



AMERICAN SOCIETY OF TROPICAL MEDICINE & HYGIENE  
ADVANCING GLOBAL HEALTH SINCE 1903

VOLUME 101 NOVEMBER 2019 NUMBER 5 SUPPLEMENT

SIXTY-EIGHTH  
**ANNUAL MEETING**

November 20–24, 2019 | [astmh.org](http://astmh.org) | [ajtmh.org](http://ajtmh.org) | [#TropMed19](https://twitter.com/TropMed19) [#lamTropMed](https://twitter.com/lamTropMed)

GAYLORD NATIONAL RESORT AND CONVENTION CENTER NATIONAL HARBOR, MARYLAND, USA

ASTMH is an **international society** committed to **equity** and **global impact** through the **treatment** and **prevention** of **tropical infectious diseases**. Our **diverse membership** comes from more than **115 countries**... we are **committed** to the **open exchange of ideas, freedom of thought and expression**, and **productive scientific debate**... **open and diverse environment** that is built on **dignity and mutual respect for all**... **freedom from discrimination based on personal attributes including** but not limited to **race, color, national origin, age, religion, socioeconomic status, disability, sexual orientation, gender, and gender identity or expression**. ASTMH is an **international society** committed to **equity** and **global impact** through the **treatment** and **prevention** of **tropical infectious diseases**. Our **diverse membership** comes from more than **115 countries**... we are **committed** to the **open exchange of ideas, freedom of thought and expression**, and **productive scientific debate**... **open and diverse environment** that is built on **dignity and mutual respect for all**... **freedom from discrimination based on personal attributes including**



Supplement to  
The American Journal of Tropical Medicine and Hygiene





## Welcome to #TropMed19, your access to all that is new, evolving, challenging, successful and exciting in tropical medicine and global health.

We have two keynote speakers this year to kick off the meeting, Dr. Abhay Bang and Dr. Rani Bang, founders of the Society for Education, Action and Research in Community Health (SEARCH) in Maharashtra, India. Dr. Chandy John will deliver the President's Address. Other highlighted speakers include Dr. Peter Hotez delivering the Fred L. Soper Lecture, Dr. Moses Kamya delivering the Commemorative Fund Lecture and Robert Handby delivering the Vincenzo Marcolongo Memorial Lecture.

At noon on Friday, NIH Director Dr. Francis Collins will speak with trainees (and those working with trainees) on becoming a global health researcher. Peace Corps Director Josephine (Jody) Olsen will be a plenary speaker on Sunday morning.

Additional highlights include:

- Climate change is the issue of our day, and we will explore its direct and indirect effects on tropical medicine during a Saturday morning session.
- Ebola is another pressing concern, and we have symposia on Thursday and Saturday afternoons with experts from the frontlines of the current Ebola outbreak in the Democratic Republic of the Congo.
- Award-winning authors Richard Preston (*Crisis in the Red Zone – The Story of the Deadliest Ebola Outbreak in History, and of the Outbreaks to Come*) and Douglas Preston (*The Lost City of the Monkey God*) will be at the Tropical Bookshelf on Friday afternoon.
- The Walter Reed Army Institute of Research mobile insectary exhibit will be on display during the meeting. The insectary rears the insects used to study vectors and pathogens.
- The popular Innovations Pitch Competition returns Friday morning. This lively session has scientists pitching innovative ideas for mitigating outbreak-prone disease risks for a chance at a \$10,000 prize.
- Also returning is Pint of Science @ ASTMH, a series of off-site interactive talks on Thursday evening. Come support your friends and colleagues and share with local residents.
- Walgreens' Get a Shot. Give a Shot.® will be back again too. Get your free flu shot and Walgreens will also provide a child in need a lifesaving vaccine via the UN Foundation's Shot@Life campaign.

All this, plus the great science and clinical sessions you have come to expect, free Wi-Fi and meeting App, and MP4 recordings of every session within 24 hours after a session ends.

Lastly, be sure to check out the offerings and information from our sponsors and exhibitors at the Opening Reception, along with complimentary food and drink. They make all of the above possible.

Look forward to seeing you for another great ASTMH Annual Meeting,



*Daniel Bausch*

Daniel G. Bausch, MD,  
MPH&TM, FASTMH  
Scientific Program Chair



*Chandy C. John*

Chandy C. John, MD, MS,  
FASTMH  
President



*Karen A. Goraleski*

Karen A. Goraleski  
CEO

## Bienvenido a #TropMed19, su acceso a todo lo nuevo, evolutivo, desafiante, exitoso y emocionante en medicina tropical y salud global.

Tenemos dos oradores principales este año para comenzar la reunión, el Dr. Abhay Bang y el Dr. Rani Bang, fundadores de la Sociedad para la Educación, Acción e Investigación en Salud Comunitaria (SEARCH) en Maharashtra, India. El Dr. Chandy John pronunciará el discurso del presidente. Otros oradores destacados incluyen al Dr. Peter Hotez impartiendo la Conferencia Fred L. Soper, el Dr. Moses Kanya impartiendo la Conferencia del Fondo Conmemorativo y Robert Handby impartiendo la Conferencia Conmemorativa Vincenzo Marcolongo.

Al mediodía del viernes, el director de NIH, el Dr. Francis Collins, hablará con los aspirantes (y aquellos que trabajan con ellos) acerca de cómo convertirse en un investigador de salud global. La directora del Cuerpo de Paz Josephine (Jody) Olsen será una oradora plenaria el domingo por la mañana.

Algunos puntos destacados adicionales incluyen:

- El cambio climático es el tema de nuestros días, y exploraremos sus efectos directos e indirectos sobre la medicina tropical durante una sesión del sábado por la mañana.
- El ébola es otra preocupación apremiante, y tenemos simposios los jueves y sábados por la tarde con expertos de la primera línea del brote actual de ébola en la República Democrática del Congo.
- Los galardonados autores Richard Preston (*Crisis in the Red Zone – The Story of the Deadliest Ebola Outbreak in History, and of the Outbreaks to Come*) y Douglas Preston (*The Lost City of the Monkey God*) estarán en la estantería tropical el viernes por la tarde.
- La exhibición móvil de insectos del Instituto de Investigación del Ejército Walter Reed estará en exhibición durante la reunión. El insectario cría a los insectos utilizados para estudiar vectores y patógenos.
- La popular competencia Innovations Pitch regresa el viernes por la mañana. En esta sesión, científicos presentan ideas innovadoras para mitigar riesgos de enfermedades propensas a brotes para tener la oportunidad de obtener un premio de \$10,000.
- También regresa Pint of Science @ ASTMH, una charla interactiva fuera del sitio el jueves por la noche. Venga a apoyar a sus amigos y colegas, y comparta con los residentes locales.
- Walgreens Get a Shot. Give a Shot.® también regresará. Obtenga su vacuna gratuita contra la gripe y Walgreens también le proporcionará a un niño necesitado una vacuna para salvar vidas a través de la campaña Shot@Life de la Fundación de las Naciones Unidas.

Todo esto, además de las excelentes sesiones científicas y clínicas que espera, la aplicación gratuita de Wi-Fi y de reuniones, y las grabaciones MP4 de cada sesión dentro de las 24 horas posteriores a la finalización de la sesión.

Por último, asegúrese de consultar las ofertas y la información de nuestros patrocinadores y expositores en la Recepción de apertura, junto con alimentos y bebidas de cortesía. Hacen posible todo lo anterior.

Esperamos verlo en otra gran reunión anual de ASTMH.



*Daniel Bausch*

Daniel G. Bausch, MD,  
MPH&TM, FASTMH  
Scientific Program Chair



*Chandy C. John*

Chandy C. John, MD, MS,  
FASTMH  
President



*Karen A. Goraleski*

Karen A. Goraleski  
CEO



## **Bienvenue au #TropMed19 qui vous donnera accès à toutes les nouveautés et évolutions et à tous les défis, succès et sujets passionnants en médecine tropicale et santé mondiale.**

Nous accueillons cette année deux grands orateurs pour le discours d'ouverture de l'assemblée annuelle : le Dr Abhay Bang et le Dr Rani Bang, fondateurs de la Society for Education, Action and Research in Community Health (SEARCH, société pour l'éducation, l'action et la recherche en santé communautaire) à Maharashtra, Inde. Le Dr Chandy John présentera l'allocution du Président. Parmi les autres intervenants principaux figurent le Dr Peter Hotez, le Dr Moses Kamya et Robert Handby qui prendront la parole au nom de Fred L. Soper, du Commemorative Fund et du Vincenzo Marcolongo Memorial, respectivement.

Vendredi à midi, le Dr Francis Collins, Directeur du NIH, expliquera aux stagiaires (et à ceux qui travaillent avec eux) comment devenir chercheur en santé mondiale. Josephine (Jody) Olsen, Directrice de Peace Corps, interviendra en tant que conférencière lors de la séance plénière de dimanche matin.

Les éléments suivants compteront parmi les autres temps forts de l'assemblée annuelle :

- Le changement climatique est le grand enjeu de notre époque ; nous étudierons ses effets directs et indirects sur la médecine tropicale lors d'une séance organisée samedi matin.
- Le virus Ebola constitue lui aussi une préoccupation urgente ; nous organiserons des symposia jeudi et samedi après-midi avec des experts exerçant sur les fronts des flambées actuelles de maladie à virus Ebola en République démocratique du Congo.
- Les auteurs et frères primés Richard Preston (*Crisis in the Red Zone – The Story of the Deadliest Ebola Outbreak in History, and of the Outbreaks to Come*) et Douglas Preston (*The Lost City of the Monkey God, La Cité perdue du dieu singe* en français) seront présents à la « bibliothèque tropicale » Tropical Bookshelf vendredi après-midi.
- L'exposition mobile de l'insectarium du Walter Reed Army Institute of Research sera présentée lors de l'assemblée annuelle. Cet insectarium élève les insectes utilisés pour étudier les vecteurs de maladies et les agents pathogènes.
- Le célèbre concours Innovations Pitch Competition revient vendredi matin. Lors de cette séance animée, des scientifiques présenteront des idées innovantes sur la limitation des risques de maladies à potentiel épidémique, avec à la clé la possibilité de remporter un prix de 10 000 \$.
- Le Pint of Science @ ASTMH, une série de discussions interactives à l'extérieur du site de l'assemblée, est lui aussi reconduit lors de cette édition, le jeudi soir. Venez soutenir vos amis et collègues et échanger avec la population locale.
- La campagne Get a Shot. Give a Shot.® de Walgreens sera également à nouveau représentée cette année. Faites-vous vacciner gratuitement contre la grippe et Walgreens fournira à un enfant un vaccin qui pourra lui sauver la vie dans le cadre de la campagne Shot@Life organisée par la Fondation des Nations Unies.

À tout cela s'ajoutent l'excellente sélection de séances cliniques et scientifiques que vous attendez tous, l'accès gratuit au Wi-Fi et à l'application de l'assemblée annuelle, ainsi que des enregistrements MP4 mis à disposition dans les 24 heures suivant la fin de chaque séance.

Enfin, n'oubliez pas de prendre connaissance des offres et des informations présentées par nos sponsors et exposants à l'occasion de la Réception d'ouverture, au cours de laquelle vous serez servis rafraîchissements et en-cas. Tout ceci n'aurait pas été possible sans eux.

Nous sommes impatients de vous retrouver pour une nouvelle et formidable Assemblée annuelle de l'ASTMH.



*Daniel Bausch*

Daniel G. Bausch, MD,  
MPH&TM, FASTMH  
Scientific Program Chair



*Chandy C. John*

Chandy C. John, MD, MS,  
FASTMH  
President



*Karen A. Goraleski*

Karen A. Goraleski  
CEO



**Chris Van Hollen**  
U.S. Senator



November 2019

Dear Friends:

I am pleased to extend my warmest greetings to everyone attending the 68<sup>th</sup> Annual Meeting of the American Society of Tropical Medicine and Hygiene. I am delighted to welcome everyone to the great State of Maryland and hope that you enjoy the many wonderful sights and offerings of our state and of our Nation's Capital.

The ASTMH Annual Meeting provides an important opportunity for collaboration among tropical medicine and global health professionals on some of the world's greatest health challenges. I commend each of you on your efforts independently and as a part of the largest international scientific organization to reduce the worldwide burden of tropical infectious diseases and to improve global health.

As a member of the U.S. Senate Appropriations Subcommittee that determines U.S. global health spending, I have worked to ensure that essential programs -- from combatting infectious diseases to improving maternal and child health around the world -- receive sustained and robust funding. On a recent trip to Uganda, I had the opportunity to see firsthand the impact of these efforts in delivering vaccines and key medical treatment to communities in need. And, as the Ebola outbreak in the Democratic Republic of Congo threatens to spread, the U.S. must double down on efforts to safeguard global health.

Thank you for your outstanding and life-saving work. You have my best wishes for a productive meeting. I stand ready to help you in any way that I can.

Sincerely,

Chris Van Hollen  
United States Senator

Not printed at government expense

# U.S. SENATOR BEN CARDIN



[www.cardin.senate.gov](http://www.cardin.senate.gov)



@SenatorCardin



SenatorBenCardin



a senatorcardin

November 20, 2019

Dear Friends:

I would like to extend a warm welcome to everyone attending the Annual Meeting of the American Society of Tropical Medicine and Hygiene. This conference serves as an international forum where scientists and medical experts can come together to discuss tropical infectious diseases and efforts to improve global health.

Global health continues to be one of the most important issues facing mankind, and I am pleased to see that ASTMH is dedicated to freeing the world of tropical infectious diseases. Since 1903, ASTMH has worked to promote global health research through the sharing of scientific evidence, advocating for science-based policy and practices, and by cultivating a culture of international cooperation among scientists. The unity and collaboration that ASTMH fosters within the health research community is crucial, for pooling our talents and skills facilitates the breakthroughs critical to finding cures.

Thank you all for working to eradicate tropical infectious diseases. As a U.S. Senator and fierce advocate for global health, I will always fight to ensure that the scientific community has the necessary resources to make our world healthier and stronger. You have my best wishes for a productive conference.

Sincerely,

A handwritten signature in blue ink, appearing to read "Ben Cardin". The signature is stylized and fluid.

Benjamin L. Cardin  
United States Senator



## Fogarty International Center

*Advancing science for global health since 1968*

November 20, 2019

Dear Colleagues,

On behalf of the Fogarty International Center at NIH, welcome to Washington D.C. and the 68th annual gathering of ASTMH!

We're delighted that we and our NIH colleagues can more fully participate in your annual meeting this year. We look forward to engaging with you on the many pressing issues we face—from the domestic threats of EEE and Lyme disease, to the ongoing Ebola outbreak in Africa.

Through our programs that build research capacity where it's needed most, we support your critical mission to advance science to reduce the global burden of infectious diseases.

Congratulations on your selection of Joel Breman as your incoming president. As a Fogarty senior scientist emeritus, Joel has offered us much sage advice over the years and we are proud to support him as he assumes this new role. We are also extremely grateful for the wisdom and support we've received from your CEO, Karen Goraeski, and the rest of your leadership team.

We greatly value our longstanding partnership with ASTMH and look forward to a stimulating and productive meeting.

Warm regards,

Roger I. Glass, M.D., Ph.D. Director  
**Fogarty International Center**  
Associate Director of Global Health Research  
National Institutes of Health

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[www.fic.nih.gov](http://www.fic.nih.gov)





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**William A. Petri, Jr.**

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## About the American Society of Tropical Medicine and Hygiene

The American Society of Tropical Medicine and Hygiene, founded in 1903, is the largest international scientific organization of experts dedicated to reducing the worldwide burden of tropical infectious diseases and improving global health. We accomplish this through generating and sharing scientific evidence, informing health policies and practices, fostering career development, recognizing excellence, and advocating for investment in tropical medicine/global health research.



## ASTMH Membership

### Be a Member — Join ASTMH

We invite you to join ASTMH and benefit from membership in the premier international organization for professionals involved in tropical medicine and global health. ASTMH provides a forum for sharing scientific advances, exchanging ideas, fostering new research and providing professional education. Join online at [astmh.org](http://astmh.org) or visit the TropMed Hub in the Exhibit Hall for more information.

### Advantages of ASTMH Membership

- Active specialty subgroups in the areas of clinical tropical medicine, medical entomology, virology, global health and molecular, cellular and immunoparasitology
- The Clinical Consultants Directory — a listing of physicians who offer clinical consultative service in tropical medicine, medical parasitology and travelers' health
- Online access to the *American Journal of Tropical Medicine and Hygiene*, the foremost peer-reviewed publication for communicating new findings in tropical medicine
- Reduced page charges for publishing in the *American Journal of Tropical Medicine and Hygiene*

### Educational Opportunities

- Reduced registration rates for the Annual Meeting, the premier gathering of tropical medicine professionals, featuring the latest cutting-edge research and program developments via symposia, plenary and interactive sessions, contributed and invited abstracts, and impromptu networking opportunities
- Reduced rates for the Update Course in Clinical Tropical Medicine and Travelers' Health
- Examination Leading to a CTropMed® — Certificate of Knowledge in Clinical Tropical Medicine and Travelers' Health

### Professional Development Opportunities

- Funding, fellowship and sponsorship opportunities tailored to members' specific research and clinical needs
- Innovative Annual Meeting
- Access to the leading minds working and studying in tropical medicine today
- Annual awards and scholarships for excellence across disciplines
- Access to a professional network
- Members recognized as leaders in the tropical medicine and hygiene field
- Opportunities for leadership and skills-building through Board, subgroup and committee participation

### Affiliate Members

#### Patron



Thank You

Peter Melby, *Professor; Director, UTMB Center for Tropical Diseases, Department of Internal Medicine, Division of Infectious Diseases, University of Texas Medical Branch*

## Membership Dues

Student (Undergraduate, Graduate, Pre-Doctoral): **\$15**

Trainee (Post-Doctoral, Resident, Fellow): **\$25**

Early-Career: **\$100**

Regular Member: **\$250**

Regular Member: Low/Low-Middle Income Countries: **\$25**

Fellow of ASTMH (FASTMH): **\$50** voluntary contribution

Lifetime: **\$4,600**

### Welcome ASTMH Members from Low and Low-Middle Income Countries!

#### Reduced Regular Membership Dues for Low and Low-Middle Income Countries (\$25)

This is open to all citizens and legal residents of World Bank low and low-middle income countries and WHO/HINARI classification countries of A & B. Members must be permanent residents in their country of citizenship. Visiting researchers or others on short-term assignments do not qualify.



# ASTMH Members Across Six Continents



- |                                      |               |                                  |                       |                          |
|--------------------------------------|---------------|----------------------------------|-----------------------|--------------------------|
| Afghanistan                          | Ecuador       | Italy                            | Pakistan              | Switzerland              |
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| Burkina Faso                         | Ghana         | Malta                            | Saint Lucia           | Vietnam                  |
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| China                                | Honduras      | Namibia                          | Slovenia              |                          |
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| The Democratic Republic of the Congo | Indonesia     | New Zealand                      | Sri Lanka             |                          |
| Denmark                              | Iraq          | Nigeria                          | Sudan                 |                          |
| Dominican Republic                   | Ireland       | Norway                           | Suriname              |                          |
|                                      | Israel        |                                  | Sweden                |                          |

# ASTMH 2019 Annual Meeting

Wednesday, November 20, 2019

	Prince George's Exhibit Hall C	Maryland A	Maryland B	Maryland C	Maryland D	Riverview 2	Potomac Ballroom	Chesapeake DE	Chesapeake HI	Chesapeake L				
8 – 8:30 a.m.														
8:30 – 9 a.m.														
9 – 9:30 a.m.														
9:30 – 10 a.m.														
10 – 10:30 a.m.														
10:30 – 11 a.m.														
11 – 11:30 a.m.														
11:30 a.m. – Noon		Arbovirology Pre-Meeting Course P. 81		Parasitology Pre-Meeting Course P. 83	Clinical Pre-Meeting Course P. 82	Global Health Pre-Meeting Course P. 83		Young Investigator Award Session A P. 85	Young Investigator Award Session C P. 88					
Noon – 12:30 p.m.														
12:30 – 1 p.m.														
1 – 1:30 p.m.			First-Time Attendee Orientation											
1:30 – 2 p.m.														
2 – 2:30 p.m.														
2:30 – 3 p.m.														
3 – 3:30 p.m.														
3:30 – 4 p.m.														
4 – 4:30 p.m.														
4:30 – 5 p.m.										Clinical Group Council Meeting				
5 – 5:30 p.m.														
5:30 – 6 p.m.														
6 – 6:30 p.m.							Opening Plenary Session and Awards Program P. 97							
6:30 – 7 p.m.														
7 – 7:30 p.m.	Opening Reception and Exhibits													
7:30 – 8 p.m.														
8 – 8:30 p.m.														
8:30 – 9:30 p.m.														

# ASTMH 2019 Annual Meeting

Wednesday, November 20, 2019

	Chesapeake 1	Chesapeake 4	Chesapeake 5/6	Chesapeake 9	National Harbor 4	National Harbor 6	National Harbor 7	National Harbor 12	Riverview Ballroom 5	Riverview A
8 – 8:30 a.m.										
8:30 – 9 a.m.										
9 – 9:30 a.m.										
9:30 – 10 a.m.										
10 – 10:30 a.m.										
10:30 – 11 a.m.										
11 – 11:30 a.m.										
11:30 a.m. – Noon									ACAV SIE Meeting	
Noon – 12:30 p.m.			Young Investigator Award Session D P. 90		Young Investigator Award Session E P. 92		ASTMH Communications Training Workshop P. 93	Young Investigator Award Session B P. 87		
12:30 – 1 p.m.									ACAV SIRACA Meeting	
1 – 1:30 p.m.										
1:30 – 2 p.m.						Elsevier Clinical Research Award P. 94				
2 – 2:30 p.m.										
2:30 – 3 p.m.									ACAV SALS Meeting	Student Reception
3 – 3:30 p.m.										
3:30 – 4 p.m.										
4 – 4:30 p.m.										
4:30 – 5 p.m.	ACME Council Meeting	ACGH Council Meeting		ACMCIP Council Meeting					ACAV Council Meeting	
5 – 5:30 p.m.										
5:30 – 6 p.m.										
6 – 6:30 p.m.										
6:30 – 7 p.m.										
7 – 7:30 p.m.										

**Online Meeting Program**

Search the Annual Meeting program online by abstract keyword, title, subject, author and/or presentation time at [astmh.org/annual-meeting](http://astmh.org/annual-meeting). The full text of all abstracts, including Late-Breaker Abstracts, can be found in the Online Program Planner.

**Meeting App**

Download the meeting app for easy access to all ASTMH program information. Use the app to view the meeting schedule, session and presenter information, full abstracts, exhibitors, maps and Twitter feed.

**Program Changes**

Times and/or locations of activities or sessions are subject to change. Please check the meeting app for program changes.

**Online Abstract Book**

The Annual Meeting Abstract Book is accessible at [astmh.org/annual-meeting](http://astmh.org/annual-meeting). View the full text of the abstracts presented.

# ASTMH 2019 Annual Meeting

Thursday, November 21, 2019

	Prince George's Exhibit Hall C	Prince George's Exhibit Hall D	Maryland A	Maryland B	Maryland C	Maryland D	Potomac A	Potomac B	
8 – 9:45 a.m.	Exhibits Open 9:30 - 10:30		2 Scientific Session Malaria: Clinical Trials and Pre-Clinical Drug Development P. 99	3 Scientific Session Clinical Tropical Medicine I P. 100	4 Scientific Session Malaria: Vectors and Vector Control P. 100	5 Scientific Session Malaria: Pathogenesis P. 101	6 Symposium ACGH I: Sustainable Business for Innovations and Business Meeting P. 102	7 Symposium Relative Importance of Migrant and Mobile Populations: Challenge for Malaria P. 102	
9:45 – 10:15 a.m.	Coffee Break	Poster Session A Setup							
10:15 a.m. – Noon		Poster Session A Viewing	14 Symposium Evaluation in Uganda: Impact of Long-lasting Insecticidal Nets P. 107	15 Scientific Session Clinical Tropical Medicine II P. 108	16 Symposium Genome-wide Approaches to Antimalarial Drugs P. 108	17 Symposium Precision Mapping of Innovative and Intensified Disease Management P. 109	18 Symposium ACGH II: Diverse Pathogens, Common Risk Factor: Infections of Poverty P. 110	19 Symposium Alan J. Magill Malaria Eradication Symposium P. 110	
Noon – 12:15 p.m.	Exhibit Hall Open and Light Lunch	26 Poster Session A Presentations and Light Lunch P. 115							
12:15 – 12:30 p.m.									
12:30 – 12:45 p.m.									
12:45 – 1:30 p.m.									
1:30 – 1:45 p.m.									
1:45 – 3:30 p.m.	Exhibits Open 3:15 – 4:15	Poster Session A Viewing	30 Symposium Zoonotic Malaria in the Elimination Era P. 161	31 Scientific Session Malaria: Modeling Malaria Disease and Transmission P. 162	32 Symposium Generation of Anti-malarial Drug Candidates P. 162	33 Symposium Interventions to Decrease Burden of Malaria in School-aged Children P. 163	34 Symposium Clinical Group Symposium I: Vincenzo Marcolongo Lecture P. 164		
3:30 – 4 p.m.	Coffee Break								
4 – 5:45 p.m.		Poster Session A Dismantle	44 Scientific Session Malaria: Immunology P. 171	42 Symposium Malaria: Reducing Deaths by Improving Quality of Care P. 170	43 Symposium Case Study from Malaria Control in Burkina Faso P. 170		45 Clinical Group Symposium II P. 172		
5:45 – 6:15 p.m.									
6:15 – 7 p.m.						53 Plenary II Fred L. Soper Lecture P. 177			
7 – 7:15 p.m.									
7:15 – 8 p.m.									
8 – 8:30 p.m.									
8:30 – 9 p.m.									
9 – 9:30 p.m.									

**INCLUDED WITH YOUR REGISTRATION FEE**

**Webcasts (MP4 recordings) of All Sessions**  
 Registrants will receive free access to webcasts (MP4 recordings and slides where permission has been granted) of all sessions within 24 hours of a session's end.

# ASTMH 2019 Annual Meeting

Thursday, November 21, 2019

	Potomac C	Potomac D	National Harbor 2	National Harbor 3	National Harbor 4/5	National Harbor 10	National Harbor 11
8 – 9:45 a.m.	8 Symposium Toward a Chikungunya Vaccine P. 103	9 Symposium ACME I: Annual Business Meeting and Reception P. 104	10 Scientific Session ACMCIP Worms, Protists and Trematodes: Immunology P. 104		11 Symposium Enteric Pathogens in Urban Environments P. 105	12 Scientific Session Schistosomiasis - Trematodes: Epidemiology and Control P. 105	13 Scientific Session Cestodes: Cysticercosis P. 106
9:45 – 10:15 a.m.							
10:15 a.m. – Noon	20 Scientific Session Chikungunya and Other Alphaviruses P. 111	21 Symposium ACME II: Lessons from Previous Vector Control Efforts P. 111	22 ACMCIP Kinetoplastida: Molecular, Cellular and Immunobiology P. 112		23 Scientific Session Global Health: Maternal and Child Health P. 113	24 Scientific Session Schistosomiasis- Trematodes: Immunology, Pathology, Cellular, Molecular P. 114	25 Scientific Session Filariasis: Epidemiology and Control I P. 114
Noon – 12:15 p.m.							
12:15 – 12:30 p.m.							
12:30 – 12:45 p.m.				27 Late Breakers in Clinical and Applied Sciences P. 160	28 Mid-Day Session Career Pathways in Science Trainee Panel P. 160	29 Meet the Professors A P. 161	
12:45 – 1:30 p.m.							
1:30 – 1:45 p.m.							
1:45 – 3:30 p.m.	35 Symposium Confronting Ebola: Reflections from Experts from Discovery to Today P. 165	36 Scientific Session ACMCIP Malaria: New Molecular and Cellular Approaches P. 165	37 Scientific Session Kinetoplastida: Diagnosis, Treatment and Vaccine Development P. 166	38 Scientific Session WaSH-E and Behavior P. 167	39 Scientific Session Global Health: Impact and Economics of Health Interventions P. 167	40 Symposium Clinical Research Networks to Support Emergency Preparedness P. 168	41 Scientific Session Filariasis: Epidemiology and Control II P. 169
3:30 – 4 p.m.							
4 – 5:45 p.m.	46 Scientific Session West Nile and Other Flaviviruses P. 173	47 Scientific Session One Health: Interface of Human Health/Animal Diseases P. 173	48 Symposium Social Innovation for Infectious Diseases of Poverty P. 174	49 Symposium <i>Wolbachia</i> for the Biocontrol of <i>Aedes aegypti</i> P. 175	50 Symposium Building Leadership and Management Capacity to Achieve SDGs P. 175	51 Symposium Hookworm Infections in West Africa and Haiti P. 176	
5:45 – 6:15 p.m.							
6:15 – 7 p.m.							
7 – 7:15 p.m.							
7:15 – 8 p.m.			Sponsored Symposium: Responses to Healthcare Challenges in Africa: Looking for Solutions to Reduce the Impact of High-Burden Diseases P. 45 and 178				Sponsored Symposium: TDR: Strengthening Implementation Research Capacity to Accelerate Universal Health Coverage P. 45 and 178
8 – 8:30 p.m.							
8:30 – 9 p.m.							
9 – 9:30 p.m.							

# ASTMH 2019 Annual Meeting

Friday, November 22, 2019

	Prince George's Exhibit Hall C	Prince George's Exhibit Hall D	Maryland A	Maryland B	Maryland C	Maryland D	Potomac A	Potomac B
8 – 9:45 a.m.				54 Scientific Session Malaria Epidemiology I: Surveillance, Trends and Program Impact P. 179	55 Symposium Routine Data for Decision Making: Driving Progress in Malaria Control P. 180	56 ACMCIP 17th Annual Symposium: Your Brain on Parasites P. 180	57 ACAV Symposium I: ACAV Business Meeting and Awards P. 181	
	Exhibits Open 9:30 - 10:30							
9:45 – 10:15 a.m.	Coffee Break	Poster Session B Setup						
10:15 a.m. – Noon		Poster Session B Viewing	65 Symposium Innovations for Response to Outbreak-Prone Diseases: A Challenge to Innovators to Pitch their Ideas P. 186	66 Scientific Session Malaria Epidemiology II: Clinical Epidemiology and Intervention Studies P. 187	67 Symposium Human Monoclonal Antibodies Against Malaria P. 188		69 American Committee on Arthropod-Borne Viruses (ACAV) Symposium II: Yellow Fever P. 189	70 Symposium Beyond HIV: Immuno- compromised Patients in Global Context P. 189
Noon – 12:15 p.m.	Exhibit Hall Open and Light Lunch	77 Poster Session B Presentations Light Lunch P. 194						
12:15 – 12:30 p.m.						78 Mid-Day Session Charting Your Research Career in Global Health: A Conversation with Francis Collins P. 239		
12:30 – 12:45 p.m.								
12:45 – 1:30 p.m.								
1:30 – 1:45 p.m.								
1:45 – 3:30 p.m.		Poster Session B Viewing	81 Scientific Session Diagnosis of Malaria: Are the Available Tools Sufficient to Eliminate Disease? P. 239	82 Symposium Seasonal Malaria Chemoprevention: Current and Future Perspectives P. 240	83 Symposium Cellular and Molecular Signature of Durable Immunity P. 241	84 Symposium Malaria: Getting back on Track in High Burden Countries P. 241	85 Symposium "The Tropical Bookshelf" Authors' Panel with Douglas Preston and Richard Preston P. 242	86 Hot Topics in Travel Medicine and Migrant Health P. 242
	Exhibits Open 3:15 – 4:15 p.m.							
3:30 – 4 p.m.	Coffee Break							
4 – 5:45 p.m.		Poster Session B Dismantle		94 Symposium Bridging the Gap Between Malaria Mathematical Modeling and Country Application P. 248	95 Symposium Understanding Malaria Resurgence through Studies of Host Immunity and Parasite Diversity P. 249	96 Scientific Session Integrated Control Measures for Neglected Tropical Diseases P. 249		97 Scientific Session Viral Hemorrhagic Fever P. 250
5:45 – 6:15 p.m.								
6:15 – 7 p.m.					106 Plenary III Commemorative Fund Lecture P. 256			
7 – 7:15 p.m.								
7:15 – 8 p.m.								
8 – 8:30 p.m.								
8:30 – 9 p.m.								

# ASTMH 2019 Annual Meeting

Friday, November 22, 2019

	Potomac C	Potomac D	National Harbor 2	National Harbor 3	National Harbor 4/5	National Harbor 10	National Harbor 11	Riverview Ballroom 1/2/3
8 – 9:45 a.m.	58 Symposium High Throughput Malaria Sero- Epidemiology – Development, Utility and Insights from Examples across the Globe P. 181	59 Symposium Assessment of Surveillance Systems for Neglected Tropical Diseases after Elimination P. 182	60 Symposium Intersection of Advocacy, Policy and Social Media: A Washington, DC, Primer P. 183	61 Scientific Session Arthropods: Other Arthropods P. 183	62 Symposium Novel Typhoid Surveillance Methods P. 184	63 Scientific Session Schistosomiasis and Other Trematodes: Diagnosis and Treatment P. 184	64 Symposium Evidence and Multi-disciplinary Approaches Towards Zoonoses P. 185	
9:45 – 10:15 a.m.								
10:15 – Noon	68 Symposium Tafenoquine: New Drug for Chemoprophylaxis and Treatment of Relapsing Malaria P. 188	71 Symposium Interplay of Environmental Stressors, Infectious Diseases, and Human Health P. 190	72 Scientific Session ACMCIP Worms and Trematodes: Molecular and Cellular Biology P. 191	73 Scientific Session Mosquitoes: Biochemistry and Molecular Biology P. 191	74 Symposium Latest Data to Inform Typhoid Conjugate Vaccine Implementation P. 192	75 Symposium Bubble CPAP and High Flow Nasal Cannula in Low- Resource Settings P. 193	76 Symposium Surveillance for Lymphatic Filariasis after Validation of Elimination P. 193	
Noon – 12:15 p.m.								
12:15 – 12:30 p.m.								
12:30 – 12:45 p.m.								
12:45 – 1:30 p.m.				79 Late Breakers in Basic Sciences P. 239		80 Meet the Professors B P. 239		
1:30 – 1:45 p.m.								
1:45 – 3:30 p.m.	87 Scientific Session HIV and Tropical Co-Infections P. 243	88 Scientific Session ACMCIP Malaria: Molecular Mechanisms of Pathogenesis and Resistance P. 243	89 Symposium Unmeasured Risk Factors Impacting Arboviral Transmission P. 244	90 Scientific Session Mosquitoes: Molecular Genetics and Genomics P. 245	91 Scientific Session Protozoa P. 245	92 Scientific Session Intestinal and Tissue Nematodes: Soil-Transmitted Helminths - Biology and Immunology P. 246	93 Scientific Session Filariasis: Clinical P. 247	
3:30 – 4 p.m.								
4 – 5:45 p.m.	98 Symposium Poor Quality Drugs and Antimicrobial Resistance P. 251	99 Scientific Session Global Health: Prevention, Control and Surveillance of Infectious Diseases P. 252	100 Scientific Session Kinetoplastida: Epidemiology and Diagnosis P. 253	101 Symposium Cutting-edge Technology and Challenges to Map Human Settlements P. 253	102 Symposium Early Lessons with TCV Introduction P. 254	103 Symposium Applied Helminth Genomics: Translational Aspects P. 255	104 Scientific Session Ectoparasite- Borne Disease P. 255	
5:45 – 6:15 p.m.								105 Special Session Speed- Networking with the Experts P. 256
6:15 – 7 p.m.								
7 – 7:15 p.m.								
7:15 – 8 p.m.								
8 – 8:30 p.m.							Sponsored Symposium Gender Dimensions in the Prevention and Control of Neglected Tropical Diseases P. 46 and 257	
8:30 – 9 p.m.								

# ASTMH 2019 Annual Meeting

Saturday, November 23, 2019

	Prince George's Exhibit Hall C	Prince George's Exhibit Hall D	Maryland A	Maryland B	Maryland C	Maryland D	Potomac A	Potomac B
8 – 9:45 a.m.	Exhibits Open 9:30 - 10:30		107 Symposium Can Pyronaridine- artesunate be Considered as a Potential Tool for Use in Malaria Elimination? P. 257	108 Symposium Malaria Resurgence in Venezuela and its Regional Implications P. 258	109 Symposium Rethinking Gametocyte Biology in Malaria Parasites in an Era of Elimination P. 259	110 Symposium Mass Drug Administration Treatment Coverage in Soil-transmitted Helminths P. 259	111 Scientific Session Dengue: Transmission and Virus-Host Interactions P. 260	112 Symposium Climate Change and Tropical Medicine: The Issue of Our Day P. 261
9:45 – 10:15 a.m.	Coffee Break	Poster Session C Setup						
10:15 a.m. – Noon		Poster Session C Viewing	120 Scientific Session Malaria: Vaccines P. 266	121 Scientific Session Malaria: Evidence for Malaria Elimination P. 267	122 Symposium Learning from Experience to Optimize Chemoprevention Strategies for Malaria P. 268		123 Scientific Session Dengue: Vaccines and Immunity P. 268	124 Symposium Challenges of Implementing NTD Assessments in Conflict Areas and Fragile States P. 269
Noon – 12:15 p.m.								
12:15 – 12:30 p.m.								
12:30 – 12:45 p.m.								
12:45 – 1:30 p.m.	Exhibit Hall Open and Light Lunch	131 Poster Session C Presentations Light Lunch P. 275						
1:30 – 1:45 p.m.								
1:45 – 3:30 p.m.		Poster Session C Viewing	135 Symposium PfSPZ-Based Vaccines: Progress Towards Licensure P. 320	136 Symposium Updates and Challenges in Measuring Malaria Burden in the Era of SDGs P. 321	137 Scientific Session Malaria: New Drugs and New Insights on Old Drugs P. 321	138 Symposium Ebola in the Democratic Republic of the Congo: The Perfect Public Health Storm P. 322	139 Scientific Session Zika I P. 323	140 Symposium Development and Implementation of Smartphone Applications for Vector-Borne Disease Research and Control P. 324
3:30 – 4 p.m.								
4 – 5:45 p.m.		Poster Session C Dismantle by 5 p.m.	148 Symposium <i>The Lancet</i> Commission on Malaria Eradication P. 330	149 Scientific Session Malaria: Parasite Genetics and Genomic Epidemiology of Malaria P. 330	150 Scientific Session Malaria: Updates and Innovations in Malaria Prevention P. 331		151 Scientific Session Zika II P. 332	152 Symposium Artificial Intelligence and Tropical Medicine P. 333
5:45 – 6:15 p.m.								
6:15 – 7 p.m.					161 Plenary IV President's Address P. 339			
7 – 7:15 p.m.	<p><b>Online Meeting Program</b></p> <p>Search the Annual Meeting program online by abstract keyword, title, subject, author and/or presentation time at <a href="http://astmh.org/annual-meeting">astmh.org/annual-meeting</a>. The full text of all abstracts, including Late-Breaker Abstracts, can be found in the Online Program Planner.</p>							
7:15 – 8 p.m.	<p><b>Meeting App</b></p> <p>Download the meeting app for easy access to all ASTMH program information. Use the app to view the meeting schedule, session and presenter information, full abstracts, exhibitors, maps and Twitter feed.</p>							
8 – 8:30 p.m.	<p><b>Program Changes</b></p> <p>Times and/or locations of activities or sessions are subject to change. Please check the meeting app for program changes.</p>							
8:30 – 9 p.m.	<p><b>Online Abstract Book</b></p> <p>The Annual Meeting Abstract Book is accessible at <a href="http://astmh.org/annual-meeting">astmh.org/annual-meeting</a>. View the full text of the abstracts presented.</p>							
9 – 9:30 p.m.								





# ASTMH 2019 Annual Meeting

Saturday, November 23, 2019

	Potomac C	Potomac D	National Harbor 2	National Harbor 3	National Harbor 4/5	National Harbor 10	National Harbor 11
8 – 9:45 a.m.	113 Symposium From Biomarker to Differential Diagnosis in Malaria P. 261	114 Symposium Clinical Research in Public Health Emergencies P. 262	115 Scientific Session Kinetoplastida: Molecular Biology and Immunology P. 262	116 Scientific Session Mosquitoes: Vector Biology - Epidemiology I P. 263	117 Scientific Session Bacteriology: Cholera and Other Intestinal Infections P. 264	118 Symposium Expanding Impact of Tick-borne Diseases around the World P. 265	119 Symposium Epidemiology of Coupled Natural- human Systems: Drivers of Vector- borne and Zoonotic Disease P. 265
9:45 – 10:15 a.m.							
10:15 a.m. – Noon	125 Symposium Advances in Sero- epidemiology: Disease Modeling and Prediction P. 270	126 Symposium Controversies in Personal Protective Equipment P. 270		127 Scientific Session Mosquitoes: Vector Biology - Epidemiology II P. 271	128 Scientific Session Bacteriology: Systemic Infections P. 272	129 Congressional- Directed Medical Tick-Borne Diseases Research Program P. 273	130 Scientific Session ACMCIP Protozoans: Molecular and Cellular Biology P. 274
Noon – 12:15 p.m.							
12:15 – 12:30 p.m.			132 ASTMH Annual Business Meeting P. 320	133 Late Breakers in Malaria P. 320		134 Meet the Professors C P. 320	
12:30 – 12:45 p.m.							
12:45 – 1:30 p.m.							
1:30 – 1:45 p.m.							
1:45 – 3:30 p.m.	141 Symposium African Perspectives on Programmatic Challenges to Malaria Elimination P. 324	142 Symposium HIV and Neglected Tropical Disease Co-infections: Protozoa and Helminths P. 325	143 Scientific Session WaSH-E: Transmission and Exposure P. 326	144 Scientific Session Mosquitoes: Insecticide Resistance and Control I P. 326	145 Scientific Session Bacteriology: Typhoid/ <i>Shigella</i> / <i>E. coli</i> P. 327	146 Symposium School-based Health Interventions P. 328	147 Scientific Session Filariasis: Molecular Biology, Immunology and Diagnostics P. 329
3:30 – 4 p.m.							
4 – 5:45 p.m.	153 Symposium Changing the Immune Landscape: How One Infection Impacts Another P. 334	154 Symposium Food Hygiene for Public Health: Intervention Design, Implementation and Evaluation P. 334	155 Symposium Serosurveys and Multiplex Assay Technology Transfer to Augment Epidemiological Surveillance P. 335	156 Scientific Session Mosquitoes: Insecticide Resistance and Control II P. 335	157 Scientific Session Pneumonia, Respiratory Infections and Tuberculosis P. 336	158 Symposium Scrub Typhus P. 337	159 Symposium Challenges of Schistosomiasis Control: The SCORE Project P. 338
5:45 – 6:15 p.m.							
6:15 – 7 p.m.							
7 – 7:15 p.m.							
7:15 – 8 p.m.							
8 – 8:30 p.m.			162 Special Session: Film Screening: Under the Mask, Premiere in USA P. 339				
8:30 – 9 p.m.							
9 – 9:30 p.m.							

# ASTMH 2019 Annual Meeting

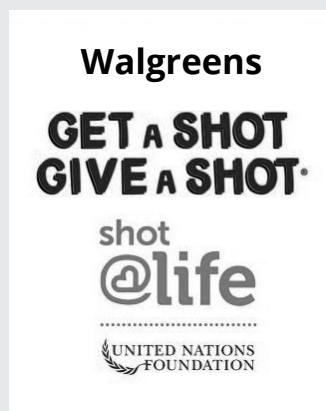
Sunday, November 24, 2019

	Maryland/Potomac Ballroom Lobby	Maryland A	Maryland B	Maryland C	Maryland D	Potomac A	Potomac B	Potomac C
7 – 7:30 a.m.								
7:30 – 8 a.m.								
8 – 9:45 a.m.		163 Symposium Dragon by the Tail: Road to Guinea Worm Eradication P. 340	164 Symposium What is Needed to Eliminate Viral Hepatitis? P. 340	165 Scientific Session Opportunities and Challenges for Providers and Policy-Makers in Malaria P. 341		166 Symposium Safety is No Accident: Harm Reduction and Mass Drug Administration P. 342	167 Symposium Venezuelan Complex Humanitarian Emergency: A Perfect Storm P. 343	168 Symposium Environmental Enteric Dysfunction: Interventional Trials and Observational Studies P. 343
9:45 – 10:15 a.m.	Coffee Break							
10:15 a.m. – 11:00					175 Plenary Session V: Peace Corps: An Investment Worth Making P. 348			
11:00 – 11:15 a.m.								
11:15 a.m. – 1 p.m.		176 Symposium Engaging High-risk Communities to Accelerate Malaria Elimination P. 349	177 Symposium Repurposed Drugs for Neglected Infectious Diseases P. 349	178 Symposium Recent Advances for Controlling Chagas Disease P. 350		179 Symposium Antimalarial Efficacy Monitoring in the Americas P. 350	180 Symposium Findings and Recommendations of the WHO Strategic Advisory Group on Malaria Eradication P. 351	181 Scientific Session Global Health: Health Systems Strengthening P. 352

## Get Your Flu Shot @ TropMed! Get a Shot Give a Shot®

Potomac Ballroom Lobby (Ballroom Level)

Walgreens' Get a Shot. Give a Shot.® campaign has helped provide more than 20 million lifesaving vaccines to children in need around the world through the United Nations Foundation's Shot@Life campaign. Now, TropMed19 is giving attendees an opportunity to give back to the global health communities we serve. Receive your annual flu shot and provide lifesaving vaccines to families in developing countries. Immunizations are one of the world's biggest public health success stories, but not all communities have the same access to vaccines.



# ASTMH 2019 Annual Meeting

Sunday, November 24, 2019

	Potomac D	National Harbor 2	National Harbor 3	National Harbor 4/5	National Harbor 10	National Harbor 11
7 – 7:30 a.m.						
7:30 – 8 a.m.						
8 – 9:45 a.m.	169 Symposium Healthy Homes and Cities: Impact of Built Environment and Urbanization P. 344	170 Scientific Session WaSH-E: Water Access, Quality and Treatment P. 345	171 Symposium Mosquito Love, Naturally: Sexual and Natural Selection P. 345	172 Scientific Session Bacteriology: Trachoma, Other Bacterial Infections, Diagnostics P. 346	173 Symposium Rise of Human Babesiosis P. 347	174 Symposium New Tools to Accelerate Elimination of Onchocerciasis P. 347
9:45 – 10:15 a.m.						
10:15 a.m. – 11:00						
11:00 – 11:15 a.m.						
11:15 a.m. – 1 p.m.	182 Innovation in Primary Healthcare: Pneumonia Case Management in Children under Five P. 352	183 Symposium Host-based Biomarkers: Precision Medicine Heads South P. 353	184 Symposium Accelerating Access to Innovative Malaria Products: Market and Economic Data P. 354	185 Symposium Schistosomiasis Remapping, Refocusing, and Refining after Preventive Chemotherapy P. 354	186 Scientific Session Intestinal and Tissue Nematodes: Soil-Transmitted Helminths - Epidemiology and Control P. 355	187 Symposium Vascular Dysfunction of Severe Viral Infections P. 356

## Walter Reed Army Institute of Research Insectary Visit us at TropMed this year

*Convention Center Foyer (Ballroom Level)*

The Walter Reed Army Institute of Research (WRAIR) is bringing its mobile insectary exhibit to the 2019 ASTMH Annual Meeting in November. The insectary rears the insects used in the institute's study of interactions between disease vectors and pathogens and in the Controlled Human Malaria Infection (CHMI) model. Vector-borne diseases, including malaria, leishmaniasis, dengue and Zika virus, remain significant threats to Service Members and global health.

WRAIR develops countermeasures, including insect repellents, rapid diagnostic kits, preventive drugs and vaccines, to identify, prevent and treat these threats. Backing these product development programs are insectaries around the world, capable of rearing millions of mosquitoes and hundreds of thousands of sand flies every year. WRAIR's mobile insectary will exhibit the worldwide surveillance efforts to identify vectors and diseases of concern, highlight current product development priorities, showcase the breadth of mosquito and sand fly vectors available for use by scientists and demonstrate the controlled human malaria infection model - where volunteers are safely infected with malaria to test new drugs and vaccines.



Walter Reed Army  
Institute of Research  
Soldier Health ★ World Health

# Meeting Room Directory

## Ballroom Level

Chesapeake A (Speaker Ready Room)  
Chesapeake B  
Chesapeake C  
Chesapeake D  
Chesapeake E  
Chesapeake F  
Chesapeake G  
Chesapeake H  
Chesapeake I  
Chesapeake L  
Chesapeake 1  
Chesapeake 2 (Press Room)  
Chesapeake 4  
Chesapeake 5  
Chesapeake 6 (Meeting Sign-Up Room)  
Chesapeake 7  
Chesapeake 8  
Chesapeake 9 (Meeting Sign-Up Room)  
Magnolia 3  
Maryland A  
Maryland B  
Maryland C  
Maryland D  
Maryland 4/5/6 Foyer (TropStop Student Lounge)  
Maryland 1  
Maryland 2  
Maryland 3  
Maryland 4  
Maryland 5/6 (TropStop Career Chats)  
Potomac Ballroom Lobby (Registration)  
Potomac A  
Potomac B  
Potomac C  
Potomac D  
Potomac 1-6 Foyer  
Potomac 1  
Potomac 2  
Potomac 3  
Potomac 4  
Potomac 5  
Potomac 6

## National Harbor Level

National Harbor 1  
National Harbor 2  
National Harbor 3  
National Harbor 4/5  
National Harbor 6  
National Harbor 7  
National Harbor 8  
National Harbor 9  
National Harbor 10  
National Harbor 11  
National Harbor 12  
National Harbor 13  
National Harbor 14  
National Harbor 15

## Lobby Level

Mezzanine 1  
Mezzanine 2  
Mezzanine 3  
Mezzanine 4

## Lower Atrium Level

Prince George's Exhibit Hall C (Exhibit Hall)  
Prince George's Exhibit Hall D (Poster Hall)

## Riverview Ballroom

Riverview A  
Riverview B  
Riverview 1  
Riverview 2  
Riverview 3  
Riverview 4  
Riverview 5

# Program Information

## ASTMH Values and Promotes Diversity

### ASTMH Inclusion/Respect Statement

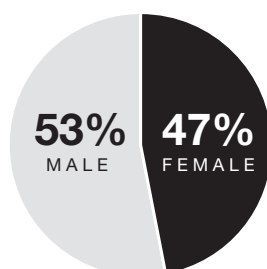
At the Saturday, October 27, 2018, Board meeting of the ASTMH, under the leadership of then-President Regina Rabinovich, MD, FASTMH, the following statement was adopted: The ASTMH is an international society committed to equity and global impact through the treatment and prevention of tropical infectious diseases. Our diverse membership comes from more than 115 countries and engages with an enormous array of infectious diseases, cultures, ethnicities, and countries. We come from academia, research institutes, implementation programs, industry, multilateral organizations, foundations, and governments, gathering annually to exchange data, share learning, and honor contributions from the field and the lab.

As a Society, we are committed to the open exchange of ideas, freedom of thought and expression, and productive scientific debate that are central to our mission. These require an open and diverse environment that is built on dignity and mutual respect for all members, participants, and staff, free of discrimination based on personal attributes including but not limited to ethnicity, color, national origin, age, religion, socioeconomic status, disability, sexual orientation, gender, and gender identity or expression. We affirm the key principles of inclusion, diversity, and respect for all people. In a world of rich diversity, the advancement of science depends on the intellectual breadth and depth of a diverse ASTMH, one that informs and enriches the shape and content of scientific discourse. These principles guide the actions of ASTMH's leaders, members, and staff in advancing the goals of the Society.

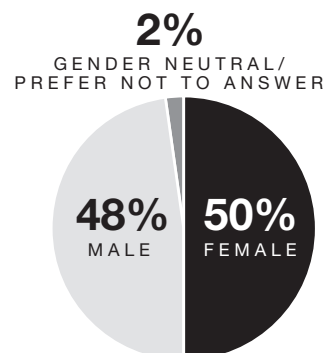
ASTMH takes pride in its diverse membership, represented through the Society's leadership, Annual Meeting presenters and attendees. Symposium Organizers were encouraged to consider diversity with respect to gender, institutional background and country of origin when developing symposium submissions. All symposia were required to have at least one male and one female participant.



**2018 New Orleans Annual Meeting Attendance**



**Board/Executive Committee**



**2019 National Harbor Symposium and Abstract Presenters**

## ASTMH Board of Directors, Subgroup Leadership and Fellows of ASTMH (FASTMH)

ASTMH extends a special thank you to its Board members for their outstanding contributions throughout the year and their dedication to advancing the Society's mission.

### Executive Committee

\*Indicates voting member

#### President\*

Chandy C. John  
*Indiana University, United States*

#### President-Elect\*

Joel G. Breman  
*National Institutes of Health, Fogarty International Center (Retired), United States*

### Immediate Past President\*

Regina Rabinovich  
*Harvard T.H. Chan School of Public Health, United States*

### Secretary-Treasurer

David R. Hill  
*Quinnipiac University, United States*

# ASTMH Board, Subgroup Leadership and Fellows of ASTMH (FASTMH)

## Chair, Scientific Program Committee

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UK Public Health Rapid Support Team,  
United Kingdom

## Editor-in-Chief, American Journal of Tropical Medicine and Hygiene

Philip Rosenthal  
University of California San Francisco,  
United States

## CEO

Karen A. Goraleski

## Board Members

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University of Notre Dame, United States

Koya C. Allen\* (2019)  
KCA Consulting, United States

Abdoulaye Djimde\* (2016-2020)  
University of Science, Techniques and  
Technologies of Bamako, Mali

David Fidock\* (2015-2019)  
Columbia University Medical Center,  
United States

David Hamer\* (2018-2021)  
Boston University, United States

Julie Jacobson\* (2016-2020)  
Bridges to Development, United States

Albert Icksang Ko\* (2019-2022)  
Yale School of Public Health, United States

Miriam Laufer\* (2019-2022)  
University of Maryland, United States

Jetsumon Sattabongkot Prachumsri\*  
(2018-2021)  
Mahidol University, Thailand

Anna Uehara\* (2019-2020)  
Orise Fellow, Centers for Disease Control  
and Prevention, United States

## Board Advisor

Patricia Walker (2019-2022)

## Subgroup Leadership

### American Committee of Medical Entomology (ACME)

Chair: Matthew Thomas  
Pennsylvania State University, United States

### American Committee of Molecular, Cellular and Immunoparasitology (ACMCIP)

President: Michael Ferdig  
University of Notre Dame, United States

### American Committee on Arthropod-Borne Viruses (ACAV)

Chair: Lark Coffey  
University of California Davis, United States

### American Committee on Clinical Tropical Medicine and Travelers' Health (ACCTMTH – Clinical Group)

President: M. Patricia Joyce  
United States

### ASTMH Committee on Global Health (ACGH)

President: Julie Pavlin  
National Academies of Sciences,  
Engineering and Medicine, United States

## Fellows of ASTMH (FASTMH)

Fellow member status in the Society is an honor recognizing sustained professional excellence in any phase of tropical medicine, hygiene, global health and related disciplines. 2019 Fellows will be announced and recognized at the Awards Program on Wednesday, November 20.

## 2018 Fellows

James Diaz  
Louisiana State University, United States

Eva Harris  
University of California Berkeley School of  
Medicine, United States

Charles King  
Case Western Reserve University, United  
States

Regina Rabinovich  
Harvard T.H. Chan School of Public Health,  
United States

## ASTMH Staff

Karen A. Goraleski, CEO

Stephen M. Croll, Chief Operating Officer

Yvonne Aiken, Executive Assistant

Judy DeAcetis, Administrator

Doug Dusik, Senior Communications  
Executive

Buffy Finn, Member Services Administrator

Rebecca Hamel, Development Manager

Brenda Howe, Meetings and Partnerships  
Manager

Alison Jaeb, AJTMH Editorial Assistant

Lyn Maddox, Vice-President, Meetings

Miranda Rogliano, Communications and  
Policy Intern

Rhonda Schultz, Coordinator, Awards and  
Fellowships

Cathi Siegel, AJTMH Managing Editor

## Additional Annual Meeting Onsite Support

Anna Chen, Burness

Matthew Davis, Burness

Michael Giliberto, Annual Meeting Support

Bridget DeSimone, Burness

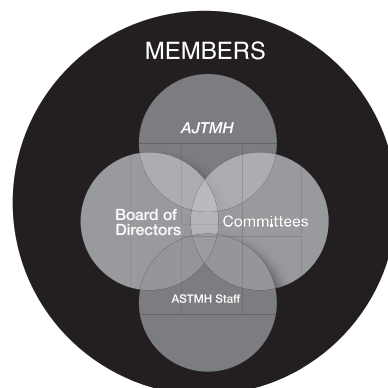
Gideon Hertz, Burness

Brian McGowan, Annual Meeting Support

Saad Saroufim, Burness

Preeti Singh, Burness

## ASTMH Organizational Chart



# ASTMH Subgroups and Committees

## Subgroups

### **American Committee of Medical Entomology (ACME)**

ACME promotes medical entomology within ASTMH and in organizations with scopes of activities that include the area of human diseases transmitted by arthropods.

Matthew Thomas, *Chair, Councilor and Hoogstraal Medal Coordinator*

Ellen Dotson, *Chair-Elect and Councilor*; Philip Armstrong, *Past Chair and Awards Coordinator*; Alvaro Molina-Cruz, *Secretary-Treasurer and Councilor*; Kate Aultman, *Councilor*; Jason Richardson, *Councilor*; Laura Harrington, *Councilor*; Diana Ortiz, *Councilor*; Christopher Barker, *Councilor*; Gabriel Hamer, *Councilor*; Molly Duman Scheel, *Councilor*; Audrey Lenhart, *Councilor*; Douglas Norris, *Councilor*; Andrew Golnar, *Student Representative*

### **American Committee of Molecular, Cellular and Immunoparasitology (ACMCIP)**

ACMCIP facilitates interactions among scientists within ASTMH who work in the varied disciplines of parasitology, especially in basic laboratory, pre-clinical and translational research, clinician sciences and population-based sciences.

Michael Ferdig, *President*

Christine Petersen, *Past President*; Amanda Lukens, *Secretary-Treasurer*; Julian Rayner, *Councilor (Program Committee)*; Mahalia Desruisseaux, *Councilor (Annual Meeting Symposia)*; Jeffrey Dvorin, *Councilor (Awards and Pre-Meeting Course)*; Robin Stephens, *Councilor for Communications*; Christian Happi, *International Councilor*; Jenna Oberstaller, *Councilor for Trainees*

### **American Committee on Arthropod-Borne Viruses (ACAV)**

ACAV provides a forum for exchange of information among people interested in arbovirus research.

Lark Coffey, *Chair and Councilor*

David Morens, *Chair-Elect and Councilor*; Desiree LaBeaud, *Past Chair and Councilor*; Shannon Bennett, *Secretary and Councilor*; Rebecca Christofferson, *Treasurer and Councilor*; Donald Burke, *Archivist/Historian*; Laura Kramer, *Councilor*; Thomas Ksiazek, *Councilor*; Louis Lambrechts, *Councilor*; Maria Onyango, *Councilor for Trainees*; Ann Powers, *Ex-Officio Councilor*; Mike Turell, *Ex-Officio Councilor*; Scott Weaver, *Ex-Officio Councilor*

### **American Committee on Clinical Tropical Medicine and Travelers' Health (ACCTMTH – Clinical Group)**

The Clinical Group (ACCTMTH) is the clinicians' group within ASTMH and includes civilian, military and governmental experts in travelers' health, tropical infection and tropical disease.

M. Patricia Joyce, *President*

Latha Rajan, *President-Elect*; David Brett-Major, *Past President*; Kristina Krohn, *Secretary-Treasurer*; Janine Danko, *Councilor*; Natasha Hochberg, *Councilor*; Daniel Kaminstein, *Councilor*; Michael Harper, *Student Representative*

### **ASTMH Committee on Global Health (ACGH)**

ACGH promotes the development of the field of global health within ASTMH and addresses multidisciplinary transnational approaches to health issues that unfavorably affect underserved and under-resourced populations.

Julie Pavlin, *President*

Robert Newman, *President-Elect*; Ramin Asgary, *Past President*; Miguel Reina Ortiz, *Secretary-Treasurer*; Jessica Manning, *Councilor*; Eileen Stillwaggon, *Councilor*; Ilin Chuang, *Councilor*; Joel Montgomery, *Councilor*

## Administration

### **Clinical Standards and Treatment Guidelines**

Philip Coyne, *Chair*

Josh Berman; Johanna Daily; David Freedman; Robert Gasser; Hector Gorbea; David Hill; Eric Houpt; Chandy John; Kevin Kain; James Maguire; Jean Nachega; Joe Vinetz

### **Editorial Board, American Journal of Tropical Medicine and Hygiene**

*Editorial Staff:* Philip Rosenthal, *Chair (Editor-in-Chief)*

Joe Vinetz (*Associate Editor*); Cathi Siegel (*Managing Editor*); Alison Jaeb (*Editorial Assistant*); Daniel Tisch (*Biostatistical Editor*)

*Section Editors:* Bradley Blitvich; Aaron Brault; Claudia Ida Brodskyn; J. Stephen Dumler; David Hamer; Duane Hospenthal; James Kazura; Kristina Krohn; Miriam Laufer; Anna Mandalakas; John Sanders; Thomas Scott; Christina Stauber; Maxine Whittaker

*Editorial Board:* Jonathan Berman; Dwight Bowman; Brett Forshey; Hector Garcia; Stephen Graves; Eric Halsey; Desiree LaBeaud; Patrick Lammie; Alan Magill (In Memoriam); Thomas Nutman; Tyler Sharp; Terrie Taylor; David Walker; A. Clinton White

### **Nominations**

Patricia Walker, *Chair*

Serap Aksoy; Christina Coyle; Lee Hall; Laura Kramer; Bernard Nahlen; Christine Petersen; Christina Polyak; Ann Powers; Regina Rabinovich; Larry Slutsker; Jonathan Stiles



# ASTMH Subgroups and Committees (cont.)

## Annual Meeting

### Commemorative Fund Lectureship

Chandy John, *Chair*

### Lecture (Fred L. Soper and Charles F. Craig)

Robert Tesh, *Chair*

Donald Burke; David Freedman (*Gorgas representative*); Peter Hotez; William Petri

### Scientific Program:

Daniel Bausch, *Chair*

Stephanie Yanow, *Associate chair*

See full committee roster on page 30.

### Travel Awards

Tracey Lamb, *Chair*

Muhammed Aflolabi; Subash Babu; Nsa Dada; John Donelson; Carole Eboumbou; Erin Eckert; Keke Fairfax; Brian Foy; Nisha Garg; Patrick Kachur; Kent Kester; Sanjai Kumar; Kim Lindblade; Payal Maharaj; Indu Malhotra; Julie Moore; Ann Moormann; Hira Nakhasi; Momar Ndao; Francis Ndungu; Elizabeth Rogawski McQuade; Alexandra Rowe; Sharon Tennant; Eileen Villasante; Sarah Volkman; Yimin Wu

### Young Investigator Award

Ed Mitre, *Chair*

Lytic Bartholomay; Sasisekhar Bennuru; Fernando Bruno; Timothy Burgess; Vitaliano Cama; Peter Crompton; Stephen Davies; David Diemert; Sara Healy; Tracy Lamb; Matthew Laurens; Naomi Lucci; Ann Moormann; Courtney Murdock; Elise O'Connell; Nathan Schmidt; Prakash Srinivasan; Ann Stewart; Jason Stumhofer; Tuan Tran

## Awards and Professional Recognition

### Medals

Stephen Higgs, *Chair*

Patricia Walker; Regina Rabinovich

### Communications Award

Patricia Walker and Karen A. Goraleski, *Co-Chairs*

Caroline Ash; Philip Coyne; Amanda Izzo; Joseph Wagman; Laila Woc-Colburn

## CTropMed® Examination

### CTropMed® Examination

Patrick Hickey, *Chair*

David Boulware; Robert DeFraités; Jessica Fairley; Yasuyuki Kato; Amy Klion; Alexia Knapp; Gregory Martin; Obinna Nnedu; Jakrapun Pupaibool; Latha Rajan; Kristina St. Clair; Jill Weatherhead

### Diploma Course Certification Committee

Susan McLellan, *Chair*

David Freedman; Amy Klion; Anne McCarthy

### Clinical Tropical and Travel Medicine Education Program Committee

John Sanders, *Chair*

Christina Coyle; Michael Libman; Susan McLellan; Lin Chen; Patrick Hickey; Latha Rajan

## Courses

### Courses Committee

Christina Coyle and Michael Libman, *Co-Chairs*

Nicole Achee; Daniel Bausch; David Brett-Major; Elizabeth Collins; Philip Coyne (*CME Liaison*); David Hill; Louise Ivers (*CME Liaison*); Christopher King; M. Patricia Joyce; Siddhartha Mahanty; Latha Rajan

### Update Course in Clinical Tropical Medicine and Travelers' Health

Elizabeth Collins and Siddhartha Mahanty, *Co-Chairs*

## Education/Fellowships/Grant Awards

### Alan J. Magill Fellowship

Kent Kester, *Chair*

Janiine Babcock; Mark Fukuda; Andres Lescano; Bruno Moonen (*Ex-Officio*); Christopher Plowe; Rick Steketee; Mahamadou Ali Thera; Sarah Volkman; Karen A. Goraleski (*Ex-Officio*)

### Benjamin H. Kean Travel Fellowship in Tropical Medicine

Desiree LaBeaud, *Chair*

Arlene Dent; Miriam Laufer; Paul Okojie; Christina Polyak; Mark Travassos; Indi Trehan; Paige Waterman

### Burroughs Wellcome Fund-ASTMH Fellowship

Joseph Tucker and Molly Hughes, *Co-Chairs*

Subash Babu; Michael Kron; Anuja Mathew; Victoria McGovern (*Ex-Officio*); Dan Milner; Terrie Taylor; Joe Vinetz



# ASTMH Subgroups and Committees (cont.)

## Centennial Travel Award

Joe Vinetz, *Chair*

David Fidock; Douglas Perkins; Sarah Volkman

## Digital Education Committee

Nicole Achee, *Chair*

Daniel Bausch (*Scientific Program Chair*); Matthew Thomas (*ACME*); Julie Paviin (*ACGH*); Michael Ferdig (*ACMCIP*); John Sanders (*ACCTMTH/Clinical Education Chair*); Lark Coffey (*ACAV*)

## Robert E. Shope International Fellowship

Ann Powers, *Chair*

Charles Calisher; Amy Krystosik; Desiree LaBeaud; Eric Mossel; Richard Shope; Tom Yuill

## Tropical Medicine/Global Health Subspecialty Exploratory Committee

Brett Hendel-Paterson, *Chair*

Marc Altshuler; Elizabeth Barnett; Johanna Daily; Ashti Doobay-Persaud; Sophia Gladding; German Henostroza; John Sanders; Fritz Siegert; Andrew Steenhoff; Janis Tupesis; Patricia Walker; Karen A. Goraleski (*Ex-Officio*)

## Membership

### Fellows (FASTMH)

David Hill, *Chair*

Josh Berman; Stephen Higgs; Laura Kramer; Rick Steketee; Mary Wilson

### Honorary International Fellows of ASTMH (FASTMH)

Regina Rabinovich, *Interim Chair*

Marcel Tanner; Rose Leke

### International Member

David Hamer and Jetsumon Sattabongkot Prachumsri, *Co-Chairs*

John Aaskov; Subash Babu; Silva Maria Fatima DiSanti; Abdoulaye Djimde; Stephen Higgs; David Hill (*Ex-Officio*); Pui-Ying Iroh Tam; Nadira Karunaweera; Andres Lescano; Bartholomew Ondigo; Carola Salas; Tyler Sharp; Stephanie Yanow

### Membership

David Hill, *Chair*

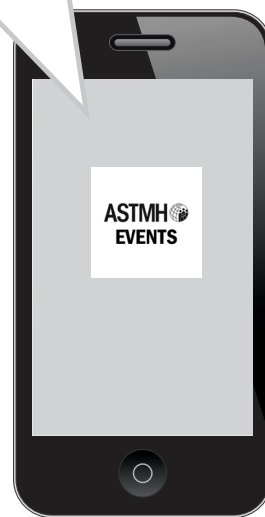
Daniel Bausch; Joel Breman; Sarah Schaffer DeRoo; Tim Endy; Rick Fairhurst; Martin Grobusch; David Hamer; Selma Jeronimo; Kent Kester; Beth Kirkpatrick; Desiree LaBeaud; Kevin Macaluso; Wilbur Milhous; Scott Weaver; Pete Zimmerman; Karen A. Goraleski

### Trainee Member

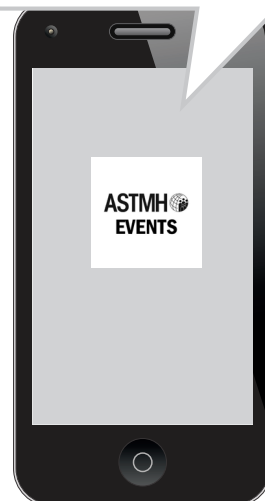
Koya Allen and Anna Uehara, *Co-Chairs*

Elizabeth Anderson; Dibyadyuti Datta; Shyam Dumre; Cusi Ferradas; David Fidock; Krutika Kuppalli; Iset Vera

**BACK AGAIN!**  
**Meeting App**



**FREE Wi-Fi**  
**at the Gaylord**  
**Convention Center**



# ASTMH Scientific Program Committee

The Society and the Annual Meeting attendees offer special thanks to the Scientific Program Committee for their work in determining the robust agenda offered at this year's meeting.

*Chair:* Daniel G. Bausch,  
UK Public Health Rapid  
Support Team

*Associate Chair:*  
Stephanie Yanow,  
University of Alberta



## **Bacterial Illness and Diarrhea**

*Chair:* Richelle Charles, *Massachusetts General Hospital*  
Daniel Leung, *University of Utah*  
Megan Reller, *Duke University*  
Mark Simons, *Naval Medical Research Center*  
Duncan Steele, *Bill & Melinda Gates Foundation*

## **Clinical Tropical Medicine**

*Chair:* Mark Kortepeter, *University of Nebraska*  
Bradley Connor, *Weill Cornell Medical College*  
Janine Danko, *Walter Reed Military Medical Center*  
John Gawoski, *Lahey Hospital and Medical Center*  
Brett Hendel-Paterson, *University of Minnesota*  
Jason Maguire, *Pfizer*  
Joe Vinetz, *Yale University*  
Henry Wu, *Emory University*

## **Ectoparasite-Borne Diseases**

*Chair:* J. Stephen Dumler  
Robert Smith, *Maine Medical Center*  
Sam Telford, *Tufts University*  
Saravanan Thangamani, *SUNY Upstate Medical University*  
Jefferson Vaughan, *University of North Dakota*

## **Entomology**

*Chair:* Michel Slotman, *Texas A&M University*  
Kate Aultman, *St. Mary's University*  
Louis Lambrechts, *Institut Pasteur*  
Audrey Lenhart, *Centers for Disease Control and Prevention*

## **Filariasis**

*Chair:* Peter Fischer, *Washington University*  
Subash Babu, *NIH-NIRT-ICER*  
Sasisekhar Bennuru, *National Institutes of Health*  
Daniel Tisch, *Case Western Reserve University*

## **Global Health**

*Chair:* Richard Reithinger, *RTI International*  
Erin Eckert, *United States Agency for International Development*  
Philip Gould, *Centers for Disease Control and Prevention*  
David Hamer, *Boston University*  
Mary Hayden, *University of Colorado*  
Louise Ivers, *Massachusetts General Hospital*  
Jean Lang, *Sanofi Pasteur*  
Kayla Laserson, *Bill & Melinda Gates Foundation*  
Mark Paris, *Mark Paris, MD*  
Julie Pavlin, *National Academies of Sciences, Engineering and Medicine*  
Eileen Stillwaggon, *Gettysburg College*  
Jose Stoute, *Pennsylvania State University*  
Theresa Townley, *Creighton University*  
Michael Wimberly, *University of Oklahoma*

## **HIV and Tropical Co-Infections**

*Chair:* Christina Polyak, *Military HIV Research Program*  
David Boulware, *University of Minnesota*  
Martin Grobusch, *Academic Medical Center*  
Daniel Leung, *University of Utah*  
Jean Nachega, *Johns Hopkins University*

## **Integrated Control Measures for Neglected Tropical Diseases**

*Chair:* Charles King, *Case Western Reserve University*  
Darin Evans, *United States Agency for International Development*  
Eric Ottesen, *Task Force for Global Health*  
Ricardo Soares Magalhaes, *University of Queensland*

## **Intestinal and Tissue Helminths, Cestodes**

*Chair:* David Abraham, *Thomas Jefferson University*  
Siddhartha Mahanty, *University of Melbourne*  
Makedonka Mitreva, *Washington University*  
Jose Serpa-Alvarez, *Baylor College of Medicine*  
Francesca Tamarozzi, *Istituto Superiore di Sanita*

## **Kinetoplastida**

*Chair:* Lynn Soong, *University of Texas Medical Branch*  
Caryn Bern, *University of California San Francisco*  
Natalie Bowman, *University of North Carolina*  
Nisha Garg, *University of Texas Medical Branch*  
Shaden Kamhawi, *National Institute of Allergy and Infectious Diseases*  
Hira Nakhasi, *Food and Drug Administration*  
Paul Nguewa, *Instituto de Salud Tropical, Universidad de Navarra*

## **Late-Breakers in Basic Sciences**

*Co-Chair:* Naomi Forrester, *University of Texas Medical Branch*  
*Co-Chair:* Rebekah Kading, *Colorado State University*

## **Late-Breakers in Clinical and Applied Sciences**

*Co-Chair:* Noreen Hynes, *Johns Hopkins University*  
*Co-Chair:* Jason Maguire, *Pfizer*  
Miguel Cabada, *University of Texas Medical Branch*

# ASTMH Scientific Program Committee (cont.)

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## **Late-Breakers in Malaria**

*Chair:* Carol Sibley, *University of Washington*  
Mahamadou Diakite, *Malaria Research & Training Center-USTTB*  
Silvia Di Santi, *USP*  
Jonathan Juliano, *University of North Carolina*  
Kent Kester, *Sanofi Pasteur*

## **Malaria**

*Chair:* Carol Sibley, *University of Washington*  
Arlene Dent, *Case Western Reserve University*  
Mahamadou Diakite, *Malaria Research & Training Center-USTTB*  
Silvia Di Santi, *USP*  
Francisco-Javier Gamo, *GlaxoSmithKline*  
Susanta Ghosh, *National Institute of Malaria Research*  
Michael Good, *Griffith University*  
Shannon Takala Harrison, *University of Maryland*  
Jonathan Juliano, *University of North Carolina*  
Patrick Kachur, *Columbia University*  
Stefan Kappe, *Center for Infectious Disease Research*  
Kent Kester, *Sanofi Pasteur*  
Urszula Krzych, *Walter Reed Army Institute of Research*  
Miriam Laufer, *University of Maryland*  
Jessica Lin, *University of North Carolina*  
Kim Lindblade, *Centers for Disease Control and Prevention*  
Peter McElroy, *Centers for Disease Control and Prevention*  
Miranda Oakley, *Food and Drug Administration*  
Karl Seydel, *Michigan State University*  
Eleanore Sternberg, *Vestergaard/Liverpool School of Tropical Medicine*  
Moriya Tsuji, *Rockefeller University*

## **Meet the Professors**

*Chair:* David Boulware, *University of Minnesota*

## **Molecular Parasitology**

*Chair:* Julian Rayner, *University of Cambridge*  
David Abraham, *Thomas Jefferson University*  
Manoj Duraisingh, *Harvard T.H. Chan School of Public Health*  
Kami Kim, *University of South Florida*  
Dylan Pillai, *University of Calgary*  
David Serre, *University of Maryland*  
Niraj Tolia, *National Institute of Allergy and Infectious Diseases*

## **One Health: The Interface of Human Health and Animal Diseases**

*Chair:* Christopher Woods, *Durham Veterans Administration Medical Center*  
Claire Cornelius, *United States Army*  
David Morens, *National Institute of Allergy and Infectious Diseases*  
Kristy Murray, *Baylor College of Medicine*

## **Opportunistic and Anaerobic Protozoa**

*Chair:* Upinder Singh, *Stanford University*  
Boris Striepen, *University of Pennsylvania*

## **Pneumonia, Respiratory Infections and Tuberculosis**

*Chair:* Natasha Hochberg, *Boston University*  
Abdullah Brooks, *Johns Hopkins Bloomberg School of Public Health*  
Keith Klugman, *Bill & Melinda Gates Foundation*  
Samba Sow, *Center for Vaccine Development Mali*

## **Schistosomiasis-Helminths**

*Chair:* Michael Hsieh, *Biomedical Research Institute*  
Stephen Davies, *Uniformed Services University of the Health Sciences*  
Robert Greenberg, *University of Pennsylvania*  
Emily McDonald, *Rhode Island Hospital*

## **Virology**

*Chair:* Greg Ebel, *Colorado State University*  
Anna Durbin, *Johns Hopkins Bloomberg School of Public Health*  
Brett Forshey, *DoD Global Emerging Infections Surveillance (GEIS)*  
Sharone Green, *University of Massachusetts*  
Maria Guzman, *Pedro Kouri Tropical Medicine Institute*  
Michael Holbrook, *National Institute of Allergy and Infectious Diseases*  
Christopher Mores, *George Washington University*  
Lyle Petersen, *Centers for Disease Control and Prevention*  
John Schieffelin, *Tulane University*  
Theodore Tsai, *Takeda Vaccines*  
Nikos Vasilakis, *University of Texas Medical Branch*

## **Water, Sanitation, Hygiene and Environmental Health**

*Chair:* Christine Moe, *Emory University*  
Joseph Eisenberg, *University of Michigan School of Public Health*  
Christine George, *Johns Hopkins University*  
Eric Mintz, *Centers for Disease Control and Prevention*  
Amy Pickering, *Tufts University*

# ASTMH Fellowships, Travel Awards, and Grants

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## Alan J. Magill Fellowship

This fellowship, created in honor of Alan Magill, supports career-broadening experiences to enhance professional development and leadership opportunities beyond those traditionally available from within an applicant's home organization, and in so doing, equips awardees to later assume leadership and mentoring roles in various aspects of tropical medicine.

*Committee Chair: Kent Kester, Sanofi Pasteur, United States*

### 2019 Recipient



Deusdedith R.S. Ishengoma, PhD  
*NIMR-TANGA Centre, Tanzania*

ASTMH is grateful for the support and partnership with the Bill & Melinda Gates Foundation.

**BILL & MELINDA**  
GATES *foundation*

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## ASTMH Annual Meeting Travel Awards

*Chair: Tracey Lamb, University of Utah, United States*

ASTMH offers travel awards to qualified students, early-career investigators and scientists actively working in the tropical medicine field to attend the Annual Meeting. These awards facilitate participation for those who might not otherwise be able to attend.

ASTMH gratefully acknowledges the support received from the Bill & Melinda Gates Foundation.

**BILL & MELINDA**  
GATES *foundation*

**Dennis Adu-Gyasi**, *Kintampo Health Research Centre, Ghana*  
**Abstract 1483**

**Olugbenga Akinola**, *National Center for Genetic Engineering and Biotechnology (BIOTEC), Thailand*  
**Abstract 1302**

**Md Nuhu Amin**, *Icddr, Bangladesh*  
**Abstract 1340**

**Laud Anthony Basing**, *Komfo Anokye Teaching Hospital, Ghana*  
**Abstract 1158**

**Madeleine Eunice Betouke Ongwe**, *LUMC/CERMEL, Netherlands*  
**Abstract 1394**

**Jyoti Bhardwaj**, *Indiana University, United States*  
**Abstract 1431**

**Carolina Camargo**, *Universidad de Antioquia Max Planck, Colombia*  
**Abstract 1556**

**Peter Cheuka**, *University of Zambia, Zambia*  
**Abstract 1197**

**Uchekukwu Chukwuocha**, *University of Massachusetts, United States*  
**Abstract 1202**

**Naomi Clarke**, *University of New South Wales, Australia*  
**Abstract 1418**

**Jennifer Clinton**, *Baylor College of Medicine, United States*  
**Abstract 1150**

**Sandra Duffy**, *Griffith University, Australia*  
**Abstract 1293**

**Yalemzewod Gelaw**, *University of Queensland, Australia*  
**Abstract 1437**

**Alexander Gold**, *Boston University, United States*  
**Abstract 1142**

# ASTMH Fellowships, Travel Awards, and Grants (cont.)

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**Oheneba Charles Hagan**, *University of Ghana, Ghana*  
Abstract 1316

**Visopo Harawa**, *Blantyre Malaria Project, Malawi*  
Abstract 1475, 1488

**Tatiana Hountohotegbe**, *University of Abomey-Calavi, Benin*  
Abstract 1364

**Lucy John**, *National Department of Health of Papua New Guinea,  
Papua New Guinea*  
Abstract 1209

**Emmanuel Kaindoa**, *Ifakara Health Institute, Tanzania*  
Abstract 1346

**Ruwandi Kariyawasam**, *University of Toronto, Canada*  
Abstract 1235

**Gokul Raj Kathamuthu**, *NIH-ICER-NIRT, India*  
Abstract 1444

**Aisha Khatib**, *University of Toronto, Canada*  
Abstract 1236

**Abibatou Konate**, *Universite Felix Houphouet Boigny, Cote D'Ivoire*  
Abstract 1381

**Amy Krystosik**, *Stanford University School of Medicine,  
United States*  
Abstract 1530, 2099

**David Kwasi**, *University of Ibadan, Nigeria*  
Abstract 1448

**Viridiana Laredo-Tiscareno**, *Universidad Autonoma de Ciudad  
Juarez, Mexico*  
Abstract 1167

**Allan Lemtudo**, *KEMRI/Walter Reed Project, Kenya*  
Abstract 1350

**Jonathan Liew**, *University of Malaya, Malaysia*  
Abstract 1342

**Jailos Lubinda**, *Ulster University, United Kingdom*  
Abstract 1313

**Paulo Manrique Valverde**, *Universidad Peruana Cayetano  
Heredia, Peru*  
Abstract 1528

**Mikhael Manurung**, *Leiden University Medical Center, Netherlands*  
Abstract 1328

**Catherin Marin**, *Leiden University Medical Center, Netherlands*  
Abstract 1531

**Victor Mobegi**, *University of Nairobi, Kenya*  
Abstract 1500

**Bushra Mufti**, *Aga Khan University Hospital, Pakistan*  
Abstract 1485

**Shamsun Naher**, *BRAC, Bangladesh*  
Abstract 1289

**Mercy Opiyo**, *ISGLOBAL, Spain*  
Abstract 1193

**Benjamin Opot**, *United States Army Medical Research  
Directorate, Kenya*  
Abstract 1467

**Lam Phung**, *Oxford University Clinical Research Unit, Vietnam*  
Abstract 1429

**Christiane Prosser**, *University of Sydney, Australia*  
Abstract 1157, 1285

**Gianmarco Raddi**, *Wellcome Trust Sanger Institute,  
United Kingdom*  
Abstract 1406

**Breanna Scorza**, *University of Iowa, United States*  
Abstract 1551

**Robert Shaw**, *Harvard TH Chan School of Public Health,  
United States*  
Abstract 1543

**Robert Sumaye**, *Ifakara Health Institute, Tanzania*  
Abstract 1252, 1462

**Leandro Tapia**, *Instituto de Medicina Tropical and Salud Global  
UNIBE, Dominican Republic*  
Abstract 1332

**Lizzie Tchongwe**, *Malawi Liverpool Wellcome Trust Clinical  
Research Programme, Malawi*  
Abstract 1159

**Charlene Yoboue**, *Swiss Tropical and Public Health Institute,  
Switzerland*  
Abstract 1501



# ASTMH Fellowships, Travel Awards, and Grants (cont.)

## Presidents' Challenge Travel Award Recipients

**Jéssica Alves**, *René Rachou Institute, Brazil*  
Abstract 1515

**Mireille Amba**, *University of Kinshasa, Democratic Republic of Congo*  
Abstract 1522

**Marcos André**, *Universidade Estadual Paulista (UNESP), Brazil*  
Abstract 1387

**Martin Ayanore**, *University of Health and Allied Sciences, Ghana*  
Abstract 1399

**Marycelin Baba**, *University of Maiduguri, Nigeria*  
Abstract 1186

**Laud Anthony Basing**, *Komfo Anokye Teaching Hospital, Ghana*  
Abstract 1158

**Aissatou Diawara**, *United Arab Emirates*  
Abstract 1398

**Elise Farley**, *University of Cape Town, South Africa*  
Abstract 1310

**Trieu Huynh**, *Hospital for Tropical Diseases, Vietnam*  
Abstract 1315

**Chenjerai Jairoce**, *CISM, Mozambique*  
Abstract 1393

**Benson Juma**, *Makerere University College of Health Sciences, Uganda*  
Abstract 1477

**Alphonso Kofa**, *Liberia Ministry of Health, Liberia*  
Abstract 1436

**Aylen Kosasih**, *Fakultas Kedokteran Universitas, Indonesia*  
Abstract 1319

**Nobert Mudare**, *Africa University, Zimbabwe*  
Abstract 1464

**Celine Nkenfou**, *CIRCB, Cameroon*  
Abstract 1497

**Win Han Oo**, *Burnet Institute, Myanmar*  
Abstract 1247

**James Otieno**, *KEMRI-Wellcome Trust Research Programme, Kenya*  
Abstract 1376

**Rapatbhorn Patrapuvich**, *Mahidol University, Thailand*  
Abstract 1261

**Frank Tenywa**, *Ifakara Health Institute, Tanzania*  
Abstract 1369

**Tshokey Tshokey**, *Jigme Dorji Wangchuck National Referral Hospital, Bhutan*  
Abstract 1297

## ISGlobal/Journal of Tropical Pediatrics Travel Award Recipients



**Visopo Harawa**, *Blantyre Malaria Project, Malawi*  
Abstract 1475, 1488

**Titus Kwambai**, *Ministry of Health-Kenya, Kenya*  
Abstract 1249

## Vulule-Odada Travel Awards for Kenyan Trainees Recipients

In memory of John Vulule, KEMRI and Peter Odada Sumba, KEMRI

**Jackline Jumah**, *KEMRI-Walter Reed Project, Kenya*  
Abstract 1374

**Allan Lemtudo**, *KEMRI/Walter Reed Project, Kenya*  
Abstract 1350

# ASTMH Fellowships, Travel Awards, and Grants (cont.)

## Young Investigator Awards

ASTMH gratefully accepts support for these awards in memory of William A. Petri, Sr. and Annie Liberati.

### SUPPORTED WITH FUNDING FROM

**William A. Petri, Jr.**

**TECHLAB, Inc.**



*Chair: Edward Mitre, Uniformed Services University of the Health Sciences*

Young Investigator Awards are given to young scientists who have completed the majority of work described in their accepted abstracts as undergraduates, graduate students or during the first two years of postdoctoral research. The early-career investigators hold a primary role in the reported experimental work, as evidenced by first-author status on their abstracts. 2019 recipients will be determined at the competitive judging event held on Wednesday, November 20, at the Annual Meeting. Winners will be announced during the Awards Program at the opening session.

## Congratulations to the 2018 Winners

(Selected during ASTMH 67th Annual Meeting, October 2018)

Cordelia Coltart, *University College London, United Kingdom*

Ethan Degner, *Cornell University, United States*

Christina Faust, *University of Glasgow, United Kingdom*

Erin McDonald, *Centers for Disease Control and Prevention, United States*

Catherine Mitran, *University of Alberta, Canada*

## 2018 First-Tier Mention

Ian Buller, *Emory University, United States*

Pedro Gazzinelli-Guimaraes, *National Institutes of Health, United States*

Karthigayan Gunalan, *National Institutes of Health, United States*

Julia Mwesigwa, *Medical Research Council Unit, The Gambia*

Olivia Winokur, *University of California Davis, United States*

## Young Investigator Awards (cont.)

### 2018 Honorable Mention

Sonia Agrawal, *University of Maryland School of Medicine, United States*

Johannes Mischlinger, *Bernhard Nocht Institute for Tropical Medicine and University Medical Center, Germany*

Niraja Suresh, *University of Notre Dame, United States*

Luzia Veletzky, *Bernhard Nocht Institute for Tropical Medicine and University Medical Center, Germany*

Megan Vogt, *Baylor College of Medicine, United States*

## Burroughs Wellcome Fund – ASTMH Postdoctoral Fellowship in Tropical Infectious Diseases (\$65,000)

**ASTMH is grateful for the continuing commitment from the Burroughs Wellcome Fund.**



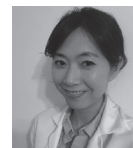
*Co-Chairs: Molly Hughes, University of Virginia School of Medicine, United States and Joseph Tucker, UNC China Project, China*

This fellowship encourages long-term career development in tropical infectious diseases by providing support to individuals who will pursue careers focused on clinical research in tropical or developing areas of the world.

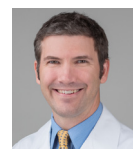
## 2019 Recipients



Emily Ciccone  
*University of North Carolina School of Medicine, United States*



Rose Lee  
*Boston Children's Hospital, Beth Israel Deaconess Medical Center, United States*



Kevin Steiner  
*University of Virginia, United States*

# ASTMH Subgroup Awards

## Benjamin H. Kean Travel Fellowship in Tropical Medicine



*Chair: Desiree LaBeaud, Stanford University, United States*

Named after renowned educator, physician and researcher Benjamin H. Kean (1912-1993), this fellowship provides travel support to medical students who arrange clinical tropical medicine or tropical medicine research electives overseas.

### 2019 Recipients

- Eve Ameen, *Stony Brook School of Medicine, United States*  
Danielle Amundsen, *John Hopkins School of Medicine, United States*  
Tiffany Borbon, *University of Iowa Carver College of Medicine, United States*  
Bickey Chang, *University of Virginia School of Medicine, United States*  
Hannah Connolly, *SUNY Upstate Medical University, United States*  
Hannah Cunningham, *Duke University School of Medicine, United States*  
Sanjana Dayananda, *University of Pittsburgh School of Medicine, United States*  
Amanda Farrell, *Duke University School of Medicine, United States*  
Julia Gelissen, *Warren Alpert Medical School of Brown University, United States*  
Mary Gwin, *University of North Carolina at Chapel Hill, United States*  
Lauren Himes, *Wake Forest School of Medicine, United States*  
Alice Huang, *Warren Alpert Medical School of Brown University, United States*  
Austin Jones, *Tulane University, United States*  
Savannah Karmen-Tuohy, *New York University School of Medicine, United States*  
Maya Ladenheim, *University of California, San Francisco, United States*  
Roger Lin, *University of Maryland School of Medicine, United States*  
Breeanna Lorenzen, *University of Minnesota, United States*  
Jez Marston, *Weill Cornell Medical College, United States*  
Aislinn McMillan, *University of California, San Diego, United States*  
John Mershon, *University of Virginia School of Medicine, United States*  
Anushay Mistry, *University of Massachusetts Medical School, United States*  
Marissa Nahirney, *University of Alberta, Canada*  
Cody Nelson, *Duke University School of Medicine, United States*  
Subhjit Sekhon, *University of Missouri-Kansas City School of Medicine, United States*  
Amaya Wittmaack, *University of Virginia School of Medicine, United States*  
Kristen Zozulin, *Frank H. Netter MD School of Medicine at Quinnipiac University, United States*

## Centennial Travel Award in Basic Science Tropical Disease Research (\$25,000)

*Chair: Joe Vinetz, Yale University, United States*

This award provides support to individuals with doctoral-level degrees who travel to laboratories in the tropics to perform molecular, cellular or immunological studies of tropical infectious diseases.

### 2019 Recipient



*Camila Coelho, NIAID/NIH, United States*

## Robert E. Shope International Fellowship in Infectious Diseases (\$25,000)



*Chair: Ann Powers, Centers for Disease Control and Prevention, United States*

Named for ASTMH past president Robert E. Shope (1929-2004), one of the world's foremost authorities on insect-borne viruses, this fellowship provides support for travel, living expenses and research for doctoral level scientists working in laboratories overseas on studies pertaining to arbovirology and/or emerging tropical infectious diseases.

### 2019 Recipient



*Anna Fagre, Colorado State University, United States*



# ASTMH Subgroup Awards

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## American Committee of Medical Entomology (ACME) Student Travel Awards

*Chair:* Philip Armstrong, *Connecticut Agricultural Experiment Station, United States*

The ACME travel awards support travel to the Annual Meeting for doctoral and post-doctoral students whose work involves arthropods of medical importance.

### 2019 Recipients

#### Young Investigator Award – Graduate

Diana Nyanting'a, *Kenya Medical Research Institute, Kenya*

Kristine Werling, *Harvard School of Public Health, United States*

#### Young Investigator Award – International

Renee Ali, *University of the West Indies, Trinidad and Tobago*

Marilyn Murindahabi, *University of Rwanda, Rwanda*

#### Young Investigator Award – Post-Doc

Deepani Fernando, *University of Peradeniya, Sri Lanka*

Emily Gallichotte, *University of North Carolina, United States*

## American Committee of Medical Entomology (ACME) Breakthrough in Medical Entomology Award

*Chair:* Matthew Thomas, *Pennsylvania State University, United States*

This award is for outstanding recent contributions (within the past five years) to the study and/or practice of Medical Entomology that ultimately will contribute to reducing the burden of human diseases transmitted by arthropods. This award is designed to encourage and acknowledge significant advances in the field by investigators at any career stage. Examples of such advances include breakthrough research findings in vector biochemistry, molecular biology, genetics, genomics or insecticide resistance, or significant advances in technologies for vector surveillance or control. This award is sponsored by a generous donation from SC Johnson: A Family Company.

### 2019 Recipient

Stephanie James, *Foundation for the National Institutes of Health, United States*

## American Committee of Medical Entomology (ACME) Future Leaders in International Medical Entomology Award

*Chair:* Matthew Thomas, *Pennsylvania State University, United States*

The Future Leaders fellowship is a competitive award offered to an outstanding junior medical entomology researcher (must be at the undergraduate to postdoctoral level) to showcase individuals that have matched interests to ACME's objectives of promoting medical entomology and reducing the burden of human diseases transmitted by arthropods globally. Applicants must be non-U.S. citizens from a low or low-middle income country. This award is sponsored by a generous donation from SC Johnson: A Family Company.

### 2019 Recipient

Adélaïde Miarinjara, *National Institutes of Health, United States*

## American Committee of Molecular, Cellular and Immunoparasitology (ACMCIP) Travel Award for Low and Low-Middle Income (LMIC) Trainees

*Chair:* Michael Ferdig, *University of Notre Dame, United States*

The ACMCIP student travel award recognizes a student or trainee conducting basic parasitology research who is primarily based in a low or low-middle income country.

### 2019 Recipients

Kritika Chaddha, *Jawaharlal Nehru University, India*

Godwin Kwakye-Nuako, *University of Cape Coast, Ghana*

## American Committee of Molecular, Cellular and Immunoparasitology (ACMCIP) Award for Advanced Training

*Chair:* Michael Ferdig, *University of Notre Dame, United States*

This award supports travel expenses for trainees to attend practical training courses in the fields of molecular, cellular or immunoparasitology. Trainees can use the award to attend any post-graduate level training course of at least one day in duration to explore new parasitological systems, gain hands-on skills in working with parasites and their hosts and obtain advanced knowledge in cutting-edge research topics and technologies.

### 2019 Recipient

Mary Lynn, *University of South Carolina Arnold School of Public Health, United States*

# ASTMH Subgroup Awards

## American Committee of Molecular, Cellular and Immunoparasitology (ACMCIP) Exchange Fellowship Award

*Chair: Michael Ferdig, University of Notre Dame, United States*

This award is aimed at all levels of trainees, including junior independent researchers seeking to gain new or additional research skills by visiting laboratories employing cutting-edge methods. The trainee must be or become an ASTMH and ACMCIP member.

### 2019 Recipient

Jessica Schue, *Johns Hopkins University, United States*

## American Committee on Arthropod-Borne Viruses (ACAV) Student/Post-Doc Travel Awards

*Chair: Lark Coffey, University of California Davis, United States*

The ACAV travel awards support travel to the Annual Meeting for graduate students or postdoctoral fellows who are actively conducting arbovirus research.

### 2019 Recipients

Priscilia Castanha, *University of Pittsburgh, United States*

Marissa Childs, *Stanford University, United States*

Francesca Falconi, *Institute of Tropical Medicine, Belgium*

Siew Wai Fong, *National University of Singapore, Singapore*

Cat Lippi, *University of Florida, United States*

Alice Michie, *University of Western Australia, Australia*

Blake Schouest, *Tulane University, United States*

## ASTMH Committee on Global Health (ACGH) Student/Post-Doc Travel Awards

*Chair: Julie Pavlin, National Academies of Sciences, Engineering and Medicine, United States*

The ACGH travel award program supports travel to the Annual Meeting for a student or postdoctoral fellow whose research directly promotes the practice of global health.

### 2019 Recipients

Saikou Bah, *WACCBIP, Ghana*

Caleb Stica, *Ifakara Health Institute, Tanzania*

## ASTMH Committee on Global Health (ACGH) Award for Research Support

*Chair: Julie Pavlin, National Academies of Sciences, Engineering and Medicine, United States*

This ACGH-sponsored award is designed to support research expenses for trainees who have approved research projects that

are currently active or will start during 2019. Trainees can use the award to support travel to field sites, purchase equipment, software, reagents or supplies, or cover other expenses that will enhance the project.

### 2019 Recipients

Rachel Bensman, *Cincinnati Children's Hospital Medical Center, United States*

Daniele Gusland, *University of Wisconsin, United States*

Andrea Perez, *Universidad de San Carlos de Guatemala, Guatemala*

## American Committee on Clinical Tropical Medicine and Travelers' Health (ACCTMTH) Martin S. Wolfe Mentoring Award

*Chair: Stephen Hoffman, Sanaria, Inc., United States*

The Clinical Group has established an award to honor the life of inspiring mentorship by our friend, teacher and colleague, Martin S. Wolfe, MD, FACP, FASTMH. This award, new in 2019, will recognize individuals who have served as exemplary and inspiring mentors. It will be presented to a member of the American Committee on Clinical Tropical Medicine and Travelers' Health (ACCTMTH, the Clinical Group) who has been exceptional in guiding the professional growth of careers in tropical and travel medicine.

### 2019 Recipient

Elaine Jong, *University of Washington School of Medicine, United States*

## Elsevier Clinical Research Award

ASTMH appreciates the support for this award by Elsevier.

*Chair: M. Patricia Joyce, Georgia, United States*

This award recognizes excellence in clinically-oriented research presented by students (within six months of completing undergraduate or Master's level training, including medical undergraduate degrees) or those in graduate medical training of work submitted and presented at the Annual Meeting. 2019 recipients will be determined at the competitive judging event held on Wednesday, November 20, during the Annual Meeting. Winners will be announced during the Awards Program at the opening session.

**2018 Recipients** (selected during ASTMH 67th Annual Meeting, October 2018)

**First Place:** Neima Briggs, *University of Texas, United States*

**Second Place:** Jonathan Chang, *Duke University School of Medicine, United States*

**Third Place:** Thomas Siegert, *University of Washington, United States*

# Program Information

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## Elsevier Clinical Research Award Competition

*National Harbor 6 (National Harbor Level)*

**Wednesday, November 20, Noon – 3:30 p.m.**

This award recognizes excellence in clinically-oriented research presented by students (within six months of completing undergraduate or Master's level training, including medical undergraduate degrees, or those in graduate medical training), of work submitted and presented at the Annual Meeting. Support these young scientists by attending their presentations during this session. View the session schedule on page 94.

## Young Investigator Award Competition

*Chesapeake D/E, Chesapeake H/I, Chesapeake 5/6, National Harbor 4 and National Harbor 12*

**Wednesday, November 20, 10 a.m. – 3 p.m.**

The Young Investigator Award is presented to outstanding young researchers during the Annual Meeting. This award encourages developing young scientists to pursue careers in various aspects of tropical disease research. Support these young scientists by attending their presentations during this session. View the session schedule on page 85.

## ASTMH Communications Training Workshop

*National Harbor 7 (National Harbor Level)*

**Wednesday, November 20, 10:30 a.m. – 2:30 p.m.**

In a world with so much noise, it's a must for researchers and clinicians to be able to clearly communicate about their work, explain the importance of tropical medicine/global health programs and advocate for research funding. To be effective advocates, to stand out from the crowd of important issues you need skills that help you be persuasive and memorable. How can you prepare for an important presentation or manage challenging media interviews? How do you explain your research to people who might not know anything about your work and get them invested in the outcome, with only minutes to make your case? This half-day course will teach you how to clearly and effectively communicate about your work. You will learn how to prepare and deliver messages, craft and tell persuasive stories, and stay in control of what you say in any meeting or interview. Time and again we see the power of these communications skills to change minds, build awareness and grab attention. This workshop is limited to those who pre-registered for the event; no onsite registration.

## Late-Breaker Abstracts

These sessions feature brief presentations of important new data obtained after the closing date for abstract submission. Late-Breaker poster presentations will take place during the poster sessions on Thursday, Friday and Saturday. A schedule of Late-Breaker Abstract presentations can be found in the meeting app and the Late-Breaker Abstract Presentation Schedule, available at <https://www.astmh.org/annual-meeting/pdfs>.

## Symposium 19:

### Alan J. Magill Malaria Eradication Symposium

*Potomac B (Ballroom Level)*

**Thursday, November 21, 10:15 a.m. - Noon**

**Supported with funding from the Bill & Melinda Gates Foundation**

This annual symposium honors the life and work of ASTMH Past President Alan Magill, who at the time of his untimely death in 2015 was promoting the bold goal of global malaria eradication in his role as the Malaria Director at the Bill & Melinda Gates Foundation. The symposium will bring together leaders in the malaria field to summarize the challenges and advances in areas of relevance to the malaria elimination and eradication effort.

This year the symposium will focus on addressing malaria across the transmission spectrum. Speakers will address this topic from different perspectives, including at a country-specific level, from a World Health organization and President's Malaria Initiative viewpoint, and from the standpoint of how strengthening health systems and using mathematical modeling can assist in reducing and eliminating malaria transmission. Speakers include Elizabeth Juma (World Health Organization), Emilie Pothin (Swiss Tropical and Public Health Institute), Patrick Kachur (Columbia University), Kenneth Staley (President's Malaria Initiative) and Kimberly Lindblade (World Health Organization).

## Meet the Professors Sessions

The Professors will present interesting clinical case(s) of tropical diseases or relevant public health challenges that they have encountered over the course of their career. The Professors will discuss how their careers have developed, as an example to others. Students and trainees are especially encouraged to attend these interactive sessions, which are open to all meeting attendees.

**SESSION FULL**

# Program Information

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## ACMCIP Abstracts

Throughout this book, you will notice that some abstracts are followed by the notation "(ACMCIP abstract)." This notation means the abstract content pertains to molecular, cellular or immunoparasitology. ACMCIP refers to the American Committee of Molecular, Cellular and Immunoparasitology, an ASTMH subgroup. For more information, go to [astmh.org/subgroups/acmcip](http://astmh.org/subgroups/acmcip).

## Calling All Early- and Mid-Career Attendees

### *Events for Students, Trainees, Fellows, Residents and Junior Faculty*

Are you a trainee or otherwise fairly new to research, global public health or clinical tropical medicine? The following sessions are designed to help build fundamental skills and perspectives for a successful start to your career. Mark your planner on the ASTMH Annual Meeting app and learn from experienced members of the various ASTMH professional communities.

### Young Investigator Award Competition

**Wednesday, November 20, 10 a.m. – 3 p.m.**

*Chesapeake DE, Chesapeake HI, Chesapeake 5/6, National Harbor 4 and National Harbor 12*

### Elsevier Clinical Research Award Competition

**Wednesday, November 20, Noon – 3:30 p.m.**

*National Harbor 6 (National Harbor Level)*

### Student Reception\*

**Wednesday, November 20, 2:30 p.m. – 3:30 p.m.**

*Riverview Ballroom A*

The ASTMH Board of Directors invites all students, postdoctoral fellows and residents to the student reception. This reception is an opportunity to meet fellow trainees, network with colleagues and mentors and engage in conversation with Society leaders.

### Mid-Day Session 28

#### **Panel Discussion: Career Pathways in Science and Identifying your Niche**

**Thursday, November 21, 12:15 p.m. – 1:30 p.m.**

*National Harbor 4/5 (National Harbor Level)*

### Mid-Day Session 78

#### **Charting Your Research Career in Global Health: A Conversation with Francis Collins**

**Friday, November 22, Noon – 1 p.m.**

*Maryland D (Ballroom Level)*

### Meet the Professors 29\*

#### **Meet the Professors A**

**Thursday, November 21, 12:15 p.m. - 1:30 p.m.**

*National Harbor 10 (National Harbor Level)*

### Meet the Professors 80\*

#### **Meet the Professors B**

**Friday, November 22, 12:15 p.m. - 1:30 p.m.**

*National Harbor 10 (National Harbor Level)*

### Meet the Professors 134\*

#### **Meet the Professors C**

**Saturday, November 23, 12:15 p.m. - 1:30 p.m.**

*National Harbor 10 (National Harbor Level)*

\*Light lunch served

### The TropStop – Student/Trainee Lounge\*

*Maryland 4/5/6 Foyer (Ballroom Level)*

This casual setting, designed with students, trainees and residents in mind (e.g., free coffee and free internet), is your place for a break from the fast pace of the meeting and to relax with colleagues and friends. This year, check out Career Chats held in the TropStop. This is your opportunity to meet professionals in the fields of tropical medicine and global health who will share their career stories and discuss topics and strategies to help you along your career path.

### TropStop Career Chats – Faculty Available

*Maryland 5/6 (Ballroom Level)*

**Thursday, November 21, 3 p.m. – 4 p.m.**

**Friday, November 22, 3 p.m. – 4 p.m.**

**Saturday, November 23, 3 p.m. – 4 p.m.**

### Special Session

#### **Social Media Pop-up: A How-To for Using Social Media as an Advocacy Tool**

**Saturday, November 23, 11 a.m. - Noon**

*Maryland 5/6 (Ballroom Level)*

# Program Information

## Pint of Science @ASTMH

**Thursday, November 21, 7 p.m. – 9 p.m.**

*Daniel O'Connell's Irish Restaurant & Bar, 112 King Street, Alexandria, VA 22314*

*2-minute walk from The Wharf*

*(Alexandria-National Harbor river ferry)*



Join us as ASTMH and the international Pint of Science Festival join forces to take science to the public spaces of the capital in Pint of Science @ ASTMH. On Thursday night, ASTMH members will give short interactive talks about their work to members of the public at Daniel O'Connell's Irish Restaurant & Bar (112 King Street, Alexandria, Virginia), with three talks featured. Come and support your colleagues and friends over a drink and bite to eat, and help share the exciting work of ASTMH with residents of our gracious host city. Bring your family and friends - this informal gathering is open to all! Keep your eyes open as we announce speakers in the build-up to ASTMH. Contact Matt Robinson (LOMWRU, matthew.r@tropmedres.ac) for more information.

## Point of Entry: First-Time Attendee Orientation

**Wednesday, November 20**

**1 p.m. – 2 p.m.**

*Maryland B (Ballroom Level)*

Are you new to the ASTMH Annual Meeting and want to get the lay of the land? Don't miss our Point of Entry session on Sunday afternoon. ASTMH Past President Stephen Higgs will orient new attendees to the schedule, session structure and highlights of the Annual Meeting. Meet others attending the meeting for the first time and expand your professional network while learning the ins and outs of where to go and what to attend.

## Burroughs Wellcome Fund-ASTMH Postdoctoral Fellowship in Tropical Infectious Diseases



Following are abstract presentations to be made by recipients of the Burroughs Wellcome Fund-ASTMH Postdoctoral Fellowship in Tropical Infectious Diseases:

**Sarah-Blythe Ballard**, *Centers for Disease Control and Prevention, United States*

**Abstract 269**

**Lisa Bebell**, *Massachusetts General Hospital, United States*

**Abstract 1243**

**Katherine Dobbs**, *Case Western Reserve University, United States*

**Abstract 993**

**DeAnna Friedman-Klabanoff**, *University of Maryland School of Medicine, United States*

**Abstract 653**

**Matthew Ippolito**, *Johns Hopkins University School of Medicine, United States*

**Abstract 900, 1613**

**Peyton Thompson**, *University of North Carolina at Chapel Hill, United States*

**Abstract 229**

**INCLUDED WITH YOUR REGISTRATION FEE:**

**FREE Wi-Fi**

at the Gaylord Convention Center!



**#TropMed19  
#IamTropMed**

**Stop in at the TropMed Hub**



# Program Information

## Poster Sessions

Prince George's Exhibit Hall D (Lower Atrium Level)

Three poster sessions will be held in the Prince George's Exhibit Hall D. During these sessions, presenters will be available at their posters for discussion. There are additional times for poster viewing (presenters need not be in attendance during these time periods). We encourage attendees to visit the Poster Hall throughout the day.

### Poster Session Schedule

#### Poster Session A | Thursday, November 21

Setup . . . . . 9:45 a.m. – 10:15 a.m.  
 Viewing . . . . . 10:15 a.m. – 4 p.m.  
 Presentations/Light Lunch. . . . . Noon – 1:45 p.m.  
 Dismantle . . . . . 4 p.m. – 6:15 p.m.

#### Poster Session B | Friday, November 22

Setup . . . . . 9:45 a.m. – 10:15 a.m.  
 Viewing . . . . . 10:15 a.m. – 4 p.m.  
 Presentations/Light Lunch. . . . . Noon – 1:45 p.m.  
 Dismantle . . . . . 4 p.m. – 6:15 p.m.

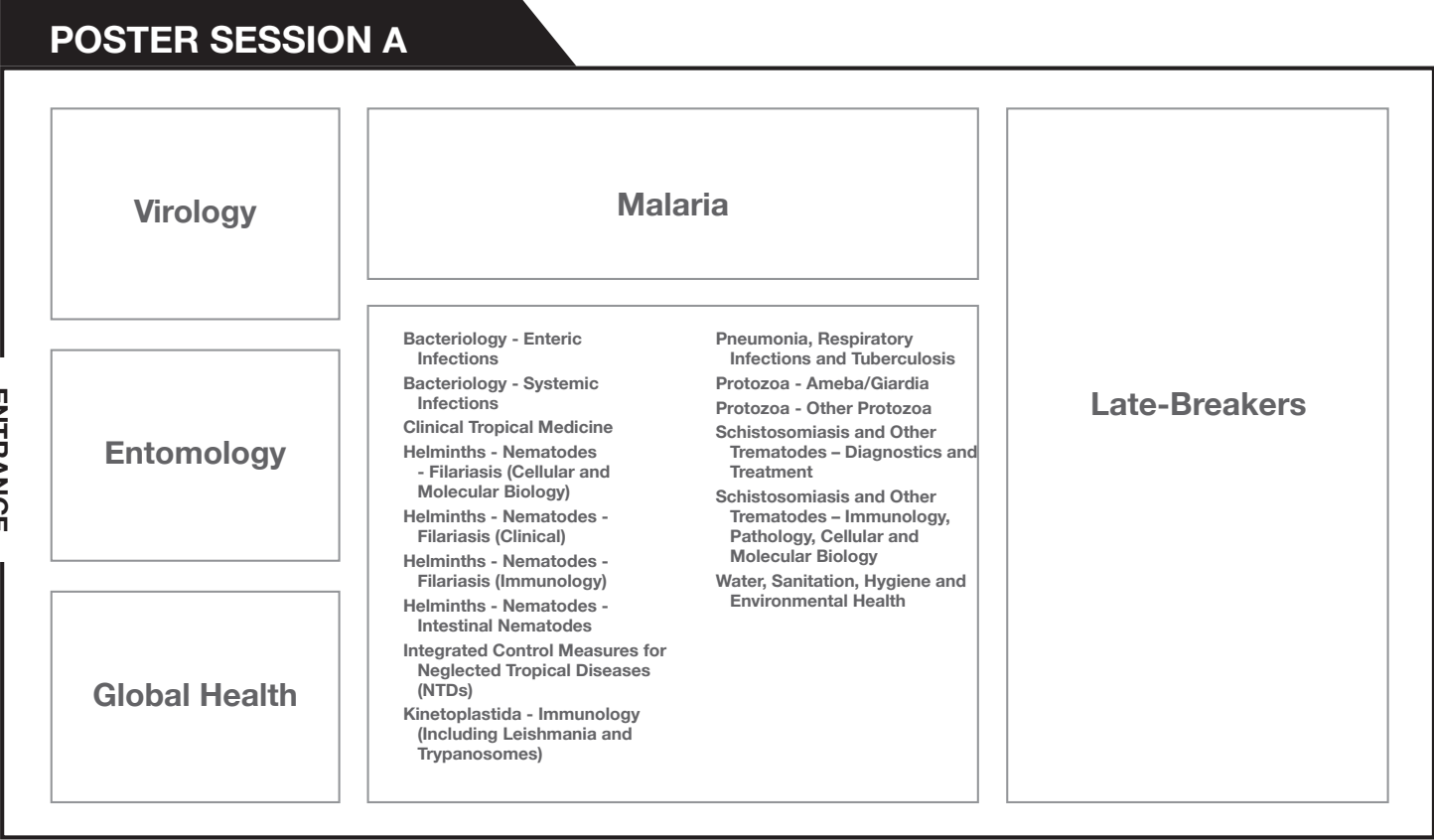
#### Poster Session C | Saturday, November 23

Setup . . . . . 9:45 a.m. – 10:15 a.m.  
 Viewing . . . . . 10:15 a.m. – 4 p.m.  
 Presentations/Light Lunch. . . . . Noon – 1:45 p.m.  
 Dismantle . . . . . 4 p.m. – 5 p.m.

## New this year! E-Posters

We are pleased to introduce e-posters to the ASTMH Annual Meeting.

- This year, poster presenters have the option to upload their poster to the Annual Meeting e-poster web site.
- On Monday, November 25, uploaded e-posters will be available online.
- Please note that the provision of e-posters is optional for poster presenters.
- e-posters do not replace the in-person poster presentation; e-posters are an additional feature to supplement the in-person poster presentation.
- All attendees will receive an email with a link and code to access the e-poster site.



# Program Information

## POSTER SESSION B

ENTRANCE

Virology

Malaria

Entomology

Global Health

Bacteriology - Enteric Infections  
 Bacteriology - Other Bacterial Infections  
 Cestodes - Echinococcosis/ Hydatid disease  
 Cestodes - Taeniasis and Cysticercosis  
 Clinical Tropical Medicine  
 Helminths - Nematodes - Filariasis (Other)  
 Helminths - Nematodes - Intestinal Nematodes  
 HIV and Tropical Co-Infections  
 Kinetoplastida - Epidemiology (Including Leishmania and Trypanosomes)

One Health: Interface Of Human Health/Animal Diseases  
 Pneumonia, Respiratory Infections and Tuberculosis  
 Schistosomiasis and Other Trematodes - Epidemiology and Control  
 Water, Sanitation, Hygiene and Environmental Health

Late-Breakers

## POSTER SESSION C

ENTRANCE

Virology

Malaria

Entomology

Global Health

Bacteriology - Enteric Infections  
 Bacteriology - Other Bacterial Infections  
 Bacteriology - Trachoma  
 Clinical Tropical Medicine  
 Helminths - Nematodes - Filariasis (Epidemiology)  
 HIV and Tropical Co-Infections  
 Kinetoplastida - Cellular and Molecular Biology (Including Leishmania and Trypanosomes)  
 Kinetoplastida - Diagnosis and Treatment (Including Leishmania and Trypanosomes)

One Health: Interface Of Human Health/Animal Diseases  
 Pneumonia, Respiratory Infections and Tuberculosis  
 Water, Sanitation, Hygiene and Environmental Health

Late-Breakers

# Program Information

## Meet us in the TropMed Hub

Exhibit Hall (*Prince George's Exhibit Hall C, Lower Atrium Level*)

Visit the TropMed Hub and visit with representatives from:

- American Committee of Medical Entomology (ACME)
- American Committee of Molecular, Cellular and Immunoparasitology (ACMCIP)
- American Committee on Arthropod-Borne Viruses (ACAV)
- American Committee on Clinical Tropical Medicine and Travelers' Health (ACCTMTH – Clinical Group)
- ASTMH Committee on Global Health (ACGH)
- ASTMH/AJTMH

Our subgroups provide unique forums for members to engage in core scientific, educational, advocacy and policy issues related to a specific expertise with fellow stakeholders of similar interests. Benefits include networking and Pre-Meeting Courses and symposia activities planned for Annual Meetings to enhance career development.

### Learn more about:

- What subgroups do
- How to get involved
- The benefits of becoming an ASTMH member
- Submitting material to the *American Journal of Tropical Medicine and Hygiene*

## Symposium 65

### The 2nd Innovations Pitch Competition is back!

**Bold Ideas to Accelerate Prediction, Prevention and Response for Epidemic-Prone Diseases**

Friday, November 22, 10:15 a.m. - Noon  
*Maryland A (Ballroom Level)*

The Innovations Pitch Competition is co-sponsored by Roche Diagnostics, Vulcan Inc. and ASTMH, and will be a lively, fun and interactive session showcasing some of the most inspiring ideas from the ASTMH community. Presentations will address problems spanning outbreak prediction, prevention and response. The Grand Prize winner will receive \$10,000 US and an opportunity for partnership, investment and coaching to help bring their idea to market.



Bright ideas to reduce risk, improve prediction and deliver better healthcare tools for outbreak-prone diseases in low-resource settings

**Top Prize: \$10,000**

THANK YOU TO OUR SPONSORS





# Sponsored Symposia

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## **Responses to Healthcare Challenges in Africa: Looking for Solutions to Reduce the Impact of High-burden Diseases**

*Sponsored by Novartis Social Business*

**Thursday, November 21, 7:15 p.m. – 9 p.m.**

*National Harbor 2 (National Harbor Level)*

Africa has a fast-growing youth population. Improvements in health outcomes have been recognized in the last decade, yet challenges still exist. Best practice sharing, collaborative healthcare solution development and training have proven to successfully minimize resource waste and work duplication, especially when a substantial proportion of external resources is accountable for the total health expenditures. In this exciting and interactive symposium, our faculty will present, with examples, how interventions and collaboration with local and regional public health organizations, can reduce the impact of infectious and emerging non-communicable diseases in Africa.

### CHAIR

**Dr. Harald Nusser, PhD**

*Head, Novartis Social Business, Holzkirchen, Germany*

### **INTRODUCTION AND OBJECTIVES**

**Dr. Harald Nusser, PhD**

*Head, Novartis Social Business, Holzkirchen, Germany*

### **DEALING WITH EMERGENCIES: EBOLA IN THE DRC AND MALARIA IN MOZAMBIQUE**

**Dr. Benjamin Djoudalbaye, MD**

*Head of Policy and Health Diplomacy, Africa CDC, Addis Ababa, Ethiopia*

### **MALARIA ELIMINATION IN AFRICA: CHALLENGES AND PERSPECTIVES**

**Dr. Pedro Aide, MD, PhD**

*Researcher, Manhica Health Research Centre, Manhica, Mozambique*

### **SICKLE CELL DISEASE: WHAT CAN AFRICA CONTRIBUTE**

**Dr. Emmanuel Balandya, MD, PhD**

*Director of Postgraduate Studies, Muhimbili University of Health and Allied Studies, Dar-es-Salaam, United Republic of Tanzania*

### **NON-COMMUNICABLE DISEASES: INTEGRATION OF HIV AND NCD SERVICES IN AFRICA**

**Prof. Gerald Yonga, MD**

*Visiting Professor, University of Nairobi; NCD Alliance Board of Directors; Chair of East Africa NCD Alliance, Nairobi, Kenya*

## **TDR: Strengthening Implementation Research Capacity to Accelerate Universal Health Coverage**

*Sponsored by TDR*

**Thursday, November 21, 7:15 p.m. – 9 p.m.**

*National Harbor 11 (National Harbor Level)*

TDR, the Special Programme for Research and Training in Tropical Diseases, manages a postgraduate training scheme as part of efforts to strengthen implementation research capacity. TDR provides full academic scholarships in collaboration with seven universities in low- and middle-income countries that train students to obtain Masters degrees focused on implementation research in malaria, tuberculosis and neglected tropical diseases. Three alumni from this TDR-supported scheme will present their work on implementation research.

### CO-CHAIRS

**Dr. Alwyn Mwinga**

*Executive Director, ZAMBART Project, Lusaka, Zambia*

**Dr. John Reeder**

*Director, TDR, Geneva, Switzerland*

### **TDR: STRENGTHENING IMPLEMENTATION RESEARCH CAPACITY TO ACCELERATE UNIVERSAL HEALTH COVERAGE**

**Dr. Pascal Launois, Scientist**

*TDR, Geneva, Switzerland*

### **IMPLEMENTING QUALITY IMPROVEMENT STRATEGIES TOWARDS ELIMINATION OF LYMPHATIC FILARIAE IN NORTHERN GHANA**

**Alfred Kwesi Manyah, PhD Fellow**

*University of Witwatersrand, Johannesburg, South Africa*

### **ASSESSING THE ACCEPTABILITY OF SCREENING OF DIABETES MELLITUS AMONG TUBERCULOSIS PATIENTS IN SELECTED DISTRICTS OF NEPAL**

**Sabina Timilsina**

*Monitor and Evaluation Expert*

*Local Fund Agent for the Global Fund, Kathmandu, Nepal*

### **HOW EFFECTIVE WAS THE IMPLEMENTATION OF EPIDEMIOLOGICAL SURVEILLANCE OF ZIKA IN PREGNANT WOMEN IN GUATEMALA?**

**Dr. Maria Albertina Argueta Escobar**

*Epidemiologist*

*Universidad San Carlos de Guatemala, Guatemala City, Guatemala*

# Sponsored Symposia

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## **Gender Dimensions in the Prevention and Control of Neglected Tropical Diseases**

**Sponsored by UNDP, TDR and Liverpool School of Tropical Medicine**

**Friday, November 22, 7:15 p.m. – 9 p.m.**

*National Harbor 11 (National Harbor Level)*

The symposium will present the importance of gender and intersectional analysis in addressing neglected tropical diseases (NTDs) meeting the goals of the WHO Roadmap on Neglected Tropical Diseases 2012 – 2020, enhancing access and delivery of health interventions and contributing towards universal health coverage and the sustainable development goals. The symposium will discuss a UNDP-TDR discussion paper on gender and NTDs, which synthesizes the evidence and presents clear recommendations on how to build more gender-equitable NTD programs and partnerships, gender analysis in implementation research and perspectives on gender analysis from Africa, South East Asia and South America. Presentations will be followed by a plenary discussion on intersectional gender analysis within program delivery.

### CO-CHAIRS

#### **Dr. Rachael Thomson**

*Director, COUNTDOWN consortium, Liverpool School of Tropical Medicine, Liverpool, United Kingdom*

#### **Dr. Kim Ozano**

*Research Associate, Liverpool School of Tropical Medicine, Liverpool, United Kingdom*

### **WELCOME**

#### **Dr. Rachael Thomson**

*Director, COUNTDOWN consortium, Liverpool School of Tropical Medicine, Liverpool, United Kingdom*

### **CONTEXT SETTING OF THE PAPERS' KEY POINTS ON GENDER DIMENSIONS OF NTDS**

#### **Dr. Kim Ozano**

*Research Associate, Liverpool School of Tropical Medicine, Liverpool, United Kingdom*

### **OPENING REMARKS**

#### **Dr. Mandeep Dhaliwal**

*Director, HIV, Health and Development Group, UNDP, New York, NY, United States*

### **OPENING REMARKS**

#### **Professor John Reeder**

*Director, TDR, Geneva, Switzerland*

### **OPENING REMARKS**

#### **Dr. Mwelecele Ntuli Malecela**

*Director of Neglected Tropical Diseases Department, WHO, Geneva, Switzerland*

### **REFLECTIONS FROM THE FIELD: THE GENDER DIMENSIONS OF NTDS IN GHANA**

#### **Professor Margaret Gyapong**

*University of Health and Allied Sciences, Ho, Ghana*

### **GENDER CONSIDERATIONS IN NTD PREVENTION AND CONTROL PROGRAMS: A PERSPECTIVE FROM NEPAL**

#### **Dr. Chandani Kharel**

*Manager, Research, HERD International, Kathmandu, Nepal*

### **GENDER DIMENSIONS IN HEALTH: PUBLIC HEALTH RESEARCHER'S PERSPECTIVE**

#### **Dr. Sundari Ravindran**

*Principal Visiting Fellow at United Nations University International Institute for Global Health, Kuala Lumpur, Malaysia*

### **MODERATED Q&A WITH THE AUDIENCE**

#### **Dr. Rachael Thomson**

*Director, COUNTDOWN consortium, Liverpool School of Tropical Medicine, Liverpool, United Kingdom*

# Onsite: What, When, Where

## Social Media at the 2019 Annual Meeting

Follow the 68th Annual Meeting on ASTMH social media channels. Visit [astmh.org](http://astmh.org) where you can access all social media outlets as follows:



Subscribe to the ASTMH Facebook page for updates from the Annual Meeting and for relevant content year round.



Follow **@ASTMH**. During the conference, you will be able to follow what your colleagues are tweeting by using the **#TropMed19** and **#IamTropMed** hashtags.



Enjoy archived video from past Annual Meetings, Alan Magill Symposia, Faces of TropMed, webinars and interviews with pioneers in the field.



**ASTMH Twitter Board**  
*Sponsored by Takeda*

If you're tweeting during the meeting, be sure to add the hashtag **#TropMed19** to your tweets so that your message gets through to other attendees or those following the meeting exclusively on Twitter. Using the hashtag is a great way to connect with your fellow tweeps, pick up new followers or, for exhibitors, drive traffic to your booth.

## Registration

*Potomac Ballroom Lobby (Ballroom Level)*

### Annual Meeting Registration Hours

Wednesday, November 20 . . . . . 6:30 a.m. – 7:30 p.m.  
Thursday, November 21 . . . . . 7 a.m. – 5 p.m.  
Friday, November 22 . . . . . 7 a.m. – 5 p.m.  
Saturday, November 23 . . . . . 7 a.m. – 5 p.m.  
Sunday, November 24 . . . . . 7 a.m. – 10:30 a.m.

### The following food functions are included in the registration fee:

- Opening reception (Wednesday)
- Student reception (Wednesday)
- Poster session lunches (Thursday, Friday, Saturday)
- Coffee breaks

### Badges/Meeting Access

Participation in the Annual Meeting is limited to registered attendees. An official badge is required for admission to all sessions, social activities and exhibit area. Do not place a business card into your badgeholder as identification. If there is an error on a badge, please have it corrected at the registration desk.

### Spouse/Guest Registration

*(Only for those outside the tropical medicine and global health field.)*

Spouse/guest registration includes admission to the opening reception on Wednesday and admission to the exhibit hall, plenary sessions, poster sessions and food functions only.

### Message Board

A message board will be available in the ASTMH registration area in the Potomac Ballroom Lobby on the Ballroom Level. Check the message board often to retrieve your messages.

### Americans with Disabilities Act (ADA)

ASTMH fully complies with the legal requirements of the ADA and the rules and regulations thereof.

## Hotel

Annual Meeting sessions and events will be held at the Gaylord National Resort and Convention Center.

### Gaylord National Resort and Convention Center

201 Waterfront Street  
National Harbor, Maryland 20745  
Phone +1-877-491-0468

### Camera/Recording Restrictions and Unauthorized Photography

Only registered members of the media and attendees who receive prior approval from ASTMH staff may take cameras into the exhibit hall or use recording devices during sessions. Still and video photography, including photography by mobile phones, is strictly prohibited in educational sessions. Attendees found to be using cameras in educational sessions without permission will be asked to leave the conference and will not be issued a refund.

### Solicitations

Sales and promotional activities are restricted to exhibitors and must take place in their assigned exhibit area. Solicitations by unauthorized persons are strictly prohibited.

### Press Room

*Chesapeake 2 (Ballroom Level)*

The press room is available for professional journalists reporting on the conference. ASTMH media kits are available. Media announcements and other details can be found in the press room.

### Press room hours of operation are:

Wednesday, November 20	10 a.m. – Noon 2:30 p.m. – 5 p.m.
Thursday, November 21	7:45 a.m. – 5 p.m.
Friday, November 22	7:45 a.m. – 5 p.m.
Saturday, November 23	7:45 a.m. – 5 p.m.

# Onsite: What, When, Where

## Continuing Education Credit Continuing Medical Education (CME) Accreditation

ASTMH is accredited by the Accreditation Council for Continuing Medical Education (ACCME) to provide continuing medical education for physicians. ASTMH designates this live activity for a maximum of 30.5 *AMA PRA Category 1 Credits*<sup>™</sup>. Physicians should claim only the credit commensurate with the extent of their participation in the activity.

## Register for CME Credit

The CME documentation fee is \$150 US. CME certificates will be mailed in late January. Complete your online CME Attendance and Evaluation Form by accessing the evaluation form at [astmh.org/annual-meeting](http://astmh.org/annual-meeting).

## American Board of Internal Medicine (ABIM) Maintenance of Certification (MOC) Credit

**Submit CME Survey and CME Claim Form by Wednesday, November 27 in order to receive ABIM MOC credit.**

If you wish to receive ABIM MOC credit, you must register for CME credit for \$150. We cannot issue ABIM MOC credit unless the registration includes payment for CME credit. Successful completion of this Annual Meeting CME activity, which includes participation in the evaluation component, enables the participant to earn up to 30.5 Medical Knowledge MOC points in the American Board of Internal Medicine's (ABIM) Maintenance of Certification (MOC) program. Your participation information, as well as your ABIM member ID and date of birth will be shared with the American Board of Internal Medicine via the Accreditation Council for CME PARS system for the purpose of reporting MOC completion.

PLEASE NOTE:

- The CME fee of \$150 must be paid in order to receive ABIM MOC credit.
- CME registrants seeking ABIM MOC credit must complete the CME Survey and CME Claim Form by Wednesday, November 27 in order to receive ABIM MOC credit.
- Pre-meeting courses are not eligible for ABIM MOC credit.
- Participants will earn MOC points equivalent to the amount of CME credits claimed for the activity.
- Attendees seeking ABIM MOC credit must provide their ABIM MOC ID number and date of birth during the registration process.

## Physician Assistant Continuing Education Credit

AAPA accepts certificates of participation for educational activities certified for *AMA PRA Category 1 Credit*<sup>™</sup> from organizations accredited by ACCME or a recognized state medical society. Physician Assistants may receive a maximum of 30.5 *AMA PRA Category 1 Credits*<sup>™</sup> for completing this program. Register for CME credit (\$150 US) at the ASTMH registration desk and submit an evaluation following the conference at [astmh.org/annual-meeting](http://astmh.org/annual-meeting).

## Veterinarian Continuing Education Credit

To better serve the continuing education needs of the full range of disciplines participating in the Annual Meeting, ASTMH offers accredited CE sessions for veterinarians. The Society's application is reviewed by the determining body, the American Association of Veterinary State Boards RACE Committee. Anticipating approval, ASTMH is typically notified just prior to the start of the Annual Meeting. Visit the onsite registration desk for a veterinarian continuing education evaluation form. This form will indicate the specific sessions that qualify for veterinary CE credits. Pay the \$150 US documentation fee at the registration desk.

Complete and return the evaluation form to the registration desk by Sunday, November 24 at 10:30 a.m. or send the form to the ASTMH office following the meeting. A continuing education certificate will be sent by postal mail in January.

## Full-Disclosure Policy Affecting CME Activities

Consistent with ASTMH policy, faculty are required to disclose any economic or other personal interests that create, or may be perceived as creating, a conflict of interest related to the material discussed. ASTMH has policies in place to resolve all conflicts of interest.

Faculty are required to disclose at the beginning of their presentation(s) any relevant financial relationships, as well as any product or drug mentioned during the presentation that is not labeled for the use under discussion or is still investigational. This policy is intended to allow attendees to form their own judgments about such material.

## Disclaimer

ASTMH is not responsible for the opinions expressed by speakers or the content of speaker slides and handout materials.

## Impromptu Meeting Rooms for Attendees

*Chesapeake 6 and Chesapeake 9 (Ballroom Level)*

The Chesapeake 6 and Chesapeake 9 rooms on the ballroom level are designated for impromptu gatherings and other group meetings. Meeting room reservations are available on a first-come, first-served basis. Use the sign-up sheet located outside the rooms to reserve meeting time for your group.

# Onsite: What, When, Where

## Information for Speakers: Speaker Ready Room and Audiovisual Guidelines

Chesapeake A (Ballroom Level)

### Hours

Wednesday, November 20 . . . . . Noon – 6 p.m.  
Thursday, November 21 . . . . . 7 a.m. – 5 p.m.  
Friday, November 22 . . . . . 7 a.m. – 5 p.m.  
Saturday, November 23 . . . . . 7 a.m. – 5 p.m.  
Sunday, November 24 . . . . . 7 a.m. – 10:30 a.m.

### Slide Presentation Format Guidelines

- Save your presentation as a Microsoft PowerPoint file in a format that is compatible with PowerPoint 2016.
- Save your file in a PPTX format for both Macintosh and PC.
- Test your presentation on a Windows machine running Windows 7 to ensure your presentation runs properly.
- In rare instances, flash drives or portable hard disks may fail or become corrupt. It is advised to make a backup copy of your presentation and media files on some type of online cloud storage such as one of the following: Google Drive, DropBox, Microsoft One Drive, Box.com, etc. It is always better to have multiple backups of your files. If you do not have access to online cloud storage and your presentation is small enough in file size, you could even email your presentation media files to yourself as a backup.

All meeting rooms will be equipped with one Windows 7 computer and PowerPoint 2016 software, screen, LCD projector display device, microphone and laser pointer. You will not be permitted to connect your own computer to the LCD projector. Your presentation will be run from the AV technician's PC-based computer. Therefore, you should visit the Speaker Ready Room in advance of your session, with your presentation saved to a storage device (USB flash drive). Please inform your meeting room technician as to any special needs e.g. video playback or audio playback in your presentation.

### Embedded Videos

If your presentation includes video, it is imperative that you visit the Speaker Ready Room in advance of your presentation to ensure compatibility with meeting equipment. Embedded videos should be saved in mp4 or .wmv format. Quicktime .mov, will not be compatible. Embedded audio should be saved in mp3 or .wav format.

**Miss a Session?**  
**All Registrants Receive a Webcast Library**

Can't figure out how to be in two places at once? Problem solved! All registrants will receive access to Webcasts (MP4 recordings), for each session within 24 hours after the session has ended. Slides will be available for sessions where permission has been granted by presenters.


**Important: Widescreen Format for Slide Presentations! The slide presentation format is widescreen HD format (16:9 aspect ratio).**

Audio visual staff will be available in the Speaker Ready Room to answer questions about the slide presentation format or to assist in converting presentations to the widescreen HD format. Please note that slide presentations using the 4:3 aspect ratio will display correctly, but black frames will appear on the sides of the screen when presented. Load your presentation in the Speaker Ready Room 24 hours prior to your session. If you are unable to do so, visit the Speaker Ready Room as early as possible on the morning of your presentation. Speakers can begin accessing the Speaker Ready Rooms on Wednesday, November 20 at noon.

**Audio Visual Guidelines**  
**Important Things to Remember**

- The slide presentation format is widescreen HD format (16:9 aspect ratio)
- Slide presentations using the 4:3 aspect ratio will display correctly, but black frames will appear on the sides of the screen when presented
- Save your presentation as a Microsoft PowerPoint file in a format that is compatible with PowerPoint 2016
- Save your file in a PPTX format for both Macintosh and PC
- All meeting rooms will be equipped with one Windows 7 computer and PowerPoint 2016 Software

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REGISTRATION FEE:  
FREE Wi-Fi  
at the Gaylord  
Convention Center!**

  
**#TropMed19  
#IamTropMed**

**Stop in at  
the  
TropMed Hub**



# ASTMH is at Work All Year Round!

## Diploma Courses in Clinical Tropical Medicine and Travelers' Health

The Society advocates and facilitates the development of new training programs in clinical tropical medicine and travelers' health and has established a mechanism for accrediting them. These courses, known as Diploma Courses, may vary considerably in format and even in broad objectives, but to be accredited by the Society they must cover the topic matter included on the Certificate Exam and have an expectation of conferring on the examinee a certain degree of competence in the key subjects. Most confer a Diploma in Clinical Tropical Medicine and Travelers' Health; some confer a different diploma or degree in which the same expectations are included.

## Update Course in Clinical Tropical Medicine and Travelers' Health

This two-day condensed course provides a broad overview of core topics in clinical tropical medicine and travelers' health. It is designed for all healthcare providers working in tropical medicine or travelers' health and for those planning to take the ASTMH Certificate Examination (CTropMed®).

## CTropMed® – Certificate of Knowledge in Clinical Tropical Medicine and Travelers' Health

The next CTropMed® Exam will be held on Saturday, November 14, 2020, in conjunction with the ASTMH 69th Annual Meeting, November 15-19, 2020 at the Metro Toronto Convention Centre, Toronto, Ontario, Canada. Fostering professional development in the fields of clinical tropical medicine and travelers' health is one of the Society's highest priorities. To that end, ASTMH developed the Certificate of Knowledge in Clinical Tropical Medicine and Travelers' Health (CTropMed® Program) as a means to distinguish individuals who have demonstrated advanced knowledge and experience in clinical tropical medicine and travelers' health. The CTropMed® Certificate is conferred on licensed medical professionals who 1) have passed an ASTMH-accredited diploma course or have extensive professional experience in clinical tropical medicine, 2) have experience in a clinical setting in the tropics or a domestic clinical activity meaningful to clinical tropical medicine and travelers' health and/or refugee medicine and 3) have passed the ASTMH Examination in Clinical Tropical Medicine and Travelers' Health.

## Fellow of ASTMH (FASTMH)

Fellow member status (also known as Fellowship) in the Society is an honor recognizing sustained professional excellence in any phase of tropical medicine, hygiene, global health and related disciplines.

## Membership Directory

This resource, available exclusively to ASTMH members, puts thousands of experts in tropical medicine and global health at your fingertips. The directory provides member listings in alphabetical order and by geographic location to ease the search for colleagues around the world.

## American Journal of Tropical Medicine and Hygiene

*The American Journal of Tropical Medicine and Hygiene*, the leading international journal in tropical medicine, is a peer-reviewed journal published on a monthly basis. Content includes original scientific articles and cutting-edge science covering new research with an emphasis on laboratory science and the application of technology in the fields of tropical medicine, parasitology, immunology, infectious diseases, epidemiology, basic and molecular biology, virology and international medicine. The *Journal* publishes unsolicited peer-reviewed manuscripts, invited review articles, short reports, case studies, reports on the efficacy of new drugs and methods of treatment, prevention and control methodologies, new testing methods and equipment, book reports and letters to the editor. Topics range from applied epidemiology in such relevant areas as AIDS to the molecular biology of vaccine development.

Why publish with the *American Journal of Tropical Medicine and Hygiene*?

- The leading journal focused on all aspects of tropical medicine
- Have your research read by half-a-million readers from all over the world
- No submission fees
- Low publication costs compared to many other journals
- Discounted publication costs for ASTMH members
- No charge to publish supplementary data online
- Support for publishing research from low- and middle-income countries
- Open Access publishing options
- A panel of Section Editors with expertise in all aspects of tropical medicine
- Average time to first review decision of less than four weeks
- Advance online publication

We would like to take the opportunity to thank all of you who have published papers in *AJTMH* and we hope you will continue to submit your research to us. Remember, ASTMH members receive a discount on page charges for publishing in the *Journal* so if you are not already a member, please consider joining today.

## MARK YOUR CALENDAR

**World Malaria Day 2020**

**April 25, 2020**

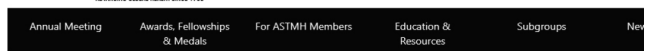
World Malaria Day is observed each year on April 25 to give countries in affected regions a chance to learn from each other's experiences and support one another's efforts in the fight against malaria; to enable new donors to join in a global partnership against malaria and for research and academic institutions to reveal scientific advances to the public; and to give international partners, companies and foundations a chance to showcase their efforts and reflect on how to scale-up what has worked.



# Check Out Our Online Page for Students, Trainees, Post-Docs, Medical Residents and Fellows

Your one-stop-shop to help build fundamental skills and perspectives for a successful start to Tropical Medicine/ Global Health Careers:

- ▶ Membership Benefits
- ▶ Subgroup Information
- ▶ Career Center
- ▶ Fellowships and Awards
- ▶ Elsevier Clinical Research Award Competition
- ▶ Annual Meeting
- ▶ Student Reception
- ▶ Speed-Networking with the Experts
- ▶ Young Investigator Awards
- ▶ Advocacy



Home >> Education & Resources >> Pre-/Post-Docs Page



## Students, Trainees, Post-Docs, Medical Residents and Fellows Resources

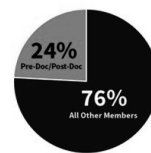
Are you a trainee or otherwise new to research, global public health or clinical tropical medicine? Are you looking to get more involved? This page is for you, to help you build fundamental skills and perspectives for a successful start to your career.



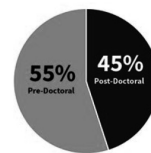
"If there was ever a professional medical society that has embraced the equity agenda, embraced inclusiveness at scientific meetings, embraced trainees and students – I understand a third of us gathered here are either trainees or students – I can't think of any other and it is an honor, as ever, to be a member of this Society." – Paul Farmer, MD, PhD Co-Founder and Chief Strategist of Partners In Health, 2017 Annual Meeting Keynote

- What ASTMH (**  
 (click on a link below
- **Discounted Mem**
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**Look for the Pre-/Post Docs page under the Education & Resources Tab**



Total Members



Pre-Doc/Post-Doc Members



# Session Topic Guide

## General Interest/Multidisciplinary

### Wednesday, November 20

**Plenary Session 1:** Plenary Session I: Keynote Address and Awards Program

### Thursday, November 21

**Poster Session 26:** Poster Session A: Presentations and Light Lunch

**Mid-Day Session 28:** Panel Discussion: Career Pathways in Science and Identifying Your Niche

**Special Session 52:** Ponder to Probe: A Cosmopolitan Debate and Peer Networking Session

**Plenary Session 53:** Plenary Session II: Fred L. Soper Lecture

### Friday, November 22

**Symposium 60:** Intersection of Advocacy, Policy and Social Media: A Washington, DC, Primer

**Poster Session 77:** Poster Session B: Presentations and Light Lunch

**Special Session 105:** Speed-Networking with the Experts

**Plenary Session 106:** Plenary Session III: Commemorative Fund Lecture

### Saturday, November 23

**Poster Session 131:** Poster Session C: Presentations and Light Lunch

**Session 132:** ASTMH Annual Business Meeting

**Special Session 160:** Moving back Home: Strategies for Returning Back to LMICs after Training Abroad

**Plenary Session 161:** Plenary Session IV: President's Address

### Sunday, November 24

**Plenary Session 175:** Plenary Session V: Peace Corps: An Investment Worth Making

## Clinical Tropical Medicine

### Thursday

**Scientific Session 3:** Clinical Tropical Medicine I

**Scientific Session 15:** Clinical Tropical Medicine II

**Meet the Professors 29:** Meet the Professors A: Enigmatic and Teaching Cases

**Late-Breaker Abstract Session 27:** Late-Breakers in Clinical and Applied Sciences

**Symposium 34:** Clinical Group Symposium I (American Committee on Clinical Tropical Medicine and Travelers' Health – ACCTMTH)

**Symposium 45:** Clinical Group Symposium II (American Committee on Clinical Tropical Medicine and Travelers' Health – ACCTMTH)

### Friday

**Symposium 70:** Beyond HIV: Caring for Immunocompromised Patients in a Global Context

**Meet the Professors 80:** Meet the Professors B: Enigmatic and Teaching Cases

**Symposium 86:** Hot Topics in Travel Medicine and Migrant Health 2019

**Symposium 98:** Poor Quality Drugs and Antimicrobial Resistance

### Saturday

**Symposium 113:** From Biomarker Discovery to Differential Diagnosis in Malaria Endemic Settings

**Symposium 125:** Advances in Sero-Epidemiology: Expanding the Toolkit for Disease Modeling and Prediction

**Meet the Professors 134:** Meet the Professors C: Enigmatic and Teaching Cases

**Symposium 153:** Changing the Immune Landscape: How One Infection Impacts Another

### Sunday

**Symposium 168:** Measuring Environmental Enteric Dysfunction (EED): Insights from Interventional Trials and Observational Studies in Bangladesh, Kenya and Mali

**Symposium 177:** Exploring the Range of Clinical Efforts to Identify Repurposed Drugs for Neglected Infectious Diseases

**Symposium 183:** Host-Based Biomarkers for Detection and Management of Emerging Infectious Diseases: Precision Medicine Heads South

## Diarrhea and Bacterial Illness

### Thursday

**Symposium 11:** Enteric Pathogens in Urban Environments: Understanding Risks and Managing Exposures

**Symposium 62:** Novel Typhoid Surveillance Methods



# Session Topic Guide (cont.)

## Friday

**Symposium 74:** A New Tool for an Old Disease: Using the Latest Data to Inform Typhoid Conjugate Vaccine Implementation

**Symposium 98:** Poor Quality Drugs and Antimicrobial Resistance

**Symposium 102:** Early Lessons with TCV Introduction: Decision-Making, Pre-Introduction and Implementation

## Saturday

**Scientific Session 117:** Bacteriology: Cholera and Other Intestinal Infections

**Scientific Session 128:** Bacteriology: Systemic Infections

**Scientific Session 145:** Bacteriology: Typhoid/*Shigella*/*E. coli*

## Sunday

**Scientific Session 172:** Bacteriology: Trachoma, Other Bacterial Infections, Diagnostics

## Ectoparasite-Borne Diseases

### Thursday

**Scientific Session 104:** Ectoparasite-Borne Disease

### Friday

**Symposium 118:** Expanding Impact of Tick-Borne Diseases Around the World: Pathogenesis and Prevention

### Saturday

**Symposium 129:** Ticks and Tick-Borne Diseases – Progress of the Congressionally-Directed Medical Research Programs/Tick-Borne Diseases Research Program

**Symposium 158:** Scrub Typhus: A Global But Neglected Disease

### Sunday

**Symposium 173:** The Rise of Human Babesiosis and the Urgent Need for Improved Detection and a Vaccine

## Entomology

### Thursday

**Symposium 9:** American Committee of Medical Entomology (ACME) Symposium I: Annual Business Meeting, Awards, Hoogstraal Medal Presentations and Networking Reception

**Symposium 21:** American Committee of Medical Entomology (ACME) Symposium II: Will History Repeat Itself? Lessons Learned from Previous Vector Control Efforts

**Symposium 49:** *Wolbachia* for the Biocontrol of *Aedes aegypti* Mosquitoes and Medically Important Arboviral Diseases

## Friday

**Scientific Session 61:** Arthropods: Other Arthropods

**Scientific Session 73:** Mosquitoes - Biochemistry and Molecular Biology

**Scientific Session 90:** Mosquitoes: Molecular Genetics and Genomics

## Saturday

**Scientific Session 116:** Mosquitoes - Vector Biology - Epidemiology I

**Scientific Session 127:** Mosquitoes - Vector Biology - Epidemiology II

**Scientific Session 144:** Mosquitoes: Insecticide Resistance and Control I

**Scientific Session 156:** Mosquitoes: Insecticide Resistance and Control II

## Sunday

**Symposium 171:** "Mosquito Love, Naturally": Sexual and Natural Selection in Mosquitoes and Its Implications for Transmission

## Filariasis

### Thursday

**Scientific Session 25:** Filariasis - Epidemiology and Control I

**Scientific Session 41:** Filariasis - Epidemiology and Control II

### Friday

**Symposium 76:** Surveillance for Lymphatic Filariasis after Validation of Elimination: Country Strategies in the Absence of Formal Guidelines and Recommendations for the Future

**Scientific Session 93:** Filariasis - Clinical

### Saturday

**Scientific Session 147:** Filariasis - Molecular Biology, Immunology and Diagnostics

# Session Topic Guide (cont.)

## Sunday

**Symposium 174:** New Tools to Accelerate Elimination of Onchocerciasis

## Global Health

## Thursday

**Symposium 6:** ASTMH Committee on Global Health (ACGH) Symposium I: Creating a Sustainable Business for Global Health Innovations and Annual Business Meeting

**Symposium 7:** The Relative Importance of Migrant and Mobile Populations in Malaria Elimination Settings: a Challenge for Surveillance Systems and Intervention Targeting

**Symposium 11:** Enteric Pathogens in Urban Environments: Understanding Risks and Managing Exposures

**Symposium 18:** ASTMH Committee on Global Health (ACGH) Symposium II: Diverse Pathogens, Common Risk Factor: Infections of Poverty in the United States

**Scientific Session 23:** Global Health: Maternal and Child Health

**Scientific Session 39:** Global Health: Impact and Economics of Health Interventions

**Symposium 40:** Developing Clinical Research Networks to Support Emergency Preparedness and Response in Resource-Limited Environments

**Symposium 48:** Social Innovation for Infectious Diseases of Poverty: Sparking Local Innovation

**Symposium 50:** Building Leadership and Management Capacity to Achieve the Sustainable Development Goals (SDGs) for Health

## Friday

**Symposium 65:** Innovations for Response to Outbreak-Prone Diseases: A Challenge to Innovators to Pitch their Ideas for Reducing Risk, Improving Prediction and Delivering Better Healthcare Tools in Resource-Limited Settings

**Mid-Day Session 78:** Charting Your Research Career in Global Health: A Conversation with Francis Collins

**Symposium 85:** "The Tropical Bookshelf" Authors' Panel with Douglas Preston and Richard Preston

**Symposium 89:** Unmeasured Risk Factors Impacting Arboviral Transmission, Outbreaks and Prevention

**Scientific Session 99:** Global Health: Prevention, Control and Surveillance of Infectious Diseases

**Symposium 101:** Cutting-Edge Technology and Challenges to Map Human Settlements for Planning, Implementation and Monitoring of Community Interventions to Optimize Impact

## Saturday

**Symposium 112:** Climate Change and Tropical Medicine: The Issue of Our Day

**Symposium 114:** Clinical Research in Public Health Emergencies: Bridging the Last Gap in the Medical Countermeasures Pathway

**Symposium 124:** The Challenges of Implementing NTD Assessments in Conflict Areas and Fragile States

**Symposium 126:** Controversies in Personal Protective Equipment: The Ins and Outs of What Health Workers Wear at the Frontline

**Symposium 140:** The Development and Implementation of Smartphone Applications for Vector-Borne Disease Research and Control: Lessons Learned and New Insights

**Symposium 146:** School-Based Health Interventions: Ensuring Children and Adolescents Can Achieve Their Full Potential as Adults

**Symposium 152:** Artificial Intelligence and Tropical Medicine: New Approaches to Understand and Combat Emerging Tropical Diseases

**Symposium 155:** Serosurveys and Multiplex Assay Technology Transfer to Augment Epidemiological Surveillance for Co-endemic Diseases in Low and Middle Income Countries (LMICs)

## Sunday

**Symposium 163:** We've Got a Dragon by the Tail: Achievements, Challenges and Lessons Learned on the Road to Guinea Worm Eradication

**Symposium 166:** Safety Is No Accident: Harm Reduction and Mass Drug Administration

**Symposium 167:** Venezuelan Complex Humanitarian Emergency: A Perfect Storm

**Symposium 169:** Healthy Homes and Cities: The Impact of Built Environment and Urbanization on Health

**Symposium 177:** Exploring the Range of Clinical Efforts to Identify Repurposed Drugs for Neglected Infectious Diseases

**Symposium 180:** Key Findings and Recommendations of the WHO Strategic Advisory Group on Malaria Eradication

**Scientific Session 181:** Global Health: Health Systems Strengthening

**Symposium 184:** Accelerating Access to Innovative Malaria Products: Exploring Challenges and Best Practices in the Use of Market and Economic Data

# Session Topic Guide (cont.)

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## HIV and Tropical Co-Infections

### Friday

**Symposium 70:** Beyond HIV: Caring for Immunocompromised Patients in a Global Context

**Scientific Session 87:** HIV and Tropical Co-Infections

### Saturday

**Symposium 142:** HIV and Neglected Tropical Disease Co-Infections: Epidemiology and Clinical Features of Important Protozoa and Helminths

## Integrated Control Measures for Neglected Tropical Diseases (NTDs)

### Thursday

**Symposium 17:** Precision Mapping of Innovative and Intensified Disease Management (IDM) Diseases

### Friday

**Symposium 59:** A Cross-Disease, Multi-Disciplinary Assessment of Surveillance Systems for Neglected Tropical Diseases After Elimination Has Been Achieved: From Laboratory Diagnostics to Systems Approaches

**Scientific Session 96:** Integrated Control Measures for Neglected Tropical Diseases

### Saturday

**Symposium 110:** Achieving and Monitoring High Mass Drug Administration Treatment Coverage in Soil-Transmitted Helminth Control and Elimination Programs

**Symposium 124:** The Challenges of Implementing NTD Assessments in Conflict Areas and Fragile States

## Intestinal and Tissue Helminths, Cestodes

### Thursday

**Scientific Session 13:** Cestodes: Cysticercosis

### Friday

**Scientific Session 92:** Intestinal and Tissue Nematodes: Soil-Transmitted Helminths - Biology and Immunology

## Sunday

**Scientific Session 186:** Intestinal and Tissue Nematodes: Soil-Transmitted Helminths - Epidemiology and Control

## Kinetoplastida

### Thursday

**Scientific Session 37:** Kinetoplastida: Diagnosis, Treatment and Vaccine Development

### Friday

**Scientific Session 100:** Kinetoplastida: Epidemiology and Diagnosis

### Saturday

**Scientific Session 115:** Kinetoplastida: Molecular Biology and Immunology

## Sunday

**Symposium 178:** Recent Advances in Understanding of Pathogenesis and Control of Chagas Disease

## Malaria

### Thursday

**Scientific Session 2:** Malaria: Clinical Trials and Pre-Clinical Drug Development

**Scientific Session 4:** Malaria: Vectors and Vector Control

**Scientific Session 5:** Malaria: Pathogenesis

**Symposium 14:** LLIN Evaluation in Uganda Project (LLINEUP) - Impact of Long-Lasting Insecticidal Nets With, and Without, Piperonyl Butoxide on Malaria Indicators in Uganda: A Cluster-Randomized Trial

**Symposium 19:** Alan J. Magill Malaria Eradication Symposium: Addressing Malaria across the Transmission Spectrum

**Symposium 30:** Zoonotic Malaria in the Elimination Era

**Scientific Session 31:** Malaria: Modeling Malaria Disease and Transmission

**Symposium 32:** A Generation of Anti-Malarial Drug Candidates in Advanced Clinical Development: Potential Future Treatments

**Symposium 33:** Interventions to Decrease the Burden of Malaria in School-Aged Children: Will They Decrease Malaria Transmission?

# Session Topic Guide (cont.)

**Symposium 42:** Severe Malaria: Reducing Deaths by Improving Quality of Care

**Symposium 43:** Prioritizing High Burden Settings for High Impact: A Case Study From Malaria Control in Burkina Faso

**Scientific Session 44:** Malaria: Immunology

## Friday

**Scientific Session 54:** Malaria Epidemiology I: Surveillance, Trends and Program Impact

**Symposium 55:** Routine Data for Decision-Making: Driving Progress in Malaria Control

**Symposium 58:** High Throughput Malaria Sero-Epidemiology – Development, Utility and Insights from Examples across the Globe

**Scientific Session 66:** Malaria Epidemiology II: Clinical Epidemiology and Intervention Studies

**Symposium 67:** Human Monoclonal Antibodies against Malaria – A New Paradigm for Prevention

**Symposium 68:** Tafenoquine: New Drug for Chemoprophylaxis and Treatment of Relapsing Malaria

**Scientific Session 81:** Diagnosis of Malaria: Are the Available Tools Sufficient to Eliminate the Disease?

**Symposium 82:** Seasonal Malaria Chemoprevention (SMC): Current and Future Perspectives

**Symposium 84:** Malaria: Getting Back on Track in High Burden Countries

**Symposium 94:** Bridging the Gap between Malaria Mathematical Modeling and Country Application to Inform Strategic and Operational Decision-Making

**Symposium 95:** Understanding Malaria Resurgence through Studies of Host Immunity and Parasite Diversity

## Saturday

**Symposium 107:** Can Pyronaridine-Artesunate Be Considered as a Potential Tool for Use in Malaria Elimination Settings?

**Symposium 108:** Malaria Resurgence in Venezuela and Its Regional Implications

**Symposium 109:** Rethinking Gametocyte Biology in Malaria Parasites in an Era of Elimination

**Symposium 113:** From Biomarker Discovery to Differential Diagnosis in Malaria Endemic Settings

**Scientific Session 120:** Malaria: Vaccines

**Scientific Session 121:** Malaria: Evidence for Malaria Elimination

**Symposium 122:** Learning From Experience to Optimize Chemoprevention Strategies For Malaria

**Late-Breaker Abstract Session 133:** Late-Breakers in Malaria

**Symposium 135:** PfSPZ-Based Vaccines: Progress Towards Licensure of a Vaccine for Malaria-Naïve and Malaria-Exposed Populations

**Symposium 136:** Updates and Challenges in Measuring Malaria Burden in the Era of Sustainable Development Goals

**Scientific Session 137:** Malaria: New Drugs and New Insights on Old Drugs

**Symposium 141:** African-Led Perspectives on Programmatic Challenges to Malaria Elimination

**Symposium 148:** *The Lancet* Commission on Malaria Eradication

**Scientific Session 149:** Malaria: Parasite Genetics and Genomic Epidemiology of Malaria

**Scientific Session 150:** Malaria: Updates and Innovations in Malaria Prevention

## Sunday

**Scientific Session 165:** Malaria: Opportunities and Challenges for Providers and Policy-Makers in Malaria Control

**Symposium 176:** Engaging High-Risk Communities to Accelerate Malaria Elimination

**Symposium 179:** Antimalarial Efficacy Monitoring in the Americas: The Way Forward as We Move Towards Elimination

**Symposium 180:** Key Findings and Recommendations of the WHO Strategic Advisory Group on Malaria Eradication

**Symposium 184:** Accelerating Access to Innovative Malaria Products: Exploring Challenges and Best Practices in the Use of Market and Economic Data

## Molecular Parasitology

### Thursday

**Scientific Session 10:** American Committee of Molecular, Cellular and Immunoparasitology (ACMCIP): Worms, Protists and Trematodes: Immunology

**Symposium 16:** Large-Scale Genome-Wide Approaches to Identify and Study Potential Antimalarial Drug Targets and Resistance Factors

**Scientific Session 22:** American Committee of Molecular, Cellular and Immunoparasitology (ACMCIP): Kinetoplastida: Molecular, Cellular and Immunobiology

**Scientific Session 36:** American Committee of Molecular, Cellular and Immunoparasitology (ACMCIP): Malaria - New Molecular and Cellular Approaches

# Session Topic Guide (cont.)

## Friday

**Symposium 56:** The 17th Annual American Committee of Molecular, Cellular and Immunoparasitology (ACMCIP) Symposium: This is Your Brain on Parasites: Neuropathology of Parasitic Infections

**Scientific Session 72:** American Committee of Molecular, Cellular and Immunoparasitology (ACMCIP): Worms and Trematodes: Molecular and Cellular Biology

**Late-Breaker Abstract Session 79:** Late-Breakers in Basic Sciences

**Scientific Session 88:** American Committee of Molecular, Cellular and Immunoparasitology (ACMCIP): Malaria - Molecular Mechanisms of Pathogenesis and Resistance

**Symposium 103:** Applied Helminth Genomics – Translational Aspects

## Saturday

**Scientific Session 130:** American Committee of Molecular, Cellular and Immunoparasitology (ACMCIP): Protozoans - Molecular and Cellular Biology

## One Health: Interface of Human Health/Animal Diseases

## Thursday

**Scientific Session 47:** One Health: Interface of Human Health/Animal Diseases

## Friday

**Symposium 64:** Synthesis of Evidence and Multi-Disciplinary Approaches Towards Zoonoses Control and Elimination

## Saturday

**Symposium 119:** Epidemiology of Coupled Natural-Human Systems: Integrating Ecological and Human Data to Understand the Socio-Ecological Drivers of Vector-Borne and Zoonotic Disease Emergence

## Opportunistic and Anaerobic Protozoa

## Friday

**Scientific Session 91:** Protozoa

## Pneumonia, Respiratory Infections and Tuberculosis

## Friday

**Symposium 75:** Bubble CPAP and High Flow Nasal Cannula in Low-Resource Settings: Promising Therapies or Have We Burst the Bubble?

## Saturday

**Scientific Session 157:** Pneumonia, Respiratory Infections and Tuberculosis

**Special Session 162:** Film Screening: Under the Mask, Premiere in USA

## Sunday

**Symposium 182:** Innovation in Primary Healthcare – It's Not Too Late to Improve Pneumonia Case Management in Children Under Five

## Schistosomiasis-Helminths

## Thursday

**Scientific Session 12:** Schistosomiasis - Trematodes: Epidemiology and Control

**Scientific Session 24:** Schistosomiasis - Trematodes: Immunology, Pathology, Cellular, Molecular

**Symposium 51:** Hookworm Infections in West Africa and Haiti: Challenges in Maintaining the Gains of Deworming in an Evolving NTD Landscape and Implications of New Guidelines for STH Programs

## Friday

**Scientific Session 63:** Schistosomiasis and Other Trematodes: Diagnosis and Treatment

**Symposium 103:** Applied Helminth Genomics – Translational Aspects

## Saturday

**Symposium 110:** Achieving and Monitoring High Mass Drug Administration Treatment Coverage in Soil-Transmitted Helminth Control and Elimination Programs

**Symposium 159:** Finding and Meeting the Challenges of Schistosomiasis Control: The SCORE Project

# Session Topic Guide (cont.)

## Sunday

**Symposium 185:** Schistosomiasis Remapping, Refocusing and Refining: How to Assess Endemicity After Multiple Rounds of Preventive Chemotherapy

## Virology

## Thursday

**Symposium 8:** Toward a Chikungunya Vaccine: Challenges and Barriers

**Scientific Session 20:** Chikungunya and Other Alphaviruses

**Symposium 35:** Confronting Ebola: Reflections from Experts from Discovery to Today

**Scientific Session 46:** West Nile and Other Flaviviruses

## Friday

**Symposium 57:** American Committee on Arthropod-Borne Viruses (ACAV) Symposium I: ACAV Business Meeting, Award Presentations and Research Presentations by Award Recipients

**Symposium 69:** American Committee on Arthropod-Borne Viruses (ACAV) Symposium II: Everything Old Is New Again - The Re-Emergence of Yellow Fever

**Symposium 83:** Hallmarks of Protection: Cellular and Molecular Signatures of Durable Immunity

**Scientific Session 97:** Viral Hemorrhagic Fevers

## Saturday

**Scientific Session 111:** Dengue: Transmission and Virus-Host Interactions

**Scientific Session 123:** Dengue: Vaccines and Immunity

**Symposium 138:** Ebola in the Democratic Republic of the Congo: The Perfect Public Health Storm

**Scientific Session 139:** Zika I

**Scientific Session 151:** Zika II

## Sunday

**Symposium 164:** What is Needed to Eliminate Viral Hepatitis Within Existing Health Systems?

**Symposium 187:** New Insights into the Vascular Dysfunction of Severe Viral Infections: Bridging the Gap from Bench to Bedside

## Water, Sanitation, Hygiene and Environmental Health

## Thursday

**Scientific Session 38:** Water, Sanitation, Hygiene and Environmental Health (WaSH-E) and Behavior

## Friday

**Symposium 71:** The Emerging Science on the Interplay of Environmental Stressors, Infectious Diseases and Human Health

## Saturday

**Scientific Session 143:** Water, Sanitation, Hygiene and Environmental Health (WaSH-E): Transmission and Exposure

**Symposium 154:** Food Hygiene for Public Health: The State of the Evidence on Intervention Design, Implementation and Evaluation

## Sunday

**Scientific Session 170:** Water, Sanitation, Hygiene and Environmental Health (WaSH-E): Water Access, Quality and Treatment



# ASTMH Board, Subgroup and Committee Meetings

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## Tuesday, November 19

### **ASTMH Board of Directors Meeting**

*Riverview Ballroom B*

Tuesday, November 19, Noon – 6 p.m.

## Wednesday, November 20

### **Burroughs Wellcome Fund/ASTMH Fellowship Committee Meeting**

*Chesapeake 4 (Ballroom Level)*

Wednesday, November 20, 7 a.m. - 9 a.m.

### **American Committee on Arthropod-Borne Viruses (ACAV) SIE Subcommittee Meeting**

*Riverview Ballroom 5*

Wednesday, November 20, 11 a.m. - Noon

### **American Committee on Arthropod-Borne Viruses (ACAV) SIRACA Subcommittee Meeting**

*Riverview Ballroom 5*

Wednesday, November 20, Noon - 2 p.m.

### **American Committee on Arthropod-Borne Viruses (ACAV) SALS Subcommittee Meeting**

*Riverview Ballroom 5*

Wednesday, November 20, 2 p.m. - 3:30 p.m.

### **Young Investigator Award Committee Meeting**

*Chesapeake D/E (Ballroom Level)*

Wednesday, November 20, 3 p.m. - 4 p.m.

### **American Committee of Molecular, Cellular and Immunoparasitology (ACMCIP) Council Meeting**

*Chesapeake 9 (Ballroom Level)*

Wednesday, November 20, 3:30 p.m. - 5:30 p.m.

### **ASTMH Committee on Global Health (ACGH) Council Meeting**

*Chesapeake 4 (Ballroom Level)*

Wednesday, November 20, 3:30 p.m. - 5:30 p.m.

### **American Committee of Medical Entomology (ACME) Council Meeting**

*Chesapeake 1 (Ballroom Level)*

Wednesday, November 20, 4 p.m. - 5:30 p.m.

### **American Committee on Arthropod-Borne Viruses (ACAV) Council Meeting**

*Riverview Ballroom 5*

Wednesday, November 20, 4 p.m. - 5:30 p.m.

### **Clinical Group Council Meeting (American Committee on Clinical Tropical Medicine and Travelers' Health - ACCTMTH)**

*Chesapeake L (Ballroom Level)*

Wednesday, November 20, 4 p.m. - 5:30 p.m.

## Thursday, November 21

### **ASTMH Diploma Course Directors Meeting**

*Chesapeake 5 (Ballroom Level)*

Thursday, November 21, 7 a.m. - 8 a.m.

### **ASTMH Travel Awards Meeting**

*Riverview Ballroom 1*

Thursday, November 21, 7 a.m. - 8:30 a.m.

### **Clinical Standards and Treatment Guidelines Committee Meeting**

*Chesapeake 1 (Ballroom Level)*

Thursday, November 21, 7 a.m. - 8 a.m.

### **Clinical Tropical and Travel Medicine Education Program Committee Meeting**

*National Harbor 8 (National Harbor Level)*

Thursday, November 21, 7 a.m. - 8 a.m.

### **International Member Committee Meeting**

*National Harbor 12 (National Harbor Level)*

Thursday, November 21, 7 a.m. - 8 a.m.

### **Courses Committee Meeting**

*Chesapeake 1 (Ballroom Level)*

Thursday, November 21, 12:15 p.m. - 1:30 p.m.

### **Kean Fellowship Committee Meeting**

*National Harbor 6 (National Harbor Level)*

Thursday, November 21, 12:15 p.m. - 1:30 p.m.

### **Membership Committee Meeting**

*Chesapeake L (Ballroom Level)*

Thursday, November 21, 12:15 p.m. - 1:30 p.m.

## Friday, November 22

### **AJTMH Editorial Board Meeting**

*National Harbor 6 (National Harbor Level)*

Friday, November 22, 7 a.m. - 8 a.m.

### **Clinical Group (ACCTMTH) Past Presidents Meeting**

*Chesapeake 1 (Ballroom Level)*

Friday, November 22, 7 a.m. - 8 a.m.

### **Shope Fellowship Committee Meeting**

*Mezzanine 1 (Lobby Level)*

Friday, November 22, 7 a.m. - 8 a.m.

### **Trainee Member Committee Meeting**

*National Harbor 8 (National Harbor Level)*

Friday, November 22, 7 a.m. - 8 a.m.

# ASTMH Board, Subgroup and Committee Meetings

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## **Tropical Medicine/Global Health Subspecialty Exploratory Committee Meeting**

*Chesapeake 1 (Ballroom Level)*

Friday, November 22, 12:15 p.m. - 1:30 p.m.

## **Saturday, November 23**

### **ASTMH Past Presidents Meeting**

*National Harbor 12 (National Harbor Level)*

Saturday, November 23, 7 a.m. - 8 a.m.

### **Scientific Program Committee Meeting**

*National Harbor 6/7 (National Harbor Level)*

Saturday, November 23, 7 a.m. - 8 a.m.

### **Diploma Course Certification Committee Meeting**

*Chesapeake 1 (Ballroom Level)*

Saturday, November 23, 7 a.m. - 8 a.m.

### **CTropMed® Exam Committee Meeting**

*Chesapeake 5 (Ballroom Level)*

Saturday, November 23, 7 a.m. - 8:30 a.m.

## **Sunday, November 24**

### **ASTMH Board of Directors Meeting**

*Maryland 1/2 (Ballroom Level)*

Sunday, November 24, 7:30 a.m. - 9:30 a.m.

# Related Organization Meetings (at press time)

## Monday, November 18

### Bill & Melinda Gates Foundation - Side Meeting

Potomac 1 (Ballroom Level)  
Monday, November 18, 8 a.m.- 8 p.m.

## Tuesday, November 19

### Foundation for the National Institutes of Health (FNIH) - Regulatory Learning Session Meeting

Riverview Ballroom 2-3  
Tuesday, November 19, 8 a.m.- 5 p.m.

### PATH MACEPA Meetings

Green Room (Ballroom Level)  
Tuesday, November 19, 8 a.m.- Noon

### Bill & Melinda Gates Foundation - Side Meeting

Potomac 1 (Ballroom Level)  
Tuesday, November 19, 8 a.m.- 8 p.m.

### Bill & Melinda Gates Foundation - Side Meeting

Potomac 2 (Ballroom Level)  
Tuesday, November 19, 8 a.m.- 8 p.m.

### Bill & Melinda Gates Foundation - Side Meeting

Potomac 3/4 (Ballroom Level)  
Tuesday, November 19, 8 a.m.- 8 p.m.

### Bill & Melinda Gates Foundation - Side Meeting

Chesapeake 7 (Ballroom Level)  
Tuesday, November 19, 8 a.m.- 8 p.m.

### Bill & Melinda Gates Foundation - Side Meeting

Chesapeake 8 (Ballroom Level)  
Tuesday, November 19, 8 a.m.- 8 p.m.

### World Health Organization - Consultation on the Research Agenda for Fractional Yellow Fever Vaccination Meeting

Riverview Ballroom 1  
Tuesday, November 19, 8 a.m.- 8 p.m.

### Westat - Zika and Infants in Pregnancy (ZIP) and ZIP 2.0 Study Investigator Meeting

Residence Inn - Mariner Ballroom (2nd Floor)  
Tuesday, November 19, 8:30 a.m.- 5 p.m.

### PATH MACEPA Meetings

Chesapeake 12 (Ballroom Level)  
Tuesday, November 19, Noon - 8 p.m.

## Wednesday, November 20

### Takeda - Various Meetings

Mezzanine 2 (Lobby Level)  
Wednesday, November 20, 6:30 a.m.- 8 p.m.

### Celgene Global Health - UCT/CGH F2F Meeting

Mezzanine 3 (Lobby Level)  
Wednesday, November 20, 7 a.m.- 11 a.m.

### PMI Impact Malaria (Population Services International) - US President's Malaria Initiative Huddle Meeting

National Harbor 14 (National Harbor Level)  
Wednesday, November 20, 7 a.m.- 7 p.m.

### Harvard/BWH/CDC - Epidemics in Central America and the Caribbean Annual Meeting

Mezzanine 4 (Lobby Level)  
Wednesday, November 20, 7:30 a.m.- 5 p.m.

### University of California Davis - TropMed Iquitos P01 Meeting 2019

National Harbor 9 (National Harbor Level)  
Wednesday, November 20, 8 a.m.- Noon

### Sustainable Sciences Institute - Dengue P01 Annual Meeting

Maryland 4 (Ballroom Level)  
Wednesday, November 20, 8 a.m.- 5 p.m.

### Bill & Melinda Gates Foundation - Side Meeting

Potomac 1 (Ballroom Level)  
Wednesday, November 20, 8 a.m.- 8 p.m.

### Bill & Melinda Gates Foundation - Side Meeting

Potomac 2 (Ballroom Level)  
Wednesday, November 20, 8 a.m.- 8 p.m.

### Bill & Melinda Gates Foundation - Side Meeting

Potomac 3/4 (Ballroom Level)  
Wednesday, November 20, 8 a.m.- 8 p.m.

### Bill & Melinda Gates Foundation - Side Meeting

Chesapeake 7 (Ballroom Level)  
Wednesday, November 20, 8 a.m.- 8 p.m.

### Bill & Melinda Gates Foundation - Side Meeting

Chesapeake 8 (Ballroom Level)  
Wednesday, November 20, 8 a.m.- 8 p.m.

### PATH MACEPA Meetings

Chesapeake 12 (Ballroom Level)  
Wednesday, November 20, 8 a.m.- 8 p.m.

### Novartis Pharma AG - Novartis Investigator Meeting for Severe Malaria

Residence Inn - Harbor II (1st Floor)  
Wednesday, November 20, 8 a.m.- 8 p.m.

### Takeda - Various Meetings

Maryland 1 (Ballroom Level)  
Wednesday, November 20, 8 a.m.- 8 p.m.

### Yale University Amazonia ICEMR Meeting

Potomac 6 (Ballroom Level)  
Wednesday, November 20, 9 a.m.- 4 p.m.

### University of California San Francisco - Entomological Surveillance Working Group Meeting

Riverview Ballroom 1  
Wednesday, November 20, 9 a.m.- 5 p.m.

# Related Organization Meetings (at press time)

## **Duke Global Health Institute, Duke University - TESTsmART Trial Team Meeting**

*Residence Inn - Mariner Ballroom (2nd Floor)*  
Wednesday, November 20, 10 a.m. - 6 p.m.

## **PATH - Diarrhea Innovations Group (DIG) Annual Member Meeting**

*Riverview Ballroom 4*  
Wednesday, November 20, Noon - 4 p.m.

## **Drugs for Neglected Diseases (DNDi) - IDDO Chagas Data Platform Meeting**

*Magnolia 3 (Ballroom Level)*  
Wednesday, November 20, Noon - 2:30 p.m.

## **University of Rhode Island - DHF Project Investigators Meeting**

*Maryland 5/6 (Ballroom Level)*  
Wednesday, November 20, Noon - 5 p.m.

## **Fogarty International Center GID/PEER/PREVAIL Meeting**

*Potomac 5 (Ballroom Level)*  
Wednesday, November 20, 1 p.m. - 5 p.m.

## **University of Vermont Vaccine Testing Center Collaborations Meeting**

*Chesapeake C (Ballroom Level)*  
Wednesday, November 20, 2 p.m. - 6 p.m.

## **Jhpiego - Malaria in Pregnancy Working Group Meeting**

*Maryland 2-3 (Ballroom Level)*  
Wednesday, November 20, 2:30 p.m. - 4:30 p.m.

## **Drugs for Neglected Diseases (DNDi) - Chagas Disease Prospective Cohort Meeting**

*Magnolia 3 (Ballroom Level)*  
Wednesday, November 20, 2:30 p.m. - 4:30 p.m.

## **Foundation for Innovative New Diagnostics (FIND) Meeting**

*Chesapeake F (Ballroom Level)*  
Wednesday, November 20, 3 p.m. - 5:30 p.m.

## **Thursday, November 21**

### **Takeda - Various Meetings**

*Chesapeake F (Ballroom Level)*  
Thursday, November 21, 6:30 a.m. - 8 p.m.

### **Takeda - Various Meetings**

*Chesapeake G (Ballroom Level)*  
Thursday, November 21, 6:30 a.m. - 8 p.m.

### **International Society of Travel Medicine - JTM Editorial Board Meeting**

*Maryland 4 (Ballroom Level)*  
Thursday, November 21, 7 a.m. - 8:30 a.m.

### **Celgene Global Health - Various Partner Meetings**

*National Harbor 1 (National Harbor Level)*  
Thursday, November 21, 7 a.m. - 6 p.m.

## **University of Vermont Vaccine Testing Center Collaborations Meeting**

*Chesapeake C (Ballroom Level)*  
Thursday, November 21, 7 a.m. - 6 p.m.

## **PMI Impact Malaria (Population Services International) - US President's Malaria Initiative Huddle Meeting**

*National Harbor 14 (National Harbor Level)*  
Thursday, November 21, 7 a.m. - 7 p.m.

## **Walter Reed Army Institute of Research (WRAIR) Meeting**

*Magnolia 3 (Ballroom Level)*  
Thursday, November 21, 7 a.m. - 7 p.m.

## **IDEEL Meeting**

*Residence Inn - Harbor II (1st Floor)*  
Thursday, November 21, 8 a.m. - 5 p.m.

## **FHI Clinical, Global CRO Meeting**

*National Harbor 15 (National Harbor Level)*  
Thursday, November 21, 8 a.m. - 6 p.m.

## **IVCC Meetings**

*Chesapeake H (Ballroom Level)*  
Thursday, November 21, 8 a.m. - 6 p.m.

## **60 Degrees Pharmaceuticals, LLC Business Meetings**

*Maryland 3 (Ballroom Level)*  
Thursday, November 21, 8 a.m. - 8 p.m.

## **Barcelona Institute for Global Health (ISGlobal) - Malaria Eradication Scientific Alliance Meeting**

*Chesapeake D (Ballroom Level)*  
Thursday, November 21, 8 a.m. - 8 p.m.

## **Bill & Melinda Gates Foundation - Side Meeting**

*Maryland 1 (Ballroom Level)*  
Thursday, November 21, 8 a.m. - 8 p.m.

## **Bill & Melinda Gates Foundation - Side Meeting**

*Potomac 1 (Ballroom Level)*  
Thursday, November 21, 8 a.m. - 8 p.m.

## **Bill & Melinda Gates Foundation - Side Meeting**

*Potomac 2 (Ballroom Level)*  
Thursday, November 21, 8 a.m. - 8 p.m.

## **Bill & Melinda Gates Foundation - Side Meeting**

*Potomac 3/4 (Ballroom Level)*  
Thursday, November 21, 8 a.m. - 8 p.m.

## **Bill & Melinda Gates Foundation - Side Meeting**

*Chesapeake 7 (Ballroom Level)*  
Thursday, November 21, 8 a.m. - 8 p.m.

## **Bill & Melinda Gates Foundation - Side Meeting**

*Chesapeake 8 (Ballroom Level)*  
Thursday, November 21, 8 a.m. - 8 p.m.

## **Infectious Diseases Data Observatory (IDDO)**

**Stakeholders Meetings**  
*Potomac 6 (Ballroom Level)*  
Thursday, November 21, 8 a.m. - 8 p.m.

## **Medicines for Malaria Venture (MMV) Meeting**

*Chesapeake E (Ballroom Level)*  
Thursday, November 21, 8 a.m. - 8 p.m.

# Related Organization Meetings (at press time)

## **PATH MACEPA Meetings**

*Chesapeake 1 (Ballroom Level)*  
Thursday, November 21, 8 a.m.- 8 p.m.

## **PATH MVI Meetings**

*National Harbor 9 (National Harbor Level)*  
Thursday, November 21, 8 a.m.- 8 p.m.

## **PATH MVI Meetings**

*National Harbor 13 (National Harbor Level)*  
Thursday, November 21, 8 a.m.- 8 p.m.

## **Population Services International (PSI) Meeting**

*National Harbor 7 (National Harbor Level)*  
Thursday, November 21, 8 a.m.- 8 p.m.

## **Medicines for Malaria Venture (MMV) - Pyramax Roundtable Meeting**

*Riverview Ballroom 1*  
Thursday, November 21, 9:30 a.m.- 4:30 p.m.

## **HJF-ACESO Side Meetings**

*Chesapeake 4 (Ballroom Level)*  
Thursday, November 21, 9 a.m.- 5 p.m.

## **University of Pennsylvania Meeting - Epidemiologic and Bioinformatic Resource Centers (ClinEpiDB/ EuPathDB) Meeting**

*Potomac 5 (Ballroom Level)*  
Thursday, November 21, 9 a.m.- 6 p.m.

## **Eck Institute for Global Health - Age Grading Malaria Vectors Meeting**

*Maryland 4 (Ballroom Level)*  
Thursday, November 21, 11 a.m.- 1 p.m.

## **The United Nations Foundation - Malaria in the Americas: Showcasing Innovation and Partnership Meeting**

*Riverview Ballroom 5*  
Thursday, November 21, 11:30 a.m.- 1:30 p.m.

## **Jhpiego - TIPTOP Project Steering Committee Meeting**

*Chesapeake 5 (Ballroom Level)*  
Thursday, November 21, Noon - 2 p.m.

## **London School of Hygiene & Tropical Medicine - Alumni Reception**

*Riverview Ballroom 3*  
Thursday, November 21, 7 p.m. - 9 p.m.

## **Eck Institute for Global Health - University of Notre Dame: Rally with Notre Dame for Global Health**

*Maryland 2 (Ballroom Level)*  
Thursday, November 21, 7:15 p.m.- 9 p.m.

## **International Society of Travel Medicine - GeoSentinel Mid-Year Meeting**

*Maryland 4 (Ballroom Level)*  
Thursday, November 21, 7:15 p.m.- 9 p.m.

## **Bill & Melinda Gates Foundation - Cocktail Reception**

*Riverview Ballroom A*  
Thursday, November 21, 7:15 p.m.- 9:30 p.m.

## **FHI Clinical Event**

*Riverview Ballroom 1*  
Thursday, November 21, 7:15 p.m.- 9:30 p.m.

## **University of Sciences, Techniques and Technologies of Bamako - USTTB-NIH Annual Collaborative Dinner Meeting**

*Riverview Ballroom 5*  
Thursday, November 21, 7:15 p.m.- 10 p.m.

## **Friday, November 22**

### **Takeda - Various Meetings**

*Chesapeake G (Ballroom Level)*  
Friday, November 22, 6:30 a.m.- 8 p.m.

### **Takeda - Various Meetings**

*Chesapeake F (Ballroom Level)*  
Friday, November 22, 6:30 a.m.- 8 p.m.

### **Walter Reed Army Institute of Research (WRAIR) Meeting**

*Magnolia 3 (Ballroom Level)*  
Friday, November 22, 7 a.m.- 7 p.m.

### **Celgene Global Health - Various Partner Meetings**

*National Harbor 1 (National Harbor Level)*  
Friday, November 22, 7 a.m.- 6 p.m.

### **PMI Impact Malaria (Population Services International) - US President's Malaria Initiative Huddle Meeting**

*National Harbor 14 (National Harbor Level)*  
Friday, November 22, 7 a.m.- 7 p.m.

### **Unitaid - Biomarkers for Diagnosing Fever at the Frontline in LMICs: An Update of the Current Landscape Meeting**

*Riverview Ballroom 1*  
Friday, November 22, 8 a.m. - Noon.

### **FHI Clinical, Global CRO Meeting**

*National Harbor 15 (National Harbor Level)*  
Friday, November 22, 8 a.m.- 6 p.m.

### **IVCC Meetings**

*Chesapeake H (Ballroom Level)*  
Friday, November 22, 8 a.m.- 6 p.m.

### **60 Degrees Pharmaceuticals, LLC Business Meetings**

*Maryland 3 (Ballroom Level)*  
Friday, November 22, 8 a.m.- 8 p.m.

### **Barcelona Institute for Global Health (ISGlobal) - Malaria Eradication Scientific Alliance Meeting**

*Chesapeake D (Ballroom Level)*  
Friday, November 22, 8 a.m.- 8 p.m.

### **Infectious Diseases Data Observatory (IDDO) Stakeholders Meetings**

*Potomac 6 (Ballroom Level)*  
Friday, November 22, 8 a.m.- 8 p.m.

### **Bill & Melinda Gates Foundation - Side Meeting**

*Maryland 1 (Ballroom Level)*  
Friday, November 22, 8 a.m.- 8 p.m.

### **Bill & Melinda Gates Foundation - Side Meeting**

*Potomac 1 (Ballroom Level)*  
Friday, November 22, 8 a.m.- 8 p.m.



# Related Organization Meetings (at press time)

## **Bill & Melinda Gates Foundation - Side Meeting**

*Potomac 2 (Ballroom Level)*  
Friday, November 22, 8 a.m.- 8 p.m.

## **Bill & Melinda Gates Foundation - Side Meeting**

*Potomac 3/4 (Ballroom Level)*  
Friday, November 22, 8 a.m.- 8 p.m.

## **Bill & Melinda Gates Foundation - Side Meeting**

*Chesapeake 7 (Ballroom Level)*  
Friday, November 22, 8 a.m.- 8 p.m.

## **Bill & Melinda Gates Foundation - Side Meeting**

*Chesapeake 8 (Ballroom Level)*  
Friday, November 22, 8 a.m.- 8 p.m.

## **Medicines for Malaria Venture (MMV) Meeting**

*Chesapeake E (Ballroom Level)*  
Friday, November 22, 8 a.m.- 8 p.m.

## **PATH MACEPA Meetings**

*Chesapeake 1 (Ballroom Level)*  
Friday, November 22, 8 a.m.- 8 p.m.

## **PATH MVI Meetings**

*National Harbor 9 (National Harbor Level)*  
Friday, November 22, 8 a.m.- 8 p.m.

## **PATH MVI Meetings**

*National Harbor 13 (National Harbor Level)*  
Friday, November 22, 8 a.m.- 8 p.m.

## **Population Services International (PSI) Meeting**

*Maryland 2 (Ballroom Level)*  
Friday, November 22, 8 a.m.- 8 p.m.

## **Drugs for Neglected Diseases (DNDi) - DNDi/USAID**

### **Global Development Alliance Update Meeting**

*Chesapeake C (Ballroom Level)*  
Friday, November 22, 9 a.m.- 11 a.m.

## **UCSF Global Health Group Malaria Elimination Initiative (DiSARM) Meeting**

*National Harbor 12 (National Harbor Level)*  
Friday, November 22, 9 a.m.- 11 a.m.

## **HJF-ACESO Side Meetings**

*Chesapeake 4 (Ballroom Level)*  
Friday, November 22, 9 a.m.- 5 p.m.

## **University of Pennsylvania Meeting - Epidemiologic and Bioinformatic Resource Centers (ClinEpiDB/ EuPathDB) Meeting**

*Potomac 5 (Ballroom Level)*  
Friday, November 22, 9 a.m.- 6 p.m.

## **BioFire Defense - Global Fever Panel Clinical Study Discussion**

*National Harbor 8 (National Harbor Level)*  
Friday, November 22, 12:45 p.m.- 1:45 p.m.

## **WANECAM II - EDCTP Meeting**

*Chesapeake L (Ballroom Level)*  
Friday, November 22, 4 p.m.- 6:30 p.m.

## **Harvard/Johns Hopkins Alumni and Researchers' Reception (Invitation Only)**

*Riverview Ballroom B*  
Friday, November 22, 7:30 p.m.- 9 p.m.

## **Saturday, November 23**

### **Takeda - Various Meetings**

*Chesapeake F (Ballroom Level)*  
Saturday, November 23, 6:30 a.m.- 8 p.m.

### **Takeda - Various Meetings**

*Chesapeake G (Ballroom Level)*  
Saturday, November 23, 6:30 a.m.- 8 p.m.

### **Celgene Global Health - Various Partner Meetings**

*National Harbor 1 (National Harbor Level)*  
Saturday, November 23, 7 a.m.- 6 p.m.

### **PMI Impact Malaria (Population Services International) - US President's Malaria Initiative Huddle Meeting**

*National Harbor 14 (National Harbor Level)*  
Saturday, November 23, 7 a.m.- 7 p.m.

### **Walter Reed Army Institute of Research (WRAIR) Meeting**

*Magnolia 3 (Ballroom Level)*  
Saturday, November 23, 7 a.m.- 7 p.m.

### **IVCC Meetings**

*Chesapeake H (Ballroom Level)*  
Saturday, November 23, 8 a.m.- 6 p.m.

### **Barcelona Institute for Global Health (ISGlobal) - Malaria Eradication Scientific Alliance Meeting**

*Chesapeake D (Ballroom Level)*  
Saturday, November 23, 8 a.m.- 8 p.m.

### **Bill & Melinda Gates Foundation - Side Meeting**

*Potomac 1 (Ballroom Level)*  
Saturday, November 23, 8 a.m.- 8 p.m.

### **Bill & Melinda Gates Foundation - Side Meeting**

*Potomac 2 (Ballroom Level)*  
Saturday, November 23, 8 a.m.- 8 p.m.

### **Bill & Melinda Gates Foundation - Side Meeting**

*Potomac 3/4 (Ballroom Level)*  
Saturday, November 23, 8 a.m.- 8 p.m.

### **Bill & Melinda Gates Foundation - Side Meeting**

*Chesapeake 7 (Ballroom Level)*  
Saturday, November 23, 8 a.m.- 8 p.m.

### **Bill & Melinda Gates Foundation - Side Meeting**

*Chesapeake 8 (Ballroom Level)*  
Saturday, November 23, 8 a.m.- 8 p.m.

### **Infectious Diseases Data Observatory (IDDO) Stakeholders Meetings**

*Potomac 6 (Ballroom Level)*  
Saturday, November 23, 8 a.m.- 8 p.m.

### **Medicines for Malaria Venture (MMV) Meeting**

*Chesapeake E (Ballroom Level)*  
Saturday, November 23, 8 a.m.- 8 p.m.



# Related Organization Meetings (at press time)

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## **PATH MACEPA Meetings**

*Chesapeake 1 (Ballroom Level)*

Saturday, November 23, 8 a.m.- 8 p.m.

## **Penn State College of Medicine - Global Health Information Technology Fund Investigators Meeting**

*Mezzanine 1 (Lobby Level)*

Saturday, November 23, 2 p.m. - 5 p.m.

## **Sunday, November 24**

### **Takeda - Various Meetings**

*Chesapeake G (Ballroom Level)*

Sunday, November 24, 6:30 a.m.- 8 p.m.

### **Takeda - Various Meetings**

*Chesapeake F (Ballroom Level)*

Sunday, November 24, 6:30 a.m.- 8 p.m.

### **PMI Impact Malaria (Population Services International) - US President's Malaria Initiative Huddle Meeting**

*National Harbor 12/13 (National Harbor Level)*

Sunday, November 24, 7 a.m.- 7 p.m.

### **IVCC Meetings**

*Chesapeake H (Ballroom Level)*

Sunday, November 24, 8 a.m.- 6 p.m.

### **Bill & Melinda Gates Foundation - Side Meeting**

*Potomac 1 (Ballroom Level)*

Sunday, November 24, 8 a.m.- 8 p.m.

### **Bill & Melinda Gates Foundation - Side Meeting**

*Potomac 2 (Ballroom Level)*

Sunday, November 24, 8 a.m.- 8 p.m.

### **Bill & Melinda Gates Foundation - Side Meeting**

*Potomac 3/4 (Ballroom Level)*

Sunday, November 24, 8 a.m.- 8 p.m.

### **Bill & Melinda Gates Foundation - Side Meeting**

*Chesapeake 7 (Ballroom Level)*

Sunday, November 24, 8 a.m.- 8 p.m.

### **Bill & Melinda Gates Foundation - Side Meeting**

*Chesapeake 8 (Ballroom Level)*

Sunday, November 24, 8 a.m.- 8 p.m.

### **Medicines for Malaria Venture (MMV) Meeting**

*Chesapeake E (Ballroom Level)*

Sunday, November 24, 8 a.m.- 8 p.m.

## **PATH MACEPA Meetings**

*Chesapeake 1 (Ballroom Level)*

Sunday, November 24, 8 a.m.- 8 p.m.

### **World Health Organization - MVIP DSMB Meeting**

*National Harbor 8 (National Harbor Level)*

Sunday, November 24, 8 a.m.- 8 p.m.

## **Monday, November 25**

### **World Health Organization - MVIP DSMB Meeting**

*National Harbor 8 (National Harbor Level)*

Monday, November 25, 8 a.m.- 8 p.m.

# 2019 Exhibitors

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Takeda
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Abt Associates	Medical Care Development International (MCDI)
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# Exhibitor, Sponsor and Supporter Directory (at press time)

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## **60 Degrees Pharmaceuticals, LLC**

### **Booth 337**

Doug Looock  
1025 Connecticut Avenue, NW., Suite 1000  
Washington, DC 20036 USA  
Phone: +1-888-834 0225  
Email: dougloock@60degreespharma.com  
Website: www.60degreespharma.com

60° Pharmaceuticals (60P) was founded in 2010 with a mission to realize new ways to improve and extend people's lives by discovering, developing, and distributing new best-in-class medicines for treatment and prevention of tropical diseases. 60P recently received FDA marketing approval for ARAKODA (tafenoquine) tablets, for the prevention of malaria (in adult travelers). For more information please stop by our booth.

## **Abt Associates**

### **Booth 303**

Lisa Nichols  
Email: Lis\_Nichols@abtassoc.com  
Website: www.abtassociates.com  
Twitter: @AbtAssociates

Abt Associates is an engine for social impact, dedicated to moving people from vulnerability to security. Harnessing the power of data and our experts' grounded insights, we provide research, consulting and technical services globally in the areas of health, environmental and social policy, technology and international development.

## **ACE Research**

### **Booth 109**

Amos Ndhere  
P.O. BOX 3964  
Kisumu, 40100 Kenya  
Phone: +254 786 690 234; +254 796 145 263; +254 771 466 728  
Email: a-ndhere@acerresearchafrica.com  
office@acerresearchafrica.com  
Website: www.acerresearchafrica.com

Africa Clinical Research Management (ACE Research) is African niche full-service CRO specializing in support of clinical trial services for vaccines, drugs and devices in Sub-Saharan Africa.

## **Akros, Inc.**

### **Booth 101**

Anna Winters  
45A Roan Road, Kabulonga  
Lusaka, 00000 Zambia  
Phone: +260 969.519957  
Email: info@akros.com  
Website: https://akros.com/  
Twitter: @akros\_global

Akros establishes data-driven systems to improve the health of disadvantaged communities. We take pride in our ground-level knowledge of the service delivery systems where we work, and our ability to provide novel, lasting solutions in developing regions. Akros is an economically disadvantaged, small, woman-owned business that works with a broad range of donors and stakeholders. Although we work across Southern Africa and provide technical assistance globally, the majority of our staff are based in Zambia.

## **Albourn Translation Services**

### **Booth 208**

Sandra Albourn  
2533 Wilson Blvd.  
Arlington, Virginia 22201 USA  
Phone: +1-571-765-3060  
Email: sandra@albourn.com  
Website: www.albourn.com  
Twitter: @albournsays

Albourn Translation Services exclusively supports nonprofits and mission-driven organizations. We work with you, not for you, as you better the world. Our high-quality, affordable translation services make your message accessible in any language.

## **altona Diagnostics USA, Inc.**

### **Booth 221**

Tyler Carney  
8120 Corporate Blvd.  
Plain City, Ohio 43064 USA  
Phone: +1-614-706-1784  
Email: tyler.carney@altona-diagnostics.com  
Website: http://www.altona-diagnostics.com/en/

altona Diagnostics USA Inc provides reagents for lab tests for over 35 tropical / infectious diseases. The RealStar® PCR Reagents are designed to amplify and detect pathogen specific DNA or RNA by real-time PCR. The RealStar® GPR Product contains General Purpose Reagents as a Master for amplification of DNA by PCR.

# Exhibitor, Sponsor and Supporter Directory (at press time)

## Aries Pharmaceuticals

### Booth 508 & 510

Brian Burke  
9276 Scranton Road, Suite 600  
San Diego, CA 92121 USA  
Phone: +1-678-778-4543  
Email: bburke@ariespharma.com  
Website: <https://www.ariespharma.com/>

Aries Pharmaceuticals, Inc. (Aries) is a wholly owned subsidiary of Aries Pharmaceuticals, Ltd., a specialty pharmaceutical company focused on developing and commercializing best in class products in endoscopy and to treat gastrointestinal diseases.

## Bavarian Nordic

### Booth 329

**SPONSOR**

Rolf Sass Sorensen  
Phone: +45 33 26 83 83  
Email: [info@bavarian-nordic.com](mailto:info@bavarian-nordic.com)  
Website: [www.bavarian-nordic.com](http://www.bavarian-nordic.com)  
Twitter: @bavariannordic

Bavarian Nordic is a fully integrated biotechnology company focused on the development of innovative therapies against infectious diseases and cancer. Using our live virus vaccine platform technology, MVA-BN®, we have created a diverse portfolio of proprietary and partnered product candidates and approved vaccines intended to unlock the power of the immune system to improve public health with a focus on high unmet medical needs. For more information visit [www.bavarian-nordic.com](http://www.bavarian-nordic.com) or follow us on Twitter @bavariannordic.

## BEI Resources

### Booth 209

Timothy Stedman  
10801 University Blvd.  
Manassas, VA 20110 USA  
Phone: +1-703-365-2700  
Email: [tstedman@atcc.org](mailto:tstedman@atcc.org)  
Website: [www.beiresources.org](http://www.beiresources.org)

BEI Resources, funded by NIAID, is the leading source for high-quality microbial cultures, reagents and assays for investigating tropical and emerging infectious diseases including viral, bacterial and parasitic pathogens and arthropod vectors. Explore our authenticated reagents, provided at no cost to registered users, for supporting pathogen and vector research and development of detection and diagnostic assays, vaccines and therapeutics at [www.beiresources.org](http://www.beiresources.org). We will take care of the details, while you focus on your research.

## Bill & Melinda Gates Foundation

P.O. Box 23350  
Seattle, WA 98102 USA  
Phone: +1-206-709-3100  
Email: [info@gatesfoundation.org](mailto:info@gatesfoundation.org)  
Website: [www.gatesfoundation.org](http://www.gatesfoundation.org)

**SUPPORTER**

Guided by the belief that every life has equal value, the Bill & Melinda Gates Foundation works to help all people lead healthy, productive lives. In developing countries, it focuses on improving people's health and giving them the chance to lift themselves out of hunger and extreme poverty. In the United States, it seeks to ensure that all people – especially those with the fewest resources – have access to the opportunities they need to succeed in school and life. Based in Seattle, the foundation is led by CEO Dr. Susan Desmond-Hellmann and co-chair William H. Gates, Sr., under the direction of Bill and Melinda Gates and Warren Buffett.

## BioFire Defense

### Booth 219

Mark Keessler  
79 West 4500 South, Suite 14  
Salt Lake City, UT 84107 USA  
Phone: +1-801-262-3592  
Email: [mark@biofiredefense.com](mailto:mark@biofiredefense.com)  
Website: [www.biofiredefense.com](http://www.biofiredefense.com)  
Twitter: @BioFireDefense

At BioFire Defense we deliver a fully integrated suite for detection of pathogens and emerging infection diseases to the biodefense and first responder community. Our Products and services speed up medical results, help people stay healthy and make communities more secure. Simply put, we make the world a safer and healthier place.

## Bristol Scientific Company

### Booth 436

John Shidiak  
14 Bristol Road  
Lagos, 101254 Nigeria  
Email: [info@bristolscientific.com](mailto:info@bristolscientific.com)  
Website: [www.bristolscientific.com](http://www.bristolscientific.com)

Bristol Scientific is a leading distributor of scientific and diagnostic laboratory supplies based in Lagos, Nigeria and covering the West Africa region. A one-stop shop for all laboratory related supplies including chemicals, consumables Bristol Scientific employs leading engineering, application and after-sales support teams to ensure maximum uptime of customer laboratories. Expertise includes laboratory design and turnkey projects.

# Exhibitor, Sponsor and Supporter Directory (at press time)

## Burroughs Wellcome Fund

P.O. Box 13901  
Research Triangle Park, NC 27709 USA  
Phone: +1-919-991-5100  
Website: [www.bwfund.org](http://www.bwfund.org)  
Twitter: @BWFPATH

**SUPPORTER**

The Burroughs Wellcome Fund is an independent private foundation dedicated to advancing the biomedical sciences by supporting research and other scientific and educational activities. Within this broad mission, BWF has two primary goals: To help scientists early in their careers develop as independent investigators and to advance fields in the basic biomedical sciences that are undervalued or in need of particular encouragement. BWF's financial support is channeled primarily through competitive peer-reviewed award programs.

## Carramore International Ltd

### Booth 401

Alasdair Grant  
Thongsbridge Mills, Miry Lane  
Holmfirth, HD9 7RW UK  
Phone: +44 1484 690 444  
Email: [quotes@carramore.com](mailto:quotes@carramore.com)  
Website: [www.carramore.com](http://www.carramore.com)

Carramore is a supplier of customized services to medical and life science research in LMICs.

Our services are:

- Product sourcing and supply, including the associated logistics
- Third party logistics, including infectious substances

Our reputation is founded on our ability to anticipate, overcome and manage the challenges that arise.

Our experience in meeting such challenges is unsurpassed  
[www.carramore.com](http://www.carramore.com)

## Celgene Global Health, Celgene Corporation

**SPONSOR**

Vikram Khetani  
Executive Director, Drug Development  
86 Morris Avenue  
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Email: [vkhetani@celgene.com](mailto:vkhetani@celgene.com)  
Website: [www.celgene.com/responsibility/global-health/](http://www.celgene.com/responsibility/global-health/)  
Twitter: @celgene

Celgene Global Health (CGH) is a dedicated R&D unit of Celgene committed to discovering, developing and delivering novel drugs for Diseases of the Developing World (DDWs). Collaborating with non-profit and academic institutions around the globe, CGH has utilized the company's library of more than 400,000 compounds to evaluate candidates for drug development for DDWs. More than 10 discovery and development programs are ongoing in several disease areas such as malaria and tuberculosis.

## Cellabs

### Booth 439

Diane Hall  
7/27 Dale Street  
Brookvale, New South Wales 2100 Australia  
Phone: +61 2 9905 0133  
Email: [diane@cellabs.com.au](mailto:diane@cellabs.com.au)  
Website: [www.cellabs.com.au](http://www.cellabs.com.au)

Established in 1985, Cellabs is a leading biotechnology company based in Australia with a long history in research, design, development and manufacture of high-quality diagnostic kits for infectious and tropical diseases. Cellabs has a special interest in neglected disease diagnostics and was one of the first companies to provide diagnostics for malaria, filariasis, cryptosporidiosis, giardiasis, and chlamydial diseases.

## Chan Zuckerberg Initiative

### Booth 119

Website: <https://chanzuckerberg.com>  
Twitter: @ChanZuckerberg

Founded by Dr. Priscilla Chan and Mark Zuckerberg in 2015, the Chan Zuckerberg Initiative (CZI) is a new kind of philanthropy that's leveraging technology to help solve some of the world's toughest challenges — from eradicating disease, to improving education, to reforming the criminal justice system. Across three core Initiative focus areas of Science, Education, and Justice & Opportunity, we're pairing engineering with grant-making, impact investing, and policy and advocacy work to help build an inclusive, just and healthy future for everyone.

## ClinEpiDB/U. Pennsylvania

### Booth 431

Brianna Lindsay  
Phone: +1-215-573-1205  
Email: [lindsabr@upenn.edu](mailto:lindsabr@upenn.edu)  
Website: <https://clinepidb.org>  
Twitter: @ClinEpiDB

The Clinical Epidemiology Database Resource, ClinEpiDB (<https://ClinEpiDB.org>), is a global open-access, epidemiological data resource charged with enabling investigators to maximize the utility and reach of their data and make optimal use of information released by others. ClinEpiDB is a project of the NIH/NIAID funded Bioinformatics Resource Center, VEuPathDB, and funded by the Bill & Melinda Gates Foundation. ClinEpiDB staff will demo the resource, discuss availability of data and answer questions.

## DF/Net Research Inc.

### Booth 408

Christina L. Woods  
Email: [christina@dfnetresearch.com](mailto:christina@dfnetresearch.com)  
Website: [www.dfnetresearch.com](http://www.dfnetresearch.com)

Incorporated in Seattle in 2004, DF/Net Research (DF/Net) provides data management and biostatistics services, together with our DFdiscover (formerly DataFax) clinical data management software (CDMS) in support of global health research. As a data-focused CRO, we know accurate data drives results. Over our 15 years'



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history, we've learned to consistently deliver quality data from challenging settings, and make the best use of limited study resources. Our people, processes, and products have made us a trusted partner for academic, non-profit, and industry clients worldwide. DF/Net is committed to global public health. Our clients have chosen DF/Net based on our mutual desire to work together to improve lives around the world.

## Drugs for Neglected Diseases *initiative* (DNDi)

### Booth 410

Ilan Moss  
40 Rector Street, 16th Floor  
New York, NY 10006 USA  
Phone: +1-646-215-7076  
Email: imoss@dndi.org  
Website: www.dndi.org  
Twitter: @DNDi

The Drugs for Neglected Diseases *initiative* (DNDi) is a collaborative, patient needs-driven, not-for-profit research and development (R&D) organization that develops safe, effective, and affordable treatments for patients with neglected diseases, notably human African trypanosomiasis (sleeping sickness), leishmaniasis, Chagas disease, filariasis, paediatric HIV, mycetoma, and hepatitis C. In 2016, in collaboration with the World Health Organization, DNDi launched the Global Antibiotic Research and Development Partnership (GARDP) to develop antibiotic treatments and ensure sustainable access.

## Elsevier Booth 403

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Philadelphia, PA 19103 USA  
Phone: +1-215-239-3294  
Email: m.milano@elsevier.com  
Website: ElsevierHealth.com  
Twitter: @elsevierconnect

Elsevier is a world-leading provider of information solutions that enhance the performance of science, health, and technology professionals, empowering them to make better decisions, and deliver better care.

## FHI Clinical Booth 200 & 202

Jonsi Cousin  
359 Blackwell Street, Suite 200  
Durham, NC 27701 USA  
Phone: +1-678-420-0179  
Email: jcousin@fhiclinical.com  
Website: <https://www.fhiclinical.com/>  
Twitter: @FHIClinical

A subsidiary of FHI 360, we benefit from our parent company's 40+ year history of clinical research and success in creating and growing contract research organizations (CROs). Our mission is to address unmet research needs and achieve maximum social impact by supporting the development of life-saving vaccines and medicines.

## GSK Booth 322

**SPONSOR**

## Global Health NOW/Johns Hopkins Bloomberg School of Public Health Booth 238"

## Global Medicine - University of Minnesota Booth 310

Sarah Sponsler or Beth Scudder  
420 Delaware Street SE., MMC 284  
Minneapolis, MN 55455 USA  
Phone: +1-612-626-3526  
Email: radic011@umn.edu  
Website: <https://www.dom.umn.edu/global-medicine>  
Twitter: @UMNGlobalHealth

University of Minnesota Department of Medicine Global Medical Education is committed to improving the health of individuals and communities globally. We are engaged in global health teaching, research, and clinical care which is values based and which improves the health of individuals and communities. We offer a wide range of courses, in-person and online, to meet your educational needs including: CTropMed Certification training/preparation, our Global Health Course, Asian Clinical Tropical Medicine Course, and Interactive Case learning.

## Healgen Scientific LLC Booth 210

3818 Fuqua Street  
Houston, TX 77047 USA  
Phone: +1-713-733-8088  
Email: healgensales@healgen.us  
Website: www.healgen.com

Located in Houston, Texas, Healgen Scientific manufactures and distributes, by wholesale, both OEM and generic Lateral Flow Immunoassay's (Rapid Tests) worldwide. Various products hold certifications of FDA, CE, COFEPRIS, CFDA and Health Canada. Product categories include Drugs of Abuse, Infectious Disease, Pregnancy and Fertility, Cardiac Markers, Tumor Markers and Urine Reagent Strips.

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## Hemex Health

### Booth 420

Patti White  
4640 SW Macadam Avenue, #250  
Portland, Oregon 97239 USA  
Phone: +1-971-801-2573  
Email: p.white@hemexhealth.com  
Website: <http://hemexhealth.com/>  
Twitter: @HemexHealth

Hemex Health connects innovation to Global Health with its affordable, life-changing medical diagnostics designed to reach at-risk populations. Our easy-to-use Gazelle™ Diagnostic Device supports an affordable, one-minute malaria test that is more accurate than existing diagnostics as well as the first affordable hemoglobin variant diagnostic (e.g. for sickle cell anemia) to provide both identification and quantification of hemoglobin types. Hemex's solutions provide benefit quickly and effectively for healthcare workers and patients in both modern clinics and low resource areas.

## Henry M. Jackson Foundation

### Booth 409

Phone: +1-240-694-2603  
Email: sfewell@hjf.org  
Website: [www.hjf.org](http://www.hjf.org)  
Twitter: @HJFMilMed

The Henry M. Jackson Foundation for the Advancement of Military Medicine, Inc. is a private, not-for-profit organization established in 1983 and authorized by Congress to support medical research and education at the Uniformed Services University of the Health Sciences and throughout the broader military medical community. We serve military, academic and government clients by administering, managing and supporting preeminent scientific programs that benefit members of the armed forces and civilians alike. For more information, visit [www.hjf.org](http://www.hjf.org).

## HUMAN Gesellschaft Fuer Biochemica Und Diagnostica MbH

### Booth 113

Thomas Roesser  
Phone: +49 6122 9988 278  
Email: t.roesser@human.de  
Website: [www.human.de](http://www.human.de)

HUMAN brings IVD products of the highest quality to healthcare professionals and patients worldwide for over 45 years. More than 400 products, ranging from reagents to automated systems, offer solutions for all relevant areas of humanitarian aid. Our extended network of partners in more than 160 countries, ensures coordinated and controlled supply chains, as well as local service and support.

## IAMAT – International Association for Medical Assistance to Travellers

**SUPPORTER**

67 Mowat Avenue, Suite 036  
Toronto, ON M6K 3E3 Canada  
Email: [info@iamat.org](mailto:info@iamat.org)  
Website: [www.iamat.org](http://www.iamat.org)  
Twitter: @IAMAT\_Travel

IAMAT's mission is to make the world a healthier place to travel. As an advocate for travelers' health since 1960, IAMAT protects the well-being of travelers with up-to-date health information and an international network of English-speaking doctors. The non-profit organization also awards travel medicine scholarships to health practitioners from countries where travel medicine is an emerging specialty. The scholarship program aims to advance travel medicine education and enhance care for travellers and local patients. Since 1990, IAMAT has sponsored the annual ASTMH Vincenzo Marcolongo Memorial Lecture in honor of IAMAT's founder, a specialist in tropical medicine who dedicated his life to the medical needs of travelers.

## ICF

### Booth 229

Isiah Donaldson  
9300 Lee Highway  
Fairfax, VA 22031 USA  
Phone: +1-571-373-5458  
Email: [Isiah.donaldson@icf.com](mailto:Isiah.donaldson@icf.com)  
Website: <https://www.icf.com/work/international-development/global-health>  
Twitter: @ICF

With more than 30 years of experience supporting improved health outcomes in developing countries, ICF helps international development agencies and their partners address today's most pressing global health issues.

## ICON plc

### Booth 228

Edward (Ted) Wright  
South Country Business Park  
Dublin, 18 Ireland  
Email: [eloise@mammoth.tv](mailto:eloise@mammoth.tv)  
Website: <https://www.iconplc.com>  
Twitter: @ICONplc

ICON plc is a global provider of drug and device development and commercialisation services to pharmaceutical, biotechnology, medical device and government and public health organisations. The company specialises in the strategic development, management and analysis of programs that support clinical development - from compound selection to Phase I-IV clinical studies. ICON has over 25 years' experience in directly supporting multiple government agencies as well as being a trusted partner to both multinational public health organizations, and global Non-Government Organizations (NGOs). With headquarters in Dublin, Ireland, ICON employed approximately 14,500 employees in 40 countries. Further information is available at [www.iconplc.com](http://www.iconplc.com).

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## **Illumina**

### **Booth 313**

William O'Bannon  
5200 Illumina Way  
San Diego, CA 92122 USA  
Phone: +1-619-572-3204  
Email: wobannon@illumina.com  
Website: www.illumina.com

A global leader in DNA sequencing and microarray-based solutions, Illumina is dedicated to improving human health by unlocking the power of the genome. Serving customers in the clinical, research, and applied markets, Illumina technology is responsible for generating more than 90% of the world's sequencing data.

## **In2Care BV**

### **Booth 413**

Marit Farenhorst  
Phone: +31 317 769018  
Email: marit@in2care.org  
Website: www.in2care.org  
Twitter: @In2CareBV

In2Care is company that designs, develops and markets science-based insect control products, with a focus on low-cost solutions to combat disease-carrying mosquitoes. The In2Care® Mosquito Trap is an EPA-approved product for controlling Aedes vectors that uses auto-dissemination and a biological adulticide. In2Care® EaveTubes are lure-and-kill ventilation tubes with static netting inserts treated with powder-formulated biocides that kill insecticide-resistant malaria mosquitoes.

## **InBios International, Inc.**

### **Booth 318 & 320**

Wendy Bagnato  
307 Westlake Avenue N., #300  
Seattle, WA 98109  
Phone: +1-206-326-5409  
Email: wendy@inbios.com  
Website: www.inbios.com  
Twitter: @inbiosusa

InBios is a diagnostics developer and manufacturer located in Seattle, Washington. Since 1997, InBios has developed many commercial products for infectious diseases including Zika, dengue, chikungunya, leishmaniasis, and Chagas. InBios is also developing tests for biothreat targets such as melioidosis and anthrax. InBios can partner with you on your assay development and contract manufacturing projects. InBios has decades of experience and a toolbox of proprietary reagents with novel bioengineering technologies to help meet your challenges.

## **Indiana University School of Medicine**

### **Booth 321**

Katrina Co  
1044 W. Walnut Street, R4 451C  
Indianapolis, IN 46202 USA  
Phone: +1-317-278-5777  
Email: katco@iu.edu  
Website: https://medicine.iu.edu/  
Twitter: @AMPATH  
@IUCGH  
@ChandyJohnLab  
@IUPedsID

The Indiana University School of Medicine is a national leader in global health. At the Center for Global Health, AMPATH, and the Ryan White Center for Pediatric Infectious Disease and Global Health, we conduct innovative programs in global health research, clinical care, population health and education in partnership with Moi University and the Kenya Medical Research Institute in Kenya and Makerere University and Global Health Uganda in Uganda. Primary global health research areas at the Indiana University School of Medicine include malaria, HIV, HPV, and infections in neonates and children with sickle cell disease.

## **Integrum Scientific**

### **Booth 129**

Joseph Sgherza  
Phone: +1-919-744-0642  
Email: Joe.Sgherza@integrumsci.com  
Website: integrumsci.com

**SPONSOR**

Integrum Scientific is an Outbreak Readiness and Response company founded to reduce the impact of infectious diseases, especially in the most vulnerable regions of the world. Along with our trusted partners, Lynden International, The Geneva Foundation, we support improved surveillance, global clinical trials, training, and enhanced field response times and capabilities. Our world renowned team has firsthand experience bringing mobile labs and clinical research to regions with limited infrastructure.

## **International Society of Travel Medicine ISTM**

### **Booth 500**

Diane Nickolson  
1200 Ashwood Parkway, Suite 500  
Dunwoody, Georgia 30338 USA  
Phone: +1-404-373-8282  
Email: mclark@ISTM.org  
Website: www.ISTM.org  
Twitter: @\_ISTM\_

The ISTM, with more than 4,300 members in close to 100 countries, is the largest organization of professionals dedicated to the advancement of the specialty of travel medicine. Members include physicians, nurses and other health professionals from academia, government and the private sector. In cooperation with health care providers, academic centers, the travel industry and the media, ISTM advocates and facilitates education, service, and research activities in the field of travel medicine.

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## **Jhpiego**

### **Booth 323**

Cynthia Morgan

Phone: +1-410-537-1808

Email: [cynthia.morgan@jhpiego.org](mailto:cynthia.morgan@jhpiego.org)

Website: [www.Jhpiego.org](http://www.Jhpiego.org)

Twitter: @Jhpiego

A Johns Hopkins University affiliate, Jhpiego is a nonprofit global leader in the creation and delivery of transformative health care solutions that save lives. Through our close partnerships with local communities, policymakers, donors and health providers, we are able to transform health care systems, leading to better health across a lifespan—from pregnancy to delivery, and beyond. By embedding our know-how and skills into everyday practice, we are creating lasting change that improves the health of some of the world's most disadvantaged for generations to come.

## **Johns Hopkins Bloomberg School of Public Health Booth 502**

Phone: +1 844-379-1319

Email: [JHSPH.Applied-Learning@jhu.edu](mailto:JHSPH.Applied-Learning@jhu.edu)

Website: <https://www.jhsph.edu/academics/online-learning-and-courses/online-programs/online-programs-for-applied-learning/index.html>

Twitter: @JohnsHopkinsSPH

For more than a century, the Johns Hopkins Bloomberg School of Public Health has been leading the educational charge in safeguarding public health across the globe. Our Online Programs for Applied Learning are fully online, part-time master's degrees and certificates that are designed for working professionals. Programs are offered in the burgeoning fields of global health, global tobacco control, humanitarian health, patient safety and healthcare quality, population health management and spatial analysis for public health.

## **Leidos**

### **Booth 528**

Brian Roberts

Phone: +1-240-529-0455

Email: [brian.a.roberts@leidos.com](mailto:brian.a.roberts@leidos.com)

Website: [www.leidos.com/health/life-sciences](http://www.leidos.com/health/life-sciences)

Leidos is a Fortune 500® information technology, engineering, and science solutions and services leader working to solve the world's toughest challenges. Leidos Life Sciences executes a diverse portfolio of medical science, biopharmaceutical, and grant/program review contracts with services that span the full spectrum of the biomedical product lifecycle, from discovery through post-marketing surveillance. We deliver customized solutions that support groundbreaking medical research, optimize business operations, and expedite the discovery of safe and effective medical treatments.

## **Luminex Corporation**

### **Booth 319**

12212 Technology Blvd.

Austin, Texas 78727 USA

Phone: +1-512-219-8020

Email: [info@luminexcorp.com](mailto:info@luminexcorp.com)

Website: [www.luminexcorp.com](http://www.luminexcorp.com)

Twitter: @Luminex

At Luminex, our mission is to empower labs to obtain reliable, timely, and actionable answers, ultimately advancing health. We serve the needs of our customers in diverse markets including clinical diagnostics, pharmaceutical drug discovery, life science research, immunology, and personalized medicine. Our goal is to transform global healthcare with innovative instruments and assays that deliver cost-effective, rapid results to clinicians and researchers. For further information, please visit [www.luminexcorp.com](http://www.luminexcorp.com).

## **Mahidol-Oxford Tropical Medicine Research Unit Booth 311**

## **Malaria Consortium**

### **Booth 419**

Ashley Giles

244-254 Cambridge Heath Road

London, E2 9DA United Kingdom

Phone: +44 (0)20 35596431

Email: [info@malariaconsortium.org](mailto:info@malariaconsortium.org)

Website: [malariaconsortium.org](http://malariaconsortium.org)

Twitter: @FightingMalaria

Malaria Consortium is one of the world's leading non-profit organisations specialising in the prevention, control and treatment of malaria and other communicable diseases among vulnerable populations. Our mission is to improve lives in Africa and Asia through sustainable, evidence-based programmes that combat targeted diseases and promote child and maternal health.

## **Maternal and Child Survival Program**

### **Booth 422**

Holly O'Hara

1776 Massachusetts Avenue NW., Suite 300

Washington, DC 20036 USA

Phone: +1-434-941-9197

Website: <https://www.mcsprogram.org/>

Twitter: @MCSPglobal

The Maternal & Child Survival Program is a multi-partner, flagship program in support of USAID's priority goal of preventing child and maternal deaths. Our work is evidence-based and results oriented. We focus on increasing coverage and utilization of high-quality reproductive, maternal, newborn and child health interventions at the household, community and health facility levels.

## **Med Pro**

### **Booth 231**

Robin Baker

1550 Katy Gap Road

Katy, Texas 77494 USA

Phone: +1-281-410-1229

Email: [robinbaker1992@yahoo.com](mailto:robinbaker1992@yahoo.com)

Website: [www.medproequipment.com](http://www.medproequipment.com)

Med Pro is a team of experienced laboratory facility experts dedicated to providing a single source of responsibility for the planning, design, support and construction of laboratory and technical equipment. Over 3,000 infectious disease lab designs.

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## Medical Care Development International (MCDI)

### Booth 402

My-Anh Ha  
8401 Colesville Road, Suite 425  
Silver Spring, Maryland 20910 USA  
Phone: +1-301-562-1920  
Email: mcdi@mcdi.org  
Website: www.mcdinternational.org  
Twitter: @MCDITweets

Medical Care Development International (MCDI) is the international division of Medical Care Development (MCD), a non-profit organization that works to strengthen health systems through high-impact public health interventions.

## MediKnox

### Booth 223

## Mérieux Foundation USA

### Booth 512

Emily Penrose  
1211 Connecticut Avenue NW.  
Washington, DC 20036 USA  
Phone: 202-222-0411  
Email: admin@fondation-merieuxusa.org

The Mérieux Foundation USA is a public charity dedicated to building capacity in developing countries to improve diagnostic capabilities for local healthcare, and for the surveillance, alert and response to infectious disease epidemics. The foundation focuses on programs to strengthen national laboratory systems for surveillance and applied research, the backbone of effective global prevention and response to epidemics.

## Naval Medical Research Center

### Booth 131

Steve Vanderwerff  
503 Robert Grant Avenue  
Silver Spring, MD 20910 USA  
Phone: +1-301-319-9378  
Email: steven.h.vanderwerff.civ@mail.mil  
Website: https://www.med.navy.mil/sites/nmrc/Pages/NMRD.aspx  
Twitter: @NavalMedicalRC

NMRC's eight laboratories are engaged in a broad spectrum of activity from basic science in the laboratory to field studies at sites in austere and remote areas of the world to operational environments. In support of the Navy, Marine Corps, and joint U.S.

## National Center for Emerging and Zoonotic Infectious Diseases

### Booth 236

Rebecca Gold  
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Atlanta GA 30333 USA  
Phone: +1-404-498-6588  
Email: rgold@cdc.gov  
Website: www.cdc.gov/ncezid  
Twitter: @CDC\_NCEZID

CDC works 24/7 to protect America from health, safety, and security threats. In CDC's National Center for Emerging and Zoonotic

Infectious Diseases (NCEZID), our expert scientists, laboratories, and emergency responders work to protect people from a multitude of health threats, including antibiotic-resistant infections, foodborne outbreaks, bioterrorism, deadly diseases like Ebola and rabies, diseases that cross borders, and illnesses spread from mosquitoes, ticks, and fleas.

## NIAID, Office of Global Research

### Booth 301

Janette Eng  
Phone: +1-301-761-7535  
Email: niaidogrppc@niaid.nih.gov  
Website: https://www.niaid.nih.gov/research/global-research  
Twitter: NIAID News, NIAID Careers, NIAID Funding

The NIH: NIAID Office of Global Research (OGR) facilitates and coordinates NIAID's international activities and collaborative research programs. OGR works closely with other NIH Institutes and Centers, HHS offices and agencies, and numerous foreign government agencies.

## New Mountain Innovations Inc.

### Booth 536

## Noul Co., Ltd.

### Booth 336

Jon Kim  
Unit 1201-1, Building A, 767 Sinsu-ro, Suji-gu  
Yongin-si, Gyeonggi-do 16827 Republic of Korea  
Phone: +82 010 4440 3424  
Email: marketing@noul.kr  
Website: www.noul.kr

Noul Co., Ltd. is a start-up diagnostic firm focused on bringing gold-standard diagnostics for blood-related diseases like Malaria to resource-limited healthcare facilities. Noul developed miLab™ (Micro-Intelligent Laboratory), a diagnostic platform that replaces manual microscopy by automating sample slide preparation, imaging review, and AI analysis, providing an accurate clinical diagnosis in 15 minutes using just one drop of finger pricked blood. Noul conducted more than 8 clinical trials in countries like Malawi and Cambodia and holds 64 patents. In 2019, Noul established a Tropical and Infectious Disease Center in Malawi to strength research on Malaria and other febrile diseases.

## Oxford University Press

### Booth 328

Xavier McCutcheon  
Phone: +1-800-451-7556  
Email: Custserv.us@oup.com  
Website: www.global.oup.com  
Twitter: @oxunipress

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## PEPperPRINT GmbH

### Booth 518

Carsten Haber or Kirsten Heiss  
Rischerstrasse 12  
Heidelberg, 69123 Germany  
Phone: +49 6221 7264489  
Email: carsten.haber@pepperprint.com  
kirsten.heiss@pepperprint.com  
Website: www.pepperprint.com  
Twitter: @PEPperCHIP

PEPperPRINT provides high-content peptide microarrays for antibody epitope mapping, as well as profiling of immune responses in blood sera linked with infection, immunization, autoimmune diseases, or cancer. The PEPperCHIP® peptide microarrays are synthesized with a patented, laser printer-based method directly on the chip. The benefits of this approach are a unique flexibility in terms of custom peptide content, a high spot density, and reduced material consumption.

## PLOS

### Booth 421

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Philip Mills  
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Cambridge, Cambridgeshire CB4 3DN UK  
Phone: +44 (0)1223 442814  
Email: pmills@plos.org  
Website: plos.org  
Twitter: @PLOS

PLOS was founded as a nonprofit Open Access publisher, innovator and advocacy organization with a mission to advance progress in science and medicine by leading a transformation in research communication. We believe that OPEN is a mindset that represents the best scientific values, bringing scientists together to share work as rapidly and widely as possible, to advance science faster and to benefit society as a whole. Since launching our first OA journal in 2003 to being the first publisher to formally offer cross-linking between our published articles and its posted preprint, PLOS has been a force for transformation in scholarly publishing. We proved the viability of Open Access, redefined publishing with PLOS ONE, the world's largest multidisciplinary peer-reviewed journal, and developed the first suite of Article-Level Metrics. 15 years later, our key innovations continue to accelerate science and medicine... and we're only getting started.

## Roche Diagnostics GmbH

SPONSOR

## Rho, Inc.

### Booth 418

Karley St. Pierre  
Phone: +1-919-408-8000  
Email: Karley\_stpierre@rhoworld.com  
Website: www.rhoworld.com  
Twitter: @rhoworld

Rho, a contract research organization (CRO) located in Durham, NC, provides a full range of services across the entire drug development process. For more than 30 years, Rho has been a trusted partner

to leading pharmaceutical, biotechnology, and medical device companies as well as academic and government organizations. Our commitment to excellence, innovative technologies, and therapeutic expertise accelerate time to market, maximize returns on investment, and lead to an exceptional customer experience.

## RTI International

### Booth 411

Katie Desrosiers  
3040 E. Cornwallis Road  
Research Triangle Park, NC 27709 USA  
Phone: +1-202-728-2080  
Website: <https://www.rti.org/practice-area/global-health>  
Twitter: @RTIfightsNTDs, @RTI\_INTL\_DEV

RTI International is an independent, nonprofit research institute dedicated to improving the human condition. We help developing countries and communities address complex problems in education, health, food security, governance, and economic development.

## Sanaria Inc.

### Booth 400

Phone: +1-301-770-3222  
Email: sanaria@sanaria.com  
Website: www.sanaria.com  
Twitter: @sanaria\_inc

Sanaria is a biotechnology company developing vaccines protective against malaria. Sanaria's vaccines have proven highly protective against *Plasmodium falciparum* infection in humans. Sanaria's vaccines are intended to be used to prevent malaria in individuals and, in combination with other malaria control measures, to halt transmission of and eliminate malaria from communities.

## Southern Research

### Booth 212

Nathan Fisher  
2000 9th Avenue South  
Birmingham, AL 35205 USA  
Phone: +1-301-997-5348  
Email: nfisher@southernresearch.org  
Website: www.southernresearch.org  
Twitter: @SoResearchNews

Southern Research provides the comprehensive pre-clinical and clinical vaccine development services you need. We're dedicated to developing relevant small and large animal models and GLP validated supporting assays for infectious diseases. We were among the first CROs to offer full-service capabilities for evaluation of pandemic influenza, Zika and dengue virus countermeasures including clinical trial support services for the vaccines. Learn more at [southernresearch.org/drug-development](http://southernresearch.org/drug-development).

## SUNY Upstate Institute for Global Health

### Booth 412

Holly Chanatry  
Phone: +1-315-464-4326  
Email: chanatrh@upstate.edu  
Website: [www.upstate.edu/globalhealth](http://www.upstate.edu/globalhealth)



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The SUNY Upstate Institute for Global Health and Translational Science (IGHTS) is a platform for cross-functional approaches to solving complex global health problems. IGHTS succeeds through collaboration. We value opportunities to demonstrate our expertise in basic, translational and clinical research, including human challenge studies and regulatory sponsorship; highly skilled research support personnel; access to domestic and international partners and sites; and our commitment to excellence in research developing medical countermeasures and actionable knowledge products.

## **Sysmex Corporation**

### **Booth 423**

Nao Takishita  
Sysmex Corporation  
Phone: +81-80-4363-8900  
Email: Takishita.Nao@sysmex.co.jp  
Website: www.sysmex.co.jp

The path to better health begins with testing that allows patients and the professionals who treat them to make decisions with greater trust and confidence. Through our innovative hematology, urinalysis and flow cytometry testing solutions, Sysmex Corporation is lighting the way forward with diagnostic technologies that transform the future of healthcare and contribute to healthier lives.

## **TDR, the Special Programme for Research & Training in Tropical Diseases**

### **Booth 312**

Makiko Kitamura  
World Health Organization  
20 Avenue Appia  
Geneva 27, GE 1211 Switzerland  
Phone: +41 22 791 2926  
Email: suderi@who.int  
Website: www.who.int/tdr  
Twitter: @TDRnews

TDR is a global programme of scientific collaboration established in 1975. Its focus is to improve the health and well-being of people burdened by infectious diseases of poverty through research and innovation. TDR is hosted at the World Health Organization (WHO), and is sponsored by the United Nations Children's Fund (UNICEF), the United Nations Development Programme (UNDP), the World Bank and WHO.

## **Takeda**

### **Booth 201**

Nigel Glover  
Thurgauerstrasse 130  
Glattpark-Opfikon (Zurich) 8152 Switzerland  
Phone: +44 7824 592266  
Email: Nigel.glover@takeda.com  
Website: www.takeda.com  
Twitter: @TakedaPharma

Takeda Pharmaceutical Company Limited is a global research and development-driven pharmaceutical company committed to bringing better health and a brighter future to patients by translating science into life changing medicines. Takeda focuses its R&D efforts on oncology, gastroenterology and central nervous

system therapeutic areas plus vaccines. Takeda conducts R&D both internally and with partners to stay at the leading edge of innovation. New innovative products, especially in oncology and gastroenterology, as well as our presence in Emerging Markets, fuel the growth of Takeda. For the past 70 years, Takeda has supplied vaccines to protect the health of people in Japan. Today, Takeda's global vaccine business is applying innovation to tackle some of the world's most challenging infectious disease, such as dengue, Zika, norovirus and polio. For more information, visit <http://www.takeda.com/news>

## **Tetracore, Inc.**

### **Booth 230**

Correy Jones  
Phone: +1-240-264-5400  
Email: sales@tetracore.com  
Website: www.tetracore.com

Tetracore, Inc. is a biotechnology company that offers highly innovative technologies for molecular and immuno-detection of biological warfare (BW) threat agents, veterinary diagnostics. We also provide contract research services to the government and other customers for the development of state of the art assays on various technology platforms. The wide range of our products includes field-portable tests and devices viz, lateral flow assays (LFA), dried down RT-PCR assays, LFA readers, real-time PCR device T-COR 8™.

## **The Geneva Foundation**

### **Booth 522**

Audra Earl  
917 Pacific Avenue, Suite 600  
Tacoma, WA 98402-4437 USA  
Phone: +1-253-383-1398  
Email: help@genevaUSA.org  
Website: <https://genevausa.org/>

The Geneva Foundation is a 501(c)3 non-profit organization that advances military medicine through innovative scientific research, exceptional program management, and a dedication to U.S. service members and veterans, their families, and the global community. Geneva is proud to have over 25 years of experience in delivering full spectrum scientific, technical, and program management expertise in the areas of federal grants, federal contracts, industry sponsored clinical trials, and educational services. [www.genevaUSA.org](http://www.genevaUSA.org).

## **The Global Vector Hub**

### **Booth 111**

Email: [globalvectorhub@istmh.ac.uk](mailto:globalvectorhub@istmh.ac.uk)  
Website: [www.ishtm.ac.uk/globalvectorhub](http://www.ishtm.ac.uk/globalvectorhub)  
Twitter: @globalvectorhub

The Global Vector Hub is a global first. It is an open access, interactive resource that not only has the capacity to transform vector research and vector control programmes, but revolutionize our preparedness and ability to respond around the world. For the first time, we aim to bring together researchers and health workers on the largest scale ever seen, cutting across several disciplines, diseases and vectors around the world.

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# Exhibitor, Sponsor and Supporter Directory (at press time)

## University of Notre Dame's Eck Institute for Global Health

### Booth 213

Kelly Thomson

Phone: +1-574-631-2171

Email: [eigh@nd.edu](mailto:eigh@nd.edu)

Website: [globalhealth.nd.edu](http://globalhealth.nd.edu)

Twitter: @ndeckinstitute

The University of Notre Dame's Eck Institute for Global Health (EIGH) serves as a university-wide enterprise that recognizes health as a fundamental human right and works to promote research, training, and service to advance health standards and reduce health disparities for all. The EIGH brings together multidisciplinary teams to understand and address health challenges that disproportionately affect the poor and to train the next generation of global health leaders.

## University of Oxford

### Booth 309

Claire-Lise Kessler

Phone: +44 7917 701024

Email: [claire.escherkessler@ndm.ox.ac.uk](mailto:claire.escherkessler@ndm.ox.ac.uk)

Website: [www.tropicalmedicine.ox.ac.uk](http://www.tropicalmedicine.ox.ac.uk)

Twitter: @TropMedOxford

The Centre for Tropical Medicine and Global Health at the University of Oxford is a collection of research groups permanently based in Oxford, in Africa (Kenya, Uganda and DRC) and in Asia (Thailand, Vietnam, Laos, Myanmar, Cambodia, Indonesia and Nepal). Aiming to tackle infectious diseases, from malaria, TB and HIV to neglected tropical diseases and emerging infections, our research ranges from clinical studies to behavioural sciences, with capacity building integral to all of our activities.

## U.S. Army Medical Recruiting

### Booth 237

## U.S. Pharmacopia

### Booth 211

## VEuPathDB/U. Pennsylvania/U. Georgia/

## U. Notre Dame

### Booth 429

Contact: Omar Harb, Director of Outreach and Education

Phone: +1-215-746-7019

Email: [oharb@sas.upenn.edu](mailto:oharb@sas.upenn.edu)

Website: <https://www.VEuPathDB.org>

Twitter: @VEuPathDB

The Vector and Eukaryotic Pathogen Database ([www.VEuPathDB.org](http://www.VEuPathDB.org)) is an NIH/NIAID-funded Bioinformatics Resource Center focusing on providing free online informatics support for eukaryotic pathogens and invertebrate vectors of human pathogens, integrating EuPathDB, FungiDB & VectorBase. VEuPathDB integrates large-scale 'omics data and provide intuitive and sophisticated tools to query the underlying data. In addition, VEuPathDB provides users with private workspaces for primary data analysis. Representatives will be available from VEuPathDB.org to answer questions and help with queries.

## Vulcan, Inc.

Contact: Paul Keating,  
Senior Director, Philanthropy  
Technology Advancement

505 5<sup>th</sup> Avenue South

Seattle, WA 98199

Phone: +1-206-342-2000

Website: [www.vulcan.com](http://www.vulcan.com)

Twitter: @vulcaninc

Vulcan Inc. is a nimble private company founded by Paul G. Allen working to solve some of the biggest global issues using innovative approaches. Our programs, projects and initiatives work to discover and develop smart, data-driven solutions and create inspiring experiences that help us tackle some of the world's toughest challenges.

## Vysnova Partners, Inc.

### Booth 530

Hoa Nguyen

Phone: +1-202-830-9688

Email: [hnguyen@vysnova.com](mailto:hnguyen@vysnova.com)

Website: [www.vysnova.com](http://www.vysnova.com)

Twitter: @VysnovaPartners

Vysnova Partners, Inc. (Vysnova) is a certified Service Disabled Veteran Owned Small Business (SDVOSB) program management firm that delivers a broad range of professional, technical and institutional support services in Public/Global Health, Research and Development (R&D) in the Life Sciences, and Government Operations and Acquisition worldwide. In executing our CONUS and OCONUS programs, Vysnova employs programmatic best practices by ensuring comprehensive compliance with the Federal Acquisition Regulations (FAR), other Agency-specific regulations, and local laws.

## Walter Reed Army Institute for Research

### Booth 308

Calvin A. Bowens

503 Robert Grant Avenue

Silver Spring, Maryland 20910 USA

Phone: +1-301-319-7534

Email: [calvin.bowens.civ@mail.mil](mailto:calvin.bowens.civ@mail.mil)

Website: <http://www.wrair.army.mil/AboutWRAIR.aspx>

Twitter: @WRAIR

The Walter Reed Army Institute of Research is the largest biomedical research laboratory in the DoD and is based in Maryland with facilities throughout the world. The Institute is committed to innovation and excellence with a military-specific focus to protect the health and readiness of the Warfighter. It develops countermeasures to infectious disease threats and conducts research that promotes psychological resilience, enhances neurological functioning, and improves operational readiness among our serve members.

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# Exhibitor, Sponsor and Supporter Directory (at press time)

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## **Wellcome Trust**

### **Booth 520**

Elena Netsi  
215 Euston Road  
London, NW1 2BF, United Kingdom  
Email: E.Netsi@wellcome.ac.uk

## **World Vision**

### **Booth 338**

Nana Coleman  
300 I Street NE.  
Washington, DC 20002 USA  
Phone: +1-202-572-6387  
Email: ncoleman@WorldVision.org  
Website: [www.worldvision.org](http://www.worldvision.org)  
Twitter: @WorldVisionUSA

World Vision is a Christian humanitarian organization dedicated to working with children, families, and their communities worldwide to reach their full potential by tackling the causes of poverty and injustice.



## Tuesday, November 19

### Institute for Disease Modeling - Introduction to Agent-Based Modeling for Infectious Diseases (Session I)

Potomac 5/6 (Ballroom Level)

Tuesday, November 19, 8 a.m. - Noon

Organized by Institute for Disease Modeling. Please note that attendance is limited to those who pre-registered for the event. ASTMH and the Institute for Disease Modeling (IDM) have partnered to offer a two-part introductory workshop on using agent-based models for modeling infectious diseases. Modeling is essential for understanding disease dynamics and creating effective control strategies. ASTMH and IDM are offering this workshop on ABMs with the intention of making modeling more accessible to public health researchers. IDM is composed of global health researchers as well as professional software engineers and has developed open-source software that is freely available to the research community.

### ASTMH Board of Directors Meeting

Riverview B

Tuesday, November 19, Noon - 6 p.m.

### Institute for Disease Modeling - Introduction to the EMOD Agent-Based Modeling Tool (Session II)

Potomac 5/6 (Ballroom Level)

Tuesday, November 19, 1 p.m. - 5 p.m.

Organized by Institute for Disease Modeling. ASTMH and the Institute for Disease Modeling (IDM) have partnered to offer a two-part introductory workshop on using agent-based models for modeling infectious diseases. Modeling is essential for understanding disease dynamics and creating effective control strategies. ASTMH and IDM are offering this workshop on ABMs with the intention of making modeling more accessible to public health researchers. IDM is composed of global health researchers as well as professional software engineers and has developed open-source software that is freely available to the research community.

## Wednesday, November 20

### Registration

Potomac Ballroom Lobby (Ballroom Level)

Wednesday, November 20, 6:30 a.m. - 7:30 p.m.

### Arbovirology (ACAV) Pre-Meeting Course: Arbovirotics - How 'omics' Technologies are Advancing Arbovirus Research and Control

Maryland A (Ballroom Level)

Wednesday, November 20, 7 a.m. - 3:15 p.m.

An improved understanding of arbovirus biology and transmission dynamics is essential to the development of disease prevention strategies. A comprehensive view of arbovirus life cycles requires integration of multiple time and length scales, which was often

technically limited until recently. In the last decade, advances in 'omics' technologies such as high-throughput sequencing and mass spectrometry are providing unprecedented opportunities to advance arbovirus research through increased resolution of observations at multiple temporal and spatial scales. This course will provide an overview of omics techniques applied to arbovirus research and illustrate how the knowledge generated can inform arbovirus prevention and control.

### COURSE CO-CHAIR

Felix Hol

Stanford University, Stanford, CA, United States

Louis Lambrechts

Institut Pasteur, Paris, France

7 a.m.

### LIGHT CONTINENTAL BREAKFAST

7:30 a.m.

### WELCOME AND INTRODUCTION BY COURSE ORGANIZERS

Felix Hol

Stanford University, Stanford, CA, United States

Louis Lambrechts

Institut Pasteur, Paris, France

7:45 a.m.

### THE NGS TOOLBOX FOR ARBOVIROLOGISTS: DO I NEED A SCREWDRIVER OR A HAMMER?

Nathan Grubaugh

Yale School of Public Health, New Haven, CT, United States

8:30 a.m.

### THE ZIBRA PROJECT

Nuno Faria

University of Oxford, Oxford, United Kingdom

9:15 a.m.

### USING MOBILITY DATA AND SEQUENCE DATA TO RECONSTRUCT TRANSMISSION CHAINS AND UNDERSTAND THE SPATIAL SPREAD OF ARBOVIRUSES

Henrik Salje

Institut Pasteur, Paris, France

10 a.m.

### COFFEE BREAK

10:15 a.m.

### INTRAHOST POPULATION DYNAMICS OF ARBOVIRUSES: HIGH THROUGHPUT APPROACHES AND NEW MOLECULAR TOOLS

Gregory D. Ebel

Colorado State University, Fort Collins, CO, United States

11 a.m.

### ZIKA VIRUS EVOLUTIONARY DYNAMICS IN HOST ADAPTATION

Matthew Aliota

University of Minnesota, St. Paul, MN, United States

11:45 a.m.

### LUNCH (ON YOUR OWN)

1 p.m.  
**UNDERSTANDING FLAVIVIRUS REPLICATION AND PATHOGENESIS THROUGH VIRUS-HOST INTERACTION MAPPING**

Priya Shah  
*University of California Davis, Davis, CA, United States*

1:45 p.m.  
**ARTHROPOD METAGENOMICS: CHARACTERIZING THE DIVERSITY OF VIRUSES IN MOSQUITOES TO ADVANCE KNOWLEDGE OF MOSQUITO MICROBIOMES AND VECTOR-BORNE INFECTIOUS DISEASES**

Shannon N. Bennett  
*California Academy of Sciences, San Francisco, CA, United States*

2:15 p.m.  
**METAGENOMICS OF THE MOSQUITO VIROME: PRACTICUM**

Panpim H. Thongsripong  
*California Academy of Sciences, San Francisco, CA, United States*

3:15 p.m.  
**COURSE ADJOURNS**

**Clinical (ACCTMTH - Clinical Group) Pre-Meeting Course: Tropical Diseases Encountered in Non-Travel Clinics**

*Maryland D (Ballroom Level)*

Wednesday, November 20, 7 a.m. - 4:15 p.m.

This full day course will cover a broad range of tropical diseases which are commonly encountered in the primary care setting. The course is designed for clinicians who are already familiar with clinical tropical and travel medicine. The course will focus on problems in tropical and travel medicine that are commonly seen by a primary care provider caring for either migrants, ill travelers, or travelers at risk for infectious exposures. The overall objective will be to help practitioners update their knowledge base in these areas, and improve their comfort level in managing these types of problems. There will be relatively little discussion of topics which are typically managed by specialty referral centers. The speakers will emphasize new or controversial aspects of diagnosis and management. The target audience includes any clinician who wants to develop a deeper understanding of tropical and travel medicine.

**COURSE CO-CHAIR**

Christina Coyle  
*Jacobi Medical Center and Albert Einstein College of Medicine, Bronx, NY, United States*

Michael Libman  
*McGill University, Montreal, QC, Canada*

7 a.m.  
**NETWORKING CONTINENTAL BREAKFAST**

7:45 a.m.  
**MANAGEMENT OF *GIARDIA* IN THE AGE OF RESISTANCE**

Michael Libman  
*McGill University, Montreal, QC, Canada*

8:30 a.m.  
**HYPEREOSINOPHILIC SYNDROMES: PARASITIC CAUSES AND BEYOND**

Peter Weller  
*Harvard Medical School and Beth Israel Deaconess Medical Center, Boston, MA, United States*

9:15 a.m.  
**WHEN TO WORRY ABOUT YOUR MALARIA PATIENT**

Terrie Taylor  
*Michigan State University, East Lansing, MI, United States*

10 a.m.  
**COFFEE BREAK**

10:15 a.m.  
**LATENT TUBERCULOSIS IN ADULTS**

Kevin Schwartzman  
*McGill University, Montreal, QC, Canada*

11 a.m.  
**FIGURING OUT FEVERS IN CHILDREN**

Valerie D'Acremont  
*Swiss Tropical and Public Health Institute, University of Basel and Centre for Primary Care and Public Health, University of Lausanne, Basel, Switzerland*

11:45 a.m.  
**LUNCH (ON YOUR OWN)**

12:45 p.m.  
**MEDICAL CONSIDERATIONS BEFORE INTERNATIONAL TRAVEL**

David Freedman  
*University of Alabama at Birmingham, Birmingham, AL, United States*

1:30 p.m.  
**YELLOW FEVER VACCINE: OUTBREAKS, SHORTAGES AND IMMUNITY**

Leo Visser  
*Leiden University Medical Centre, Leiden, Netherlands*

2:15 p.m.  
**BREAK**

2:30 p.m.  
**TROPICAL DISEASES THAT ARE THE GREAT PRETENDERS**

Christina Coyle  
*Jacobi Medical Center and Albert Einstein College of Medicine, Bronx, NY, United States*

3:15 p.m.  
**CREEPY, DREADFUL, WONDERFUL PARASITES: CASES FROM THE LAB**

Bobbi Pritt  
*Mayo Clinic, Rochester, MN, United States*

4 p.m.  
**WRAP-UP**

4:15 p.m.  
**COURSE ADJOURNS**



## Parasitology (ACMCIP) Pre-Meeting Course: Imaging Parasites from Single Molecules to Whole Organism

*Maryland C (Ballroom Level)*

Wednesday, November 20, 7 a.m. - 4:15 p.m.

Parasitic infections in humans are caused by a diverse range of eukaryotic pathogens, including both single-celled and multi-cellular organisms. Microscopy has provided an enormous wealth of information about the pathogenesis of these infections, the life cycle of the causative parasites and the molecular mechanisms that underpin their growth and replication. This course will discuss cutting-edge techniques to visualize parasites – from the single molecule to the whole organism. Recent advances to the classic techniques of light and electron microscopy, together with computer-based algorithms to understand these data, have pushed the frontiers of imaging parasites. This course will discuss these techniques and how they can be applied to divergent parasitic organisms to gain new levels of understanding about their basic cell biology and molecular pathogenesis. The course will cover advances in 2D and 3D imaging techniques, advances in single-molecule structural studies and use of artificial intelligence, as well as high-throughput imaging to elucidate parasite biology.

### COURSE ORGANIZER

Jake Baum

*Imperial College London, London, United Kingdom*

Jeffrey Dvorin

*Boston Children's Hospital and Harvard Medical School, Boston, MA, United States*

Eva Frickel

*The Francis Crick Institute, London, United Kingdom*

7 a.m.

### CONTINENTAL BREAKFAST

7:45 a.m.

### WELCOME AND OPENING REMARKS

Jeffrey Dvorin

*Boston Children's Hospital and Harvard Medical School, Boston, MA, United States*

8 a.m.

### SOME MUSINGS ON THE HISTORY OF MICROSCOPY

Jake Baum

*Imperial College London, London, United Kingdom*

8:30 a.m.

### EPIFLUORESCENCE: INNER MEMBRANE COMPLEX FORMATION IN *TOXOPLASMA*

Dinkorma Ouologuem

*Malaria Research and Training Center, University of Science, Techniques and Technologies of Bamako, Bamako, Mali*

9:15 a.m.

### EPIFLUORESCENCE: DNA REPLICATION IN *PLASMODIUM*

Catherine Merrick

*University of Cambridge, Cambridge, United Kingdom*

10 a.m.

### COFFEE BREAK

10:15 a.m.

### FIB-SEM/LIVE MICROSCOPY: INTRAFLAGELLAR TRANSPORT IN *TRYPANOSOMA*

Eloise Bertiaux

*Université de Genève, Geneva, Switzerland*

11 a.m.

### FIB-SEM: DAUGHTER PARASITE FORMATION IN *PLASMODIUM*

Jeffrey Dvorin

*Boston Children's Hospital and Harvard Medical School, Boston, MA, United States*

11:45 a.m.

### LUNCH (ON YOUR OWN)

1 p.m.

### ARTIFICIAL INTELLIGENCE: APPLICATION OF AI TO *T. GONDII*

Eva Frickel

*The Francis Crick Institute, London, United Kingdom*

1:45 p.m.

### ARTIFICIAL INTELLIGENCE: APPLICATION OF AI TO *P. FALCIPARUM*

George W. Ashdown

*Imperial College London, London, United Kingdom*

2:30 p.m.

### BREAK

2:45 p.m.

### CRYO-EM: STRUCTURE OF THE RH5-CYRPA-RIPR INVASION COMPLEX IN *PLASMODIUM FALCIPARUM*

Wilson Wong

*Walter and Eliza Hall Institute of Medical Research, Melbourne, Australia*

3:30 p.m.

### CELLPROFILER: HIGH THROUGHPUT IMAGING IN EUKARYOTIC CELLS

Beth Cimini

*The Broad Institute of Massachusetts Institute of Technology and Harvard, Cambridge, MA, United States*

4:15 p.m.

### COURSE ADJOURNS

## Global Health (ACGH) Pre-Meeting Course: Field Applications for Stopping Infectious Disease Threats at International Points of Entry

*Riverview 2*

Wednesday, November 20, 7:30 a.m. - 4:15 p.m.

The Ebola outbreak that originated in Guinea in December 2013 and spread to Liberia, Sierra Leone, Senegal, Mali and Nigeria with sporadic cases in other countries outside of Africa was due in part to a failure to adequately implement aspects of the International Health Regulations 2005 (IHR), which urges countries to promptly detect and respond to infectious disease threats at international points of entry (PoE). Public health emergency preparedness at international ground crossings, airports and seaports requires a well-coordinated effort among public and private service providers and operators, public health officials, law enforcement and border control units, and local healthcare facilities. The pace and

connectedness of international air travel and transportation today represents an unprecedented global public health risk. Workforce development, multisectoral planning and exercise activities for communicable disease preparedness at international airports, based on the IHR and guidelines from the International Civil Aviation Organization (ICAO), have been a priority for the U.S. Centers for Disease Control and Prevention (CDC) as a component of the Global Health Security Agenda. This course will provide attendees an opportunity to understand the challenges faced by national authorities and international response organizations by providing a theoretical framework for implementation of the IHR at international PoE, as well as by providing practical experience through facilitated discussions and exercises. Participants can expect to be able to begin developing global health-related competencies that are essential to respond to public health events that impact travel across international borders.

#### COURSE CO-CHAIR

Clive Brown

*Centers for Disease Control and Prevention, Atlanta, GA, United States*

Miguel Reina Ortiz

*University of South Florida, Tampa, FL, United States*

7:30 a.m.

#### **LIGHT CONTINENTAL BREAKFAST**

8 a.m.

#### **INTRODUCTION OF TOPICS AND LOGISTICS**

8:15 a.m.

#### **KEYNOTE ADDRESS: THE WEST AFRICA EBOLA OUTBREAK (2014): NEED FOR CROSS-BORDER HEALTH PROTECTION AND POINT-OF-ENTRY RISK MITIGATION READINESS**

Martin Cetron

*Centers for Disease Control and Prevention, Atlanta, GA, United States*

#### **KEYNOTE ADDRESS: IN THE TRENCHES: HOW CLINICIANS AND HEALTH CENTERS WORK WITH PUBLIC HEALTH TO PREPARE FOR BIOTHRREATS**

Edward Ryan

*Massachusetts General Hospital, Harvard Medical School and Harvard T.H. Chan School of Public Health, Boston, MA, United States*

9:30 a.m.

#### **DIPLOMATIC EFFORTS AND RISK MITIGATION: THE ROLE OF THE GLOBAL HEALTH SECURITY AGENDA (GHSA), INTERNATIONAL HEALTH REGULATIONS AND OTHER INTERNATIONAL HEALTH AGREEMENTS**

Vikas Kapil

*Centers for Disease Control and Prevention, Atlanta, GA, United States*

10 a.m.

#### **INTERNATIONAL HEALTH REGULATIONS: AN OVERVIEW AND ITS RELEVANCE TO POINT-OF-ENTRY RISK MITIGATION**

Ninglan Wang

*Health Emergencies Program (WHE), World Health Organization, Lyon, France*

10:30 a.m.

#### **COFFEE BREAK**

10:45 a.m.

#### **PANEL DISCUSSION: RISK MITIGATION FROM THE PERSPECTIVES OF THE AVIATION INDUSTRY, ITS REGULATORY BODIES AND PUBLIC HEALTH ORGANIZATIONS**

Kris M. Belland

*American Airlines; Premise Health, Keller, TX, United States*

Matthew H. Crosman

*Washington Dulles International Airport, Metropolitan Washington Airports Authority, Washington, DC, United States*

Johanna (Ansa) Jordaan

*International Civil Aviation Organization, Montreal, QC, Canada*

Alex Naar

*Federal Aviation Administration, Washington, DC, United States*

George Samiotis

*Office of Border and Travel Health, Public Health Agency of Canada/Government of Canada, Canada*

11:15 a.m.

#### **QUESTIONS AND ANSWERS**

11:30 a.m.

#### **POINT-OF-ENTRY RISK MITIGATION TRAINING: APPLICATION OF ADULT LEARNING THEORIES FROM THE WORLD HEALTH ORGANIZATION AND CENTERS FOR DISEASE CONTROL AND PREVENTION**

Morenike Alex-Okoh

*Federal Ministry of Health, Nigeria*

Yolanda V. Bayugo

*Health Emergencies Program (WHE), World Health Organization, Lyon, France*

Clive Brown

*Centers for Disease Control and Prevention, Atlanta, GA, United States*

Kimberly Singler

*Centers for Disease Control and Prevention, Atlanta, GA, United States*

Ninglan Wang

*Health Emergencies Program (WHE), World Health Organization, Lyon, France*

12:45 p.m.

#### **LUNCH (ON YOUR OWN)**

1:45 p.m.

#### **POINT-OF-ENTRY RISK MITIGATION TRAINING WORKSHOP AND TABLETOP EXERCISE - PART I (SCENARIO-BASED EXERCISE)**

Course Faculty

2:45 p.m.

#### **BREAK**

3 p.m.

#### **POINT-OF-ENTRY RISK MITIGATION TRAINING WORKSHOP AND TABLETOP EXERCISE - PART II (SCENARIO-BASED EXERCISE)**

Course Faculty

4 p.m.

#### **CONCLUDING REMARKS**

4:15 p.m.

#### **COURSE ADJOURNS**

## Burroughs Wellcome Fund/ASTMH Fellowship Committee Meeting

Chesapeake 4 (Ballroom Level)

Wednesday, November 20, 7 a.m. - 9 a.m.

## Press Room

Chesapeake 2 (Ballroom Level)

Wednesday, November 20, 10 a.m. - Noon

## Young Investigator Award Sessions

### CHAIR

Edward Mitre

Uniformed Services University of the Health Sciences, Bethesda, MD, United States

The Young Investigator Award is presented to outstanding young researchers during the Annual Meeting. This award encourages developing young scientists to pursue careers in various aspects of tropical disease research. Support these young scientists by attending their presentations during this session.

ASTMH gratefully accepts support for these awards in memory of William A. Petri, Sr. and Annie Liberati.

### ASTMH APPRECIATES SUPPORT OF THESE AWARDS FROM:

William A. Petri, Jr.

TECHLAB Inc.

PLOS Neglected Tropical Diseases

## Young Investigator Award Session A

Chesapeake D/E (Ballroom Level)

Wednesday, November 20, 10 a.m. - 3 p.m.

### JUDGE

Fernando Bruno

Touro College of Osteopathic Medicine and Harvard T. H. Chan School of Public Health and, Middletown, NY, United States

Vitaliano A. Cama

Centers for Disease Control and Prevention, Atlanta, GA, United States

Matthew B. Laurens

Institute for Global Health, University of Maryland School of Medicine, Baltimore, MD, United States

Elise O'Connell

National Institutes of Health, Bethesda, MD, United States

## 470

### RIFAMPIN-OFLOXACIN-MINOCYCLINE (ROM) FOR THE TREATMENT OF PAUCIBACILLARY LEPROSY: A SYSTEMATIC REVIEW

Michael A. Klowak<sup>1</sup>, Shareese Clarke<sup>1</sup>, Shveta Bhasker<sup>1</sup>, Olamide Egbewumi<sup>1</sup>, Celine Lecce<sup>1</sup>, Alexandra Stoianov<sup>1</sup>, Samed Asmer<sup>1</sup>, Sharmistha Mishra<sup>2</sup>, Andrea K. Boggild<sup>1</sup>

<sup>1</sup>Tropical Disease Unit, Toronto General Hospital and University of Toronto, Toronto, ON, Canada, <sup>2</sup>Li Ka Shing Knowledge Institute, St. Michael's Hospital, Toronto, ON, Canada

## 478

### ASSESSING THE ROLE OF POSTMORTEM MICROBIOLOGY IN DETERMINING THE CAUSE OF FATAL FEBRILE ILLNESS, KILIMANJARO, TANZANIA

Cristina Costales<sup>1</sup>, Matthew P. Rubach<sup>1</sup>, Alex Mremi<sup>2</sup>, Patrick Amsi<sup>2</sup>, Manuela Carugati<sup>1</sup>, Ann M. Nelson<sup>3</sup>, Venance P. Maro<sup>3</sup>, John A. Crump<sup>1</sup>

<sup>1</sup>Division of Infectious Diseases and International Health, Duke University, Durham, NC, United States, <sup>2</sup>Department of Pathology, Kilimanjaro Christian Medical Centre, Moshi, United Republic of Tanzania, <sup>3</sup>Department of Pathology and Laboratory Medicine, Duke University, Durham, NC, United States, <sup>4</sup>Kilimanjaro Christian Medical University College, Moshi, United Republic of Tanzania

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### A SYSTEMATIC REVIEW OF SOLID ORGAN TRANSPLANTATION IN ACUTE PRESENTATIONS OF TROPICAL INFECTIOUS DISEASES

Shveta Bhasker<sup>1</sup>, Emma Hagopian<sup>1</sup>, Celine Lecce<sup>1</sup>, David Harris<sup>1</sup>, Shareese Clarke<sup>1</sup>, Priyanka Challa<sup>1</sup>, Michael A. Klowak<sup>1</sup>, Eric Shao<sup>1</sup>, Kimberley Marks - Beaubrun<sup>1</sup>, Katherine Faith Tan<sup>1</sup>, Mofe Adeosun<sup>1</sup>, Osaru Omoruna<sup>1</sup>, Christian Lecce<sup>1</sup>, Avinash N. Mukkala<sup>1</sup>, Rachel Lau<sup>2</sup>, Andrea K. Boggild<sup>1</sup>

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### TESTING FOR CHAGAS CARDIAC DISEASE AT A LARGE SAFETY-NET HOSPITAL IN NEW ENGLAND

Alyse Wheelock<sup>1</sup>, Sukhmeet Sandhu<sup>1</sup>, Davidson Hamer<sup>2</sup>, Rachel Marcus<sup>3</sup>, Deepa Gopal<sup>4</sup>, Natasha Hochberg<sup>5</sup>

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### ENDEMIC TYPHOID INCIDENCE, KILIMANJARO REGION, TANZANIA, 2007-2018

Elena R. Cutting<sup>1</sup>, Deng B. Madut<sup>2</sup>, Michael J. Maze<sup>3</sup>, Nathaniel H. Kalengo<sup>4</sup>, Manuela Carugati<sup>2</sup>, Blandina T. Mmbaga<sup>4</sup>, Ronald M. Mbwasia<sup>4</sup>, Kajiru G. Kilonzo<sup>4</sup>, Annette Marandu<sup>5</sup>, Calvin Moshia<sup>5</sup>, Furaha S. Lyamuya<sup>4</sup>, Grace D. Kinabo<sup>4</sup>, Anne B. Morrissey<sup>2</sup>, Venance P. Maro<sup>2</sup>, Matthew P. Rubach<sup>2</sup>, John A. Crump<sup>3</sup>

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### PROVIDER ATTITUDES TOWARDS AN ELECTRONIC CLINICAL DECISION SUPPORT TOOL FOR PEDIATRIC DIARRHEA

Joel I. Howard<sup>1</sup>, Ben Brintz<sup>1</sup>, Adrew Pavia<sup>1</sup>, Eric Nelson<sup>2</sup>, Adam Aluisio<sup>3</sup>, Adam C. Levine<sup>3</sup>, Karen Kotloff<sup>4</sup>, Daniel Leung<sup>1</sup>

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### ANTI-PYRETIC USE AMONG FEBRILE PATIENTS ATTENDING EMERGENCY DEPARTMENTS IN RIO DE JANEIRO, BRAZIL: A CROSS-SECTIONAL, OBSERVATIONAL STUDY

José Moreira, Roxana Mamani, Patricia Brasil, Andre Siqueira  
Instituto Nacional de Infectologia Evandro Chagas, Rio de Janeiro, Brazil

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**THE MISSING 90 IN THE HIV CASCADE OF CARE: LATE PRESENTATION IN CARE IN THE DOMINICAN REPUBLIC**

**Leandro Tapia<sup>1</sup>**, Rosa M. Rodriguez-Lauzurique<sup>1</sup>, Merelin Muñoz<sup>2</sup>, Robert Paulino-Ramirez<sup>1</sup>

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**VACCINATION WITH AN ATTENUATED HOOKWORM VACCINE: PRELIMINARY RESULTS FROM A PHASE 1B CLINICAL TRIAL**

**Paul R. Chapman<sup>1</sup>**, Paul Giacomini<sup>2</sup>, Peter O'Rourke<sup>1</sup>, Stacey Llewellyn<sup>1</sup>, Christian Engwerda<sup>1</sup>, Alex Loukas<sup>2</sup>, James S. McCarthy<sup>1</sup>

<sup>1</sup>Queensland Institute of Medical Research - Berghofer, Herston, Australia, <sup>2</sup>Australian Institute of Tropical Health and Medicine, Cairns, Australia

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**THE EFFECT OF INTENSIVE CARE TREATMENT BUNDLE ON SERUM CYTOKINES AND VIRAL LOAD DURING EBOLA VIRUS (ZAIRE) INFECTION**

**Paul W. Blair<sup>1</sup>**, Karen A. Martins<sup>2</sup>, Mark G. Kortepeter<sup>3</sup>, Michael W. Keebaugh<sup>2</sup>, Isaac L. Downs<sup>2</sup>, Anthony P. Cardile<sup>2</sup>

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**EFFECTS OF SULFADOXINE-PYRIMETHAMINE INTERMITTENT PREVENTIVE THERAPY IN PREGNANCY ON MATERNAL CARRIAGE OF ENTEROPATHOGENS AND GUT MICROBIOMES AND INFANT BIRTH OUTCOMES**

**Andreea Waltmann<sup>1</sup>**, Jobiba Chinkhumba<sup>2</sup>, Megumi Itoh<sup>3</sup>, Fatsani Gadama<sup>2</sup>, Enala Mzembe<sup>2</sup>, Michael Kayange<sup>4</sup>, Sydney M. Puerto-Meredith<sup>5</sup>, Elizabeth T. Rogawski McQuade<sup>6</sup>, Darwin J. Operario<sup>3</sup>, Jeffrey Roach<sup>7</sup>, Don P. Mathanga<sup>2</sup>, Ian Carroll<sup>8</sup>, Julie R. Gutman<sup>3</sup>, Steven R. Meshnick<sup>9</sup>

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**SEROPREVALENCE AND DETERMINANTS OF TRANSFUSION TRANSMISSIBLE INFECTIONS AMONG VOLUNTARY BLOOD DONORS IN HOMABAY KISUMU AND SIAYA COUNTIES IN WESTERN KENYA**

**George Calleb Onyango<sup>1</sup>**, Lilian Ogonda<sup>2</sup>

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**DIAGNOSIS OF NEUROLOGICAL TOXOPLASMOSIS IN URINE IN PERSONS LIVING WITH HIV**

**Hannah Steinberg<sup>1</sup>**, Andrea Diestra<sup>2</sup>, Cusi Ferradas<sup>2</sup>, Maritza Calderón<sup>2</sup>, Catherine Apaza<sup>2</sup>, Marilly Donayre Urquiza<sup>3</sup>, Melanie Ayachi López<sup>4</sup>, Viviana Pinedo Cancino<sup>3</sup>, Lastenia Ruiz<sup>3</sup>, Cesar Ramal<sup>4</sup>, Paul Russo<sup>5</sup>, Natalie Bowman<sup>6</sup>, Lance Liotta<sup>2</sup>, Alessandra Luchini<sup>5</sup>, Robert H. Gilman<sup>7</sup>

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1841

**ACCURACY OF DIAGNOSTICS IN TEGUMENTARY LEISHMANIASIS: A SYSTEMATIC REVIEW**

**Sonia Igboanugo<sup>1</sup>**, Melissa S. Phuong<sup>1</sup>, Rachel Lau<sup>2</sup>, Robert Chris<sup>1</sup>, Eric Shao<sup>1</sup>, Ruwandi Kariyawasam<sup>3</sup>, Hira Raheel<sup>1</sup>, Sharmistha Mishra<sup>4</sup>, Andrea K. Boggild<sup>1</sup>

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1842

**ETHNOPHARMACEUTICALS FOR THE TREATMENT OF OLD WORLD CUTANEOUS LEISHMANIASIS: A SYSTEMATIC REVIEW OF TOPICAL APPLICATION OF TURMERIC**

**Priyanka Challa<sup>1</sup>**, Michael A. Klowak<sup>1</sup>, Ruwandi Kariyawasam<sup>2</sup>, Emma Hagopian<sup>1</sup>, Eric Shao<sup>1</sup>, Jason Kwan<sup>1</sup>, Hira Raheel<sup>1</sup>, Tianna Chong - Kit<sup>1</sup>, Swana Kopalakrishnan<sup>1</sup>, Anjola Ogunsina<sup>1</sup>, Andrea K. Boggild<sup>1</sup>

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1844

**AN UPDATE ON THE ROLE OF WOUND CARE IN THE MANAGEMENT OF OLD WORLD CUTANEOUS LEISHMANIASIS**

**David Harris<sup>1</sup>**, Ruwandi Kariyawasam<sup>2</sup>, Avinash N. Mukkala<sup>1</sup>, Christian Lecce<sup>1</sup>, Evan Belsky<sup>1</sup>, Andrea K. Boggild<sup>1</sup>

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1901

**AFRICAN-LINEAGE ZIKA VIRUS CAUSES PLACENTAL PATHOLOGY IN PREGNANT RHESUS MACAQUES**

**Chelsea M. Crooks<sup>1</sup>**, Anna S. Jaeger<sup>2</sup>, Andrea M. Weiler<sup>3</sup>, Sierra L. Rybarczyk<sup>3</sup>, Mason I. Bliss<sup>3</sup>, Elizabeth A. Brown<sup>1</sup>, Heather A. Simmons<sup>3</sup>, Jennifer M. Hayes<sup>3</sup>, Andres Mejia<sup>3</sup>, Keisuke Yamamoto<sup>4</sup>, Phoenix Shepherd<sup>4</sup>, Megan E. Murphy<sup>5</sup>, Thaddeus G. Golos<sup>5</sup>, Amber Possell<sup>3</sup>, Kara Weaver<sup>3</sup>, Terry K. Morgan<sup>6</sup>, Dawn M. Dudley<sup>4</sup>, Nancy Schultz-Darken<sup>3</sup>, Eric Peterson<sup>3</sup>, David H. O'Connor<sup>4</sup>, Matthew T. Aliota<sup>2</sup>, Thomas C. Friedrich<sup>1</sup>

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## Young Investigator Award Session B

National Harbor 12 (National Harbor Level)

Wednesday, November 20, 10 a.m. - 3 p.m.

### JUDGE

Sasisekhar Bennuru

National Institutes of Health, Bethesda, MD, United States

Ann M. Moormann

University of Massachusetts, Worcester, MA, United States

Jason Stumhofer

University of Arkansas for Medical Sciences, Little Rock, AR, United States

Tuan Tran

Indiana University School of Medicine, Indianapolis, IN, United States

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### MICROFILARIAE TRIGGER MURINE AND HUMAN EOSINOPHIL EXTRACELLULAR TRAPS IN A DECTIN-1-DEPENDENT MANNER

**Alexandra Ehrens**<sup>1</sup>, Benjamin Lenz<sup>1</sup>, Anna Lena Neumann<sup>1</sup>, Samuela Giarrizzo<sup>1</sup>, Stefan J. Frohberger<sup>1</sup>, Wiebke Stammering<sup>1</sup>, Benedikt C. Bürfent<sup>1</sup>, Frederic Fercoq<sup>2</sup>, Coralie Martin<sup>2</sup>, Daniel Kulke<sup>3</sup>, Achim Hoerauf<sup>1</sup>, Marc P. Hübner<sup>1</sup>

<sup>1</sup>University Hospital Bonn, Bonn, Germany, <sup>2</sup>Muséum National d'Histoire Naturelle, Paris, France, <sup>3</sup>Bayer Animal Health GmbH, Monheim, Germany

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### MYELOID AND LYMPHOID IMMUNE EXHAUSTION PROFILE DURING MURINE VISCERAL LEISHMANIASIS

**Diogo Valadares**<sup>1</sup>, Richard E. Davis<sup>2</sup>, Ellen Kiser<sup>1</sup>, Mary Wilson<sup>1</sup>

<sup>1</sup>University of Iowa, Iowa City, IA, United States, <sup>2</sup>University of Utah, Salt Lake City, UT, United States

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### CONGENITAL DNEGUE: CD133+ AND CD34+ HEMATOPOETIC STEM CELLS IN UMBILICAL CORD BLOOD ARE INFECTABLE BY DENGUE VIRUS CONFERRING VERTICAL TRANSMISSION

**Amrita Vats**

National Cheng Kung University, Tainan, Taiwan

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### MALIAN CHILDREN WITH BOTH CEREBRAL MALARIA AND SEVERE MALARIAL ANEMIA HAVE A SEROLOGIC AND CYTOKINE PROFILE DISTINCT FROM THOSE WITH OTHER SEVERE MALARIA SUBTYPES

**Abby R. Goron**<sup>1</sup>, Andrea A. Berry<sup>1</sup>, Jason A. Bailey<sup>1</sup>, Drissa Coulibaly<sup>2</sup>, Matthew Adams<sup>1</sup>, Abdoulaye K. Kone<sup>2</sup>, Bourema Kouriba<sup>2</sup>, J. Alexandra Rowe<sup>3</sup>, Ogobara K. Doumbo<sup>2</sup>, Marcelo B. Sztejn<sup>1</sup>, Philip Felgner<sup>4</sup>, Christopher V. Plowe<sup>1</sup>, Mahamadou A. Thera<sup>2</sup>, Kirsten E. Lyke<sup>1</sup>, Mark A. Travassos<sup>1</sup>

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### MALIAN ADULTS MAINTAIN SEROLOGIC RESPONSES TO NON-CD36-BINDING PFEMP1S AMID SEASONAL PATTERNS OF FLUCTUATION

**Noah Thomas Ventimiglia**<sup>1</sup>, Emily M. Stucke<sup>1</sup>, Andrea A. Berry<sup>1</sup>, Drissa Coulibaly<sup>2</sup>, Kirsten E. Lyke<sup>1</sup>, Matthew B. Laurens<sup>1</sup>, Jason A. Bailey<sup>1</sup>, Matthew Adams<sup>1</sup>, Amadou Niangaly<sup>2</sup>, Abdoulaye K. Kone<sup>2</sup>, Shannon Takala-Harrison<sup>1</sup>, Bourema Kouriba<sup>2</sup>, Ogobara K. Doumbo<sup>2</sup>, Mahamadou A. Thera<sup>2</sup>, Phillip L. Felgner<sup>3</sup>, Christopher V. Plowe<sup>4</sup>, Mark A. Travassos<sup>1</sup>

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### DRIVERS OF INFLAMMASOME ACTIVATION IN IMMUNOPATHOLOGIC CUTANEOUS LEISHMANIASIS

**Christina K. Go**, Fernanda O. Novais, Phillip Scott

University of Pennsylvania, Philadelphia, PA, United States

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### ANTIBODIES TO PEPTIDES REPRESENTING *PLASMODIUM FALCIPARUM* CIRCUMSPOROZOITE PROTEIN REFLECT ACQUISITION OF NATURALLY ACQUIRED IMMUNITY IN MALIAN ADULTS AND CHILDREN

**DeAnna J. Friedman-Klabanoff**<sup>1</sup>, Mark A. Travassos<sup>1</sup>, Sonia Agrawal<sup>1</sup>, Amed Ouattara<sup>1</sup>, Andrew Pike<sup>2</sup>, Jason A. Bailey<sup>3</sup>, Matthew Adams<sup>1</sup>, Drissa Coulibaly<sup>4</sup>, Kirsten E. Lyke<sup>1</sup>, Matthew B. Laurens<sup>1</sup>, Shannon Takala-Harrison<sup>1</sup>, Bourema Kouriba<sup>4</sup>, Abdoulaye K. Kone<sup>4</sup>, Ogobara K. Doumbo<sup>4</sup>, Jigar J. Patel<sup>5</sup>, Mahamadou A. Thera<sup>4</sup>, Philip L. Felgner<sup>6</sup>, John C. Tan<sup>5</sup>, Christopher V. Plowe<sup>7</sup>, Andrea A. Berry<sup>1</sup>

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### REPEATED MALARIA EXPOSURES SKEW MONOCYTES/MACROPHAGES TOWARDS A REGULATORY PHENOTYPE

**Rajan Guha**<sup>1</sup>, Anna Mathioudaki<sup>2</sup>, Gunjan Arora<sup>1</sup>, Shangping Li<sup>1</sup>, Shafiuddin Siddiqui<sup>3</sup>, Jeff Skinner<sup>1</sup>, Didier Doumtebe<sup>4</sup>, Safiatou Doumbo<sup>4</sup>, Kassoum Kayentao<sup>4</sup>, Aissata Ongoiba<sup>4</sup>, Boubacar Traore<sup>4</sup>, Judith Zaugg<sup>2</sup>, Peter Crompton<sup>1</sup>

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### PROTECTIVE EFFICACY OF JAPANESE ENCEPHALITIS VIRUS MONOCLONAL ANTIBODIES DERIVED FROM VACCINATION IN A MINIATURE SWINE MODEL

**Christian L. Cook**<sup>1</sup>, Victoria B. Ayers<sup>1</sup>, Amy C. Lyons<sup>1</sup>, So Lee Park<sup>1</sup>, Ashley N. Doerfler<sup>1</sup>, Susan M. Hettenbach<sup>2</sup>, Ashley M. Zelenka<sup>1</sup>, Konner R. Cool<sup>1</sup>, Gregory J. Peterson<sup>3</sup>, Stephen Higgs<sup>2</sup>, Dana L. Vanlandingham<sup>1</sup>, Yan-Jang S. Huang<sup>1</sup>

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### A RECOMBINANT SUBUNIT LASSA VIRUS VACCINE ELICITS A STRONG ANTIBODY AND CELL-MEDIATED RESPONSE

**Albert To**

University of Hawai'i at Mānoa, Honolulu, HI, United States

**979****HUMAN ANTIBODIES TO AN EPITOPE IN PVDBP BLOCK ADHESION OF *P. FALCIPARUM* PLACENTAL PARASITES VIA CRYPTIC EPITOPES IN VAR2CSA****Catherine J. Mitran**<sup>1</sup>, Angie Mena<sup>1</sup>, Hazel Lugo<sup>1</sup>, Ali Salanti<sup>2</sup>, Francis B. Ntumngia<sup>3</sup>, John H. Adams<sup>3</sup>, Eliana M. Arango<sup>4</sup>, Amanda Maestre<sup>4</sup>, Michael F. Good<sup>5</sup>, Stephanie K. Yanow<sup>1</sup><sup>1</sup>University of Alberta, Edmonton, AB, Canada, <sup>2</sup>University of Copenhagen, Copenhagen, Denmark, <sup>3</sup>University of South Florida, Tampa, FL, United States, <sup>4</sup>University of Antioquia, Medellín, Colombia, <sup>5</sup>Institute for Glycomics, Griffith University, Gold Coast, Australia**982****ANTIBODY PROFILES INDUCED BY IMMUNIZATION WITH RADIATION ATTENUATED *PLASMODIUM FALCIPARUM* SPOROZOITES (PFSPZ VACCINE) IN MALARIA NAIVE VOLUNTEERS****Freia-Raphaella Lorenz**<sup>1</sup>, Rolf Fendel<sup>1</sup>, Phillip L. Felgner<sup>2</sup>, B. Kim Lee Sim<sup>3</sup>, Stephen L. Hoffman<sup>3</sup>, Peter G. Kremsner<sup>1</sup>, Benjamin Mordmüller<sup>1</sup><sup>1</sup>Institute of Tropical Medicine, University of Tübingen, Tübingen, Germany, <sup>2</sup>Vaccine R&D Center, University of California Irvine, Irvine, CA, United States, <sup>3</sup>Sanaria Inc., Rockville, MD, United States**1348****HUMAN MAB BLOCKS MALARIA TRANSMISSION IN *PLASMODIUM*-INFECTED MOSQUITOES****Camila H. Coelho**<sup>1</sup>, Marty Butkhardt<sup>1</sup>, Issaka Sagara<sup>2</sup>, Jacob D. Galson<sup>3</sup>, Thiago A. Silva<sup>4</sup>, Justin Taylor<sup>5</sup>, Miranda Byrne-Steele<sup>6</sup>, Nichole Salinas<sup>1</sup>, David Narum<sup>1</sup>, Niraj Tolia<sup>1</sup>, Jonathan Renn<sup>1</sup>, Patrick E. Duffy<sup>1</sup><sup>1</sup>Laboratory of Malaria Immunology and Vaccinology/National Institute of Allergy and Infectious Diseases/National Institutes of Health, Rockville, MD, United States, <sup>2</sup>University of Bamako, Bamako, Mali, <sup>3</sup>Kymab, UK, United Kingdom, <sup>4</sup>Laboratory of Malaria and Vector Research/National Institute of Allergy and Infectious Diseases/National Institutes of Health, Rockville, MD, United States, <sup>5</sup>Fred Hutchinson Cancer Research Center, Seattle, WA, United States, <sup>6</sup>Repertoire, Huntsville, AL, United States**1500****PRETREATMENT WITH PUTATIVE NOVEL ADJUVANTS MODULATE T FOLLICULAR HELPER AND B CELL RESPONSES TO ZIKV-E ANTIGEN****Brien K. Haun**, Albert To, Teri Wong, Lishomwa Ndhlovu, Axel Lehrner  
University of Hawaii, Honolulu, HI, United States**1645****CHARACTERIZATION OF DIFFERENCES IN HOST IMMUNE GENE EXPRESSION PROFILE IN MALARIA-PROTECTED AND MALARIA-SUSCEPTIBLE CHILDREN****Gillian Mbambo**, Ankit Dwivedi, Kirsten E. Lyke, Joana C. Silva  
University of Maryland School of Medicine, Baltimore, MD, United States**1717****COMPARATIVE ANALYSIS OF THE PARASITE NEUTRALIZING ACTIVITY OF ANTIBODIES RAISED AGAINST REGION II AND REGION III-V OF THE *PLASMODIUM FALCIPARUM* ERYTHROCYTE BINDING ANTIGEN-175****Kritika Chaddha**<sup>1</sup>, Gaurav Anand<sup>1</sup>, Syed Yusuf Mian<sup>1</sup>, Enna Dogra Gupta<sup>2</sup>, Deepak Gaur<sup>1</sup><sup>1</sup>Jawaharlal Nehru University, New Delhi, India, <sup>2</sup>Indian Council of Medical Research, New Delhi, India**1779****ENHANCING VACCINE IMMUNOGENICITY AND STABILITY USING A GEL-DEPOT ADJUVANT****Vanessa Silva-Moraes**<sup>1</sup>, Lisa M. Shollenberger<sup>2</sup>, Jessica C. Ramadhin<sup>1</sup>, Ted M. Ross<sup>1</sup>, Justine C. Shiau<sup>1</sup>, Ashutosh K. Pathak<sup>1</sup>, Demba Sarr<sup>1</sup>, Courtney Murdock<sup>1</sup>, Donald E. Champagne<sup>1</sup>, Evelina Angov<sup>3</sup>, Donald A. Harn<sup>1</sup><sup>1</sup>University of Georgia, Athens, GA, United States, <sup>2</sup>Old Dominion University, Norfolk, VA, United States, <sup>3</sup>Walter Reed Army Institute for Research, Silver Spring, MD, United States**1936****WHOLE-GENOME ANALYSIS OF *PLASMODIUM FALCIPARUM* TO UNDERSTAND CLINICAL IMMUNITY TO MALARIA****Zalak Shah**<sup>1</sup>, Alexis Boleda<sup>2</sup>, Kara Moser<sup>1</sup>, Matthew Adams<sup>1</sup>, Andrea Buchwald<sup>3</sup>, Karl Seydel<sup>4</sup>, Don Mathanga<sup>5</sup>, David Serre<sup>1</sup>, Miriam K. Laufer<sup>1</sup>, Michael Cummings<sup>2</sup>, Joana C. Silva<sup>1</sup>, Shannon Takala-Harrison<sup>1</sup><sup>1</sup>University of Maryland School of Medicine, Baltimore, MD, United States, <sup>2</sup>University of Maryland College Park, College Park, MD, United States, <sup>3</sup>University of Colorado School of Public Health, Aurora, CO, United States, <sup>4</sup>Michigan State University, East Lansing, MI, United States, <sup>5</sup>University of Malawi College of Medicine, Blantyre, Malawi**Young Investigator Award Session C***Chesapeake H/I (Ballroom Level)*

Wednesday, November 20, 10 a.m. - 3 p.m.

**JUDGE**Peter Crompton  
National Institutes of Health, Rockville, MD, United StatesTracey Lamb  
University of Utah, Salt Lake City, UT, United StatesPrakash Srinivasan  
Johns Hopkins School of Public Health, Baltimore, MD, United StatesV. Ann Stewart  
Uniformed Services University of the Health Sciences, Bethesda, MD, United States**141****IMPROVED GENE EDITING EFFICIENCY OF RECEPTOR-MEDIATED OVARY TRANSDUCTION OF CARGO -REMOT CONTROL- IN *Aedes aegypti*****Duverney D. Chaverra-Rodriguez**<sup>1</sup>, Chan C. Heu<sup>1</sup>, Donghum Kim<sup>1</sup>, Vanessa Macias<sup>1</sup>, Jason L. Rasgon<sup>2</sup><sup>1</sup>Pennsylvania State University, State College, PA, United States, <sup>2</sup>Pennsylvania State University, University Park, PA, United States**337****TEMPORAL CHANGE OF GENETIC DIVERSITY AND POPULATION STRUCTURE OF *PLASMODIUM VIVAX* IN THREE CONTRASTING SETTLEMENTS IN THE PERUVIAN AMAZON****Paulo C. Manrique Valverde**<sup>1</sup>, Roberson Ramirez Saavedra<sup>1</sup>, Mitchel Guzman Guzman<sup>1</sup>, Alejandro Llanos Cuentas<sup>2</sup>, Joseph Vinez<sup>3</sup>, Ananias A. Escalante<sup>4</sup>, Dionicia Gamboa Vilela<sup>5</sup><sup>1</sup>Laboratorio ICEMR-Amazonia, Laboratorios de Investigación y Desarrollo, Facultad de Ciencias y Filosofía, Universidad Peruana Cayetano Heredia, Lima, Peru, <sup>2</sup>Instituto de Medicina Tropical Alexander von Humboldt, Universidad Peruana Cayetano Heredia, Lima, Peru, <sup>3</sup>Yale School of Medicine, Section of Infectious Diseases, Department of Internal Medicine, New Haven, CT, United States, <sup>4</sup>Institute for Genomics and Evolutionary Medicine (IGEM), Temple University, Philadelphia, PA, United States, <sup>5</sup>Departamento de Ciencias Celulares y Moleculares, Facultad de Ciencias y Filosofía, Universidad Peruana Cayetano Heredia, Lima, Peru



### CELTOS DOMAINS EXPOSED: FROM LIPID BINDING, CONFORMATIONAL FLEXIBILITY TO REGULATORY REGIONS

Hirdesh Kumar<sup>1</sup>, John R. Jimah<sup>2</sup>, Francis B. Ntumngia<sup>3</sup>, Samantha Barnes<sup>3</sup>, John H. Adams<sup>3</sup>, Paul H. Schlesinger<sup>4</sup>, Niraj H. Tolia<sup>1</sup>

<sup>1</sup>Host-Pathogen Interactions and Structural Vaccinology Section, Laboratory of Malaria Immunology and Vaccinology, National Institute of Allergy and Infectious Diseases, National Institutes of Health, Bethesda, MD, United States, <sup>2</sup>Structural Cell Biology Section, Laboratory of Cell and Molecular Biology, National Institute of Diabetes and Digestive and Kidney Diseases, National Institutes of Health, Bethesda, MD, United States, <sup>3</sup>Center for Global Health and Infectious Diseases Research, University of South Florida, Tampa, FL, United States, <sup>4</sup>Department of Cell Biology and Physiology, Washington University School of Medicine, St. Louis, MO, United States

### EVOLUTION OF THE *THEILERIA PARVA* REPEAT (*TPR*) GENE FAMILY IS CONSISTENT WITH ADAPTATION TO MAMMALIAN HOST SPECIES

Nicholas C. Palmateer<sup>1</sup>, James B. Munro<sup>1</sup>, Roger Pelle<sup>2</sup>, Lucilla Steinaa<sup>2</sup>, Vish Nene<sup>2</sup>, Richard P. Bishop<sup>3</sup>, Donald P. Knowles<sup>3</sup>, Ine De Goeys<sup>4</sup>, Dirk Geysen<sup>4</sup>, Ivan Morrison<sup>5</sup>, Joana C. Silva<sup>1</sup>

<sup>1</sup>University of Maryland School of Medicine, Baltimore, MD, United States, <sup>2</sup>International Livestock Research Institute, Nairobi, Kenya, <sup>3</sup>Department of Veterinary Microbiology and Pathology, Pullman, WA, United States, <sup>4</sup>Institute of Tropical Medicine, Antwerp, Belgium, <sup>5</sup>The Roslin Institute, University of Edinburgh, Edinburgh, United Kingdom

### CTL4 GENE-KNOCKOUT TO BLOCK *PLASMODIUM* INFECTION IN THE VECTOR MOSQUITO

Maria L. Simoes, Yuemei Dong, Godfree Mlambo, George Dimopoulos  
Johns Hopkins University, Baltimore, MD, United States

### A MOSQUITO TRIGLYCERIDE LIPASE IS CRITICAL FOR *ANOPHELES GAMBIAE* REPRODUCTION AND FOR *PLASMODIUM FALCIPARUM* DEVELOPMENT IN THE MOSQUITO

Maurice A. Itoe<sup>1</sup>, Kristine Werling<sup>1</sup>, Amy Deik<sup>2</sup>, Kathleen A. Westervelt<sup>1</sup>, Clary Clish<sup>2</sup>, Flaminia Catteruccia<sup>1</sup>

<sup>1</sup>Harvard T.H. Chan School of Public Health, Boston, MA, United States, <sup>2</sup>Broad Institute of Harvard and M.I.T., Cambridge, MA, United States

### CHARACTERIZATION OF GENETIC VARIATION BETWEEN ZIKV ASIAN AND AFRICAN STRAINS

Camila R. Fontes-Garfias<sup>1</sup>, Bruno Nunes<sup>2</sup>, Chao Shan<sup>1</sup>, Antonio Muruato<sup>1</sup>, Scott C. Weaver<sup>1</sup>, Pedro F. Vasconcelos<sup>2</sup>, Daniele B. Medeiros<sup>2</sup>, Pei-Yong Shi<sup>1</sup>

<sup>1</sup>University of Texas Medical Branch, Galveston, TX, United States, <sup>2</sup>Evandro Chagas Institute, Ministry of Health, Brazil

### INTEGRATING VERTICAL AND LATERAL FLOW ASSAYS FOR IMPROVED DIAGNOSIS OF ASYMPTOMATIC MALARIA INFECTIONS

Carson P. Moore, Nathaniel Z. Piety, David W. Wright  
Vanderbilt University, Nashville, TN, United States

### SELECTIVE WHOLE GENOME AMPLIFICATION OF DNA IN LOW PARASITEMIA SAMPLES OF *PLASMODIUM VIVAX* FROM PERU

Mac Pholo Aguirre Huamani<sup>1</sup>, Paulo César Manrique Valverde<sup>1</sup>, Christopher Delgado Ratto<sup>2</sup>, Jean-Pierre Van geertruyden<sup>2</sup>, Dionicia Gamboa Vilela<sup>1</sup>, Dionicia Gamboa Vilela<sup>3</sup>, Dionicia Gamboa Vilela<sup>4</sup>

<sup>1</sup>Laboratorio de Malaria, Laboratorios de Investigación y Desarrollo, Facultad de Ciencias y Filosofía, Universidad Peruana Cayetano Heredia, Lima, Peru, <sup>2</sup>Global Health Institute, University of Antwerp, Antwerp, Belgium, <sup>3</sup>Departamento de Ciencias Celulares y Moleculares, Facultad de Ciencias y Filosofía, Universidad Peruana Cayetano Heredia, Lima, Peru, <sup>4</sup>Instituto de Medicina Tropical "Alexander von Humboldt", Universidad Peruana Cayetano Heredia, Lima, Peru

### A COMPARISON OF QUANTITATIVE PCR, KATO-KATZ TECHNIQUE, AND SODIUM NITRATE FLOTATION FOR THE DIAGNOSIS OF HOOKWORM INFECTIONS IN VIETNAM

Naomi Clarke<sup>1</sup>, Dinh Ng-Nguyen<sup>2</sup>, Rebecca Traub<sup>3</sup>, Archie Clements<sup>4</sup>, Roy Anderson<sup>5</sup>, Susana Vaz Nery<sup>1</sup>

<sup>1</sup>University of New South Wales, Kensington NSW, Australia, <sup>2</sup>Tay Nguyen University, Dak Lak, Vietnam, <sup>3</sup>University of Melbourne, Parkville VIC, Australia, <sup>4</sup>Curtin University, Perth WA, Australia, <sup>5</sup>Imperial College London, London, United Kingdom

### SEQUENCE HETEROGENEITY IN *LEISHMANIA* RNA VIRUS-1 (LRV-1) DETECTED IN STRAINS OF *LEISHMANIA VIANNIA* SPP.

Ruwandi Kariyawasam<sup>1</sup>, Rachel Lau<sup>2</sup>, Eric Shao<sup>3</sup>, Braulio M. Valencia<sup>4</sup>, Alejandro Llanos-Cuentas<sup>5</sup>, Andrea Boggild<sup>3</sup>

<sup>1</sup>Institute of Medical Sciences, Department of Medicine, University of Toronto, Toronto, ON, Canada, <sup>2</sup>Public Health Ontario Laboratories, Toronto, ON, Canada, <sup>3</sup>Tropical Disease Unit, Toronto General Hospital and University of Toronto, Toronto, ON, Canada, <sup>4</sup>Kirby Institute, University of New South Wales, Sydney, Australia, <sup>5</sup>Instituto de Medicina Tropical "Alexander von Humboldt", Lima, Peru

### DISTRIBUTION OF PFCRT MUTATIONS ASSOCIATED WITH PIPERAQUINE RESISTANCE IN CAMBODIA

Biraj Shrestha<sup>1</sup>, Zalak Shah<sup>1</sup>, Andrew P. Morgan<sup>2</sup>, Matthew Adams<sup>1</sup>, Piyaporn Saingam<sup>3</sup>, Chaiyaporn Chaisatit<sup>3</sup>, Paphavee L. Ketwalha<sup>3</sup>, Christian Parobek<sup>2</sup>, Huy Rekol<sup>4</sup>, Soklyda Chann<sup>3</sup>, Michele D. Spring<sup>3</sup>, Mariusz Wojnarski<sup>3</sup>, Mark M. Fukuda<sup>3</sup>, Brian A. Vesely<sup>3</sup>, David L. Saunders<sup>1</sup>, Philip L. Smith<sup>3</sup>, Chanthap Lon<sup>3</sup>, Jessica T. Lin<sup>2</sup>, Norman C. Waters<sup>1</sup>, Shannon T. Harrison<sup>1</sup>

<sup>1</sup>University of Maryland Baltimore, Baltimore, MD, United States, <sup>2</sup>University of North Carolina Chapel Hill, Chapel Hill, NC, United States, <sup>3</sup>Armed Forces Research Institute of Medical Sciences, Bangkok, Thailand, <sup>4</sup>National Centre for Parasitology, Entomology and Malaria Control, Phnom Penh, Cambodia

### GLOBAL GENETIC DIVERSITY AND POPULATION STRUCTURE OF *PLASMODIUM FALCIPARUM* TRANSMISSION VACCINE TARGETS PFS47, PFS48/45 AND PFS230

Ankit Dwivedi<sup>1</sup>, Alvaro Molina-Cruz<sup>2</sup>, Giovanna Carpi<sup>3</sup>, Kara Moser<sup>1</sup>, Carolina Barillas-Mury<sup>2</sup>, Joana C. Silva<sup>1</sup>

<sup>1</sup>Institute for Genome Sciences, University of Maryland School of Medicine, Baltimore, MD, United States, <sup>2</sup>National Institute of Allergy and Infectious Diseases, National Institutes of Health, Bethesda, MD, United States, <sup>3</sup>Department of Biological Sciences, Purdue University, West Lafayette, IN, United States

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**ACCURATE ASSEMBLY OF MULTIGENE FAMILIES AND OTHER REGIONS OF HIGH DIVERSITY IN *P. FALCIPARUM* FROM WHOLE GENOME SEQUENCING WITH NOVEL ASSEMBLER PATHWEAVER**

Nicholas J. Hathaway<sup>1</sup>, Jeffrey A. Bailey<sup>2</sup>

<sup>1</sup>University of Massachusetts Medical School, Worcester, MA, United States, <sup>2</sup>Brown University, Providence, RI, United States

1839

**A SYSTEMATIC REVIEW OF VIRULENCE FACTORS IN THE *LEISHMANIA* GENUS**

Osaru Omoruna<sup>1</sup>, Avinash N. Mukkala<sup>1</sup>, Ruwandi Kariyawasam<sup>2</sup>, Eric Shao<sup>1</sup>, Priyanka Challa<sup>1</sup>, Michael A. Klodawski<sup>1</sup>, Shareese Clarke<sup>1</sup>, Jamie Sookhoo<sup>1</sup>, Dylan Kain<sup>1</sup>, Tianna Chong-Kit<sup>1</sup>, Olamide Egbewumi<sup>1</sup>, Andrea K. Boggild<sup>1</sup>

<sup>1</sup>Tropical Disease Unit, Toronto General Hospital and University of Toronto, Toronto, ON, Canada, <sup>2</sup>Institute of Medical Sciences, Department of Medicine, University of Toronto, Toronto, ON, Canada

1996

**A DEEP SEQUENCING APPROACH TO DEFINE BENZIMIDAZOLE RESISTANCE GENE FREQUENCIES IN HUMAN HOOKWORM EGG SAMPLES FROM KPANDAI DISTRICT, GHANA**

Santosh George<sup>1</sup>, Peter Suwondo<sup>1</sup>, Joseph Otchere<sup>2</sup>, Lisa M. Harrison<sup>1</sup>, Kaya Bilguvar<sup>3</sup>, James Knight<sup>3</sup>, Adalgisa Caccone<sup>4</sup>, Debbie Humphries<sup>5</sup>, Michael D. Wilson<sup>2</sup>, Michael Cappello<sup>1</sup>

<sup>1</sup>Yale Partnerships for Global Health, Yale School of Medicine, New Haven, CT, United States, <sup>2</sup>Noguchi Memorial Institute for Medical Research, University of Ghana, Legon, Ghana, <sup>3</sup>Yale Center for Genome Analysis, Yale School of Medicine, New Haven, CT, United States, <sup>4</sup>Department of Ecology and Evolutionary Biology, Yale University, New Haven, CT, United States, <sup>5</sup>Department of Epidemiology of Microbial Diseases, Yale School of Public Health, Yale University, New Haven, CT, United States

**Young Investigator Award Session D**

Chesapeake 5/6 (Ballroom Level)

Wednesday, November 20, 10 a.m. - 3 p.m.

**JUDGE**

Stephen Davies

Uniformed Services University of the Health Sciences, Bethesda, MD, United States

David Diemert

George Washington University, Washington, DC, United States

Naomi W. Lucchi

Centers for Disease Control and Prevention, Atlanta, GA, United States

Nathan W. Schmidt

Indiana University School of Medicine, Indianapolis, IN, United States

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**NANOMOLAR POTENCY INHIBITORS OF THE MALARIA PURINE UPTAKE TRANSPORTER KILL *PLASMODIUM FALCIPARUM* PARASITES**

Yvett Darcie Sosa<sup>1</sup>, Xiaoming Xu<sup>2</sup>, Shi-Xian Deng<sup>2</sup>, Donald Landry<sup>2</sup>, Myles Akabas<sup>1</sup>

<sup>1</sup>Albert Einstein College of Medicine, Bronx, NY, United States, <sup>2</sup>Columbia University, New York City, NY, United States

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**EXPERIMENTAL MALARIA IN PREGNANCY IS ASSOCIATED WITH NEUROPSYCHIATRIC DISORDERS IN OFFSPRING IN A DISEASE SEVERITY-DEPENDENT MANNER**

Andrea Weckman<sup>1</sup>, Vanessa Tran<sup>2</sup>, Chloe R. McDonald<sup>2</sup>, Kevin C. Kain<sup>3</sup>

<sup>1</sup>University of Toronto, Toronto, ON, Canada, <sup>2</sup>Sandra Rotman Centre for Global Health, University Health Network-Toronto General Hospital, Toronto, ON, Canada, <sup>3</sup>Sandra Rotman Centre for Global Health, University Health Network-Toronto General Hospital, Tropical Disease Unit, Department of Medicine, University of Toronto, Toronto, ON, Canada

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**TARGETING THE HEDGEHOG PATHWAY IS A NOVEL THERAPEUTIC STRATEGY TO TREAT SCHISTOSOMIASIS FIBROSIS AND PORTAL HYPERTENSION**

Thiago de Almeida Pereira<sup>1</sup>, Paula Vidigal<sup>2</sup>, Izabela Voieta<sup>2</sup>, Vivian Resende<sup>2</sup>, Rafal Witek<sup>3</sup>, Anil Jegga<sup>4</sup>, Joseph Arron<sup>5</sup>, Satish Madala<sup>4</sup>, José Roberto Lambertucci<sup>2</sup>, Anna Mae Diehl<sup>6</sup>, Thomas Wynn<sup>7</sup>, Philip Beachy<sup>1</sup>

<sup>1</sup>Stanford University, Stanford, CA, United States, <sup>2</sup>Federal University of Minas Gerais, Belo Horizonte, Brazil, <sup>3</sup>Thermo Fisher Scientific, Frederick, MD, United States, <sup>4</sup>Cincinnati Children's Hospital Medical Center, Cincinnati, OH, United States, <sup>5</sup>Genentech Inc, South San Francisco, CA, United States, <sup>6</sup>Duke University, Durham, NC, United States, <sup>7</sup>National Institute of Allergy and Infectious Diseases/ National Institutes of Health, Bethesda, MD, United States

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**THE ROLE OF IRRIGATED AGRICULTURE IN SCHISTOSOMIASIS RISK IN A DAMMED LANDSCAPE IN WEST AFRICA**

Andrea Lund<sup>1</sup>, David Rehkopf<sup>1</sup>, Susanne Sokolow<sup>2</sup>, Nicolas Jouanard<sup>3</sup>, M. Moustapha Sam<sup>3</sup>, Assane Fall<sup>3</sup>, Gilles Riveau<sup>3</sup>, Jason Andrews<sup>1</sup>, Giulio De Leo<sup>2</sup>, David Lopez-Carr<sup>4</sup>

<sup>1</sup>Stanford University, Stanford, CA, United States, <sup>2</sup>Hopkins Marine Station, Stanford University, Pacific Grove, CA, United States, <sup>3</sup>Centre de Recherche Biomedicale - Espoir Pour La Sante, Saint-Louis, Senegal, <sup>4</sup>University of California Santa Barbara, Santa Barbara, CA, United States

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**MUTATIONS IN *PLASMODIUM FALCIPARUM* PRO-DRUG ACTIVATION AND RESISTANCE ESTERASE MEDIATES RESISTANCE TO A SUB-CLASS OF SESQUITERPENE DIMER ANTIMALARIAL NATURAL PRODUCTS**

Joshua H. Butler<sup>1</sup>, Emilio F. Merino<sup>1</sup>, Rodrigo P. Baptista<sup>1</sup>, Judith I. Okoro<sup>2</sup>, Ryan M. Scales<sup>3</sup>, Philip J. Rosenthal<sup>4</sup>, Roland A. Cooper<sup>5</sup>, Jessica C. Kissinger<sup>1</sup>, Jian-Min Yue<sup>6</sup>, Bin Zhou<sup>6</sup>, Maria B. Cassera<sup>1</sup>

<sup>1</sup>University of Georgia, Athens, GA, United States, <sup>2</sup>University of California Berkeley, Berkeley, CA, United States, <sup>3</sup>University of North Carolina, Charlotte, Charlotte, NC, United States, <sup>4</sup>University of California San Francisco, San Francisco, CA, United States, <sup>5</sup>Dominican University of California, San Rafael, CA, United States, <sup>6</sup>State Key Laboratory of Drug Research, Shanghai Institute of Materia Medica, Chinese Academy of Sciences, Shanghai, and University of Chinese Academy of Sciences, Beijing, China

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**DISTINGUISHING AMONG *PLASMODIUM VIVAX* RELAPSES AND NEW INFECTIONS IN A LOW ENDEMIC AREA: A POPULATION GENETICS APPROACH**

Christopher Delgado Ratto<sup>1</sup>, Verónica E. Soto-Calle<sup>2</sup>, Annette Erhart<sup>3</sup>, Peter Van den Eede<sup>4</sup>, Eliana Torres<sup>2</sup>, Luis Sánchez-Martínez<sup>2</sup>, Juan Contreras-Mancilla<sup>5</sup>, Anna Rosanas-Urgell<sup>4</sup>, Hugo Rodríguez Ferrucci<sup>6</sup>, Alejandro Llanos-Cuentas<sup>2</sup>, Umberto D'Alessandro<sup>3</sup>, Jean-Pierre Van geertruyden<sup>1</sup>, Dionicia Gamboa Vilela<sup>2</sup>

<sup>1</sup>University of Antwerp, Antwerp, Belgium, <sup>2</sup>Universidad Peruana Cayetano Heredia, Lima, Peru, <sup>3</sup>Medical Research Council Unit at the London School of Hygiene & Tropical Medicine, Fajara, Gambia, <sup>4</sup>Institute of Tropical Medicine, Antwerp, Belgium, <sup>5</sup>Universidad Peruana Cayetano Heredia, Lima, Peru, <sup>6</sup>Ministry of Health of Peru, Iquitos, Peru

### CLINICAL CHARACTERISTICS AND RISK FACTORS FOR *CAMPYLOBACTER SPP* GASTROENTERITIS IN THE FIRST YEAR OF LIFE IN A NICARAGUAN BIRTH COHORT

Denise T. St. Jean<sup>1</sup>, Roberto Herrera<sup>2</sup>, Lester Gutierrez<sup>2</sup>, Nadja A. Vielot<sup>3</sup>, Fredman Gonzalez<sup>2</sup>, Yaoska Reyes<sup>2</sup>, Margarita Paniagua<sup>2</sup>, Natalie Bowman<sup>4</sup>, Filemon Bucardo<sup>2</sup>, Samuel Vilchez<sup>2</sup>, Sylvia Becker-Dreps<sup>3</sup>

<sup>1</sup>Department of Epidemiology, Gillings School of Global Public Health, University of North Carolina at Chapel Hill, Chapel Hill, NC, United States, <sup>2</sup>Universidad Nacional Autónoma de Nicaragua, León, León, Nicaragua, <sup>3</sup>Department of Family Medicine, School of Medicine, University of North Carolina at Chapel Hill, Chapel Hill, NC, United States, <sup>4</sup>Department of Infectious Diseases, School of Medicine, University of North Carolina at Chapel Hill, Chapel Hill, NC, United States

### IMPROVED BIOMARKERS AND IMAGE ANALYSIS FOR CHARACTERIZING PROGRESSIVE CARDIAC FIBROSIS IN A MOUSE MODEL OF CHRONIC CHAGASIC CARDIOMYOPATHY

Kristyn Hoffman, Peter Hotez, Maria Bottazzi, Kathryn Jones  
Baylor College of Medicine, Houston, TX, United States

### USE OF HEALTH FACILITY-BASED SEROLOGICAL SURVEILLANCE TO INVESTIGATE *P. FALCIPARUM* AND *P. VIVAX* TRANSMISSION DYNAMICS IN A PRE-ELIMINATION SETTING, INDONESIA

Henry Surendra<sup>1</sup>, Supargiyono Supargiyono<sup>2</sup>, Riris A. Ahmad<sup>3</sup>, Rizqiani A. Kusumasari<sup>2</sup>, Theodola B. Rahayujati<sup>4</sup>, Siska Damayanti<sup>4</sup>, Jackie Cook<sup>5</sup>, Chris Drakeley<sup>1</sup>

<sup>1</sup>Department of Immunology and Infection, London School of Hygiene & Tropical Medicine, London, United Kingdom, <sup>2</sup>Department of Parasitology, Faculty of Medicine-Public Health and Nursing, Universitas Gadjah Mada, Yogyakarta, Indonesia, <sup>3</sup>Department of Biostatistics, Epidemiology and Population Health, Faculty of Medicine-Public Health and Nursing, Universitas Gadjah Mada, Yogyakarta, Indonesia, <sup>4</sup>District Health Office of Kulon Progo, Wates, Indonesia, <sup>5</sup>MRC Tropical Epidemiology Group, Department of Infectious Disease Epidemiology, London School of Hygiene & Tropical Medicine, London, United Kingdom

### EXPANSION OF CHLOROQUINE SENSITIVE HAPLOTYPES IN THE *PLASMODIUM FALCIPARUM* RESERVOIR IN BONGO DISTRICT, GHANA

Charles A. Narh<sup>1</sup>, Kathryn E. Tiedje<sup>1</sup>, Michael F. Duffy<sup>1</sup>, Anita Ghansah<sup>2</sup>, Abraham R. Oduro<sup>3</sup>, Kwadwo A. Koram<sup>2</sup>, Karen P. Day<sup>1</sup>

<sup>1</sup>School of Bioscience/Bio21 Institute, The University of Melbourne, Melbourne, Australia, <sup>2</sup>Noguchi Memorial Institute for Medical Research, University of Ghana, Accra, Ghana, <sup>3</sup>Navrongo Health Research Centre, Navrongo, Ghana

### MAPPING COMPETITIVE GROWTH OF MALARIA PARASITES TO ASSESS THE FITNESS IMPACT OF ARTEMISININ RESISTANCE

Katelyn M. Vendrely<sup>1</sup>, Lisa A. Checkley<sup>1</sup>, Marina McDew-White<sup>2</sup>, Ian H. Cheeseman<sup>3</sup>, Ashley M. Vaughan<sup>3</sup>, François H. Nosten<sup>4</sup>, Timothy J. Anderson<sup>2</sup>, Michael T. Ferdig<sup>1</sup>

<sup>1</sup>Eck Institute for Global Health, Department of Biological Sciences, University of Notre Dame, Notre Dame, IN, United States, <sup>2</sup>Texas Biomedical Research Institute, San Antonio, TX, United States, <sup>3</sup>Seattle Children's Research Institute, Seattle, WA, United States, <sup>4</sup>Shoklo Malaria Research Unit, Mahidol-Oxford Tropical Medicine Research Unit, Mahidol University, Mae Sot, Thailand

### PUTTING THE THREE DELAYS MODEL TO WORK: A PRAGMATIC 12-MONTH COMMUNITY-BASED COHORT STUDY TO ASSESS ACCESS TO EMERGENCY OBSTETRICAL AND NEONATAL CARE IN A REMOTE ISLAND COMMUNITY IN WESTERN KENYA

Nicholas DesLauriers<sup>1</sup>, Evance Ogola<sup>2</sup>, Gor Ouma<sup>3</sup>, Brian Mattah<sup>3</sup>, Louisa Ndunyu<sup>2</sup>, Lily Muldoon<sup>4</sup>, Richard Magerenge<sup>3</sup>, Peres Okinyi<sup>3</sup>, Marcus Salmen<sup>3</sup>, Kelsi Hines<sup>3</sup>, Robinson Okeyo<sup>3</sup>, Ben Pedersen<sup>5</sup>, John Ssenkusu<sup>6</sup>, Shailey Prasad<sup>1</sup>, Molly McCoy<sup>1</sup>, Walter Opiyo<sup>3</sup>, Hanna Nedrud<sup>1</sup>, Kelsey Finn<sup>1</sup>, Charles Salmen<sup>1</sup>

<sup>1</sup>University of Minnesota, Minneapolis, MN, United States, <sup>2</sup>Maseno University, Maseno, Kenya, <sup>3</sup>Ekiolo Kiona Centre, Kitawi Beach, Kenya, <sup>4</sup>University of California San Francisco, San Francisco, CA, United States, <sup>5</sup>Oregon Health and Sciences University, Portland, OR, United States, <sup>6</sup>Makerere University, Kampala, Uganda

### ASSESSING THE RESILIENCE OF COMMUNITY DRUG DISTRIBUTORS (CDDS) CONDUCTING MASS DRUG ADMINISTRATION (MDA) FOR LYMPHATIC FILARIASIS AND ONCHOCERCIASIS IN CÔTE D'IVOIRE

Daniel Dilliot<sup>1</sup>, David Addiss<sup>2</sup>, Margaret Gyapong<sup>3</sup>, Deborah McFarland<sup>4</sup>, Mary Amuyunzu-Nyamongo<sup>5</sup>, Esther Comoe<sup>6</sup>, Adam Mama Djima<sup>6</sup>, Amos Wung Buh<sup>1</sup>, Alison Krentel<sup>1</sup>

<sup>1</sup>Bruyère Research Institute, Ottawa, ON, Canada, <sup>2</sup>The Task Force for Global Health, Decatur, GA, United States, <sup>3</sup>University of Health and Allied Sciences, Ho, Ghana, <sup>4</sup>Rollins School of Public Health, Emory University, Atlanta, GA, United States, <sup>5</sup>African Institute for Health and Development, Nairobi, Kenya, <sup>6</sup>Ministère de la Santé et de l'Hygiène Publique, Abidjan, Côte D'Ivoire

### THE MAGUDE PROJECT: DRASTIC REDUCTION OF MALARIA BURDEN AND SUSTAINED GAINS AFTER A MALARIA ELIMINATION PROJECT IN SOUTHERN MOZAMBIQUE

Beatriz Galatas<sup>1</sup>, Helena Martí-Soler<sup>1</sup>, Caterina Guinovart<sup>1</sup>, Lidia Nhamussua<sup>2</sup>, Wilson Simone<sup>2</sup>, Humberto Munguambe<sup>2</sup>, Arlindo Chidimatembue<sup>2</sup>, Júlia Montaña<sup>1</sup>, Fabião Luis<sup>2</sup>, Krijn Paaijmans<sup>1</sup>, Quique Bassat<sup>1</sup>, Alfredo Mayor<sup>1</sup>, Clara Menéndez<sup>1</sup>, Baltazar Candrinho<sup>3</sup>, Regina Rabinovich<sup>1</sup>, Pedro Alonso<sup>1</sup>, Francisco Saúte<sup>2</sup>, Pedro Aide<sup>2</sup>

<sup>1</sup>ISGlobal, Barcelona, Spain, <sup>2</sup>CISM, Manhica, Mozambique, <sup>3</sup>National Malaria Control Programme, Ministry of Health, Maputo, Mozambique

### IDENTIFICATION OF EXPRESSED VARS IN WHOLE BLOOD CLINICAL SAMPLES WITH A CUSTOM CAPTURE ARRAY VERSUS RNA ENRICHMENT METHODS

Emily M. Stucke<sup>1</sup>, Antoine Dara<sup>2</sup>, Ankit Dwivedi<sup>1</sup>, Theresa Hodges<sup>1</sup>, Drissa Coulibaly<sup>2</sup>, Abdoulaye K. Kone<sup>2</sup>, Karim Troaore<sup>2</sup>, Boureima Guindo<sup>2</sup>, Bourama Tangara<sup>2</sup>, Amadou Niangaly<sup>2</sup>, Modibo Daou<sup>2</sup>, Issa Diarra<sup>2</sup>, Youssef Tolo<sup>2</sup>, Mody Sissoko<sup>2</sup>, Albert E. Zhou<sup>1</sup>, Matthew B. Laurens<sup>1</sup>, Amed Ouattara<sup>1</sup>, Bourema Kouriba<sup>2</sup>, Ogobar K. Duombo<sup>2</sup>, Shannon Takala-Harrison<sup>1</sup>, David Serre<sup>1</sup>, Mahamadou A. Thera<sup>2</sup>, Christopher V. Plowe<sup>3</sup>, Mark A. Travassos<sup>1</sup>, Joana C. Silva<sup>1</sup>

<sup>1</sup>University of Maryland School of Medicine, Baltimore, MD, United States, <sup>2</sup>University of Sciences, Techniques and Technologies, Bamako, Mali, <sup>3</sup>Duke University, Durham, NC, United States

### THE ROLE OF IP-10 AND CXCR3 SIGNALING IN ZIKA VIRUS PROSTATE CELL INFECTION

Jennifer L.S. Clinton, Linda L. Tran, Megan B. Vogt, David R. Rowley, Jason T. Kimata, Rebecca R. Rico-Hesse

Baylor College of Medicine, Houston, TX, United States

## AN INDIVIDUAL PARTICIPANT DATA META-ANALYSIS ON THE ASSOCIATION BETWEEN ENVIRONMENTAL FECAL CONTAMINATION AND CHILD HEALTH

Frederick G. Goddard<sup>1</sup>, Amy J. Pickering<sup>2</sup>, Ayse Ercumen<sup>3</sup>, Joe Brown<sup>4</sup>, Howard H. Chang<sup>1</sup>, Thomas F. Clasen<sup>1</sup>

<sup>1</sup>Emory University, Atlanta, GA, United States, <sup>2</sup>Tufts University, Boston, MA, United States, <sup>3</sup>North Carolina State University, Raleigh, NC, United States, <sup>4</sup>Georgia Institute of Technology, Atlanta, GA, United States

## Young Investigator Award Session E

National Harbor 4 (National Harbor Level)

Wednesday, November 20, 10 a.m. - 3 p.m.

### JUDGE

Lyric Bartholomay

University of Wisconsin - Madison, Madison, WI, United States

Timothy Burgess

IDCRP, Uniformed Services University, Bethesda, MD, United States

Sara Anne Healy

National Institute of Allergy and Infectious Diseases, National Institutes of Health, Rockville, MD, United States

Courtney Murdock

University of Georgia, Athens, GA, United States

## STRUCTURE AND FUNCTION OF THE Y-CHROMOSOME IN ANOPHELES ALBIMANUS

Austin Compton<sup>1</sup>, Varvara Lukyanchikova<sup>2</sup>, Zhijian (Jake) Tu<sup>1</sup>, Victor Llaca<sup>3</sup>, Stephane Deschamps<sup>3</sup>, Chujia Chen<sup>4</sup>, Chunhong Mao<sup>5</sup>, Igor Sharakhov<sup>2</sup>

<sup>1</sup>Department of Biochemistry, Virginia Tech; <sup>2</sup>Fralin Life Sciences Institute of Virginia Tech, Blacksburg, VA, United States, <sup>3</sup>Department of Entomology, Virginia Tech, Blacksburg, VA, United States, <sup>4</sup>Corteva Agriscience™, Agriculture Division of DowDuPont™, Johnston, IA, United States, <sup>5</sup>Department of Biochemistry, Virginia Tech; <sup>6</sup>Fralin Life Sciences Institute of Virginia Tech; and <sup>7</sup>Interdisciplinary PhD Program in Genetics, Bioinformatics, and Computational Biology, Virginia Tech, Blacksburg, VA, United States, <sup>8</sup>Biocomplexity Institute and Initiative, University of Virginia, Charlottesville, VA, United States

## EMERGENT VIRUSES AND THEIR INTERACTIONS IN Aedes Aegypti: MAYARO AND ZIKA VIRUS COINFECTED MOSQUITOES CAN SUCCESSFULLY TRANSMIT BOTH PATHOGENS

Marco Brustolin, Sujit Pujhari, Cory Henderson, Jason Rasgon

The Pennsylvania State University, University Park, PA, United States

## EPIDEMIOLOGICAL UPDATE ON FEVER IN RETURNING TRAVELERS TO ONTARIO FROM THE 'RAPID ASSESSMENT OF FEBRILE TRAVELERS' (RAFT) PROGRAM

Aisha Khatib<sup>1</sup>, Shareese Clarke<sup>1</sup>, Michael A. Klowak<sup>1</sup>, Emma Hagopian<sup>1</sup>, Farah Jazuli<sup>2</sup>, David Harris<sup>1</sup>, Ruwandi Kariyawasam<sup>3</sup>, Rachel Lau<sup>4</sup>, Stefanie A. Klowak<sup>1</sup>, Evan Belsky<sup>1</sup>, Andrea K. Boggild<sup>1</sup>

<sup>1</sup>Tropical Disease Unit, Toronto General Hospital and University of Toronto, Toronto, ON, Canada, <sup>2</sup>Department of Emergency Medicine, McMaster University, Hamilton, ON, Canada, <sup>3</sup>Institute of Medical Sciences, Department of Medicine, University of Toronto, Toronto, ON, Canada, <sup>4</sup>Public Health Ontario, Toronto, ON, Canada

## INSECT STEROID HORMONE SIGNALING REGULATES NON-COMPETITIVE PLASMODIUM FALCIPARUM DEVELOPMENT IN ANOPHELES GAMBIAE MOSQUITOES

Kristine Werling<sup>1</sup>, W. Robert Shaw<sup>1</sup>, Maurice A. Itoe<sup>1</sup>, Kathleen A. Westervelt<sup>1</sup>, Perrine Marcenac<sup>1</sup>, Douglas G. Paton<sup>1</sup>, Duo Peng<sup>1</sup>, Naresh Singh<sup>1</sup>, Andrea L. Smidler<sup>1</sup>, Adam South<sup>1</sup>, Amy A. Deik<sup>2</sup>, Liliana Mancio-Silva<sup>3</sup>, Allison R. Demas<sup>3</sup>, Sandra March<sup>3</sup>, Eric Calvo<sup>4</sup>, Serge Rakiswendé Yerbanga<sup>5</sup>, Thierry Lefèvre<sup>5</sup>, Abdoulaye Diabaté<sup>5</sup>, Roch K. Dabiré<sup>5</sup>, Sangeeta N. Bhatia<sup>3</sup>, Clary B. Clish<sup>2</sup>, Flaminia Catteruccia<sup>1</sup>

<sup>1</sup>Harvard TH Chan School of Public Health, Boston, MA, United States, <sup>2</sup>Broad Institute, Cambridge, MA, United States, <sup>3</sup>Institute for Medical Engineering and Science, Massachusetts Institute of Technology, Cambridge, MA, United States, <sup>4</sup>Laboratory of Malaria and Vector Research, National Institutes of Health, National Institute of Allergy and Infectious Diseases, Rockville, MD, United States, <sup>5</sup>Institut de Recherche en Sciences de la Santé/Centre Muraz, Bobo-Dioulasso, Burkina Faso

## BACTERIAL COMPOSITION DIFFERS BETWEEN PERMETHRIN-SUSCEPTIBLE AND -RESISTANT ANOPHELES GAMBIAE SENSU STRICTO IN A SITE WITH INTENSE PYRETHROID RESISTANCE IN WESTERN KENYA

Diana N. Omoke<sup>1</sup>, Ezekiel Mugendi<sup>2</sup>, Eric Ochomo<sup>1</sup>, Mathew Kipsam<sup>1</sup>, Samson Otieno<sup>1</sup>, Edward Esalimba<sup>1</sup>, Mili Sheth<sup>3</sup>, Audrey Lenhart<sup>3</sup>, Nsa Dada<sup>3</sup>

<sup>1</sup>Kenya Medical Research Institute, Kisumu, Kenya, <sup>2</sup>Kenyatta University, Nairobi, Kenya, <sup>3</sup>United States Centers for Disease Control and Prevention, Atlanta, GA, United States

## SEX-SPECIFIC RESPONSES OF ANOPHELES GAMBIAE MOSQUITOES TO A MOSQUITO-BORNE ALPHAVIRUS INFECTION

Karen Kemirembe, Jason Rasgon

The Pennsylvania State University, University Park, PA, United States

## CO-CIRCULATION OF DENGUE, ZIKA AND CHIKUNGUNYA IN THE PERUVIAN AMAZON

Francesca Falconi-Agapito<sup>1</sup>, Xiomara Merino<sup>2</sup>, Karen Kerkhof<sup>1</sup>, Kevin K. Ariën<sup>1</sup>, Michael Talledo<sup>2</sup>

<sup>1</sup>Institute of Tropical Medicine, Antwerp, Belgium, <sup>2</sup>Instituto de Medicina Tropical Alexander von Humboldt, Universidad Peruana Cayetano Heredia, Lima, Peru

## EVOLUTION OF PLASMODIUM FALCIPARUM AFTER AN OUTBREAK FACILITATES LOW ENDEMICITY MALARIA TRANSMISSION IN ECUADOR

Shazia Ruybal-Pesántez<sup>1</sup>, Fabián E. Sáenz<sup>2</sup>, Claudia A. Vera-Arias<sup>2</sup>, Kathryn E. Tiedje<sup>1</sup>, Karen P. Day<sup>1</sup>

<sup>1</sup>School of BioSciences/Bio21 Institute, University of Melbourne, Melbourne, Australia, <sup>2</sup>Centro de Investigación para la Salud en América Latina, Escuela de Ciencias Biológicas, Pontificia Universidad Católica del Ecuador, Quito, Ecuador

## ENHANCING MALARIA ELIMINATION AND CONTROL EFFORTS IN HIGH AND LOW BURDEN AREAS OF ZAMBIA USING SPATIO-TEMPORAL MODELLING OF TRENDS IN INCIDENCE AND RISK

Jailos Lubinda<sup>1</sup>, Yaxin Bi<sup>2</sup>, Busiku Hamainza<sup>3</sup>, Adrian J. Moore<sup>1</sup>

<sup>1</sup>Ulster University, Coleraine, United Kingdom, <sup>2</sup>Ulster University, Newtown Abbey, United Kingdom, <sup>3</sup>National Malaria Elimination Center, Lusaka, Zambia



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**PROGRESS TOWARD FIELD APPLICATION OF TRANSGENIC MOSQUITOCIDAL ENTOMOPATHOGENIC FUNGI: A SEMI FIELD TRIAL TEST IN A MOSQUITO-SPHERE IN BURKINA FASO**

Etienne Bilgo

IRSS/Centre Muraz, Bobo Dioulasso, Burkina Faso

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**USING KERNEL DENSITY ESTIMATES IN LIKELIHOOD RATIOS TO OPTIMIZE ETIOLOGICAL PREDICTIONS OF INFECTIOUS DIARRHEA IN RESOURCE-LIMITED SETTINGS**

Benjamin J. Brintz<sup>1</sup>, Joel Howard<sup>1</sup>, Benjamin Haaland<sup>1</sup>, Andrew Pavia<sup>1</sup>, Tom Greene<sup>1</sup>, Dennis Chao<sup>2</sup>, Joshua Proctor<sup>2</sup>, Adam Levine<sup>3</sup>, Karen Kotloff<sup>4</sup>, James Platts-Mills<sup>5</sup>, Daniel Leung<sup>1</sup>

<sup>1</sup>University of Utah, Salt Lake City, UT, United States, <sup>2</sup>Institute of Disease Modeling, Seattle, WA, United States, <sup>3</sup>Brown University, Providence, RI, United States, <sup>4</sup>University of Maryland, College Park, MD, United States, <sup>5</sup>University of Virginia, Charlottesville, VA, United States

1374

**DIFFERENTIAL CONTRIBUTION OF ANOPHELES VECTORS TO MALARIA TRANSMISSION IN TWO NEIGHBORING VILLAGES IN THE RURAL COMMUNE OF ANDRIBA, MADAGASCAR**

Jessy Marlene Goupeyou-Youmsi<sup>1</sup>, Tsiriniana Rakotondranaivo<sup>2</sup>, Mandaniaina Radotiana Andriamiarimanana<sup>2</sup>, Tsikiniana Rasoloharimanana<sup>2</sup>, Nicolas Puchot<sup>2</sup>, Rado Lalaina Rakotoarison<sup>2</sup>, Emma Rakotomalala<sup>2</sup>, Romain Girod<sup>2</sup>, Mamadou Ousmane Ndiath<sup>2</sup>, Ines Vigan-Womas<sup>2</sup>, Catherine Bourgoignie<sup>3</sup>

<sup>1</sup>University of Malawi College of Medicine, Blantyre, Malawi, <sup>2</sup>Institut Pasteur de Madagascar, Antananarivo, Madagascar, <sup>3</sup>Institut Pasteur, Paris, France

1429

**ABILITY TO RECOGNIZE THE LYME DISEASE VECTOR BY THE GENERAL PUBLIC IN THE NORTHEAST AND MIDWEST UNITED STATES**

Gebbienna M. Bron<sup>1</sup>, Maria del Pilar Fernandez<sup>2</sup>, Jean I. Tsao<sup>3</sup>, Maria A. Diuk-Wasser<sup>2</sup>, Lyric C. Bartholomay<sup>1</sup>, Susan M. Paskewitz<sup>1</sup>

<sup>1</sup>University of Wisconsin - Madison, Madison, WI, United States, <sup>2</sup>Columbia University, New York, NY, United States, <sup>3</sup>Michigan State University, East Lansing, MI, United States

1455

**Aedes Aegypti BLOOD AND SUGAR-FEEDING PATTERNS ARE ASSOCIATED WITH HOUSING QUALITY AND HUMAN BEHAVIOR IN LOS ANGELES, CALIFORNIA**

Marisa A. Donnelly<sup>1</sup>, Christopher M. Barker<sup>1</sup>, Bradley Main<sup>1</sup>, Susanne Klueh<sup>2</sup>

<sup>1</sup>University of California Davis, Davis, CA, United States, <sup>2</sup>Greater Los Angeles County Vector Control District, Santa Fe Springs, CA, United States

1463

**DENGUE ENDEMIC SYNCHRONY ACROSS THE AMERICAS**

Talia M. Quandelacy<sup>1</sup>, Rachel Lowe<sup>2</sup>, Anna Stewart<sup>3</sup>, Maria Vincenti<sup>4</sup>, Esteban Ortiz Prado<sup>5</sup>, Cesar V. Munayco<sup>6</sup>, Mercy Borbor-Cordova<sup>7</sup>, Leslie Rollock<sup>8</sup>, Laura Figueroa<sup>9</sup>, Rolando Masis<sup>10</sup>, Dania M. Rodriguez<sup>1</sup>, Maria Grillet<sup>11</sup>, Gabriela Paz-Bailey<sup>1</sup>, Steve Waterman<sup>1</sup>, Isabel Rodriguez-Barraquer<sup>12</sup>, Derek Cummings<sup>13</sup>, Michael A. Johansson<sup>1</sup>

<sup>1</sup>Center for Disease Control and Prevention-Dengue Branch, San Juan, PR, United States, <sup>2</sup>London School of Hygiene & Tropical Medicine, London, United Kingdom, <sup>3</sup>State University of New York Upstate Medical University, Syracuse, NY, United States, <sup>4</sup>University of Groningen, Groningen, Netherlands, <sup>5</sup>OneHealth Research Group, Universidad de Las Americas, Quito, Ecuador, <sup>6</sup>Centro Nacional de Epidemiologia, Prevencion y Control de Enfermedades, Lima, Peru, <sup>7</sup>Escuela Superior Polytechnica del Litoral, Guayaquil, Ecuador, <sup>8</sup>Ministry of Health and Wellness, Saint Michael, Barbados, <sup>9</sup>Ministerio de Salud y Asistencia Social, Guatemala City, Guatemala, <sup>10</sup>Ministerio de Salud, San Salvador, El Salvador, <sup>11</sup>Universidad Central de Venezuela, Caracas, Bolivarian Republic of

Venezuela, <sup>12</sup>University of California San Francisco, San Francisco, CA, United States, <sup>13</sup>University of Florida, Gainesville, FL, United States

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**HOW MUCH OF PASSIVE DENGUE SURVEILLANCE CASES ARE NON-SECOND, AND DOES IT MATTER?**

Angkana Huang, Derek Cummings

University of Florida, Gainesville, FL, United States

1619

**EVALUATION OF A LINK BETWEEN MALARIA AND HYPERTENSION IN THE UNITED STATES: A CROSS-SECTIONAL POPULATION-BASED COHORT ANALYSIS**

Morgan Birabaharan, Andrew Strunk, Amit Garg, Stefan Hagmann

Donald and Barbara Zucker School of Medicine, Hempstead, NY, United States

1964

**INCIDENCE OF INFLUENZA AND INFLUENZA-LIKE ILLNESS IN HOUSEHOLDS OF PREGNANT WOMEN, POSTPARTUM WOMEN AND INFANTS UNDER SIX MONTHS OF AGE IN BAMAKO, MALI**

Nancy Ortiz<sup>1</sup>, Adama M. Keita<sup>2</sup>, Boubou Tamboura<sup>2</sup>, Flanon Coulibaly<sup>2</sup>, Uma Onwuchekwa<sup>2</sup>, Samba O. Sow<sup>2</sup>, Arthur L. Reingold<sup>1</sup>, Myron M. Levine<sup>3</sup>, Milagritos D. Tapia<sup>3</sup>

<sup>1</sup>University of California Berkeley, Berkeley, CA, United States, <sup>2</sup>Centre pour le Développement des Vaccins-Mali, Bamako, Mali, <sup>3</sup>Center for Vaccine Development, University of Maryland School of Medicine, Baltimore, MD, United States

**ASTMH Communications Training Workshop**

National Harbor 7 (National Harbor Level)

Wednesday, November 20, 10:30 a.m. - 2:30 p.m.

In a world with so much noise, it's a must for researchers and clinicians to be able to clearly communicate about their work, explain the importance of tropical medicine/global health programs and advocate for research funding. To be effective advocates, to stand out from the crowd of important issues you need skills that help you be persuasive and memorable. How can you prepare for an important presentation or manage challenging media interviews? How do you explain your research to people who might not know anything about your work and get them invested in the outcome, with only minutes to make your case? This all-day course will teach you how to clearly and effectively communicate about your work. You will learn how to prepare and deliver messages, craft and tell persuasive stories, and stay in control of what you say in any meeting or interview. Time and again we see the power of these communications skills to change minds, build awareness and grab attention. This workshop is limited to those who pre-registered for the event, no onsite registration.

**SESSION FULL**

10:30 a.m.

**OPENING AND INTRODUCTIONS**

Karen A. Goralesski

American Society of Tropical Medicine and Hygiene, Arlington, VA, United States

ASTMH CEO Karen A. Goralesski will introduce the trainers and the agenda and goals for the day.

Wednesday  
November 20

10:40 a.m.

### **BEING MEMORABLE AND THE IMPORTANCE OF MESSAGE**

Participants will start with an exercise about being memorable and discuss the importance of message.

11:20 a.m.

### **CRAFTING POWERFUL AND PERSUASIVE MESSAGES**

Participants will then learn how to craft messages to communicate with brevity, clarity and in a way that resonates with reporters and the general public.

11:35 a.m.

### **INTERACTIVE EXERCISE: DELIVERING AND REFINING YOUR MESSAGE**

Participants will have a brief opportunity to refine their messages before testing them out with other participants.

12:05 p.m.

### **CONTROLLING THE INTERVIEW: BRIDGING**

Participants will learn how to prepare for and stay in control of the interview; specifically, how to “bridge” from difficult or off-topic questions back to their message.

12:30 p.m.

### **BOX LUNCH**

1 p.m.

### **BREAKOUT GROUPS**

Participants will break into smaller groups for mock interviews with feedback and critique from trainers, and other exercises.

2:25 p.m.

### **CLOSE AND FEEDBACK**

## **American Committee on Arthropod-Borne Viruses (ACAV) SIE Subcommittee Meeting**

*Riverview 5*

Wednesday, November 20, 11 a.m. - Noon

### **Speaker Ready Room**

*Chesapeake A (Ballroom Level)*

Wednesday, November 20, Noon - 6 p.m.

## **American Committee of Molecular, Cellular and Immunoparasitology (ACMCIP) Mentor/Trainee Lunch Kick-Off Panel**

*Chesapeake 1 (Ballroom Level)*

Wednesday, November 20, Noon - 1:30 p.m.

An introduction to the experts, their fields, and a quick discussion of suggested topics to get experts and trainees in the mentoring mindset for their one-on-two Mentor/Mentee lunch. By invitation only.

## **American Committee on Arthropod-Borne Viruses (ACAV) SIRACA Subcommittee Meeting**

*Riverview 5*

Wednesday, November 20, Noon - 2 p.m.

## **Public Library of Science - PLOS Writing Workshop**

*National Harbor 13 (National Harbor Level)*

Wednesday, November 20, 1 p.m. – 5 p.m.

*PLOS Pathogens* and *PLOS Neglected Tropical Diseases*, along with the *American Journal of Tropical Medicine and Hygiene*, *Vector Borne and Zoonotic Diseases*, and *The Lancet Infectious Diseases* present a Writing Workshop intended to equip and support early-career researchers and researchers from disease endemic regions in understanding the publication process and best practices for manuscript writing. Highlights of the sessions include: Framing your research and choosing your journal, mapping out your paper, abstract writing, the mechanics of writing, and research and publication ethics.

## **Elsevier Clinical Research Award**

*National Harbor 6 (National Harbor Level)*

Wednesday, November 20, Noon - 3:30 p.m.

This award recognizes excellence in clinically-oriented research presented by students (within six months of completing, undergraduate or master's level training, including medical undergraduate degrees) or those in graduate medical training, of work submitted and presented (oral or poster) at the ASTMH Annual Meeting. Support these young scientists by attending their presentations during this session.

### **CHAIR**

M. Patricia Joyce  
*Tucker, GA, United States*

### **JUDGE**

Daniel Kaminstein  
*Medical College of Georgia, Augusta, GA, United States*

Kristina Krohn  
*University of Minnesota, Minneapolis, MN, United States*

Latha Rajan  
*Tulane University, New Orleans, LA, United States*

John W. Sanders  
*Wake Forest University School of Medicine, Winston-Salem, NC, United States*

12:05 p.m.

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## **A SYSTEMATIC REVIEW OF SOLID ORGAN TRANSPLANTATION IN ACUTE PRESENTATIONS OF TROPICAL INFECTIOUS DISEASES**

**Shveta Bhasker**<sup>1</sup>, Emma Hagopian<sup>1</sup>, Celine Lecce<sup>1</sup>, David Harris<sup>1</sup>, Shareese Clarke<sup>1</sup>, Priyanka Challa<sup>1</sup>, Michael A. Klowak<sup>1</sup>, Eric Shao<sup>1</sup>, Kimberley Marks - Beaubrun<sup>1</sup>, Katherine Faith Tan<sup>1</sup>, Mofe Adeosun<sup>1</sup>, Osaru Omoruna<sup>1</sup>, Christian Lecce<sup>1</sup>, Avinash N. Mukkala<sup>1</sup>, Rachel Lau<sup>2</sup>, Andrea K. Boggild<sup>1</sup>

<sup>1</sup>Tropical Disease Unit, Toronto General Hospital and University of Toronto, Toronto, ON, Canada, <sup>2</sup>Public Health Ontario, Toronto, ON, Canada



12:20 p.m.

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**DETECTION AND SEQUENCING OF ZIKA VIRUS IN NORMOCEPHALIC NEWBORNS WITH CONGENITAL ZIKA INFECTION**

**Breno L. de Almeida**<sup>1</sup>, Marta Giovanetti<sup>1</sup>, João V. Oliveira<sup>1</sup>, Tereza C. Xavier<sup>2</sup>, Eduardo M. Figueiredo<sup>3</sup>, Jaqueline J. Goes<sup>1</sup>, Luiz C. Alcantara<sup>1</sup>, Isadora C. de Siqueira<sup>1</sup>

<sup>1</sup>Fundação Oswaldo Cruz-Fiocruz, Salvador, Brazil, <sup>2</sup>Maternidade de Referencia Prof José Maria de Magalhães Neto, Salvador, Brazil, <sup>3</sup>Maternidade de Referencia Prof José Maria de Magalhães Neto, Salvador, Brazil

12:35 p.m.

1842

**ETHNOPHARMACEUTICALS FOR THE TREATMENT OF OLD WORLD CUTANEOUS LEISHMANIASIS: A SYSTEMATIC REVIEW OF TOPICAL APPLICATION OF TUMERIC**

**Priyanka Challa**<sup>1</sup>, Michael A. Klowak<sup>1</sup>, Ruwandi Kariyawasam<sup>2</sup>, Emma Hagopian<sup>1</sup>, Eric Shao<sup>1</sup>, Jason Kwan<sup>1</sup>, Hira Raheel<sup>1</sup>, Tianna Chong - Kit<sup>1</sup>, Swana Kopalakrishnan<sup>1</sup>, Anjola Ogunsina<sup>1</sup>, Andrea K. Boggild<sup>1</sup>

<sup>1</sup>Tropical Disease Unit, Toronto General Hospital and University of Toronto, Toronto, ON, Canada, <sup>2</sup>Institute of Medical Sciences, Department of Medicine, University of Toronto, Toronto, ON, Canada

12:50 p.m.

1841

**ACCURACY OF DIAGNOSTICS IN TEGUMENTARY LEISHMANIASIS: A SYSTEMATIC REVIEW**

**Sonia Igboanugo**<sup>1</sup>, Melissa S. Phuong<sup>1</sup>, Rachel Lau<sup>2</sup>, Robert Chris<sup>1</sup>, Eric Shao<sup>1</sup>, Ruwandi Kariyawasam<sup>3</sup>, Hira Raheel<sup>1</sup>, Sharmistha Mishra<sup>4</sup>, Andrea K. Boggild<sup>1</sup>

<sup>1</sup>Tropical Disease Unit, Toronto General Hospital and University of Toronto, Toronto, ON, Canada, <sup>2</sup>Public Health Ontario, Toronto, ON, Canada, <sup>3</sup>Institute of Medical Sciences, Department of Medicine, University of Toronto, Toronto, ON, Canada, <sup>4</sup>Li Ka Shing Knowledge Institute, St. Michael's Hospital, Toronto, ON, Canada

1:05 p.m.

1780

**INTEGRATING OPT-OUT HEPATITIS C SCREENING WITH EMERGENCY SERVICES FOR HIGH RISK POPULATIONS**

**Austin T. Jones**<sup>1</sup>, Lisa Moreno-Walton<sup>2</sup>, Kanayo R. Okeke-Eweni<sup>2</sup>, Jenna Miller<sup>2</sup>, Dylan Soderstrum<sup>2</sup>, Patricia Kissinger<sup>1</sup>

<sup>1</sup>Tulane University, New Orleans, LA, United States, <sup>2</sup>Louisiana State University, New Orleans, LA, United States

1:20 p.m.

1308

**SEQUENCE HETEROGENEITY IN LEISHMANIA RNA VIRUS-1 (LRV-1) DETECTED IN STRAINS OF LEISHMANIA VIANNIA SPP.**

**Ruwandi Kariyawasam**<sup>1</sup>, Rachel Lau<sup>2</sup>, Eric Shao<sup>3</sup>, Braulio M. Valencia<sup>4</sup>, Alejandro Llanos-Cuentas<sup>5</sup>, Andrea Boggild<sup>3</sup>

<sup>1</sup>Institute of Medical Sciences, Department of Medicine, University of Toronto, Toronto, ON, Canada, <sup>2</sup>Public Health Ontario Laboratories, Toronto, ON, Canada, <sup>3</sup>Tropical Disease Unit, Toronto General Hospital and University of Toronto, Toronto, ON, Canada, <sup>4</sup>Kirby Institute, University of New South Wales, Sydney, Australia, <sup>5</sup>Instituto de Medicina Tropical "Alexander von Humboldt", Lima, Peru

1:35 p.m.

1940

**MALARIA CHEMOPREVENTION WITH MONTHLY TREATMENT WITH DIHYDROARTEMISININ PIPERAQUINE FOR THE POST DISCHARGE MANAGEMENT OF SEVERE ANAEMIA IN CHILDREN AGED LESS THAN 5 YEARS IN UGANDA AND KENYA: A 3 YEAR, MULTI-CENTER, TWO ARM RANDOMIZED PLACEBO CONTROLLED SUPERIORITY TRIAL**

**Titus K. Kwambai**<sup>1</sup>, Aggrey Dhabangi<sup>2</sup>, Richard Idro<sup>2</sup>, Robert Opoka<sup>2</sup>, Simon Kariuki<sup>1</sup>, Victoria Watson<sup>3</sup>, Nickline Ashitiba<sup>1</sup>, Kephias Otieno<sup>1</sup>, Aaron M. Samuels<sup>4</sup>,

Meghna Desai<sup>4</sup>, Chandy C. John<sup>5</sup>, Bjarne Robberstad<sup>6</sup>, Michael Boele van Hensbroek<sup>7</sup>, Duolao Wang<sup>3</sup>, Kamija Phiri<sup>8</sup>, Feiko O. ter Kuile<sup>3</sup>

<sup>1</sup>Kenya Medical Research Institute, Kisumu, Kenya, <sup>2</sup>Makerere University College of Health Sciences, Kampala, Uganda, <sup>3</sup>Liverpool School of Tropical Medicine, Liverpool, United Kingdom, <sup>4</sup>Malaria Branch, Division of Parasitic Diseases and Malaria, Centers for Disease Control and Prevention, Atlanta, GA, United States, <sup>5</sup>Ryan White Center for Pediatric Infectious Disease and Global Health, Indiana University School of Medicine, Indianapolis, IN, United States, <sup>6</sup>Centre for International Health, University of Bergen, Bergen, Norway, <sup>7</sup>Emma Children's Hospital, Academic Medical Centre, University of Amsterdam, Amsterdam, Netherlands, <sup>8</sup>School of Public Health and Family Medicine, College of Medicine, University of Malawi, Blantyre, Malawi

1:50 p.m.

492

**EPIDEMIOLOGICAL UPDATE ON FEVER IN RETURNING TRAVELERS TO ONTARIO FROM THE 'RAPID ASSESSMENT OF FEBRILE TRAVELERS' (RAFT) PROGRAM**

**Aisha Khatib**<sup>1</sup>, Shareese Clarke<sup>1</sup>, Michael A. Klowak<sup>1</sup>, Emma Hagopian<sup>1</sup>, Farah Jazuli<sup>2</sup>, David Harris<sup>1</sup>, Ruwandi Kariyawasam<sup>3</sup>, Rachel Lau<sup>4</sup>, Stefanie A. Klowak<sup>1</sup>, Evan Belsky<sup>1</sup>, Andrea K. Boggild<sup>1</sup>

<sup>1</sup>Tropical Disease Unit, Toronto General Hospital and University of Toronto, Toronto, ON, Canada, <sup>2</sup>Department of Emergency Medicine, McMaster University, Hamilton, ON, Canada, <sup>3</sup>Institute of Medical Sciences, Department of Medicine, University of Toronto, Toronto, ON, Canada, <sup>4</sup>Public Health Ontario, Toronto, ON, Canada

2:05 p.m.

**BREAK**

2:15 p.m.

1142

**ANTIPYRETIC USE AMONG FEBRILE PATIENTS ATTENDING EMERGENCY DEPARTMENTS IN RIO DE JANEIRO, BRAZIL: A CROSS-SECTIONAL, OBSERVATIONAL STUDY**

**José Moreira**, Roxana Mamani, Patricia Brasil, Andre Siqueira  
Instituto Nacional de Infectologia Evandro Chagas, Rio de Janeiro, Brazil

2:30 p.m.

1843

**ETHNOPHARMACEUTICALS FOR THE TREATMENT OF NEW WORLD CUTANEOUS LEISHMANIASIS: A SYSTEMATIC REVIEW OF TOPICAL APPLICATION OF PEPPER AND ALLIUM**

**Anjola Ogunsina**<sup>1</sup>, Ruwandi Kariyawasam<sup>2</sup>, Olamide Egbewumi<sup>1</sup>, Sonia Igboanugo<sup>1</sup>, Shveta Bhaskar<sup>1</sup>, Shareese Clarke<sup>1</sup>, Paul Dunn<sup>1</sup>, Avinash N. Mukkala<sup>1</sup>, David Harris<sup>1</sup>, Andrea K. Boggild<sup>1</sup>

<sup>1</sup>Tropical Disease Unit, Toronto General Hospital and University of Toronto, Toronto, ON, Canada, <sup>2</sup>Institute of Medical Sciences, Department of Medicine, University of Toronto, Toronto, ON, Canada

2:45 p.m.

1839

**A SYSTEMATIC REVIEW OF VIRULENCE FACTORS IN THE LEISHMANIA GENUS**

**Osaru Omoruna**<sup>1</sup>, Avinash N. Mukkala<sup>1</sup>, Ruwandi Kariyawasam<sup>2</sup>, Eric Shao<sup>1</sup>, Priyanka Challa<sup>1</sup>, Michael A. Klowak<sup>1</sup>, Shareese Clarke<sup>1</sup>, Jamie Sookhoo<sup>1</sup>, Dylan Kain<sup>1</sup>, Tianna Chong-Kit<sup>1</sup>, Olamide Egbewumi<sup>1</sup>, Andrea K. Boggild<sup>1</sup>

<sup>1</sup>Tropical Disease Unit, Toronto General Hospital and University of Toronto, Toronto, ON, Canada, <sup>2</sup>Institute of Medical Sciences, Department of Medicine, University of Toronto, Toronto, ON, Canada

3 p.m.

**1827**

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**SEROPREVALENCE AND DETERMINANTS OF TRANSFUSION TRANSMISSIBLE INFECTIONS AMONG VOLUNTARY BLOOD DONORS IN HOMABAY KISUMU AND SIAYA COUNTIES IN WESTERN KENYA**

George Calleb Onyango<sup>1</sup>, Lilian Ogonda<sup>2</sup>

<sup>1</sup>Kenya Medical Training College, Kisumu, Kenya, <sup>2</sup>Maseno University, Kisumu, Kenya

3:15 p.m.

**690**

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**TREATMENT OUTCOMES OF FASCIOLA HEPATICA INFECTION IN PRE SCHOOL AND SCHOOL AGE CHILDREN IN CUSCO, PERU**

Melinda B. Tanabe<sup>1</sup>, Camille M. Webb<sup>1</sup>, Maria L. Morales<sup>2</sup>, Marta Lopez<sup>3</sup>, Miguel M. Cabada<sup>1</sup>

<sup>1</sup>University of Texas Medical Branch, Galveston, TX, United States, <sup>2</sup>IMT - Universidad Peruana Cayetano Heredia, Cusco, Peru, <sup>3</sup>IMT - Universidad Peruana Cayetano Heredia, Galveston, TX, United States

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**American Committee on Arthropod-Borne Viruses (ACAV) SALS Subcommittee Meeting**

Riverview 5

Wednesday, November 20, 2 p.m. - 3:30 p.m.

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**Point of Entry: First-Time Attendee Orientation**

Maryland B (Ballroom Level)

Wednesday, November 20, 1 p.m. - 2 p.m.

Are you new to the ASTMH Annual Meeting and want to get the lay of the land? Don't miss our Point of Entry session. ASTMH Past President Stephen Higgs will orient new attendees to the schedule, session structure and highlights of the Annual Meeting. Meet others attending the conference for the first time and expand your professional network while learning the ins and outs of the meeting.

**CHAIR**

Stephen Higgs

Biosecurity Research Institute, Kansas State University, Manhattan, KS, United States

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**Spatial Intelligence to Optimize Disease Surveillance and Response Workshop**

National Harbor 5 (National Harbor Level)

Wednesday, November 20, 2 p.m. - 5 p.m.

Smart maps and digital systems, if user-centered and implemented well, can help optimize the delivery of life-saving interventions, like indoor residual spraying, mass drug administration, and other community health services. ASTMH and Akros, along with National Malaria Control Programs, Ona, UCSF's Malaria Elimination Initiative, PATH's Malaria Control and Elimination Partnership in Africa, Clinton Health Access Initiative, WHO, Digital Solutions for Malaria Elimination (DSME) Community, USAID President's Malaria Initiative (Zambia), and others have partnered to bring attendees an interactive workshop on challenges encountered during large-scale intervention delivery campaigns, and how these challenges can be addressed through "spatial intelligence" and analytic tools. Attendees will learn processes used to build base-maps, guide and support intervention planning, and monitor coverage and impact of intervention delivery through interactive maps. During the workshop,

partners will provide use cases from multiple countries and sectors to describe how spatial intelligence tools and digital mapping approaches are fundamentally changing intervention delivery. The agenda will also include time to brainstorm the potential for applying these tools in projects relevant to participants. All are welcome to attend, including country governments, implementing partners, representatives from donor organizations, and individuals interested in utilizing novel approaches to improve impact in cost-effective ways.

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**Press Room**

Chesapeake 2 (Ballroom Level)

Wednesday, November 20, 2:30 p.m. - 5 p.m.

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**Student Reception**

Riverview A

Wednesday, November 20, 2:30 p.m. - 3:30 p.m.

The ASTMH Board of Directors invites students, postdoctoral fellows and residents to the student reception. This reception is an opportunity to meet fellow trainees, network with colleagues and mentors and engage in conversation with Society leaders.

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**Young Investigator Award Committee Meeting**

Chesapeake D/E (Ballroom Level)

Wednesday, November 20, 3 p.m. - 4 p.m.

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**American Committee of Molecular, Cellular and Immunoparasitology (ACMCIP) Council Meeting**

Chesapeake 9 (Ballroom Level)

Wednesday, November 20, 3:30 p.m. - 5:30 p.m.

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**American Committee of Medical Entomology (ACME) Council Meeting**

Chesapeake 1 (Ballroom Level)

Wednesday, November 20, 4 p.m. - 5:30 p.m.

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**American Committee on Arthropod-Borne Viruses (ACAV) Council Meeting**

Riverview 5

Wednesday, November 20, 4 p.m. - 5:30 p.m.

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**ASTMH Committee on Global Health (ACGH) Council Meeting**

Chesapeake 4 (Lobby Level)

Wednesday, November 20, 3:30 p.m. - 5:30 p.m.

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**Clinical Group Council Meeting (American Committee on Clinical Tropical Medicine and Travelers' Health - ACCTMTH)**

Chesapeake L (Ballroom Level)

Wednesday, November 20, 4 p.m. - 5:30 p.m.

## Plenary Session 1

### Plenary Session I: Keynote Address and Awards Program

Potomac Ballroom (Ballroom Level)

Wednesday, November 20, 5:30 p.m. - 7 p.m.

#### CHAIR

Chandy C. John

Indiana University School of Medicine, Indianapolis, IN, United States

5:30 p.m.

#### WELCOMING REMARKS

Daniel G. Bausch

UK Public Health Rapid Support Team, London, United Kingdom

5:40 p.m.

#### VIDEO WELCOMING MESSAGE

Tedros Adhanom Ghebreyesus

World Health Organization, Geneva, Switzerland

5:45 p.m.

#### KEYNOTE ADDRESS:



#### RESEARCH WITH THE PEOPLE: FROM GADCHIROLI TO GLOBAL

Abhay Bang, MD, MPH, D.Sc (Hon.), D.Lit (Hon.)

Society for Education, Action and Research in Community Health (SEARCH), Gadchiroli, Maharashtra, India

#### LISTENING TO WOMEN

Rani Bang, MD, MPH, D.Sc (Hon), D.Lit (Hon.)

Society for Education, Action and Research in Community Health (SEARCH), Gadchiroli, Maharashtra, India

Abhay Bang, MD, MPH, D.Sc (Hon.), D.Lit (Hon.), and Rani Bang, MD, MPH, D.Sc (Hon), D.Lit (Hon.), founded the Society for Education, Action and Research in Community Health (SEARCH) in 1985 in Gadchiroli, a remote district in Maharashtra, India, where they live, provide medical care and conduct research in 150 villages.

Abhay Bang was the lead researcher of a 1999 study on the effect of home-based newborn and child care in rural India that helped develop a new model for neonatal care in developing countries. The approach, which has reduced the infant mortality rate and shaped

national and global policies, has been replicated in 10 countries and is being scaled up nationally by the Government of India. The research also was selected as one of the milestone papers published in the *Lancet* in the past 180 years and included in *Vintage Papers from Lancet*.

He currently is a member of the Central Health Council, Government of India. He was Chairman of the Expert Committee on Tribal Health, Government of India, and has been a member of India's National Commission on Population, the National Commission on Macroeconomics and Health; the High-Level Expert Group on Universal Health Coverage for the Government of India; and the High Level Committee On Socioeconomic, Health And Educational Status Of Tribal Communities Of India.

Rani Bang has made a landmark contribution to improving women's life as a gynecologist, research scientist and social activist. She was the lead researcher of the 1989 study, "Prevalence of gynecological morbidity in rural Indian women," that brought worldwide attention to the hidden burden of gynecological diseases in rural women in developing countries. She currently is a member of the International Advisory Group on Universal Health Care – WHO and the Steering Group, National Health Mission, Government of India. She also has been a member of several national and international committees on women's health and was a member of the National Commission on Population.

The Bangs and SEARCH have received nearly 60 awards, including the Maharashtra Bhushan, the highest honor of the Maharashtra state, and the Padma Shri by the President of India. They also received the national award from the Indian Council of Medical Research have been and honored by Save the Children and the MacArthur Foundation. In 2005, *TIME* magazine recognized them as the Global Health Heroes.

6:15 p.m.

## **AWARDS PROGRAM**

Presiding Officer: Chandy C. John  
*Indiana University School of Medicine, Indianapolis, IN, United States*

### **Recognition of ASTMH/BMGF Annual Meeting Travel Awards**

### **Recognition of Presidents' Challenge Travel Awards**

### **Recognition of ISGlobal/Journal of Tropical Pediatrics Travel Award**

### **Recognition of Vulule-Odada Travel Awards for Kenyan Trainees**

### **Recognition of Burroughs Wellcome Fund - ASTMH Postdoctoral Fellowship In Tropical Infectious Diseases**

### **Recognition of Young Investigator Awards**

### **Recognition of Elsevier Clinical Research Award**

### **Recognition of Fellows of ASTMH (FASTMH)**

### **Honorary International Fellows of ASTMH (FASTMH)**

Tahmeed Ahmed  
*International Centre for Diarrhoeal Disease Research, Bangladesh, Dhaka, Bangladesh*

Martin Grobusch  
*University of Amsterdam, Amsterdam, Netherlands*

Clara Menendez  
*Barcelona Institute for Global Health ISGlobal, Barcelona, Spain*

Pascal Ringwald  
*World Health Organization, Geneva, Switzerland*

Allan Saul  
*GSK Vaccines Institute for Global Health, Siena, Italy*

### **2019 ALAN J. MAGILL FELLOW**

Deusedith Ishengoma  
*NIMR-TANGA Centre, Tanga, Tanzania*

## **Subgroup Medals and Awards**

### **Harry Hoogstraal Medal (ACME)**

### **Dalrymple/Young Award (ACAV)**

### **William Trager Award for Basic Parasitology (ACMCIP)**

### **Martin S. Wolfe Mentoring Award (ACCTMTH)**

## **Society Level Medals and Awards**

### **AWARD FOR LEADERSHIP AND VACCINE ADVOCACY**

Peter J. Hotez  
*National School of Tropical Medicine, Baylor College of Medicine, Houston, TX, United States*

### **COMMUNICATIONS AWARD**

“On a remote Pacific island, this doctor has revived a 60-year quest to eradicate a disfiguring disease”

Martin Enserink  
*Science, Washington, DC, United States*

### **BAILEY K. ASHFORD MEDAL**

Shannon Takala Harrison  
*University of Maryland School of Medicine, Baltimore, MD, United States*

Joel Tarning  
*Mahidol-Oxford Tropical Medicine Research Unit, Bangkok, Thailand*

Sharon Tennant  
*University of Maryland School of Medicine, Baltimore, MD, United States*

### **BEN KEAN MEDAL**

Thomas B. Nutman  
*NIAID, Bethesda, MD, United States*

William A. Petri, Jr.  
*University of Virginia, Charlottesville, VA, United States*

Mary E. Wilson  
*University of California San Francisco, San Francisco, CA, United States*

### **DONALD MACKAY MEDAL**

Christopher King  
*Case Western Reserve University, Cleveland, OH, United States*

### **CLARA SOUTHMAYD LUDLOW MEDAL**

Isabella Quakyi  
*University of Ghana, Accra, Ghana*

## **Opening Reception**

*Prince George's Exhibit Hall C (Lower Atrium Level)*

Wednesday, November 20, 7 p.m. - 9:30 p.m.

**Sponsored By Bavarian Nordic**

## **Exhibit Hall Open**

*Prince George's Exhibit Hall C (Lower Atrium Level)*

Wednesday, November 20, 7 p.m. - 9:30 p.m.

# **Thursday, November 21**

## **Registration**

*Potomac Ballroom Lobby (Ballroom Level)*

Thursday, November 21, 7 a.m. - 5 p.m.

## **Speaker Ready Room**

*Chesapeake A (Ballroom Level)*

Thursday, November 21, 7 a.m. - 5 p.m.

## **TropStop - Student/Trainee Lounge**

*Maryland 4/5/6 Foyer (Ballroom Level)*

Thursday, November 21, 7 a.m. - 5 p.m.

This casual setting, designed with students, trainees and residents in mind (coffee, internet), is your place for a break from the fast-pace of the meeting and relax with colleagues and friends. Check out the “Career Chats,” held next to the TropStop in Maryland 5/6. This will be your opportunity to meet professionals in the fields of tropical medicine and global health who will share their personal career paths and answer your questions about the various bumps and forks in the road.



## Meeting Sign-Up Room

Chesapeake 6 and Chesapeake 9 (Ballroom Level)  
Thursday, November 21, 7 a.m. - 10 p.m.

## ASTMH Travel Awards Meeting

Riverview 1  
Thursday, November 21, 7 a.m. - 8:30 a.m.

## Clinical Standards and Treatment Guidelines Committee Meeting

Chesapeake 1 (Ballroom Level)  
Thursday, November 21, 7 a.m. - 8 a.m.

## Clinical Tropical and Travel Medicine Education Program Committee Meeting

National Harbor 8 (National Harbor Level)  
Thursday, November 21, 7 a.m. - 8 a.m.

## ASTMH Diploma Course Directors Meeting

Chesapeake 5 (Ballroom Level)  
Thursday, November 21, 7 a.m. - 8 a.m.

## International Member Committee Meeting

National Harbor 12 (National Harbor Level)  
Thursday, November 21, 7 a.m. - 8 a.m.

## Press Room

Chesapeake 2 (Ballroom Level)  
Thursday, November 21, 7:45 a.m. - 5 p.m.

## Scientific Session 2

### Malaria: Clinical Trials and Pre-Clinical Drug Development

Maryland A (Ballroom Level)  
Thursday, November 21, 8 a.m. - 9:45 a.m.

#### CHAIR

Francisco-Javier Gamo  
GlaxoSmithKline, Tres Cantos (Madrid), Spain

Phornpimon Tiphara  
Mahidol Oxford Tropical Medicine Research Unit, Bangkok, Thailand

8 a.m.

1

#### A PHASE IB STUDY TO INVESTIGATE THE ANTIMALARIAL ACTIVITY OF M5717, A FIRST-IN-CLASS INHIBITOR OF *PLASMODIUM* ELONGATION FACTOR 2, USING THE INDUCED BLOOD STAGE *PLASMODIUM FALCIPARUM* MALARIA MODEL

James McCarthy<sup>1</sup>, Wilhelmina Bagchus<sup>2</sup>, Arnand Odedra<sup>1</sup>, Rebecca Webster<sup>1</sup>, Claude Oeuvray<sup>3</sup>, Aliona Tappert<sup>4</sup>, Deon Bezuidenhout<sup>5</sup>, Xiaoyan Yin<sup>6</sup>, Akash Khandelwal<sup>4</sup>, Oezkan Yalkinoglu<sup>4</sup>  
<sup>1</sup>QIMR Berghofer Medical Research Institute, Herston, Australia, <sup>2</sup>Merck Institute for Pharmacometrics, Lausanne, Switzerland, <sup>3</sup>The Global Health Institute of Merck, Eysin, Switzerland, <sup>4</sup>Merck KGaA, Darmstadt, Germany, <sup>5</sup>Merck (Pty), Modderfontein, South Africa, <sup>6</sup>emd Serono, Boston, MA, United States

8:15 a.m.

2

#### A RANDOMIZED, DOUBLE-BLIND, PLACEBO-CONTROLLED, PHASE IB STUDY TO EVALUATE THE SAFETY, TOLERABILITY AND CHEMOPROTECTIVE ANTI-MALARIAL ACTIVITY OF P218 AGAINST CONTROLLED HUMAN MALARIA INFECTION BY DIRECT VENOUS INOCULATION (DVI) OF *PLASMODIUM FALCIPARUM* SPOOROZOITE (PFSPZ-DVI) IN NON-IMMUNE HEALTHY ADULT VOLUNTEERS

Mohamed Farouk Chughlay  
Medicines for Malaria Venture, Geneva, Switzerland

8:30 a.m.

3

#### IDENTIFICATION OF IVERMECTIN METABOLITES

Phornpimon Tiphara<sup>1</sup>, Kevin Kobylinski<sup>2</sup>, Markus Winterberg<sup>1</sup>, Joel Tarning<sup>1</sup>  
<sup>1</sup>Mahidol Oxford Tropical Medicine Research Unit, Bangkok, Thailand, <sup>2</sup>Armed Forces Research Institute of Medical Sciences, Bangkok, Thailand

8:45 a.m.

4

#### PROPHYLACTIC EFFICACY OF POTENT AND BROADLY NEUTRALIZING, NON-CROSS-COMPETING FULLY HUMAN MONOCLONAL ANTIBODIES TARGETING PFRH5

Jonathan Viau, Lisa Purcell  
Regeneron Pharmaceuticals, Tarrytown, NY, United States

9 a.m.

5

#### DISSECTION OF HAPLOTYPE-SPECIFIC DRUG RESPONSE PHENOTYPES IN MULTICLONAL MALARIA ISOLATES

Standwell Nkhoma, Amel Ahmed, Danielle L. Porier, Sharmeen Zaman, Timothy T. Stedman  
ATCC, Manassas, VA, United States

#### (ACMCIP Abstract)

9:15 a.m.

6

#### NANOMOLAR POTENCY INHIBITORS OF THE MALARIA PURINE UPTAKE TRANSPORTER KILL *PLASMODIUM FALCIPARUM* PARASITES

Yvett Darcie Sosa<sup>1</sup>, Xiaoming Xu<sup>2</sup>, Shi-Xian Deng<sup>2</sup>, Donald Landry<sup>2</sup>, Myles Akabas<sup>1</sup>  
<sup>1</sup>Albert Einstein College of Medicine, Bronx, NY, United States, <sup>2</sup>Columbia University, New York City, NY, United States

9:30 a.m.

7

#### ASPARAGINE ETHYLENEDIAMINES AS ANTI-MALARIAL *PLASMODIUM*-SELECTIVE PROTEASOME INHIBITORS

Wenhu Zhan<sup>1</sup>, Joseph Visone<sup>1</sup>, Jacob Harris<sup>1</sup>, Tierra Ouellette<sup>1</sup>, Rong Wang<sup>2</sup>, Hao Zang<sup>1</sup>, Pradeep Singh<sup>1</sup>, John Ginn<sup>3</sup>, George Sukenick<sup>2</sup>, Tzu-Tshin Wong<sup>3</sup>, Judith Okoro<sup>4</sup>, Ryan Scales<sup>5</sup>, Patrick K. Tumwebaze<sup>4</sup>, Philip J. Rosenthal<sup>6</sup>, Bjorn Kafsack<sup>1</sup>, Roland A. Cooper<sup>6</sup>, Peter T. Meinke<sup>3</sup>, Gang Lin<sup>1</sup>, Laura Kirkman<sup>1</sup>  
<sup>1</sup>Weill Cornell Medical College, New York, NY, United States, <sup>2</sup>Memorial Sloan Kettering, New York, NY, United States, <sup>3</sup>Tri-Institutional Therapeutics Discovery Institute, New York, NY, United States, <sup>4</sup>Infectious Diseases Research Collaboration, Kampala, Uganda, <sup>5</sup>Dominican University, San Rafael, CA, United States, <sup>6</sup>University of California San Francisco, San Francisco, CA, United States

## Scientific Session 3

### Clinical Tropical Medicine I

Maryland B (Ballroom Level)

Thursday, November 21, 8 a.m. - 9:45 a.m.

#### CHAIR

Mark Kortepeter

University of Nebraska College of Public Health, Omaha, NE, United States

Lauren M. Sauer

Johns Hopkins University, Baltimore, MD, United States

8 a.m.

8

#### THE COMPENSATORY RESERVE INDEX FOR PREDICTING SHOCK IN INTENSIVE CARE PATIENTS WITH SEVERE DENGUE

**Trieu T. Huynh**<sup>1</sup>, Lam K. Phung<sup>2</sup>, Tam T. Dong<sup>2</sup>, Chau V. Nguyen<sup>1</sup>, Quyen T. Nguyen<sup>2</sup>, Ertan Deniz<sup>3</sup>, Jane Mulligan<sup>4</sup>, De Huynh<sup>5</sup>, Brian Streng<sup>6</sup>, Bridget A. Wills<sup>2</sup>, Steven L. Moulton<sup>5</sup>, Sophie Yacoub<sup>2</sup>

<sup>1</sup>Hospital for Tropical Diseases, Ho Chi Minh City, Vietnam, <sup>2</sup>Oxford University Clinical Research Unit, Ho Chi Minh City, Vietnam, <sup>3</sup>Sierra Nevada Corporation, Sparks, NV, United States, <sup>4</sup>Flashback Technologies, Inc., Louisville, CO, United States, <sup>5</sup>University of Colorado School of Medicine, Aurora, CO, United States

8:15 a.m.

9

#### UPDATE FROM PAGODAS: PEDIATRIC ASSESSMENT GROUP OF DENGUE AND AEDES SALIVA TO INVESTIGATE VECTOR-BORNE DETERMINANTS OF AEDES-TRANSMITTED ARBOVIRAL INFECTIONS IN CAMBODIA

Rithea Leang<sup>1</sup>, Daniel Parker<sup>2</sup>, Dara Kong<sup>1</sup>, Somnang Man<sup>1</sup>, Sokunthea Sreng<sup>1</sup>, Sreyngim Lay<sup>1</sup>, Kimsour Nang<sup>1</sup>, Shaden Kamhawi<sup>3</sup>, Michael Fay<sup>3</sup>, Emerito Amaro-Carambot<sup>3</sup>, Stephen Whitehead<sup>3</sup>, Stephen Whitehead<sup>3</sup>, Seila Suon<sup>1</sup>, Chea Huch<sup>1</sup>, Rekol Huy<sup>1</sup>, Thomas E. Wellems<sup>3</sup>, Jesus G. Valenzuela<sup>3</sup>, **Jessica E. Manning**<sup>4</sup>

<sup>1</sup>National Center for Parasitology, Entomology, and Malaria Control, Phnom Penh, Cambodia, <sup>2</sup>University of California Irvine, Irvine, CA, United States, <sup>3</sup>National Institute of Allergy and Infectious Diseases, Bethesda, MD, United States, <sup>4</sup>National Institute of Allergy and Infectious Diseases, Phnom Penh, Cambodia

8:30 a.m.

10

#### PHARMACOKINETICS OF TKM-130803 IN EBOLA VIRUS DISEASE IN SIERRA LEONEAN PATIENTS

**Janet T. Scott**<sup>1</sup>, Raman Sharma<sup>2</sup>, Luke W. Meredith<sup>3</sup>, Jake Dunning<sup>1</sup>, Catrin E. Moore<sup>4</sup>, Foday Sahr<sup>5</sup>, Steve Ward<sup>2</sup>, Ian Goodfellow<sup>3</sup>, Peter Horby<sup>6</sup>

<sup>1</sup>MRC-University of Glasgow Centre for Virus Research, Glasgow, United Kingdom, <sup>2</sup>Liverpool School of Tropical Medicine, Liverpool, United Kingdom, <sup>3</sup>University of Cambridge, Cambridge, United Kingdom, <sup>4</sup>Centre for Tropical Medicine and Global Health, University of Oxford, Oxford, United Kingdom, <sup>5</sup>34 Military Hospital, Freetown, Sierra Leone, <sup>6</sup>Centre for Tropical Medicine and Global Health, University of Oxford, Oxford, United Kingdom

8:45 a.m.

11

#### HEARING LOSS ASSOCIATED WITH VIRAL HEMORRHAGIC FEVERS

**Samuel C. Ficenec**<sup>1</sup>, Donald Grant<sup>2</sup>, Robert Samuels<sup>2</sup>, Susan D. Emmett<sup>3</sup>, John S. Schieffelin<sup>1</sup>

<sup>1</sup>Tulane School of Medicine, New Orleans, LA, United States, <sup>2</sup>Sierra Leone Ministry of Health and Sanitation, Freetown, Sierra Leone, <sup>3</sup>Duke University School of Medicine, Durham, NC, United States

9 a.m.

12

#### MACHINE-LEARNING PROGNOSTIC MODELS FROM THE 2014-16 EBOLA OUTBREAK: DATA-HARMONIZATION CHALLENGES, VALIDATION STRATEGIES, AND MHEALTH APPLICATIONS

**Andres Colubri**<sup>1</sup>, Mary-Anne Hartley<sup>2</sup>, Mathew Siakor<sup>3</sup>, Vanessa Wolfman<sup>3</sup>, August Felix<sup>1</sup>, Adam C. Levine<sup>4</sup>, Pardis C. Sabeti<sup>1</sup>

<sup>1</sup>Broad Institute, Cambridge, MA, United States, <sup>2</sup>University of Lausanne, Lausanne, Switzerland, <sup>3</sup>International Medical Corps, Los Angeles, CA, United States, <sup>4</sup>Brown University, Providence, RI, United States

9:15 a.m.

13

#### CLINICAL PROFILE AND THERAPEUTIC RESPONSE OF MEROPENEM AND AZITHROMYCIN IN THE TREATMENT OF EXTENSIVELY DRUG RESISTANT (XDR) TYPHOID FEVER IN A LOW-MIDDLE INCOME COUNTRY

**Sonia Qureshi**, Tahir Yousafzai, Abdullah Naveed, Khalil Ahmad, Sarwat Ansari, Heeramani Lohana, Farah Naz Qamar

Aga Khan University Hospital, Karachi, Pakistan

9:30 a.m.

14

#### HISTOPATHOLOGICAL GRADING OF ENVIRONMENTAL ENTERIC DYSFUNCTION (EED) IN THE SEEM STUDY

**Najeeha Talat Iqbal**<sup>1</sup>, Kamran Sadiq<sup>1</sup>, Sana Syed<sup>2</sup>, Zubair Ahmad<sup>1</sup>, Romana Idress<sup>1</sup>, Zehra Jamil<sup>1</sup>, Kumail Ahmed<sup>1</sup>, Junaid Iqbal<sup>1</sup>, Shahida Qureshi<sup>1</sup>, Aneeta Hotwani<sup>1</sup>, Najeeb Rahman<sup>1</sup>, Fayyaz Umran<sup>1</sup>, Sheraz Ahmed<sup>1</sup>, Sean Moore<sup>2</sup>, Asad Ali<sup>1</sup>

<sup>1</sup>Aga Khan University, Karachi, Pakistan, <sup>2</sup>University of Virginia, Charlottesville, VA, United States

## Scientific Session 4

### Malaria: Vectors and Vector Control

Maryland C (Ballroom Level)

Thursday, November 21, 8 a.m. - 9:45 a.m.

#### CHAIR

Mercy Opiyo

ISGLOBAL, Barcelona, Spain

Eleanore Sternberg

Vestergaard/Liverpool School of Tropical Medicine, Liverpool, United Kingdom

8 a.m.

15

#### DROP-THE-LOSER ADAPTIVE INTERVENTIONS: AN INNOVATIVE DESIGN FOR FINDING THE OPTIMAL INTEGRATED MALARIA VECTOR CONTROL STRATEGIES

**Guofa Zhou**

University of California Irvine, Irvine, CA, United States

8:15 a.m.

16

#### EFFECTIVENESS OF COMPLEMENTARY STRATEGIES ON MALARIA BURDEN AND TRANSMISSION: A FOUR-ARMED RANDOMIZED CONTROLLED TRIAL IN KORHOGO AREA, NORTHERN CÔTE D'IVOIRE

**Barnabas Zogo**<sup>1</sup>, Bertin N'Cho Tchiekoi<sup>2</sup>, Dieudonné Diloma Soma<sup>3</sup>, Anthony Somé<sup>3</sup>, Ludovic P. Ahoua Alou<sup>2</sup>, Alphonsine A. Koffi<sup>2</sup>, Florence Fournet<sup>4</sup>, Amal Dahounto<sup>3</sup>, Baba Coulibaly<sup>2</sup>, Roch Kounbobr Dabiré<sup>3</sup>, Lamine Baba-Moussa<sup>5</sup>, Nicolas Moiroux<sup>6</sup>, Cédric Pennetier<sup>4</sup>

<sup>1</sup>Institut Pierre Richet/MIVEGEC (University Montpellier, CNRES, IRD)/Université d'Abomey-Calavi, Bouaké, Côte D'Ivoire, <sup>2</sup>Institut Pierre Richet, Bouaké, Côte D'Ivoire, <sup>3</sup>Institut de Recherche en Sciences de la Santé (IRSS), Bobo-Dioulasso, Burkina Faso, <sup>4</sup>MIVEGEC (University Montpellier, CNRES, IRD), Bouaké, Côte



8:30 a.m.

17

### THE DISTRIBUTION AND INSECTICIDE RESISTANCE STATUS OF ANOPHELES STEPHENSI IN EASTERN ETHIOPIA

Meshesha Balkew

Abt Associates Inc, Addis Ababa, Ethiopia

8:45 a.m.

18

### THE PROTECTIVE GAP OF INDOOR RESIDUAL SPRAYING: WALL MODIFICATIONS AFTER SPRAYING AFFECTS ACTUAL COVERAGE AND HAMPERS MALARIA ELIMINATION EFFORTS

Mercy Opiyo<sup>1</sup>, Charfudin Sacoor<sup>2</sup>, Mara Maquina<sup>2</sup>, Celso Alafa<sup>2</sup>, Pedro Aide<sup>2</sup>, Ariel Nhacolo<sup>2</sup>, Lucia Fernandez-Montonya<sup>3</sup>, Helena Marti<sup>1</sup>, Francisco Saute<sup>2</sup>, Krijn Paaijmans<sup>4</sup>

<sup>1</sup>Barcelona Institute for Global Health, Barcelona, Spain, <sup>2</sup>Manhica Health Research Centre, Maputo, Mozambique, <sup>3</sup>World Health Organization, Geneva, Switzerland, <sup>4</sup>Arizona State University, Tempe, AZ, United States

9 a.m.

19

### THE COST OF MEASURING IMPACT: RCT TRIAL METHODOLOGIES FOR VECTOR CONTROL

Molly Robertson<sup>1</sup>, Joe Wagman<sup>1</sup>, Rose Zulliger<sup>2</sup>, Abuchahama Saifodine<sup>3</sup>, Baltazar Candrinho<sup>4</sup>, Jason Richardson<sup>5</sup>, Laurence Slutsker<sup>6</sup>, Carlos Chaccour<sup>7</sup>, Francisco Saute<sup>1</sup>

<sup>1</sup>PATH, Washington, DC, United States, <sup>2</sup>President's Malaria Initiative, Division of Parasitic Diseases and Malaria, US Centers for Disease Control and Prevention, Maputo, Mozambique, <sup>3</sup>President's Malaria Initiative, US Agency for International Development, Maputo, Mozambique, <sup>4</sup>Programa Nacional do Controlo da Malaria, Maputo, Mozambique, <sup>5</sup>Innovative Vector Control Consortium, Liverpool, United Kingdom, <sup>6</sup>PATH, Seattle, WA, United States, <sup>7</sup>ISGlobal, Barcelona Centre for International Health, Research Hospital Clinic - Universitat de Barcelona, Barcelona, Spain

9:15 a.m.

20

### LESSONS LEARNED, CHALLENGES AND IMPLICATIONS FOR DECISION-MAKING AFTER A DECADE OF EXPERIENCE MONITORING THE IMPACT OF INDOOR RESIDUAL SPRAYING IN BENIN, WEST AFRICA

Martin Akogbeto

Cotonou Research Entomology Center, Cotonou, Benin

9:30 a.m.

21

### COST-EFFECTIVENESS OF COLLABORATING WITH THE TOGOLESE ARMED FORCES FOR LONG-LASTING INSECTICIDE-TREATED MOSQUITO NET (LLIN) MASS DISTRIBUTION CAMPAIGN

Tchaa A. Bakai<sup>1</sup>, Tchassama Tchadjobo<sup>1</sup>, Josée Gnamien-Koudou<sup>1</sup>, Jean-Emmanuel Julo-Réminiac<sup>2</sup>, Stéphane d'Almeida<sup>3</sup>, Komi Kusiaku<sup>3</sup>, Komla D. Kadzaho<sup>1</sup>, Agnidouféyi Aawi<sup>1</sup>, Aféignitou BoukpeSSI<sup>1</sup>, Batoma Tombegou-Pana<sup>1</sup>, Eso-Kilina Tako<sup>1</sup>, Kossi Yakpa<sup>1</sup>, Ahoefan Djossou<sup>1</sup>, Kansame Labarboré<sup>1</sup>, Ley-Bawé Tchamoussa<sup>1</sup>, Bana Botcholi<sup>1</sup>, Batawa Akakpo<sup>1</sup>, Kokoe D. d'Almeida<sup>1</sup>, Afolabi Eliassou<sup>1</sup>, Tinah Atcha-Oubou<sup>1</sup>

<sup>1</sup>National Malaria Control Program, Lome, Togo, <sup>2</sup>HRH2030-Capacity Building for Malaria, Chemonics International, Arlington, VA, United States, <sup>3</sup>Global Fund Project Management Unit (PMU), Lome, Togo

## Scientific Session 5

### Malaria: Pathogenesis

Maryland D (Ballroom Level)

Thursday, November 21, 8 a.m. - 9:45 a.m.

#### CHAIR

Sung-Jae Cha

Johns Hopkins University, Baltimore, MD, United States

Andrea Weckman

University of Toronto, Toronto, ON, Canada

8 a.m.

22

### DISSECTING THE MECHANISMS OF MALARIA INDUCED ANEMIA IN RODENT MALARIA MODELS

Keyla C. Tumas<sup>1</sup>, Jian Wu<sup>1</sup>, Sittiporn Pattaradilokrat<sup>1</sup>, Lu Xia<sup>1</sup>, Yu-Chih Peng<sup>1</sup>, Timothy G. Myers<sup>2</sup>, Xin-zhuan Su<sup>1</sup>

<sup>1</sup>National Institutes of Health, Rockville, MD, United States, <sup>2</sup>National Institutes of Health, Bethesda, MD, United States

(ACMCIP Abstract)

8:15 a.m.

23

### EXPERIMENTAL MALARIA IN PREGNANCY IS ASSOCIATED WITH NEUROPSYCHIATRIC DISORDERS IN OFFSPRING IN A DISEASE SEVERITY-DEPENDENT MANNER

Andrea Weckman<sup>1</sup>, Vanessa Tran<sup>2</sup>, Chloe R. McDonald<sup>2</sup>, Kevin C. Kain<sup>3</sup>

<sup>1</sup>University of Toronto, Toronto, ON, Canada, <sup>2</sup>Sandra Rotman Centre for Global Health, University Health Network-Toronto General Hospital, Toronto, ON, Canada, <sup>3</sup>Sandra Rotman Centre for Global Health, University Health Network-Toronto General Hospital, Tropical Disease Unit, Department of Medicine, University of Toronto, Toronto, ON, Canada

8:30 a.m.

24

### COMPARATIVE TRANSCRIPTOMICS IDENTIFIES PHENOTYPIC SIMILARITIES BETWEEN MOUSE MODELS AND HUMAN SEVERE MALARIA

Athina Georgiadou<sup>1</sup>, Pablo Soro Barrio<sup>1</sup>, Claire Dunican<sup>1</sup>, Hyun Jae Lee<sup>2</sup>, Michael Levin<sup>1</sup>, Myrsini Kaforou<sup>1</sup>, Aubrey Cunnington<sup>1</sup>

<sup>1</sup>Imperial College London, Section of Paediatrics, London, United Kingdom, <sup>2</sup>Institute for Molecular Bioscience, University of Queensland, Brisbane, Australia

8:45 a.m.

25

### EXPRESSION PROFILING PATIENT SAMPLES IDENTIFIES GAMETOCYTE-COMMITTED RING BIOMARKERS

Surendra K. Prajapati<sup>1</sup>, Ruth Ayanful-Torgby<sup>2</sup>, Michelle C. Barbeau<sup>1</sup>, Festus K. Acquah<sup>2</sup>, Elizabeth Cudjoe<sup>2</sup>, Courage Kakaney<sup>2</sup>, Jones A. Amponsah<sup>2</sup>, Evans Obboh<sup>3</sup>, Benjamin K. Abuaku<sup>2</sup>, Linda E. Amoah<sup>2</sup>, Kim C. Williamson<sup>1</sup>

<sup>1</sup>Uniformed Services University of the Health Sciences, Bethesda, MD, United States, <sup>2</sup>Noguchi Memorial Institute for Medical Research, University of Ghana, Accra, Ghana, <sup>3</sup>University of Cape Coast, Cape Coast, Ghana

(ACMCIP Abstract)

9 a.m.

26

### HEPATOCYTE BINDING PEPTIDE HP1 TARGETS PLASMODIUM SPOOROZITE-HEPATOCYTE INTERACTION

Sung-Jae Cha, Marcelo Jacobs-Lorena

Johns Hopkins University, Baltimore, MD, United States

(ACMCIP Abstract)

9:15 a.m.

27

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## RISK OF READMISSION IN UGANDAN CHILDREN WITH SEVERE MALARIAL ANEMIA

Samina Bhumbra<sup>1</sup>, Gregory S. Park<sup>2</sup>, Robert O. Opoka<sup>3</sup>, Dibyadyuti Datta<sup>1</sup>, Chandu C. John<sup>1</sup>

<sup>1</sup>Ryan White Center for Pediatric Infectious Disease and Global Health, Department of Pediatrics, Indiana University School of Medicine, Indianapolis, IN, United States, <sup>2</sup>Office of the Vice President for Research, University of Minnesota, Minneapolis, MN, United States, <sup>3</sup>Department of Paediatrics and Child Health, Makerere University, Kampala, Uganda

9:30 a.m.

28

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## MALIAN CHILDREN WITH SEVERE MALARIA SUBTYPES HAVE DISTINCT ANTIBODY GAPS TO VIRULENT PFEMP1S

Mark A. Travassos<sup>1</sup>, Paul Han<sup>1</sup>, Drissa Coulibaly<sup>2</sup>, Albert E. Zhou<sup>1</sup>, Antoine Dara<sup>1</sup>, Biraj Shrestha<sup>1</sup>, Rie Nakajima<sup>3</sup>, Aarti Jain<sup>3</sup>, Omid Taghavian<sup>3</sup>, Algis Jasinskas<sup>3</sup>, Matthew B. Laurens<sup>1</sup>, Amadou Niangaly<sup>2</sup>, Amed Ouattara<sup>1</sup>, Andrea A. Berry<sup>1</sup>, Matthew Adams<sup>1</sup>, Shannon Takala-Harrison<sup>1</sup>, Bourema Kouriba<sup>2</sup>, Abdoulaye K. Kone<sup>2</sup>, J. Alexandra Rowe<sup>4</sup>, Ogobara K. Doumbo<sup>2</sup>, Kirsten E. Lyke<sup>1</sup>, Philip L. Felgner<sup>3</sup>, Christopher V. Plowe<sup>5</sup>, Mahamadou A. Thera<sup>2</sup>

<sup>1</sup>University of Maryland School of Medicine, Baltimore, MD, United States, <sup>2</sup>University of Sciences, Techniques and Technologies, Bamako, Bamako, Mali, <sup>3</sup>University of California Irvine, Irvine, CA, United States, <sup>4</sup>University of Edinburgh, Edinburgh, United Kingdom, <sup>5</sup>Duke University, Durham, NC, United States

(ACMCIP Abstract)

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## Symposium 6

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### ASTMH Committee on Global Health (ACGH) Symposium I: Creating a Sustainable Business for Global Health Innovations and Annual Business Meeting

Potomac A (Ballroom Level)

Thursday, November 21, 8 a.m. - 9:45 a.m.

The Sustainable Development Goal (Target 3.B) is to support research and development of vaccines and medicines for diseases that primarily affect developing countries and to provide access to affordable essential medicines and vaccines. Despite intensive R&D for a malaria vaccine, these efforts are hampered by the difficulty in getting a product licensed, manufactured and distributed without a market in high-income countries. If a disease such as malaria, which has a very high disease burden, lacks a cogent business case, there is an exceptionally dire situation for products against neglected tropical diseases, both communicable and non-communicable. The situation for other health commodities, to include diagnostics and vector control agents and devices, is similarly challenging. To reach SDG 3.B, we must face the challenges of product development and deployment through tough discussions on financing and access. Following this discussion, ACGH will hold the annual business meeting, which will focus on strategic planning to address how ACGH members can support the Society in promoting global health holistically.

#### CHAIR

Julie Pavlin  
National Academies of Sciences, Engineering and Medicine, Washington, DC, United States

Robert Newman  
Aspen Management Partnership for Health, Washington, DC, United States

Ilin Chuang

Infectious Disease Directorate/Malaria Program, Naval Medical Research Center, Silver Spring, MD, United States

8 a.m.

## PANEL DISCUSSION

Catharina Boehme  
Foundation for Innovative New Diagnostics, Geneva, Switzerland

Peter J. Hotez  
Baylor College of Medicine, Houston, TX, United States

Maria Elena Bottazzi  
Baylor College of Medicine, Houston, TX, United States

Suprotik Basu  
Blue like an Orange Sustainable Capital, Washington, DC, United States

9 a.m.

## ACGH ANNUAL BUSINESS MEETING

Julie Pavlin  
National Academies of Sciences, Engineering and Medicine, Bethesda, MD, United States

9:30 a.m.

## NETWORKING AND SOCIAL TIME

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## Symposium 7

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### The Relative Importance of Migrant and Mobile Populations in Malaria Elimination Settings: A Challenge for Surveillance Systems and Intervention Targeting

Potomac B (Ballroom Level)

Thursday, November 21, 8 a.m. - 9:45 a.m.

In 2015, the World Health Assembly adopted the WHO Global Technical Strategy for Malaria 2016–2030. This strategy describes the global malaria community's long-term vision of a world free of malaria, targeting (1) a reduction of malaria incidence and mortality rates globally by at least 90% by 2030; (2) elimination of the disease in at least 35 new countries; and (3) prevention of its re-establishment in countries that were malaria-free in 2015. Progress against malaria in the last ten years has been significant: malaria incidence and mortality have been reduced by 14.2% and 34.4%, respectively, and—in the last five years alone—five countries have been certified as malaria-free, including the Maldives (2015), Sri Lanka (2016), Kyrgyzstan (2016), Paraguay (2018) and Uzbekistan (2018). As per WHO World Malaria Report 2018, there are 30+ countries that are reporting <1 malaria case per 1,000 population. These countries have made significant progress in reducing malaria morbidity and mortality in the past decade (e.g. Botswana, Comoros, Thailand, Zanzibar) and/or historically countries of low malaria endemicity (e.g. Bhutan, Mexico). One of the challenges these countries face in their progress towards malaria elimination is malaria among migrant and mobile populations (MMPs), including seasonal laborers, forest workers, miners, military personnel, refugees and internally displaced people. Malaria in MMPs may overestimate the intensity of autochthonous malaria transmission, contribute to the expansion of drug-resistant *Plasmodium* strains, and lead to the re-establishment of malaria in areas where malaria has been eliminated. Generally, MMPs are hard to reach and have

limited access to public health services and malaria interventions, because of (i) their mobile and transient behavior (e.g. seasonal agricultural workers, military personnel), (ii) the nature of the activities they pursue (e.g. illegal logging or mining), or (iii) their marginalization (e.g. indigenous populations, refugees and internally displaced people). What is the relative importance of MMPs in malaria elimination efforts? How are MMPs reported in national malaria surveillance systems? How are MMPs targeted with malaria prevention and control interventions and are they effective? How can they be engaged in malaria programming? The session will present various case examples—from Zanzibar and Thailand to Venezuela—of the importance of MMPs in the context of malaria elimination efforts, how they are or are not captured in national malaria surveillance systems and what approaches are taken to ensure MMPs' risk of malaria infection is minimized. Additionally, there will be discussion on the importance of human rights, gender and ethical aspects to consider when targeting malaria interventions for MMPs.

#### CHAIR

Richard Reithinger  
*RTI International, Washington, DC, United States*

Myaing Myaing Nyunt  
*Duke University, Durham, NC, United States*

8 a.m.

#### THE RELATIVE IMPORTANCE OF MMPS IN THE CONTEXT OF MALARIA ELIMINATION IN THAILAND

Prayuth Sudathip  
*Bureau of Vector-borne Diseases, Ministry of Public Health, Bangkok, Thailand*

8:20 a.m.

#### THE ROLE OF TRAVEL IN THE CONTEXT OF MALARIA ELIMINATION IN ZANZIBAR

Abdullah Ali  
*Zanzibar Malaria Elimination Programme, Stonetown, Zanzibar, United Republic of Tanzania*

8:40 a.m.

#### THE IMPACT OF MMP FLOWS ON REGIONAL MALARIA ELIMINATION EFFORTS IN THE AMERICAS

Marcos Espinal  
*Pan American Health Organization, Washington, DC, United States*

9 a.m.

#### HUMAN RIGHTS, GENDER AND ETHICS CONSIDERATIONS WHEN TARGETING MALARIA INTERVENTIONS TO MMPS

Joanna Csete  
*Columbia University Mailman School of Public Health, New York, NY, United States*

9:20 a.m.

#### DISCUSSION

### Symposium 8

#### Toward a Chikungunya Vaccine: Challenges and Barriers

*Potomac C (Ballroom Level)*

Thursday, November 21, 8 a.m. - 9:45 a.m.

Several vaccines targeting Chikungunya virus are in pre-clinical or clinical development. However considerable challenges exist to assessing the efficacy or effectiveness of these vaccines in

preventing disease. The epidemiology of Chikungunya is complex and often characterized by explosive and unpredictable outbreaks. Increasingly there is evidence of endemic transmission, particularly in large countries which may experience frequent smaller outbreaks in shifting geographic areas. How do researchers plan clinical endpoint trials that demonstrate protection against disease with this shifting epidemiology? Passive transfer studies suggest that antibody is protective in an animal model. However, there is no accepted correlate of protection for Chikungunya, though natural history studies suggest that prior infection is protective and hint at the possibility of a correlate. Would licensure of a vaccine be acceptable based on non-clinical endpoints such as generation of neutralizing antibody? This symposium will review the current challenges and controversies around the development of non-clinical endpoint assays for use in defining correlates of protection in natural history or vaccine trials. This session will also discuss how modeling might be used to design trials for outbreak settings and capture efficacy or effectiveness using clinical endpoints. Finally, regulatory perspectives on pathways toward a Chikungunya vaccine will be discussed.

#### CHAIR

Julia Anne Lynch  
*International Vaccine Institute, Seoul, Republic of Korea*

Jakob P. Cramer  
*CEPI, Oslo, Norway*

8 a.m.

#### CURRENT STATUS OF CHIKUNGUNYA VACCINE LANDSCAPE AND CHALLENGES AND BARRIERS TO ADVANCED DEVELOPMENT

Gagandeep Kang  
*Translational Health Science Technology Institute (THSTI), Haryana, India*

8:20 a.m.

#### PERSPECTIVES ON STRATEGIES TO ACCELERATE AVAILABILITY OF A CHIKUNGUNYA VACCINE

Joachim Hombach  
*World Health Organization, Geneva, Switzerland*

8:40 a.m.

#### IS A CORRELATE OF PROTECTION POSSIBLE FOR CHIKUNGUNYA?

Scott C. Weaver  
*University of Texas Medical Branch, Galveston, TX, United States*

9 a.m.

#### WHO BLUEPRINT CONSULTATION: DESIGN OF TRIALS TO EVALUATE THE SAFETY AND EFFICACY OF CHIKUNGUNYA VACCINES IN OUTBREAK SETTINGS

Ira Longini  
*University of Florida and WHO R&D Blueprint, Gainesville, FL, United States*

9:20 a.m.

#### DISCUSSION

## Symposium 9

### American Committee of Medical Entomology (ACME) Symposium I: Annual Business Meeting, Awards, Hoogstraal Medal Presentations and Networking Reception

Potomac D (Ballroom Level)

Thursday, November 21, 8 a.m. - 9:45 a.m.

This symposium provides a forum for exchange of information among people interested in research on arthropod vectors of disease. This session features a short ACME business meeting followed by presentation of the 2019 SC Johnson (SCJ) Innovation Award. This serves to highlight the next generation of medical entomologists. The session features the presentation of the Hoogstraal medal and associated lecture, and culminates with a social/networking session.

#### CHAIR

Matthew Thomas

*Pennsylvania State University, University Park, PA, United States*

Ellen Dotson

*Centers for Disease Control and Prevention, Atlanta, GA, United States*

8 a.m.

#### ACME ANNUAL BUSINESS MEETING AND AWARDS

Matthew Thomas

*Pennsylvania State University, University Park, PA, United States*

8:15 a.m.

#### SC JOHNSON (SCJ) INNOVATION AWARD

Stephanie James

*Foundation for the National Institutes of Health, Bethesda, MD, United States*

8:30 a.m.

#### HARRY HOOGSTRAAL MEDAL PRESENTATION AND MINI-SYMPOSIUM: INTRODUCTION

Introduction by Tom Burkot

*Australian Institute of Tropical Health and Medicine, Stratford, Australia*

8:35 a.m.

#### FRANK COLLINS' CONTRIBUTIONS TO FIELD STUDIES

Patricia M. Graves

*James Cook University, Cairns, Qld, Australia*

8:45 a.m.

#### REFRACTORINESS TO MALARIA IN MOSQUITOES

Carolina Barillas-Mury

*Mosquito Immunity and Vector Competence Section, National Institutes of Health, Rockville, MD, United States*

8:55 a.m.

#### RDNA ASSAY

Alessandra Dellatorre

*Universita di Roma "La Sapienza", Rome, Italy*

9:05 a.m.

#### GAMBIAE GENOME/VECTORBASE

Catherine A. Hill

*Purdue University, West Lafayette, IN, United States*

9:15 a.m.

#### NETWORKING AND SOCIAL TIME

## Scientific Session 10

### American Committee of Molecular, Cellular and Immunoparasitology (ACMCIP): Worms, Protists and Trematodes: Immunology

National Harbor 2 (National Harbor Level)

Thursday, November 21, 8 a.m. - 9:45 a.m.

**Supported with funding from the Burroughs Wellcome Fund**

#### CHAIR

Thiago de Almeida Pereira

*Stanford University, Stanford, CA, United States*

Alessandra Ricciardi

*National Institutes of Health/National Institute of Allergy and Infectious Diseases, Rockville, MD, United States*

8 a.m.

**2003**

#### THE DAMAGE SIGNAL IL-33 PROMOTES A PROTECTIVE IMMUNE RESPONSE TO *TOXOPLASMA GONDII* IN THE BRAIN

Katherine M. Still, Samantha J. Batista, Jeremy A. Thompson, Nikolas W. Hayes, Carleigh O'Brien, Tajie H. Harris

*Center for Brain Immunology and Glia, Department of Neuroscience, University of Virginia, Charlottesville, VA, United States*

8:15 a.m.

**2004**

#### BASOPHILS REGULATE HELMINTH-INDUCED INNATE LYMPHOID CELL RESPONSES BY MODULATING NEUROPEPTIDE RECEPTOR EXPRESSION

Juan Inclan-Rico, J.J. Ponesse, C.M. Hernandez, M.C. Siracusa

*Center for Immunity and Inflammation, Department of Medicine, Rutgers New Jersey Medical School, Newark, NJ, United States*

8:30 a.m.

**29**

#### POLYMPHONUCLEAR, BUT NOT MONOCYTIC, MYELOID-DERIVED SUPPRESSOR CELLS CONTRIBUTE TO IMMUNOMODULATION IN CHRONIC LOIASIS

Rafiou Adamou<sup>1</sup>, Gerrit Marwin Burger<sup>1</sup>, Ruth Kreuzmair<sup>1</sup>, Carlos Calle Lamsfus<sup>2</sup>, Luzia Veletzky<sup>3</sup>, Wolfram Metzger<sup>2</sup>, Benjamin Mordmüller<sup>2</sup>, Michael Ramharter<sup>3</sup>, Ghyslain Mombo-Ngoma<sup>1</sup>, Ayola Akim Adegnika<sup>1</sup>, Rella Manego Zoleko<sup>1</sup>, Matthew B. McCall<sup>1</sup>

<sup>1</sup>Centre de Recherches Médicales de Lambaréné (CERMEL), Lambaréné, Gabon, <sup>2</sup>Institut für Tropenmedizin, Tübingen, Germany, <sup>3</sup>Bernhard Nocht Institut für Tropenmedizin, Hamburg, Germany

(ACMCIP Abstract)



8:45 a.m.

30

**MICROFILARIAE TRIGGER MURINE AND HUMAN EOSINOPHIL EXTRACELLULAR TRAPS IN A DECTIN-1-DEPENDENT MANNER**

Alexandra Ehrens<sup>1</sup>, Benjamin Lenz<sup>1</sup>, Anna Lena Neumann<sup>1</sup>, Samuela Giarrizzo<sup>1</sup>, Stefan J. Frohberger<sup>1</sup>, Wiebke Stamminger<sup>1</sup>, Benedikt C. Bürfer<sup>1</sup>, Frederic Fercoq<sup>2</sup>, Coralie Martin<sup>2</sup>, Daniel Kulke<sup>3</sup>, Achim Hoerauf<sup>1</sup>, Marc P. Hübner<sup>1</sup>  
<sup>1</sup>University Hospital Bonn, Bonn, Germany, <sup>2</sup>Muséum National d'Histoire Naturelle, Paris, France, <sup>3</sup>Bayer Animal Health GmbH, Monheim, Germany

(ACMCIP Abstract)

9 a.m.

31

**A PARASITE-ENCODED HUMAN IL-10 RECEPTOR ANTAGONIST REVEALS A NOVEL STRATEGY USED TO MODULATE THE HOST RESPONSE IN FILARIAL INFECTIONS**

Alessandra Ricciardi, Thomas B. Nutman  
Laboratory of Parasitic Diseases, National Institute of Allergy and Infectious Diseases, National Institutes of Health, Bethesda, MD, United States

(ACMCIP Abstract)

9:15 a.m.

32

**INTERLEUKIN-4 SIGNALING PLAYS A MAJOR ROLE IN UROGENITAL SCHISTOSOMIASIS-ASSOCIATED BLADDER CARCINOGENESIS**

Evaristus C. Mbanefo<sup>1</sup>, Chi-Ling Fu<sup>2</sup>, Christina P. Ho<sup>3</sup>, Loc Le<sup>1</sup>, Kenji Ishida<sup>1</sup>, Michael H. Hsieh<sup>1</sup>  
<sup>1</sup>Biomedical Research Institute, Rockville, MD, United States, <sup>2</sup>Pharmacyclics, Sunnyvale, CA, United States, <sup>3</sup>Children's National Medical Center, Washington, DC, United States

(ACMCIP Abstract)

9:30 a.m.

33

**TARGETING THE HEDGEHOG PATHWAY IS A NOVEL THERAPEUTIC STRATEGY TO TREAT SCHISTOSOMIASIS FIBROSIS AND PORTAL HYPERTENSION**

Thiago de Almeida Pereira<sup>1</sup>, Paula Vidigal<sup>2</sup>, Izabela Voieta<sup>2</sup>, Vivian Resende<sup>2</sup>, Rafal Witek<sup>3</sup>, Anil Jegga<sup>4</sup>, Joseph Arron<sup>5</sup>, Satish Madala<sup>4</sup>, José Roberto Lambertucci<sup>2</sup>, Anna Mae Diehl<sup>6</sup>, Thomas Wynn<sup>7</sup>, Philip Beachy<sup>1</sup>  
<sup>1</sup>Stanford University, Stanford, CA, United States, <sup>2</sup>Federal University of Minas Gerais, Belo Horizonte, Brazil, <sup>3</sup>Thermo Fisher Scientific, Frederick, MD, United States, <sup>4</sup>Cincinnati Children's Hospital Medical Center, Cincinnati, OH, United States, <sup>5</sup>Genentech Inc, South San Francisco, CA, United States, <sup>6</sup>Duke University, Durham, NC, United States, <sup>7</sup>National Institute of Allergy and Infectious Diseases/ National Institutes of Health, Bethesda, MD, United States

(ACMCIP Abstract)

**Symposium 11**

**Enteric Pathogens in Urban Environments: Understanding Risks and Managing Exposures**

National Harbor 4/5 (National Harbor Level)  
Thursday, November 21, 8 a.m. - 9:45 a.m.

Expansion of traditional and effective environmental services – including adequate water supply and sanitation – has not kept pace with the explosive growth in urban populations in low- and middle-income countries. High population density and a mixture of rural (e.g. animal husbandry) and urban (e.g. market-sourced foods) lifestyles make enteric pathogen exposure pathways complex and difficult to study. While new laboratory and field-based methods are helping to understand exposures and exposure pathways in urban environments, these must go hand-in-hand with an increased

attention to control strategies that are sensitive to the realities of urban conditions. This session will bring together recent evidence on environmental contamination in urban settings, data on how and where children are exposed to enteric pathogens and discuss innovative approaches to the control and management of enteric pathogen exposures.

**CHAIR**

Robert Dreifelbis  
London School of Hygiene & Tropical Medicine, London, United Kingdom

8 a.m.

**USE OF FECAL SLUDGES IN ENTERIC INFECTION SURVEILLANCE AND RISK ASSESSMENT: LESSONS FROM MOZAMBIQUE**

Drew Capone  
Georgia Institute of Technology, Atlanta, GA, United States

8:20 a.m.

**WHERE CHILDREN PLAY: DIVERSITY IN ENTEROPATHOGEN EXPOSURE OF YOUNG CHILDREN FROM RESIDENTIAL PUBLIC AREAS IN URBAN KENYA AND HAITI**

Kelly K. Baker  
University of Iowa College of Public Health, Iowa City, IA, United States

8:40 a.m.

**CHILD EXPOSURE TO ENTERIC PATHOGENS IN PERI-URBAN AREAS OF KISUMU, KENYA**

Sheillah N. Simiyu  
Great Lakes University of Kisumu, Kisumu, Kenya

9 a.m.

**AN INNOVATIVE APPROACH TO THE CONTROL AND MANAGEMENT OF ENTERIC PATHOGEN EXPOSURES IN BAULENI COMPOUND, LUSAKA, ZAMBIA**

Jenala Chipungu  
Centre for Infectious Disease Research, Zambia, Lusaka, Zambia

9:20 a.m.

**DISCUSSION**

**Scientific Session 12**

**Schistosomiasis - Trematodes: Epidemiology and Control**

National Harbor 10 (National Harbor Level)  
Thursday, November 21, 8 a.m. - 9:45 a.m.

**CHAIR**

Stephen Davies  
Uniformed Services University of the Health Sciences, Bethesda, MD, United States

Emily McDonald  
Rhode Island Hospital, Providence, RI, United States

Thursday  
November 21

8 a.m.

34

**FROM SATELLITES TO SNAILS IN NORTHERN SENEGAL: HONING IN ON HIGHLY PRODUCTIVE SNAIL HABITATS USING REMOTE SENSING TECHNOLOGIES FOR TARGETED AND INTEGRATED VECTOR CONTROL OF SCHISTOSOMIASIS**

**Caitlin M. Wolfe**<sup>1</sup>, Christopher J. Haggerty<sup>1</sup>, Andy Chamberlin<sup>2</sup>, Isabel J. Jones<sup>2</sup>, Raphael Ndione<sup>3</sup>, Sidy Bakhoun<sup>3</sup>, Nicolas Jouanard<sup>3</sup>, Gilles Riveau<sup>3</sup>, Chelsea Wood<sup>4</sup>, Sanna Sokolow<sup>2</sup>, Giulio De Leo<sup>2</sup>, Jason R. Rohr<sup>1</sup>  
<sup>1</sup>University of South Florida, Tampa, FL, United States, <sup>2</sup>Stanford University, Palo Alto, CA, United States, <sup>3</sup>Espoir Pour la Sante, Saint-Louis, Senegal, <sup>4</sup>University of Washington, Seattle, WA, United States

8:15 a.m.

35

**THE ROLE OF IRRIGATED AGRICULTURE IN SCHISTOSOMIASIS RISK IN A DAMMED LANDSCAPE IN WEST AFRICA**

**Andrea Lund**<sup>1</sup>, David Rehkopf<sup>1</sup>, Susanne Sokolow<sup>2</sup>, Nicolas Jouanard<sup>3</sup>, M. Moustapha Sam<sup>3</sup>, Assane Fall<sup>3</sup>, Gilles Riveau<sup>3</sup>, Jason Andrews<sup>1</sup>, Giulio De Leo<sup>2</sup>, David Lopez-Carr<sup>4</sup>  
<sup>1</sup>Stanford University, Stanford, CA, United States, <sup>2</sup>Hopkins Marine Station, Stanford University, Pacific Grove, CA, United States, <sup>3</sup>Centre de Recherche Biomedicale - Espoir Pour La Sante, Saint-Louis, Senegal, <sup>4</sup>University of California Santa Barbara, Santa Barbara, CA, United States

8:30 a.m.

36

**DEVELOPMENT AND APPLICATION OF A COMPLETE TRI- AND TETRAMER REPEAT MICROSATELLITE CATALOG TO BRAZILIAN AND KENYAN S. MANSONI POPULATIONS**

**Jeffrey D. Kovach**<sup>1</sup>, Lúcio M. Barbosa<sup>2</sup>, Luciano K. Silva<sup>3</sup>, Ana Rafaela Krummel<sup>4</sup>, Mitermayer G. Reis<sup>3</sup>, Ronald E. Blanton<sup>1</sup>  
<sup>1</sup>Case Western Reserve University, Cleveland, OH, United States, <sup>2</sup>Bahiana School of Medicine and Public Health, Salvador, Brazil, <sup>3</sup>Oswaldo Cruz Foundation, Gonçalo Moniz Institute, Salvador, Brazil, <sup>4</sup>Georgia State University, Atlanta, GA, United States

8:45 a.m.

37

**IMPACT OF BIENNIAL COMMUNITY-WIDE AND SCHOOL-BASED TREATMENT ON UROGENITAL SCHISTOSOMIASIS IN NIGER**

**Anna E. Phillips**<sup>1</sup>, Neerav Dhanani<sup>2</sup>, Amadou Garba<sup>3</sup>, Amina A. Hamidou<sup>4</sup>  
<sup>1</sup>Imperial College, London, United Kingdom, <sup>2</sup>Schistosomiasis Control Initiative, London, United Kingdom, <sup>3</sup>World Health Organisation, Geneva, Switzerland, <sup>4</sup>Riseal Niger, Niamey, Niger

9 a.m.

38

**SCHISTOSOMIASIS AT DELIVERY IS ASSOCIATED WITH A HIGHER RISK OF SMALL-FOR-GESTATIONAL AGE AT BIRTH AND INFANT'S WEIGHT DURING THE FIRST YEAR OF LIFE IN BENIN**

**Gino C. Agbota**<sup>1</sup>, Frank T. Wieringa<sup>2</sup>, Maiza Compos-Ponce<sup>3</sup>, Nadine Fievet<sup>4</sup>, Manfred Accrombessi<sup>1</sup>, Emmanuel Yovo<sup>1</sup>, Clémentine Roucher<sup>5</sup>, Achille Massougbdji<sup>1</sup>, Michel Cot<sup>4</sup>, Valérie Briand<sup>4</sup>, Katja Polman<sup>5</sup>  
<sup>1</sup>CERPAGE/UMR216/IRD, Cotonou, Benin, <sup>2</sup>Nutripass, UMR204, IRD, Montpellier, France, <sup>3</sup>Vrije University, Amsterdam, Netherlands, <sup>4</sup>UMR216/IRD, Paris, France, <sup>5</sup>Institute of Tropical Medicine, Antwerp, Belgium

9:15 a.m.

39

**A THEATRE-BASED APPROACH FOR ASSESSING AND INFLUENCING HIGH-RISK WATER CONTACT BEHAVIORS OF SCHISTOSOMIASIS-ENDEMIC COMMUNITIES IN ETHIOPIA AND TANZANIA**

**May N. Sule**<sup>1</sup>, Safari M. Kinung'hi<sup>2</sup>, Teshome Imana<sup>3</sup>, Emma Bewley<sup>1</sup>, Justina Masha<sup>2</sup>, Teckla Angelo<sup>2</sup>, Kamran Rafiq<sup>4</sup>, Alex Dower<sup>4</sup>, Feleke Zewge<sup>3</sup>, Michael R. Templeton<sup>1</sup>  
<sup>1</sup>Imperial College London, London, United Kingdom, <sup>2</sup>National Institute for Medical Research, Mwanza Centre, Mwanza, United Republic of Tanzania, <sup>3</sup>Addis Ababa University, Addis Ababa, Ethiopia, <sup>4</sup>Acting for Health, London, United Kingdom

9:30 a.m.

40

**ADAPTIVE STRATEGIES FOR SCHISTOSOMIASIS CONTROL AND ELIMINATION IN HETEROGENEOUS ENVIRONMENTS: A MODEL-BASED ANALYSIS OF PUBLIC HEALTH GUIDELINES**

**David Gurarie**<sup>1</sup>, Charles H. King<sup>1</sup>, Nathan C. Lo<sup>2</sup>, Qimin Huang<sup>1</sup>, Emily Li<sup>1</sup>  
<sup>1</sup>Case Western Reserve University, Cleveland, OH, United States, <sup>2</sup>Stanford University, Stanford, CA, United States

**Scientific Session 13**

**Cestodes: Cysticercosis**

*National Harbor 11 (National Harbor Level)*

Thursday, November 21, 8 a.m. - 9:45 a.m.

CHAIR

Theodore E. Nash  
National Institutes of Health, Bethesda, MD, United States

Ian Pray  
Oregon Health and Science University, Portland, OR, United States

8 a.m.

41

**CEREBRAL SPINAL FLUID IN SUBARACHNOID NEUROCYSTICERCOSIS IS CHARACTERIZED BY PROINFLAMMATORY CYTOKINES AND CHEMOKINES THAT FAIL TO FULLY NORMALIZE FOLLOWING CURE**

**Elise M. O'Connell**, Sarah Harrison, Theodore E. Nash, Thomas B. Nutman  
National Institutes of Health, Bethesda, MD, United States

**(ACMCIP Abstract)**

8:15 a.m.

42

**COMBINED USE OF ANTIBODY AND ANTIGEN DETECTION TO IMPROVE THE ACCURACY IN THE DIAGNOSIS OF VIABLE INFECTION IN PATIENTS WITH PARENCHYMAL CEREBRAL CYSTICERCOSIS**

**Gianfranco Arroyo**<sup>1</sup>, Javier A. Bustos<sup>1</sup>, Andres G. Lescano<sup>1</sup>, Pierre Dorny<sup>2</sup>, Erika Perez<sup>3</sup>, Yesenia Castillo<sup>1</sup>, Isidro Gonzales<sup>3</sup>, Herbert Saavedra<sup>3</sup>, E. Javier Pretell<sup>4</sup>, Saul Santivañez<sup>3</sup>, Robert H. Gilman<sup>6</sup>, Armando E. Gonzalez<sup>7</sup>, Hector H Garcia<sup>1</sup>  
<sup>1</sup>Universidad Peruana Cayetano Heredia, Lima, Peru, <sup>2</sup>Institute of Tropical Medicine, Antwerp, Belgium, <sup>3</sup>Cysticercosis Unit, Instituto Nacional de Ciencias Neurológicas, Lima, Peru, <sup>4</sup>Department of Neurology, Hospital Nacional Alberto Sabogal, Callao, Peru, <sup>5</sup>Instituto Peruano de Parasitología Clínica y Experimental, Lima, Peru, <sup>6</sup>Bloomberg School of Public Health, Johns Hopkins University, Baltimore, MD, United States, <sup>7</sup>School of Veterinary Medicine, Universidad Nacional Mayor de San Marcos, Lima, Peru



8:30 a.m.

43

**RISK FACTORS FOR BREAKTHROUGH SEIZURES IN PATIENTS WITH EPILEPSY DUE TO CALCIFIED NEUROCYSTICERCOSIS**

Javier A. Bustos<sup>1</sup>, Gianfranco Arroyo<sup>1</sup>, Isidro Gonzales<sup>2</sup>, Herbert Saavedra<sup>2</sup>, Robert H. Gilman<sup>3</sup>, Armando E. Gonzalez<sup>1</sup>, Hector H. Garcia<sup>1</sup>, for the Cysticercosis Working Group in Peru<sup>1</sup>

<sup>1</sup>Universidad Peruana Cayetano Heredia, Lima, Peru, <sup>2</sup>Instituto Nacional de Ciencias Neurologicas, Lima, Peru, <sup>3</sup>Johns Hopkins Bloomberg School of Public Health, Baltimore, MD, United States

8:45 a.m.

44

**MOVING TOWARDS IMPLEMENTATION: A COMMUNITY-BASED PARTICIPATORY RESEARCH PILOT TO PROMOTE CYSTICERCOSIS PREVENTION AND RING SURVEILLANCE IN NORTHERN PERU**

Michelle Beam<sup>1</sup>, Angela G. Spencer<sup>1</sup>, Ruth Atto<sup>2</sup>, Roberto Camizan<sup>2</sup>, Lauralee Fernandez<sup>1</sup>, Ian Pray<sup>1</sup>, Brian Garvey<sup>1</sup>, Percy Vilchez<sup>2</sup>, Claudio Muro Ecce<sup>2</sup>, Ricardo Gamboa<sup>2</sup>, Luz Maria Moyano<sup>2</sup>, Josefina Coloma<sup>3</sup>, Hector H. Garcia<sup>4</sup>, Seth E. O'Neal, for the Cysticercosis Working Group<sup>1</sup>

<sup>1</sup>Oregon Health and Science University, Portland, OR, United States, <sup>2</sup>Center for Global Health Tumbes, Universidad Peruana Cayetano Heredia, Lima, Peru, <sup>3</sup>University of California Berkeley, Berkeley, CA, United States, <sup>4</sup>Universidad Peruana Cayetano Heredia, Lima, Peru

9 a.m.

45

**PROLONGED CYSTICIDAL TREATMENT AND CONTROL OF INFLAMMATION LEADS TO SUSTAINED INACTIVE DISEASE IN SUBARACHNOID RACEMOSE NEUROCYSTICERCOSIS**

Theodore E. Nash<sup>1</sup>, Elise M. O'Connell<sup>1</sup>, Dima A. Hammoud<sup>1</sup>, Lauren Wetzler<sup>1</sup>, JeanAnne M. Ware<sup>1</sup>, Siddhartha Mahanty<sup>2</sup>

<sup>1</sup>National Institutes of Health, Bethesda, MD, United States, <sup>2</sup>The Peter Doherty Institute for Infection and Immunity, University of Melbourne and The Royal Melbourne Hospital, Melbourne, Australia

9:15 a.m.

46

**PREDICTORS FOR THE DEVELOPMENT OF RESIDUAL CALCIFICATIONS AFTER ANTIPARASITIC TREATMENT OF PARENCHYMAL BRAIN CYSTICERCOSIS**

Javier A. Bustos<sup>1</sup>, Gianfranco Arroyo<sup>1</sup>, Percy Soto-Becerra<sup>1</sup>, Robert H. Gilman<sup>2</sup>, Isidro Gonzales<sup>3</sup>, Herbert Saavedra<sup>3</sup>, Armando E. Gonzalez<sup>1</sup>, Hector H. Garcia<sup>1</sup>, for the Cysticercosis Working Group in Peru<sup>4</sup>

<sup>1</sup>Universidad Peruana Cayetano Heredia, Lima, Peru, <sup>2</sup>Johns Hopkins Bloomberg School of Public Health, Baltimore, MD, United States, <sup>3</sup>Instituto Nacional de Ciencias Neurologicas, Lima, Peru, <sup>4</sup>Universidad Peruana Cayetano heredia, Lima, Peru

9:30 a.m.

47

**SEASON PATTERNS IN RISK FACTORS FOR TAENIA SOLIUM TRANSMISSION: A GPS TRACKING STUDY OF PIGS AND OPEN HUMAN DEFECACTION IN NORTHERN PERU**

Ian W. Pray<sup>1</sup>, Claudio Muro<sup>2</sup>, Percy Vilchez<sup>2</sup>, Ricardo Gamboa<sup>2</sup>, Hector H. Garcia<sup>3</sup>, Seth E. O'Neal<sup>1</sup>

<sup>1</sup>Oregon Health and Science University, Portland, OR, United States, <sup>2</sup>Center for Global Health Tumbes, Tumbes, Peru, <sup>3</sup>Universidad Peruana Cayetano Heredia, Lima, Peru

**Exhibit Hall Open**

Prince George's Exhibit Hall C (Lower Atrium Level)  
Thursday, November 21, 9:30 a.m. - 10:30 a.m.

**Poster Session A Set-Up**

Prince George's Exhibit Hall D (Lower Atrium Level)  
Thursday, November 21, 9:45 a.m. - 10:15 a.m.

**Coffee Break**

Prince George's Exhibit Hall C (Lower Atrium Level)  
Thursday, November 21, 9:45 a.m. - 10:15 a.m.

**Get a Shot. Give a Shot.®**

Potomac Ballroom Lobby (Ballroom Level)  
Thursday, November 21, 10 a.m. - 4 p.m.

Walgreens' Get a Shot. Give a Shot.® campaign has helped provide more than 20 million lifesaving vaccines to children in need around the world through the United Nations Foundation's Shot@Life campaign. Now, TropMed19 is giving attendees an opportunity to give back to the global health communities we serve. Receive your annual flu shot and provide lifesaving vaccines to families in developing countries. Immunizations are one of the world's biggest public health success stories, but not all communities have the same access to vaccines.

**Poster Session A Viewing**

Prince George's Exhibit Hall D (Lower Atrium Level)  
Thursday, November 21, 10:15 a.m. - Noon

**Symposium 14**

**LLIN Evaluation in Uganda Project (LLINEUP) - Impact of Long-Lasting Insecticidal Nets With, and Without, Piperonyl Butoxide on Malaria Indicators in Uganda: A Cluster-Randomized Trial**

Maryland A (Ballroom Level)  
Thursday, November 21, 10:15 a.m. - Noon

This symposium will present results from a cluster randomized control trial to evaluate the impact of combination LLINs (with PBO), as compared to conventional LLINs (without PBO), on parasite prevalence in Eastern and Western Uganda. The study tests the hypothesis that parasite prevalence will be lower in intervention clusters (health sub-districts [HSDs] randomized to receive PBO nets), than in control clusters (HSDs randomized to conventional nets) overall, and stratified by region (Eastern and Western regions). The trial is the largest vector control intervention ever undertaken and involved the distribution of over 15 million LLINs. The WHO requires data from two RCTs to make a policy recommendation for a new vector control class. For PBO-LLINs, one trial has been conducted in Tanzania; this is the second trial and no more PBO-LLIN trials are likely to be conducted. One of the presenters will summarize the results of the two trials to enable this group to make tentative policy recommendations of the role of PBO-LLINs in malaria vector control.

**CHAIR**

Martin J. Donnelly  
Liverpool School of Tropical Medicine, Liverpool, United Kingdom  
Sarah G. Staedke  
London School of Hygiene & Tropical Medicine, London, United Kingdom

Thursday  
November 21

10:15 a.m.

**LLIN EVALUATION IN UGANDA PROJECT (LLINEUP) - IMPACT OF LONG-LASTING INSECTICIDAL NETS WITH, AND WITHOUT, PIPERONYL BUTOXIDE ON MALARIA INDICATORS IN UGANDA: PRIMARY OUTCOMES**

Sarah G. Staedke

*London School of Hygiene & Tropical Medicine, London, United Kingdom*

10:40 a.m.

**LLIN EVALUATION IN UGANDA PROJECT (LLINEUP) - IMPACT OF LONG-LASTING INSECTICIDAL NETS WITH, AND WITHOUT, PIPERONYL BUTOXIDE ON MALARIA INDICATORS IN UGANDA: SECONDARY OUTCOMES**

Catherine Maiteki-Sebuguzi

*National Malaria Control Program, Kampala, Uganda*

11:05 a.m.

**LLIN EVALUATION IN UGANDA PROJECT (LLINEUP) - IMPACT OF LONG-LASTING INSECTICIDAL NETS WITH, AND WITHOUT, PIPERONYL BUTOXIDE ON MALARIA INDICATORS IN UGANDA: ENTOMOLOGICAL OUTCOMES**

Martin J. Donnelly

*Liverpool School of Tropical Medicine, Liverpool, United Kingdom*

11:30 a.m.

**THE TWO PBO-LLIN CRCT TRIALS: SYNTHESIS AND POLICY IMPLICATIONS**

Immo Kleinschmidt

*London School of Hygiene & Tropical Medicine, London, United Kingdom*

**Scientific Session 15**

**Clinical Tropical Medicine II**

*Maryland B (Ballroom Level)*

Thursday, November 21, 10:15 a.m. - Noon

**CHAIR**

Jason D. Maguire

*Pfizer, White Plains, NY, United States*

Lucia Mullen

*Johns Hopkins Bloomberg School of Public Health, Baltimore, MD, United States*

10:15 a.m.

**48**

**PARENTERAL ARTEMISININS ARE ASSOCIATED WITH REDUCED MORTALITY AND IMPROVED LONG-TERM BEHAVIORAL OUTCOMES BUT INCREASED HOSPITAL READMISSION IN UGANDAN CHILDREN WITH SEVERE MALARIA**

Andrea L. Conroy<sup>1</sup>, Robert O. Opoka<sup>2</sup>, Paul Bangirana<sup>2</sup>, Richard Idro<sup>2</sup>, Chandy C. John<sup>1</sup>

*<sup>1</sup>Indiana University School of Medicine, Indianapolis, IN, United States, <sup>2</sup>Makerere University, Kampala, Uganda*

10:30 a.m.

**49**

**ACUTE KIDNEY INJURY DURING AN EPISODE OF SEVERE MALARIA IS ASSOCIATED WITH RECURRENT SEVERE MALARIA IN UGANDAN CHILDREN**

Ruth Namazzi<sup>1</sup>, Robert Opoka<sup>1</sup>, Richard Idro<sup>1</sup>, Paul Bangirana<sup>1</sup>, Dibiyadyuti Datta<sup>2</sup>, Andrea Conroy<sup>3</sup>, Chandy John<sup>3</sup>

*<sup>1</sup>Makerere University College of Health Sciences, Kampala, Uganda, <sup>2</sup>Indiana University School of Medicine, Indianapolis, IN, United States, <sup>3</sup>Indiana University School of Medicine, Indianapolis, IN, United States*

10:45 a.m.

**50**

**ATOVAQUONE-PROGUANIL EXPOSURE IN PREGNANCY AND RISK FOR ADVERSE FETAL AND INFANT OUTCOMES**

Julie R. Gutman<sup>1</sup>, Clinton Hall<sup>2</sup>, Zeina G. Khodr<sup>2</sup>, Anna T. Bukowski<sup>2</sup>, Gia R. Gumbs<sup>2</sup>, Ava Marie S. Conlin<sup>3</sup>, Natalie Y. Wells<sup>4</sup>, Kathrine R. Tan<sup>1</sup>

*<sup>1</sup>Centers for Disease Control and Prevention, Atlanta, GA, United States, <sup>2</sup>Naval Health Research Center, Deployment Health Research Department and Leidos Inc., San Diego, CA, United States, <sup>3</sup>Naval Health Research Center, Deployment Health Research Department and Innovative Employee Solutions, San Diego, CA, United States, <sup>4</sup>Naval Health Research Center, Deployment Health Research Department, San Diego, CA, United States*

11 a.m.

**51**

**AETIOLOGIES OF ACUTE FEBRILE ILLNESS AMONG CHILDREN IN A CONTEXT OF DECLINING MALARIA TRANSMISSION**

Techalew Shimelis Woldkiros<sup>1</sup>, Birkneh Tilahun Tadesse<sup>2</sup>, Fitsum Belay<sup>2</sup>, Gill Schierhout<sup>3</sup>, Susana Vaz Nery<sup>1</sup>, John Kaldor<sup>1</sup>

*<sup>1</sup>University of New South Wales, Sydney, Australia, <sup>2</sup>Hawassa University, Hawassa, Ethiopia, <sup>3</sup>The George Institute, Sydney, Australia*

11:15 a.m.

**52**

**ALGORITHM IN THE DIAGNOSIS OF FEBRILE ILLNESS USING PATHOGEN-SPECIFIC RAPID DIAGNOSTIC TESTS**

Sunil Pokharel<sup>1</sup>, Lisa J. White<sup>2</sup>, Ricardo Aguas<sup>2</sup>, Olivier Celhay<sup>2</sup>, Karell G. Pelle<sup>3</sup>, Sabine Dittrich<sup>3</sup>

*<sup>1</sup>Centre for Tropical Medicine and Global Health, Nuffield Department of Medicine, University of Oxford, Oxford, United Kingdom, <sup>2</sup>Mahidol-Oxford Tropical Medicine Research Unit, Faculty of Tropical Medicine, Mahidol University, Bangkok, Thailand, <sup>3</sup>Foundation for New Innovative Diagnostics (FIND), Geneva, Switzerland*

11:30 a.m.

**53**

**AN EPIDEMIOLOGICAL STUDY OF TOXOCARA SPECIES IN HOUSTON PARKS USING A NOVEL PCR-BASED METHOD**

David McCormick<sup>1</sup>, Timothy Erickson<sup>1</sup>, Donna L. Tyungu<sup>2</sup>, Rojelio Mejia<sup>1</sup>

*<sup>1</sup>Baylor College of Medicine, Houston, TX, United States, <sup>2</sup>The University of Oklahoma Health Sciences Center, Oklahoma, OK, United States*

**(ACMCIP Abstract)**

11:45 a.m.

**54**

**EFFECTS OF IVERMECTIN ON INTRAOCULAR MICROFILARIAE IN PERSONS WITH ONCHOCERCIASIS IN EASTERN GHANA**

Hong Augustine<sup>1</sup>, Nicholas O. Opoku<sup>2</sup>, Charles W. Goss<sup>1</sup>, Christopher L. King<sup>3</sup>, Gary J. Weil<sup>1</sup>, Michael E. Gyasi<sup>4</sup>

*<sup>1</sup>Washington University School of Medicine, St. Louis, MO, United States, <sup>2</sup>University of Health and Allied Sciences, Hohoe, Ghana, <sup>3</sup>Case Western Reserve University, Cleveland, OH, United States, <sup>4</sup>St. Thomas Eye Hospital, Accra, Ghana*

**Symposium 16**

**Large-Scale Genome-Wide Approaches to Identify and Study Potential Antimalarial Drug Targets and Resistance Factors**

*Maryland C (Ballroom Level)*

Thursday, November 21, 10:15 a.m. - Noon

Genome-level forward genetic screening approaches were recently used to define essential genes of *Plasmodium falciparum* and *Plasmodium berghei*, using random transposon-mediated and gene-targeting approaches, respectively (doi: 10.1126/science.

aap7847; doi: 10.1016/j.cell.2017.06.030). Major findings from these studies provided validated lists of essential genes required for asexual blood-stage growth under ideal *in vitro* culture conditions for *P. falciparum* and *in vivo* for *P. berghei*. Both species have surprisingly high levels of essential genes compared to humans and other eukaryotes that have been studied. Targets associated with current and historical antimalarial drugs are considered high-value and typically have defined functions associated with specific metabolic pathways and processes. Most of these known drug target genes were found to be essential by the genome-scale forward genetic screens. An important discovery these screens was the determination that almost two-thirds of all genes are essential for asexual blood-stage growth and 1000 are *Plasmodium*-conserved essential genes of unknown function. Therefore, there are many new high-value potential drug targets and pathways for developing new antimalarial drugs and these targets of unknown function are likely to have unique biological properties. This symposium will delve into the next phase of genome-scale experimental studies to characterize high-value *Plasmodium* genes using innovative genetic screening strategies to define gene functions, link phenotypes and define unique cellular processes essential for parasite survival. These studies also include a combination of systems analysis and phenotypic profiling to identify GO pathways and processes of the known and unknown essentiality genes. The speakers will provide new insights into the unique biology of malaria parasites, genes required for life cycle progression and define genetic factors associated with drug resistance and mechanisms of action.

#### **CHAIR**

John H. Adams  
*University of South Florida, Tampa, FL, United States*

Ellen Yeh  
*Stanford University, Stanford, CA, United States*

10:15 a.m.

#### **REVERSE GENETICS SCREENS TO ASSIGN FUNCTION TO *PLASMODIUM BERGHEI* GENES AT SCALE**

Ellen Bushell  
*Laboratory for Molecular Infection Medicine Sweden, Umeå, Sweden*

10:35 a.m.

#### **HARNESSING THE POWER OF EXPERIMENTAL GENETIC CROSSES AND SYSTEMS GENETICS TO PROBE DRUG RESISTANCE IN MALARIA**

Michael Ferdig  
*University of Notre Dame, Notre Dame, IN, United States*

10:55 a.m.

#### **A MUTAGENESIS SCREEN FOR ESSENTIAL PLASTID BIOGENESIS GENES IN HUMAN MALARIA PARASITES**

Ellen Yeh  
*Stanford University, Stanford, CA, United States*

11:15 a.m.

#### **GENOME-SCALE PHENOTYPIC SCREENS OF *PLASMODIUM FALCIPARUM* TO UNDERSTAND MALARIA-PARASITE RESPONSE TO STRESS PROVIDES INSIGHTS INTO ARTEMISININ SENSITIVITY**

John H. Adams  
*University of South Florida, Tampa, FL, United States*

11:35 a.m.

#### **DISCUSSION**

### **Symposium 17**

#### **Precision Mapping of Innovative and Intensified Disease Management (IDM) Diseases**

*Maryland D (Ballroom Level)*

Thursday, November 21, 10:15 a.m. - Noon

Innovative and Intensified Disease Management (IDM) Diseases are a group of NTDs for which cost-effective control tools are scarce or in-existent, and the implementation of existing tools is geographically restricted. Several IDM-NTDs are targeted for "elimination" but programs lack data on their distribution and burden, which is essential for targeting resources and interventions. Challenges include lack of agreement on mapping strategy and lack of point-of-care diagnostics. This symposium will highlight innovative, integrated and standardized approaches to mapping IDM diseases. Using examples of progress in the development of precision mapping approaches in Cameroon, Ethiopia, Liberia, Ghana, Côte d'Ivoire and Rwanda, this symposium will introduce participants to different strategies of collecting spatial data on IDM-NTDs including Buruli ulcer, leishmaniasis, leprosy, podoconiosis and yaws. Focus points will include gold-standard epidemiological surveys, the feasibility of implementing gold-standard methods at scale, the usefulness of mapping secondary data, the use of different sources of data to develop global atlas of IDM diseases and the optimal approach for integrated mapping. The symposium will also highlight the importance of precision mapping as a decision-making tool for programs aiming to integrate IDM interventions with the primary healthcare system, and ultimately to eliminate IDM diseases as a public health problem, both identified as goals of the WHO. The session will discuss how accurate, fine-scale data on the geographical distribution and burden of IDM diseases will facilitate evidence-based resource allocation and intervention targeting by national control programs. The role of precision mapping in disease surveillance, capacity building and research will also be discussed using practical examples from different endemic countries.

#### **CHAIR**

Kebede Deribe  
*Brighton and Sussex Medical School, Brighton, United Kingdom*

Daniel Argaw Dagne  
*World Health Organization, Geneva, Switzerland*

10:15 a.m.

#### **INTEGRATED MAPPING OF YAWS AND PODOCONIOSIS IN CAMEROON**

Samuel Wanji  
*University of Buea, Buea, Cameroon*

10:30 a.m.

#### **MAPPING BURULI ULCER: FROM GLOBAL DISTRIBUTION TO SMALL-SCALE PREDICTIVE MAPS**

Hope Simpson  
*London School of Hygiene & Tropical Medicine, London, United Kingdom*

10:45 a.m.

**INTEGRATING COMMUNITY-LEVEL MAPPING OF BURULI ULCER, LEPROSY, LYMPHATIC FILARIASIS AND YAWS IN LIBERIA**

Joseph Timothy

*London School of Hygiene & Tropical Medicine, London, United Kingdom*

11 a.m.

**PRECISION MAPPING: TOWARDS THE GLOBAL ATLAS OF PODOCONIOSIS EXPERIENCE FROM ETHIOPIA AND RWANDA**

Kebede Deribe

*Brighton and Sussex Medical School, Brighton, United Kingdom*

11:15 a.m.

**INTEGRATED INTENSIFIED CASE MANAGEMENT NTDS SURVEYS IN WEST AFRICA**

Rie Roselyne Yotsu

*Nagasaki University, School of Tropical Medicine and Global Health, Nagasaki, Japan*

11:30 a.m.

**DISCUSSION**

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**Symposium 18**

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**ASTMH Committee on Global Health (ACGH)  
Symposium II: Diverse Pathogens, Common Risk Factor: Infections of Poverty in the United States**

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*Potomac A (Ballroom Level)*

Thursday, November 21, 10:15 a.m. - Noon

The term “global health” is colloquially associated with the health of people living in low- and middle-income countries. That notion can obscure the prevalence of parasitic and vector-borne diseases in high-income countries, including the United States. The risk of acquiring one of these diseases and the severity of morbidity depend on location and condition of residence, occupation, access to health care and comorbidities in the United States as in the rest of the world. The symposium examines four diseases commonly associated with poor populations in poor countries that are important health issues in the United States.

**CHAIR**

Eileen Stillwaggon

*Gettysburg College, Gettysburg, PA, United States*

Jessica E. Manning

*National Institutes of Health, Phnom Penh, Cambodia*

10:15 a.m.

**ENVIRONMENTAL EXPOSURE TO PARASITES IN URBAN AND RURAL USA**

Rojelio Mejia

*Baylor College of Medicine, Houston, TX, United States*

10:35 a.m.

**EPIDEMIOLOGY OF INTESTINAL PARASITES IN A CENTRAL TEXAS COMMUNITY AND SPECIES DISTRIBUTION MODELING FOR *STRONGYLOIDES STERCORALIS* IN NORTH AMERICA**

Rachael Singer

*University of Texas at Austin, Austin, TX, United States*

10:55 a.m.

**CONGENITAL CHAGAS DISEASE IN THE U.S.: ECONOMIC COSTS AND BENEFITS OF MATERNAL SCREENING WITH COMMERCIALLY AVAILABLE BENZNIDAZOLE**

Victoria Perez-Zetune

*University of Maryland, College Park, MD, United States*

11:05 a.m.

**WEST NILE VIRUS: CONTINUED EMERGENCE AND AVAILABLE THERAPEUTICS**

Shannon E. Ronca

*Baylor College of Medicine, Houston, TX, United States*

11:25 a.m.

**DISCUSSION**

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**Symposium 19**

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**Alan J. Magill Malaria Eradication Symposium: Addressing Malaria across the Transmission Spectrum**

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*Potomac B (Ballroom Level)*

Thursday, November 21, 10:15 a.m. - Noon

**Supported with funding from the Bill & Melinda Gates Foundation**



This annual symposium honors the life and work of ASTMH Past President Alan Magill, who at the time of his untimely death in 2015 was promoting the bold goal of global malaria eradication in his role as the Malaria Director at the Bill & Melinda Gates Foundation. The symposium will bring leaders in the malaria field together to summarize the challenges and

advances in areas of relevance to the malaria elimination and eradication effort. This year the symposium will focus on addressing malaria across the transmission spectrum. Speakers will address this topic from different perspectives, including at a country-specific level, from a World Health organization and President's Malaria Initiative viewpoint, and from the standpoint of how strengthening health systems and using mathematical modeling can assist in reducing and eliminating malaria transmission.

**CHAIR**

Chandy C. John

*Indiana University School of Medicine, Indianapolis, IN, United States*

Philip Welkhoff

*Bill & Melinda Gates Foundation, Seattle, WA, United States*

10:15 a.m.

**IMPLEMENTING MALARIA INTERVENTIONS IN A HETEROGENEOUS TRANSMISSION SETTING: A KENYAN PERSPECTIVE**

Elizabeth Juma

*Centre for Clinical Research, World Health Organization, Nairobi, Kenya*

10:35 a.m.

**USING MODELLING TO INFORM STRATEGIC PLANNING OF MALARIA INTERVENTIONS**

Emilie Pothin

*Swiss Tropical and Public Health Institute, Basel, Switzerland*



10:55 a.m.

### TANGIBLE AND INTANGIBLE HEALTH SYSTEMS ASSETS FOR MALARIA ACROSS THE ELIMINATION SPECTRUM

S. Patrick Kachur

Columbia University Medical Center, New York, NY, United States

11:15 a.m.

### LINKING HEALTH SYSTEMS AND IMPLEMENTATION DATA TO COMBAT MALARIA

Kenneth Staley

U.S. President's Malaria Initiative, Washington, DC, United States

11:35 a.m.

### WORKING WITH THE E-2020 MALARIA ELIMINATION INITIATIVE: LESSONS LEARNED FROM GETTING 21 COUNTRIES ACROSS THE FINISH LINE

Kimberly Lindblade

World Health Organization, Bangkok, Thailand

## Scientific Session 20

### Chikungunya and Other Alphaviruses

Potomac C (Ballroom Level)

Thursday, November 21, 10:15 a.m. - Noon

#### CHAIR

Laura Adams

Centers for Disease Control and Prevention Dengue Branch, San Juan, PR, United States

Alexander W.E. Franz

University of Missouri, Columbia, MO, United States

10:15 a.m.

55

### CHIKUNGUNYA VIRUS DISSEMINATION FROM THE MIDGUT OF Aedes Aegypti - INSIGHTS INTO THE MECHANISM

Alexander W.E. Franz, Yingjun Cui, Asher M. Kantor, DeAna G. Grant, Tommi A. White

University of Missouri, Columbia, MO, United States

10:30 a.m.

56

### SAFETY OF THE MEASLES-VECTORED CHIKUNGUNYA VACCINE (MV-CHIK) IN HEALTHY VOLUNTEERS PREVIOUSLY EXPOSED TO CHIKUNGUNYA VIRUS

Katrin Ramsauer<sup>1</sup>, Clemente Diaz<sup>2</sup>, Irma Febo<sup>2</sup>, James Powell<sup>2</sup>, Aileen Rivera Maldonado<sup>2</sup>, Raimund Vielnascher<sup>1</sup>, Paul B. Keiser<sup>3</sup>

<sup>1</sup>Themis Bioscience GmbH, Vienna, Austria, <sup>2</sup>University of Puerto Rico, San Juan, Puerto Rico, <sup>3</sup>Walter Reed Army Institute of Research, Silver Spring, MD, United States

(ACMCIP Abstract)

10:45 a.m.

57

### AEDES AEGYPTI SIALOKININ I MODULATES SIGLEC-1 EXPRESSION ON HUMAN MONOCYTES AND MACROPHAGES DURING CHIKUNGUNYA VIRUS INFECTION

Siew-Wai Fong<sup>1</sup>, Jeslin J.L. Tan<sup>2</sup>, Vaishnavi Sridhar<sup>1</sup>, Tze-Kwang Chua<sup>2</sup>, Siti Naqiah Amrun<sup>2</sup>, Guillaume Carissimo<sup>2</sup>, Fok-Moon Lum<sup>2</sup>, Kini R Manjunatha<sup>1</sup>, Lisa F.P. Ng<sup>2</sup>

<sup>1</sup>National University of Singapore, Singapore, Singapore, <sup>2</sup>Singapore Immunology Network, Agency for Science, Technology and Research, Singapore (A\*STAR), Singapore, Singapore

11 a.m.

58

### RISK FACTORS FOR INFECTION WITH CHIKUNGUNYA AND ZIKA VIRUSES IN A COMMUNITY-BASED COHORT STUDY IN SOUTHERN PUERTO RICO

Laura E. Adams<sup>1</sup>, Liliana Sanchez-Gonzalez<sup>1</sup>, Robert Rodriguez Gonzalez<sup>2</sup>, Kyle Ryff<sup>1</sup>, Dania M. Rodriguez<sup>1</sup>, Chelsea Major<sup>1</sup>, Emma M. Little<sup>1</sup>, Olga Lorenzi<sup>1</sup>, Mark Delorey<sup>1</sup>, Freddy A. Medina<sup>1</sup>, Manuela Beltran<sup>1</sup>, Jorge L. Muñoz-Jordán<sup>1</sup>, Stephen H. Waterman<sup>1</sup>, Marianyoly Ortiz<sup>3</sup>, Vanessa Rivera-Amill<sup>2</sup>, Gabriela Paz-Bailey<sup>1</sup>

<sup>1</sup>Division of Vector-borne Diseases, Centers for Disease Control and Prevention, San Juan, PR, United States, <sup>2</sup>Ponce Health Sciences University, Ponce, PR, United States, <sup>3</sup>Puerto Rico Vector Control Unit, San Juan, PR, United States

11:15 a.m.

59

### SAFETY AND IMMUNOGENICITY OF A REPLICATION DEFICIENT SIMIAN ADENOVIRAL VECTORED CHIKUNGUNYA VACCINE: A PHASE I, FIRST-IN-HUMAN, DOSE ESCALATION TRIAL

Pedro M. Folegatti<sup>1</sup>, Kate Harrison<sup>1</sup>, Fernando Ramos Lopez<sup>1</sup>, Mark W. Tilley<sup>1</sup>, Cesar Lopez-Camacho<sup>1</sup>, Young C. Kim<sup>1</sup>, Lorena Preciado-Llanes<sup>1</sup>, Shannan L. Rossi<sup>2</sup>, Ian Poulton<sup>1</sup>, Daniel Jenkin<sup>1</sup>, Mehreen Dattoo<sup>1</sup>, Yrene Themistocleous<sup>1</sup>, Alison Lawrie<sup>1</sup>, Rachel Roberts<sup>1</sup>, Katie Ewer<sup>1</sup>, Eleanor Berrie<sup>1</sup>, Adrian Hill<sup>1</sup>, Arturo Reyes-Sandoval<sup>1</sup>

<sup>1</sup>University of Oxford, Oxford, United Kingdom, <sup>2</sup>University of Texas Medical Branch, Galveston, TX, United States

11:30 a.m.

60

### ROBUST IMMUNOGENICITY OF 1- AND 2-DOSE SERIES OF AN ADJUVANTED VLP-BASED CHIKUNGUNYA VACCINE

Sean R. Bennett<sup>1</sup>, Jason Mendy<sup>2</sup>, Lisa Bedell<sup>1</sup>, Kelly L. Warfield<sup>3</sup>, Paul Shabram<sup>2</sup>, Paul-Andre deLame<sup>3</sup>

<sup>1</sup>Emergent BioSolutions, Inc., Redwood City, CA, United States, <sup>2</sup>Emergent BioSolutions, Inc., San Diego, CA, United States, <sup>3</sup>Emergent BioSolutions, Inc., Gaithersburg, MD, United States

11:45 a.m.

61

### CHIKUNGUNYA: PHASE 1 CLINICAL DEVELOPMENT OF A SINGLE-SHOT LIVE-ATTENUATED VACCINE

Nina Wressnigg, Romana Hochreiter, Andrea Fritzer, Robert Schlegel, Andreas Meinke

Valneva, Vienna, Austria

## Symposium 21

### American Committee of Medical Entomology (ACME) Symposium II: Will History Repeat Itself? Lessons Learned from Previous Vector Control Efforts

Potomac D (Ballroom Level)

Thursday, November 21, 10:15 a.m. - Noon

Vector control interventions in the prevention and control of vector-borne diseases, such as Yellow Fever, dengue, malaria, and Chagas disease, are more important than ever. This symposium will provide a review of some historic vector control projects against several vector borne diseases (Garki Project and Rhodesian copper mining companies for malaria control, Yellow Fever elimination in the Americas and the Central American Initiative for Chagas disease control). Multiple methods have been used in the past and some are being reconsidered today (eg. House modifications, larval



source management, biological control, insecticidal control). This symposium will provide attendees with a historical background to work in these areas, as well as considering how these experiences might better inform present-day vector control.

#### CHAIR

Ellen M. Dotson  
*Centers for Disease Control and Prevention, Atlanta, GA, United States*

Matthew Thomas  
*Pennsylvania State University, University Park, PA, United States*

10:15 a.m.

#### **MALARIA CONTROL IN THE COPPER BELT: LESSONS FROM MALCOLM WATSON'S WORK IN CENTRAL AFRICA**

Seth Irish  
*Centers for Disease Control and Prevention, Atlanta, GA, United States*

10:35 a.m.

#### **MALARIA VECTOR CONTROL IN NIGERIA, LEARNING FROM THE HISTORIC GARKI PROJECT**

Samson Awolola  
*Nigerian Institute of Medical Research, Lagos, Nigeria*

10:55 a.m.

#### **AEDES AEGYPTI CONTROL: STILL STUCK IN THE YELLOW FEVER PROGRAM?**

Amy Morrison  
*University of California, Davis, CA, United States*

11:15 a.m.

#### **CHAGAS DISEASE VECTOR CONTROL IN GUATEMALA (CENTRAL AMERICA): DOMICILIATED VS SYLVATIC SPECIES**

Celia Cordon-Rosales  
*Universidad del Valle, Guatemala City, Guatemala*

11:35 a.m.

#### **DISCUSSION**

### **Scientific Session 22**

#### **American Committee of Molecular, Cellular and Immunoparasitology (ACMCIP): Kinetoplastida: Molecular, Cellular and Immunobiology**

*National Harbor 2 (National Harbor Level)*  
Thursday, November 21, 10:15 a.m. - Noon

**Supported with funding from the Burroughs Wellcome Fund**

#### CHAIR

Andrea Paun  
*National Institute of Allergy and Infectious Diseases/National Institutes of Health, Bethesda, MD, United States*

Mary E. Wilson  
*University of Iowa, Iowa City, IA, United States*

10:15 a.m.

**2005**

#### **DEVELOPMENTAL COMPETENCE AND ANTIGEN SWITCH FREQUENCY CAN BE UNCOUPLED IN *TRYPANOSOMA BRUCEI***

**Kirsty R. McWilliam<sup>1</sup>**, Alasdair Ivens<sup>2</sup>, Liam J. Morrison<sup>2</sup>, Monica Mugnier<sup>3</sup>, Keith R. Matthews<sup>2</sup>

<sup>1</sup>*University of Edinburgh, Edinburgh, Scotland, United Kingdom and Ludwig-Maximilians-Universität München, Munich, Germany,* <sup>2</sup>*University of Edinburgh, Edinburgh, Scotland, United Kingdom,* <sup>3</sup>*Johns Hopkins School of Public Health, Johns Hopkins University, Baltimore, MD, United States*

10:30 a.m.

**2006**

#### **MYND AND RNA-BINDING PROTEIN 6 (RBP6) AS MASTER REGULATORS OF *TRYPANOSOMA BRUCEI* DIFFERENTIATION AND MIGRATION IN THE TSETSE**

**Aitor Casas-Sanchez<sup>1</sup>**, Lara Lopez-Escobar<sup>1</sup>, Aryana Zardkoobi-Burgos<sup>1</sup>, Cintia Cansado-Utrilla<sup>1</sup>, Lee R. Haines<sup>1</sup>, Alistair Darby<sup>2</sup>, Samuel Dean<sup>3</sup>, Jannah Shamsani<sup>4</sup>, Pegine Walrad<sup>4</sup>, Alvaro Acosta-Serrano<sup>1</sup>

<sup>1</sup>*Liverpool School of Tropical Medicine, Liverpool, United Kingdom,* <sup>2</sup>*University of Liverpool, Liverpool, United Kingdom,* <sup>3</sup>*University of Oxford, Oxford, United Kingdom,* <sup>4</sup>*University of York, York, United Kingdom*

10:45 a.m.

**2007**

#### **A BAR-SEQ FITNESS SCREEN OF *LEISHMANIA CRISPR-CAS9* KNOCKOUT MUTANTS SHOWS THE IMPORTANCE OF MOTILITY IN COLONIZATION OF SANDFLIES**

**Tom Beneke<sup>1</sup>**, James Smith<sup>1</sup>, Edward Hookway<sup>2</sup>, Tomas Becvar<sup>3</sup>, Jitka Myskova<sup>3</sup>, Tereza Lestinova<sup>3</sup>, Jovana Sadlova<sup>3</sup>, Petr Volf<sup>3</sup>, Richard Wheeler<sup>4</sup>, Eva Gluenz<sup>1</sup>

<sup>1</sup>*University of Oxford, Sir William Dunn School of Pathology, Oxford, United Kingdom,* <sup>2</sup>*Research Department of Pathology, University College London, London, United Kingdom,* <sup>3</sup>*Department of Parasitology, Faculty of Science, Charles University, Prague, Czech Republic,* <sup>4</sup>*Peter Medawar Building for Pathogen Research, Nuffield Department of Medicine, University of Oxford, Oxford, United Kingdom*

11 a.m.

**62**

#### **VACCINATION WITH A *TRYPANOSOMA CRUZI* CYCLOPHILIN 19-DELETION MUTANT CONFERS COMPLETE PROTECTION AGAINST ACUTE CHAGAS DISEASE IN MICE**

**Bijay Kumar Jha<sup>1</sup>**, Sanjay Varikuti<sup>1</sup>, Nicholas Bishop<sup>1</sup>, Gregory Pedroso dos Santos<sup>2</sup>, Manjusha Kulkarni<sup>1</sup>, Sergio Schenkman<sup>3</sup>, Abhay Satoskar<sup>1</sup>, Bradford Scott McGwire<sup>1</sup>

<sup>1</sup>*The Ohio State University, Columbus, OH, United States,* <sup>2</sup>*Universidade Federal de São Paulo, Estado de São Paulo, Brazil,* <sup>3</sup>*Universidade Federal de São Paulo, São Paulo, Brazil*

**(ACMCIP Abstract)**

11:15 a.m.

63

### CHEMICAL CARTOGRAPHY OF HOST-PARASITE-MICROBIOME INTERACTIONS REVEALS NEW MECHANISMS OF DISEASE TOLERANCE IN AMERICAN TRYPANOSOMIASIS

Ekram Hossain<sup>1</sup>, Chaoyi Wu<sup>1</sup>, Sharmily Khanam<sup>1</sup>, Danya A. Dean<sup>1</sup>, Adwaita Parab<sup>1</sup>, Shelley Kane<sup>1</sup>, Karina Flores<sup>1</sup>, Sharon Lostracco-Johnson<sup>2</sup>, Diane Thomas<sup>2</sup>, Danyang Li<sup>3</sup>, Christine Woelfel-Monsivais<sup>1</sup>, Mitchell Katemauswa<sup>1</sup>, Camil Gosmanov<sup>1</sup>, Krithivasan Sankaranarayanan<sup>1</sup>, **Laura-Isobel McCall**<sup>1</sup>

<sup>1</sup>University of Oklahoma, Norman, OK, United States, <sup>2</sup>University of California San Diego, La Jolla, CA, United States, <sup>3</sup>Beijing Normal University, Beijing, China

(ACMCIP Abstract)

11:30 a.m.

64

### THE ROLE OF MONOCYTE MOBILIZATION IN RESPONSE TO SAND FLY BITES IN INCREASED TRANSMISSION FROM MAMMALIAN HOSTS TO THE SAND FLY VECTOR

Andrea Paun, Joanna G. Valverde, David L. Sacks

National Institute of Allergy and Infectious Diseases/National Institutes of Health, Bethesda, MD, United States

(ACMCIP Abstract)

11:45 a.m.

65

### MYELOID AND LYMPHOID IMMUNE EXHAUSTION PROFILE DURING MURINE VISCERAL LEISHMANIASIS

Diogo Valadares<sup>1</sup>, Richard E. Davis<sup>2</sup>, Ellen Kiser<sup>1</sup>, Mary Wilson<sup>1</sup>

<sup>1</sup>University of Iowa, Iowa City, IA, United States, <sup>2</sup>University of Utah, Salt Lake City, UT, United States

(ACMCIP Abstract)

## Scientific Session 23

### Global Health: Maternal and Child Health

National Harbor 4/5 (National Harbor Level)

Thursday, November 21, 10:15 a.m. - Noon

#### CHAIR

Erin Eckert

United States Agency for International Development, Arlington, VA, United States

Peter M. Macharia

KEMRI Wellcome Trust Research Programme, Nairobi, Kenya

10:15 a.m.

66

### SUBNATIONAL MAPPING OF UNDER-FIVE MORTALITY AND ITS DETERMINANTS IN KENYA SINCE 1965

Peter M. Macharia<sup>1</sup>, Emanuele Giorgi<sup>2</sup>, Pamela Thurairaja<sup>1</sup>, Noel K. Joseph<sup>1</sup>, Benn Sartorius<sup>3</sup>, Robert W. Snow<sup>4</sup>, Emelda Okiro<sup>1</sup>

<sup>1</sup>Kenya Medical Research Institute-Wellcome Trust Research Programme, Nairobi, Kenya, <sup>2</sup>Lancaster Medical School, Lancaster University, Lancaster, United Kingdom, <sup>3</sup>Public Health Medicine, School of Nursing and Public Health, University of KwaZulu-Natal, Durban, South Africa, <sup>4</sup>Kenya Medical Research Institute-Wellcome Trust Research Programme, Nairobi, Kenya and Centre for Tropical Medicine and Global Health, Nuffield Department of Clinical Medicine, University of Oxford, Oxford, United Kingdom

10:30 a.m.

67

### A SYSTEMATIC REVIEW OF PROACTIVE CASE DETECTION BY COMMUNITY HEALTH WORKERS FOR THE MANAGEMENT OF COMMON CHILDHOOD ILLNESSES

Caroline Whidden<sup>1</sup>, Julie Thwing<sup>2</sup>, Julie Gutman<sup>2</sup>, Clemence Leyrat<sup>1</sup>, Kassoum Kayentao<sup>3</sup>, Ari Johnson<sup>4</sup>, Brian Greenwood<sup>1</sup>, Daniel Chandramohan<sup>1</sup>

<sup>1</sup>London School of Hygiene & Tropical Medicine, London, United Kingdom, <sup>2</sup>Centers

for Disease Control and Prevention, Atlanta, GA, United States, <sup>3</sup>University of Sciences, Techniques and Technologies of Bamako, Bamako, Mali, <sup>4</sup>University of California San Francisco, San Francisco, CA, United States

10:45 a.m.

68

### USING PARTNERSHIPS AND EXISTING SYSTEMS TO IMPROVE THE QUALITY OF INTEGRATED SERVICES FOR SICK CHILDREN AT PATENT AND PROPRIETARY MEDICINE VENDORS IN TWO STATES IN NIGERIA

Kate E. Gilroy<sup>1</sup>, Abimbola Olayemi<sup>2</sup>, Adedeji Onayade<sup>3</sup>, Olujide Arije<sup>3</sup>, Miranda Gyang<sup>2</sup>, Felix Ogaga<sup>4</sup>, Chinwe Nweze<sup>5</sup>, Olusegun Afolabi<sup>3</sup>, Abimbola Phillips<sup>3</sup>, Michel Pacqué<sup>1</sup>

<sup>1</sup>MCSP/JSI, Washington, DC, United States, <sup>2</sup>MCSP/JSI, Abuja, Nigeria, <sup>3</sup>Institute of Public Health, Obafemi Awolowo University, Ile-Ife, Nigeria, <sup>4</sup>MCSP/JSI, Lokoja, Nigeria, <sup>5</sup>MCSP/JSI, Abakaliki, Nigeria

11 a.m.

69

### PREVALENCE OF CHILD MARRIAGE IN RURAL BANGLADESH AND ASSOCIATIONS WITH ADVERSE PREGNANCY OUTCOMES

Kyu Han Lee<sup>1</sup>, Atique I. Chowdhury<sup>2</sup>, Qazi S. Rahman<sup>2</sup>, Sanwarul Bari<sup>2</sup>, Shams El Arifeen<sup>2</sup>, Emily S. Gurley<sup>1</sup>

<sup>1</sup>Johns Hopkins Bloomberg School of Public Health, Baltimore, MD, United States, <sup>2</sup>International Centre for Diarrhoeal Disease Research, Bangladesh, Dhaka, Bangladesh

11:15 a.m.

70

### FACTORS ASSOCIATED WITH CONSENT FOR MINIMALLY INVASIVE TISSUE SAMPLING (MITS) TO IDENTIFY THE CAUSE OF DEATH FOR STILLBIRTHS AND CHILDREN UNDER THE AGE 5 IN BANGLADESH

Shahana Parveen<sup>1</sup>, Farzana Islam<sup>1</sup>, M. Saiful Islam<sup>1</sup>, Hossain M. Sazzad<sup>1</sup>, Farhana Hasnat Khan<sup>1</sup>, Md. Al-Mamun<sup>1</sup>, Mahadi Hasan<sup>1</sup>, Safiur Rahman<sup>1</sup>, Salim Reza<sup>1</sup>, Sazzad Hossain Khan<sup>1</sup>, Tonmoy Sarkar<sup>1</sup>, Kamal Ibne Chowdhury<sup>1</sup>, Dalia Yeasmin<sup>1</sup>, Kyu Han Lee<sup>2</sup>, Sanwarul Bari<sup>1</sup>, Shams El Arifeen<sup>1</sup>, Emily S. Gurley<sup>2</sup>

<sup>1</sup>International Centre for Diarrhoeal Diseases Research, Bangladesh (icddr), Dhaka, Bangladesh, <sup>2</sup>John Hopkins University, Baltimore, MD, United States

11:30 a.m.

71

### INVOLVING COMMUNITY VOLUNTEERS FOR REAL-TIME IDENTIFICATION OF STILLBIRTHS AND UNDER-5 CHILD DEATHS IN A CHILD HEALTH PROGRAM IN RURAL BANGLADESH

Abdullah Al Masud<sup>1</sup>, Shahana Parveen<sup>1</sup>, Saiful Islam<sup>1</sup>, Faruque Hussain<sup>1</sup>, John Blevins<sup>2</sup>, Ahoua Kone<sup>2</sup>, Kyu Han Lee<sup>3</sup>, Qazi Sadeq-ur Rahman<sup>1</sup>, Palash Mutsuddi<sup>1</sup>, Sanwarul Bari<sup>1</sup>, Shams El Arifeen<sup>1</sup>, Emily S. Gurley<sup>3</sup>

<sup>1</sup>International Centre for Diarrhoeal Disease Research, Bangladesh, Dhaka, Bangladesh, <sup>2</sup>Rollins School of Public Health, Emory University, Atlanta, GA, United States, <sup>3</sup>John Hopkins University, Baltimore, MD, United States

11:45 a.m.

72

### MINIMALLY INVASIVE TISSUE SAMPLING AMONG HOSPITAL-BASED CHILD DEATHS IN BLANTYRE, MALAWI: THE ROLE OF SOCIAL RELATIONSHIPS AND POWER DYNAMICS

Dave Mankhokwe Namusanya<sup>1</sup>, Sarah Lawrence<sup>2</sup>, Andrew Hamuza<sup>1</sup>, Cornelius Huwa<sup>3</sup>, Maureen Kelley<sup>4</sup>, Sassy Molyneux<sup>4</sup>, Wiegier Voskuil<sup>5</sup>, Donna Denno<sup>2</sup>, Nicola Desmond<sup>1</sup>, Dennis Chasweka<sup>3</sup>

<sup>1</sup>Malawi Liverpool Wellcome Trust, Blantyre, Malawi, <sup>2</sup>University of Washington, Seattle, WA, United States, <sup>3</sup>University of Malawi, College of Medicine, Blantyre, Malawi, <sup>4</sup>University of Oxford, Oxford, United Kingdom, <sup>5</sup>Global Health Child Group, Amsterdam University Medical Care, University of Amsterdam, Amsterdam, Netherlands

## Scientific Session 24

### Schistosomiasis - Trematodes: Immunology, Pathology, Cellular, Molecular

National Harbor 10 (National Harbor Level)

Thursday, November 21, 10:15 a.m. - Noon

#### CHAIR

Keke C. Fairfax

University of Utah, Salt Lake City, UT, United States

Michael Hsieh

Biomedical Research Institute, Rockville, MD, United States

10:15 a.m.

73

#### H-IPSE, A PATHOGEN-SECRETED HOST NUCLEUS-INFILTRATING PROTEIN (INFILTRIN), HAS A LIMITED RANGE OF TARGET CELLS

Olivia Lamanna<sup>1</sup>, Evaristus Mbanefo<sup>2</sup>, Kenji Ishida<sup>2</sup>, Luke Pennington<sup>3</sup>, Theodore Jardetzky<sup>3</sup>, Franco Falcone<sup>4</sup>, Michael Hsieh<sup>1</sup>

<sup>1</sup>Children's National Medical Center, Washington, DC, United States, <sup>2</sup>Biomedical Research Institute, Rockville, MD, United States, <sup>3</sup>Stanford University, Stanford, CA, United States, <sup>4</sup>The University of Nottingham, Nottingham, United Kingdom

(ACMCIP Abstract)

10:30 a.m.

74

#### VACCINATION WITH CATHEPSIN B USING A YS1646 SALMONELLA ENTERICA TYPHIMURIUM VECTOR PROTECTS MICE AGAINST SCHISTOSOMA MANSONI CHALLENGE

Adam Hassan, Nicholas H. Zelt, Dilhan J. Perera, Brian J. Ward, Momar Ndao  
Research Institute of the McGill University Health Centre, Montreal, QC, Canada

(ACMCIP Abstract)

10:45 a.m.

75

#### USE OF BODIPY LABELLED ATP ANALOGUE IN THE DEVELOPMENT AND VALIDATION OF A KINASE BINDING ASSAY FOR SCREENING OF KINASE INHIBITORS

Bernardo Pereira Moreira<sup>1</sup>, Tom Armstrong<sup>2</sup>, Izabella Cristina Batista<sup>1</sup>, Naiara Clemente Tavares<sup>1</sup>, Camilla Valente Pires<sup>1</sup>, Marina de Moraes Mourão<sup>1</sup>, Franco Falcone<sup>3</sup>, Lodewijk Dekker<sup>3</sup>

<sup>1</sup>Rene Rachou Research Centre/CPqRR - FIOCRUZ, Belo Horizonte, Brazil, <sup>2</sup>School of Chemistry, University of Nottingham, Nottingham, United Kingdom, <sup>3</sup>School of Pharmacy, Division of Molecular Therapeutics and Formulation, University of Nottingham, Nottingham, United Kingdom, <sup>4</sup>School of Pharmacy, Division of Biomolecular Science and Medicinal Chemistry, University of Nottingham, Nottingham, United Kingdom

(ACMCIP Abstract)

11 a.m.

76

#### HEADS OR TAILS? DIFFERENTIAL TRANSLATIONAL REGULATION IN CERCARIAL HEADS AND TAILS OF SCHISTOSOME WORMS

James R. Hagerty, Emmitt R. Jolly

Case Western Reserve University, Cleveland, OH, United States

11:15 a.m.

77

#### COMPARING CATHEPSIN B VACCINE FORMULATIONS IN A PRE-CLINICAL SCHISTOSOMIASIS MODEL

Dilhan J. Perera<sup>1</sup>, Adam Hassan<sup>1</sup>, Yimei Jia<sup>2</sup>, Michael McCluskie<sup>2</sup>, Risini Weeratna<sup>2</sup>, Momar Ndao<sup>1</sup>

<sup>1</sup>Research Institute McGill University Health Center, Montreal, QC, Canada, <sup>2</sup>National Research Council Canada; Human Health Therapeutics Research Center, Ottawa, ON, Canada

(ACMCIP Abstract)

11:30 a.m.

78

#### THE HUMAN TELOMERASE REVERSE TRANSCRIPTASE, HERTERT IS ABSENT IN SCHISTOSOMA MANSONI: EFFECT OF INFECTION AND DRUG TREATMENT ON GENE EXPRESSION OF THE BIOMPHALARIA GLABRATA ORTHOLOG IN THE HOST-PATHOGEN RELATIONSHIP

Nana Adjoo Pels, Swara Yadav, Olayemi Akinyele, Freddie Dixon, Carolyn Cousin, Matty Knight

University of the District of Columbia, Washington, DC, United States

(ACMCIP Abstract)

11:45 a.m.

79

#### DUAL TRANSCRIPTOMICS PROFILING OF THE MOUSE BLADDER WALL INJECTION MODEL OF SCHISTOSOMA HAEMATOBIIUM INFECTION

Kenji Ishida<sup>1</sup>, Evaristus Mbanefo<sup>1</sup>, Nirad Banskota<sup>1</sup>, James Cody<sup>1</sup>, Loc Le<sup>1</sup>, Neil Young<sup>2</sup>, Michael Hsieh<sup>1</sup>

<sup>1</sup>Biomedical Research Institute, Rockville, MD, United States, <sup>2</sup>The University of Melbourne, Victoria, Australia

(ACMCIP Abstract)

## Scientific Session 25

### Filariasis - Epidemiology and Control I

National Harbor 11 (National Harbor Level)

Thursday, November 21, 10:15 a.m. - Noon

#### CHAIR

Colleen Lau

Australian National University, Brisbane, Queensland, Australia

Gregory S. Noland

The Carter Center, Atlanta, GA, United States

10:15 a.m.

80

#### THE INTERRUPTION OF TRANSMISSION OF ONCHOCERCIASIS BY AN ANNUAL MDA PROGRAM IN PLATEAU AND NASARAWA STATES, NIGERIA

Frank O. Richards<sup>1</sup>, Abel Eigege<sup>2</sup>, John Umaru<sup>2</sup>, Barminas Kahansim<sup>2</sup>, Solomon Adelamo<sup>2</sup>, Jonathan Kadimbo<sup>3</sup>, Jacob Danboyi<sup>4</sup>, Hayward Mafuyai<sup>5</sup>, Yisa Saka<sup>6</sup>, Chukwuma Anyaike<sup>6</sup>, Michael Igbe<sup>6</sup>, Lindsay Rakers<sup>1</sup>, Emily Griswold<sup>1</sup>, Thomas Unnasch<sup>7</sup>, Bertram E. Nwoke<sup>8</sup>, Emmanuel Miri<sup>2</sup>

<sup>1</sup>The Carter Center, Atlanta, GA, United States, <sup>2</sup>The Carter Center, Jos, Nigeria, <sup>3</sup>Plateau State Ministry of Health, Jos, Nigeria, <sup>4</sup>Nasarawa State Ministry of Health, Lafia, Nigeria, <sup>5</sup>University of Jos, Jos, Nigeria, <sup>6</sup>Federal Ministry of Health, Abuja, Nigeria, <sup>7</sup>University of South Florida, Tampa, FL, United States, <sup>8</sup>Imo State University, Owerri, Nigeria

10:30 a.m.

81

**RESURGENT LYMPHATIC FILARIASIS IN THE SAMOAN ISLANDS: TIME FOR CHANGE IN SURVEILLANCE STRATEGIES AND THRESHOLDS FOR VALIDATION OF ELIMINATION?**

**Colleen L. Lau**<sup>1</sup>, Sarah Sheridan<sup>2</sup>, Therese Kearns<sup>3</sup>, Take Naseri<sup>4</sup>, Robert Thomsen<sup>4</sup>, Saipale Fuimaono<sup>5</sup>, Tautala Mauala<sup>6</sup>, Helen Mayfield<sup>1</sup>, Brady McPherson<sup>1</sup>, Kelley Meder<sup>1</sup>, Gabriela Willis<sup>1</sup>, Benjamin Dickson<sup>1</sup>, Meru Sheel<sup>1</sup>, Kimberly Won<sup>7</sup>, Katherine Gass<sup>8</sup>, Patricia Graves<sup>9</sup>  
<sup>1</sup>Australian National University, Canberra, Australia, <sup>2</sup>University of New South Wales, Sydney, Australia, <sup>3</sup>Menzies School of Health Research, Darwin, Australia, <sup>4</sup>Samoa Ministry of Health, Apia, Samoa, <sup>5</sup>American Samoa Department of Health, Pago Pago, American Samoa, <sup>6</sup>Samoa Red Cross, Apia, Samoa, <sup>7</sup>Centers for Disease Control and Prevention, Division of Parasitic Diseases and Malaria, Atlanta, GA, United States, <sup>8</sup>Task Force for Global Health, Atlanta, GA, United States, <sup>9</sup>James Cook University, Cairns, Australia

10:45 a.m.

82

**ANNUAL VERSUS SEMI-ANNUAL MASS DRUG ADMINISTRATION WITH DIETHYLCARBAMAZINE PLUS ALBENDAZOLE FOR ELIMINATION OF LYMPHATIC FILARIASIS IN EAST SEPIK PROVINCE, PAPUA NEW GUINEA**

**Michael C. Payne**<sup>1</sup>, Philip Lus<sup>2</sup>, Nelly Sanuku<sup>2</sup>, Brooke Mancuso<sup>1</sup>, James Suamani<sup>2</sup>, Delma Beaso<sup>2</sup>, Gary J. Weil<sup>3</sup>, Peter U. Fischer<sup>3</sup>, Moses Laman<sup>4</sup>, Leanne J. Robinson<sup>5</sup>, Daniel J. Tisch<sup>1</sup>, Christopher L. King<sup>1</sup>  
<sup>1</sup>Case Western Reserve University, Cleveland, OH, United States, <sup>2</sup>Papua New Guinea Institute of Medical Research, Maprik, Papua New Guinea, <sup>3</sup>Washington University School of Medicine, St. Louis, MO, United States, <sup>4</sup>Papua New Guinea Institute of Medical Research, Goroka, Papua New Guinea, <sup>5</sup>Burnet Institute, Melbourne, Australia

11 a.m.

83

**ONCHOCERCIASIS ELIMINATION IN LOW-ENDEMIC SETTINGS: MATHEMATICAL MODELLING TO ASSESS THE REQUIRED DURATION OF MASS DRUG ADMINISTRATION OF IVERMECTIN**

**Wilma A. Stolk**, Anneke S. De Vos, David J. Blok, Luc E. Coffeng, Sake J. De Vlas  
*Erasmus MC, Rotterdam, Netherlands*

11:15 a.m.

84

**FEASIBILITY OF ONCHOCERCIASIS ELIMINATION USING A "TEST-AND-NOT-TREAT" STRATEGY IN LOA LOA CO-ENDEMIC AREAS**

**David J. Blok**<sup>1</sup>, Joseph Kamgno<sup>2</sup>, Sebastien D. Pion<sup>3</sup>, Hughes C. Nana-Djeunga<sup>2</sup>, Yannick Niamsi-Emilio<sup>2</sup>, Cedric B. Chesnais<sup>3</sup>, Charles D. MacKenzie<sup>4</sup>, Amy D. Klion<sup>5</sup>, Daniel A. Fletcher<sup>6</sup>, Thomas B. Nutman<sup>5</sup>, Sake J. de Vlas<sup>1</sup>, Michel Boussinesq<sup>3</sup>, Wilma A. Stolk<sup>1</sup>  
<sup>1</sup>Department of Public Health, Erasmus MC, University Medical Center, Rotterdam, Netherlands, <sup>2</sup>Centre for Research on Filariasis and other Tropical Diseases (CRFiIT), Yaoundé, Cameroon, <sup>3</sup>IRD UMI 233-INSERM U1175-Montpellier University, Montpellier, France, <sup>4</sup>Liverpool School of Tropical Medicine, Liverpool, United Kingdom, <sup>5</sup>Laboratory of Parasitic Diseases, National Institute of Allergy and Infectious Diseases, Bethesda, MD, United States, <sup>6</sup>Department of Bioengineering and the Biophysics Program, University of California, Berkeley, CA, United States

11:30 a.m.

85

**ENVIRONMENTAL FACTORS ASSOCIATED WITH CONTRASTING GEOGRAPHICAL DISTRIBUTIONS AND HOTSPOTS OF ONCHOCERCIASIS AND LOIASIS IN KONGO-CENTRAL, DEMOCRATIC REPUBLIC OF CONGO**

Xavier Badia-Rius, Hannah Betts, **Louise A. Kelly-Hope**  
*Liverpool School of Tropical Medicine, Liverpool, United Kingdom*

11:45 a.m.

86

**EVALUATION OF RESPONDENT-DRIVEN SAMPLING TO ESTIMATE LYMPHATIC FILARIASIS MORBIDITY BURDEN IN HAITI**

Alexia Couture<sup>1</sup>, Luccene Desir<sup>1</sup>, Ernest Jean Romuald<sup>1</sup>, Madsen Beau De Rochars<sup>2</sup>, Brittany Eddy<sup>1</sup>, Karen E. Hamre<sup>3</sup>, Michelle A. Chang<sup>3</sup>, Katherine M. Gass<sup>4</sup>, Caitlin M. Worrell<sup>5</sup>, Jean Frantz Lemoine<sup>5</sup>, **Gregory S. Noland**<sup>1</sup>  
<sup>1</sup>The Carter Center, Atlanta, GA, United States, <sup>2</sup>Department of Health Services Research, Management and Policy, College of Public Health and Health Professions, University of Florida, Gainesville, FL, United States, <sup>3</sup>Division for Parasitic Diseases and Malaria, Center for Global Health, U.S. Centers for Disease Control and Prevention, Atlanta, GA, United States, <sup>4</sup>Neglected Tropical Diseases Support Center, Task Force for Global Health, Decatur, GA, United States, <sup>5</sup>Ministère de la Santé Publique et de la Population, Port-au-Prince, Haiti

**American Committee of Medical Entomology (ACME) Trainee Networking Lunch Event**

*National Harbor 8 (National Harbor Level)*  
Thursday, November 21, Noon - 1 p.m.

These lunch table meetings, organized by the ACME subgroup of ASTMH, aim to provide students and postdoctoral fellows an opportunity to interact with established medical entomologists to discuss job opportunities, related scientific work and receive valuable career guidance and direction.

**Exhibit Hall Open and Light Lunch**

*Prince George's Exhibit Hall C (Lower Atrium Level)*  
Thursday, November 21, Noon - 1:45 p.m.

**Poster Session 26**

**Poster Session A: Presentations and Light Lunch**

*Prince George's Exhibit Hall D (Lower Atrium Level)*  
Thursday, November 21, Noon - 1:45 p.m.

**Poster Session A Directory**

- Global Health: #87 - 114
- Ectoparasite-Borne Disease - Other: #115 - 126
- Mosquitoes - Molecular Genetics: #127 - 146
- Mosquitoes - Vector Biology-Epidemiology: #147 - 165
- Alphaviruses (Includes Chikungunya): #166 - 177
- Flaviviridae* - Dengue: #178 - 207
- Flaviviridae* - Other: #208 - 219
- Viruses - Other: #220 - 241
- Malaria - Biology and Pathogenesis: #242 - 253
- Malaria - Chemotherapy and Drug Resistance: #254 - 273
- Malaria - Diagnosis: #274 - 292
- Malaria - Drug Development - Preclinical Studies: #293 - 304
- Malaria - Epidemiology: #305 - 332
- Malaria - Genetics/Genomics: 333 - 347
- Malaria - Immunology: #348 - 362
- Malaria - Modeling: #363 - 373
- Malaria - Other: #374 - 388

Thursday  
November 21



Malaria – Prevention: #389 – 401  
Malaria - Strategies for Elimination: #402 – 416  
Malaria - Technological Innovations in Prevention and Control: #417 – 427  
Malaria – Vaccines: #428 – 439  
Malaria - Vector Control: #440 - 454  
Bacteriology – Enteric Infections: 455 - 468  
Bacteriology – Systemic Infections: #469 - 483  
Clinical Tropical Medicine: #484 – 516  
Helminths – Nematodes - Filariasis (Cellular and Molecular Biology): #517 - 521  
Helminths - Nematodes - Filariasis (Clinical): #522 - 525  
Helminths - Nematodes - Filariasis (Immunology): #526 - 530  
Helminths - Nematodes - Intestinal Nematodes: #531 - 540  
Integrated Control Measures for Neglected Tropical Diseases (NTDs): #541 - 556  
Kinetoplastida – Immunology (Including *Leishmania* and Trypanosomes): #557 - 564  
Pneumonia, Respiratory Infections and Tuberculosis: #565 - 574  
Protozoa - Ameba/*Giardia*: #575 - 580  
Protozoa - Other Protozoa: #581 - 590  
Schistosomiasis and Other Trematodes – Diagnostics and Treatment: #591 - 595  
Schistosomiasis and Other Trematodes – Immunology, Pathology, Cellular and Molecular Biology: #596 - 599  
Water, Sanitation, Hygiene and Environmental Health: #600 - 612

## Global Health

87

### HEALTH CARE PROVIDERS AND CAREGIVERS' VIEWS ON THE FEASIBILITY, USABILITY AND ACCEPTABILITY OF LUNG ULTRASOUND FOR DIAGNOSING PEDIATRIC PNEUMONIA IN MANHIÇA DISTRICT, MOZAMBIQUE

Olga Cambaco  
Manhica Health Research Centre, Vila da Manhica, Mozambique

88

### AWARENESS AND WILLINGNESS TO USE PREP AMONG FEMALE SEX WORKERS IN DAR ES SALAAM

Diana Faini<sup>1</sup>, Mucho Mizinduko<sup>1</sup>, Samuel Likindikoki<sup>1</sup>, Alexander Mwijage<sup>1</sup>, Melkizedeck Leshabari<sup>1</sup>, Neema Makyao<sup>2</sup>, Kåre Moen<sup>3</sup>, Germana H. Leyna<sup>1</sup>, Claudia Hanson<sup>4</sup>, Patricia Munseri<sup>1</sup>, Elia J. Mbagga<sup>1</sup>

<sup>1</sup>Muhimbili University of Health and Allied Sciences, Dar es Salaam, United Republic of Tanzania, <sup>2</sup>National AIDS Control Program, Dar es Salaam, United Republic of Tanzania, <sup>3</sup>University of Oslo, Oslo, Norway, <sup>4</sup>Karolinska Institutet, Stockholm, Sweden

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### A BASELINE ASSESSMENT EVIDENCE INFORMED DECISION MAKING NETWORK IN THE HEALTH SECTOR IN MALAWI USING SOCIAL NETWORK ANALYSIS AND A PROSPECTIVE CASE STUDY

Melody Sakala<sup>1</sup>, Kate Gooding<sup>1</sup>, Jenny Hill<sup>2</sup>, Linda Nyondo Mipando<sup>3</sup>, Bertie Squire<sup>2</sup>  
<sup>1</sup>Malawi Liverpool Wellcome Trust, Blantyre, Malawi, <sup>2</sup>Liverpool School of Tropical Medicine, Liverpool, United Kingdom, <sup>3</sup>College of Medicine, Blantyre, Malawi

90

### GEOSPATIAL MAPPING OF TIMELY ACCESS TO COMPREHENSIVE EMERGENCY OBSTETRIC CARE IN KENYA

Paul Ouma, Robert Snow, Mike English, Emelda Okiro  
KEMRI-Wellcome Trust, Nairobi, Kenya

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### COST OF DENGUE ILLNESS IN INDONESIA

Oliver J. Brady<sup>1</sup>, Lauren Carrington<sup>2</sup>, Emilie Hendrickx<sup>1</sup>, Dinar D. Kharisma<sup>3</sup>, Ida S. Laksanawati<sup>4</sup>, Kathleen O'Reilly<sup>1</sup>, Donald S. Shepard<sup>5</sup>, Cynthia Tschamp<sup>3</sup>, Nandyan N. Wilastonegoro<sup>6</sup>, Laith Yakob<sup>1</sup>, Wu Zeng<sup>3</sup>  
<sup>1</sup>London School of Tropical Medicine & Hygiene, London, United Kingdom, <sup>2</sup>Oxford University Clinical Research Unit, Ho Chi Minh, Vietnam, <sup>3</sup>Brandeis University, Waltham, MA, United States, <sup>4</sup>Dr. Sardjito General Hospital, Yogyakarta, Indonesia, <sup>5</sup>Heller School for Social Policy and Management, Waltham, MA, United States, <sup>6</sup>Faculty of Medicine, Public Health and Nursing, Universitas Gadjah Mada, Yogyakarta, Indonesia

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### HEALTH CARE OPTIONS AND FACTORS INFLUENCING HEALTH SEEKING BEHAVIOR IN A RURAL NIGERIAN COMMUNITY

Paul W. Okojie  
Liberty University, Lynchburg, VA, United States

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### MATERNITY WAITING HOMES IN LIBERIA: RESULTS OF A 5-YEAR COUNTRY-WIDE MULTI-SECTOR SCALE-UP

Alphonso W. Kofa<sup>1</sup>, Joseph E. Perosky<sup>2</sup>, Aloysius Nyanplu<sup>1</sup>, Cheryl A. Moyer<sup>3</sup>, Jody R. Lori<sup>4</sup>  
<sup>1</sup>Liberia Ministry of Health, Phebe, Liberia, <sup>2</sup>Michigan State University College of Human Medicine, East Lansing, MI, United States, <sup>3</sup>University of Michigan Medical School, Ann Arbor, MI, United States, <sup>4</sup>University of Michigan School of Nursing, Ann Arbor, MI, United States

94

### PRECISION PUBLIC HEALTH AND PANDEMIC PREPAREDNESS: QUANTIFYING TRAVEL TIME TO HEALTH CARE AND LOCATIONS AT RISK FOR PATHOGEN TRANSMISSION

Erin Hulland<sup>1</sup>, Kirsten Wiens<sup>1</sup>, Shreya Shirude<sup>1</sup>, Beth Bell<sup>2</sup>, Peter Rabinowitz<sup>3</sup>, Judith Wasserheit<sup>2</sup>, Daniel Weiss<sup>4</sup>, Simon Hay<sup>1</sup>, David Pigott<sup>1</sup>  
<sup>1</sup>Institute for Health Metrics and Evaluation, Seattle, WA, United States, <sup>2</sup>Department of Global Health, University of Washington, Seattle, WA, United States, <sup>3</sup>Department of Global Health and School of Public Health, University of Washington, Seattle, WA, United States, <sup>4</sup>Big Data Institute, Nuffield Department of Medicine, Oxford, United Kingdom

95

### BURDEN OF NON-COMMUNICABLE DISEASES IN A KENYAN CASUALTY DEPARTMENT

Gladys Wambua<sup>1</sup>, Mugane Mutua<sup>1</sup>, Daniel Rafiki Owambo<sup>2</sup>, Morgan Muchemi<sup>3</sup>, Thomas Kedera<sup>4</sup>, Kipkoech Rop<sup>5</sup>, Benjamin Wachira<sup>6</sup>, Christine Ngaruiya<sup>7</sup>  
<sup>1</sup>Kenyatta National Hospital, Nairobi, Kenya, <sup>2</sup>Narok County Referral Hospital, Kenya, Narok, Kenya, <sup>3</sup>PCEA Chogoria Mission Hospital, Chogoria, Kenya, <sup>4</sup>Kakamega County Referral Hospital, Kakamega, Kenya, <sup>5</sup>Kilifi County Referral Hospital, Kilifi, Kenya, <sup>6</sup>Aga Khan University Hospital, Nairobi, Kenya, <sup>7</sup>Yale School of Medicine, New Haven, CT, United States

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### TRASH TO TREASURE: COLLECTING TRASH FOR PROFIT TO REDUCE VECTOR BREEDING SITES IN KWALE COUNTY, KENYA

Gathenji B. Njoroge  
University of California Berkeley School of Public Health, Berkeley, CA, United States



## HEALTHCARE UTILIZATION IN PATIENTS WITH SUSPECTED ENTERIC FEVER

Alexander T. Yu<sup>1</sup>, Rajani Shakya<sup>2</sup>, Caryn Bern<sup>3</sup>, Bikram Adhikari<sup>2</sup>, Dipesh Tamrakar<sup>2</sup>, Krista Vaidya<sup>2</sup>, Caitlin Barkume<sup>4</sup>, Denise Garrett<sup>4</sup>, Stephen Luby<sup>1</sup>, Isaac Bogoch<sup>5</sup>, Jason Andrews<sup>1</sup>

<sup>1</sup>Stanford University, San Francisco, CA, United States, <sup>2</sup>Dhulikhel Hospital, Kathmandu University Hospital, Dhulikhel, Nepal, <sup>3</sup>University of California San Francisco, San Francisco, CA, United States, <sup>4</sup>Sabin Institute, Washington, DC, United States, <sup>5</sup>University of Toronto, Toronto, ON, Canada

## ESTABLISHING AN URBAN HEALTH AND DEMOGRAPHIC SURVEILLANCE SYSTEM IN A SEMI INFORMAL SETTLEMENT, INITIAL EXPERIENCES AND FINDINGS OF FIRST TWO YEARS, MANYATTA KISUMU

Thomas Misore, Maurice Ombok, David Obor, Peter Otieno, Stephen Liech, Leonard Oyuga, Janet Agaya

Kenya Medical Research Institute (KEMRI), Kisumu, Kenya

## INTRATER RELIABILITY OF AN ADAPTED AND TRANSLATED VERSION OF THE MULLEN SCALES OF EARLY LEARNING (MSEL) IN RURAL GUATEMALA

Alison M. Colbert<sup>1</sup>, Molly M. Lamb<sup>1</sup>, Desirée Bauer<sup>2</sup>, Sara Hernández<sup>2</sup>, Maria Alejandra Martínez<sup>2</sup>, Paola Arroyave<sup>2</sup>, Alejandra Paniagua-Avila<sup>2</sup>, Daniel Olson<sup>1</sup>, Mirella Calvimontes<sup>2</sup>, Guillermo A. Bolaños<sup>2</sup>, Hana M. El Sahly<sup>3</sup>, Flor M. Muñoz<sup>3</sup>, Edwin J. Asturias<sup>1</sup>, Amy K. Connery<sup>1</sup>

<sup>1</sup>University of Colorado School of Medicine, Aurora, CO, United States, <sup>2</sup>Center for Human Development, Fundación para la Salud Integral de los Guatemaltecos, Retalhuleu, Guatemala, <sup>3</sup>Baylor College of Medicine, Houston, TX, United States

## ENGAGING YOUNG PEOPLE AS AGENTS OF CHANGE: A SCHOOL-BASED INTERVENTION TO REDUCE ARBOVIRUS TRANSMISSION - 1 YEAR FOLLOW-UP INTERVIEWS

Arielle M. Kempinsky<sup>1</sup>, Jenna E. Forsyth<sup>2</sup>, Emilia J. Ling<sup>1</sup>, Catharina J. Alberts<sup>3</sup>, Francis Mutuku<sup>4</sup>, Lydia Kibe<sup>5</sup>, A. Desiree LaBeaud<sup>6</sup>

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## UNDERSTANDING THE CONTEXT OF DEATH OF UNDER-FIVE CHILDREN IN RURAL GHANA USING VERBAL POST MORTEM NARRATIVES

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### DENGUE FEVER, *Aedes Aegypti* AND CLIMATE DYNAMICS FROM THE TEMPERATE CITY OF CÓRDOBA, ARGENTINA, DURING THE TIME SERIES OF 2009-2017

Elizabet L. Estallo<sup>1</sup>, Rachel Sippy<sup>2</sup>, Anna Stewart-Ibarra<sup>2</sup>, Marta G. Grech<sup>3</sup>, Francisco F. Ludueña-Almeida<sup>1</sup>, Elisabet M. Benitez<sup>1</sup>, Mariela Aineté<sup>4</sup>, María Frías<sup>4</sup>, Michael Robert<sup>5</sup>, Moory Romero<sup>2</sup>, Walter R. Almirón<sup>1</sup>

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### UNCOVERING THE DENGUE-1 SPECIFIC MEMORY B CELL DERIVED ANTIBODY REPERTOIRE IN IMMUNE DONORS 1 TO 43 YEARS AFTER DENGUE INFECTION IN A NON-ENDEMIC COHORT

Zoe Lyski<sup>1</sup>, Bettie Kareko<sup>1</sup>, Brian Booty<sup>2</sup>, Jana Mooster<sup>1</sup>, William Messer<sup>1</sup>

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### CHARACTERIZING THE SPATIO-TEMPORAL DYNAMICS OF DENGUE IN BRAZIL

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### THE LABORATORY PROFILE OF DENGUE IN PATIENTS ADMITTED TO TEACHING HOSPITAL ANURADHAPURA

Shobha Sanjeeewani Gunathilaka<sup>1</sup>, SAM Kularatne<sup>2</sup>, Jayantha Rajapakse<sup>3</sup>, Rohitha Muthugala<sup>4</sup>

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### CHARACTERIZING EXPOSURE TO DENGUE VIRUS INFECTION IN COASTAL KENYA

Henry Kibe Karanja<sup>1</sup>, John N. Gitonga<sup>1</sup>, Doris Nyamwaya<sup>1</sup>, Donwilliams Omwoyo<sup>1</sup>, Evelyn Kamau<sup>1</sup>, Barnes Kitsao<sup>1</sup>, Rosemary Sang<sup>2</sup>, Limbaso Konongoi<sup>2</sup>, Daniel Wright<sup>3</sup>, Charles Nyaigoti<sup>1</sup>, George Warimwe<sup>1</sup>

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### A NEW SET OF PRIMERS FOR IN-HOUSE LOOP-MEDIATED ISOTHERMAL AMPLIFICATION (LAMP) FOR DENGUE VIRUS DIFFERENTIAL DIAGNOSIS

Scarlett Barrientos Peña, Oscar Nolasco Cárdenas

Laboratorios de Investigación y Desarrollo, Facultad de Ciencias y Filosofía, Universidad Peruana Cayetano Heredia, Lima, Peru

### CIRCULATION OF MULTIPLE DENGUE VIRUS SEROTYPES IN IBADAN NIGERIA

Anyebe B. Onoja<sup>1</sup>, Mamoudou Maiga<sup>2</sup>, Adekunle J. Adeniji<sup>1</sup>, Georgina N. Odaibo<sup>1</sup>, Robert L. Murphy<sup>3</sup>, Olufemi D. Olaleye<sup>1</sup>

<sup>1</sup>University of Ibadan, Ibadan, Nigeria, <sup>2</sup>Center for Innovation in Global Health Technologies, Northwestern University, Evanston Campus, IL, United States, <sup>3</sup>Center for Global Health, Feinberg School of Medicine, Northwestern University, Chicago, IL, United States

(ACMCIP Abstract)

### DIFFERENTIAL SUSCEPTIBILITIES AND IMMUNE RESPONSES OF *Aedes Aegypti* TO TWO DENGUE 4 VIRUS STRAINS

Caroline J. Stephenson, Seokyoung Kang, John A. Lednicky, Rhoel R. Dinglasan  
University of Florida, Gainesville, FL, United States

### GENETIC DIVERSITY OF CIRCULATING DENGUE VIRUSES IN THE PHILIPPINES (2014 - 2017)

John Mark S. Velasco, Chonticha Klungthong, Ma. Theresa Valderama, Paula Corazon Diones, Piyawan Chinnawitropisan, Wudtichai Manasatienkij, Yongyuth Poolpanichupatam, Khajohn Joonlasak, Damon Ellison, Stefan Fernandez, Louis Macareo

U.S. Army Medical Directorate-Armed Forces Research Institute of Medical Sciences, Bangkok, Thailand

### EARLY GUILLAIN-BARRE' SYNDROME COMPLICATING DENGUE HEMORRHAGIC FEVER: TWO CASES FROM MYANMAR

Aye Mya Theingi Win<sup>1</sup>, Khin Ko<sup>1</sup>, Aye Win<sup>1</sup>, May Zabe<sup>1</sup>, Cho New<sup>1</sup>, Mya Paing<sup>1</sup>, Patricia F. Walker<sup>2</sup>, Moe San<sup>1</sup>

<sup>1</sup>University of Medicine (1), Yangon, Myanmar, <sup>2</sup>University of Minnesota, Minneapolis, MN, United States

### PRIMARY DENGUE INFECTION MODULATES ZIKA PATHOGENESIS IN A TIME-DEPENDENT MANNER

Crisanta Serrano-Collazo<sup>1</sup>, Petraleigh Pantoja<sup>1</sup>, Lorna A. Cruz<sup>1</sup>, Erick X. Perez<sup>1</sup>, Idia V. Rodriguez<sup>2</sup>, Teresa Arana<sup>1</sup>, Melween Martinez<sup>2</sup>, Mariah Hassert<sup>3</sup>, Laura J. White<sup>4</sup>, James D. Brien<sup>3</sup>, Vida Hodara<sup>5</sup>, Luis Giavedoni<sup>5</sup>, Aravinda de Silva<sup>4</sup>, Amelia Pinto<sup>3</sup>, Carlos A. Sario<sup>1</sup>

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### AN RT-PCR PANEL FOR RAPID SEROTYPING OF DENGUE VIRUS SEROTYPES 1 TO 4 IN HUMAN SERUM AND MOSQUITO ON A FIELD-DEPLOYABLE PCR SYSTEM

Jih-Jin Tsai<sup>1</sup>, Wei-Liang Liu<sup>2</sup>, Ping-Chang Lin<sup>1</sup>, Bo-Yi Huang<sup>1</sup>, Ching-Yi Tsai<sup>1</sup>, Pin-Hsing Chou<sup>3</sup>, Fu-Chun Lee<sup>3</sup>, Chia-Fong Ping<sup>3</sup>, Pei-Yu Alison Lee<sup>3</sup>, Li-Teh Liu<sup>4</sup>, Chun-Hong Chen<sup>5</sup>

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### A PHASE I RANDOMIZED, DOUBLE-BLIND, PLACEBO-CONTROLLED STUDY TO EVALUATE THE SAFETY, TOLERABILITY, AND IMMUNOGENICITY OF A LIVE-ATTENUATED TETRAVALENT DENGUE VACCINE (V181) IN FLAVIVIRUS-NAÏVE AND FLAVIVIRUS- EXPERIENCED HEALTHY ADULTS

Kevin Russell<sup>1</sup>, Richard Rupp<sup>2</sup>, Javier Morales-Ramirez<sup>3</sup>, Clemente Diaz-Perez<sup>4</sup>, Charles Andrews<sup>5</sup>, Matthew Davis<sup>6</sup>, Andrew Lee<sup>1</sup>, Tyler Finn<sup>1</sup>, Amy Falk Russell<sup>1</sup>, Margaret Schaller<sup>1</sup>, Jason Martin<sup>1</sup>, Donna Hyatt<sup>1</sup>, Sabrina Gozlan-Kelner<sup>1</sup>, Jon Stek<sup>1</sup>, Beth-Ann Collier<sup>1</sup>

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### A DENGUE RT-PCR TEST PERFORMED DIRECTLY FROM BLOOD OR PLASMA FOR DIAGNOSIS IN LOW-RESOURCE SETTINGS

Ninad Mehta<sup>1</sup>, Bastien Perrais<sup>1</sup>, Kimberly Martin<sup>1</sup>, Anil Kumar<sup>1</sup>, Tom C. Hobman<sup>1</sup>, Mary N. Cabalfin-Chua<sup>2</sup>, Manuel E. Donaldo<sup>3</sup>, Maria S. Panaiga<sup>4</sup>, James Y. Gaite<sup>4</sup>, Vanessa Tran<sup>5</sup>, Kevin C. Kain<sup>5</sup>, Michael T. Hawkes<sup>1</sup>, **Stephanie K. Yanow**<sup>1</sup>

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### INCREASED SEVERITY OF ILLNESS IN THE 2019 DENGUE FEVER EPIDEMIC IN RIBEIRAO PRETO, BRAZIL WITH CONSEQUENT INCREASING NUMBER OF HOSPITAL ADMISSIONS

Silvia N. Fonseca, Lude B. Silveira, Maria L. Freitas, Ivana C. Lucca, Ronaldo D. Marani, Deise R. Ustulin, Gabrielly R. Sarria, Francieliana B. Sgobi, Andre L. Fioravante, Rafael D. Duarte, Alexandre V. Celia, Felicia D. Maia, Ernani M. Martins, Viviane F. Veiga, Woe T. Chan

Hospital Sao Francisco, Ribeirao Preto, Brazil

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### DENGUE VACCINE INTRODUCTION ACCEPTABILITY AND FEASIBILITY IN BARRANQUILLA, COLOMBIA AND MERIDA, VENEZUELA

Elizabeth McMahon<sup>1</sup>, Liliana Encinales<sup>2</sup>, Carlos Navarro Encinales<sup>3</sup>, Silvana Vielma<sup>4</sup>, Nelly Pacheco<sup>2</sup>, Lil Geraldine Avendaño Echavez<sup>5</sup>, Sandra Acosta Rodríguez<sup>6</sup>, Milena Calderon<sup>6</sup>, Silvia Encinales Sanabria<sup>6</sup>, Lorena Encinales Sanabria<sup>6</sup>, Ericka Serrano Bernal<sup>6</sup>, Andrés González Coba<sup>6</sup>, Denny Jiméñez<sup>6</sup>, Gary Simon<sup>1</sup>, Aileen Y. Chang<sup>1</sup>

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### DENGUE FORECASTING: VIETNAM AS A CASE STUDY

Giang D. H. Dang<sup>1</sup>, Thai Q. Pham<sup>2</sup>, Thanh Ngo-Duc<sup>3</sup>, Son Tong-Si<sup>3</sup>, Tuong-Thuy Vu<sup>4</sup>, Guy E. Thwaites<sup>1</sup>, Marc Choisy<sup>5</sup>, Hannah E. Clapham<sup>1</sup>

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### LABORATORY-ACQUIRED DENGUE IN A RESEARCHER WORKING WITH HIGH-TITER VIRUS, USA, 2018

Tyler M. Sharp<sup>1</sup>, Teresa Fisher<sup>2</sup>, Kristin Long<sup>3</sup>, Garry Coulson<sup>4</sup>, Freddy Medina<sup>1</sup>, Carolyn Herzig<sup>2</sup>, Mary B. Koza<sup>4</sup>, Jorge L. Munoz-Jordan<sup>1</sup>, Gabriela Paz-Bailey<sup>1</sup>, Zachary Moore<sup>2</sup>, Carl Williams<sup>2</sup>

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### AVIDITY ASSESSMENT OF ANTI-DENGUE VIRUS ANTIBODY RESPONSE ELICITED BY A LIVE ATTENUATED TETRAVALENT DENGUE VACCINE

Isamu Tsuji, David Dominguez, Christina DeMaso, Allan Parker, Sunil Palani, Nicole Messere, Melissa Zahralban-Steele, Sharma Mayuri, Ralph Braun, Hansi Dean, DEN 203 and 204 study groups

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### ESTIMATING FORCE OF INFECTION (FOI) OF ALL FOUR DENGUE SEROTYPES FROM SEROLOGICAL STUDIES IN TWO REGIONS OF VIETNAM

Huynh Thi Phuong<sup>1</sup>, Nguyen Ha Thao Vy<sup>1</sup>, Ha Minh Lam<sup>1</sup>, Erwin de Bruin<sup>2</sup>, Marion Koopmans<sup>2</sup>, Maciej F. Boni<sup>3</sup>, Nguyen Thi Le Thanh<sup>1</sup>, Hannah E. Clapham<sup>1</sup>

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### COMPREHENSIVE MUTAGENESIS OF DENGUE VIRUS ENVELOPE PROTEINS TO MAP ANTIBODY EPITOPES AND IDENTIFY RESIDUES ESSENTIAL FOR FUNCTION

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## Flaviviridae – Other

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### INTERCURRENT FLAVIVIRAL VIREMIA IN ILL RETURNED TRAVELERS WITH *PLASMODIUM VIVAX* MALARIA

Katherine Faith Tan<sup>1</sup>, Ruwandi Kariyawasam<sup>2</sup>, Rachel Lau<sup>3</sup>, Filip Ralevski<sup>3</sup>, Andrea K. Boggild<sup>1</sup>

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(ACMCIP Abstract)

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### DETECTION AND SEQUENCING OF ZIKA VIRUS IN NORMOCEPHALIC NEWBORNS WITH CONGENITAL ZIKA INFECTION

Breno L. de Almeida<sup>1</sup>, Marta Giovanetti<sup>1</sup>, João V. Oliveira<sup>1</sup>, Tereza C. Xavier<sup>2</sup>, Eduardo M. Figueiredo<sup>3</sup>, Jaqueline J. Goes<sup>1</sup>, Luiz C. Alcantara<sup>1</sup>, Isadora C. de Siqueira<sup>1</sup>

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**210****ZIKA VIRUS DETECTION IN PREVIOUSLY UNDIAGNOSABLE SAMPLES: OPTIMIZATION OF A QUANTITATIVE RT-PCR ASSAY FOR SAMPLES OF LOW VIRAL CONCENTRATION****Alejandra Garcia Glaessner**<sup>1</sup>, Patricia Barrera<sup>2</sup>, Amy C. Morrison<sup>3</sup>, Thomas W. Scott<sup>4</sup>, Mariana Leguia<sup>1</sup><sup>1</sup>Genomics Laboratory, Pontificia Universidad Católica del Perú, Lima, Peru, <sup>2</sup>Asociación Benéfica Prisma, Lima, Peru, <sup>3</sup>Department of Pathology, Microbiology, and Immunology, School of Veterinary Medicine, University of California, Davis, CA, United States, <sup>4</sup>Department of Entomology and Nematology, University of California, Davis, CA, United States

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**211****SEROPREVALENCE OF ZIKV IN CEBU PROVINCE, PHILIPPINES****Cameron R. Adams**<sup>1</sup>, Ramesh Jadi<sup>1</sup>, Michelle Ylade<sup>2</sup>, Jedas Daag<sup>2</sup>, Kristal An Agrupis<sup>2</sup>, Jacqueline Deen<sup>2</sup>, Aravinda de Silva<sup>1</sup>, Premkumar Lakshmanane<sup>1</sup>, Anna Lena Lopez<sup>2</sup><sup>1</sup>University Of North Carolina, Chapel Hill, NC, United States, <sup>2</sup>Institute of Child Health and Human Development, University of the Philippines Manila, Manila, Philippines

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**212****PREGNANCY AND BIRTH OUTCOMES AMONG COLOMBIAN WOMEN WITH ZIKA VIRUS DISEASE IN THREE SURVEILLANCE SITES, PROYECTO VIGILANCIA DE EMBARAZADAS CON ZIKA****Van Tong**<sup>1</sup>, Marcela Mercado<sup>2</sup>, Suzanne Gilboa<sup>1</sup>, Diana Valencia<sup>1</sup>, Marcela Daza<sup>3</sup>, Romeo Galang<sup>1</sup>, Christina Winfield<sup>1</sup>, Shana Godfred-Cato<sup>1</sup>, Monica Benavides<sup>3</sup>, Julie Villanueva<sup>1</sup>, Jonathan Daniels<sup>1</sup>, Julu Bhatnaga<sup>1</sup>, Jarad Schiffer<sup>1</sup>, Sheryll Corchuelo<sup>3</sup>, Sarah Tinker<sup>1</sup>, Kayla Anderson<sup>1</sup>, Johana Osorio<sup>3</sup>, Veronica Burkel<sup>4</sup>, Jacob Hojnacki<sup>5</sup>, Maritza Gonzalez<sup>2</sup>, Cynthia Moore<sup>1</sup>, Margaret Honein<sup>1</sup>, Martha Ospina<sup>2</sup><sup>1</sup>Centers for Disease Control and Prevention, Atlanta, GA, United States, <sup>2</sup>National Institute of Health, Bogota, Colombia, <sup>3</sup>Vysnova Partners, Bethesda, MD, United States, <sup>4</sup>Eagle Medical Services, LLC, San Antonio, TX, United States, <sup>5</sup>Oak Ridge Institutes for Science and Education, Oak Ridge, TN, United States

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**213****PEDIATRIC ZIKA VARIES BY AGE AND IS OFTEN MISSED UNDER CURRENT CASE DEFINITIONS****Fausto A. Bustos Carrillo**<sup>1</sup>, Raquel Burger-Calderon<sup>1</sup>, Lionel Gresh<sup>2</sup>, Sergio Ojeda<sup>2</sup>, Nery Sanchez<sup>2</sup>, Miguel Plazaola<sup>2</sup>, Leah Katzelnick<sup>1</sup>, Brenda L. Mercado<sup>2</sup>, Jairo C. Monterrey<sup>2</sup>, Douglas Elizondo<sup>2</sup>, Sonia Arguello<sup>2</sup>, Andrea Nuñez<sup>3</sup>, Aubree Gordon<sup>4</sup>, Angel Balmaseda<sup>3</sup>, Guillermina Kuan<sup>5</sup>, Eva Harris<sup>1</sup><sup>1</sup>Division of Infectious Diseases and Vaccinology, School of Public Health, University of California, Berkeley, Berkeley, CA, United States, <sup>2</sup>Sustainable Sciences Institute, Managua, Nicaragua, <sup>3</sup>Laboratorio Nacional de Virología, Centro Nacional de Diagnóstico y Referencia, Ministerio de Salud, Managua, Nicaragua, <sup>4</sup>Department of Epidemiology, University of Michigan, Ann Arbor, MI, United States, <sup>5</sup>Centro de Salud Sócrates Flores Vivas, Ministerio de Salud, Managua, Nicaragua

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**214****CLINICAL AND EPIDEMIOLOGICAL FEATURES OF THE ZIKA OUTBREAK IN NICARAGUA****Natalie M. Bowman**<sup>1</sup>, Filemon Bucardo<sup>2</sup>, Matthew H. Collins<sup>3</sup>, Yaoska Reyes<sup>2</sup>, Edwing Centeno<sup>2</sup>, Quique P. Guerra<sup>1</sup>, Rebecca J. Rubinstein<sup>1</sup>, Guei-Jiun Alice Liou<sup>1</sup>, Aravinda de Silva<sup>1</sup>, Becker-Dreps Sylvia<sup>1</sup><sup>1</sup>University of North Carolina-Chapel Hill, Chapel Hill, NC, United States, <sup>2</sup>Universidad Nacional Autónoma de Nicaragua-León, León, Nicaragua, <sup>3</sup>Emory University, Atlanta, GA, United States

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**215****DOSE SELECTION OF A PURIFIED INACTIVATED ZIKA VIRUS VACCINE (PIZV) CANDIDATE FOR FURTHER CLINICAL DEVELOPMENT****Htay Htay Han**<sup>1</sup>, the ZKV-101 Study Group<sup>2</sup><sup>1</sup>Takeda Vaccines Inc., Cambridge, MA, United States

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**216****TGF-B AND TNF-A CYTOKINE GENE POLYMORPHISMS MAY INFLUENCE PREGNANCY OUTCOMES OF ZIKA VIRUS INFECTED WOMEN****Benedito A. Fonseca**, Mayara R. Agostinho, Danillo L. Esposito, Vitor G. Floriano, Marcio J. Siconelli

School of Medicine of Ribeirão Preto, Ribeirão Preto, S.P., Brazil

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**217****CHARACTERIZATION OF A POTENTIAL CORRELATE OF PROTECTION PROVIDED BY TAKEDA'S PURIFIED INACTIVATED ZIKA VACCINE IN INDIAN RHESUS MACAQUES****Ginger Young**<sup>1</sup>, Stephanie Sonnberg<sup>1</sup>, Hui-Ling Chen<sup>1</sup>, Srisowmya Sanisetty<sup>1</sup>, Melissa Zahralban-Steele<sup>1</sup>, Tim Powell<sup>1</sup>, Joseph Lee<sup>1</sup>, Michael Johnson<sup>1</sup>, Greg Hather<sup>2</sup>, Lovkesh Karwal<sup>1</sup>, Kelly Bohning<sup>1</sup>, Lydia Anderson<sup>1</sup>, Hetal Patel<sup>1</sup>, Hansi Dean<sup>1</sup><sup>1</sup>Takeda Vaccines, Inc., Cambridge, MA, United States, <sup>2</sup>Takeda Pharmaceuticals, Inc., Cambridge, MA, United States

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**218****RESEARCH OF ANTI-VIRUS ANTIBODIES OF MEASLES, RUBELLA, MUMPS AND TOXOPLASMA GONDII IN SALIVA OF SCHOOLS AND COLLEGES OF THE CITY OF SÃO PAULO****Barbara F. Sampaio**

Institute of Tropical Medicine Sao Paulo, Sao Paulo, Brazil

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**219****ZIKA VIRUS COMPLICATIONS BEYOND CONGENITAL ZIKA SYNDROME: A SYSTEMATIC REVIEW****Leyla A. Hernandez-Donoso**<sup>1</sup>, Estelle Meroc<sup>2</sup>, Laurence De Moerloose<sup>1</sup><sup>1</sup>Takeda Pharmaceuticals, Zurich, Switzerland, <sup>2</sup>p95, Leuven, Belgium

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**Viruses – Other**

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**220****PROSPECTIVE STUDY OF HEPATITIS E VIRUS INFECTION AMONG PREGNANT WOMEN IN NIGERIA****Adeola Fowotade**

University of Ibadan, Ibadan, Nigeria

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**221****HEPATITIS E VIRUS INFECTIONS AMONG PATIENTS WITH ACUTE FEBRILE JAUNDICE IN BURKINA FASO, 2013-2016****Sylvie Zida**<sup>1</sup>, Chloé Di Méglio<sup>2</sup>, Dramane Kania<sup>3</sup>, Judith Mbombi Mantono<sup>4</sup>, Thérèse Kagoné<sup>3</sup>, Souleymane Tassebedo<sup>3</sup>, Amadou Dicko<sup>3</sup>, Bachirou Tinto<sup>3</sup>, Seydou Yaro<sup>3</sup>, Hervé Hien<sup>3</sup>, Jérémie Rouamba<sup>3</sup>, Brice Bicaba<sup>3</sup>, Isaïe Medah<sup>5</sup>, Nicolas Meda<sup>5</sup>, Omar Traoré<sup>6</sup>, Edouard Tuailon<sup>7</sup>, Florence Abravanel<sup>2</sup>, Jacques Izopet<sup>2</sup><sup>1</sup>Institut de Recherche en Sciences de la Santé, Ouagadougou, Burkina Faso, <sup>2</sup>CHU Toulouse, Hôpital Purpan, Laboratoire de virologie, Centre national de référence du virus de l'hépatite E, Toulouse, France, <sup>3</sup>Centre Muraz, Bobo Dioulasso, Burkina Faso, <sup>4</sup>Université Catholique d'Afrique de l'Ouest, Bobo Dioulasso, Burkina Faso, <sup>5</sup>Ministère de la Santé, Ouagadougou, Burkina Faso, <sup>6</sup>Agence nationale de biosécurité, Ouagadougou, Burkina Faso, <sup>7</sup>Pathogenesis and Control of Chronic Infections. INSERM, University of Montpellier, Etablissement Français du Sang, Montpellier, France



### SEROPREVALENCE OF VIRAL INFECTIONS IN BLOOD DONORS IN YAOUNDE, CAMEROON

Diderot Fopa<sup>1</sup>, Claude Tayou Tagny<sup>1</sup>, Dora Mbanya<sup>1</sup>, Daniel Candotti<sup>2</sup>, Camille Doux<sup>2</sup>, Syria Laperche<sup>2</sup>, Edward L. Murphy<sup>3</sup>  
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### SEROPREVALENCE OF MOSQUITO-BORNE VIRUSES AMONG RESIDENTS FROM DIFFERENT CITIES OF NIGERIA

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### OUTBREAK OF ENVIRONMENTALLY ISOLATED TYPE 2 CIRCULATING VACCINE-DERIVED POLIOVIRUS IN METROPOLITAN KANO, NORTHWESTERN NIGERIA. 2018

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### SPATIOTEMPORAL RESOURCES FOR PREEMPTIVE PREPAREDNESS AGAINST RIFT VALLEY FEVER

Austin Hardcastle, Joshua Osborne, Rebecca Ramshaw, Erin Hullah, Julia Morgan, Julia Hon, Lucas Earl, Shreya Shirude, Simon Hay, David Pigott  
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### CHARACTERIZING THE GENOMIC DIVERSITY, EVOLUTION AND PHYLOGEOGRAPHY OF RESPIRATORY SYNCYTIAL VIRUS GENOTYPE ON1 IN KENYA

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**Catherin Y. Marin-Mogollon**<sup>1</sup>, Ahmed M. Salman<sup>2</sup>, Karin M. Koolen<sup>3</sup>, Judith M. Bolscher<sup>3</sup>, Fiona J. van Pul<sup>1</sup>, Shinya Miyazaki<sup>1</sup>, Takashi Imai<sup>4</sup>, Ahmad Syibli Othman<sup>5</sup>, Jai Ramesar<sup>1</sup>, Geert-Jan van Gemert<sup>6</sup>, Hans Kroeze<sup>1</sup>, Severine Chevalley-Maurel<sup>1</sup>, Blandine Franke-Fayard<sup>1</sup>, Robert W. Sauerwein<sup>6</sup>, Adrian V. Hill<sup>2</sup>, Koen J. Decherin<sup>3</sup>, Chris J. Janse<sup>1</sup>, Shahid M. Khan<sup>1</sup>

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**Keri Harp**<sup>1</sup>, Felix Botchway<sup>2</sup>, Michael Wilson<sup>3</sup>, Yvonne Dei-Adomakoh<sup>2</sup>, Jonathan K. Stiles<sup>1</sup>, Adel Driss<sup>1</sup>

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### STUDY OF ANTI-MALARIAL DRUG RESISTANCE USING THE MUSE<sup>®</sup> RBC INVASION ASSAY

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**IDENTIFYING MOLECULAR MARKERS OF *PLASMODIUM FALCIPARUM* ARTEMISININ RESISTANCE USING THE CRISPR-CAS9 GENOME EDITING SYSTEM**

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### THERAPEUTIC EFFICACY OF ARTEMETHER-LUMEFANTRINE FOR THE TREATMENT OF UNCOMPLICATED *PLASMODIUM FALCIPARUM* MALARIA IN COLOMBIA, 2018-2019

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### ANGIOGENIC AND ANGIOSTATIC FACTORS IN THE SALIVA OF MALARIA PATIENTS

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### VALIDATION OF PFHRP2/3 GENE DELETION ASSAYS USING CULTURED MALARIA PARASITES

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### THE ROLE OF MRDTS IN SCREENING OF ASYMPTOMATIC INDIVIDUALS TO BE ENROLLED IN CLINICAL TRIALS

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**Agneta Ogolo**, Cornel Arima, Cephas Aguko, Catherine Sumbi, Michael Ayaya, Everlyne Omondi, Victor Otieno, Vincent Akolo, Rose Adeny, Hosea M. Akala, Bernhards Ogutu, Jim Ray Managbanag  
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(ACMCI Abstract)

## MALARIA IN SEMI-ISOLATED AMAZONIAN INDIGENOUS COMMUNITY: HETEROGENEITY OF TRANSMISSION AND PREDOMINANCE OF SUBMICROSCOPIC INFECTION

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## RETINOPATHY IN CEREBRAL MALARIA IN CHILDREN IN KINSHASA

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## THE INFLUENCE OF TRAINING OUTCOME AND COMPETENCY ON EFFECTIVE UTILIZATION OF MALARIA MICROSCOPY RESULT BY HEALTH PROFESSIONALS IN SOUTHEASTERN NIGERIA

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## THE LACK OF A STANDARD DEFINITION FOR SUSPECTED MALARIA CASE—HOW CAN WE DIAGNOSE WHAT WE DON'T FIRST SUSPECT? DIAGNOSE WHAT WE DON'T FIRST SUSPECT?

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## SENSITIVITY AND SPECIFICITY OF A NOVEL HIGHLY SENSITIVE RAPID DIAGNOSTIC TEST FOR DETECTING LOW DENSITY *PLASMODIUM FALCIPARUM* INFECTION DURING A CONTROLLED HUMAN MALARIA INFECTION STUDY IN EQUATORIAL GUINEA

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## Malaria - Drug Development - Preclinical Studies

## SOLUBILITY OPTIMIZATION AND DOCKING STUDIES OF ANTIMALARIAL AMINOPYRAZINES

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## DISCOVERY OF A NOVEL, FAST-ACTING ANTIMALARIAL COMPOUND THAT RETAINS POTENCY AGAINST A PANEL OF RESISTANT PARASITES

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## EXPLOITING *IN VITRO* SYNERGISTIC INTERACTIONS BETWEEN THE CONSTITUENT PLANTS OF SOME ANTIMALARIAL POLYHERBALS TO IMPROVE THERAPEUTIC SELECTIVITY

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(ACMCIP Abstract)

## METHYLENE BLUE ACTIVITY AGAINST HEPATIC STAGES OF *PLASMODIUM*

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## AN EXTENSIVE COMPUTATIONAL APPROACH TO INHIBIT MEROZOITE SURFACE PROTEIN-1 OF *PLASMODIUM VIVAX* ELUCIDATES FURTHER HORIZON IN THE ESTABLISHMENT NEXT GENERATION THERAPEUTICS AGAINST MALARIA

Parag Palit<sup>1</sup>, Md. Ohedul Islam<sup>1</sup>, Jakaria Shawon<sup>1</sup>, Md. Kamrul Hasan<sup>2</sup>, Mustafa Mahfuz<sup>1</sup>, Tahmeed Ahmed<sup>1</sup>, Dinesh Mondal<sup>1</sup>

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(ACMCIP Abstract)

## INVESTIGATION OF *PLASMODIUM FALCIPARUM* CYTOADHERENCE AND EXPORTED PROTEINS INTERACTIONS WITH SULFATED POLYSACCHARIDES CONTAINING ANTI-MALARIAL PROPERTIES

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Victor S. Koko<sup>1</sup>, Oliver J. Pratt<sup>1</sup>, Paye K. Nyansaiye<sup>1</sup>, Levi D. Hinneh<sup>1</sup>, Joseph O. Alade<sup>1</sup>, Moses Badio<sup>2</sup>, Eric Diboulo<sup>3</sup><sup>1</sup>Ministry of Health/National Malaria Control Program, Monrovia, Liberia, <sup>2</sup>Local consultant, Monrovia, Liberia, <sup>3</sup>Measure Evaluation, Monrovia, Liberia

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(ACMCIP Abstract)

**311****ASSESSING RELATIONSHIP BETWEEN HUMAN SETTLEMENT PATTERNS AND MALARIA RISK IN A RESIDUAL TRANSMISSION SETTING IN SOUTHEASTERN TANZANIA****Emmanuel W. Kaindoa**<sup>1</sup>, Arnold S. Mmbando<sup>1</sup>, Gustav Mkandawile<sup>1</sup>, Maureen Coetzee<sup>2</sup>, Sherif Amer<sup>3</sup>, Fredros O. Okumu<sup>1</sup><sup>1</sup>Ifakara Health Institute, Morogoro, United Republic of Tanzania, <sup>2</sup>Wits Research Institute for Malaria and Wits/MRC Collaborating Centre for Multidisciplinary Research on Malaria, School of Pathology, Faculty of Health Sciences, University of the Witwatersrand, Johannesburg, South Africa, <sup>3</sup>Faculty of Geo-information Science and Earth Observation, University of Twente, Netherlands, Netherlands**312****PARADIGM SHIFT AND SEASONAL VARIATION IN MALARIA PREVALENCE AND ANAEMIA IN IJEDE, IKORODU LOCAL GOVERNMENT AREA, LAGOS STATE, NIGERIA****Oluwagbemiga Olanrewaju Aina**<sup>1</sup>, Adeola Yetunde Olukosi<sup>1</sup>, Chimere Obiora Agomo<sup>2</sup>, Bamidele Abiodun Bamidele Iwalokun<sup>1</sup>, Olusola Ajibaye<sup>1</sup>, Bassey A. Orok<sup>1</sup>, Adeniyi K. Adeneye<sup>1</sup>, Chinendum T. Oparaugo<sup>1</sup>, Samuel K. Akindele<sup>1</sup>, Olajumoke M. Akinyele<sup>1</sup>, Samson T. Awolola<sup>1</sup><sup>1</sup>Nigerian Institute of Medical Research, Lagos, Nigeria, <sup>2</sup>Department of Medical Laboratory Science, University of Lagos, Lagos, Nigeria**313****A SYSTEMATIC REVIEW OF THE CHANGING MALARIA DISEASE BURDEN IN SUB-SAHARAN AFRICA SINCE 2000: COMPARING MODEL PREDICTIONS AND EMPIRICAL OBSERVATION****Alice Kamau**<sup>1</sup>, Polycarp Mogeni<sup>1</sup>, Emelda A. Okiro<sup>1</sup>, Robert W. Snow<sup>2</sup>, Philip Bejon<sup>2</sup>  
<sup>1</sup>KEMRI-Wellcome Trust Research Programme, Kilifi, Kenya, <sup>2</sup>Centre for Tropical Medicine and Global Health, Nuffield Department of Clinical Medicine, University of Oxford, Oxford, United Kingdom**314****HIGHLY DYNAMIC CHANGES IN IRON STATUS DURING PREGNANCY AND POSTPARTUM AND ASSOCIATIONS WITH ADVERSE MATERNAL OUTCOMES IN A MALARIA ENDEMIC REGION OF PAPUA NEW GUINEA: A COHORT STUDY****Eliza Davidson**<sup>1</sup>, Michelle Scoullar<sup>1</sup>, Herbert Opi<sup>1</sup>, Elizabeth Peach<sup>1</sup>, Chris Morgan<sup>1</sup>, Pele Melepiea<sup>2</sup>, Ruth Fidelis<sup>2</sup>, Willie Pomat<sup>3</sup>, Philippe Boeuf<sup>1</sup>, Ricardo Ataide<sup>1</sup>, Julie Simpson<sup>4</sup>, James Beeson<sup>1</sup>, Freya Fowkes<sup>1</sup><sup>1</sup>Burnet, Melbourne, Australia, <sup>2</sup>Burnet, Kokopo, Papua New Guinea, <sup>3</sup>Papua New Guinea Institute of Medical Research, Goroka, Papua New Guinea, <sup>4</sup>Melbourne School of Population and Global Health, University of Melbourne, Melbourne, Australia**315****COMPARISON OF PLASMODIUM INFECTION BETWEEN CHILDREN AND ADULTS IN KOMBEWA COMPARISON OF PLASMODIUM INFECTION BETWEEN CHILDREN AND ADULTS IN KOMBEWA****Cornel Obonyo Arima**, Jim Ray Managbanag, Cephas Aguko, Agneta Ogolo, Catherine Sumbi, Michael Ayaya, Everlyne Omondi, Victor Otieno, Vincent Akolo, Rose Adeny, Hoseah M. Akala, Bernhards Ogutu  
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National Malaria Control Programme, Accra, Ghana**319****HUMAN MOBILITY AND MALARIA HISTORY IN A PERIURBAN COMMUNITY OF THE PERUVIAN AMAZON****Andree Valle Campos**<sup>1</sup>, Jorge L. Maguñá<sup>1</sup>, Gabriela Ulloa<sup>1</sup>, Katty M. Arista<sup>2</sup>, Viviana Pinedo-Cancino<sup>2</sup>, Lastenia Ruiz-Mesia<sup>2</sup>, Meddy Santolalla<sup>1</sup>, Adam Bennett<sup>3</sup>, Andres G. Lescano<sup>1</sup><sup>1</sup>Emerge, Emerging Diseases and Climate Change Research Unit, School of Public Health and Administration, Universidad Peruana Cayetano Heredia, Lima, Peru, <sup>2</sup>Universidad Nacional de la Amazonia Peruana, Iquitos, Peru, <sup>3</sup>Malaria Elimination Initiative, Global Health Group, University of California San Francisco (UCSF), San Francisco, CA, United States**320****PREGNANT WOMEN MAY BE A SENTINEL GROUP FOR MALARIA SURVEILLANCE: PRELIMINARY RESULTS FROM A STUDY IN SOUTHERN MOZAMBIQUE****Alfredo Mayor**<sup>1</sup>, Gloria Matambisso<sup>2</sup>, Gizela Bambo<sup>2</sup>, Beatriz Galatas<sup>1</sup>, Pau Cisteró<sup>1</sup>, Sonia Maculuve<sup>2</sup>, Caterina Guinovart<sup>1</sup>, Francisco Saúte<sup>2</sup>, Clara Menéndez<sup>1</sup>, Pedro Aide<sup>2</sup>, Eusébio Macete<sup>2</sup><sup>1</sup>Barcelona Institute for Global Health (ISGlobal), Barcelona, Spain, <sup>2</sup>Manhiça Health Research Center (CISM), Manhiça, Mozambique**321****MONITORING MALARIA CASES IN THE STATE OF RORAIMA, BRAZIL****Rispah A. Abdallah**<sup>1</sup>, Jaime Louzada<sup>2</sup>, Venkatachalam Udhayakumar<sup>1</sup>, Joseli Oliveira-Ferreira<sup>3</sup>, Naomi W. Lucchi<sup>1</sup><sup>1</sup>Malaria Branch, Division of Parasitic Diseases and Malaria, Center for Global Health, Centers for Disease Control and Prevention, Atlanta, GA, United States, <sup>2</sup>Federal University of Roraima, Boa Vista, Brazil, <sup>3</sup>Instituto Oswaldo Cruz- Fiocruz, Rio De Janeiro, BrazilThursday  
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**322****MOLECULAR SURVEILLANCE FOR ANTIMALARIAL DRUG RESISTANCE MARKERS IN *PLASMODIUM FALCIPARUM* CASES — RORAIMA, BRAZIL, 2016-2017****Christina M. Carlson**<sup>1</sup>, Julia N. Kelley<sup>1</sup>, Rispah A. Abdallah<sup>1</sup>, Dhruviben Patel<sup>1</sup>, Jaime Louzada<sup>2</sup>, Bryan C. Ezema<sup>1</sup>, Venkatachalam Udhayakumar<sup>1</sup>, Joseli Oliveira-Ferreira<sup>3</sup>, Eldin Talundzic<sup>1</sup>, Naomi W. 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Harrison<sup>1</sup>, Kweku Djan<sup>1</sup>, Apongwu Fopenawoh<sup>3</sup>, Tsiri Agbenyega<sup>4</sup>, Michael Cappello<sup>1</sup><sup>1</sup>Yale University, New Haven, CT, United States, <sup>2</sup>HopeXchange Medical Centre, Kumasi, Ghana, <sup>3</sup>University of Maryland, College Park, MD, United States, <sup>4</sup>Kwame Nkrumah University of Science and Technology, Kumasi, Ghana**326****BLACKWATER FEVER IN UGANDAN CHILDREN WITH SEVERE ANEMIA IS ASSOCIATED WITH POOR POST-DISCHARGE OUTCOMES. A PROSPECTIVE COHORT STUDY****Robert O. Opoka**<sup>1</sup>, Ali Waisswa<sup>2</sup>, Harriet Nambuya<sup>3</sup>, Ch C. John<sup>4</sup>, James K. 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Shields<sup>1</sup>, James Maragia<sup>2</sup>, Daniel Esimit<sup>2</sup>, Samuel Lokemer<sup>2</sup>, Joseph Kipkoech<sup>3</sup>, Diana Menya<sup>3</sup>, Andrew Obala<sup>4</sup>, Wendy Prudhomme-O'meara<sup>5</sup><sup>1</sup>Department of Epidemiology, Johns Hopkins Bloomberg School of Public Health, Baltimore, MD, United States, <sup>2</sup>Department of Health and Sanitation, Turkana County Government, Lodwar, Kenya, <sup>3</sup>School of Public Health, Moi University College of Health Sciences, Eldoret, Kenya, <sup>4</sup>School of Medicine, Moi University College of Health Sciences, Eldoret, Kenya, <sup>5</sup>Department of Medicine and Duke Global Health Institute, Duke University, Durham, NC, United States**328****SPATIAL AND TEMPORAL PATTERNS OF *PLASMODIUM FALCIPARUM* INFECTIONS IN BHUTAN, 2006-2014****Kinley Wangdi**<sup>1</sup>, Zhining Xu<sup>1</sup>, Darren J. Gray<sup>1</sup>, Kathryn Glass<sup>1</sup>, Archie C. Clements<sup>2</sup><sup>1</sup>Australian National University, Canberra, Australia, <sup>2</sup>Curtin University, Perth, Australia**329****FACTORS ASSOCIATED WITH ACCESS AND ADHERENCE TO ARTEMISININ-BASED COMBINATION THERAPY (ACTS) FOR TREATMENT OF FEVER IN CHILDREN UNDER FIVE: A SECONDARY ANALYSIS OF THE 2012 SIERRA LEONE MALARIA KNOWLEDGE, ATTITUDES, AND PRACTICES SURVEY****Kristin Banek**<sup>1</sup>, Emily L. Webb<sup>1</sup>, Emily Bostick Doogue<sup>2</sup>, Samuel Juana Smith<sup>3</sup>, Daniel Chandramohan<sup>1</sup>, Sarah G. Staedke<sup>1</sup><sup>1</sup>London School of Hygiene & Tropical Medicine, London, United Kingdom, <sup>2</sup>Catholic Relief Services, Baltimore, MD, United States, <sup>3</sup>National Malaria Control Program, National Malaria Control Programme, Ministry of Health and Sanitation, Freetown, Sierra Leone**330****RISK FACTORS FOR MALARIA, AND SPATIAL CLUSTERING OF CASES FROM A HOUSEHOLD SURVEY IN ARTIBONITE, HAITI****Karen E. Hamre**<sup>1</sup>, Nishant Kishore<sup>2</sup>, Amber M. Dismar<sup>1</sup>, Anyess R. Travers<sup>3</sup>, Kathleen McGee<sup>4</sup>, Baby Pierre<sup>5</sup>, Kathleen Holmes<sup>1</sup>, Eric Rogier<sup>1</sup>, Jean Frantz Lemoine<sup>5</sup>, Michelle A. Chang<sup>1</sup><sup>1</sup>Centers for Disease Control and Prevention, Atlanta, GA, United States, <sup>2</sup>Harvard T.H. Chan School of Public Health, Cambridge, MA, United States, <sup>3</sup>University of Georgia, Athens, GA, United States, <sup>4</sup>Population Services International - Haiti, Péguy-Villy, Haiti, <sup>5</sup>Ministère de la Santé Publique et de la Population, Port-au-Prince, Haiti**331****RAPID CHARACTERIZATION OF URBAN MALARIA TRANSMISSION — CONAKRY, GUINEA, 2018****Dean M. Sayre**<sup>1</sup>, Alioune Camara<sup>2</sup>, Yaya Barry<sup>2</sup>, Toure B. 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Castaneda-Mogollon**<sup>1</sup>, Abebe Genetu Bayih<sup>2</sup>, Aberham Abere<sup>2</sup>, Ranmalee Amarasekara<sup>1</sup>, Habtie Tesfa<sup>2</sup>, Dylan R. Pillai<sup>1</sup><sup>1</sup>University of Calgary, Calgary, AB, Canada, <sup>2</sup>University of Gondar, Gondar, Ethiopia



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### GLOBAL SURVEILLANCE OF *PLASMODIUM FALCIPARUM* ANTIMALARIAL DRUG RESISTANCE AND DIAGNOSTIC TEST EVASION

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### FRAGMENTED POPULATION STRUCTURE OF *PLASMODIUM VIVAX* ASSOCIATED WITH THE DECLINE TRANSMISSION FACILITATE THE MALARIA SURVEILLANCE AND TARGET CONTROL IN THE GREATER MEKONG SUBREGION

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### SELECTIVE SWEEPS AND GENETIC LINEAGES OF *P. FALCIPARUM* CHLOROQUINE RESISTANCE GENE, *P. FALCIPARUM* DIHYDROPTEROATE SYNTHASE AND *P. FALCIPARUM* DIHYDROFOLATE REDUCTASE GENES IN KENYA

Marcel Nyabute<sup>1</sup>, Dennis Juma<sup>1</sup>, Penninah Muiruri<sup>2</sup>, Benjamin Opot<sup>1</sup>, Raphael Okoth<sup>1</sup>, Martha Nginya<sup>1</sup>, Jennifer Mutisya<sup>1</sup>, Brenda Mugambi<sup>1</sup>, Agnes Cheruiyot<sup>1</sup>, Gladys Chemwor<sup>1</sup>, Redemptah Yeda<sup>1</sup>, Charles Okello<sup>1</sup>, Hoseah Akala<sup>1</sup>, Ben Andagalu<sup>1</sup>, Jim Ray Managbanag<sup>1</sup>, Edwin Kamau<sup>3</sup>  
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Martha N. Kivecu<sup>1</sup>, Victor Mobegi<sup>2</sup>, Brenda Makena<sup>1</sup>, Raphael Okoth<sup>1</sup>, Gladys Chemwor<sup>1</sup>, Marcel Juma<sup>3</sup>, Edwin Mwakio<sup>1</sup>, Jackline Juma<sup>1</sup>, Charles Okello<sup>1</sup>, Redemptah Yedah<sup>1</sup>, Agnes Cheryuiyot<sup>1</sup>, Benjamin Opot<sup>1</sup>, Dennis Juma<sup>1</sup>, Hoseah Akala<sup>1</sup>, Ben Andagalu<sup>1</sup>, Jim R. Manangbanang<sup>1</sup>  
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### TEMPORAL CHANGE OF GENETIC DIVERSITY AND POPULATION STRUCTURE OF *PLASMODIUM VIVAX* IN THREE CONTRASTING SETTLEMENTS IN THE PERUVIAN AMAZON

Paulo C. Manrique Valverde<sup>1</sup>, Roberson Ramirez Saavedra<sup>1</sup>, Mitchel Guzman Guzman<sup>1</sup>, Alejandro Llanos Cuentas<sup>2</sup>, Joseph Vinetz<sup>3</sup>, Ananias A. Escalante<sup>4</sup>, Dionicia Gamboa Vilela<sup>5</sup>  
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### *P. VIVAX* GENETIC POLYMORPHISM IN DIFFERENT BRAZILIAN ENDEMIC AREAS

Natália Ketrin Almeida de Oliveira<sup>1</sup>, Rebecca Abreu Santos<sup>1</sup>, Anielle Pina Costa<sup>2</sup>, Patrícia Brazil<sup>2</sup>, Cláudio Tadeu Daniel-Ribeiro<sup>1</sup>, Maria de Fátima Ferreira da Cruz<sup>1</sup>  
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### POPULATION STRUCTURE OF *PLASMODIUM MALARIAE* USING MICROSATELLITES AND SELECTIVE WHOLE GENOME SEQUENCING

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### EVALUATION OF A POOLED STRATEGY FOR TARGETED AMPLICON DEEP SEQUENCING OF *P. FALCIPARUM* DRUG RESISTANT ASSOCIATED GENES *DHFR* AND *MDR1*

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Tamar E. Carter<sup>1</sup>, Lambodhar Damodaran<sup>2</sup>, Shantoy Hansel<sup>3</sup>, Callum Montgomery<sup>3</sup>, Victoria Bonnell<sup>4</sup>, Karen Lopez<sup>3</sup>, Daniel Janies<sup>3</sup>, Solomon Yared<sup>5</sup>  
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### DISTINGUISHING AMONG *PLASMODIUM VIVAX* RELAPSES AND NEW INFECTIONS IN A LOW ENDEMIC AREA: A POPULATION GENETICS APPROACH

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### RBTAP; A NOVEL REFERENCE BASED TOOL TO ASSEMBLE POLYMORPHIC GENES IN MALARIA

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**GENOMIC ANALYSIS OF *PLASMODIUM VIVAX* CLINICAL ISOLATES FROM THE CHINA-MYANMAR BORDER AND NEIGHBORING COUNTRIES IN SOUTHEAST ASIA PROVIDES INSIGHTS INTO GENETIC DIVERSITY AND PARASITE POPULATION STRUCTURE**

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**ROLE OF KILLER CELL IMMUNOGLOBULIN-LIKE RECEPTOR AND HUMAN LEUKOCYTE ANTIGEN-C GENETIC VARIANTS IN TRANSMISSION AND SEVERITY OF MALARIA IN UGANDA**

Stephen Tukwasibwe<sup>1</sup>, James Traherne<sup>2</sup>, Olympe Chazara<sup>2</sup>, Arthur Mpimbaza<sup>1</sup>, Jyothi Jayaraman<sup>2</sup>, John Trowsdale<sup>2</sup>, Ashley Moffett<sup>2</sup>, Francesco Colucci<sup>2</sup>, Moses R Kanya<sup>1</sup>, Joaniter I Nankabirwa<sup>1</sup>, Grant Dorsey<sup>3</sup>, Philip J Rosenthal<sup>3</sup>, Stephen Cose<sup>4</sup>, Annettee Nakimuli<sup>1</sup>

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**A SUICIDE-RESCUE-BASED CRISPR/CAS9 SYSTEM COMPETENT FOR LARGE DNA FRAGMENT KNOCK-IN AND SEQUENTIAL GENE EDITING IN *PLASMODIUM FALCIPARUM***

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**MULTIPLICITY OF *PLASMODIUM FALCIPARUM* INFECTIONS IN ASYMPTOMATICALLY INFECTED CHILDREN IN UGANDA**

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**ANTIBODIES TO PFRH5-LIKE DOMAIN OF PFRH2B PROTEIN IS ASSOCIATED WITH INCREASE IN PARASITEMIA**

Jonathan Suurbaa<sup>1</sup>, Collins M. Morang<sup>1</sup>, Prince B. Nyarko<sup>1</sup>, Katherine Wright<sup>2</sup>, Kwadwo A. Kusi<sup>3</sup>, Felix Ansah<sup>1</sup>, Eric Kyei-Baafour<sup>3</sup>, Evelyn B. Quansah<sup>1</sup>, Jessica Asante<sup>3</sup>, Latty G. Thiam<sup>1</sup>, Matthew Higgins<sup>2</sup>, Gordon A. Awandare<sup>1</sup>, Yaw Aniweh<sup>1</sup>

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**EFFECT OF MALARIA PATHOLOGY ON CD4 AND IMMUNE CELLS**

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**VARIATION AND HOST GENETIC CONTROL OF MIRNAS IN RESPONSE TO *PLASMODIUM FALCIPARUM* INFECTION**

Aissatou Diawara<sup>1</sup>, Mame M. Dieng<sup>1</sup>, Vinu Manikandan<sup>1</sup>, Hala Tamin El Jarkass<sup>1</sup>, Alfred B. Tiono<sup>2</sup>, Sodiomon B. Sirima<sup>2</sup>, Issiaka Soulama<sup>2</sup>, Youssef Idaghdour<sup>1</sup>

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**INVESTIGATING THE IMMUNE PREDICTORS OF NATURALLY ACQUIRED IMMUNITY IN MALIAN CHILDREN USING SYSTEMS BIOLOGY APPROACHES**

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**CHARACTERIZATION OF MONOCYTES IN MALAWIAN CHILDREN PRESENTING WITH EITHER UNCOMPLICATED OR CEREBRAL MALARIA**

Visopo Chizaso Harawa<sup>1</sup>, Madi Njie<sup>2</sup>, Iset Vera<sup>3</sup>, Anne Kessler<sup>4</sup>, Anthony Jaworowski<sup>5</sup>, Terrie Taylor<sup>1</sup>, Wilson Mandala<sup>6</sup>, Karl Seydel<sup>1</sup>, Kami Kim<sup>3</sup>, Stephen Rogerson<sup>2</sup>

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**FLOW CYTOMETRIC-BASED MULTIPLEX ASSAY TO ASSESS STRAIN TRANSCENDING ANTIBODIES TO *PLASMODIUM VIVAX* DBPII REVEAL AN EFFICIENT TOOL TO IDENTIFY BINDING-INHIBITORY ANTIBODIES (BIABS) RESPONDERS**

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**INFLUENCE OF EPSTEIN-BARR VIRUS INFECTION ON HUMAN MALARIA CAUSED BY *PLASMODIUM VIVAX***

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**A PEPTIDE-BASED CHECKPOINT INHIBITOR THERAPEUTICALLY RESCUES MICE FROM LETHAL MALARIA AND ENHANCES PRIMING OF T CELLS FOLLOWING VACCINATION**

Timothy W. Phares<sup>1</sup>, Vinayaka Kotraiah<sup>1</sup>, Deshapriya Karunarathne<sup>2</sup>, Michelle Wykes<sup>2</sup>, Jing Huang<sup>3</sup>, Moriya Tsuji<sup>3</sup>, Jim A. Pannucci<sup>1</sup>, Gabe M. Gutierrez<sup>1</sup>

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### IMMUNOGLOBULIN REPERTOIRES IN MEMORY B CELLS AND PLASMA BLASTS FROM CHILDREN AND ADULTS WITH DIFFERENT LEVELS OF PRE-EXISTING EXPOSURE TO *PLASMODIUM FALCIPARUM*

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### MALIAN CHILDREN WITH BOTH CEREBRAL MALARIA AND SEVERE MALARIAL ANEMIA HAVE A SEROLOGIC AND CYTOKINE PROFILE DISTINCT FROM THOSE WITH OTHER SEVERE MALARIA SUBTYPES

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### MULTI-SITE COMPARISON OF CHANGES IN CYTOKINE AND CHEMOKINE EXPRESSION PROFILES OVER 1-YEAR IN CHILDREN <5 YEARS WITH ASYMPTOMATIC MALARIA

Katrina E. Co<sup>1</sup>, Elizabeth C. Okafor<sup>2</sup>, Dibiyadyuti Datta<sup>1</sup>, Elizabeth Fernander<sup>1</sup>, Estela Shabani<sup>3</sup>, Eliud O. Onyango<sup>1</sup>, George Ayodo<sup>4</sup>, Robert O. Opoka<sup>5</sup>, Chandy C. John<sup>1</sup>

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(ACMCIP Abstract)

### DOES IT MATTER IF *PLASMODIUM* PREFERENTIALLY INVADES RETICULOCYTES OR NORMOCYTES?

Palmer Masumbe Netongo<sup>1</sup>, Palmer Masumbe Netongo<sup>2</sup>, Spencer Seely<sup>2</sup>, Patrice Mimche<sup>3</sup>, Aubree Earl<sup>3</sup>, Nathan T. Jacobs<sup>4</sup>, Tracey J. Lamb<sup>3</sup>

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(ACMCIP Abstract)

### PLASMA CYTOKINE AND CHEMOKINE SIGNATURES DURING ACUTE INFECTION BUT NOT CONVALESCENCE DISTINGUISH BETWEEN CHILDREN WITH DIFFERENT LEVELS OF PRIOR EXPOSURE TO MALARIA

Nancy K. Nyakoe<sup>1</sup>, Jean Langhorne<sup>2</sup>, Gordon A. Awandare<sup>1</sup>, Kwaku P. Asante<sup>3</sup>, Yaw Bediako<sup>1</sup>

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(ACMCIP Abstract)

### MALIAN ADULTS MAINTAIN SEROLOGIC RESPONSES TO NON-CD36-BINDING PFEMP1S AMID SEASONAL PATTERNS OF FLUCTUATION

Noah Thomas Ventimiglia<sup>1</sup>, Emily M. Stucke<sup>1</sup>, Andrea A. Berry<sup>1</sup>, Drissa Coulibaly<sup>2</sup>, Kirsten E. Lyke<sup>1</sup>, Matthew B. Laurens<sup>1</sup>, Jason A. Bailey<sup>1</sup>, Matthew Adams<sup>1</sup>, Amadou Niangaly<sup>2</sup>, Abdoulaye K. Kone<sup>2</sup>, Shannon Takala-Harrison<sup>1</sup>, Bourema Kouriba<sup>2</sup>, Ogobara K. Doumbo<sup>2</sup>, Mahamadou A. Thera<sup>2</sup>, Phillip L. Felgner<sup>3</sup>, Christopher V. Plowe<sup>4</sup>, Mark A. Travassos<sup>1</sup>

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### MECHANISMS DRIVING ALTERED $\text{V}\alpha 2+$ $\text{T}$ CELL FUNCTION DURING RECURRENT MALARIA INFECTION

Kathleen W. Dantzer<sup>1</sup>, Sandy Klemm<sup>1</sup>, Rafael Polidoro<sup>2</sup>, Aditya Rao<sup>1</sup>, Caroline Junquiera<sup>3</sup>, Mai Dvorak<sup>1</sup>, John Rek<sup>4</sup>, Moses Kanya<sup>5</sup>, Peggie Cheung<sup>1</sup>, Alex Kuo<sup>1</sup>, Grant Dorsey<sup>6</sup>, Margaret Feeney<sup>6</sup>, Judy Lieberman<sup>2</sup>, Purvesh Khatri<sup>1</sup>, William Greenleaf<sup>1</sup>, Prasanna Jagannathan<sup>1</sup>

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(ACMCIP Abstract)

## Malaria – Modeling

### STATISTICAL MODELLING OF SURVEILLANCE DATA TO IDENTIFY CORRELATES OF URBAN MALARIA RISK: A POPULATION-BASED STUDY IN THE AMAZON BASIN

Rodrigo Corder, Gilberto Paula, Anaclara Pincelli, Marcelo Ferreira  
University of Sao Paulo, Sao Paulo, Brazil

### DEVELOPMENT OF A COMMUNITY-DELIVERED MALARIA ELIMINATION MODEL FOR MYANMAR

Win Han Oo<sup>1</sup>, Lisa Gold<sup>2</sup>, Elizabeth Hoban<sup>2</sup>, Kyu Kyu Than<sup>1</sup>, Aung Thi<sup>3</sup>, Paul A. Agius<sup>4</sup>, Freya J. Fowkes<sup>4</sup>

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### TREATMENT ALGORITHMS WITH RADICAL CURE OF VIVAX MALARIA BASED ON SEX: A COST-EFFECTIVENESS ANALYSIS TO SUPPORT ROLL OUT STRATEGIES

Angela Devine<sup>1</sup>, Sandra Incardona<sup>2</sup>, Ric N. Price<sup>1</sup>, Sabine Dittrich<sup>2</sup>, Xavier Ding<sup>2</sup>

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### REFINING GLOBAL MAPS OF G6PD DEFICIENCY: HARNESSING NEW DATA AND ANALYTICAL METHODS

Daniel A. Pfeffer<sup>1</sup>, Timothy C. Lucas<sup>2</sup>, Colin Johnston<sup>2</sup>, Jia Wei<sup>3</sup>, Jonas Sandbrink<sup>2</sup>, Benedikt Ley<sup>1</sup>, Archie Clements<sup>4</sup>, Peter W. Gething<sup>2</sup>, Ric N. Price<sup>1</sup>, Rosalind E. Howes<sup>2</sup>

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**IN SILICO PREDICTION OF THE STRUCTURE OF PLASMODIUM FALCIPARUM GAMETOCYTE DEVELOPMENT PROTEIN 1 AND ITS EVALUATION AS A DRUG TARGET**

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Emma Hughes<sup>1</sup>, Richard Kajubi<sup>2</sup>, Erika Wallender<sup>1</sup>, Liusheng Huang<sup>1</sup>, Teddy Ochieng<sup>2</sup>, Abel Kakuru<sup>2</sup>, Prasanna Jagannathan<sup>3</sup>, Miriam Nakalembe<sup>4</sup>, Bishop Opira<sup>2</sup>, John Ategeka<sup>2</sup>, Patience Nayebara<sup>2</sup>, Tamara D. Clark<sup>1</sup>, Moses Kamya<sup>5</sup>, Philip Rosenthal<sup>1</sup>, Grant Dorsey<sup>1</sup>, Francesca Aweeka<sup>1</sup>, Rada Savic<sup>1</sup>  
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**INCREASED PATENT MALARIA IN THE DRC: GEOGRAPHIC AND EPIDEMIOLOGICAL CHANGES FROM 2007 TO 2013**

Molly Deutsch-Feldman<sup>1</sup>, Jonathan Parr<sup>2</sup>, Nicholas F. Brazeau<sup>2</sup>, Kyaw Thwai<sup>2</sup>, Melchior Kashamuka<sup>3</sup>, Antoinette Tshetu<sup>3</sup>, Jonathan J. Juliano<sup>2</sup>, Robert Verity<sup>4</sup>, Steven R. Meshnick<sup>2</sup>  
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**THE ROLE OF LONG-LASTING SYSTEMIC INSECTICIDES IN ACCELERATING MALARIA CONTROL AND ELIMINATION: A MODELING STUDY OF THREE DIVERSE TRANSMISSION SETTINGS**

Prashanth Selvaraj<sup>1</sup>, Joshua Suresh<sup>1</sup>, Edward Wenger<sup>1</sup>, Caitlin Bever<sup>1</sup>, Jaline Gerardin<sup>2</sup>  
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**EVIDENCE-BASED TOOLS TO SUPPORT DECISION MAKING FOR MALARIA ELIMINATION**

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**AN INTEGRATED SOFTWARE PACKAGE FOR MODELLING CLINICAL TRIALS OF VECTOR CONTROL INTERVENTIONS FOR PLASMODIUM FALCIPARUM MALARIA REDUCTION**

Keith J. Fraser, Lazaro Mwandigha, Azra Ghani  
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Miles B. Markus, Lizette L. Koekemoer, Robyn L. van Zyl  
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Gérard Hodévè Tiko<sup>1</sup>, Rock Djehoue<sup>1</sup>, Rafiou Adamou<sup>1</sup>, Adandé Assogba Medjigbodo<sup>2</sup>, Abdou Madjid O. Amoussa<sup>1</sup>, Luc Salako Djogbenou<sup>2</sup>, Latifou Lagnika<sup>1</sup>  
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**PROTECTING THE PERI-DOMESTIC ENVIRONMENT: THE CHALLENGE FOR ELIMINATING RESIDUAL MALARIA**

Edgar J. Pollard, David MacLaren, Tanya L. Russell, Thomas R. Burkot  
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**PLASMODIUM OVALE AND PLASMODIUM FALCIPARUM CO-INFECTION AMONG SYMPTOMATIC AND ASYMPTOMATIC MALARIA ASSOCIATED WITH SYMPTOMS IN ENDEMIC REGIONS OF WESTERN KENYA**

Jackline Juma, Hosea Akala, Dennis Juma, Benjamin Opot, Agnes Cheruiyot, Redemptah Yeda, Gladys Chemwor, Edwin Mwakio, Charles Okudo  
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**MOLECULAR DETECTION OF PARASITIC CO-INFECTION AND DETERMINATION OF INFECTION PREVALENCE IN PREGNANT WOMEN OF GHANA**

Sarah Alhakimi<sup>1</sup>, Abraham Anang<sup>2</sup>, Nilanjan Lodh<sup>1</sup>  
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**RISK FACTOR FOR CRITICAL CARE ADMISSION AMONG CHILDREN WITH MALARIA IN PUBLIC HOSPITALS OF THE PERUVIAN AMAZON**

Nataly Atarama<sup>1</sup>, Karen Arica<sup>1</sup>, Amy C. Morrison<sup>2</sup>, Raul Seminario<sup>3</sup>, Stalin Vilcarromero<sup>4</sup>  
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**EVOLUTION OF AVAILABILITY IN ACT, RDT AND SULFADOXIN/PYRIMETHAMIN AT THE LEVEL OF DIRECT CUSTOMERS OF COTE D'IVOIRE NEW PHARMACY OF THE PUBLIC HEALTH FROM JANUARY TO FEBRUARY 2019**

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NMCP, Abidjan, Côte D'Ivoire



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Annette Nti<sup>1</sup>, Hassana Salifu<sup>1</sup>, Felix Botchway<sup>2</sup>, Nelly Yatchi<sup>3</sup>, Mingli Liu<sup>1</sup>, Andrew Adjei<sup>2</sup>, Pauline Jolly<sup>3</sup>, Jonathan K. Stiles<sup>1</sup>

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**EVALUATION OF A HOMEMADE SALIVA KIT FOR THE STABILIZATION OF PLASMODIUM DNA AT ROOM TEMPERATURE**

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**TRACKING SPENDING ON MALARIA BY SOURCE IN 106 COUNTRIES, 2000-2016: AN ECONOMIC MODELLING STUDY**

Annie Haakenstad<sup>1</sup>, Anton C. Harle<sup>2</sup>, Golsum Tsakalos<sup>2</sup>, Angela E. Micah<sup>2</sup>, Tianchan Tao<sup>2</sup>, Joseph L. Dieleman<sup>2</sup>

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**NEURODEVELOPMENTAL PERFORMANCE IN PRESCHOOLERS AFTER SEVERE ANEMIA AT LIRA REGIONAL REFERRAL HOSPITAL, UGANDA**

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**ANALYSIS OF UNITED STATES PRESIDENT'S MALARIA INITIATIVE-SUPPORTED OPERATIONAL RESEARCH STUDIES, 2006-2018**

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**SEVERE MALARIA WITH REPEATED MALARIA ATTACKS AND ACADEMIC ACHIEVEMENT IN UGANDAN CHILDREN**

Ann J. Nakitende<sup>1</sup>, John Ssenkusu<sup>1</sup>, Richard Idro<sup>1</sup>, Noeline Nakasujja<sup>1</sup>, Chandy C. John<sup>2</sup>, Margaret Semrud-Clikeman<sup>3</sup>, Paul Bangirana<sup>1</sup>

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**CARE SEEKING FOR AND MANAGEMENT OF FEBRILE ILLNESS IN SENEGAL IN THE CONTEXT OF MALARIA CONTROL AND ELIMINATION. WHAT DO SURVEY DATA TELL US?**

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**MALARIA DATA QUALITY AND USE IN SELECTED CENTERS OF EXCELLENCE IN MADAGASCAR: RESULTS FROM A CROSS-SECTIONAL BASELINE SURVEY**

Maurice Ye<sup>1</sup>, Jean Marie N'Gbichi<sup>2</sup>, Thierry Franchard<sup>3</sup>, Solo Harimalala<sup>3</sup>, Brune Ramiranirina<sup>3</sup>, Mauricette N. Andriamananjara<sup>3</sup>, Laurent Kapesa<sup>4</sup>, Jocelyn Razafindrakoto<sup>4</sup>, Yazoume Ye<sup>5</sup>

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**HEALTH MESSAGE ANNOUNCEMENTS THROUGH LOUDSPEAKERS ABOUT MALARIA CARE - PREVENTION AND PRACTICE AMONG PEOPLE LIVING IN A MALARIA ENDEMIC AREA OF BANMAUK TOWNSHIP, SAGAING REGION, MYANMAR**

Pyae Linn Aung<sup>1</sup>, Tepanata Pumpaibo<sup>2</sup>, Than Naing Soe<sup>3</sup>, Myat Phone Kyaw<sup>4</sup>

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**EFFECT OF SEASONAL MALARIA CHEMOPREVENTION ON MALARIA IN CHILDREN UNDER 5 YEARS: A COHORT STUDY IN DANGASSA, MALI**

Drissa Konaté<sup>1</sup>, Sory I. Diawara<sup>1</sup>, Mahamoud Touré<sup>1</sup>, Seidina AS Diakité<sup>2</sup>, Agnes Guindo<sup>2</sup>, Ayouba Diarra<sup>3</sup>, Bourama Keita<sup>1</sup>, Sibe Thiam<sup>3</sup>, Moussa Keita<sup>3</sup>, Ibrahim Sissoko<sup>3</sup>, Nafomon Sogoba<sup>3</sup>, Sekou F Traoré<sup>1</sup>, Donald J Krogstad<sup>4</sup>, Seydou Doumbia<sup>1</sup>, Mahamadou Diakité<sup>5</sup>

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**AN ASSESSMENT OF QUALITY OF DELIVERY OF SEASONAL MALARIA CHEMOPREVENTION USING LOW LITERATE COMMUNITY HEALTH WORKERS IN NIGERIA**

Olusola B. Oresanya<sup>1</sup>, Abraham Ahmadu<sup>1</sup>, Olatunde Adesoro<sup>1</sup>, Louise Maranda<sup>1</sup>, Diego Morosso<sup>2</sup>, Kolawole Maxwell<sup>1</sup>

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**MALARIA PREVENTIVE PRACTICES AMONG OUTDOOR WORKERS IN BILIN TOWNSHIP, MON STATE, MYANMAR**

Pyae Sone Tint

ARC/Defeat Malaria, Yangon, Myanmar

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**REVIEW OF ACCESS AND USE OF LONG LASTING INSECTICIDAL BED NETS (LLINS) IN MALARIA ENDEMIC AREAS OF BANGLADESH**

Akramul Islam, Shamsun Naher, Maktadir Kabir

BRAC, Dhaka, Bangladesh

Thursday  
November 21



### MOSQUITO EXPOSURE TO ANTIMALARIALS PREVENTS TRANSMISSION OF *PLASMODIUM FALCIPARUM*

Douglas G. Paton<sup>1</sup>, Lauren M. Childs<sup>2</sup>, Maurice A. Itoe<sup>1</sup>, Inga E. Holmdahl<sup>1</sup>, Serge Yerbanga<sup>3</sup>, Thierry Lefevre<sup>3</sup>, Caroline O. Buckee<sup>1</sup>, Flaminia Catteruccia<sup>1</sup>  
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### POLYESTER OR POLYETHYLENE? DIFFERENCES IN LLIN USE DRIVEN BY FABRIC TYPES IN CAMBODIA AND MYANMAR

May Me Thet<sup>1</sup>, Ye Kyaw Aung<sup>1</sup>, Sochea Phok<sup>2</sup>, Si Thu Thein<sup>1</sup>  
<sup>1</sup>Population Services International Myanmar, Yangon, Myanmar, <sup>2</sup>Population Services International Cambodia, Phnom Penh, Cambodia

### QUANTIFYING SEASONAL VARIATION IN INSECTICIDE-TREATED NET USE BEHAVIOR

Hannah Koenker<sup>1</sup>, Cameron Taylor<sup>2</sup>, Julie Thwing<sup>3</sup>, Clara Burgert-Brucker<sup>4</sup>, Tom Fish<sup>2</sup>, Albert Kilian<sup>5</sup>  
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### EVALUATION OF SIERRA LEONE'S INTERMITTENT PREVENTATIVE TREATMENT FOR INFANTS (IPTI) PILOT IN KAMBIA DISTRICT

Laura C. Steinhardt<sup>1</sup>, Roberta Sutton<sup>2</sup>, Oliver Eleeza<sup>3</sup>, Adewale Akinjeji<sup>3</sup>, Anthony Mansaray<sup>3</sup>, Michael John<sup>3</sup>, Brigette Gleason<sup>4</sup>, Michael Friedman<sup>5</sup>, Samuel J. Smith<sup>6</sup>, Miriam Rabkin<sup>2</sup>, Maria Lahuerta<sup>2</sup>  
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### THE IMPACT OF INDOOR RESIDUAL SPRAYING FOR MALARIA PREVALENCE IN HOMA BAY COUNTY, KENYA: AN OBSERVATIONAL STUDY

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### EFFICACY OF CONTINUOUS BED NET DISTRIBUTION TO MAINTAIN HIGH COVERAGE AFTER A MASS DISTRIBUTION CAMPAIGN IN MADAGASCAR, 2017

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### INDIVIDUAL, HOUSEHOLD AND COMMUNITY FACTORS ASSOCIATED WITH THE UPTAKE OF THREE DOSES OF INTERMITTENT PREVENTIVE TREATMENT OF MALARIA IN PREGNANCY (IPTP3) IN COTE D'IVOIRE: A MULTILEVEL ANALYSIS

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### COSTING MASS DRUG ADMINISTRATION WITH DIFFERENT TARGETING STRATEGIES

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**SYNTHETIC BIOTIN LIGASE ENABLES TO LABEL SURFACE INVASION FACTORS OF CULTURED HUMAN MALARIA PARASITE, PLASMODIUM FALCIPARUM**

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**GENERATION OF PLASMODIUM FALCIPARUM NF135 REPORTER LINES EXPRESSING FLUORESCENT PROTEINS FOR EXAMINING BLOOD-, MOSQUITO- AND LIVER-STAGES**

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**MICROSCALE MAGNETIC LEVITATION FOR MULTIPLEXED ANALYSIS OF MALARIA-INFECTED BLOOD SAMPLES IN RESOURCE-LIMITED SETTINGS**

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**A NEW NON-HUMAN PRIMATE MODEL FOR TESTING HUMAN MALARIA VACCINE EFFICACY**

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**GENETIC DIVERSITY, NATURAL SELECTION AND HAPLOTYPE GROUPING OF PLASMODIUM VIVAX VACCINE CANDIDATE, DUFFY BINDING PROTEIN OF CHINA-MYANMAR BORDER AND WESTERN MYANMAR ISOLATES**

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**THE ‘ACUTE CHALLENGE’ MODEL: SENSITIVE MODERATE-THROUGHPUT ASSESSMENT OF MALARIA T CELL VACCINE ANTIGENS IN MICE**

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(ACMCIP Abstract)

**LESSONS LEARNED FROM A VACCINE EPITOPE DISCOVERY EFFORT TARGETING MALARIA BLOOD-STAGE ANTIGENS**

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**FUNCTIONAL CHARACTERIZATION OF A POTENTIAL BLOOD-STAGE MALARIA VACCINE CANDIDATE. MALARIA VACCINE CANDIDATE**

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**CYSTEINE MOTIF 1 DOMAIN IN PFS230 MOLECULE IS CRUCIAL TO MAINTAIN THE CORRECT CONFORMATION OF PFS230-BASED TRANSMISSION-BLOCKING VACCINES**

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**DEMONSTRATION OF A BLOOD-STAGE CONTROLLED HUMAN MALARIA INFECTION MODEL FOR PLASMODIUM VIVAX VACCINE EFFICACY TESTING**

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### EPITOPE-BASED SIEVE ANALYSIS OF *PLASMODIUM FALCIPARUM* SEQUENCES TO ASSESS FMP2.1/AS02<sub>A</sub> IS CONSISTENT WITH DIFFERENTIAL VACCINE EFFICACY AGAINST IMMUNOLOGICALLY RELEVANT AMA1 VARIANTS

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### CELTOS DOMAINS EXPOSED: FROM LIPID BINDING, CONFORMATIONAL FLEXIBILITY TO REGULATORY REGIONS

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## Malaria - Vector Control

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### SYNCHRONIZATION OF A MASS BEDNET DISTRIBUTION CAMPAIGN ACROSS INTERNATIONAL BORDERS: THE EMERGING MODEL FROM THE GAMBIA AND SENEGAL

Libasse Gadiaga<sup>1</sup>, Balla Kandeh<sup>2</sup>, Michelle Kouletio<sup>3</sup>, Vanessa Rouselle<sup>4</sup>, Doudou Sene<sup>1</sup>, Moustapha Cisse<sup>1</sup>, Mamadou Lamine Diouf<sup>1</sup>, Florence Penard<sup>4</sup>, Fatou Ba Fall<sup>1</sup>, Marcy Erskine<sup>5</sup>, Mame Birame Diouf<sup>3</sup>

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### INSECTICIDE RESISTANCE IN INDOOR AND OUTDOOR-RESTING *ANOPHELES GAMBIAE* S.L. IN NORTHERN GHANA

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### IMPACT OF INDOOR RESIDUAL SPRAY PROGRAM ON THE PREVALENCE OF *PLASMODIUM* INFECTIONS AND ANEMIA IN WESTERN KENYA: AN OPEN COHORT STUDY

Collince J. Omondi<sup>1</sup>, Harrysone Atieli<sup>2</sup>, David Odongo<sup>1</sup>, Andrew K. Githeko<sup>3</sup>, James W. Kazura<sup>4</sup>, Guiyun Yan<sup>5</sup>

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### COST PER YEAR OF EFFECTIVE LIFE CAN BE ESTIMATED FROM WHO PHASE III EVALUATION OF LONG LASTING INSECTICIDAL NETS: EVIDENCE FROM A FIELD TRIAL THAT IS WORTH SHARING!

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### GREEN SYNTHESIS OF SILVER NANOPARTICLES USING *MORINGA OLEIFERA* LEAVES EXTRACT AND THEIR EFFECT ON MALARIA VECTOR CONTROL

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### PRESENCE OF THE ZOONOTIC MALARIA PARASITES, *PLASMODIUM KNOWLESI* AND *PLASMODIUM CYNOMOLGI* IN MEMBERS OF SEVERAL *ANOPHELES* SUBGROUP IN TWO DISTRICTS OF SARAWAK, MALAYSIAN BORNEO

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### BEDNET USE, DISPOSAL PRACTICES AND ASSOCIATED FACTORS IN RURAL WESTERN UGANDA

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### LOCALIZED VARIATIONS IN LLIN USE IN MYANMAR AND CAMBODIA

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### MOSQUITO AND PARASITE GENETIC DETERMINANTS OF THE EXTRINSIC INCUBATION PERIOD OF *PLASMODIUM FALCIPARUM*

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## INTRAZONAL DIFFERENCE IN MALARIA PREVALENCE AND FACTORS ASSOCIATED WITH MALARIA INFECTION AMONG CHILDREN AGED 0 TO 10 YEARS IN KISANTU HEALTH ZONE

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## CHARACTERIZING THE MOLECULAR AND METABOLIC MECHANISMS OF INSECTICIDE RESISTANCE IN ANOPHELES GAMBIAES.L. IN FARANAH, GUINEA

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## NATIONAL MALARIA VECTOR SURVEILLANCE: A REGIONAL ANALYSES AGAINST RECOMMENDED ACTIVITIES

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## EFFECTIVENESS OF SELECTED CATTLE-ADMINISTERED ENDECTOCIDES TO REDUCE MALARIA-VECTOR MOSQUITOES

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## OPERATIONAL IMPLICATIONS OF PYRETHROID RESISTANCE AND PIPERONYL BUTOXIDE SYNERGIST ASSAYS ON VECTOR CONTROL DECISIONS IN NIGERIA

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## BIONOMICS OF ANOPHELES MOSQUITOES IN MALARIA ENDEMIC SENTINEL SITES IN GRACIAS A DIOS DEPARTMENT, HONDURAS

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## Bacteriology - Enteric Infections

## IDENTIFICATION OF ENTEROTOXIGENIC ESCHERICHIA COLI FROM INFANTS ATTENDING HEALTHCARE CENTERS IN IBADAN NORTH

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## INVESTIGATING VITAMIN A IN TREATING DISSEMINATED INFECTIONS WITH MULTIDRUG RESISTANT NON-TYPHOIDAL SALMONELLA

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## GUT RESISTOME AFTER ORAL ANTIBIOTICS IN PRESCHOOL CHILDREN IN BURKINA FASO: A RANDOMIZED CONTROLLED TRIAL

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## CHOLERA VACCINAL IN DRC

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## PATHOGEN BOX CONTAINS INHIBITORS OF ENTEROAGGREGATIVE ESCHERICHIA COLI GROWTH WITH ANTIBACTERIAL POTENTIAL

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**CHARACTERIZATION OF SHIGELLA SPECIES CAUSING DISEASE IN CHILDREN ADMITTED TO KILIFI COUNTY HOSPITAL, KENYA**

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**ISOLATION, IDENTIFICATION AND MOLECULAR CHARACTERIZATION OF ENTEROPATHOGENIC ESCHERICHIA COLI AND PSEUDOMONAS SPECIES OBTAINED FROM MEAT SAMPLES FROM DIFFERENT AREAS OF DHAKA CITY**

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**IDENTIFYING GEOGRAPHIC PRIORITIES FOR CHOLERA CONTROL INTERVENTIONS**

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**CLINICAL CHARACTERISTICS AND RISK FACTORS FOR CAMPYLOBACTER SPP GASTROENTERITIS IN THE FIRST YEAR OF LIFE IN A NICARAGUAN BIRTH COHORT**

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**CHOLERA OUTBREAKS IN SUB-SAHARAN AFRICA: 1996-2016**

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### A FIELD PORTABLE THERMOCYCLER T-COR 8™ FOR MULTIPLEX DETECTION AND DIFFERENTIATION OF *BURKHOLDERIA PSEUDOMALLEI* AND *BURKHOLDERIA MALLEI*

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**A DOCTOR'S EXPERIENCE: THE DILEMMA FACED USING PERSONAL PROTECTIVE EQUIPMENT WHILE WORKING IN AN EBOLA TREATMENT UNIT**

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**A RANDOMIZED PILOT CLINICAL STUDY ON THE USE OF HERBAL PRODUCT HB01, IN TREATMENT OF HIV POSITIVE PATIENTS IN ANAMBRA STATE, NIGERIA**

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**CLINICAL PROFILE AND OUTCOME OF TETANUS AMONG ADULT PATIENTS IN ETHIOPIA**

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**RETROSPECTIVE REVIEW OF BLOOD STREAM INFECTIONS IN A GOVERNMENT HOSPITAL IN MAHARASHTRA, INDIA**

**Kananbala Avinash Yelikar<sup>1</sup>**, Jyoti Anil Iravane<sup>1</sup>, Anil Gaikwad<sup>1</sup>, Poonam Korpe<sup>2</sup>

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**ECONOMIC BURDEN OF ANTIMICROBIAL RESISTANCE IN LOW AND MIDDLE-INCOME COUNTRIES: A SYSTEMATIC REVIEW AND EXPERT CONSULTATION**

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**URINARY TRACT INFECTION IS A COMMON REASON FOR POTENTIALLY INAPPROPRIATE ANTIMICROBIAL USE AMONG INPATIENTS IN SRI LANKA**

**Tianchen Sheng<sup>1</sup>**, Gaya B. Wijayaratne<sup>2</sup>, Thushani M. Dabrera<sup>3</sup>, Richard J. Drew<sup>1</sup>, Ajith Nagahawatte<sup>2</sup>, Champica K. Bodinayake<sup>2</sup>, Ruvini Kurukulasooriya<sup>4</sup>, Truls Østbye<sup>1</sup>, Kristin J. Nagaro<sup>1</sup>, Cherin De Silva<sup>4</sup>, Hasini Ranawakaarachchi<sup>4</sup>, Arambegedara Thusitha Sudarshana<sup>3</sup>, Deverick J. Anderson<sup>1</sup>, Christopher W. Woods<sup>1</sup>, L. Gayani Tillekeratne<sup>1</sup>

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**PROFILE OF ADVERSE EVENTS FOLLOWING ROUTINE IMMUNIZATION IN 5 HEALTH ZONES OF KINSHASA, THE DEMOCRATIC REPUBLIC OF CONGO**

**Trésor Bodjick Muena Mujobu**, Gaston Tona Lutete

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**THE ROLE OF NUTRITIONAL STATUS IN THE EFFICACY OF AZITHROMYCIN TO REDUCE CHILD MORTALITY IN NIGER: A SUBGROUP ANALYSIS OF THE MORDOR TRIAL**

**Kieran S. O'Brien<sup>1</sup>**, Ahmed M. Arzika<sup>2</sup>, Ramatou Maliki<sup>2</sup>, Sun Y. Cotter<sup>1</sup>, Elodie Lebas<sup>1</sup>, Catherine Cook<sup>1</sup>, Kathryn J. Ray<sup>1</sup>, Sheila K. West<sup>3</sup>, Robin L. Bailey<sup>4</sup>, Catherine E. Oldenburg<sup>1</sup>, Jeremy D. Keenan<sup>1</sup>, Thomas M. Lietman<sup>1</sup>

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**RICKETTSIA FELIS ASSOCIATED WITH FATAL CENTRAL NERVOUS SYSTEM INFECTION IN INDONESIA**

Arthur Mawuntu<sup>1</sup>, Edison Johar<sup>2</sup>, Riane Anggraeni<sup>1</sup>, Feliana Feliana<sup>1</sup>, Janno Bernadus<sup>1</sup>, Dodi Safari<sup>2</sup>, Frilasita Yudhaputri<sup>2</sup>, Rama Dhenni<sup>2</sup>, Yora Dewi<sup>2</sup>, Cecilia Kato<sup>3</sup>, Ann Powers<sup>3</sup>, Ronald Rosenberg<sup>3</sup>, **Amin Soebandrio<sup>2</sup>**, Khin Saw Myint<sup>2</sup>

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**WHEN MALIGNANCY AND INFECTION INTERTWINE: A DIAGNOSTIC CHALLENGE IN THE TROPICS**

**Jessica Tuan<sup>1</sup>**, Janvier Murayire<sup>2</sup>, Alain Prince Kubwayo<sup>2</sup>, Thomas Habanabakize<sup>2</sup>, Felix Manirakiza<sup>2</sup>, Leway Kailani<sup>2</sup>, Menelas Nkeshimana<sup>2</sup>, Florence Masaisa<sup>2</sup>

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**LAUNCH OF A NEW FECAL MOLECULAR EXTERNAL QUALITY ASSESSMENT (EQA) SCHEME BY UK NEQAS PARASITOLOGY**

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(ACMCIP Abstract)

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**A PROTEOMICS APPROACH TO IMPROVE THE DIAGNOSIS OF NEGLECTED TROPICAL DISEASES**

Markus Winterberg, Joel Tarning  
Mahidol-Oxford Tropical Medicine Research Unit, Bangkok, Thailand

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**SEROLOGICAL INFERENCE OF PAST PRIMARY AND SECONDARY DENGUE INFECTION: IMPLICATIONS FOR VACCINATION**

Ha Minh Lam<sup>1</sup>, Huynh Thi Phuong<sup>1</sup>, Nguyen Ha Thao Vy<sup>1</sup>, Nguyen Thi Le Thanh<sup>1</sup>, Pham Ngoc Dung<sup>2</sup>, Thai Thi Ngoc Muon<sup>3</sup>, Nguyen Van Vinh Chau<sup>4</sup>, Isabel Rodriguez-Barraquer<sup>5</sup>, Derek A. Cummings<sup>6</sup>, Bridget A. Wills<sup>1</sup>, Maciej F. Boni<sup>7</sup>, Maia A. Rabaa<sup>1</sup>, Hannah E. Clapham<sup>1</sup>  
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**SELECTION AND VALIDATION OF LABORATORY INSTRUMENTATION TO SUPPORT CLINICAL RESEARCH INVOLVING HIGH-CONSEQUENCE PATHOGENS DURING OUTBREAKS**

Willy Kayondo<sup>1</sup>, Sharon Kagabane<sup>1</sup>, Sharon Atukunda<sup>1</sup>, Lydia Tumubeere<sup>1</sup>, Daniel Kibombo<sup>2</sup>, Brenda Kusima<sup>2</sup>, Joseph Wandegye<sup>1</sup>, Prossy Naluyima<sup>1</sup>, Karen Martins<sup>3</sup>, Chi Ritchie<sup>3</sup>  
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**COMBAT AND NON-COMBAT MORTALITY AMONG U.S. MILITARY ADVISORS IN SOUTHEAST ASIA: 1956-1964**

David Adams, Valerie Adams  
Point University, Midway, GA, United States

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Chayasin Mansanguan<sup>1</sup>, Weerapong Phumratanaprapin<sup>1</sup>, Borimas Hanboonkunupakarn<sup>1</sup>, Sant Muangnoicharoen<sup>1</sup>, Arun Huntrup<sup>1</sup>, Akkapon Poolcharoen<sup>2</sup>  
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**EFFICACY AND TOLERABILITY OF MILTEFOSINE FOR THE TREATMENT OF CUTANEOUS LEISHMANIASIS**

JeanAnne M. Ware<sup>1</sup>, Elise M. O'Connell<sup>1</sup>, Kawsar R. Talaat<sup>2</sup>, Thomas B. Nutman<sup>1</sup>, Theodore E. Nash<sup>1</sup>  
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**PATIENT CENTERED MANAGEMENT OF BURULI ULCER IN CAMEROON: INTEGRATING LOCAL DIAGNOSIS, MENTAL HEALTH AND TRADITIONAL CONSIDERATIONS**

Lucrece Eteki<sup>1</sup>, Radhika Sundararajan<sup>2</sup>, Rodrigue Ntone<sup>1</sup>, Joel Djatche<sup>3</sup>, Franck Wanda<sup>4</sup>, Yves Hako<sup>5</sup>, Jacques Minyem<sup>6</sup>, Earnest Njih<sup>7</sup>, Sara Eyangoh<sup>8</sup>, Alphonse Um Boock<sup>9</sup>, Yap Boum<sup>1</sup>  
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**Helminths - Nematodes - Filariasis (Cellular and Molecular Biology)**

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**GENE EXPRESSION ANALYSIS OF ANTI-FILARIAL ACTIVITY OF NATURAL AND SYNTHETIC SESQUITERPENE LACTONES FROM THE PLANT *NEUROLAENA LOBATA***

Lizzette Perez-Perez, Jessica Grant, Susan Haynes, Kevin M. Shea, Steven A. Williams  
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(ACMCIP Abstract)

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**ANTI-FILARIAL DRUGS INHIBIT EXTRACELLULAR VESICLE RELEASE FROM PARASITIC NEMATODES**

Hannah J. Loghry, Wang Yuan, Michael J. Kimber  
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**GENOME SEQUENCES OF THE *WOLBACHIA* ENDOSYMBIONTS FROM THE FILARIAL PARASITES *MANSONELLA PERSTANS* AND *MANSONELLA OZZARDI***

Zhiru (Liz) Li<sup>1</sup>, Amit Sinha<sup>1</sup>, Catherine B. Poole<sup>1</sup>, Richard D. Morgan<sup>1</sup>, Laurence Ettwiller<sup>1</sup>, Nathalia F. Lima<sup>2</sup>, Marcelo U. Ferreira<sup>2</sup>, Samuel Wanji<sup>3</sup>, Clotilde K. Carlow<sup>1</sup>  
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**DEVELOPMENT OF A QUANTITATIVE PCR ASSAY FOR THE DETECTION OF *MANSONELLA PERSTANS* IN HUMAN BLOOD**

Tamara S. Thomas, Nils Pilotte, Lori J. Saunders, Steven A. Williams  
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**POPULATION GENOMICS AND MOLECULAR PHYLOGENETIC RELATIONSHIPS OF *SIMULIUM* VECTORS OF ONCHOCERCIASIS IN GHANA: LARGE INTERBREEDING SYMPATRIC POPULATIONS AND LARGE TRANSMISSION ZONES**

Warwick Grant, Ernest Gyan, Shannon Hedtke  
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### EFFECT OF DIFFERENT ALBENDAZOLE-BASED TREATMENT REGIMENS ON *LOA LOA* MICROFILARIAEMIA IN AN ENDEMIC REGION OF GABON PRELIMINARY RESULTS OF AN OPEN-LABEL RANDOMIZED CONTROLLED CLINICAL TRIAL

**Rella Zoleko-Manego**<sup>1</sup>, Ghyslain Mombo-Ngoma<sup>1</sup>, Ruth Kreuzmair<sup>2</sup>, Wilfrid Ndoumba<sup>1</sup>, Michael Ramharter<sup>3</sup>  
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### POTENTIAL CROSS REACTIVITY OF *MANSONELLA PERSTANS* WITH *WUCHERERIA BANCROFTI* BY FILARIASIS TEST STRIPS

Yaya Ibrahim Koulibaly<sup>1</sup>, Lamine Soumaoro<sup>1</sup>, Benoit Dembele<sup>2</sup>, **Mary Hodges**<sup>3</sup>, Yaobi Zhang<sup>4</sup>

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### EVALUATION OF THE THERAPEUTIC COVERAGE OF MASS TREATMENT CAMPAIGN AGAINST LF IN A CONTEXT OF PERSISTENT TRANSMISSION OF THE DISEASE

Roland Bougma<sup>1</sup>, **Mamadou Serme**<sup>1</sup>, Christophe Nassa<sup>1</sup>, Micheline Ouedraogo<sup>2</sup>, Appolinaire Kima<sup>1</sup>, Clarisse Bougouma<sup>1</sup>, Dieudonné Nare<sup>2</sup>, Jean-Paul Djijatsa<sup>2</sup>, Fanny Yago-Wienne<sup>2</sup>, Amy Veinoglou<sup>3</sup>, Yaobi Zhang<sup>4</sup>

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### STANDARDIZATION OF DIAGNOSTIC METHODS FOR THE DETECTION OF MICROFILARIAEMIA IN BLOOD FOR LYMPHATIC FILARIASIS: A REVIEW AND META-ANALYSIS

**Natalie Vivian Vinkeles Melchers**, Luc E. Coffeng, Sake J. de Vlas, Wilma A. Stolk Erasmus MC, University Medical Center Rotterdam, Rotterdam, Netherlands

## Helminths - Nematodes - Filariasis (Immunology)

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### CYTOKINE SIGNATURES ASSOCIATED WITH MICROFILARIA CLEARANCE FOLLOWING SINGLE DOSE OF IVERMECTIN, DIETHYLCARBAMAZINE AND ALBENDAZOLE THERAPY FOR LYMPHATIC FILARIASIS IN COTE D'IVOIRE

**Charlene Aya Yoboue**<sup>1</sup>, Sarah Frischmann<sup>2</sup>, Claudia Daubenberger<sup>1</sup>, Juerg Utzinger<sup>1</sup>, Benjamin Guibehi Koudou<sup>3</sup>, Christopher Lee King<sup>2</sup>  
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### ASSESSING THE IMMUNOGENICITY OF ADJUVANT-ANTIGEN FORMULATIONS IN A NATURAL BOVINE - *ONCHOCERCA OCHENGI* INFECTION MODEL FOR HUMAN ONCHOCERCIASIS

**John Graham-Brown**<sup>1</sup>, Lisa Luu<sup>1</sup>, Catherine Hartley<sup>1</sup>, Bin Zhan<sup>2</sup>, Maria-Elena Bottazzi<sup>2</sup>, David Abraham<sup>3</sup>, Nikolai Petrovsky<sup>4</sup>, Nicholas Bayang<sup>5</sup>, Germanus Bah<sup>5</sup>, Vincent Tanya<sup>5</sup>, Sara Lustigman<sup>6</sup>, Benjamin Makepeace<sup>1</sup>  
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### IMMUNE ACTIVATION IN PATIENTS WITH FILARIAL LYMPHEDEMA BEFORE AND AFTER TREATMENT WITH DOXYCYCLINE

**Inge Kroidl**<sup>1</sup>, Anja Feichtner<sup>1</sup>, Sacha Horn<sup>1</sup>, Upendo Mwingira<sup>2</sup>, Abdallah Ngenya<sup>3</sup>, Godfrey Chotta<sup>4</sup>, Ute Klarmann-Schulz<sup>5</sup>, Janina Kuehlwein<sup>5</sup>, Achim Hoerauf<sup>6</sup>, Jubin Osei-Mensah<sup>6</sup>, Linda Batsa Debrah<sup>6</sup>, Alexander Y. Debrah<sup>6</sup>  
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### DEVELOPMENT OF A TWO-STEP FLOW CYTOMETRY METHOD FOR A FIELD SETTING USING WHOLE BLOOD FOR THE DESCRIPTION OF PHENOTYPIC MARKERS ON PERIPHERAL BLOOD CELLS

**Sacha Horn**, Mohamed I. Ahmed, Christof Geldmacher, Michael Hölscher, Inge Kroidl  
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### IMPROVED PERFORMANCE OF A SEROLOGY RAPID DIAGNOSTIC TEST FOR ONCHOCERCIASIS BY USING DRIED BLOOD SPOTS

**Guilherme Maerschner Ogawa**<sup>1</sup>, Allison Golden<sup>2</sup>, Jui A. Bhingarde<sup>3</sup>, Andreas Nshala<sup>4</sup>, Eugene Liu<sup>1</sup>, Austin Newsam<sup>1</sup>, Ryan Wiegand<sup>1</sup>, Paul Cantey<sup>1</sup>, Vitaliano Cama<sup>1</sup>  
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## Helminths - Nematodes - Intestinal Nematodes

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### DEVELOPMENT OF AN EXPERIMENTAL NEUROTOXOCARIASIS IN A PORCINE MODEL

**Luis A. Gomez-Puerta**<sup>1</sup>, Katherine Robles<sup>1</sup>, Ana Vargas-Calla<sup>1</sup>, Gianfranco Arroyo<sup>2</sup>, Armando Gonzalez<sup>1</sup>, Hector H. Garcia<sup>2</sup>, Alessandra Nicoletti<sup>3</sup>

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**RWANDA NEGLECTED TROPICAL DISEASE CONTROL PROGRAM: WHAT IS THE IMPACT OF DEWORMING OF SCHOOL-AGE CHILDREN 6 YEARS AFTER IT STARTED?**

Eugene Ruberanziza<sup>1</sup>, Denise Mupfasoni<sup>2</sup>, Aimable Mbituyumuremyi<sup>1</sup>, Jamie Tallant<sup>3</sup>, Jean Bosco Mbonigaba<sup>1</sup>, Ursin Bayisenge<sup>1</sup>, Michee Kabera S.<sup>1</sup>, Innocent Turate<sup>1</sup>

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**HELMINTH MEDIATED MODULATION OF THE SYSTEMIC AND MYCOBACTERIAL ANTIGEN - STIMULATED CYTOKINE PROFILES IN EXTRA-PULMONARY TUBERCULOSIS**

Gokul Raj Kathamuthu<sup>1</sup>, Saravanan Munisankar<sup>1</sup>, Baskaran Dhanaraj<sup>2</sup>, Subash Babu<sup>1</sup>

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**THE IMPACT OF FIFTEEN YEARS OF IVERMECTIN AND ALBENDAZOLE TREATMENT FOR THE CONTROL OF LYMPHATIC FILARIASIS ON SOIL-TRANSMITTED HELMINTHS**

Dziedzom K. de Souza<sup>1</sup>, Edward Dumashie<sup>1</sup>, Joseph Otchere<sup>1</sup>, Collins S. Ahorlu<sup>2</sup>, Irene Ayi<sup>1</sup>

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**STAKEHOLDER SURVEY ON 2030 WORLD HEALTH ORGANIZATION TARGETS FOR SOIL-TRANSMITTED HELMINTHIASIS**

Jasmine L. Irish, Girija Sankar, Michael R. Diaz, Sanjaya Dhakal, Alexander H. Jones, Rubina Imtiaz

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**DEVELOPING NEW THERAPIES FOR SOIL TRANSMITTED NEMATODE INFECTIONS**

David M. Gazzola, Hanchen Li, Ambily Abraham, Yan Hu, Kelly Flanagan, You-Mie Kim, Anand Sitaram, Tasia Kellogg, Florentina Rus, Martin Nielsen, Anne Zajac, Joe Urban, Jennifer Ketzes, Gary Ostroff, Raffi V. Aroian

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**GLOBAL EPIDEMIOLOGY OF STRONGYLOIDIASIS: FILLING THE KNOWLEDGE GAP**

Donal Bisanzio<sup>1</sup>, Dora Buonfrate<sup>2</sup>, Antonio Montresor<sup>3</sup>, Micheal French<sup>1</sup>, Richard Reithinger<sup>1</sup>, Giovanni Giorli<sup>4</sup>, Zeno Bisoffi<sup>2</sup>

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**SYSTEMATIC LITERATURE REVIEW OF GLOBAL SOIL-TRANSMITTED HELMINTHIASIS PREVALENCE AND INTENSITY STUDIES: IDENTIFYING KNOWLEDGE GAPS, METHODOLOGICAL CONCERNS AND GUIDING FUTURE RESEARCH**

Michael R. Diaz, Jasmine L. Irish, Zena Belay, Stacy L. Davlin, Sanjaya Dhakal, Alexander H. Jones, Rubina Imtiaz

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**DIFFERENT STH INFECTIONS AMONG TWO NEIGHBORING INDIGENOUS POPULATIONS FROM PUERTO IGUAZÚ, MISIONES, ARGENTINA**

Ernesto Candela-Senti<sup>1</sup>, Carolina Goizueta<sup>2</sup>, Marta Cabrera<sup>3</sup>, Carla Muñoz-Antolí<sup>1</sup>, Maria V. Periago<sup>4</sup>

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**IMPACT OF ASSORTATIVE MIXING ON STABILITY OF TRANSMISSION AND FEASIBILITY OF CONTROL OF SOIL-TRANSMITTED HELMINTH INFECTIONS**

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**Integrated Control Measures for Neglected Tropical Diseases (NTDs)**

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**SOCIO-CONTEXT INTERLINKAGES OF NEGLECTED TROPICAL DISEASES AND WATER SANITATION AND HYGIENE INTERVENTIONS IN TWO RURAL DISTRICTS IN AFRICA: POLICY IMPLICATIONS OF CONTROL AND ERADICATION OF NEGLECTED TROPICAL DISEASES IN GHANA**

Martin Amogre Ayanore

University of Health and Allied Sciences, Ho, Ghana

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**DO COMMUNITIES PERCEIVE THE NEED FOR A COMMUNITY-WIDE DEWORMING PROGRAM? QUALITATIVE RESULTS FROM THE DEWORM3 STUDY, INDIA**

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**MASS DEWORMING CAMPAIGN: ACHIEVEMENTS, PROSPECTS AND CHALLENGES IN THE CONTEXT OF NIGERIA PROGRESS TOWARDS THE WHO 2020 GOAL**

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**MASS DRUG ADMINISTRATION COVERAGE SURVEY IN THREE DISTRICTS THAT FAILED A REPEAT PRE-TRANSMISSION ASSESSMENT SURVEY IN 2017**

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**STUDIES ON SCABIES IN IMO STATE SOUTH EASTERN NIGERIA**

**Chinyere N. Ukaga**, Ann I. Ogomaka, Betram E. Nwoke, Lillian C. Chimechefulam, Evangeline C. Uwalaka  
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**INTERRUPTING TRANSMISSION OF SOIL-TRANSMITTED HELMINTHS AND SCHISTOSOME PARASITES IN ETHIOPIA - THE GESHIYARO PROJECT PROTOCOL**

**Kalkidan Mekete**<sup>1</sup>, Alison Ower<sup>2</sup>, Julia C. Dunn<sup>2</sup>, Heven Sime<sup>1</sup>, Gemechu Tadesse<sup>1</sup>, Ebba Abate<sup>1</sup>, Nebiyu Nigussu<sup>3</sup>, Fikreselasie Seife<sup>3</sup>, Emily McNaughton<sup>2</sup>, Anna Phillips<sup>2</sup>, Roy M. Anderson<sup>2</sup>  
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**COMMUNITY-BASED SURVEY FOR PROGRAM MONITORING OF SOIL TRANSMITTED HELMINTHIASIS IN SIERRA LEONE**

Ibrahim Kargbo Labour<sup>1</sup>, Jusufu Paye<sup>2</sup>, Stacy Davlin<sup>3</sup>, Abdul Conteh<sup>1</sup>, Victoria Redwood-Sawyer<sup>2</sup>, Amy Veinoglou<sup>4</sup>, Mustapha Sonnie<sup>2</sup>, Mary H. Hodges<sup>2</sup>, Alexander H. Jones<sup>3</sup>, **Yaobi Zhang**<sup>5</sup>  
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**PREVALENCE AND INTENSITY OF STH INFECTIONS IN TWO SETTINGS WITH A CONTRASTING HISTORY OF IVERMECTIN MASS DISTRIBUTIONS: INDICATIONS OF COLLATERAL IMPACT**

**Hugues Nana Djeunga**<sup>1</sup>, Linda Djune Yemeli<sup>1</sup>, Cédric Lenou Nanga<sup>1</sup>, André Domche<sup>1</sup>, Floribert Fossuo Thotchum<sup>1</sup>, Yannick Niamsi Emalio<sup>1</sup>, Thérèse Nkoa<sup>2</sup>, Joseph Kamgno<sup>1</sup>  
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**THE IMPACT OF ADJUSTED MOBILE TREATMENT POSTS STRATEGY ON MASS DRUG ADMINISTRATION COVERAGE IN AN URBAN SETTING. CASE STUDY OF DAR ES SALAAM, TANZANIA**

**Alistidia Simon**<sup>1</sup>, Cecilia Uisso<sup>1</sup>, Upendo Mwingira<sup>2</sup>, Jeremiah Ngondi<sup>3</sup>, Hailey Mableson<sup>1</sup>, Andreas Nshala<sup>4</sup>  
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**AN INNOVATIVE INTEGRATIVE APPROACH FOR NTD CONTROL IN ETHIOPIA: SUSTAINED REDUCTION IN PREVALENCE OF SCHISTOSOMA AND STH INFECTIONS IN RURAL AND URBAN POPULATIONS**

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**HEALTH EDUCATION AND BEHAVIOR CHANGE OF CHILDREN ARE ESSENTIAL FOR CONTROLLING NTDS: LESSONS FROM A SUCCESSFUL PILOT TRIAL IN ETHIOPIA**

**Zvi Bentwich**, Liat Rennert  
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**Zvi Bentwich**, Asrat Meleko, Dorin Turgeman  
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**EVIDENCE FOR GLOBAL HEALTH INTERVENTIONS: PERSPECTIVES FROM THE AFRICAN GREAT LAKES ON EVIDENCE IN MASS DRUG ADMINISTRATION PROGRAMMES FOR SCHISTOSOMIASIS AND SOIL-TRANSMITTED HELMINTHS**

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**INTEGRATING SOIL/TRANSMITTED HELMINTHIASES AND SCHISTOSOMIASIS CONTROL PROGRAMS IN PRIMARY HEALTH CARE: A STEP TO FORWARD FOR UNIVERSAL HEALTH COVERAGE**

**Arancha Amor Aramendia**<sup>1</sup>, Melaku Anegagrie Mekonen<sup>2</sup>, Elena Barrio Migue<sup>1</sup>, Birhanu Tashu<sup>3</sup>, Juan Jose de los Santos<sup>1</sup>  
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**DATA QUALITY ASSESSMENT AS A PROJECT MONITORING TOOL IN MASS DRUG ADMINISTRATION FOR NEGLECTED TROPICAL DISEASES IN GUINEA**

**André Géopogui**<sup>1</sup>, Christelly Badila Flore<sup>2</sup>, Mamadou Siradiou Baldé<sup>1</sup>, Lamine Lamah<sup>2</sup>, Bamba Fougoutin Ibrahim<sup>2</sup>  
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**GETTING OUT OF THE COMFORT ZONE: INTEGRATED APPROACH OF SKIN NTDS**

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### OVEREXPRESSION OF THE KINASE *JEAN3* FROM *LEISHMANIA MAJOR* MAY ATTENUATE PARASITES INFECTIVITY IN BALB/C MICE BY IMPAIRING THE TH2-TYPE IMMUNE RESPONSE THROUGH THE DOWNREGULATION OF *IL4*, *IL10*, AND *ARG1*

Andres Vacas<sup>1</sup>, Celia Fernandez-Rubio<sup>1</sup>, Esther Larrea<sup>1</sup>, Jose Pena-Guerrero<sup>1</sup>, Miriam Algarabel<sup>1</sup>, Fabio Rocha Formiga<sup>2</sup>, Paul Nguewa<sup>1</sup>

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Olakunle O. Kassim<sup>1</sup>, Hilaire M. Kenguele<sup>2</sup>, Oladapo Bakare<sup>3</sup>, Kwashie A. Ako-Nai<sup>4</sup>, Winston A. Anderson<sup>3</sup>, Clarence M. Lee<sup>3</sup>

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### PARASITE BURDEN IS ASSOCIATED WITH THERAPEUTIC FAILURE IN HUMAN CUTANEOUS LEISHMANIASIS

Mauricio Nascimento, Rubia Costa, Maira Saldanha, Sergio Arruda, Paulo Machado, Edgar M. Carvalho, Lucas P. Carvalho  
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### IMPAIRED TH1 RESPONSE IS ASSOCIATED THERAPEUTIC FAILURE IN PATIENTS WITH CUTANEOUS LEISHMANIASIS AND NEGATIVE *LEISHMANIA* SKIN TEST

Augusto M. Carvalho<sup>1</sup>, Luiz Guimaraes<sup>1</sup>, Iana Prates<sup>1</sup>, Rubia Costa<sup>1</sup>, Lucas P. Carvalho<sup>1</sup>, Phillip Scott<sup>2</sup>, Edgar M. Carvalho<sup>1</sup>

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### BLOOD MONOCYTES IN HUMAN VISCERAL LEISHMANIASIS ARE SKEWED TOWARDS NON INFLAMMATORY PHENOTYPE AND DISPLAY DEFECTIVE PHAGOCYTOSIS AND OXIDATIVE BURST

Neetu Singh<sup>1</sup>, Christian Engwerda<sup>2</sup>, Shyam Sundar<sup>1</sup>

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### IMPACT OF THE INTRODUCTION OF PCV7/13 ON ANTIMICROBIAL RESISTANCE IN INVASIVE PNEUMOCOCCAL DISEASE IN INDONESIA

Ebrima Jobarteh, Mustapha Danso, Dawda Kairaba Jawara, Mam Mass Sey  
Universitas Islam negeri Uin syariff hidayatullah jakarta, Jakarta, Indonesia

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### EVIDENCE OF EXOGENOUS AND ENDOGENOUS RE-INFECTATION WITH *MYCOBACTERIUM TUBERCULOSIS* COMPLEX STRAINS AMONG PULMONARY TB PATIENTS WITH RECURRING TB EPISODES IN GHANA; A CALL FOR INTENSIFYING TB MONITORING

Prince Asare<sup>1</sup>, Stephen Osei-Wusu<sup>1</sup>, Adwoa Asante-Poku<sup>1</sup>, Isaac D. Otchere<sup>1</sup>, Dina A. Prah<sup>1</sup>, Sonia Borrell<sup>2</sup>, Edmund Bedeley<sup>1</sup>, Audrey Forson<sup>3</sup>, Kwadwo A. Koram<sup>1</sup>, Sebastien Gagneux<sup>2</sup>, Dorothy Yeboah-Manu<sup>1</sup>

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### ASSESSMENT OF HEALTH RELATED QUALITY OF LIFE OF ADULTS TREATED FOR PNEUMONIA IN NAIROBI HEALTH FACILITIES

Apollo Odhiambo Maima<sup>1</sup>, Faith Apolot Okalebo<sup>2</sup>, Dan Owino Kaseje<sup>3</sup>

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Sinthia Kabir Mumu, Akash Ahmed, M. Mahboob Hossain

BRAC University, Dhaka, Bangladesh

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**EVALUATION OF SAME, DAY DIAGNOSIS OF TUBERCULOSIS MICROSCOPY IN COMPARISON TO THE SPOT-MORNING-SPOT METHOD IN SELECTED HEALTH INSTITUTION IN ADDIS ABABA, ETHIOPIA**

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**ASSESSMENT OF EFFLUX PUMPS FROM MYCOBACTERIUM TUBERCULOSIS BY CRISPR INTERFERENCE IN MYCOBACTERIUM SMEGMATIS IN VIVO MODEL AND ITS EFFECT ON SUSCEPTIBILITY TO PYRAZINAMIDE**

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**HEALTH CARE UTILIZATION SURVEY OF CHILDREN UNDER FIVE WITH PNEUMONIA IN PERI URBAN COMMUNITIES OF KARACHI, PAKISTAN**

Bushra Abid Iqbal Mufti, Salima Kerai, Imran Nasir, Muhammad Ilyas, Sana Qaiser, Khalid Feroz, Azhar Raza, Faizan Khalid, Benazir Balouch, Fyezah Jehan

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**AN OUTBREAK OF ADENOVIRUS CAUSING SEVERE RESPIRATORY ILLNESS IN SOUTHERN SRI LANKA, 2018**

Weerasinghe M. D. G. B. Wijayarathne<sup>1</sup>, Sky Vanderburg<sup>2</sup>, Vasantha Devasiri<sup>1</sup>, Ajith Nagahawatte<sup>1</sup>, Champika K. Bodinayake<sup>1</sup>, Eelizabeth Petzold<sup>2</sup>, Sunethra Gunasena<sup>1</sup>, Nayomi Danthanarayana<sup>3</sup>, Bhagya Piyasiri<sup>3</sup>, Muhunthan Sellathurai<sup>3</sup>, Nayani P. Weerasinghe<sup>1</sup>, Chathuranga L. Fonseka<sup>1</sup>, Ruvini P. Kurukulasoorya<sup>1</sup>, Nishantha C. Gunasekara<sup>1</sup>, Brad P. Nicholson<sup>2</sup>, Chris W. Woods<sup>2</sup>, L. Gayani Tillekeratne<sup>2</sup>

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**BIOMARKERS OF PEDIATRIC PNEUMONIA: THE POSSIBILITY OF A FINGERSTICK DIAGNOSTIC TEST**

Jack Underschultz<sup>1</sup>, Jeremy Soo<sup>1</sup>, Ravi Bhargava<sup>1</sup>, Robert Opoka<sup>2</sup>, Andrea Conroy<sup>3</sup>, Sophie Namasopo<sup>4</sup>, Michael Hawkes<sup>1</sup>

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**Protozoa - Ameba/Giardia**

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**DETECTION AND MOLECULAR CHARACTERIZATION OF GIARDIA DUODENALIS IN PATIENTS WITH CHRONIC AND PERSISTENT DIARRHEA**

Sumeeta Khurana, Monika Jangra, Usha Dutta, Rakesh Sehgal, Br Thapa, Nalini Gupta, Ritambhra Nada

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**GIARDIA ASSEMBLAGES AND DIARRHEA IN CHILDREN BELOW 5 YEARS IN SIAYA COUNTY, KENYA**

Esther Omuseni<sup>1</sup>, Benjamin Ochieng<sup>1</sup>, Jane Juma<sup>1</sup>, Evans Apondi<sup>1</sup>, Richard Omore<sup>1</sup>, Irene N. Kasumba<sup>2</sup>, Anna Rose<sup>2</sup>, Jie Liu<sup>3</sup>, Eric Houpt<sup>3</sup>, Sharon Tennant<sup>2</sup>, Karen Kotloff<sup>2</sup>

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**COMPARATIVE EFFICACY OF DNA ISOLATION FROM RECTAL SWABS AND BULK STOOL FOR MOLECULAR DETECTION OF GIARDIA INTESTINALIS**

Jacqueline R. Maasch<sup>1</sup>, Ahmed M. Arzika<sup>2</sup>, Catherine Cook<sup>3</sup>, Elodie Lebas<sup>3</sup>, Nils Pilotte<sup>1</sup>, Jessica R. Grant<sup>1</sup>, Steven A. Williams<sup>1</sup>, Jeremy A. Keenan<sup>3</sup>, Kristen A. Aiemjoy<sup>4</sup>

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**MOLECULAR CHARACTERIZATION OF ENTAMOEBIA COMPLEX IN HUMAN STOOL SAMPLES FROM CASES AND CONTROLS IDENTIFIES ENTAMOEBIA MOSHKOVSKII FOR THE FIRST TIME IN KENYA**

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**PREVALENCE OF BLASTOCYSTIS SP. AND ASSOCIATED FACTORS TO INFECTION AND SYMPTOMATOLOGY IN PERIURBAN COMMUNITIES OF AREQUIPA, PERU**

Victor Luis Vasquez Huerta<sup>1</sup>, Renzo Sadath Salazar Sánchez<sup>1</sup>, Elí Martínez Barrios<sup>1</sup>, Kasandra Lizzeth Ascuña Durand<sup>1</sup>, Ana Leila Maza Santillán<sup>1</sup>, Mónica Yauri Huamani<sup>1</sup>, Almendra Del Rosario Ascuña Durand<sup>1</sup>, Jorge Andrés Ballón Echegaray<sup>1</sup>, Ricardo Castillo Neyra<sup>2</sup>

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**HEALTHY COMMUNITY STOOL SCREENINGS IN RURAL NICARAGUA REVEAL HIGH PREVALENCE OF PROTOZOAL INTESTINAL PARASITES AND POLYPARASITISM**

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Thursday  
November 21

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**INFLUENCE OF HOST NUTRIOME ON IMMUNOLOGICAL CONTROL OF PROTOZOAL INFECTIONS**Emma Hagopian<sup>1</sup>, Shveta Bhasker<sup>1</sup>, Ruwandi Kariyawasam<sup>2</sup>, David Harris<sup>1</sup>, Priyanka Challa<sup>1</sup>, Celine Lecce<sup>1</sup>, Rachel Lau<sup>3</sup>, Andrea Boggild<sup>1</sup><sup>1</sup>Tropical Disease Unit, Toronto General Hospital and University of Toronto, Toronto, ON, Canada, <sup>2</sup>Institute of Medical Sciences, Department of Medicine, University of Toronto, Toronto, ON, Canada, <sup>3</sup>Public Health Ontario Laboratories, Toronto, ON, Canada

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**THE ROLE OF PROTOZOAN PARASITES IN FEVERS OF UNKNOWN ORIGINS IN GHANA**

Georgina I. Djameh, Annabella Nkansah, Senyo Botchie, Irene Ayi Noguchi Memorial Institute for Medical Research, Accra, Ghana

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**EPIDEMIOLOGY AND CLINICAL PRESENTATION OF CRYPTOSPORIDIUM-ASSOCIATED DIARRHEAL DISEASE IN CHILDREN UNDER FIVE FROM THREE COUNTRIES IN SUB-SAHARAN AFRICA**M. Jahangir Hossain<sup>1</sup>, Anna Roose<sup>2</sup>, Samba Sow<sup>3</sup>, Sanogo Doh<sup>3</sup>, Richard Omoro<sup>4</sup>, Ben Ochieng<sup>5</sup>, Joquina Chiquita M. Jones<sup>1</sup>, Syed M.A. Zaman<sup>1</sup>, Henry Badji<sup>1</sup>, Sharon M. Tennant<sup>2</sup>, Irene Kasumba<sup>2</sup>, Helen Powell<sup>2</sup>, Dilruba Nasrin<sup>2</sup>, Jie Liu<sup>5</sup>, James Platts-Mills<sup>5</sup>, Martin Antonio<sup>1</sup>, Eric Houpt<sup>6</sup>, Karen L. Kotloff<sup>2</sup><sup>1</sup>Medical Research Council Unit The Gambia at the London School of Hygiene & Tropical Medicine, Banjul, Gambia, <sup>2</sup>Center for Vaccine Development and Global Health, University of Maryland School of Medicine, Baltimore, MD, United States, <sup>3</sup>Center for Vaccine Development-Mali, Bamako, Mali, <sup>4</sup>Kenya Medical Research Institute, Kisumu, Kenya, <sup>5</sup>Division of Infectious Diseases and International Health, Department of Medicine, University of Virginia, Charlottesville, VA, United States, <sup>6</sup>Division of Infectious Diseases and International Health, Department of Medicine, University of Virginia, Charlottesville, VA, United States

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**ENVIRONMENTAL EXPOSURES ARE A RISK FACTOR FOR TOXOPLASMA GONDII INFECTION IN AN URBAN SLUM IN SALVADOR, BRAZIL**Arnau Casanovas-Massana<sup>1</sup>, Joyce Wang<sup>1</sup>, Elsie A. Wunder<sup>1</sup>, Ridalva D. Felzemburgh<sup>2</sup>, Renato B. Reis<sup>2</sup>, Nivison Nery<sup>2</sup>, Guilherme S. Ribeiro<sup>2</sup>, Federico Costa<sup>2</sup>, Peter J. Diggle<sup>3</sup>, Mitermayer G. Reis<sup>2</sup>, Claudia Munoz-Zanzi<sup>4</sup>, Albert I. Ko<sup>1</sup>  
<sup>1</sup>Yale School of Public Health, New Haven, CT, United States, <sup>2</sup>Oswaldo Cruz Foundation, Salvador, Brazil, <sup>3</sup>University of Lancaster, Lancaster, United Kingdom, <sup>4</sup>University of Minnesota, Minneapolis, MN, United States

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**THE FECAL MICROBIOME ASSOCIATED WITH CRYPTOSPORIDIUM-INFECTION AND DIARRHEAL SYMPTOMS IN BANGLADESHI CHILDREN**Maureen A. Carey<sup>1</sup>, Gregory L. Medlock<sup>1</sup>, Sultan Uz Zaman<sup>2</sup>, Md Jashim Uddin<sup>1</sup>, Emtiaz Ahmed<sup>2</sup>, Masud Alam<sup>2</sup>, Shahnavaz Ahmed<sup>2</sup>, Mamun Kabir<sup>2</sup>, Jason Papin<sup>1</sup>, A. S. G. Faruque<sup>2</sup>, Rashidul Haque<sup>2</sup>, William A. Petri, Jr.<sup>1</sup>, Carol A. Gilchrist<sup>1</sup><sup>1</sup>University of Virginia, Charlottesville, VA, United States, <sup>2</sup>International Centre for Diarrhoeal Disease Research, Bangladesh, Dhaka, Bangladesh**EVOLUTION OF THE THEILERIA PARVA REPEAT (TPR) GENE FAMILY IS CONSISTENT WITH ADAPTATION TO MAMMALIAN HOST SPECIES**Nicholas C. Palmateer<sup>1</sup>, James B. Munro<sup>1</sup>, Roger Pelle<sup>2</sup>, Lucilla Steinaa<sup>2</sup>, Vish Nene<sup>2</sup>, Richard P. Bishop<sup>3</sup>, Donald P. Knowles<sup>3</sup>, Ine De Goeyse<sup>4</sup>, Dirk Geysen<sup>4</sup>, Ivan Morrison<sup>5</sup>, Joana C. Silva<sup>1</sup><sup>1</sup>University of Maryland School of Medicine, Baltimore, MD, United States, <sup>2</sup>International Livestock Research Institute, Nairobi, Kenya, <sup>3</sup>Department of Veterinary Microbiology and Pathology, Pullman, WA, United States, <sup>4</sup>Institute of Tropical Medicine, Antwerp, Belgium, <sup>5</sup>The Roslin Institute, University of Edinburgh, Edinburgh, United Kingdom

(ACMCIP Abstract)

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**BEI RESOURCES: A BIOLOGICAL RESOURCE CENTER SUPPORTING NEGLECTED AND EMERGING PARASITIC DISEASES**

Robert E. Molestina, Biniam Hagos, Ioana Brasov ATCC, Manassas, VA, United States

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**INTESTINAL PARASITES CAUSING DIARRHEAL ILLNESS IN KENYA**Cliff Odhiambo Philip<sup>1</sup>, Nancy Kipkemoi<sup>1</sup>, Janet Ndonge<sup>1</sup>, Margaret Koech<sup>1</sup>, Abigael Ombogo<sup>1</sup>, Mary Kirui<sup>1</sup>, Ronald Kirera<sup>1</sup>, Erick Kipkirui<sup>1</sup>, Elizabeth Odondo<sup>1</sup>, Brook Danboise<sup>2</sup>, Christine Hulseberg<sup>3</sup>, Stacey Bateman<sup>4</sup>, Alexander Flynn<sup>1</sup>, Brett Swierczewski<sup>5</sup><sup>1</sup>Kenya Medical Research Institute/U.S Army Medical Research Directorate-Africa, Kericho, Kenya, <sup>2</sup>University of Michigan Medical School, Michigan, MI, United States, <sup>3</sup>US Army Medical Research Institute of Infectious Diseases, Fort Detrick, MD, United States, <sup>4</sup>Madigan Army Medical Center, Tacoma, WA, United States, <sup>5</sup>Walter Reed Army Institute of Research, Silver Spring, MD, United States

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**COMPARISON OF CONVENTIONAL AND IT MOLECULAR METHODS OF DETECTION OF HAEMOPARASITES FROM NIGERIAN CATTLE**Anise Nkenjop Happi<sup>1</sup>, Olawale Osifade<sup>1</sup>, Paul E. Oluniji<sup>2</sup>, Bamidele N. Ogunro<sup>1</sup>  
<sup>1</sup>University of Ibadan, Ibadan, Nigeria, <sup>2</sup>Redeemer's University, Ede, Nigeria

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**USE OF A NEW TRICHROME STAIN FOR RAPID IDENTIFICATION OF CYSTS AND TROPHOZOITES OF COLPODELLA SP. (APICOMPLEXA)**

Tobili Y. Sam-Yellowe, Kush Addepalli Cleveland State University, Cleveland, OH, United States

(ACMCIP Abstract)

**Schistosomiasis and Other Trematodes – Diagnostics and Treatment**

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**AN UPDATE ON THE ROLE OF IMAGING IN THE CARE OF PATIENTS WITH SCHISTOSOMIASIS**Celine Lecce<sup>1</sup>, Leila Makhani<sup>1</sup>, Shveta Bhasker<sup>1</sup>, Christian Lecce<sup>1</sup>, Jason Kwan<sup>1</sup>, Michael Klwak<sup>1</sup>, Priyanka Challa<sup>1</sup>, Anjola Ogunsina<sup>1</sup>, Osaru Omoruna<sup>1</sup>, Kimberley Marks-Beaubrun<sup>1</sup>, Zachary Corso<sup>1</sup>, Rachel Lau<sup>2</sup>, Andrea Boggild<sup>1</sup><sup>1</sup>Tropical Disease Unit, Toronto General Hospital and University of Toronto, Toronto, ON, Canada, <sup>2</sup>Public Health Ontario, Toronto, ON, Canada

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### SCHISTODETECT™: DEVELOPMENT OF A RELIABLE AND SENSITIVE RAPID DIAGNOSTIC TEST FOR *SCHISTOSOMA JAPONICUM* INFECTION IN HUMANS

Jose Ma. M. Angeles<sup>1</sup>, Yasuyuki Goto<sup>2</sup>, Lydia R. Leonardo<sup>1</sup>, Dindo Reyes<sup>3</sup>, Kharleezelle J. Moendeg<sup>4</sup>, Minh Anh Danh Trinh<sup>4</sup>, Elena A. Villacorte<sup>1</sup>, Pilarita T. Rivera<sup>1</sup>, Masashi Kirinoki<sup>5</sup>, Yuichi Chigusa<sup>5</sup>, Raymond L. Houghton<sup>3</sup>, Shin-ichiro Kawazu<sup>4</sup>

<sup>1</sup>Department of Parasitology, College of Public Health, University of the Philippines Manila, Manila, Philippines, <sup>2</sup>Laboratory of Molecular Immunology, Department of Animal Resource Sciences, Graduate School of Agricultural and Life Sciences, The University of Tokyo, Tokyo, Japan, <sup>3</sup>InBios International Inc., Seattle, WA, United States, <sup>4</sup>National Research Center for Protozoan Diseases, Obihiro University of Agriculture and Veterinary Medicine, Obihiro, Hokkaido, Japan, <sup>5</sup>Department of Tropical Medicine and Parasitology, Dokkyo Medical University School of Medicine, Mibu, Tochigi, Japan

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### DEVELOPMENT OF A SENSITIVE, QUANTITATIVE PCR ASSAY FOR THE DETECTION OF *SCHISTOSOMA MANSONI* TO AUGMENT STOOL SURVEYS FOR STH

Kareen Seignon, Jessica R. Grant, Nils Pilotte, Steven A. Williams  
Smith College, Northampton, MA, United States

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### ACCEPTABILITY AND FEASIBILITY OF HOME-BASED GENITAL SELF-SWAB SAMPLING FOR THE DIAGNOSIS OF FEMALE GENITAL SCHISTOSOMIASIS IN ZAMBIA: LESSONS LEARNT FROM THE BILHIV STUDY

Comfort Rutty Phiri<sup>1</sup>, Amy Sturt<sup>2</sup>, Emily Webb<sup>2</sup>, Isaiah Hansingo<sup>3</sup>, Kwame Shanaube<sup>1</sup>, Richard Hayes<sup>2</sup>, Helen Ayles<sup>1</sup>, Amaya L. Bustinduy<sup>2</sup>  
<sup>1</sup>Zambart, Lusaka, Zambia, <sup>2</sup>London School of Hygiene & Tropical Medicine, London, United Kingdom, <sup>3</sup>Livingstone Central Hospital, Livingstone, Zambia

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### SPECIFIC NUCLEIC ACIDS LIGATION FOR DETECTION OF *SCHISTOSOMES*: SNAILS

Alexander J. Webb<sup>1</sup>, Toby Landeryou<sup>2</sup>, Richard Kelwick<sup>1</sup>, Fiona Allan<sup>2</sup>, Aidan Emery<sup>2</sup>, Kirsten Jensen<sup>1</sup>, Michael Templeton<sup>1</sup>, Paul S. Freemont<sup>1</sup>  
<sup>1</sup>Imperial College London, London, United Kingdom, <sup>2</sup>Natural History Museum, London, United Kingdom

## Schistosomiasis and Other Trematodes – Immunology, Pathology, Cellular and Molecular Biology

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### PATHOLOGICAL EFFECT OF URINARY SCHISTOSOMIASIS AMONG SCHOOL CHILDREN IN AN ENDEMIC COMMUNITY OF SOUTHWESTERN NIGERIA

Adeyinka Samuel Adedokun<sup>1</sup>, Olusola Ojuronbe<sup>1</sup>, Akeem Akindele<sup>1</sup>, Segun Akindokun<sup>2</sup>, Temitope Bello<sup>1</sup>, Victor Oyedepo<sup>2</sup>, Johnson Ojo<sup>1</sup>  
<sup>1</sup>Ladoke Akintola University of Technology, Nigeria, Ogbomoso, Nigeria, <sup>2</sup>Ladoke Akintola University of Teaching Hospital, Nigeria, Osogbo, Nigeria

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### SCHISTOSOMIASIS ASSOCIATED WITH ADVANCED STAGE DUODENAL ADENOCARCINOMA

Daniel A. Welder, Clare McCormick-Baw, Megan Wachsmann, Zhikai Chi, Dominick Cavuoti  
UT Southwestern Medical Center, Dallas, TX, United States

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### EVALUATION OF OCCUPATIONAL RISK FOR *SCHISTOSOMA MANSONI* AND CHANGING PARASITE POPULATION STRUCTURE IN AGRICULTURAL WORKERS IN SALVADOR, BAHIA

Pedro Santos-Muccillo<sup>1</sup>, João R. Cruz<sup>2</sup>, Luciano K. Silva<sup>1</sup>, Ronald E. Blanton<sup>3</sup>, Mitermayer G. Reis<sup>1</sup>, Lúcio M. Barbosa<sup>2</sup>  
<sup>1</sup>Oswaldo Cruz Foundation, Salvador, Brazil, <sup>2</sup>Bahiana School of Medicine and Public Health, Salvador, Brazil, <sup>3</sup>Case Western Reserve University, Cleveland, OH, United States

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### INCREASED SERUM CONCENTRATION OF IL-5 AND IL-17 DURING ACUTE FASCIOLIASIS IN CHILDREN LIVING IN HIGHLY ENDEMIC AREA IN CUSCO, PERU

Catalina Aron<sup>1</sup>, Martin Montes<sup>1</sup>, Maria L. Morales<sup>1</sup>, Martha Lopez<sup>1</sup>, Miguel Cabada<sup>2</sup>  
<sup>1</sup>Universidad Peruana Cayetano Heredia, Lima, Peru, <sup>2</sup>University of Texas Medical Branch at Galveston, Galveston, TX, United States

(ACMCIP Abstract)

## Water, Sanitation, Hygiene and Environmental Health

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### TROPICAL DISEASES RELATED TO WATER AND SANITARY RESILIENCE IN THE MUNICIPALITIES OF ATHIEME AND GRAND-POPO IN SOUTHWEST OF BENIN

Anselme Kpominanon Sede  
UAC/LACEEDE, Abomey-Calavi, Benin

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### SEASONAL VARIATIONS IN NUTRIENT INTAKE AND DIETARY DIVERSITY AMONG ELECTRONIC WASTE WORKERS, GHANA

Sylvia Akpene Takyi<sup>1</sup>, Julius N. Fobil<sup>1</sup>, Niladri Basu<sup>2</sup>, John Arko-Mensah<sup>1</sup>  
<sup>1</sup>University of Ghana, Accra, Ghana, <sup>2</sup>McGill University, Montreal, QC, Canada

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### DRINKING WATER USE BY INFANTS IN A LOW-INCOME COMMUNITY IN THE DOMINICAN REPUBLIC

John D. McLennan<sup>1</sup>, Maria Mosquea<sup>2</sup>  
<sup>1</sup>Children's Hospital of Eastern Ontario - Research Institute, Ottawa, ON, Canada, <sup>2</sup>Servicio Nacional de Salud, Santo Domingo, Dominican Republic

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### FIELD TRIAL OF AN AUTOMATED BATCH CHLORINATOR SYSTEM AT SHARED SHALLOW TUBEWELLS AMONG THE MOST VULNERABLE FORCIBLY DISPLACED MYANMAR NATIONALS (FDMN) IN COX'S BAZAR, BANGLADESH

Nuhu Amin<sup>1</sup>, Mahbubur Rahman<sup>1</sup>, Anika Tasneem<sup>2</sup>, Mahbub Ul Alam<sup>1</sup>, Abul Kasham Shoab<sup>1</sup>, Tarique Mohammad Nurul Huda<sup>1</sup>, Md. Kawsar Alome<sup>3</sup>, Maksudul Amin<sup>3</sup>, Leanne Unicomb<sup>1</sup>  
<sup>1</sup>International Centre for Diarrhoeal Disease Research, Bangladesh, Dhaka, Bangladesh, <sup>2</sup>North South University, Dhaka, Bangladesh, <sup>3</sup>Action Against Hunger, Dhaka, Bangladesh

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**ESTABLISHING AN EFFECTIVE ENVIRONMENTAL SURVEILLANCE FOR POLIOVIRUS IN A DENSELY POPULATED URBAN LOW-INCOME AREA IN DHAKA, BANGLADESH**

**Md Ohedul Islam**<sup>1</sup>, Yoann Mira<sup>2</sup>, Philippe Veltsos<sup>2</sup>, Md Masud Alam<sup>1</sup>, Ashraf Islam Khan<sup>1</sup>, Sultan Uz Zaman<sup>1</sup>, Tahmina Ahmed<sup>1</sup>, Md Abdul Karim<sup>1</sup>, Tania Ferdousi<sup>1</sup>, Tuhinar Arju<sup>1</sup>, Rashidul Haque<sup>1</sup>, Firdausi Qadri<sup>1</sup>, Mami Taniuchi<sup>3</sup>  
<sup>1</sup>International Centre for Diarrhoeal Disease Research, Bangladesh, Dhaka, Bangladesh, <sup>2</sup>Novel-T Sàrl, Geneva, Switzerland, <sup>3</sup>University of Virginia, Charlottesville, VA, United States

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**KNOWLEDGE, ATTITUDES AND PRACTICES OF MOTHERS REGARDING CHILDREN'S DIARRHEA, UNIVERSITY HOSPITAL OF MIREBALAIS, HAITI, MAY-JUNE 2018**

Emmanuel Fabrice Julceus, **Tania Gessie Ramilus**, Raymonde Pinchinat, Emmanuel Mathieu, Ben Bechir Beaubrun, Renault Louis  
Zanmi Lasante, Mirebalais, Haiti

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**THE USE OF DIGITAL TECHNOLOGY TO IMPROVE AND MONITOR HANDWASHING AMONG CHILDREN 12 YEARS OR YOUNGER IN EDUCATIONAL SETTINGS: A SYSTEMATIC REVIEW**

**Sylvia K. Ofori**<sup>1</sup>, Yuen Wai Hung<sup>2</sup>, Kamalich Muniz-Rodriguez<sup>1</sup>, Reece J. Kakau<sup>1</sup>, Sunmisola E. Alade<sup>1</sup>, Kadiatou Diallo<sup>1</sup>, Kelly L. Sullivan<sup>1</sup>, Jessica S. Schwind<sup>1</sup>, Benjamin J. Cowling<sup>3</sup>, Isaac Chun-Hai Fung<sup>1</sup>  
<sup>1</sup>Georgia Southern University, Statesboro, GA, United States, <sup>2</sup>Wilfrid Laurier University, Waterloo, ON, Canada, <sup>3</sup>The University of Hong Kong, Hong Kong, China

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**CLEAN WATER ACCESS IN HAITI: IMPACT OF SOURCE TYPE AND MANAGEMENT STRATEGY ON FUNCTIONALITY AND WATER QUALITY**

**Declan Joseph Devine**<sup>1</sup>, Neil Van Dine<sup>2</sup>, Brian Jensen<sup>2</sup>, Mustafa Sikder<sup>1</sup>, Daniele Lantagne<sup>1</sup>  
<sup>1</sup>Tufts University, Medford, MA, United States, <sup>2</sup>Haiti Outreach, Pignon, Haiti

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**ZIKA VIRUS RNA PERSISTENCE IN SEWAGE: A NOVEL SURVEILLANCE TOOL**

**Aaron Muirhead**<sup>1</sup>, Kevin J. Zhu<sup>2</sup>, Joe Brown<sup>2</sup>, Margo A. Brinton<sup>1</sup>, Federico Costa<sup>3</sup>, Matthew J. Hayat<sup>1</sup>, Christine E. Stauber<sup>1</sup>  
<sup>1</sup>Georgia State University, Atlanta, GA, United States, <sup>2</sup>Georgia Institute of Technology, Atlanta, GA, United States, <sup>3</sup>Universidade Federal da Bahia, Salvador, Brazil

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**WATER TREATMENT PROCESSES FOR PREVENTING TRANSMISSION OF SCHISTOSOMIASIS**

**Laura Braun**, Lucinda Hazell, Michael R. Templeton  
Imperial College London, London, United Kingdom

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**ULTRAVIOLET DISINFECTION OF SCHISTOSOME CERCARIAE IN WATER USING ULTRAVIOLET LIGHT EMITTING DIODES**

**Lucinda Hazell**, Michael R. Templeton  
Imperial College London, London, United Kingdom

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**WATER, SANITATION, AND HYGIENE (WASH) ENTREPRENEURS AS AGENTS OF IMPROVED SANITATION IN RURAL LIBERIA**

**Alex B. Keimbe**<sup>1</sup>, Isaac Mwase<sup>1</sup>, Marcy Sallor<sup>1</sup>, Jannie H. Horace<sup>2</sup>  
<sup>1</sup>Partnership for Advancing Community-Based Services (PACS), Monrovia, Liberia, <sup>2</sup>U.S. Agency for International Development (USAID), Monrovia, Liberia

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**SPATIAL PROXIMITY TO WASTEWATER USED FOR IRRIGATION AND CHILDHOOD DIARRHEA IN THE MEZQUITAL VALLEY, MEXICO**

**Jesse D. Contreras**<sup>1</sup>, Rob Trangucci<sup>1</sup>, Eunice E. Felix-Arellano<sup>2</sup>, Sandra Rodríguez-Dozal<sup>2</sup>, Horacio Riojas-Rodríguez<sup>2</sup>, Rafael Meza<sup>1</sup>, Jon Zelnor<sup>1</sup>, Joseph N.S. Eisenberg<sup>1</sup>  
<sup>1</sup>University of Michigan, Ann Arbor, MI, United States, <sup>2</sup>Instituto Nacional de Salud Pública, Cuernavaca, Mexico

**Late-Breaker Abstract Session 27**

**Late-Breakers in Clinical and Applied Sciences**

*National Harbor 3 (National Harbor Level)*

Thursday, November 21, 12:15 p.m. - 1:30 p.m.

This session is specifically designed for brief presentations of new data obtained after the closing date for abstract submission. See the Meeting App or Late-Breaker Abstract Presentation Schedule booklet (available online) for the presentation schedule.

**CHAIR**

Miguel M. Cabada  
University of Texas Medical Branch, Galveston, TX, United States

Noreen A. Hynes  
Johns Hopkins School of Medicine, Baltimore, MD, United States

Jason D. Maguire  
Pfizer, White Plains, NY, United States

**Mid-Day Session 28**

**Panel Discussion: Career Pathways in Science and Identifying Your Niche**

*National Harbor 4/5 (National Harbor Level)*

Thursday, November 21, 12:15 p.m. - 1:30 p.m.

With the fluid landscape of the science field and the daunting experience of science trainees not knowing where they best fit in, this event aims to bring together accomplished scientists from a wide variety of professional backgrounds in science. The session will feature an engaging discussion on the available pathways to a career in science, the skill sets required for each of them and tips on how to determine where one is best suited.

**CHAIR**

Maria G. Onyango  
New York State Department of Health, Griffin Laboratories, Slingerlands, NY, United States

Lark Coffey  
University of California Davis, Davis, CA, United States

**PANELISTS**

Laura D. Kramer  
Wadsworth Center, Slingerlands, NY, United States

Thomas P. Monath  
BioProtection Systems Corp./NewLink Genetics, Inc., Devens, MA, United States



Connie Schmaljohn  
USAMRIID, Ft. Detrick, MD, United States

Carol Blair  
Colorado State University, Fort Collins, CO, United States

## Meet the Professors 29

### Meet the Professors A: Enigmatic and Teaching Cases

*National Harbor 10 (National Harbor Level)*

Thursday, November 21, 12:15 p.m. - 1:30 p.m.

The professors will present interesting clinical case(s) of tropical diseases or relevant public health challenges that they have encountered over the course of their careers. The professors will discuss how their careers have developed, as an example to others. Students and trainees are especially encouraged to attend these interactive sessions, which are open to all meeting attendees.

#### CHAIR

David R. Boulware  
University of Minnesota, Minneapolis, MN, United States

#### PRESENTER

Peter Piot  
Director, London School of Hygiene & Tropical Medicine, London, United Kingdom

## Courses Committee Meeting

*Chesapeake 1 (Ballroom Level)*

Thursday, November 21, 12:15 p.m. - 1:30 p.m.

## Kean Fellowship Committee Meeting

*National Harbor 6 (National Harbor Level)*

Thursday, November 21, 12:15 p.m. - 1:30 p.m.

## Membership Committee Meeting

*Chesapeake L (Ballroom Level)*

Thursday, November 21, 12:15 p.m. - 1:30 p.m.

## Poster Session A Viewing

*Prince George's Exhibit Hall D (Lower Atrium Level)*

Thursday, November 21, 1:45 p.m. - 4 p.m.

## Symposium 30

### Zoonotic Malaria in the Elimination Era

*Maryland A (Ballroom Level)*

Thursday, November 21, 1:45 p.m. - 3:30 p.m.

*Plasmodium falciparum* and *P. vivax* remain the major causes of malaria morbidity and mortality, and the elimination agenda rightfully targets these two species. With the success of some national malaria control programs in moving toward elimination of these human-only species, a number of countries in southeast Asia have seen parallel rises in zoonotic malaria from the monkey parasite, *Plasmodium knowlesi*, and the recognition of human infection with *P. cynomolgi*. In Malaysia, over 4000 cases of knowlesi malaria occurred in 2018, the highest to date, more than double the number seen in 2015, and accounting for over 98% of all malaria.

Reported in all countries across southeast Asia, *P. knowlesi* is now the commonest cause of malaria in Malaysia, regions of western Indonesia and Brunei. Its incidence in co-endemic countries outside of Malaysia (the only country where molecular surveillance is routine) is likely to be underestimated. With 6-9% of clinical cases being severe, including ongoing fatal cases, this symposium will highlight why zoonotic malaria is important. Commonly misdiagnosed in co-endemic regions by routine microscopy as *P. malariae*, *P. falciparum* and *P. vivax*, zoonotic malaria underestimates the success of elimination programs for human-only species. The symposium will present data on the reasons for the rising incidence of zoonotic malaria. Land use and land cover changes alter the transmission of zoonotic malaria, bringing people, simian reservoirs and mosquito vectors in closer proximity at habitat edges. By applying data-driven analysis pathways to detailed data on land cover, use and configuration, the symposium will demonstrate that deforestation, agricultural expansion and resulting habitat fragmentation are associated with increased *P. knowlesi* transmission in Malaysian Borneo. At a finer spatial scale within this area, GPS tracking studies of both people and macaques illustrate the role of local land use in driving movement patterns and determining exposure to infected mosquitoes. New data from Malaysia show that mosquitoes other than those in the *An. leucosphyrus* group are now also vectors of *P. knowlesi*, including those with daytime feeding. Updated data on the population genetics of *P. knowlesi* show that there may be two separate zoonotic transmission cycles. The potential for human to human transmission will be discussed. New molecular data from Brazil characterize the zoonotic transmission cycles of *P. simium* a major cause of zoonotic malaria outside the Amazon. The symposium will discuss the implications of each of the zoonotic malarias on malaria elimination efforts and the major challenges they pose to malaria control and prevention.

#### CHAIR

Nicholas Anstey  
Menzies School of Health Research, Darwin, Australia

Bridget Barber  
QIMR Berghofer Institute of Medical Research and Menzies School of Health Research, Brisbane, Australia

1:45 p.m.

#### THE RISE IN KNOWLESI MALARIA: WHY DOES IT MATTER?

Nicholas Anstey  
Menzies School of Health Research, Darwin, Australia

2:05 p.m.

#### KNOWLESI MALARIA: WHY IS IT INCREASING?

Kim Fornace  
London School of Hygiene & Tropical Medicine, London, United Kingdom

2:25 p.m.

#### P. KNOWLESI AND P. CYNOMOLGI: THE CHALLENGES FACING MALARIA ELIMINATION

Balbir Singh  
University of Malaysia Sarawak, Kuching, Malaysia

2:45 p.m.

#### P. SIMIUM MALARIA: NEW INSIGHTS INTO TRANSMISSION

Cristiana F. de Brito  
Institute René Rachou - Fiocruz Minas, Belo Horizonte, Brazil



3:05 p.m.  
DISCUSSION

### Scientific Session 31

#### Malaria: Modeling Malaria Disease and Transmission

Maryland B (Ballroom Level)

Thursday, November 21, 1:45 p.m. - 3:30 p.m.

##### CHAIR

Hsiao-Han Chang  
Harvard T.H. Chan School of Public Health, Boston, MA, United States

Amelia Bertozzi-Villa  
Institute for Disease Modeling, Bellevue, WA, United States

1:45 p.m.

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#### MODELLING THE IMPACT OF PYRETHROID RESISTANCE ON PERSONAL PROTECTION AND THE MASS COMMUNITY EFFECT OF LONG-LASTING INSECTICIDE TREATED NETS

H. Juliette T. Unwin, Ellie Sherrard-Smith, Thomas S. Churcher, Azra C. Ghani  
Imperial College, London, United Kingdom

2 p.m.

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#### WHOSE ARCHETYPE IS IT, ANYWAY? A MACHINE LEARNING APPROACH FOR CHARACTERIZING MALARIA TRANSMISSION SETTINGS

Amelia Bertozzi-Villa<sup>1</sup>, Joshua L. Proctor<sup>1</sup>, Jaline Gerardin<sup>2</sup>, Caitlin Bever<sup>1</sup>, Samir Bhatt<sup>3</sup>, Peter Gething<sup>4</sup>

<sup>1</sup>Institute for Disease Modeling, Bellevue, WA, United States, <sup>2</sup>Northwestern University, Chicago, IL, United States, <sup>3</sup>Imperial College, London, United Kingdom, <sup>4</sup>Oxford University, Oxford, United Kingdom

2:15 p.m.

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#### MBITES: A MODELLING FRAMEWORK FOR THE STUDY OF MOSQUITO BIONOMICS AND VECTORIAL CAPACITY AS EMERGENT PATTERNS

Sean Wu<sup>1</sup>, Héctor M. Sánchez C.<sup>1</sup>, Biyanka Liang<sup>1</sup>, Daniel T. Citron<sup>2</sup>, John Henry<sup>2</sup>, David L. Smith<sup>2</sup>

<sup>1</sup>University of California Berkeley, Berkeley, CA, United States, <sup>2</sup>IHME, Seattle, WA, United States

2:30 p.m.

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#### SHAPESHIFTER: A NOVEL MODEL FRAMEWORK FOR SIMULATING INDIVIDUAL-LEVEL MALARIA INFECTION AND IMMUNE DYNAMICS

Jonathan Russell<sup>1</sup>, Dan Goes<sup>1</sup>, Andre Lin Ouedraogo<sup>1</sup>, Chris Lorton<sup>1</sup>, Isabel Rodriguez-Barraquer<sup>2</sup>, Bryan Greenhouse<sup>2</sup>, Edward Wenger<sup>1</sup>, Jaline Gerardin<sup>3</sup>, Caitlin Bever<sup>1</sup>

<sup>1</sup>Institute for Disease Modeling, Bellevue, WA, United States, <sup>2</sup>University of California San Francisco, San Francisco, CA, United States, <sup>3</sup>Northwestern University, Chicago, IL, United States

2:45 p.m.

617

#### MODELING OF HEMATOLOGICAL INDICES DURING SEVERE AND UNCOMPLICATED MALARIA USING ARTIFICIAL NEURAL NETWORKS

Collins Misita Morang<sup>1</sup>a<sup>1</sup>, Thomas D. Otto<sup>2</sup>, Saikou Y. Bah<sup>3</sup>, Vincent Appiah<sup>1</sup>, Gordon A. Awandare<sup>1</sup>, Lucas Amenga-Etego<sup>1</sup>

<sup>1</sup>West African Centre for Cell Biology of Infectious Pathogens, University of Ghana, Accra, Ghana, <sup>2</sup>Institute of Infection, Immunity and Inflammation, University of Glasgow, Glasgow, United Kingdom, <sup>3</sup>Vaccine and Immunity Theme, Medical Research Council Unit The Gambia at London School of Hygiene & Tropical Medicine, Banjul, Gambia

3 p.m.

618

#### ACCOUNTING FOR HUMAN MOBILITY IN MALARIA ELIMINATION PROGRAMS WITH HETEROGENEOUS TRAVEL DATA

Hsiao-Han Chang<sup>1</sup>, Ayesha Mahmud<sup>1</sup>, Daniel T. Citron<sup>2</sup>, Caroline O. Buckee<sup>1</sup>

<sup>1</sup>Harvard T.H. Chan School of Public Health, Boston, MA, United States, <sup>2</sup>Institute for Health Metrics and Evaluation, Seattle, WA, United States

3:15 p.m.

619

#### IMPLICATION OF SULFADOXINE-PYRIMETHAMINE RESISTANCE-ASSOCIATED MUTATIONS ON THE PROTECTIVE EFFICACY OF SEASONAL MALARIA CHEMOPREVENTION: A PHARMACOKINETIC-PHARMACODYNAMIC ANALYSIS

Gina Maria Cuomo-Dannenburg<sup>1</sup>, Patrick Walker<sup>1</sup>, Robert Verity<sup>1</sup>, Matthew Cairns<sup>2</sup>, Paul Milligan<sup>2</sup>, Lucy Okell<sup>1</sup>

<sup>1</sup>Imperial College London, London, United Kingdom, <sup>2</sup>London School of Hygiene & Tropical Medicine, London, United Kingdom

### Symposium 32

#### A Generation of Anti-Malarial Drug Candidates in Advanced Clinical Development: Potential Future Treatments

Maryland C (Ballroom Level)

Thursday, November 21, 1:45 p.m. - 3:30 p.m.

About a decade ago, *P. falciparum* was cultured for the first time in a cost-effective assay format. This allowed automatic screening of compounds to identify new active classes, some of which have now advanced to phase II clinical development. The challenges in developing new anti-malarials are compounded by the need for drug combination therapies, both to prevent (or delay) the emergence of resistance and to improve treatment outcomes. Generally, new anti-malarial candidates are tested as monotherapies in phase I and phase IIa trials. Based on safety and efficacy results, the most promising compounds are combined for full clinical development. As there are more drug candidates now than ever before, Medicines for Malaria Venture (MMV) and partners are developing new approaches to facilitate efficient selection of combinations using SCID mouse models engrafted with human erythrocytes, and studies with infected human volunteers who undergo subclinical malaria. These approaches, as well as non-clinical studies, can generate data that can be modelled to assess all potential combinations and to avoid testing less promising candidate molecules in patients. Choices of drug combinations can also be based on differing modes of action to reduce potential emergence of resistance. The emergence of artemisinin resistance,

as seen today in the Greater Mekong Subregion in southeast Asia, and the threat of spread to Africa, is the major reason for the urgency to find new anti-malarial combinations. The mainstay of uncomplicated, blood-stage malaria treatment, artemisinin-based combination therapy (ACT), is taken on three consecutive days. The goal of new treatments is to shorten this regimen to two days, or a single day, to improve patient compliance and to simplify malaria elimination campaigns. Convenient treatment regimens help in elimination efforts, but medicines that prevent malaria transmission will also be key to reduce the level of gametocytes in asymptomatic populations. Another aspect of new anti-malarial treatments is how long they provide protection against reinfection of patients residing in endemic regions or migrant population. This symposium will focus on attributes of new molecules or combinations that have entered phase II clinical development and might eventually constitute potential new treatment options for patients. These molecules are either still being tested as monotherapy, or have been combined with another new drug candidate, or with an existing anti-malarial that has demonstrated efficacy. The following molecules will be presented and discussed at the symposium: MMV048, KAE609 (cipargamin), OZ439 (artefenomel)/ferroquine combination, and KAF156 (ganaplacide)/lumefantrine combination.

#### CHAIR

Wiweka Kaszubska  
*Medicines for Malaria Venture, Geneva, Switzerland*

Stephan Duparc  
*Medicines for Malaria Venture, Geneva, Switzerland*

1:45 p.m.

#### **KAE609, A HIGHLY POTENT SPIROINDOLONE, IN PHASE II, MULTI-CENTER, OPEN-LABEL, DOSE-ESCALATION STUDY TO DETERMINE SAFETY OF SINGLE (QD) AND MULTIPLE (3 QD) DOSES GIVEN TO ADULTS WITH UNCOMPLICATED *PLASMODIUM FALCIPARUM* MALARIA**

Ghyslain Mombo-Ngoma  
*Centre de Recherches Medicales de Lambaréné (CERMEL), Lambaréné, Gabon*

2:05 p.m.

#### **MMV048 PHASE IIA OPEN-LABEL STUDY TO ASSESS SAFETY AND EFFICACY OF A SINGLE DOSE TREATMENT IN ADULT PATIENTS WITH UNCOMPLICATED *PLASMODIUM VIVAX* OR *FALCIPARUM* MALARIA MONOINFECTION**

Rezika Mohammed Yesuf  
*University of Gondar, Gondar, Ethiopia*

2:25 p.m.

#### **KAF156 AND LUMEFANTRINE SDF COMBINATION PHASE II MULTI-CENTER, OPEN-LABEL STUDY TO DETERMINE THE EFFECTIVE AND TOLERABLE DOSE, GIVEN ONCE DAILY FOR 1, 2, AND 3 DAYS TO ADULTS AND CHILDREN WITH UNCOMPLICATED *PLASMODIUM FALCIPARUM* MALARIA**

Hoang Chau Nguyen  
*Oxford University Clinical Research Unit (OUCRU), Ho Chi Minh City, Vietnam*

2:45 p.m.

#### **PHASE II DEVELOPMENT OF OZ439 (ARTEFENOMEL)/ FERROQUINE COMBINATION AS A POTENTIAL SINGLE DOSE CURE FOR UNCOMPLICATED *PLASMODIUM FALCIPARUM* MALARIA**

Grace Kaguthi  
*Kenya Medical Research Institute (KEMRI)/Centre for Respiratory Diseases Research (CRDR), Nairobi, Kenya*

3:05 p.m.

#### **DISCUSSION**

### **Symposium 33**

#### **Interventions to Decrease the Burden of Malaria in School-Aged Children: Will They Decrease Malaria Transmission?**

*Maryland D (Ballroom Level)*

Thursday, November 21, 1:45 p.m. - 3:30 p.m.

School-aged children (SAC; 5-15 years old) have the highest burden of malaria infection in many malaria-endemic regions, however, they are not specifically targeted by current malaria control interventions. This has important implications for the health of these children and may also be a key barrier to malaria elimination efforts. Schoolchildren are major contributors to the infectious reservoir, and account for a substantial portion of transmission. Targeting chemoprevention to school-aged children stands to provide substantial health benefits to individual children and may prove an effective means of reducing transmission, while at the same time, mitigating concerns about drug pressure and resistance as compared to a standard mass drug administration approach. This symposium will explore various drug-based strategies to treat or prevent malaria in school-aged children and evaluate their potential impact on malaria transmission. A wide range of strategies exist. Efforts may focus on preventing infection or identifying and treating sick children. In addition, current pilot studies include interventions based in schools and other based in the community. Each of these approaches have different benefits and challenges and may have differential impact on transmission. This symposium will present case studies examining the impact and implementation challenges from three different strategies, expansion of seasonal malaria chemoprevention (SMC) to SAC, expansion of community case management (CCM) to include SAC, and finally intermittent preventive treatment in school children (IPTsc). The session will then use modelling to better understand the potential impact of these strategies more generally. At the close of the symposium, the chairs will lead a discussion of how to further evaluate and potentially implement these interventions, including how to achieve high coverage and ways to integrate chemoprevention with other school-based programs. The symposium will also discuss the remaining knowledge gaps to be addressed with further research, including the potential impact on naturally acquired immunity and risk of rebound and the risk of accelerating antimalarial drug resistance.

#### CHAIR

Julie R. Gutman  
*Centers for Disease Control and Prevention, Atlanta, GA, United States*

Miriam Laufer  
*University of Maryland, Baltimore, MD, United States*

1:45 p.m.

#### **EXPANSION OF THE AGE RANGE FOR SEASONAL MALARIA CHEMOPREVENTION IN MALI**

Sory I. Diawara  
*Malaria Research and Training Center, Faculty of Medicine, Pharmacy and Odontostomatology, University of Sciences, Techniques and Technologies of Bamako, Bamako, Mali*

2:05 p.m.

**THE IMPACT OF INTERMITTENT PREVENTIVE TREATMENT IN SCHOOLS AMONG SCHOOL CHILDREN AND ON THE COMMUNITY**

Catherine Maiteki-Sebuguzi

*Ministry of Health, National Malaria Control Division, Kampala, Uganda*

2:25 p.m.

**THE IMPACT OF EXPANDING COMMUNITY CASE MANAGEMENT OF MALARIA TO ALL AGES IN RWANDA**

Aimable Mbituyumuremyi

*Malaria and Other Parasitic Diseases Division, Kigali, Rwanda*

2:45 p.m.

**MODELLING THE IMPACT OF DIFFERENT STRATEGIES OF CHEMOPREVENTION AMONG SCHOOL-AGED CHILDREN**

Patrick G. Walker

*Imperial College, London, United Kingdom*

3:05 p.m.

**DISCUSSION**

**Symposium 34**

**Clinical Group Symposium I  
(American Committee on Clinical Tropical  
Medicine and Travelers' Health – ACCTMTH)**

*Potomac A (Ballroom Level)*

Thursday, November 21, 1:45 p.m. - 3:30 p.m.

***Supported with funding from the International Association  
for Medical Assistance to Travellers (IAMAT)***

This session features the Vincenzo Marcolongo Lecture, the CDC Travelers' Health and Yellow Book update and the first presentation of the Martin S. Wolfe, MD Mentoring Award.

The Marcolongo Lecture recognizes contemporary issues in the health of travelers as well as those they encounter in their search for the human. As Dr. Vincenzo Marcolongo, the lecture's namesake, said, "Distinguished physicians and respected medical institutions, with a sense of solidarity which makes them like one family, are now working in harmony to assist the traveler who may require medical assistance on his journey...The need for peace and understanding between the peoples of the world has never been as great as now. Peace can come only with understanding, and travel is an important means of acquiring it. It is, however, only through the full consciousness of 'the essence of the human' that we shall be able to open the difficult paths of international relationships. As a traveler you have an excellent opportunity to serve your country and the world in creating ties of friendship. To you, therefore, we bring this message, a message sparked with beauty all its own: 'The search for the human'."

**CHAIR**

M. Patricia Joyce

*Tucker, GA, United States*



The Marcolongo Lecture honors Vincenzo Marcolongo (1922–1988), founder of IAMAT-International Association for Medical Assistance to Travellers. A graduate of the medical school at the University of Rome, Dr. Marcolongo did his postgraduate training at McGill University in Montreal and returned to Italy to obtain his doctorate in

tropical medicine. Dr. Marcolongo made the medical needs of travelers his life's work. In an era of increasing international travel, he realized that there was a need for collaboration among medical practitioners around the world to help travelers. In 1960 he founded IAMAT, a non-profit organization, to coordinate medical services for travelers and to prepare them for their journey. Dr. Marcolongo understood that travelers need comprehensive advice about the health risks and tropical diseases they encounter on trips to increasingly remote and distant destinations. Of particular interest to him was malaria and preventing the unnecessary morbidity and mortality it causes among travelers. Through IAMAT and numerous publications, Dr. Marcolongo worked tirelessly to inform travelers of health risks and raise awareness of travelers' health among travel industry professionals and medical practitioners worldwide. His foresight, compassion and generosity continue to serve as inspiration for IAMAT's work.

1:45 p.m.

**VINCENZO MARCOLONGO MEMORIAL LECTURE:  
THE PROVISION OF SAFE WATER IN COMPLEX  
ENVIRONMENTS**



**Robert Handby, DPH, AO**

*Water and Sanitation Aid Worker; Australian  
Red Cross (Retired)*

*Port Fairy, Australia*

During a career of 27 years in local government working as an Environmental Health Officer, Robert Handby took leave to work with the International Committee of the Red Cross to some of the world's worst humanitarian disasters where he was responsible for providing safe water and improving sanitation. These disasters include conflict zones in Uganda, Iraq, Rwanda, Kosovo and Sri Lanka. He has also worked throughout Asia and the Pacific, including significant natural disasters like the Boxing Day Tsunami in Banda Aceh, Cyclone Nargis in Myanmar and floods in Pakistan.

In 2007, Robert Handby left local government and joined Australian Red Cross as Manager, Water and Sanitation, International Emergencies. He retired from the Red Cross at the end of 2012 but came out of retirement in December 2014 to assist with the Red Cross response to Ebola in Sierra Leone, where he led a small team to a location as a result of a spike in Ebola cases. This led to him being responsible for the cleanup of a dysfunctional hospital and the building of an Ebola Treatment Center.

Robert Handby is an Honorary Life Member of Australian Red Cross and in 2018 was awarded an Order of Australia with the citation, "For distinguished service to the international community, particularly with humanitarian disaster assistance missions

and the environmental health profession.” He is a Life Fellow of Environmental Health Australia and Environmental Health Professionals Australia.

2:30 p.m.

### **CDC TRAVELERS' HEALTH AND YELLOW BOOK: UPDATE**

Allison T. Walker

*Centers for Disease Control and Prevention, Atlanta, GA, United States*

2:45 p.m.

### **MARTIN S. WOLFE, MD MENTORING AWARD**

Presented by Sheila Mackell

*Mountain View Pediatrics, Flagstaff, AZ, United States*

Elaine Jong

*University of Washington School of Medicine, Edmonds, WA, United States*

3 p.m.

### **MARTIN S. WOLFE, MD MENTORING AWARD RECEPTION**

## **Symposium 35**

### **Confronting Ebola: Reflections from Experts from Discovery to Today**

*Potomac C (Ballroom Level)*

Thursday, November 21, 1:45 p.m. - 3:30 p.m.

Since its discovery in 1976, Ebola virus disease has posed one of the most challenging public health threats to sub-Saharan Africa and beyond. Once considered a “exotic disease” seen only in small sporadic outbreaks in remote African villages, in recent years the pace, scale and complexity of outbreaks have all increased. The 2013-16 outbreak in West Africa, with up to 30,000 cases and over 11,000 deaths, highlighted Ebola’s potential as disruptor on a global scale, while the ongoing outbreak in eastern Democratic Republic of the Congo, now the second biggest on record, has illustrated the challenges of effective response in an extremely socio-politically complex environment. At the same time, scientific breakthroughs on vaccines and therapeutics show promise for control, if they can be effectively implemented. Challenges remain on all fronts. In this interactive symposium, in which questions from the audience will be taken, a panel of experts with vast field experience controlling Ebola since its discovery until present day will reflect on the evolution of the disease, the settings in which it occurs, and what it will take, present and future, to keep this dangerous disease in check.

#### CHAIR

Joel G. Breman

*Fogarty International Center, Bethesda, MD, United States*

#### PANELISTS

Daniel G. Bausch

*UK Public Health Rapid Support Team, London, United Kingdom*

Soce Fall

*World Health Organization, Geneva, Switzerland*

Lina M. Moses

*Tulane School of Public Health and Tropical Medicine, New Orleans, LA, United States*

Peter Plot

*Director, London School of Hygiene & Tropical Medicine, London, United Kingdom*

Natalie Roberts

*Medicins Sans Frontieres, Paris, France*

## **Scientific Session 36**

### **American Committee of Molecular, Cellular and Immunoparasitology (ACMCIP): Malaria - New Molecular and Cellular Approaches**

*Potomac D (Ballroom Level)*

Thursday, November 21, 1:45 p.m. - 3:30 p.m.

**Supported with funding from the Burroughs Wellcome Fund**

#### CHAIR

Katrina A. Button-Simons

*Eck Institute for Global Health, University of Notre Dame, Notre Dame, IN, United States*

David Serre

*University of Maryland, Baltimore, MD, United States*

1:45 p.m.

**2008**

### **NANOSCALE ELUCIDATION OF THE INVASION APPARATUS OF APICOMPLEXAN PARASITES**

Li-av Segev-Zarko<sup>1</sup>, Stella Y. Sun<sup>1</sup>, Peter D. Dahlberg<sup>1</sup>, Daniel Pelt<sup>2</sup>, Jian-Hua Chen<sup>3</sup>, Michael F. Schmid<sup>1</sup>, Jesus Galaz-Montoya<sup>1</sup>, W. E. Moerner<sup>1</sup>, Carolyn Larabell<sup>4</sup>, James Sethian<sup>2</sup>, Wah Chiu<sup>1</sup>, John Boothroyd<sup>1</sup>

<sup>1</sup>Stanford University, Stanford, CA, United States, <sup>2</sup>University of California Berkeley, Berkeley, CA, United States, <sup>3</sup>Lawrence Berkeley National Laboratory, Berkeley, CA, United States, <sup>4</sup>University of California San Francisco, San Francisco, CA, United States

2 p.m.

**620**

### **THE POWER OF NEXT GENERATION *PLASMODIUM FALCIPARUM* GENETIC CROSSES IN HUMAN LIVER-CHIMERIC MICE**

Katrina A. Button-Simons<sup>1</sup>, Sudhir Kumar<sup>2</sup>, Lisa A. Checkley<sup>1</sup>, Meseret Haile<sup>2</sup>, Nelly Carmago<sup>2</sup>, Catherine Jett<sup>3</sup>, Shalini Nair<sup>3</sup>, Marina M. White<sup>3</sup>, Xue Li<sup>3</sup>, François H. Nosten<sup>4</sup>, Stefan H. Kappe<sup>2</sup>, Timothy J. Anderson<sup>3</sup>, Jeanne Romero-Severson<sup>5</sup>, Michael T. Ferdig<sup>1</sup>, Scott J. Emrich<sup>6</sup>, Ashley M. Vaughan<sup>2</sup>, Ian H. Cheeseman<sup>3</sup>

<sup>1</sup>Eck Institute for Global Health, Department of Biological Sciences, University of Notre Dame, Notre Dame, IN, United States, <sup>2</sup>Seattle Children's Research Institute, Seattle, WA, United States, <sup>3</sup>Texas Biomedical Research Institute, San Antonio, TX, United States, <sup>4</sup>Shoklo Malaria Research Unit, Mahidol-Oxford Tropical Medicine Research Unit, Mahidol University, Mae Sot, Thailand, <sup>5</sup>Department of Biological Sciences, University of Notre Dame, Notre Dame, IN, United States, <sup>6</sup>University of Tennessee, Knoxville, TN, United States

2:15 p.m.

**621**

### **UNRAVELING THE EPIGENOME OF THE HUMAN MALARIA PARASITE *PLASMODIUM FALCIPARUM***

Chengqi Wang, Samir Jahangiri, Justin Gibbons, Swamy Adapa, Jenna Oberstaller, Xiangyun Liao, Min Zhang, Rays Jiang, John Adams  
*University of South Florida, Tampa, FL, United States*



2:30 p.m.

622

**SELECTION FOR GROUP A VAR GENES DOES NOT OCCUR DURING EARLY BLOOD-STAGE INFECTION IN MALARIA-NAÏVE HUMAN VOLUNTEERS**

Kathryn Milne<sup>1</sup>, Adam Reid<sup>2</sup>, Ruth Payne<sup>3</sup>, Navin Venkatraman<sup>3</sup>, Mandy Sanders<sup>3</sup>, Matt Berriman<sup>2</sup>, Simon Draper<sup>3</sup>, Phil Spence<sup>1</sup>, **J. Alexandra Rowe**<sup>1</sup>  
<sup>1</sup>University of Edinburgh, Edinburgh, United Kingdom, <sup>2</sup>Wellcome Sanger Institute, Cambridge, United Kingdom, <sup>3</sup>University of Oxford, Oxford, United Kingdom

(ACMCIP Abstract)

2:45 p.m.

623

**DEVELOPMENT OF AN EX VIVO HUMAN BRAIN ORGANOID MODEL TO STUDY SEVERE MALARIA PATHOGENESIS**

Adriana Harbuzari<sup>1</sup>, Sidney A. Pitts<sup>1</sup>, Andrew P. Shaw<sup>2</sup>, Juan C. Cespedes<sup>1</sup>, Keri Harp<sup>1</sup>, Annette Nti<sup>1</sup>, Mingli Liu<sup>1</sup>, Jonathan K. Stiles<sup>1</sup>  
<sup>1</sup>Morehouse School of Medicine, Atlanta, GA, United States, <sup>2</sup>Georgia Institute of Technology, Atlanta, GA, United States

3 p.m.

624

**A NOVEL IN VITRO MODEL OF PLASMODIUM VIVAX HYPNOZOITES**

Araya Jivapethai<sup>1</sup>, Yongyut Pewklang<sup>1</sup>, Paviga Limudompon<sup>1</sup>, Sreekanth Kokkonda<sup>2</sup>, Wanlapa Roobsoong<sup>1</sup>, Suradej Hongeng<sup>1</sup>, Pradipsinh K. Rathod<sup>2</sup>, Osamu Kaneko<sup>3</sup>, **Rapatbhorn Patrapuvich**<sup>1</sup>  
<sup>1</sup>Mahidol University, Bangkok, Thailand, <sup>2</sup>University of Washington, Seattle, WA, United States, <sup>3</sup>Nagasaki University, Nagasaki, Japan

3:15 p.m.

625

**SINGLE-CELL RNA-SEQ REVEALS TIGHTLY REGULATED CHANGES IN GENE EXPRESSION DURING THE INTRAERYTHROCYTIC LIFE CYCLE OF P. VIVAX PARASITES**

David Serre<sup>1</sup>, Matthew V. Cannon<sup>1</sup>, Ramon L. Caleon<sup>2</sup>, Thomas E. Wellems<sup>2</sup>, Juliana M. Sa<sup>2</sup>  
<sup>1</sup>University of Maryland, Baltimore, MD, United States, <sup>2</sup>National Institutes of Health, Rockville, MD, United States

(ACMCIP Abstract)

**Scientific Session 37**

**Kinetoplastida: Diagnosis, Treatment and Vaccine Development**

National Harbor 2 (National Harbor Level)

Thursday, November 21, 1:45 p.m. - 3:30 p.m.

**CHAIR**

Frederick S. Buckner  
University of Washington, Seattle, WA, United States

Paul Nguewa  
Instituto de Salud Tropical University de Navarra, Pamplona, Spain

1:45 p.m.

626

**DEVELOPMENT OF DRUG CANDIDATES FOR CHAGAS DISEASE TARGETING THE TRYPANOSOMA CRUZI METHIONYL-TRNA SYNTHETASE**

Frederick S. Buckner, John R. Gillespie, Nora R. Molasky, Zhongsheng Zhang, Wenlin Huang, Sayaka Shibata, Yi Liu, Erkang Fan  
University of Washington, Seattle, WA, United States

2 p.m.

627

**XENODIAGNOSIS OF DOGS VERTICALLY INFECTED WITH LEISHMANIA INFANTUM REVEALS SKIN PARASITE BURDEN AS STRONGEST CORRELATE OF CANINE INFECTIOUSNESS TO SAND FLY VECTOR**

Breanna M. Scorza<sup>1</sup>, Kurayi Mahachi<sup>1</sup>, Erin C. Cox<sup>1</sup>, Angela J. Toepp<sup>1</sup>, Adam Lima<sup>1</sup>, Anurag Kushwaha<sup>2</sup>, Patrick Kelly<sup>1</sup>, Claudio Meneses<sup>3</sup>, Katherine N. Gibson-Corley<sup>1</sup>, Lyric Bartholomay<sup>4</sup>, Shaden Kamhawi<sup>3</sup>, Christine A. Petersen<sup>1</sup>  
<sup>1</sup>University of Iowa, Iowa City, IA, United States, <sup>2</sup>Banaras Hindu University, Varanasi, India, <sup>3</sup>National Institute of Allergy and Infectious Diseases, National Institutes of Health, Rockville, MD, United States, <sup>4</sup>University of Wisconsin, Madison, WI, United States

(ACMCIP Abstract)

2:15 p.m.

628

**TESTING FOR CHAGAS CARDIAC DISEASE AT A LARGE SAFETY-NET HOSPITAL IN NEW ENGLAND**

Alyse Wheelock<sup>1</sup>, Sukhmeet Sandhu<sup>1</sup>, Davidson Hamer<sup>2</sup>, Rachel Marcus<sup>3</sup>, Deepa Gopal<sup>4</sup>, Natasha Hochberg<sup>5</sup>  
<sup>1</sup>Internal Medicine Residency Program, Department of Medicine, Boston Medical Center, Boston, MA, United States, <sup>2</sup>Department of Global Health, Boston University School of Public Health; Section of Infectious Disease, Department of Medicine, Boston University School of Medicine, Boston, MA, United States, <sup>3</sup>MedStar Heart and Vascular Institute, Medstar Union Memorial Hospital, Baltimore, MD, United States, <sup>4</sup>Department of Medicine, Cardiovascular Division, Boston University Medical Center, Boston, MA, United States, <sup>5</sup>Section of Infectious Disease, Department of Medicine, Boston University School of Medicine, Boston, MA, United States

2:30 p.m.

629

**COMPARISON OF CHAGAS DISEASE SEROLOGY TEST PERFORMANCE IN THE UNITED STATES**

Jeffrey D. Whitman<sup>1</sup>, Christina A. Bulman<sup>1</sup>, Emma L. Gunderson<sup>1</sup>, Rebecca L. Townsend<sup>2</sup>, Susan L. Stramer<sup>2</sup>, Judy A. Sakanari<sup>1</sup>, Caryn Bern<sup>1</sup>  
<sup>1</sup>University of California San Francisco, San Francisco, CA, United States, <sup>2</sup>American Red Cross, Gaithersburg, MD, United States

2:45 p.m.

630

**ADDRESSING EARLY DIAGNOSIS OF CONGENITAL CHAGAS DISEASE IN THE TIME OF THE ELIMINATION GOAL OF MOTHER-TO-CHILD TRANSMISSION IN THE AMERICAS**

Yagahira E. Castro<sup>1</sup>, Freddy Tinajeros<sup>1</sup>, Caryn Bern<sup>2</sup>, Gerson Galdos-Cardenas<sup>1</sup>, Edith S. Malaga<sup>3</sup>, Edward Valencia Ayala<sup>3</sup>, Syamal Raychaudhuri<sup>4</sup>, Kathryn Hjerrild<sup>4</sup>, Steven J. Clipman<sup>1</sup>, Andrés G. Lescano<sup>3</sup>, Tabitha Bayangos<sup>1</sup>, Walter Castillo<sup>5</sup>, María Carmen Menduina<sup>6</sup>, Kawsar R. Talaat<sup>1</sup>, Robert H. Gilman<sup>1</sup>  
<sup>1</sup>Johns Hopkins Bloomberg School of Public Health, Baltimore, MD, United States, <sup>2</sup>University of California, San Francisco, CA, United States, <sup>3</sup>Universidad Peruana Cayetano Heredia, Lima, Peru, <sup>4</sup>InBios International, Inc., Seattle, WA, United States, <sup>5</sup>Asociación Benéfica PRISMA, Lima, Peru, <sup>6</sup>Percy Boland Maternity Hospital, Santa Cruz, Plurinational State of Bolivia

3 p.m.

631

**EVALUATING COMMUNITY-BASED SCREENING CAMPAIGNS FOR SEROLOGICAL DIAGNOSIS OF TRYPANOSOMA CRUZI AND STRONGYLOIDES STERCORALIS IN MADRID, SPAIN**

María Delmans Flores-Chavez<sup>1</sup>, Olvido Bocos<sup>2</sup>, Francisca Vivas<sup>3</sup>, Brigitte Jordan<sup>4</sup>, Javier Nieto<sup>5</sup>, Emilia Garcia<sup>5</sup>, Belen Garcia<sup>4</sup>, Ignacio Peña<sup>6</sup>, Cristina Arcas<sup>6</sup>, Carmen Llanos Aguilar<sup>2</sup>, Ana Orellana<sup>2</sup>, Jose Saugar<sup>2</sup>, Juan Jose De Los Santos<sup>4</sup>  
<sup>1</sup>Fundación Mundo Sano / Centro Nacional de Microbiología, Madrid, Spain, <sup>2</sup>Centro Municipal de Salud Comunitaria de Usera, Madrid, Spain, <sup>3</sup>Ayuntamiento de Madrid, Madrid, Spain, <sup>4</sup>Fundación Mundo Sano, Madrid, Spain, <sup>5</sup>Centro Nacional de Microbiología-ISCIII, Madrid, Spain, <sup>6</sup>Salud Entre Culturas, Madrid, Spain



3:15 p.m.

632

**IMPROVED BIOMARKERS AND IMAGE ANALYSIS FOR CHARACTERIZING PROGRESSIVE CARDIAC FIBROSIS IN A MOUSE MODEL OF CHRONIC CHAGASIC CARDIOMYOPATHY**

Kristyn Hoffman, Peter Hotez, Maria Bottazzi, Kathryn Jones  
Baylor College of Medicine, Houston, TX, United States

(ACMCIP Abstract)

**Scientific Session 38**

**Water, Sanitation, Hygiene and Environmental Health (WaSH-E) and Behavior**

National Harbor 3 (National Harbor Level)

Thursday, November 21, 1:45 p.m. - 3:30 p.m.

**CHAIR**

Christine Marie George  
Johns Hopkins University, Baltimore, MD, United States

Tarique M. Huda  
International Centre for Diarrhoeal Disease Research, Bangladesh (ICDDR,B), Dhaka, Bangladesh

1:45 p.m.

633

**CHILD MOUTHING OF CONTAMINATED FOMITES AND ANIMAL CONTACT IS ASSOCIATED WITH DIARRHEA AND STUNTING (REDUCE PROGRAM)**

Christine Marie George<sup>1</sup>, Ronald Saxton<sup>1</sup>, Jennifer Kuhl<sup>1</sup>, Jamie Perin<sup>1</sup>, Nicole Coglianesi<sup>2</sup>, Elizabeth Thomas<sup>1</sup>, Sarah Bauler<sup>2</sup>, Anthony Koomson<sup>2</sup>, Phil Moses<sup>2</sup>, Geoffrey A. Nyakuni<sup>3</sup>, Amagana Togo<sup>3</sup>, Ruthly Francois<sup>1</sup>, Patrick Mirindi<sup>3</sup>, Lucien Bisimwa<sup>3</sup>

<sup>1</sup>Johns Hopkins University, Baltimore, MD, United States, <sup>2</sup>Food for the Hungry, Phoenix, AZ, United States, <sup>3</sup>Food for the Hungry, Bukavu, Democratic Republic of the Congo

2 p.m.

634

**HAND CONTAMINATION WITH PATHOGENIC, ZOOONOTIC AND ANTIMICROBIAL RESISTANT BACTERIA AMONG CAREGIVERS RESIDING WITH DOMESTIC ANIMALS IN INDIA**

Marlene K. Wolfe<sup>1</sup>, Karin Gallandat<sup>2</sup>, Daniele Lantagne<sup>1</sup>, Amy Pickering<sup>1</sup>  
<sup>1</sup>Tufts University, Medford, MA, United States, <sup>2</sup>London School of Hygiene & Tropical Medicine, London, United Kingdom

2:15 p.m.

635

**A PROSPECTIVE COHORT STUDY INVESTIGATING THE RELATIONSHIP BETWEEN THE GUT MICROBIOTA, ENVIRONMENTAL ENTEROPATHY AND IMPAIRED GROWTH IN RURAL BANGLADESH**

Jamie Perin<sup>1</sup>, Mathieu Almeida<sup>2</sup>, Vanessa Burrowes<sup>1</sup>, Shah Nawaz Ahmed<sup>3</sup>, Rashidul Haque<sup>3</sup>, Tahmina Parvin<sup>3</sup>, Shwapon Biswas<sup>3</sup>, Ishrat J. Azmi<sup>3</sup>, Md. Sazzadul Islam Bhuyian<sup>3</sup>, Kaiser A. Talukder<sup>3</sup>, Abu G. Faruque<sup>3</sup>, O. Colin Stine<sup>2</sup>, Christine Marie George<sup>1</sup>

<sup>1</sup>Johns Hopkins University, Baltimore, MD, United States, <sup>2</sup>University of Maryland, Baltimore, MD, United States, <sup>3</sup>International Centre for Diarrhoeal Disease Research, Bangladesh (icddr,b), Dhaka, Bangladesh

2:30 p.m.

636

**PTM202, A BOVINE COLOSTRUM BASED NUTRITIONAL SUPPLEMENT, DECREASES THE ENTERIC INFLAMMATION OF ENVIRONMENTAL ENTERIC DYSFUNCTION IN BANGLADESHI INFANTS**

Jeffrey Donowitz<sup>1</sup>, Masud Alam<sup>2</sup>, Mamun Kabir<sup>2</sup>, Tahsin Ferdous<sup>2</sup>, Aysha Zerín<sup>2</sup>, Uma Nayak<sup>3</sup>, Rashidul Haque<sup>2</sup>, William A. Petri<sup>3</sup>  
<sup>1</sup>Virginia Commonwealth University, Richmond, VA, United States, <sup>2</sup>International Centre for Diarrhoeal Disease Research, Bangladesh, Dhaka, Bangladesh, <sup>3</sup>University of Virginia, Charlottesville, VA, United States

2:45 p.m.

637

**MODIFYING TOILETS TO MAKE THEM CHILD FRIENDLY IN RURAL BANGLADESH**

Tarique Mohammad Huda<sup>1</sup>, Ruhul Amin<sup>1</sup>, Abdullah Al Masud<sup>1</sup>, Elli Leontsini<sup>2</sup>, Mahbubur Rahman<sup>1</sup>, Tania Jahir<sup>1</sup>, Jyoti Bhushan Das<sup>1</sup>, Farzana Yeasmin<sup>1</sup>, Fosiul Alam Nizame<sup>1</sup>, Abul Kasham Shoab<sup>1</sup>, Laura Kwong<sup>3</sup>, Stephen P. Luby<sup>3</sup>, Peter J. Winch<sup>2</sup>

<sup>1</sup>International Centre for Diarrhoeal Disease Research, Bangladesh, Dhaka, Bangladesh, <sup>2</sup>Johns Hopkins Bloomberg School of Public Health, Baltimore, MD, United States, <sup>3</sup>Stanford University, Stanford, CA, United States

3 p.m.

638

**EVALUATING A COMPLEMENTARY FOOD HYGIENE BEHAVIOR CHANGE INTERVENTION IN RURAL MALAWI**

Kondwani R. Chidziwisano<sup>1</sup>, Save Kumwenda<sup>1</sup>, Jurgita Slekiene<sup>2</sup>, Joachim H. Mosler<sup>2</sup>, Tracy Morse<sup>3</sup>

<sup>1</sup>University of Malawi, Blantyre, Malawi, <sup>2</sup>Eawag aquatic research, Zurich, Switzerland, <sup>3</sup>University of Strathclyde, Glasgow, United Kingdom

3:15 p.m.

639

**DOES A SCHOOL BASED INTERVENTION TO ENGAGE PARENTS CHANGE OPPORTUNITY FOR HANDWASHING WITH SOAP AT HOME? PRACTICAL EXPERIENCE FROM AN ON-GOING RANDOMIZED TRIAL IN NORTHWEST TANZANIA**

Elialilia S. Okello<sup>1</sup>, Heiner Grosskurth<sup>2</sup>, Kenneth Makata<sup>1</sup>, Onike Mcharo<sup>1</sup>, Safari Kinungh<sup>1</sup>, Saidi Kapiga<sup>1</sup>, Belen Torondel<sup>2</sup>, Robert Dreifelbis<sup>2</sup>

<sup>1</sup>Mwanza Intervention Trials Unit, Mwanza, United Republic of Tanzania, <sup>2</sup>London School of Hygiene & Tropical Medicine, London, United Kingdom, <sup>3</sup>National Institute for Medical Research, Mwanza Centre, United Republic of Tanzania

**Scientific Session 39**

**Global Health: Impact and Economics of Health Interventions**

National Harbor 4/5 (National Harbor Level)

Thursday, November 21, 1:45 p.m. - 3:30 p.m.

**CHAIR**

Rebecca Brander  
University of Washington, Seattle, WA, United States

Eileen Stillwaggon  
Gettysburg College, Rockville, MD, United States

Thursday  
November 21

1:45 p.m.

**640**

**OPTIMIZING THE NUMBER OF CHILD DEATHS AVERTED WITH MASS AZITHROMYCIN DISTRIBUTION**

Catherine Oldenburg<sup>1</sup>, Ahmed Arzika<sup>2</sup>, Ramatou Maliki<sup>2</sup>, Ying Lin<sup>1</sup>, Kieran O'Brien<sup>1</sup>, Jeremy Keenan<sup>1</sup>, Thomas Lietman<sup>1</sup>

<sup>1</sup>University of California San Francisco, San Francisco, CA, United States, <sup>2</sup>The Carter Center Niger, Niamey, Niger

2 p.m.

**641**

**PROJECTED IMPACT AND COST-EFFECTIVENESS OF HIGH-RISK TARGETED VERSUS COMMUNITY-BASED ADMINISTRATION OF AZITHROMYCIN FOR REDUCING CHILD MORTALITY IN SUB-SAHARAN AFRICA**

Rebecca Brander<sup>1</sup>, Marcia Weaver<sup>1</sup>, Benson Singa<sup>2</sup>, Grace John-Stewart<sup>1</sup>, Patricia Pavlinac<sup>1</sup>, Judd Walson<sup>1</sup>

<sup>1</sup>University of Washington, Seattle, WA, United States, <sup>2</sup>Kenya Medical Research Institute, Nairobi, Kenya

2:15 p.m.

**642**

**"HE'S CONSIDERING HIS INVESTMENT, NOT HIS HEALTH": ECONOMIC DETERMINANTS OF RISK, PREVENTION AND RESPONSE BEHAVIORS RELATED TO THE FIVE PRIORITY DISEASE GROUPS IN COTE D'IVOIRE**

Danielle Naugle<sup>1</sup>, Natalie Tibbels<sup>1</sup>, Abdul Dosso<sup>2</sup>, William Benié<sup>2</sup>, Walter Kra<sup>3</sup>, Corinne Fordham<sup>1</sup>, Mieko McKay<sup>2</sup>, Valère Konan<sup>4</sup>, Jeanne Brou<sup>5</sup>, Jocelyne Nebre<sup>5</sup>, Adaman Kouadio<sup>4</sup>, Zandra Andre<sup>6</sup>, Diarra Kamara<sup>2</sup>, Stella Babalola<sup>1</sup>

<sup>1</sup>Johns Hopkins University, Baltimore, MD, United States, <sup>2</sup>Johns Hopkins University, Abidjan, Côte D'Ivoire, <sup>3</sup>Alassane Ouattara University, Bouaké, Côte D'Ivoire, <sup>4</sup>Department of Veterinarian Services Ministry of Animal Resources and Fisheries, Abidjan, Côte D'Ivoire, <sup>5</sup>National Institute of Public Hygiene, Abidjan, Côte D'Ivoire, <sup>6</sup>U.S. Agency for International Development, Abidjan, Côte D'Ivoire

2:30 p.m.

**643**

**AN INVESTMENT CASE FOR MATERNAL NEONATAL TETANUS ELIMINATION**

Sarah K. Laing<sup>1</sup>, Ulla Griffiths<sup>2</sup>, Sophia Bessias<sup>1</sup>, Sachiko Ozawa<sup>1</sup>

<sup>1</sup>University of North Carolina at Chapel Hill, Chapel Hill, NC, United States, <sup>2</sup>UNICEF, New York City, NY, United States

2:45 p.m.

**644**

**DIRECT AND INDIRECT COSTS TO THE DOD FOR MILITARY BENEFICIARIES PROVIDED CARE IN THE MILITARY HEALTH SYSTEM FOR DENGUE FEVER, 2012 - 2017**

Bria Graham-Glover<sup>1</sup>, Lanna Forrest<sup>1</sup>, Calli Rooney<sup>2</sup>, Stephen Barnes<sup>1</sup>, Stefan Fernandez<sup>3</sup>, Emily Cisney<sup>4</sup>, Jacob Ball<sup>5</sup>, John Ambrose<sup>1</sup>

<sup>1</sup>DHA US Army Satellite, Aberdeen Proving Ground, MD, United States, <sup>2</sup>U.S. Army Medical Materiel Development Activity (USAMMDA), Ft. Detrick, MD, United States, <sup>3</sup>Armed Forces Research Institute of Medical Sciences (AFRIMS), Bangkok, Thailand, <sup>4</sup>DoD JPEO CBRND, Ft. Detrick, MD, United States, <sup>5</sup>Army Public Health Center, Department of Defense, Aberdeen Proving Ground, MD, United States

3 p.m.

**645**

**EVALUATION OF A SAVINGS LED FAMILY-BASED ECONOMIC EMPOWERMENT INTERVENTION FOR AIDS-AFFECTED ADOLESCENTS IN UGANDA WITH HEALTH ECONOMIC EVALUATION: A FOUR-YEAR FOLLOW-UP**

Yesim Tozan<sup>1</sup>, Ariadna Capasso<sup>1</sup>, Sicong Sun<sup>2</sup>, Julia Sh Wang<sup>3</sup>, Ozge S. Bahar<sup>2</sup>, Christopher Damulira<sup>2</sup>, Fred M. Ssewamala<sup>2</sup>

<sup>1</sup>College of Global Public Health, New York University, New York, NY, United States, <sup>2</sup>International Center for Child Health and Development, Brown School of Social Work, Washington University, St. Louis, MO, United States, <sup>3</sup>Department of Social Work and Social Administration, The University of Hong Kong, Hong Kong, Hong Kong

3:15 p.m.

**645A**

**EVALUATION OF THE IMPACT OF THE CERTIFIED OPHTHALMIC PARAMEDIC PROGRAM AT A LARGE CHARITY EYE HOSPITAL IN DELHI, INDIA**

Vimal Konduri<sup>1</sup>, Ishaana Sood<sup>2</sup>, Shalinder Sabherwal<sup>2</sup>, Sunita Arora<sup>2</sup>, Parul Datta<sup>2</sup>, Kyle McDaniel<sup>1</sup>, Suresh R. Chandra<sup>1</sup>, Cat N. Burkat<sup>1</sup>

<sup>1</sup>University of Wisconsin School of Medicine and Public Health, Madison, WI, United States, <sup>2</sup>Dr. Shroff's Charity Eye Hospital, Delhi, India

**Symposium 40**

**Developing Clinical Research Networks to Support Emergency Preparedness and Response in Resource-Limited Environments**

*National Harbor 10 (National Harbor Level)*

Thursday, November 21, 1:45 p.m. - 3:30 p.m.

Recent outbreaks of emerging infectious diseases such as Ebola, Zika and MERS-CoV have demonstrated the importance of epidemic readiness and dedicated, coordinated global public health responses incorporating local, regional, national and international levels. Preparation efforts are complicated by the poor predictability of disease outbreak agents, timings, and locations, leading to lost time and resources in recognizing an emergency situation and mobilizing the appropriate response. The initial focus of such a response is by necessity a near-exclusive effort to contain the outbreak. However, such an event also presents the need for urgent research addressing disease pathogenesis, therapeutics and vaccines. Initiating clinical research early during the course of an epidemic can lead to more lives being saved and a shortened outbreak, though the lack of scientific and healthcare infrastructure in many resource-limited environments often delays or prevents these opportunities altogether. Clinical research networks can address many of these issues and serve as a powerful component of emergency preparedness planning and outbreak response, particularly in resource-limited environments. This symposium brings together representatives of national and regional clinical research networks across the globe to discuss the role of these networks in public health research, scientific collaboration, capacity building and emergency preparedness and response. An overview of each network, their operational capacity, their scientific priorities and their experience navigating outbreak responses will be presented in prepared talks.

**CHAIR**

Clifford Lane

*National Institute of Allergy and Infectious Diseases, Bethesda, MD, United States*

Seydou Doumbia

*University Clinical Research Center, Bamako, Mali*

1:45 p.m.

**MEXICO EMERGING INFECTIOUS DISEASES CLINICAL RESEARCH NETWORK (LA RED): AN NIH/NIID AND MEXICO MINISTRY OF HEALTH COLLABORATIVE RESEARCH PROGRAM AND OUTBREAK RESPONSE PLATFORM**

Justino Regalado-Pineda

*Mexico Emerging Infectious Diseases Clinical Research Network, Mexico City, Mexico*

2:05 p.m.

**STRENGTHENING THE CAPACITIES OF THE INDONESIA RESEARCH PARTNERSHIP ON INFECTIOUS DISEASES (INA-RESPOND) TO IMPROVE THE QUALITY OF CLINICAL RESEARCH AND OUTBREAK PREPAREDNESS AND RESPONSE IN THE REGION**

Pratiwi Sudarmono

*Indonesia Research Partnership on Infectious Diseases, Jakarta, Indonesia*

2:25 p.m.

**COLLABORATIVE CLINICAL RESEARCH AND OUTBREAK PREPAREDNESS IN MALI: EXPERIENCE FROM THE UNIVERSITY CLINICAL RESEARCH CENTER (UCRC)**

Seydou Doumbia

*University Clinical Research Center, Bamako, Mali*

2:45 p.m.

**SUB-REGIONAL COLLABORATION IN WEST AFRICA ON CLINICAL RESEARCH: PROSPECTS AND CHALLENGES**

Moses Massaquoi

*West Africa Sub-Regional Consortium of Guinea, Liberia, Sierra Leone and Mali, Monrovia, Liberia*

3:05 p.m.

**DISCUSSION**

**Scientific Session 41**

**Filariasis - Epidemiology and Control II**

*National Harbor 11 (National Harbor Level)*

Thursday, November 21, 1:45 p.m. - 3:30 p.m.

**CHAIR**

Marisa A. Hast

*Centers for Disease Control and Prevention, Atlanta, GA, United States*

Alison Krentel

*Bruyere Research Institute, Ottawa, ON, Canada*

1:45 p.m.

**646**

**ASSOCIATION OF PRE-CONTROL INFECTION PREVALENCE OF LYMPHATIC FILARIASIS WITH CLINICAL MORBIDITY**

Natalie V. Vinkeles Melchers<sup>1</sup>, Wilma A. Stolk<sup>1</sup>, Belén Pedrique<sup>2</sup>, Joost W. Vanhommerig<sup>1</sup>, Luc E. Coffeng<sup>1</sup>, Sake J. de Vlas<sup>1</sup>

<sup>1</sup>Erasmus MC, University Medical Center Rotterdam, Rotterdam, Netherlands, <sup>2</sup>Drugs for Neglected Diseases initiative (DNDI), Geneva, Switzerland

2 p.m.

**647**

**THE EFFICACY OF TRIPLE DRUG THERAPY IN MASS DRUG ADMINISTRATION TO REDUCE LYMPHATIC FILARIASIS IN HAITI**

Marisa A. Hast<sup>1</sup>, Christine L. Dubray<sup>1</sup>, Anita D. Sircar<sup>1</sup>, Madsen Beau De Rochars<sup>2</sup>, Joshua Bogus<sup>3</sup>, Abdel N. Direny<sup>4</sup>, Jean Romuald Ernest<sup>5</sup>, Carl Fayette<sup>5</sup>, Katuscia O'Brian<sup>3</sup>, Charles W. Goss<sup>3</sup>, Daniel Frantz Sabin<sup>6</sup>, Ryan Wiegand<sup>1</sup>, Jean Frantz Lemoine<sup>6</sup>

<sup>1</sup>Centers for Disease Control and Prevention, Atlanta, GA, United States, <sup>2</sup>University of Florida, Gainesville, FL, United States, <sup>3</sup>Washington University in St. Louis, St. Louis, MO, United States, <sup>4</sup>RTI International, Washington, DC, United States, <sup>5</sup>IMA World Health, Port-au-Prince, Haiti, <sup>6</sup>Ministere de la Sante et de la Population, Port-au-Prince, Haiti

2:15 p.m.

**648**

**COMMUNITY-LEVEL EFFECTIVENESS OF MASS DRUG ADMINISTRATION OF IVERMECTIN, DIETHYLCARBAMAZINE AND ALBENDAZOLE VERSUS DIETHYLCARBAMAZINE AND ALBENDAZOLE FOR ELIMINATION OF LYMPHATIC FILARIASIS IN PAPUA NEW GUINEA**

Moses Laman<sup>1</sup>, Livingstone Tavul<sup>1</sup>, Stephan Karl<sup>1</sup>, Bethuel Kotty<sup>1</sup>, Zebedee Kerry<sup>1</sup>, Steven Kumai<sup>2</sup>, Anna Samuel<sup>1</sup>, Lina Lorry<sup>1</sup>, Lincoln Timinao<sup>1</sup>, Samuel C. Howard<sup>3</sup>, James Wangi<sup>4</sup>, Leo Makita<sup>5</sup>, Lucy John<sup>6</sup>, Sibauk Bieb<sup>6</sup>, Charles W. Goss<sup>7</sup>, Katuscia O'Brian<sup>7</sup>, Gary J. Weil<sup>7</sup>, James W. Kazura<sup>3</sup>, Daniel J. Tisch<sup>3</sup>, Catherine Bjerum<sup>3</sup>, Christopher L. King<sup>3</sup>, Leanne J. Robinson<sup>8</sup>

<sup>1</sup>PNG Institute of Medical Research, Madang, Papua New Guinea, <sup>2</sup>Bogia District Health Office, Madang, Papua New Guinea, <sup>3</sup>Case Western Reserve University, Cleveland, OH, United States, <sup>4</sup>World Health Organisation PNG, Port Moresby, Papua New Guinea, <sup>5</sup>VBD Control Program, PNG National Department of Health, Port Moresby, Papua New Guinea, <sup>6</sup>PNG National Department of Health, Port Moresby, Papua New Guinea, <sup>7</sup>Washington University, St. Louis, MO, United States, <sup>8</sup>Burnet Institute, Melbourne, Australia

2:30 p.m.

**649**

**EFFICACY AND EFFECTIVENESS OF A 3 DRUG REGIMEN AGAINST A STANDARD 2 DRUG REGIMEN FOR LYMPHATIC FILARIASIS: RESULTS OF AN OPEN-LABELLED CLUSTER RANDOMIZED TRIAL**

Jambulingam Purushothaman<sup>1</sup>, Subramanian Swaminathan<sup>1</sup>, Gary J. Weil<sup>2</sup>, Vijesh K. Sreedhar<sup>1</sup>, Srividya Adinarayanan<sup>1</sup>, Krishnamoorthy Kalianna Gounder<sup>1</sup>

<sup>1</sup>Vector Control Research Centre (ICMR), Puducherry, India, <sup>2</sup>Washington University School of Medicine, St. Louis, MO, United States

2:45 p.m.

**650**

**PERCEPTIONS AND REPORTED SEVERITY OF ADVERSE EVENTS FOLLOWING TREATMENT FOR LYMPHATIC FILARIASIS: RESULTS OF A MULTICENTER COMMUNITY BASED STUDY**

Alison Krentel<sup>1</sup>, Shruti Mallya<sup>1</sup>, Charles W. Goss<sup>2</sup>, Charles Thickett<sup>3</sup>, Daniel Dillio<sup>1</sup>, Nandha Baskar<sup>4</sup>, Purushothaman Jambulingam<sup>4</sup>, Valery Madsen Beau De Rochars<sup>5</sup>, Abdel N. Direny<sup>6</sup>, Jean Frantz Lemoine<sup>7</sup>, Adriani Lomi Ga<sup>8</sup>, Taniawati Supali<sup>9</sup>, Joshua Bogus<sup>2</sup>, Cade Howard<sup>10</sup>, Zebedee Kerry<sup>11</sup>, Leanne J. Robinson<sup>11</sup>, Myra Hardy<sup>12</sup>, Andrew C. Steer<sup>13</sup>, Josaia Samuela<sup>14</sup>, Ken B. Schechtman<sup>2</sup>, Peter U. Fischer<sup>2</sup>, Christopher L. King<sup>10</sup>, Gary J. Weil<sup>2</sup>

<sup>1</sup>Bruyere Research Institute, Ottawa, ON, Canada, <sup>2</sup>Washington University, St. Louis, MO, United States, <sup>3</sup>University of Ottawa, Ottawa, ON, Canada, <sup>4</sup>Vector Control Research Centre, Pondicherry, India, <sup>5</sup>University of Florida, Gainesville, FL, United States, <sup>6</sup>RTI Envision, Washington, DC, United States, <sup>7</sup>Ministère de la Santé Publique et de la Population (MSPP), Port au Prince, Haiti, <sup>8</sup>Planning Department in East Nusa Tenggara Provincial Government, Kupang, Indonesia, <sup>9</sup>Universitas Indonesia, Jakarta, Indonesia, <sup>10</sup>Case Western Reserve University, Cleveland, OH, United States, <sup>11</sup>Papua New Guinea Institute of Medical Research, Madang, Papua New Guinea, <sup>12</sup>University of Melbourne, Melbourne, Australia, <sup>13</sup>Department of General Medicine, Royal Children's Hospital, Melbourne, Australia, <sup>14</sup>Ministry of Health and Medical Services Fiji, Suva, Fiji

3 p.m.

**651**

**USE OF REAL-TIME DAILY REPORTING TO IMPROVE MASS DRUG ADMINISTRATION IN AN URBAN SETTING**

Abdel N. Direny<sup>1</sup>, Alain Javel<sup>2</sup>, Jean F. Lemoine<sup>3</sup>, Franck Monestime<sup>2</sup>, Wenser Estime<sup>2</sup>, Eurica Denis<sup>2</sup>, Carl R. Fayette<sup>2</sup>, Scott Torres<sup>1</sup>, Ellen Knowles<sup>1</sup>, Nancy Stroupe<sup>1</sup>, Caitlin Worrell<sup>4</sup>, Tara Brant<sup>4</sup>

<sup>1</sup>IMA World Health, Washington, DC, United States, <sup>2</sup>IMA World Health, Port au Prince, Haiti, <sup>3</sup>Ministere de la Sante Publique et de la Population, Port au Prince, Haiti, <sup>4</sup>Centers for Disease Control and Prevention, Atlanta, GA, United States

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### **PERSISTENT LYMPHATIC FILARIASIS TRANSMISSION IN HOTSPOT COASTAL COMMUNITIES DESPITE 10 OR MORE ROUNDS OF IVERMECTIN + ALBENDAZOLE MASS DRUG ADMINISTRATION. HOW CAN PROGRAMS ACCELERATE ELIMINATION TOWARDS THE 2020 TARGET?**

Andreas Nshala<sup>1</sup>, Abdel N. Direny<sup>2</sup>, Kerry Dobies<sup>2</sup>, Nancy Stroupe<sup>2</sup>, Katie Crowley<sup>3</sup>, Upendo J. Mwingira<sup>4</sup>

<sup>1</sup>IMA World Health, Dar es Salaam, United Republic of Tanzania, <sup>2</sup>IMA World Health, Washington, DC, United States, <sup>3</sup>RTI International, Washington, DC, United States, <sup>4</sup>NTD Control Program and National Institute for Medical Research, Dar es Salaam, United Republic of Tanzania

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### **TropStop - Career Chats**

*Maryland 5/6 (Ballroom Level)*

Thursday, November 21, 3 p.m. - 4 p.m.

The TropStop schedule will include a daily one-hour afternoon session to meet professionals in the fields of tropical medicine and global health who will share their career stories and discuss topics and strategies to help you along your career path.

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### **CAREER NAVIGATION/COMPASS: THE ROLE MENTORSHIP CAN PLAY IN YOUR CAREER**

Elizabeth J. Anderson

*University of Arizona, Tucson, AZ, United States*

David A. Fidock

*Columbia University, New York, NY, United States*

Anna Uehara

*Centers for Disease Control and Prevention, Atlanta, GA, United States*

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### **Exhibit Hall Open**

*Prince George's Exhibit Hall C (Lower Atrium Level)*

Thursday, November 21, 3:15 p.m. - 4:15 p.m.

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### **Coffee Break**

*Prince George's Exhibit Hall C (Lower Atrium Level)*

Thursday, November 21, 3:30 p.m. - 4 p.m.

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### **Poster Session A Dismantle**

*Prince George's Exhibit Hall D (Lower Atrium Level)*

Thursday, November 21, 4 p.m. - 6:15 p.m.

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### **Symposium 42**

#### **Severe Malaria: Reducing Deaths by Improving Quality of Care**

*Maryland B (Ballroom Level)*

Thursday, November 21, 4 p.m. - 5:45 p.m.

Severe malaria typically occurs due to delayed treatment of uncomplicated malaria and lack of access to treatment. The vast majority of deaths from severe malaria occur among children in sub-Saharan Africa, and nearly all of these fatalities result from infection with *Plasmodium falciparum*. Consistent with the WHO-RBM Partnership to End Malaria "High burden to high impact" strategy, it is imperative that high burden countries and the global community

work to support a targeted malaria response. Having the right tools and correct information will help achieve impact and reduce malaria cases and mortality. Injectable artesunate (Inj AS), which received WHO prequalification status in 2010, is a life-saving treatment for severe malaria with superior efficacy compared with prior options. Rectal artesunate (RAS), which received WHO prequalified status in 2018, can be delivered as a pre-referral management for severe malaria in children < 6 years in community or rudimentary healthcare settings where Inj AS is not available. Despite approval and production of these important life-saving severe malaria treatments, many African countries still struggle to incorporate these modalities on a wide scale. Partly this is because affected individuals live in the most remote and deprived areas. This symposium will focus on the challenges faced by programs and on successful strategies for introducing high-quality severe malaria care to settings in need.

#### **CHAIR**

Hans Rietveld

*Medicines for Malaria Venture, Geneva, Switzerland*

Eric Halsey

*Centers for Disease Control and Prevention, Atlanta, GA, United States*

4 p.m.

#### **THE EPIDEMIOLOGICAL AND HEALTH SYSTEM CHALLENGES OF SEVERE MALARIA CASES IN REMOTE, HIGH-BURDEN SETTING: LESSONS FROM DR CONGO, NIGERIA AND UGANDA**

Manuel Hetzel

*Swiss Tropical and Public Health Institute, Basel, Switzerland*

4:20 p.m.

#### **A RAPID ASSESSMENT OF SEVERE MALARIA IN LIBERIA**

Victor Koko

*NMCP Liberia, Monrovia, Liberia*

4:40 p.m.

#### **UPDATES ON SEVERE MALARIA CASE MANAGEMENT**

Jordan Danielle Burns

*President's Malaria Initiative, Washington, DC, United States*

5 p.m.

#### **PREVENTING SEVERE MALARIA DEATHS IN ZAMBIA**

Tendayi Kureya

*Development Data, Lusaka, Zambia*

5:20 p.m.

#### **DISCUSSION**

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### **Symposium 43**

#### **Prioritizing High Burden Settings for High Impact: A Case Study From Malaria Control in Burkina Faso**

*Maryland C (Ballroom Level)*

Thursday, November 21, 4 p.m. - 5:45 p.m.

Impressive reductions in malaria have occurred throughout sub-Saharan Africa in the 21st century, but progress has not been geographically uniform: despite high coverage of WHO recommended interventions for prevention and treatment, malaria persists in some high-burden countries, and cases are on the rise.



WHO has recently called on country-led approaches to reignite progress in high burden settings. This symposium will focus on one such setting, Burkina Faso, and describe the findings from a multidisciplinary study recording the human, mosquito and health systems factors (including health financing) that are collectively contributing to the intolerably high levels of malaria transmission. Clinical data will be presented showing the current burden of malaria in the Cascades region of Burkina Faso, describing the risk factors associated with each age group, and the treatment seeking behavior in the community. Entomological data will highlight the huge challenges imposed by exceptionally high levels of pyrethroid resistance and extensive outdoor biting in the vector population. By combining this entomological data with data on human sleeping patterns, the session will highlight the coverage gaps that remain, even if universal coverage with bednets is achieved, and present findings from ethnographic studies identifying opportunities and challenges afforded by a deeper understanding of the activities different sectors of society are conducting outside the home. All of the data from these interlinked studies have been used to update models of malaria transmission, providing a contemporary picture of malaria transmission in insecticide resistant Africa. Using this model, together with information on the performance of currently available malaria control tools, the symposium will demonstrate the predicted impact that combinations of these tools could have in reducing transmission in these high burden settings. These data have also been used to develop a conceptual framework illustrating the dynamics of vulnerability and demonstrating that these contextual factors cannot be examined separately from one another. A moderated discussion will explore how these finding can help with priority setting in Burkina Faso and other high burden countries.

#### CHAIR

Hilary Ranson  
*Liverpool School of Tropical Medicine, Liverpool, United Kingdom*

Caroline Jones  
*KEMRI-Wellcome Trust Research Programme, Kilifi, Kenya*

4 p.m.

#### HIGH BURDEN TO HIGH IMPACT: WHO'S TARGETED MALARIA RESPONSE

Pedro Alonso  
*World Health Organization, Global Malaria Program, Geneva, Switzerland*

4:05 p.m.

#### RISK FACTORS FOR MALARIA IN THE CASCADES REGION OF BURKINA FASO

Yaro Jean Baptiste Bibie  
*Centre National de Recherche et de Formation sur le Paludisme (CNRFP), Ouagadougou, Burkina Faso*

4:20 p.m.

#### INTENSE PYRETHROID RESISTANCE AND OUTDOOR BITING CHARACTERIZE THE MALARIA VECTOR POPULATION IN THE CASCADES REGION OF BURKINA FASO

Antoine Sanou  
*Centre National de Recherche et de Formation sur le Paludisme, Ouagadougou, Burkina Faso*

4:35 p.m.

#### THE HUMAN FACTOR: HOW KNOWLEDGE OF HUMAN BEHAVIOR CAN INFORM WHAT CAN AND CAN'T BE ACHIEVED WITH CURRENT MALARIA CONTROL TOOLS

Federica Guglielmo  
*Liverpool School of Tropical Medicine, Liverpool, United Kingdom*

4:50 p.m.

#### MODELLING HOW HUMAN, PARASITE AND ENTOMOLOGICAL FACTORS INFLUENCE MALARIA PERSISTENCE IN INSECTICIDE RESISTANT AFRICA

Thomas S. Churcher  
*Imperial College London, London, United Kingdom*

5:10 p.m.

#### DISCUSSION

### Scientific Session 44

#### Malaria: Immunology

*Maryland A (Ballroom Level)*

Thursday, November 21, 4 p.m. - 6 p.m.

#### CHAIR

Arlene E. Dent  
*Case Western Reserve University, Cleveland, OH, United States*

Amaya Ortega  
*The Peter Doherty Institute for Infection and Immunity, Melbourne, Australia*

4 p.m.

#### Presentation by Burroughs Wellcome Fund-ASTMH Fellowship Recipient

653

#### ANTIBODIES TO PEPTIDES REPRESENTING *PLASMODIUM FALCIPARUM* CIRCUMSPOROZOITE PROTEIN REFLECT ACQUISITION OF NATURALLY ACQUIRED IMMUNITY IN MALIAN ADULTS AND CHILDREN

DeAnna J. Friedman-Klabanoff<sup>1</sup>, Mark A. Travassos<sup>1</sup>, Sonia Agrawal<sup>1</sup>, Amed Ouattara<sup>1</sup>, Andrew Pike<sup>2</sup>, Jason A. Bailey<sup>3</sup>, Matthew Adams<sup>1</sup>, Drissa Coulibaly<sup>4</sup>, Kirsten E. Lyke<sup>1</sup>, Matthew B. Laurens<sup>1</sup>, Shannon Takala-Harrison<sup>1</sup>, Bourema Kouriba<sup>4</sup>, Abdoulaye K. Kone<sup>4</sup>, Ogobara K. Doumbo<sup>4</sup>, Jigar J. Patel<sup>5</sup>, Mahamadou A. Thera<sup>4</sup>, Phillip L. Felgner<sup>6</sup>, John C. Tan<sup>5</sup>, Christopher V. Plowe<sup>7</sup>, Andrea A. Berry<sup>1</sup>  
<sup>1</sup>University of Maryland School of Medicine, Baltimore, MD, United States, <sup>2</sup>U.S. Food and Drug Administration, Silver Spring, MD, United States, <sup>3</sup>Emmes Corporation, Rockville, MD, United States, <sup>4</sup>Malaria Research and Training Center, University of Sciences, Techniques and Technologies, Bamako, Mali, <sup>5</sup>Roche Sequencing Solutions, Madison, WI, United States, <sup>6</sup>Vaccine Research and Development Center, Department of Physiology and Biophysics, School of Medicine, University of California Irvine, Irvine, CA, United States, <sup>7</sup>Duke Global Health Institute, Duke University, Durham, NC, United States

(ACMCIP Abstract)

4:15 p.m.

654

#### IDENTIFYING ANTIBODY AND MONOCYTE RESPONSES ASSOCIATED WITH PROTECTION FROM MALARIA IN PREGNANT WOMEN

Amaya Ortega<sup>1</sup>, Elizabeth Aitken<sup>1</sup>, Wina Hasang<sup>1</sup>, Holger Unger<sup>2</sup>, Maria Ome-Kaius<sup>3</sup>, Amy Chung<sup>1</sup>, Stephen Rogerson<sup>1</sup>  
<sup>1</sup>The Peter Doherty Institute for Infection and Immunity, Melbourne, Australia, <sup>2</sup>Victoria Hospital Kirkcaldy, Kirkcaldy, United Kingdom, <sup>3</sup>Papua New Guinea Institute of Medical Research, Madang, Papua New Guinea

(ACMCIP Abstract)



4:30 p.m.

655

**REPEATED MALARIA EXPOSURES SKEW MONOCYTES/  
MACROPHAGES TOWARDS A REGULATORY PHENOTYPE**

Rajan Guha<sup>1</sup>, Anna Mathioudaki<sup>2</sup>, Gunjan Arora<sup>1</sup>, Shangping Li<sup>1</sup>, Shafiuddin Siddiqui<sup>3</sup>, Jeff Skinner<sup>1</sup>, Didier Doumtable<sup>4</sup>, Safiatou Doumbo<sup>4</sup>, Kassoum Kayentao<sup>4</sup>, Aissata Ongoiba<sup>4</sup>, Boubacar Traore<sup>4</sup>, Judith Zaugg<sup>2</sup>, Peter Crompton<sup>1</sup>

<sup>1</sup>National Institute of Allergy and Infectious Diseases/National Institutes of Health, Rockville, MD, United States, <sup>2</sup>EMBL, Heidelberg, Germany, <sup>3</sup>NCI/National Institutes of Health, Bethesda, MD, United States, <sup>4</sup>Mali International Center of Excellence in Research, University of Sciences, Techniques and Technologies of Bamako, Bamako, Mali

(ACMCIP Abstract)

4:45 p.m.

656

**CLEARANCE OF *PLASMODIUM FALCIPARUM*-INFECTED  
RED BLOOD CELLS BY NK CELLS AND MONOCYTES**

Padmapriya Sekar, Gunjan Arora, Eric O. Long  
National Institutes of Health, Rockville, MD, United States

(ACMCIP Abstract)

5 p.m.

657

**MALARIA SPECIFIC GENE EXPRESSION SIGNATURE IN B  
CELLS FROM PAPUA NEW GUINEAN CHILDREN**

Arlene E. Dent<sup>1</sup>, Grace Weber<sup>1</sup>, Bruce Rosa<sup>2</sup>, Adam Pelletier<sup>1</sup>, Paula Embury<sup>1</sup>, Daisy Mantila<sup>3</sup>, Moses Laman<sup>3</sup>, Benishar Kombut<sup>3</sup>, Maria Ome-Kaius<sup>3</sup>, Christopher L. King<sup>1</sup>, Leanne Robinson<sup>4</sup>, Rafick-Pierre Sekaly<sup>1</sup>, Makedonka Mitreva<sup>2</sup>, James Kazura<sup>1</sup>

<sup>1</sup>Case Western Reserve University, Cleveland, OH, United States, <sup>2</sup>Washington University, St. Louis, MO, United States, <sup>3</sup>PNG IMR, Madang, Papua New Guinea, <sup>4</sup>Burnet Institute, Melbourne, Australia

5:15 p.m.

658

**ENHANCING ATTENUATED SPOROZOITE VACCINES  
AGAINST MALARIA WITH A GLYCOLIPID ADJUVANT**

Sumana Chakravarty<sup>1</sup>, Charles Anderson<sup>2</sup>, Moriya Tsuji<sup>3</sup>, Andrew Ishizuka<sup>4</sup>, Robert A. Seder<sup>4</sup>, Stephen L. Hoffman<sup>1</sup>

<sup>1</sup>Sanaria Inc., Rockville, MD, United States, <sup>2</sup>Laboratory of Malaria Immunology and Vaccinology, National Institute of Allergy and Infectious Diseases, National Institutes of Health, Rockville, MD, United States, <sup>3</sup>Aaron Diamond AIDS Research Center, New York, NY, United States, <sup>4</sup>Laboratory of Cellular Immunology, VRC, National Institutes of Health, Rockville, MD, United States

5:30 p.m.

659

**CELLULAR IMMUNOLOGICAL ANALYSIS OF NAÏVE  
EUROPEAN AND PRE-EXPOSED AFRICAN VOLUNTEERS  
INFECTED WITH *P. FALCIPARUM* SPOROZOITES**

Mikhael Dito Manurung<sup>1</sup>, Sanne de Jong<sup>1</sup>, Koen A. Stam<sup>1</sup>, Meta Roestenberg<sup>1</sup>, Stephen L. Hoffman<sup>2</sup>, Peter G. Kremsner<sup>3</sup>, Benjamin Mordmüller<sup>3</sup>, Bertrand Lell<sup>3</sup>, Maria Yazdanbakhsh<sup>1</sup>

<sup>1</sup>Leiden University Medical Center, Leiden, Netherlands, <sup>2</sup>Sanaria Inc., Rockville, MD, United States, <sup>3</sup>Universität Tübingen, Tübingen, Germany

(ACMCIP Abstract)

5:45 p.m.

659A

**IN VITRO AND IN VIVO ASSAYS TO ESTABLISH THE  
INFECTIVITY OF *IN VITRO*-PRODUCED *PLASMODIUM  
FALCIPARUM* SPOROZOITES**

Abraham G. Eappen<sup>1</sup>, Hashani Hettiarachchi<sup>1</sup>, Tao Li<sup>1</sup>, Sumana Chakravarty<sup>1</sup>, Christiane Urgena<sup>1</sup>, Benjamin U. Hoffman<sup>2</sup>, McWilliams Ian<sup>1</sup>, Patricia De La Vega<sup>1</sup>, Ayyappan Rathakrishnan<sup>1</sup>, Lixin Gao<sup>3</sup>, MingLin Li<sup>3</sup>, Peter F. Billingsley<sup>1</sup>, B. Kim Lee Sim<sup>1</sup>, Stephen L. Hoffman<sup>1</sup>

<sup>1</sup>Sanaria Inc., Rockville, MD, United States, <sup>2</sup>Columbia University Irving Medical Center, New York, NY, United States, <sup>3</sup>Protein Potential LLC, Rockville, MD, United States

**Symposium 45**

**Clinical Group Symposium II (American  
Committee on Clinical Tropical Medicine and  
Travelers' Health – ACCTMTH)**

Potomac A (Ballroom Level)

Thursday, November 21, 4 p.m. - 5:45 p.m.

This session will address the topics of I.V. artesunate as first-line for severe malaria in the United States, timely distribution of I.V. artesunate for severe malaria in the United States, as well as mosquito-borne viral threats to the U.S. (including Zika and Chikungunya). The session will conclude with the Clinical Group/ACCTMTH Annual Business Meeting.

**CHAIR**

M. Patricia Joyce  
Tucker, GA, United States

4 p.m.

**I.V. ARTESUNATE AS FIRST-LINE FOR SEVERE MALARIA IN  
THE UNITED STATES**

Kathrine R. Tan  
U.S. Centers for Disease Control and Prevention, Atlanta, GA, United States

4:20 p.m.

**FROM VAN TO VEIN: ASSURING TIMELY DISTRIBUTION OF  
I.V. ARTESUNATE FOR SEVERE MALARIA IN THE UNITED  
STATES**

Clive McIntosh Brown  
Centers for Disease Control and Prevention, Atlanta, GA, United States

4:40 p.m.

**CANADA'S EXPERIENCE WITH IV ARTESUNATE - A DECADE  
OF AVAILABILITY FROM SEA TO SHINING SEA**

Anne McCarthy  
Ottawa Hospital and University of Ottawa, Ottawa, ON, Canada

4:50 p.m.

**ARBOVIRAL DISEASES IN THE AMERICAS: EMERGENCE  
AND CHANGING EPIDEMIOLOGY**

Susan Hills  
PATH, Seattle, WA, United States

5:05 p.m.

**PANEL DISCUSSION**

5:15 p.m.

**ACCTMTH (CLINICAL GROUP) ANNUAL BUSINESS MEETING**

M. Patricia Joyce  
Tucker, GA, United States

## Scientific Session 46

### West Nile and Other Flaviviruses

Potomac C (Ballroom Level)

Thursday, November 21, 4 p.m. - 5:45 p.m.

#### CHAIR

Marycelin M. Baba  
University of Maiduguri, Maiduguri, Nigeria

Nisha Duggal  
Virginia Tech, Blacksburg, VA, United States

4 p.m.

660

### CHARACTERIZATION OF SUBSTANCE P DURING WEST NILE VIRUS INFECTION

Shannon E. Ronca, Sarah M. Gunter, Rebecca B. Kairis, R. Elias Alvarado, Allison Lino, Rodion Gorchakov, Kristy O. Murray  
Baylor College of Medicine, Houston, TX, United States

4:15 p.m.

661

### THE RE-EMERGENCE OF YELLOW FEVER EPIDEMICS IN NIGERIA MAY CONTINUE DESPITE THE INCLUSION OF ITS VACCINE IN NATIONAL PROGRAM ON IMMUNIZATION. THE LOW POPULATION IMMUNITY SPEAKS

Marycelin M. Baba<sup>1</sup>, Bamidele Soji Oderinde<sup>1</sup>, Erick Mora Cardenas<sup>2</sup>, Alessandro Marcello<sup>2</sup>

<sup>1</sup>University of Maiduguri, Maiduguri, Nigeria, <sup>2</sup>International Centre for Genetic Engineering and Biotechnology, Trieste, Italy

4:30 p.m.

662

### SYNDECAN-1 AS A BIOMARKER OF SEVERITY IN ACUTE YELLOW FEVER

Francielle Tramontini Gomes de Sousa<sup>1</sup>, Erika R. Manuli<sup>2</sup>, Luiz G. Zanella<sup>3</sup>, Yeh-Li Ho<sup>3</sup>, Lucas Chaves Netto<sup>3</sup>, Mariana P. Marmorato<sup>3</sup>, Juliana Z. Dias<sup>3</sup>, Mateus V. Thomazella<sup>3</sup>, Carolina A. Correia<sup>3</sup>, Cássia G. Silveira<sup>3</sup>, Priscilla R. Costa<sup>3</sup>, Geovana M. Pereira<sup>3</sup>, Midiã S. Ferreira<sup>3</sup>, Camila M. Romano<sup>2</sup>, Esper G. Kallas<sup>3</sup>, Eva Harris<sup>1</sup>, Ester C. Sabino<sup>4</sup>

<sup>1</sup>Division of Infectious Diseases and Vaccinology, School of Public Health, University of California-Berkeley, Berkeley, CA, United States, <sup>2</sup>Laboratory of Medical Investigation, Hospital das Clínicas HCFMUSP, Faculty of Medicine, University of Sao Paulo, Sao Paulo, Brazil, <sup>3</sup>Hospital das Clínicas HCFMUSP, Faculty of Medicine, University of Sao Paulo, Sao Paulo, Brazil, <sup>4</sup>Department of Infectious and Parasitic Diseases, Institute of Tropical Medicine, Faculty of Medicine, University of Sao Paulo, Sao Paulo, Brazil

4:45 p.m.

663

### AVIAN SUSCEPTIBILITY TO AFRICAN AND EUROPEAN USUTU VIRUS STRAINS

Sarah Kuchinsky<sup>1</sup>, Francesca Frere<sup>1</sup>, Eric Mossel<sup>2</sup>, Nisha Duggal<sup>1</sup>

<sup>1</sup>Virginia Tech, Blacksburg, VA, United States, <sup>2</sup>Centers for Disease Control and Prevention, Fort Collins, CO, United States

5 p.m.

664

### NS2B/NS3 MUTATIONS ENHANCE THE INFECTIVITY OF GENOTYPE I JAPANESE ENCEPHALITIS VIRUS IN AMPLIFYING HOSTS

Yi-Chin Fan<sup>1</sup>, Jian-Jong Liang<sup>2</sup>, Jo-Mei Chen<sup>3</sup>, Jen-Wei Lin<sup>3</sup>, Yi-Ying Chen<sup>3</sup>, Kuan-Hsuan Su<sup>4</sup>, Chang-Chi Lin<sup>5</sup>, Wu-Chun Tu<sup>3</sup>, Ming-Tang Chiou<sup>4</sup>, Shan-Chia Ou<sup>3</sup>, Gwong-Jen J. Chang<sup>6</sup>, Yi-Ling Lin<sup>2</sup>, Shyan-Song Chiou<sup>3</sup>

<sup>1</sup>National Taiwan University, Taipei, Taiwan, <sup>2</sup>Academia Sinica, Taipei, Taiwan, <sup>3</sup>National Chung Hsing University, Taichung, Taiwan, <sup>4</sup>National Pingtung University of Science and Technology, Pingtung, Taiwan, <sup>5</sup>National Defense Medical Center, New Taipei City, Taiwan, <sup>6</sup>Center for Disease Control and Prevention, Fort Collins, CO, United States

5:15 p.m.

665

### PROTECTIVE EFFICACY OF JAPANESE ENCEPHALITIS VIRUS MONOCLONAL ANTIBODIES DERIVED FROM VACCINATION IN A MINIATURE SWINE MODEL

Christian L. Cook<sup>1</sup>, Victoria B. Ayers<sup>1</sup>, Amy C. Lyons<sup>1</sup>, So Lee Park<sup>1</sup>, Ashley N. Doerfler<sup>1</sup>, Susan M. Hettenbach<sup>2</sup>, Ashley M. Zelenka<sup>1</sup>, Konner R. Cool<sup>1</sup>, Gregory J. Peterson<sup>3</sup>, Stephen Higgs<sup>2</sup>, Dana L. Vanlandingham<sup>1</sup>, Yan-Jang S. Huang<sup>1</sup>

<sup>1</sup>Department of Diagnostic Medicine/Pathobiology, College of Veterinary Medicine, Kansas State University, Manhattan, KS, United States, <sup>2</sup>Biosecurity Research Institute, Kansas State University, Manhattan, KS, United States, <sup>3</sup>University Research Compliance Office Kansas State University, Manhattan, KS, United States

5:30 p.m.

666

### DISEASE SURVEILLANCE AND VIROME ANALYSIS STUDY OF JAPANESE ENCEPHALITIS VECTOR, CULEX TRITAENIORHYNCHUS, COLLECTED FROM THREE PREFECTURES IN JAPAN

Astri Nur Faizah<sup>1</sup>, Daisuke Kobayashi<sup>2</sup>, Michael Amo-a-Bosompem<sup>3</sup>, Haruhiko Isawa<sup>2</sup>, Kyeong Soon Kim<sup>4</sup>, Mamoru Watanabe<sup>2</sup>, Kozue Miura<sup>1</sup>, Kazuhiro Hirayama<sup>1</sup>, Kyoko Sawabe<sup>2</sup>

<sup>1</sup>The University of Tokyo, Tokyo, Japan, <sup>2</sup>National Institute of Infectious Diseases, Tokyo, Japan, <sup>3</sup>Tokyo Medical and Dental University, Tokyo, Japan, <sup>4</sup>Tottori University, Tottori, Japan

## Scientific Session 47

### One Health: Interface of Human Health/Animal Diseases

Potomac D (Ballroom Level)

Thursday, November 21, 4 p.m. - 5:45 p.m.

#### CHAIR

Emily Bailey  
Duke University, Durham, NC, United States

David Morens  
National Institutes of Health, Bethesda, MD, United States

4 p.m.

667

### EXPLANTS OF HUMAN AND RUMINANT PLACENTAS ARE TARGETED BY MEMBERS OF THE BUNYAVIRALES ORDER DIFFERENTLY: COMPARING CELLULAR AND MOLECULAR MECHANISMS OF INFECTION TO UNDERSTAND DISPARATE RATES OF MISCARRIAGE BETWEEN SPECIES

Cynthia M. McMillen, Devin A. Boyles, Joseph R. Albe, Amy L. Hartman  
University of Pittsburgh, Pittsburgh, PA, United States

4:15 p.m.

668

### INVESTIGATION OF AIM2 LOSS IN BATS REVEALS FUNCTIONAL DAMPENING OF THE INFLAMMASOME PATHWAY

Geraldine X. Goh, Matae Ahn, Aaron T. Irving, Zhu Feng, Lin-Fa Wang  
Duke-NUS Medical School, Singapore, Singapore

4:30 p.m.

669

### PATHOGENIC *E. COLI* IN DRINKING WATER: ARE THEY HUMAN OR ANIMAL IN ORIGIN?

Jannatul Ferdous<sup>1</sup>, Ridwan Bin Rashid<sup>1</sup>, Rebeca Sultana<sup>2</sup>, Sabera Saima<sup>1</sup>, Musharrat Jahan<sup>1</sup>, Anowara Begum<sup>1</sup>, Peter Kjær Jensen<sup>2</sup>  
<sup>1</sup>University of Dhaka, Dhaka, Bangladesh, <sup>2</sup>University of Copenhagen, Copenhagen, Denmark

4:45 p.m.

670

### ANTIBODIES AGAINST *TREPONEMA PALLIDUM* SHOW THAT YAWS IS ENDEMIC IN NONHUMAN PRIMATES IN KENYA

Emily H. Hardgrove<sup>1</sup>, Dawn M. Zimmerman<sup>2</sup>, Michael E. von Fricken<sup>3</sup>, Graham A. Matulis<sup>3</sup>, Joseph Kamau<sup>4</sup>, Daniel Chai<sup>4</sup>, Samson Mutura<sup>4</sup>, Velma Kivali<sup>5</sup>, Fatima Hussein<sup>4</sup>, Peris Ambala<sup>4</sup>, Andrea Surmat<sup>6</sup>, Sascha Knauf<sup>7</sup>  
<sup>1</sup>Virginia-Maryland College of Veterinary Medicine, Blacksburg, VA, United States, <sup>2</sup>Global Health Program, Smithsonian Conservation Biology Institute, Washington, DC, United States, <sup>3</sup>George Mason University, Fairfax, VA, United States, <sup>4</sup>Institute of Primate Research, Karen-Nairobi, Kenya, <sup>5</sup>International Livestock Research Institute, Nairobi, Kenya, <sup>6</sup>Mpala Research Centre and Wildlife Foundation, Laikipia, Kenya, <sup>7</sup>German Primate Center, Goettingen, Germany

5 p.m.

671

### HIGH INCIDENCE OF HUMAN BRUCELLOSIS IN A RURAL PASTORALIST COMMUNITY IN KENYA, 2016

Peninah M. Munyua<sup>1</sup>, Eric Osoro<sup>2</sup>, Elizabeth Hunsperger<sup>1</sup>, Mathew Muturi<sup>3</sup>, Athman Mwatondo<sup>4</sup>, Doris Marwanga<sup>5</sup>, Philip Ngere<sup>6</sup>, Rebekkah Tiller<sup>7</sup>, Clayton Onyango<sup>1</sup>, Kariuki Njenga<sup>2</sup>, Marc-Alain Widdowson<sup>1</sup>  
<sup>1</sup>US Centers for Disease Control and Prevention - Kenya, Nairobi, Kenya, <sup>2</sup>Washington State University Global Health Program, Nairobi, Kenya, <sup>3</sup>Kenya Ministry of Agriculture Livestock and Fisheries, Zoonotic Disease Unit, Nairobi, Kenya, <sup>4</sup>Kenya Ministry of Health, Zoonotic Disease Unit, Nairobi, Kenya, <sup>5</sup>Center for Global Health Research, Kenya Medical Research Institute, Nairobi, Kenya, <sup>6</sup>Kajiado county Department of Health, Nairobi, Kenya, <sup>7</sup>Bacterial Special Pathogens Branch, Centers for Disease Control and Prevention Atlanta, Nairobi, Kenya

5:15 p.m.

672

### SEASONALITY OF AGRICULTURAL EXPOSURE MORE IMPORTANT THAN SEASONALITY OF CLIMATE FOR PREDICTING YELLOW FEVER TRANSMISSION IN BRAZIL

Arran Hamlet<sup>1</sup>, Daniel G. Ramos<sup>2</sup>, Katy Gaythorpe<sup>1</sup>, Alessandro P. Romano<sup>2</sup>, Tini Garske<sup>1</sup>, Neil Ferguson<sup>1</sup>  
<sup>1</sup>MRC Centre for Outbreak Analysis and Modelling, Department of Infectious Disease Epidemiology, Imperial College London, London, United Kingdom, <sup>2</sup>Secretariat for Health Surveillance, Brazilian Ministry of Health, Brasilia, Brazil

5:30 p.m.

673

### FARMERS AND FECES: A ONE HEALTH APPROACH TO EMERGING SWINE ZONOOSES

Emily Bailey<sup>1</sup>, Vida Ahyong<sup>2</sup>, Cristina Tato<sup>2</sup>, Maria Phelps<sup>2</sup>, Norma Jeff<sup>2</sup>, Michelle Tan<sup>2</sup>, Rene Sit<sup>2</sup>, Joseph DeRisi<sup>3</sup>, Gregory Gray<sup>1</sup>  
<sup>1</sup>Duke University, Durham, NC, United States, <sup>2</sup>Chan-Zuckerberg Biohub, San Francisco, CA, United States, <sup>3</sup>University of California San Francisco, San Francisco, CA, United States

## Symposium 48

### Social Innovation for Infectious Diseases of Poverty: Sparking Local Innovation

National Harbor 2 (National Harbor Level)

Thursday, November 21, 4 p.m. - 5:45 p.m.

Austerity measures around the globe have curtailed national and global support for infectious diseases research. But limited resources often spark local innovation. This symposium highlights evidence and programs on social innovation for infectious diseases in low- and middle-income countries (LMICs). Social innovation is defined as promoting measurable social change, and new to the local context. For example, organizing a challenge contest to solicit new ideas from the local community about integrating malaria detection into school settings. Social innovation approaches have been demonstrated effective in randomized controlled trials and other research, establishing the foundation for new programs and policies. Recognizing this expanding field, the Special Program for Research and Training in Tropical Diseases (TDR) launched a social innovation in health initiative (SIHI), with hubs in Colombia, Malawi, Uganda, Philippines, South Africa and China. Each hub has organized calls for examples of social innovation in health and helped organize implementation research to evaluate these new models. The three learning objectives of this symposium are: (1) to better understand the concept of social innovation in the context of infectious diseases of poverty; (2) to gain knowledge about specific ways that social innovation has been used to improve access to diagnose, treat and prevent infectious diseases of poverty; (3) to better understand opportunities and challenges for social innovation in infectious diseases, with a focus on LMIC settings.

#### CHAIR

Joseph D. Tucker  
University of North Carolina School of Medicine, Guangzhou, China  
Nancy Saravia  
Centro Internacional de Entrenamiento e Investigaciones Médicas, Cali, Colombia

4 p.m.

### SOCIAL INNOVATION IN INFECTIOUS DISEASES AND THE TDR SOCIAL INNOVATION IN HEALTH INITIATIVE

John Reeder  
TDR, Geneva, Switzerland

4:15 p.m.

### MALARIA, HIV AND STD DIAGNOSTICS AND SOCIAL INNOVATION

Rosanna Peeling  
London School of Hygiene & Tropical Medicine, London, United Kingdom

4:30 p.m.

### COMMUNICATING SOCIAL INNOVATION IN INFECTIOUS DISEASES

Maki Kitamura  
TDR, Geneva, Switzerland

4:40 p.m.

### OPPORTUNITIES AND CHALLENGES FOR SOCIAL INNOVATION IN INFECTIOUS DISEASES

Phyllis Awor  
Community Health and Behavioral Sciences, Makerere University, Kampala, Uganda

4:50 p.m.  
**OPPORTUNITIES AND CHALLENGES FOR SOCIAL INNOVATION IN INFECTIOUS DISEASES**

Don Mathanga  
*University of Malawi, Blantyre, Malawi*

5 p.m.  
**OPPORTUNITIES AND CHALLENGES FOR SOCIAL INNOVATION IN INFECTIOUS DISEASES**

Katusha de Villiers  
*Bertha Centre for Social Innovation and Entrepreneurship, University of Cape Town, Cape Town, South Africa*

5:10 p.m.  
**OPPORTUNITIES AND CHALLENGES FOR SOCIAL INNOVATION IN INFECTIOUS DISEASES**

Noel Juban  
*University of the Philippines Manila, Manila, Philippines*

5:20 p.m.  
**OPPORTUNITIES AND CHALLENGES FOR SOCIAL INNOVATION IN INFECTIOUS DISEASES**

Larry Han  
*Harvard T.H. Chan School of Public Health, Boston, MA, United States*

5:30 p.m.  
**PANEL DISCUSSION**

## Symposium 49

### ***Wolbachia* for the Biocontrol of *Aedes aegypti* Mosquitoes and Medically Important Arboviral Diseases**

*National Harbor 3 (National Harbor Level)*  
Thursday, November 21, 4 p.m. - 5:45 p.m.

Arboviruses transmitted by *Aedes aegypti* mosquitoes cause substantial disease burdens in much of the tropical world. Dengue viruses are estimated to cause 50-100 million symptomatic infections per year. The Zika virus was responsible for epidemics in the Pacific and Latin America that resulted in congenital infections and poor outcomes for newborns. Yellow fever outbreaks have plagued Brazil and central Africa in the last 5 years. Similarly, Chikungunya viruses have caused large episodic outbreaks on 2 continents. Against this backdrop, this symposium brings together experts in the field application of *Wolbachia* to achieve either *Aedes aegypti* population suppression, or population replacement with *Wolbachia* infected mosquitoes. The overarching goals of these methods is to sustainably prevent arbovirus disease transmission in endemic countries. The session will update on the field deployment of *Wolbachia* across 1.2 million people in the city of Rio de Janeiro. This presentation will describe methods of engagement and mosquito deployment in highly marginalized urban communities (favelas). The symposium will provide an update on the measurement of the public health impact of the World Mosquito Programs deployments of *Wolbachia* in 5 disease endemic countries. Included in this update will be progress in a large randomized controlled cluster trial of WMP's *Wolbachia* method in Indonesia. The presentations will describe the deployment of *Wolbachia*-infected male mosquito releases for the suppression of the *Aedes albopictus* population numbers in China. The session

will describe the application of *Wolbachia*-infected male mosquito releases for the suppression of *Aedes albopictus* populations in the USA. The symposium will be of interest to a wide audience but particularly to those working in the field of public health, arbovirology and entomology.

#### CHAIR

Cameron Simmons  
*Monash University, Melbourne, Australia*

Sophie Yacoub  
*Oxford University Clinical Research Unit, Ho Chi Minh City, Vietnam*

4 p.m.  
**LARGE SCALE POPULATION SUPPRESSION OF AEADES AEGYPTI BY RELEASE OF WOLBACHIA INFECTED MALES**

Brad White  
*Verily Life Science, San Francisco, CA, United States*

4:20 p.m.  
**PROJECT WOLBACHIA – SINGAPORE: A NEW TOOL FOR THE CONTROL OF AEADES AEGYPTI IN SINGAPORE**

Cheong Huat Tan  
*National Environment Agency, Environmental Health Institute, Singapore, Singapore*

4:40 p.m.  
**CITY-WIDE DEPLOYMENT OF WOLBACHIA IN RIO DE JANEIRO FOR THE BIOCONTROL OF ARBOVIRAL DISEASES**

Luciano A. Moreira  
*Centro de Pesquisas René Rachou, Belo Horizonte-MG, Brazil*

5 p.m.  
**GROWING EVIDENCE THAT THE WORLD MOSQUITO PROGRAM'S WOLBACHIA METHOD REDUCES DENGUE TRANSMISSION**

Katherine Anders  
*World Mosquito Program, Clayton, Australia*

5:20 p.m.  
**DISCUSSION**

## Symposium 50

### **Building Leadership and Management Capacity to achieve the Sustainable Development Goals (SDGs) for Health**

*National Harbor 4/5 (National Harbor Level)*  
Thursday, November 21, 4 p.m. - 5:45 p.m.

Attention in global health is often focused on financing, the distribution of commodities and the development of innovative tools, but rarely on the people responsible for ensuring these resources reach everyone who needs them. There is a growing recognition that the billions spent on innovation and tools needs to be complemented by far larger investments in leadership and management (L&M) capacity. To put it simply, the Astana Declaration on Primary Health Care, Universal Health Coverage or the health-related Sustainable Development Goals cannot be achieved without visionary leadership and meticulous management. This symposium will explore four different approaches to building leadership and/or management capacity for health. The University of Global Health Equity (UGHE) in Rwanda stands alone in both its focus on equity and its proximity to health systems that face the



very challenges that students will grapple with in the classroom. UGHE is pioneering a new way of training leaders who will emerge ready to develop health care services and systems that connect neglected communities with essential—and life-saving—attention. At Stanford, the WLGHI's (Women Leaders in Global Health Initiative) mission is to unleash and elevate accomplished mid-career women leaders in global health. Addressing the fact that women are untapped and underutilized at leadership levels despite comprising 70% of the world's health workforce—will raise awareness, empower leaders and catalyze change by engaging both women and men through a portfolio of scaled interventions that includes a leadership journey for mid-career women, a curated digital platform, and global, regional and local convenings. At the University of Washington (UW), there is recognition that mid-career global public health professionals operate in a demanding and changing climate. They must initiate policies, hold healthcare providers accountable and build partnerships across a vast array of communities and stakeholders. The UW International Program in Public Health Leadership (IPPHL) teaches participants the skills of analysis, leadership, communication and persuasion that enable them to advance population health in this increasingly complex, resource-constrained environment. The Aspen Management Partnership for Health (AMP Health) works to improve health systems and outcomes by collaborating with governments to strengthen L&M capabilities through public-private partnership. AMP Health has a holistic team-based approach to training public health teams, which centers around embedding mid-level professionals with private sector L&M experience into Ministries of Health, where they work with their teams to develop the best practice processes and tools needed to deliver on their strategic priorities.

#### CHAIR

Robert D. Newman  
*The Aspen Institute, Washington, DC, United States*

4 p.m.

#### **THE ROLE OF GROWING EDUCATIONAL INSTITUTIONS TO CREATE THE HEALTH LEADERS OF TOMORROW**

Agnes Binagwaho  
*University of Global Health Equity, Butaro, Rwanda*

4:25 p.m.

#### **THE WOMEN LEADERS IN GLOBAL HEALTH INITIATIVE: BUILDING THE 21ST CENTURY LEADER**

Michele Barry  
*Stanford University, Stanford, CA, United States*

4:50 p.m.

#### **THE INTERNATIONAL PROGRAM IN PUBLIC HEALTH LEADERSHIP: A UNIVERSITY-BASED PARTNERSHIP FOR CAPACITY-BUILDING IN AFRICA**

Justin Marlowe  
*University of Washington, Seattle, WA, United States*

5:15 p.m.

#### **THE ASPEN MANAGEMENT PARTNERSHIP FOR HEALTH (AMP HEALTH): A HOLISTIC TEAM-BASED APPROACH TO BUILDING LEADERSHIP AND MANAGEMENT CAPACITY**

Robert D. Newman  
*The Aspen Institute, Washington, DC, United States*

## **Symposium 51**

### **Hookworm Infections in West Africa and Haiti: Challenges in Maintaining the Gains of Deworming in an Evolving NTD Landscape and Implications of New Guidelines for STH Programs**

*National Harbor 10 (National Harbor Level)*

Thursday, November 21, 4 p.m. - 5:45 p.m.

In developing countries, women of reproductive age (WRA) and children bear high burden of disease from soil-transmitted helminth (STH) infections. Hookworm infection is one of the main causes of anemia in tropical countries where pre-school children (Pre-SAC), school age children (SAC) and WRA are the three groups at highest risk for STH morbidity. In 2015, it was estimated that over 688,000,000 WRA were living in STH-endemic countries (Mufasoni et al). In 2018, the Report of the WHO Informal Consultation on Hookworm Infection and Anemia in Girls and Women was updated to focus specifically on WRA. The report outlined a set of recommendations and research priorities (the Belagio Declaration). Clear policy and guidance are essential to support country efforts to expand routine deworming of WRA, and recent WHO publications have provided the necessary policy framework. To expand treatment among WRA, new community-based strategies are required, with strategies tailored to reach each of the different subgroups of WRA (i.e., adolescent girls, pregnant women, lactating women, and non-pregnant and non-lactating women). Countries face challenges for STH programming in countries where the lymphatic filariasis platform has been used for the STH program but is now winding down. In Haiti it was also shown that important initiatives for deworming school-age children (e.g Tom Shoes project) did not follow through. Panelists from Togo, Benin, Haiti and Sierra Leone will discuss progress and challenges in addressing hookworm in the context of the latest recommendations, the need to adapt deworming strategies and implications for national policy. Representatives from WHO will discuss the highlights of the new WHO STH framework and how to advocate for countries as they adopt the new guidelines.

#### CO-CHAIRS

Achille M. Kabore  
*FHI360, Washington, DC, United States*

Pauline N. Mwinzi  
*Expanded Special Project for Elimination of NTDs - ESPEN - World Health Organization, Brazzaville, Republic of the Congo*

4 p.m.

#### **MISSED OPPORTUNITIES TO SUSTAIN THE CONTROL OF HOOKWORM AND OTHER SOIL TRANSMITTED HELMINTHS IN HAITI**

Abdel Direny  
*IMA World Health | Lutheran World Relief, Washington, DC, United States*

4:15 p.m.

#### **SUBDISTRICT STH SURVEYS IN TOGO – THE USEFULNESS OF GRANULAR DATA HIGHLIGHTING HOOKWORM INFECTION**

Monique Dorkenoo  
*Ministry of Health, Togo, Lome, Togo*



4:30 p.m.

### **COUNTRYWIDE PREVALENCE OF HOOKWORM INFECTION IN BENIN**

Moudachirou Ibikounlé

*University of Abomey-Calavi, Cotonou, Benin*

4:45 p.m.

### **SIGNIFICANT NATIONWIDE DECREASE OF HOOKWORM INFECTION IN SIERRA LEONE: WHAT DOES IT TAKE TO MAINTAIN THE GAINS?**

Mary E. Hodges

*Helen Keller International, Freetown, Sierra Leone*

5 p.m.

### **DISCUSSION**

## **Special Session 52**

### **Ponder to Probe: A Cosmopolitan Debate and Peer Networking Session**

*National Harbor 8 (National Harbor Level)*

Thursday, November 21, 5:45 p.m. - 7 p.m.

The ASTMH Committee on Global Health (ACGH) invites you to come “speak your mind” on contemporary global health issues! Peer networking is an essential skill needed to establish and advance your global health and tropical medicine career. Networking is needed at every stage of your career and the connections you establish with peers today can be the foundation of future employment, career advancement, key collaborations, successful grants and major scientific advances of tomorrow. This peer-to-peer networking event will center around an informal debate on current key topics of interest to the tropical medicine community, including current infectious disease threats, career challenges and other hot topics pertaining to those pursuing a career in the field of global health. The session will allow participants to present their views on 2-3 pre-determined topics elicited from ACGH members based on current events, field research, scientific discovery, career challenges and general inquiry. Participants will ponder over these issues, probe alternative views, and share ideas in a relaxed setting, while getting to know their peers. Topics discussed can become conversation starters for further networking after the session and throughout the remainder of the annual meeting. This session is recommended for students, early career professionals and experts so topics can be discussed from a range of various perspectives.

#### **CO-CHAIRS**

Koya C. Allen

*KCA Consulting, Brooklyn, NY, United States*

Latasha Allen

*Assistant Secretary for Preparedness and Response (ASPR), Washington, DC, United States*

Charlotte V. Hobbs

*University of Mississippi Medical Center, Jackson, MS, United States*

### **Ben Kean Fellowship Reception - By Invitation Only**

*Chesapeake 1 (Ballroom Level)*

Thursday, November 21, 5:45 p.m. - 7:15 p.m.

## **Plenary Session 53**

### **Plenary Session II: Fred L. Soper Lecture**

*Maryland D (Ballroom Level)*

Thursday, November 21, 6:15 p.m. - 7 p.m.



*Fred L. Soper*

The Fred L. Soper Lecture is an honor bestowed upon distinguished workers in environmental control or preventive medicine. Born in 1893, Dr. Soper received his MD from the University of Chicago and a doctorate in public health from Johns Hopkins University in 1925. He began his career working with the Rockefeller Foundation on hookworm control in Brazil.

Soper headed an international group that

did revolutionary work in research and control of yellow fever in South America, and eventually became director of the Pan American Health Organization. Dr. Soper died in 1977. The first Lecture was delivered by Thomas Weller in 1978, former president of ASTMH and winner of the 1954 Nobel Prize in Medicine or Physiology, in celebration of the 40th anniversary of the Gorgas Memorial Laboratory. The lecture is now a biannual event for ASTMH and focuses on a topic related to environmental control and preventive medicine.

#### **CHAIR**

Robert B. Tesh

*University of Texas Medical Branch, Galveston, TX, United States*

6:15 p.m.

### **FRED L. SOPER LECTURE: VACCINE AND NEGLECTED TROPICAL DISEASE: DIPLOMACY IN OUR ANTHROPOCENE EPOCH**



**Peter J. Hotez, MD, PhD,  
FASTMH**

*ASTMH Past President*

*Dean, National School of*

*Tropical Medicine*

*Professor, Departments of*

*Pediatrics and Molecular*

*Virology and Microbiology*

*Baylor College of Medicine*

*Co-Director, Texas Children's Center for Vaccine Development*

Peter J. Hotez, MD, PhD, FASTMH is Professor of Pediatrics and Molecular Virology and Microbiology, and Dean of the National School of Tropical Medicine at Baylor College of Medicine where he is also the Co-Director of the Texas Children's Center for Vaccine Development. Dr. Hotez is an internationally-recognized pediatrician-scientist in neglected tropical diseases and vaccine development. He obtained his bachelor's degree in molecular biophysics from Yale in 1980, followed by a PhD degree in biochemistry from Rockefeller University in 1986, and an MD from Weil Cornell Medical College in 1987. Professor Hotez has authored more than 450 original papers and is the author of three single author books including *Forgotten People, Forgotten Diseases*; *Blue Marble Health*; and *Vaccines Did Not Cause Rachel's Autism*. He is an elected member of the National Academy of Medicine and the American Academy of Arts & Sciences, and past President of ASTMH. In 2011 he received the

Abraham Horwitz Award from PAHO-WHO. In 2015-2016 he served as U.S. Science Envoy in the Obama Administration. In 2017 he was named by *FORTUNE Magazine* as one of the 34 most influential people in health care, while in 2018 he received the Sustained Leadership Award from Research!America.

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### **Sponsored Symposium**

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#### **Responses to Healthcare Challenges in Africa: Looking for Solutions to Reduce the Impact of High-Burden Diseases**

*National Harbor 2 (National Harbor Level)*  
Thursday, November 21, 7:15 p.m. – 9 p.m.

**Sponsored by Novartis Social Business**

See page 45 for information.

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### **Sponsored Symposium**

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#### **TDR: Strengthening Implementation Research Capacity to Accelerate Universal Health Coverage**

*National Harbor 11 (National Harbor Level)*  
Thursday, November 21, 7:15 p.m. – 9 p.m.

**Sponsored by TDR**

See page 45 for information.

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## **Friday, November 22**

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### **Registration**

*Potomac Ballroom Lobby (Ballroom Level)*  
Friday, November 22, 7 a.m. - 5 p.m.

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### **Speaker Ready Room**

*Chesapeake A (Ballroom Level)*  
Friday, November 22, 7 a.m. - 5 p.m.

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### **TropStop - Student/Trainee Lounge**

*Maryland 4/5/6 Foyer (Ballroom Level)*  
Friday, November 22, 7 a.m. - 5 p.m.

This casual setting, designed with students, trainees and residents in mind (coffee, internet), is your place for a break from the fast-pace of the meeting and relax with colleagues and friends. Check out the “Career Chats,” held next to the TropStop in Maryland 5/6. This will be your opportunity to meet professionals in the fields of tropical medicine and global health who will share their personal career paths and answer your questions about the various bumps and forks in the road.

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### **Meeting Sign-Up Room**

*Chesapeake 6 and Chesapeake 9 (Ballroom Level)*  
Friday, November 22, 7 a.m. - 10 p.m.

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### **Clinical Group (ACCTMTH) Past Presidents Meeting**

*Chesapeake 1 (Ballroom Level)*  
Friday, November 22, 7 a.m. - 8 a.m.

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### **AJTMH Editorial Board Meeting**

*National Harbor 6 (National Harbor Level)*  
Friday, November 22, 7 a.m. - 8 a.m.

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### **Trainee Member Committee Meeting**

*National Harbor 8 (National Harbor Level)*  
Friday, November 22, 7 a.m. - 8 a.m.

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### **Shope Fellowship Committee Meeting**

*Mezzanine 1 (Lobby Level)*  
Friday, November 22, 7 a.m. - 8 a.m.

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### **Press Room**

*Chesapeake 2 (Ballroom Level)*  
Friday, November 22, 7:45 a.m. - 5 p.m.

## Scientific Session 54

### Malaria Epidemiology I: Surveillance, Trends and Program Impact

Maryland B (Ballroom Level)

Friday, November 22, 8 a.m. - 9:45 a.m.

#### CHAIR

Peter D. McElroy

Centers for Disease Control and Prevention, Atlanta, GA, United States

Jeanne Rini Poespoprodjo

Universitas Gadjah Mada, Yogyakarta, Indonesia

8 a.m.

674

#### MALARIA MORBIDITY IN VENEZUELA 1995-2018: AN OBSERVATIONAL ANALYSIS OVER 1.7 MILLION CASES

Leopoldo Villegas<sup>1</sup>, Leonor Pocater<sup>2</sup>, Luis F. Chavez<sup>3</sup>, Jorge Moreno<sup>4</sup>, Elia Sanchez<sup>5</sup>, Melfran Herrera<sup>5</sup>, Angela Martinez<sup>6</sup>, Gustavo Bretas<sup>7</sup>, Anderson Martinez<sup>7</sup>, Maria M. Villegas<sup>7</sup>, Mary Ann Torres<sup>8</sup>, Maria E. Guevara<sup>7</sup>, Jose Oletta<sup>9</sup>

<sup>1</sup>ASOCIS, Tumeremo, Bolivar, Bolivarian Republic of Venezuela, <sup>2</sup>Universidad Central de Venezuela, Caracas, Bolivarian Republic of Venezuela, <sup>3</sup>INCIENSA, San Jose, Costa Rica, <sup>4</sup>Centro de Investigacion de Campo Dr. Francesco Vitanza, Tumeremo, Bolivar, Bolivarian Republic of Venezuela, <sup>5</sup>Fundasalud Sucre, Cumana, Bolivarian Republic of Venezuela, <sup>6</sup>Instituto de Salud Publica, Ciudad Bolivar, Bolivarian Republic of Venezuela, <sup>7</sup>Global Development One, Silver Spring, MD, United States, <sup>8</sup>International Council Of Aids Service Organizations (ICASO), Montreal, ON, Canada, <sup>9</sup>Alianza Venezolana por la Salud, Caracas, Bolivarian Republic of Venezuela

8:15 a.m.

675

#### ESTIMATING CONTRIBUTIONS TO MALARIA TRANSMISSION BY MEASURING INDIVIDUAL HUMAN-TO-MOSQUITO *PLASMODIUM FALCIPARUM* TRANSMISSION EVENTS IN A NATURAL SETTING USING PARASITE GENOTYPING AND LONGITUDINAL HOST SAMPLING

Kelsey M. Sumner<sup>1</sup>, Elizabeth Freedman<sup>2</sup>, Lucy Abel<sup>3</sup>, Andrew Obala<sup>3</sup>, Steven Meshnick<sup>1</sup>, Steven Taylor<sup>2</sup>, Wendy Prudhomme-O'Meara<sup>2</sup>

<sup>1</sup>University of North Carolina at Chapel Hill, Chapel Hill, NC, United States, <sup>2</sup>Duke University, Durham, NC, United States, <sup>3</sup>Moi University, Eldoret, Kenya

8:30 a.m.

676

#### PERFORMANCE OF A CASE-BASED MALARIA SURVEILLANCE SYSTEM TO SUPPORT MALARIA ELIMINATION IN HAITI

Wilmar Belizaire<sup>1</sup>, Reginald Joseph<sup>2</sup>, Samson Marseille<sup>3</sup>, Kenold Rendel<sup>3</sup>, Jean Frantz Lemoine<sup>4</sup>, Alyssa J. Young<sup>1</sup>

<sup>1</sup>Clinton Health Access Initiative, Boston, MA, United States, <sup>2</sup>Ministère de la santé publique et de la population, Jeremie, Haiti, <sup>3</sup>Direction d'Epidémiologie des Laboratoires et de la Recherche, Port-au-prince, Haiti, <sup>4</sup>Ministère de la santé publique et de la population, Port-au-prince, Haiti

8:45 a.m.

677

#### USE OF HEALTH FACILITY-BASED SEROLOGICAL SURVEILLANCE TO INVESTIGATE *P. FALCIPARUM* AND *P. VIVAX* TRANSMISSION DYNAMICS IN A PRE-ELIMINATION SETTING, INDONESIA

Henry Surendra<sup>1</sup>, Supargiyono Supargiyono<sup>2</sup>, Riris A. Ahmad<sup>3</sup>, Rizqiani A. Kusumasari<sup>2</sup>, Theodola B. Rahayujati<sup>4</sup>, Siska Damayanti<sup>4</sup>, Jackie Cook<sup>5</sup>, Chris Drakeley<sup>1</sup>

<sup>1</sup>Department of Immunology and Infection, London School of Hygiene & Tropical Medicine, London, United Kingdom, <sup>2</sup>Department of Parasitology, Faculty of Medicine-Public Health and Nursing, Universitas Gadjah Mada, Yogyakarta, Indonesia, <sup>3</sup>Department of Biostatistics, Epidemiology and Population Health, Faculty of Medicine-Public Health and Nursing, Universitas Gadjah Mada, Yogyakarta, Indonesia, <sup>4</sup>District Health Office of Kulon Progo, Wates, Indonesia, <sup>5</sup>MRC Tropical Epidemiology Group, Department of Infectious Disease Epidemiology, London School of Hygiene & Tropical Medicine, London, United Kingdom

9 a.m.

678

#### MALARIA MORBIDITY AND MORTALITY FOLLOWING INTRODUCTION OF A UNIVERSAL POLICY OF ARTEMISININ-BASED TREATMENT FOR MALARIA IN PAPUA, INDONESIA: A RISING BURDEN OF *P. VIVAX* MALARIA

Jeanne Rini Poespoprodjo<sup>1</sup>, Enny Kenangalem<sup>2</sup>, Nicholas Douglas<sup>3</sup>, Lenny Burdam<sup>2</sup>, Ketut Gdeumana<sup>4</sup>, Ferry Chalifien<sup>2</sup>, Pak Prayoga<sup>2</sup>, Fransiscus Thio<sup>2</sup>, Angela Devine<sup>3</sup>, Jutta Marfurt<sup>3</sup>, Govert Waramori<sup>4</sup>, Shunmay Yeung<sup>5</sup>, Rintis Noviyanti<sup>6</sup>, Pasi Penttinen<sup>4</sup>, Michael J. Bangs<sup>4</sup>, Paulus Sugiarto<sup>7</sup>, Julie A. Simpson<sup>8</sup>, Yati Soenarto<sup>1</sup>, Nicholas M. Anstey<sup>3</sup>, Ric N. Price<sup>3</sup>

<sup>1</sup>Universitas Gadjah Mada, Yogyakarta, Indonesia, <sup>2</sup>Papuan Health and Community Development Foundation, Timika, Indonesia, <sup>3</sup>Menzies School of Health Research, Darwin, Australia, <sup>4</sup>PT Freeport Indonesia/International SOS, Timika, Indonesia, <sup>5</sup>The London School of Hygiene & Tropical Medicine, London, United Kingdom, <sup>6</sup>Eijkman Institute for Molecular Biology, Jakarta, Indonesia, <sup>7</sup>Rumah Sakit Mitra Masyarakarat, Timika, Indonesia, <sup>8</sup>University of Melbourne, Melbourne, Australia

9:15 a.m.

679

#### THE EPIDEMIOLOGY OF *P. VIVAX* AMONG ADULTS IN THE DEMOCRATIC REPUBLIC OF THE CONGO

Nicholas F. Brazeau<sup>1</sup>, Cedar Mitchell<sup>2</sup>, Molly Deutsch-Feldman<sup>2</sup>, OJ Watson<sup>3</sup>, Andrew Morgan<sup>1</sup>, Cory Keeler<sup>4</sup>, Kyaw Thwai<sup>2</sup>, Melchior Mwandagalirwa<sup>5</sup>, Antoinette Tshetu<sup>6</sup>, Joris Likwela<sup>8</sup>, Robert Verity<sup>3</sup>, Steven Meshnick<sup>2</sup>, Jonathan Juliano<sup>1</sup>

<sup>1</sup>University of North Carolina School of Medicine, Chapel Hill, NC, United States, <sup>2</sup>Gillings School of Global Public Health, Chapel Hill, NC, United States, <sup>3</sup>Imperial College London, London, United Kingdom, <sup>4</sup>Department of Geography, University of North Carolina, Chapel Hill, NC, United States, <sup>5</sup>Programme National de la Lutte contre le Paludisme, Kinshasa, Democratic Republic of the Congo, <sup>6</sup>Kinshasa School of Public Health, Kinshasa, Democratic Republic of the Congo

9:30 a.m.

680

#### TRENDS IN OUTPATIENT MALARIA CASES AND THE EFFECTS OF MALARIA CONTROL IN THE DEMOCRATIC REPUBLIC OF THE CONGO

Filippo Lechthaler<sup>1</sup>, Barbara Matthys<sup>2</sup>, Giulia Lechthaler-Felber<sup>2</sup>, Joris Losimba Likwela<sup>3</sup>, Hypolite Muhindo Mavoko<sup>4</sup>, Junior Matangila Rika<sup>4</sup>, Meschac Mutombo Mutombo<sup>2</sup>, Laura Ruckstuhl<sup>2</sup>, Joanna Barczyk<sup>2</sup>, Estifanos Shargie<sup>5</sup>, Helen Prytherch<sup>2</sup>, Christian Lengeler<sup>2</sup>

<sup>1</sup>Bern University of Applied Sciences, Bern, Switzerland, <sup>2</sup>Swiss Tropical and Public Health Institute, Basel, Switzerland, <sup>3</sup>Soins de Santé en Milieu Rural (non-profit organization SANRU), Kinshasa, Democratic Republic of the Congo, <sup>4</sup>University of Kinshasa, Kinshasa, Democratic Republic of the Congo, <sup>5</sup>The Global Fund to Fight AIDS, Tuberculosis and Malaria, Geneva, Switzerland

## Symposium 55

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### Routine Data for Decision-Making: Driving Progress in Malaria Control

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Maryland C (Ballroom Level)

Friday, November 22, 8 a.m. - 9:45 a.m.

The Global Technical Strategy for Malaria 2016–2030 (GTS) calls for reducing malaria cases and deaths by at least 40% by 2020, at least 75% by 2025 and at least 90% by 2030. At the current pace of progress, these targets are unlikely to be achieved. To catalyze progress, WHO recently launched the “High Burden, High Impact” strategy, calling on the eleven countries with highest burden to prioritize malaria. A key component of this new strategy is the use of data to optimize deployment of malaria control interventions for maximal impact, and an increased focus on obtaining quality surveillance data. Currently, the World Malaria Report uses models to estimate the number of malaria cases and deaths in the highest burden countries due to limitations in routine health information systems in these countries and because many countries face data quality challenges that limit data use. Improving data systems to enable the direct use of surveillance data is critical to making progress in malaria control scale-up and maintenance of high coverage, and represents Pillar 3 of the GTS. Routine data have the potential to provide more granular and timely information and, ultimately, to inform local and national decision-making. Yet, development and sharing of local, national and regional systems and protocols for data use to action is a critical gap in many malaria endemic countries. This session will highlight innovative initiatives across diverse settings to use routine data for decision-making. This includes presentations from two of the high burden, high impact countries: responding to apparent hotspots (Mozambique) and using data and data visualization through dashboards for stratification and targeting of interventions (Tanzania). Experiences from Zambia with data use for decision-making and lessons learned during adaptation of surveillance systems from elimination areas to higher burden areas will be presented as an example for other countries. In addition, an initiative from Tanzania that uses data collected from pregnant women attending antenatal care to monitor parasite prevalence will be presented, and the potential uses of these data for real-time surveillance and monitoring will be discussed. Finally, the chairs will engage the audience in a discussion of what it takes to implement these systems. This discussion will allow additional countries to share their experiences with the use of data for real-time decision-making to provide opportunities for peer learning.

#### CHAIR

Julie R. Gutman

Centers for Disease Control and Prevention, Atlanta, GA, United States

Richard Steketee

President’s Malaria Initiative, Washington, DC, United States

8 a.m.

#### **RAPID ASSESSMENT OF MALARIA HOT SPOTS, MOZAMBIQUE**

Rose Zulliger

U.S. Centers for Disease Control and Prevention, Maputo, Mozambique

8:20 a.m.

#### **DATA FOR STRATIFICATION AND TARGETING OF MALARIA CONTROL INTERVENTIONS**

Frank Chacky

Tanzania MoH; National Malaria Control Programme, Dar es Salaam, United Republic of Tanzania

8:40 a.m.

#### **DATA FOR DECISION-MAKING—ADAPTING LESSONS LEARNED FROM ELIMINATION SETTINGS TO HIGH BURDEN AREAS**

Busiku Hamainza

National Malaria Elimination Centre, Lusaka, Zambia

9 a.m.

#### **THE USE OF DATA FROM ANTENATAL CLINICS AS AN ADJUNCT FOR SURVEILLANCE**

Chonge A. Kitojo

President’s Malaria Initiative, U.S. Agency for International Development, Dar es salaam, United Republic of Tanzania

9:20 a.m.

#### **DISCUSSION**

## Symposium 56

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### The 17th Annual American Committee of Molecular, Cellular and Immunoparasitology (ACMCIP) Symposium: This is Your Brain on Parasites: Neuropathology of Parasitic Infections

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Maryland D (Ballroom Level)

Friday, November 22, 8 a.m. - 9:45 a.m.

#### **Supported with funding from the Burroughs Wellcome Fund**

Many parasites pathogenic to humans are able to invade the central nervous system and/or the cerebral microvasculature, resulting in significant neurological morbidity. Several reports show that these infections result in damage to the cerebral endothelia, breach of the blood-brain barrier, neuroinflammation and neural cell injury. The ensuing inflammatory responses can further potentiate the damage induced by these parasites. This symposium seeks to highlight ground-breaking research into the potential mechanisms of vascular damage and neural cell injury of neurotropic parasitic infections. In keeping with the breadth of parasitology covered by ACMCIP, the symposium will cover a range of significant species known to cause CNS injury, including *Toxoplasma gondii*, which can cause severe fatal meningoencephalitis upon reactivation in immunocompromised hosts; *Tinea solium*, the causative agent of neurocysticercosis; and *Plasmodium falciparum*, which can result in cerebral malaria in select vulnerable populations. The symposium will also highlight the encephalopathy and other adverse clinical outcomes of these neurotropic parasites.

#### CHAIR

Mahalia S. Desruisseaux

Yale School of Medicine, New Haven, CT, United States

Michael Ferdig

University of Notre Dame, Notre Dame, IN, United States



8 a.m.  
**HOST IMMUNE RESPONSE: THE KEY TO CLINICAL PRESENTATION AND MANAGEMENT OF CNS PARASITIC INFECTIONS**

Christina Coyle  
*Jacobi Medical Center, Bronx, NY, United States*

8:20 a.m.  
**THE TOXOPLASMA-NEURON INTERFACE: CHALLENGING OUR UNDERSTANDING OF NEURON CAPABILITIES**

Anita Koshy  
*The University of Arizona, Tucson, AZ, United States*

8:40 a.m.  
**CNS CONSEQUENCES OF *TAENIA SOLIUM* NEUROCYSTICERCOSIS INFECTION**

Hector H. Garcia  
*Universidad Peruana Cayetano Heredia, Lima, Peru*

9 a.m.  
**REDEFINING NEUROTROPISM: HOW VASCULOPATHY LEADS TO BRAIN INJURY DURING CEREBRAL MALARIA**

Mahalia S. Desruisseaux  
*Yale School of Medicine, New Haven, CT, United States*

9:20 a.m.  
**ACMCIP ANNUAL BUSINESS MEETING**

Michael Ferdig  
*University of Notre Dame, Notre Dame, IN, United States*

## Symposium 57

### **American Committee on Arthropod-Borne Viruses (ACAV) Symposium I: ACAV Business Meeting, Award Presentations and Research Presentations by Award Recipients**

*Potomac A (Ballroom Level)*  
Friday, November 22, 8 a.m. - 9:45 a.m.

The American Committee on Arthropod-Borne Viruses provides a forum for exchange of information among people interested in arbovirus research. This session will include the ACAV business meeting, award presentations and research presentations by ACAV award recipients. These presenters will describe their research on arbovirology and emerging diseases. The session will end with an informal reception designed to encourage new members of our community to interact with fellow arbovirologists and become involved in the ACAV subgroup.

#### CHAIR

Lark Coffey  
*University of California Davis, Davis, CA, United States*

David Morens  
*National Institutes of Health, Bethesda, MD, United States*

8 a.m.  
**AWARDS AND ACAV ANNUAL BUSINESS MEETING, OUTBREAK REPORTS**

Lark L. Coffey  
*University of California Davis, Davis, CA, United States*

8:40 a.m.  
**ESTABLISHING CRISPR-BASED DIAGNOSTICS FOR ARBOVIRUSES IN HONDURAS**

Cameron Myhrvold  
*Harvard University, Boston, MA, United States*

8:50 a.m.  
**ACAV STUDENT TRAVEL AWARD RECIPIENT LIGHTNING TALKS**

9:20 a.m.  
**NETWORKING AND SOCIAL TIME**

Lark Coffey  
*University of California Davis, Davis, CA, United States*

## Symposium 58

### **High Throughput Malaria Sero-Epidemiology – Development, Utility and Insights from Examples across the Globe**

*Potomac C (Ballroom Level)*  
Friday, November 22, 8 a.m. - 9:45 a.m.

Antibody responses to *Plasmodium* species infections correlate with the development of immunity but are complex to understand and interpret. Although historically limited to single-plex ELISAs, multiplex bead assays and protein / peptide microarrays have dramatically increased experimental throughput in characterizing antibody responses. The latter have enabled investigators to assess proteome-wide immune responses in experimental settings such as controlled human malaria infection and whole sporozoite vaccination of malaria naïve volunteers. Antibody responses to natural infections are more complex due to varied infection histories, nevertheless population level assessment of immunity for determining disease prevalence and informing public health interventions is now becoming attainable. Once generated, these rich datasets can allow for a more complete picture of an individual or population infection history and can be modelled for more robust temporal and geospatial outputs. Serological responses can thus be used as tools to estimate exposure intensity and detect recent exposure. This symposium aims to highlight the latest advances in multiplex serological assays, including their development, implementation, interpretation and application to control efforts using examples from around the world and with different *Plasmodium* species.

#### CHAIR

Andrea A. Berry  
*University of Maryland School of Medicine, Baltimore, MD, United States*

Daniel Bridges  
*PATH, Lusaka, Zambia*

8 a.m.  
**SEROSURVEILLANCE TOOLS TO ESTIMATE EXPOSURE INTENSITY AND DETECT RECENT EXPOSURE**

Kevin Tetteh  
*London School of Hygiene & Tropical Medicine, London, United Kingdom*



8:15 a.m.

**SEROLOGICAL PROFILING OF CONTROLLED HUMAN MALARIA INFECTION IN MALARIA NAÏVE VOLUNTEERS AS A CASE STUDY OF FIRST MALARIA INFECTIONS**

Andrea A. Berry

*University of Maryland School of Medicine, Baltimore, MD, United States*

8:30 a.m.

**DISTINCT ANTIBODY SIGNATURES ASSOCIATED WITH DIFFERENT MALARIA TRANSMISSION INTENSITIES IN ZAMBIA AND ZIMBABWE**

Tamaki Kobayashi

*Johns Hopkins Bloomberg School of Public Health, Baltimore, MD, United States*

8:45 a.m.

**DEPLOYMENT AND APPLICATIONS OF SERO-EPIDEMIOLOGY WITH EXAMPLES FROM HAITI**

Eric Rogier

*Centers for Disease Control and Prevention, Berkeley Lake, GA, United States*

9:05 a.m.

**DEVELOPMENT, VALIDATION, AND APPLICATION OF SEROLOGICAL MARKERS FOR DETECTING RECENT EXPOSURE TO *P. VIVAX* INFECTIONS IN SOUTHEAST ASIA**

Ivo Mueller

*Walter and Eliza Hall Institute of Medical Research, Parkville, VIC, Australia*

9:25 a.m.

**DISCUSSION**

**Symposium 59**

**A Cross-Disease, Multi-Disciplinary Assessment of Surveillance Systems for Neglected Tropical Diseases After Elimination Has Been Achieved: From Laboratory Diagnostics to Systems Approaches**

*Potomac D (Ballroom Level)*

Friday, November 22, 8 a.m. - 9:45 a.m.

Eradication and elimination of diseases is an inspiring goal, smallpox, got there, now a few other diseases are close. As we reach the end of the journey we are in uncharted territory – which requires early detection of now rare new cases. Multi-disciplinary science is needed to lead the development of new and appropriate diagnostics, delivery platforms, and management systems. Three neglected tropical diseases (NTDs) that are aiming for elimination have made significant progress - twelve trachoma endemic countries, 14 lymphatic filariasis (LF) endemic countries and four onchocerciasis endemic countries, have attained elimination targets set by WHO. That means infection or disease has been measured and found to be below a set low level. But elimination is not eradication and this status is potentially reversible. Therefore, post-elimination surveillance systems are required to indicate when the disease or infection has recrudesced above defined thresholds or has reappeared, to inform appropriate public health response. The WHO has established standard operating procedures that guide country programs to prepare dossiers for the validation of elimination for both trachoma and LF. In these dossiers, countries are required to provide plans for post-validation surveillance to enable detection of recrudescence of the disease. However,

the uptake of post-validation surveillance has been limited. This symposium discusses the need for diagnostic tests, delivery platforms and management systems to support diseases after achieving elimination status, presenting new potential 'game changing' options. Current status of the development of new diagnostics for trachoma (pgp3 antibody test), LF (filarial antigen tests) and onchocerciasis (Ov16 recombinant antibody test) will be presented, along with results of recent laboratory and field testing. Results of more than thirty years of surveillance for trachoma in the Sultanate of Oman using a school and health-care based surveillance system will be shown. A conceptual framework to support early planning in countries to ensure that post-validation systems are established by the time a country achieves elimination will be proposed for testing. Finally, an analysis of lessons learned from establishing surveillance systems for the global Guinea worm eradication programs will be presented.

**CHAIR**

Jeremiah M. Ngondi

*RTI International, Washington, DC, United States*

Aryc W. Mosher

*U.S. Agency for International Development, Washington, DC, United States*

8 a.m.

**OPTIMIZING DIAGNOSTICS FOR NEGLECTED TROPICAL DISEASES SURVEILLANCE AFTER ATTAINMENT OF ELIMINATION**

Katie Gass

*Task Force for Global Health, Atlanta, GA, United States*

8:20 a.m.

**SYSTEMS THINKING: A CONCEPTUAL FRAMEWORK FOR EARLY EARLY DETECTION AND MEASURING RECRUDESCENCE OF TRACHOMA**

Aryc W. Mosher

*U.S. Agency for International Development, Washington, DC, United States*

8:40 a.m.

**ASSESSMENT OF A LONG RUNNING SCHOOL AND HEALTH FACILITY-BASED SURVEILLANCE MODEL FOR TRACHOMA IN THE SULTANATE OF OMAN**

Saleh Al-Harbi

*Ministry of Health, Muscat, Oman*

9 a.m.

**ONE SIZE DOES NOT FIT ALL: SYSTEMS, SUCCESSES, CHALLENGES AND LESSONS LEARNED FROM GLOBAL GUINEA WORM ERADICATION SURVEILLANCE**

Adam Weiss

*The Carter Center, Atlanta, GA, United States*

9:20 a.m.

**DISCUSSION**

## Symposium 60

### Intersection of Advocacy, Policy and Social Media: A Washington, DC, Primer

National Harbor 2 (National Harbor Level)  
Friday, November 22, 8 a.m. - 9:45 a.m.

Every day, research, program, funding and policy decisions are being made at the U.S. federal level. Whether you realize it or not, you are impacted by these decisions. In these fiscally challenging times, where science is under threat by some quarters, scientists need to be engaged. The overwhelming majority of these decision-makers are not scientists or health professionals and as a result, they look at these issues through lenses very different than yours. And as a whole, the research community is late in thinking and acting like constituents. What are the Top 10 Things you need to know about U.S. government funding for the issues that ASTMH cares so deeply about? Who are the key actors? How best to use best social media platforms like Twitter to inform others about the value of tropical medicine and global health overall, including your own efforts? How do you convey the value of your work to those who play a role in increasing or cutting support for the work you do every day? Talking longer or offering more data points is a surefire way to hasten the end of a meeting with policymakers and staffers. So, what are the Do's and Don'ts? Learn how to connect with policymakers or even your family and friends who likely don't really know what you do (whose fault is that?). Listen to the experienced perspectives from the ASTMH President, the CEO, ASTMH's PR firm and its Washington, DC-based lobbyist.

#### CHAIR

Karen A. Goraleski  
*American Society of Tropical Medicine and Hygiene, Arlington, VA, United States*

8 a.m.

#### ADVOCATING FOR R&D FUNDING - THE WHO, WHAT, WHERE, WHY AND HOW

Jodie Curtis  
*The District Policy Group, Washington, DC, United States*

8:20 a.m.

#### ADVOCATING FOR GLOBAL HEALTH R&D RULE #1: AVOID SCIENCE SPEAK

Karen A. Goraleski  
*American Society of Tropical Medicine and Hygiene, Arlington, VA, United States*

8:40 a.m.

#### USING SOCIAL MEDIA STRATEGICALLY AND EFFECTIVELY

Gideon Hertz  
*Burness, Bethesda, MD, United States*

9 a.m.

#### ADVOCACY: THE NEXT STEP IN HAVING AN IMPACT AS A GLOBAL HEALTH RESEARCHER OR CLINICIAN

Chandy C. John  
*Indiana University School of Medicine, Indianapolis, IN, United States*

9:20 a.m.

#### DISCUSSION

## Scientific Session 61

### Arthropods: Other Arthropods

National Harbor 3 (National Harbor Level)  
Friday, November 22, 8 a.m. - 9:45 a.m.

#### CHAIR

Deepani Darshika Fernando  
*University of Peradeniya, Peradeniya, Sri Lanka*  
Jean Baptiste Rayaisse  
*CIRDES, Bobo - Dioulasso, Burkina Faso*

8 a.m.

681

#### INTEGRATING GENETIC AND ENVIRONMENTAL DATA TO MODEL TRANSMISSION PARAMETERS (MOVEMENT AND HABITAT USE) IN THE MAJOR INSECT VECTOR OF SLEEPING SICKNESS IN UGANDA (*GLOSSINA FUSCIPES*)

Norah Saarmán, Evelyn Pless, Anusha Bishop, Giuseppe Amatulli, Adalgisa Caccone  
*Yale University, New Haven, CT, United States*

8:15 a.m.

682

#### MUTUALISTIC BACTERIA-PROVISIONED RESOURCES IMPACT VECTOR COMPETENCY

Brian L. Weiss<sup>1</sup>, Rita Rio<sup>2</sup>  
*<sup>1</sup>Yale School of Public Health, New Haven, CT, United States, <sup>2</sup>Department of Biology, West Virginia University, Morgantown, WV, United States*

8:30 a.m.

683

#### PARATRANSGENIC MANIPULATION OF MICRORNA275 IN THE TSETSE FLY AND ITS DOWNSTREAM EFFECT ON TRYPANOSOME INFECTIONS

Liu Yang, Brian Weiss, Serap Aksoy  
*Yale University, New Haven, CT, United States*

8:45 a.m.

684

#### TSETSE CONTROL IN G-HAT FOCI: FOR HOW LONG AND HOW TO STOP?

Jean Baptiste Rayaisse<sup>1</sup>, Inaki Tirados<sup>2</sup>, Dramane Kaba<sup>3</sup>, Mahamat Hissène Mahamat<sup>4</sup>, Moise Kagbadouno<sup>5</sup>, Albert Mugenyi<sup>6</sup>, Mallaye Peka<sup>7</sup>, Fabrice Courtin<sup>8</sup>, Mamadou Camara<sup>9</sup>, Philippe Solano<sup>9</sup>  
*<sup>1</sup>CIRDES, Bobo - Dioulasso, Burkina Faso, <sup>2</sup>Liverpool School of Tropical Medicine, Liverpool, United Kingdom, <sup>3</sup>IPR, Bouaké, Côte D'Ivoire, <sup>4</sup>IREC, Ndjaména, Chad, <sup>5</sup>PNLTHA, Conakry, Guinea, <sup>6</sup>COCTU, Kampala, Uganda, <sup>7</sup>PNLTHA, Moundou, Chad, <sup>8</sup>IRD, Bouaké, Côte D'Ivoire, <sup>9</sup>IRD, Montpellier, France*

9 a.m.

685

#### AMBLYOMMA VARIEGATUM, VECTOR OF AFRICAN TICK-BITE FEVER, CONTAINS AN INTEGRATED RICKETTSIA AFRICAE CHROMOSOME IN ITS NUCLEAR GENOME

Alistair C. Darby<sup>1</sup>, Alaa M. Al-Khafaji<sup>1</sup>, Mark Whitehead<sup>1</sup>, Catherine S. Hartley<sup>1</sup>, Glen Robinson<sup>1</sup>, Stuart D. Armstrong<sup>1</sup>, Aleksandra Y. Beliavskaia<sup>1</sup>, Germanus S. Bah<sup>2</sup>, Naftaly Githaka<sup>3</sup>, Lesley Bell-Sakyi<sup>1</sup>, Ben Makepeace<sup>1</sup>  
*<sup>1</sup>University of Liverpool, Liverpool, United Kingdom, <sup>2</sup>Institut de Recherche Agricole pour le Développement, Ngaoundéré, Cameroon, <sup>3</sup>International Livestock Research Institute, Nairobi, Kenya*

#### (ACMCIP Abstract)

9:15 a.m.

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### A NOVEL GROUP OF SCABIES MITE INACTIVE CYSTEINE PROTEASES WITH PRO-COAGULATORY FUNCTIONS

Deepani D. Fernando<sup>1</sup>, Simone Renolds<sup>2</sup>, Gunter Hartel<sup>2</sup>, Bernard Cribier<sup>3</sup>, Nicolas Ortonne<sup>4</sup>, Katja Fischer<sup>2</sup>

<sup>1</sup>Faculty of Veterinary Medicine and Animal Science, University of Peradeniya, Peradeniya, Sri Lanka, <sup>2</sup>QIMR Berghofer Medical Research Institute, Brisbane, Australia, <sup>3</sup>Universite de Strasbourg Faculte de Medecine, Strasbourg, France, <sup>4</sup>CHU Henri Mondor, Service d'Anatomo-Pathologie, Paris, France

(ACMCIP Abstract)

9:30 a.m.

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### RHODNIUS ECUADORIENSIS POPULATION GENOMICS IN SOUTHERN ECUADOR FOR GUIDING VECTOR CONTROL PROGRAMS

Luis E. Hernandez Castro<sup>1</sup>, Anita G. Villacis<sup>2</sup>, Björn Andersson<sup>3</sup>, Jaime A. Costales<sup>2</sup>, Sofia Ocaña-Mayorga<sup>2</sup>, Erin L. Landguth<sup>4</sup>, Cesar A. Yumiseva<sup>2</sup>, Mario J. Grijalva<sup>2</sup>, Martin S. Llewellyn<sup>1</sup>

<sup>1</sup>University of Glasgow, Glasgow, United Kingdom, <sup>2</sup>Pontifical Catholic University in Ecuador, Quito, Ecuador, <sup>3</sup>Karolinska Institutet, Stockholm, Sweden, <sup>4</sup>University of Montana, Missoula, MT, United States

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## Symposium 62

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### Novel Typhoid Surveillance Methods

National Harbor 4/5 (National Harbor Level)

Friday, November 22, 8 a.m. - 9:45 a.m.

Enteric fever, a bacterial infection caused by *Salmonella serovar Typhi* or *Paratyphi* type A, B, or C, is a significant cause of preventable morbidity and mortality in low- and middle-income countries. Typhoid alone affects nearly 12 million people, mostly occurring among populations that lack access to safe water, sanitation and hygiene infrastructure. The recent availability of the typhoid conjugate vaccine (TCV) offers great promise in reducing the burden of typhoid; however, there is a need for more robust country and population-specific evidence to inform decision-making on vaccine introduction. Passive, clinic-based case detection underestimates typhoid incidence, both due to a sub-optimal diagnostic standard (blood culture to detect *Salmonella* bacteria) and barriers to health care utilization. Consequently, the cases presenting to a health facility likely represent only a fraction of the true burden of illness, making it difficult to accurately estimate the potential impact of TCV introduction. There is an urgent need for low-cost tools enabling rapid surveys to measure typhoid burden for effective targeting of TCV introduction. Sero-epidemiology and environmental surveillance represent two potential alternative approaches to blood culture-dependent methods to detect where, how frequently, and in whom typhoid cases are occurring in the community. This session will describe work in several African and Asian contexts to evaluate new approaches to assessing the burden of typhoid using serological markers of *S. Typhi* and *Paratyphi* infection and molecular-based detection of *S. Typhi/Paratyphi* DNA in environmental sources. The speakers will present on work arising out of the Surveillance for Enteric Fever in Asia Project (SEAP) in Bangladesh, Nepal and Pakistan, the Strategic Typhoid alliance across Africa and Asia (STRATAA) Study in Malawi, Bangladesh and Nepal, and a longitudinal study of typhoid fever transmission in Kenya. The presenters will describe the measurement of sero-prevalence, sero-conversion and sero-reversion (waning) of antibody

responses in high- and low-typhoid-burden communities and detection of *S. Typhi* in household sewage-impacted drainage streams and drinking water using both traditional, culture-based methods and new, advanced molecular-based methods. Finally, methodological work to develop uniform standards for quality assurance and quality control across environmental surveillance projects will be presented with the aim of helping researchers confidently assess the performance of their surveillance activities.

### CHAIR

Denise Garrett  
Sabin Vaccine Institute, Washington, DC, United States

Stephen Luby  
Stanford University, Stanford, CA, United States

8 a.m.

### NEW SEROLOGICAL APPROACHES FOR ESTIMATING COMMUNITY BURDEN OF TYPHOID

Jason R. Andrews  
Stanford University School of Medicine, Stanford, CA, United States

8:15 a.m.

### MEASURING THE SERO-INCIDENCE OF ENTERIC FEVER

Stephen Baker  
Oxford University Clinical Research Unit, Ho Chi Minh City, Vietnam

8:30 a.m.

### A STANDARDIZED APPROACH FOR THE PERFORMANCE ASSESSMENT OF DIFFERENT ENVIRONMENTAL SURVEILLANCE METHODS FOR *S. TYPHI*

John Scott Meschke  
University of Washington, Seattle, WA, United States

8:45 a.m.

### DEVELOPMENT AND APPLICATION OF METHODS TO DETECT *S. TYPHI* IN WATER AND SEWAGE-IMPACTED DRAINAGE SAMPLES IN AN URBAN INFORMAL SETTLEMENT IN KENYA

Jennifer Murphy  
Centers for Disease Control and Prevention, Atlanta, GA, United States

9 a.m.

### PCR-BASED ENTERIC FEVER SURVEILLANCE TOOL: A NEW APPROACH TO DIFFERENTIATE HIGH AND LOW ENDEMIC REGIONS

Md. Saiful Islam Sajib  
Child Health Research Foundation, Dhaka, Bangladesh

9:15 a.m.

### DISCUSSION

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## Scientific Session 63

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### Schistosomiasis and Other Trematodes: Diagnosis and Treatment

National Harbor 10 (National Harbor Level)

Friday, November 22, 8 a.m. - 9:45 a.m.

### CHAIR

Amanda Ruiz  
Brown University, Providence, RI, United States

8 a.m.

688

### **THE GENETIC BASIS OF PRAZIQUANTEL RESISTANCE IN SCHISTOSOMA MANSONI**

Winka Le Clec'h<sup>1</sup>, Frederic D. Chevalier<sup>1</sup>, Marina McDew-White<sup>1</sup>, Robbie Diaz<sup>1</sup>, Amanda Strickland<sup>1</sup>, Meghan Guzman<sup>2</sup>, Ana Carolina de Mattos<sup>2</sup>, Philip T. LoVerde<sup>2</sup>, **Tim Anderson**<sup>1</sup>

<sup>1</sup>Texas Biomedical Research Institute, San Antonio, TX, United States, <sup>2</sup>University of Texas Health, San Antonio, TX, United States

8:15 a.m.

689

### **CAN CIRCULATING ANTIGENS BE PREDICTORS FOR FEMALE GENITAL SCHISTOSOMIASIS AS DIAGNOSED BY EXPERT REVIEW AND COMPUTER AUTOMATED IMAGE ANALYSIS**

Sigve Holmen<sup>1</sup>, Eyrun Kjetland<sup>2</sup>, Bellington Vwalika<sup>3</sup>, Isaiah Hansingo<sup>4</sup>, Comfort Rutty Phiri<sup>5</sup>, Maina Mudenda<sup>6</sup>, Joyce Mapandi<sup>6</sup>, Govert Van Dam<sup>7</sup>, Paul Corstjens<sup>7</sup>, Claudia de Dood<sup>7</sup>, Emily Webb<sup>8</sup>, Amy Sturt<sup>9</sup>, **Amaya Lopez Bustinduy**<sup>8</sup>

<sup>1</sup>Holmen Innovative Solutions, Oslo, Norway, <sup>2</sup>University of Oslo, Oslo, Norway, <sup>3</sup>University of Zambia, School of Medicine, Lusaka, Zambia, <sup>4</sup>Livingstone Central Hospital, Livingstone, Zambia, <sup>5</sup>Zambart, Lusaka, Zambia, <sup>6</sup>Livingstone Central Hospital, Lusaka, Zambia, <sup>7</sup>Leiden University Medical Center, Leiden, Netherlands, <sup>8</sup>London School of Hygiene & Tropical Medicine, London, United Kingdom

8:30 a.m.

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### **TREATMENT OUTCOMES OF FASCIOLA HEPATICA INFECTION IN PRE SCHOOL AND SCHOOL AGE CHILDREN IN CUSCO, PERU**

**Melinda B. Tanabe**<sup>1</sup>, Camille M. Webb<sup>1</sup>, Maria L. Morales<sup>2</sup>, Marta Lopez<sup>3</sup>, Miguel M. Cabada<sup>1</sup>

<sup>1</sup>University of Texas Medical Branch, Galveston, TX, United States, <sup>2</sup>IMT - Universidad Peruana Cayetano Heredia, Cusco, Peru, <sup>3</sup>IMT - Universidad Peruana Cayetano Heredia, Galveston, TX, United States

8:45 a.m.

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### **POC-CCA PERFORMANCE FOR MAPPING LOW AND MODERATE ENDEMICITY AREAS FOR SCHISTOSOMIASIS MANSONI AND THERAPEUTIC EFFICACY EVALUATION FOLLOWING SCHOOL-BASED PRAZIQUANTEL ADMINISTRATION (60MG/KG) IN BRAZIL**

**Agostinho Gonçalves Viana**<sup>1</sup>, Pedro Henrique Gazzinelli-Guimarães<sup>2</sup>, Vanessa Normandio de Castro<sup>1</sup>, Yvanna Louise Oliveira<sup>3</sup>, Lilian Lacerda Bueno<sup>1</sup>, Stefan Michael Geiger<sup>1</sup>, Silvio Santana Dolabella<sup>3</sup>, Anna Phillips<sup>4</sup>, Ricardo Toshio Fujiwara<sup>1</sup>

<sup>1</sup>Universidade Federal de Minas Gerais, Belo Horizonte, Brazil, <sup>2</sup>Laboratory of Parasitic Diseases, National Institute of Allergy and Infectious Diseases, National Institutes of Health, EUA, Bethesda, MD, United States, <sup>3</sup>Universidade Federal de Sergipe, Aracaju, Brazil, <sup>4</sup>Imperial College London, London, United Kingdom

9 a.m.

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### **VALIDATION OF HOME-BASED GENITAL SELF-SWABS FOR THE DIAGNOSIS OF FEMALE GENITAL SCHISTOSOMIASIS IN ZAMBIAN WOMEN FROM AN HIV-1 PREVENTION TRIAL**

**Amy Sturt**<sup>1</sup>, Comfort Rutty Phiri<sup>2</sup>, Emily Webb<sup>1</sup>, Isaiah Hansingo<sup>3</sup>, Lisette Van Lieshout<sup>4</sup>, Paul Corstjens<sup>4</sup>, Govert Van Dam<sup>4</sup>, Claudia de Dood<sup>4</sup>, J. Russell Stothard<sup>5</sup>, Richard Hayes<sup>6</sup>, Helen Ayles<sup>6</sup>, Amaya L. Bustinduy<sup>6</sup>

<sup>1</sup>London School of Hygiene & Tropical Medicine, London, United Kingdom, <sup>2</sup>Zambart, Lusaka, Zambia, <sup>3</sup>Livingstone Central Hospital, Livingstone, Zambia, <sup>4</sup>Leiden University Medical Center, Leiden, Netherlands, <sup>5</sup>Liverpool School of Tropical Medicine, Liverpool, United Kingdom, <sup>6</sup>London School of Hygiene & Tropical Medicine, London, United Kingdom

9:15 a.m.

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### **POC-LAMP FOR HUMAN SCHISTOSOMES COMPARATIVE COST AND TIME ANALYSIS FOR VARIABLE ARRANGEMENTS**

Brittany Pulkkila<sup>1</sup>, Chummy S. Sikasunge<sup>2</sup>, James Mwansa<sup>2</sup>, **Nilanjan Lodh**<sup>1</sup>

<sup>1</sup>Marquette University, Milwaukee, WI, United States, <sup>2</sup>University of Zambia, Lusaka, Zambia

9:30 a.m.

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### **THE DIAGNOSTIC POTENTIAL OF GLYCAN SPECIFIC ANTIBODIES IN SCHISTOSOMIASIS ASSESSED BY GLYCAN MICROARRAYS**

**Anna O. Kildemoes**<sup>1</sup>, Angela van Diepen<sup>1</sup>, Tom Veldhuizen<sup>1</sup>, Linh Nguyen<sup>1</sup>, Mio Tanaka<sup>2</sup>, Govert J. van Dam<sup>1</sup>, Meta Roestenberg<sup>1</sup>, Shinjiro Hamano<sup>2</sup>, Cornelis H. Hokke<sup>1</sup>

<sup>1</sup>Leiden University Medical Center, Leiden, Netherlands, <sup>2</sup>Institute of Tropical Medicine (NEKKEN), Nagasaki, Japan

## **Symposium 64**

### **Synthesis of Evidence and Multi-Disciplinary Approaches Towards Zoonoses Control and Elimination**

*National Harbor 11 (National Harbor Level)*

Friday, November 22, 8 a.m. - 9:45 a.m.

A number of zoonoses are included in the global control and elimination targets set in the 2012 London Declaration on Neglected Tropical Diseases (NTD), regional plans such as the Plan of action for the elimination of neglected infectious diseases in the American Region (PAHO, 2016), and multiple country plans. Given the role of animals in the epidemiology of these diseases, either as direct transmitters, intermediate hosts or vectors, a one health approach, targeting the human/animal interface is crucial for their control. It follows that, given the increased number of relevant stakeholders to support surveillance and control efforts across the two domains (animal health and human health), and the prevailing need to optimize resources, integration of surveillance and capabilities evidence, and an understanding of the underlying risk behaviors across stakeholders is needed. This symposium will address the following multi-disciplinary questions: 1) How studying social behaviors can enhance understanding of compliance and failures in health interventions; 2) What are the methodological challenges for the integration of health capacities across domains and geographies to inform vulnerability clusters; and 3) How to exhaustively inform and map zoonoses risks with full consideration of all animal and human population and health data. This session will show the application of novel methodologies on a number of zoonoses, such as visceral leishmaniasis in Brazil and cystic echinococcosis in Argentina. However, the methodologies and exchangeable to other settings, disease or geographies.

#### **CHAIR**

Joaquin M. Prada  
University of Surrey, Guildford, United Kingdom

Victor del Rio Vilas  
University of Surrey, Guildford, United Kingdom



8 a.m.

### **AGRICULTURAL PRACTICES AND ITS ROLE IN ZOOSES EMERGENCE**

Vachel Gay V. Paller

*Institute of Biological Sciences, University of the Philippines, Los Baños, Philippines*

8:20 a.m.

### **ASSESSMENT OF AREA-LEVEL DISEASE CONTROL AND SURVEILLANCE CAPACITIES**

Qihua Qiu

*Augusta University, Augusta, GA, United States*

8:40 a.m.

### **A SMALL-AREA APPROACH TO REVISIT AND RECLASSIFY RISK OF VISCERAL LEISHMANIASIS IN BRAZIL**

Gustavo Machado

*North Carolina State University, Raleigh, NC, United States*

9 a.m.

### **BAYESIAN ANALYSIS OF ZOOSES: ECHINOCOCCUS MODELING BASED ON ACTIVE AND PASSIVE SURVEILLANCE**

Andrew B. Lawson

*Medical University of South Carolina, Charleston, SC, United States*

9:20 a.m.

### **DISCUSSION**

## **Exhibit Hall Open**

*Prince George's Exhibit Hall C (Lower Atrium Level)*

Friday, November 22, 9:30 a.m. - 10:30 a.m.

## **Coffee Break**

*Prince George's Exhibit Hall C (Lower Atrium Level)*

Friday, November 22, 9:45 a.m. - 10:15 a.m.

## **Poster Session B Set-Up**

*Prince George's Exhibit Hall D (Lower Atrium Level)*

Friday, November 22, 9:45 a.m. - 10:15 a.m.

## **Get a Shot. Give a Shot.®**

*Potomac Ballroom Lobby (Ballroom Level)*

Friday, November 22, 10 a.m. - 4 p.m.

Walgreens' Get a Shot. Give a Shot.® campaign has helped provide more than 20 million lifesaving vaccines to children in need around the world through the United Nations Foundation's Shot@Life campaign. Now, TropMed19 is giving attendees an opportunity to give back to the global health communities we serve. Receive your annual flu shot and provide lifesaving vaccines to families in developing countries. Immunizations are one of the world's biggest public health success stories, but not all communities have the same access to vaccines.

## **Poster Session B Viewing**

*Prince George's Exhibit Hall D (Lower Atrium Level)*

Friday, November 22, 10:15 a.m. - Noon

## **Symposium 65**

### **Innovations for Response to Outbreak-Prone Diseases: A Challenge to Innovators to Pitch their Ideas for Reducing Risk, Improving Prediction and Delivering Better Healthcare Tools in Resource-Limited Settings**

*Maryland A (Ballroom Level)*

Friday, November 22, 10:15 a.m. - Noon

#### **Supported with funding from Vulcan, Inc. and Roche Diagnostics GmbH**

The second annual Innovations Pitch Competition session will feature the most innovative ideas for mitigating outbreak-prone disease risk through novel uses of social communication, improved predictive capabilities, or development of better tools to detect disease, control disease, and disseminate information on disease spread. A wide range of ideas, from early-stage concepts to field-tested prototypes, will be presented. This year, we are placing greater emphasis on how these innovative ideas will improve outbreak-prone disease response in low resource settings. Five innovator/innovation team finalists have been chosen from a global Innovations competition, and coached in how to pitch their innovative idea by a team of experts. At this Innovations Pitch Competition session, these five finalists will give a rapid-fire pitch (10 minutes) in front of a live audience and a judging panel composed of global health innovations experts. Questions from the audience and real-time voting will be conducted. The winner of the session will be determined using a weighted score that factors in both the judges' scores and the audience votes. The winner will be provided with a monetary award (\$10,000 USD), marketing advice, and introduction to potential investors. Runners-up will receive cash prizes as well. Cash prizes are sponsored by Vulcan and Roche Diagnostics.

#### **CHAIR**

May C. Chu

*Colorado School of Public Health, Aurora, CO, United States*

Molly M. Lamb

*Colorado School of Public Health, Aurora, CO, United States*

#### **JUDGING PANEL**

Daniel G. Bausch

*Director, UK Public Health Rapid Support Team, London, United Kingdom*

Sumi Parapanje

*Vulcan, Inc., Seattle, WA, United States*

Matthias Strobl

*Roche Diagnostics GmbH, Penzberg, Germany*

Tristan Ford

*VectorWeb Project Engineer, Center for Bioengineering Innovation & Design, Johns Hopkins University, Baltimore, MD, United States*

Thomas P. Monath

*Crozet BioPharma LLC, Johns Hopkins University, Devens, MA, United States*



## Scientific Session 66

### Malaria Epidemiology II: Clinical Epidemiology and Intervention Studies

Maryland B (Ballroom Level)

Friday, November 22, 10:15 a.m. - Noon

#### CHAIR

S. Patrick Kachur

Columbia University Medical Center, New York, NY, United States

Jehidys Estella Montiel Ramos

Universidad de Antioquia, Medellín, Colombia

10:15 a.m.

695

#### PERSISTENCE OF A FEBRILE SUBMICROSCOPIC *PLASMODIUM* SPP. INFECTIONS IN AN ENDEMIC AREA FOR MALARIA IN COLOMBIA

Jehidys E. Montiel Ramos<sup>1</sup>, Luisa F. Carbal Reyes<sup>1</sup>, Lina M. Zuluaga Idarraga<sup>1</sup>, Ana M. Vasquez Cardona<sup>1</sup>, Daniel C. Aguirre Acevedo<sup>1</sup>, Berlin Londoño Rentería<sup>2</sup>, Alberto Tobon Castaño<sup>1</sup>

<sup>1</sup>Universidad de Antioquia, Medellín, Colombia, <sup>2</sup>Kansas State University, Manhattan, KS, United States

10:30 a.m.

696

#### FALCIPARUM BUT NOT VIVAX MALARIA DURING EARLY GESTATION IS ASSOCIATED WITH INCREASED RISK OF SUBSEQUENT HYPERTENSIVE DISORDERS OF PREGNANCY

Whitney E. Harrington<sup>1</sup>, Aung Myat Min<sup>2</sup>, Mary Ellen Gilder<sup>2</sup>, Nay Win Tun<sup>2</sup>, Kerry Moore<sup>3</sup>, Moo Kho Paw<sup>2</sup>, Jacher Wiladphaingern<sup>2</sup>, Kesinee Chotivanich<sup>4</sup>, Nicholas J. White<sup>5</sup>, Francois Nosten<sup>2</sup>, Rose McGready<sup>2</sup>

<sup>1</sup>Seattle Children's / University of Washington, Seattle, WA, United States, <sup>2</sup>Shoklo Malaria Research Unit, Mahidol-Oxford Tropical Medicine Research Unit, Faculty of Tropical Medicine, Mahidol University, Mae Sot, Thailand, <sup>3</sup>Centre for Epidemiology and Biostatistics, Melbourne School of Population and Global Health, The University of Melbourne, Melbourne, Australia, <sup>4</sup>Faculty of Tropical Medicine, Mahidol University, Bangkok, Thailand, <sup>5</sup>Centre for Tropical Medicine and Global Health, Nuffield Department of Medicine, University of Oxford, Old Road Campus, Oxford, United Kingdom

10:45 a.m.

697

#### THE EFFECT OF DELAYED TREATMENT ON PROGRESSION TO SEVERE *P. FALCIPARUM* MALARIA: A POOLED MULTICENTRE INDIVIDUAL-PATIENT ANALYSIS

Andria Mousa<sup>1</sup>, Joseph D. Challenger<sup>1</sup>, Aubrey J. Cunningham<sup>2</sup>, Abdullah Al-Taiar<sup>3</sup>, Nicholas M. Anstey<sup>4</sup>, Cyril Badaut<sup>5</sup>, Bridget E. Barber<sup>6</sup>, Dibyadyuti Datta<sup>7</sup>, Chris Drakeley<sup>8</sup>, Jamie T. Griffin<sup>1</sup>, Matthew J. Grigg<sup>9</sup>, Chandy C. John<sup>7</sup>, Florence Migot-Nabias<sup>10</sup>, Hugh Reyburn<sup>11</sup>, Eleanor M. Riley<sup>12</sup>, Colin J. Sutherland<sup>11</sup>, Firmine Viwami<sup>13</sup>, Christopher J. Whitty<sup>14</sup>, Timothy William<sup>15</sup>, Azra C. Ghani<sup>1</sup>, Lucy C. Okell<sup>1</sup>

<sup>1</sup>MRC Centre for Global Infectious Disease Analysis, Department of Infectious Disease Epidemiology, Imperial College London, London, United Kingdom, <sup>2</sup>Section of Paediatrics, Department of Medicine, Imperial College London, Imperial College London, London, United Kingdom, <sup>3</sup>Faculty of Medicine, Kuwait University, Kuwait City, Kuwait, <sup>4</sup>Global Health Division, Menzies School of Health Research, Darwin, Australia, <sup>5</sup>Unité de Biothérapie Infectieuse et Immunité, Institut de Recherche Biomédicale des Armées, Brétigny sur Orge, France, <sup>6</sup>Menzies School of Health Research, Darwin, Australia, <sup>7</sup>Ryan White Center for Pediatric Infectious Disease and Global Health, Department of Pediatrics, Indiana University School of Medicine, Indianapolis, IN, United States, <sup>8</sup>Department of Infection Biology, London School of Hygiene & Tropical Medicine, London, United Kingdom, <sup>9</sup>Global and Tropical Health Division, Menzies School of Health Research, Darwin, Australia, <sup>10</sup>MERIT, Institut de Recherche pour le Développement (IRD), Université Paris Descartes, Sorbonne Paris Cité, Paris, France, <sup>11</sup>Faculty of Infectious and Tropical Diseases, London School of Hygiene & Tropical Medicine, London, United Kingdom, <sup>12</sup>Department of Immunology and Infection, London School of Hygiene & Tropical Medicine, London, United Kingdom, <sup>13</sup>Centre d'Etude et de Recherche pour le Paludisme associé à la Grossesse et à l'Enfance, Faculté des Sciences de Santé, Université d'Abomey-Calavi, Cotonou, Benin, <sup>14</sup>Clinical Research Department, London School of Hygiene

& Tropical Medicine, London, United Kingdom, <sup>15</sup>Infectious Diseases Society Sabah-Menzies School of Health Research Clinical Research Unit, Queen Elizabeth Hospital, Kota Kinabalu, Sabah, Malaysia

11 a.m.

698

#### MALARIA ATTRIBUTABLE FEVER IN LOW AND HIGH TRANSMISSION SETTINGS OF ZAMBIA: DIFFERENCES BETWEEN ACTIVE AND PASSIVE CASE DETECTION

Japhet M. Matoba<sup>1</sup>, Philip Thuma<sup>1</sup>, Jennifer C. Stevenson<sup>2</sup>, Julia Pringle<sup>3</sup>, Caison Sing'anga<sup>1</sup>, Mukuma Lubinda<sup>1</sup>, Amy Wesolowski<sup>4</sup>, Tamaki Kobayashi<sup>4</sup>, Douglas Norris<sup>5</sup>, William J. Moss<sup>6</sup>

<sup>1</sup>Macha Research Trust, Choma, Zambia, <sup>2</sup>Macha Research Trust and Department of Molecular Microbiology and Immunology, Johns Hopkins Bloomberg School of Public Health, Choma, Zambia, <sup>3</sup>Johns Hopkins Bloomberg School of Public Health, Department of Molecular Microbiology and Immunology, Baltimore, MD, United States, <sup>4</sup>Department of Epidemiology, Johns Hopkins Bloomberg School of Public Health, Baltimore, MD, United States, <sup>5</sup>Department of Molecular Microbiology and Immunology, Johns Hopkins Bloomberg School of Public Health, Baltimore, MD, United States, <sup>6</sup>Department of Epidemiology, Department of Molecular Microbiology and Immunology, Johns Hopkins Bloomberg School of Public Health, Baltimore, MD, United States

11:15 a.m.

699

#### EPIDEMIOLOGY OF SUBPATENT *P. FALCIPARUM* INFECTIONS IDENTIFIED BY HIGH-SENSITIVITY REAL-TIME PCR DETECTION DURING COMMUNITY-BASED PROACTIVE AND REACTIVE CASE DETECTION IN WESTERN KENYA

Steve M. Taylor<sup>1</sup>, Kelsey M. Sumner<sup>2</sup>, Betsy Freedman<sup>1</sup>, Judith Mangeni<sup>3</sup>, Andrew A. Obala<sup>3</sup>, Wendy P. O'Meara<sup>1</sup>

<sup>1</sup>Duke University, Durham, NC, United States, <sup>2</sup>University of North Carolina Gillings School of Global Public Health, Chapel Hill, NC, United States, <sup>3</sup>Moi University, Eldoret, Kenya

11:30 a.m.

700

#### ONGOING ASSESSMENT OF *PLASMODIUM FALCIPARUM* PARASITE PREVALENCE IN SOUTHERN PROVINCE ZAMBIA: RESULTS FROM A 2019 PARASITE SURVEY 3 YEARS AFTER A MASS DRUG ADMINISTRATION TRIAL

Brooke Mancuso<sup>1</sup>, Travis Porter<sup>1</sup>, Maya Fraser<sup>2</sup>, Kafula Silumbe<sup>2</sup>, Busiku Hamainza<sup>3</sup>, Hawela Moonga<sup>3</sup>, Adam Bennett<sup>4</sup>, Josh Yukich<sup>1</sup>, Caterina Guinovart<sup>2</sup>, Kammerle Schneider<sup>2</sup>, John M. Miller<sup>2</sup>, Thomas P. Eisele<sup>1</sup>

<sup>1</sup>Tulane University School of Public Health, New Orleans, LA, United States, <sup>2</sup>PATH, Seattle, WA, United States, <sup>3</sup>National Malaria Control Center, Lusaka, Zambia, <sup>4</sup>University of California San Francisco, San Francisco, CA, United States

11:45 a.m.

701

#### TARGETED SURVEILLANCE FOR FOREST-BASED MALARIA TRANSMISSION: RESULTS OF A CLUSTER RANDOMIZED CONTROLLED TRIAL IN SOUTHERN LAO PDR

Adam Bennett<sup>1</sup>, Emily Dantzer<sup>1</sup>, Bouasy Hongvanthong<sup>2</sup>, Francois Rerolle<sup>1</sup>, Sophia Hocini<sup>1</sup>, Jennifer Smith<sup>1</sup>, Jimée Hwang<sup>3</sup>, Roland Gosling<sup>1</sup>, Joshua Yukich<sup>4</sup>, Bryan Greenhouse<sup>1</sup>, Rattanaxay Phetsouvanh<sup>5</sup>, Andrew A. Lover<sup>6</sup>

<sup>1</sup>University of California San Francisco, San Francisco, CA, United States, <sup>2</sup>Center for Malariology, Parasitology, and Entomology, Vientiane, Lao People's Democratic Republic, <sup>3</sup>Centers for Disease Control and Prevention, Atlanta, GA, United States, <sup>4</sup>Tulane University School of Public Health and Tropical Medicine, New Orleans, LA, United States, <sup>5</sup>Department of Communicable Disease Control, Vientiane, Lao People's Democratic Republic, <sup>6</sup>University of Massachusetts-Amherst, Amherst, MA, United States

## Symposium 67

### Human Monoclonal Antibodies against Malaria – A New Paradigm for Prevention

Maryland C (Ballroom Level)

Friday, November 22, 10:15 a.m. - Noon

The World Health Organization recently reported that progress against malaria has stalled and even reversed in some regions. This report underscores the urgent need to accelerate the development of interventions that target all stages of the malaria life-cycle to prevent disease and death, reduce transmission and ultimately eliminate malaria. Recent vaccine trials in endemic areas either with subunit or attenuated parasite vaccines have not demonstrated high-level efficacy in preventing malaria infection. These results underscore the need to re-evaluate and improve malaria vaccine design, as well as to discover alternative immune interventions to prevent malaria. Over the last few years, a number of scientific discoveries have been made based on the isolation of a large panel of human monoclonal antibodies against highly conserved pre-erythrocytic or blood stage targets. The biochemical and structural analysis of antibody binding to specific target antigens has identified new sites of neutralization, providing a rational approach for structure-based vaccine design. Moreover, the ability of such antibodies to mediate protection in mouse or non-human primate models of malaria infection should facilitate their translation to prevent malaria in humans. In this symposium, the speakers will focus on the *in vivo* protective capacity of newly isolated human monoclonal antibodies to the pre-erythrocytic circumsporozoite protein and the conserved blood-stage antigen RH5. The presentations will focus on immune mechanisms of protection *in vivo* relating to the role of Fc effector function and inhibitory capacity in the skin and liver. In addition, data will be presented on a new high-throughput method to isolate monoclonal antibodies against multiple stages (pre-erythrocytic, blood stage and transmission) of the malaria parasite life cycle. In addition to the scientific presentations, discussion will focus on the clinical applications of using monoclonal antibodies for prevention of malaria in a variety of settings. This will include seasonal prevention and elimination in defined areas. A key aspect of this presentation will be the requirements related to antibody potency, half-life and cost. The overall goal of the symposium is to highlight how the isolation of monoclonal antibodies from vaccine studies and natural infection is a powerful approach that can reveal critical scientific insights into the underlying mechanisms of protection from malaria and provide a roadmap for the use of such antibodies to prevent malaria infection.

#### CHAIR

Robert A. Seder

National Institute of Allergy and Infectious Diseases, National Institutes of Health, Bethesda, MD, United States

Joshua Tan

National Institute of Allergy and Infectious Diseases, National Institutes of Health, Rockville, MD, United States

#### 10:15 A.M.

##### IN VIVO MECHANISMS OF CSP MAB NEUTRALIZATION

Robert A. Seder

National Institute of Allergy and Infectious Diseases, Bethesda, MD, United States

#### 10:35 A.M.

##### MABS AGAINST DIFFERENT STAGES OF THE *PLASMODIUM FALCIPARUM* LIFE CYCLE

Joshua Tan

National Institute of Allergy and Infectious Diseases, National Institutes of Health, Rockville, MD, United States

#### 10:55 A.M.

##### FUNCTION AND CHARACTERIZATION OF MABS TARGETING THE BLOOD-STAGE MALARIA RH5 INVASION COMPLEX

Simon J. Draper

University of Oxford, Oxford, United Kingdom

#### 11:15 A.M.

##### DEVELOPING ANTI-INFECTION MABS FOR MALARIA: IMPLICATIONS FOR GLOBAL HEALTH

Jacqueline Kirchner

Bill & Melinda Gates Foundation, Seattle, WA, United States

#### 11:35 A.M.

##### DISCUSSION

## Symposium 68

### Tafenoquine: New Drug for Chemoprophylaxis and Treatment of Relapsing Malaria

Potomac C (Ballroom Level)

Friday, November 22, 10:15 a.m. - Noon

Tafenoquine is a newly registered 8-aminoquinoline similar to primaquine. Its two current indications are single dose treatment of relapsing malaria when given in conjunction with a blood schizonticide and chemoprophylaxis in a weekly regimen following an initial three-day loading dose. Tafenoquine is likely to largely replace the older drug primaquine because its two week half-life allows single dose treatment and infrequent doses for chemoprophylaxis. Tafenoquine has the same G6PD liability of primaquine, meaning that G6PD deficient persons may hemolyze if given the drug and therefore must be screened out using a reliable enzyme test. 8-aminoquinolines are good gametocytocidal agents giving tafenoquine a role in anti-transmission measures that may also limit further spread of multiple-drug resistant *P. falciparum*. Tafenoquine's ability to kill latent hepatic parasites (hypnozoites) is what prevents further relapses in *P. vivax*, but the mechanism of its action is not currently understood. Efficacy of tafenoquine in preventing relapse appears to vary across regions and may reflect the differences between tropical and temperate strains of *P. vivax*. Tafenoquine is currently being tested with a variety of blood schizonticides in addition to chloroquine, which was the initial partner drug. Tafenoquine has previously been successfully tested for monthly chemoprophylaxis and there are other potential indications that may apply to current efforts to eliminate malaria from entire countries. One of the most refractory problems in malaria elimination relates to asymptomatic parasitemic individuals who maintain transmission in low endemic settings. Mass drug administration has been adapted to some settings for malaria elimination, but the G6PD liability of tafenoquine makes this operationally difficult even with small populations. Tafenoquine could be considered as a second generation seasonal chemoprevention measure in sub-Saharan Africa. Prevention of re-introduction of

parasites into areas free of transmission is a critical for malaria elimination. Tafenoquine may be adapted as a post-exposure cure to stop high risk travellers from re-introducing malaria into previously eliminated areas.

#### **CHAIR**

Jimee Hwang  
*Centers for Disease Control and Prevention, Atlanta, GA, United States*

Ric N. Price  
*Menzies School of Health Research, Darwin, Australia*

10:15 a.m.

#### **TAFENOQUINE: A NEW 8-AMINOQUINOLINE FOR TREATMENT AND CHEMOPROPHYLAXIS**

Mara Kreishman Deitrick  
*Walter Reed Army Institute of Research, Silver Spring, MD, United States*

10:30 a.m.

#### **SINGLE DOSE TREATMENT – THE PLAN FOR TAFENOQUINE ROLL OUT IN BRAZIL**

Marcus Lacerda  
*Fiocruz Amazônia/Tropical Medicine Foundation Dr. Heitor Vieira Dourado, Manaus, Amazonas, Brazil*

10:45 a.m.

#### **USE OF TAFENOQUINE IN THE US – GUIDANCE FROM CENTERS FOR DISEASE CONTROL AND PREVENTION**

Kathrine M. Tan  
*U.S. Centers for Disease Control and Prevention, Atlanta, GA, United States*

11 a.m.

#### **POSSIBLE NEW INDICATIONS FOR TAFENOQUINE PARTICULARLY IN MALARIA ELIMINATION EFFORTS**

G. Dennis Shanks  
*Australian Defence Force Malaria and Infectious Disease Institute, Enoggera, Australia*

11:15 a.m.

#### **DISCUSSION**

### **Symposium 69**

#### **American Committee on Arthropod-Borne Viruses (ACAV) Symposium II: Everything Old Is New Again - The Re-Emergence of Yellow Fever**

*Potomac A (Ballroom Level)*

Friday, November 22, 10:15 a.m. - Noon

Yellow fever virus (YFV) is one of the oldest known arboviruses and currently, is widely distributed in the tropics of South America and Africa. Even though an effective vaccine exists, the virus is still responsible for approximately 200,000 cases and 29,000 to 60,000 deaths annually. Recent reports of massive yellow fever outbreaks causing deaths of thousands of people in Brazil, Angola and Democratic Republic of the Congo show that yellow fever (YF) is still a serious public health threat. Of particular concern is the risk of an urban outbreak that could affect hundreds of thousands of individuals, completely decimate the vaccine supply and lead to multiple, concurrent outbreaks with limited capacity for public health response. YF is an acute febrile infection and clinical manifestations vary from very mild infection to severe, life-threatening disease. Despite the acute character of YF, in symptomatic patients who recover, weakness and fatigue may last for weeks. Additionally,

cases usually occur in remote areas of Africa and Americas where patients have little or even no access to advanced medical care and laboratory tests. In this context, YF is still poorly understood regarding some aspects of its epidemiology, pathogenesis, clinical course, convalescent manifestations and host/virological determinants of disease during the natural course of infection. The recent YF outbreaks have provided an unprecedented opportunity to fill critical knowledge gaps that will inform prevention, clinical care and treatment of future patients. Additionally, it has prompted the development of a strategy to eliminate global outbreaks of YF. This symposium will address the new findings, the risk for the tropical populations and describe efforts to control this ancient disease.

#### **CHAIR**

Ann Powers  
*Centers for Disease Control and Prevention, Fort Collins, CO, United States*

A. Desiree LaBeaud  
*Stanford University, Stanford, CA, United States*

10:15 a.m.

#### **NOVEL CLINICAL FINDINGS ASSOCIATED WITH YF IN RURAL BRAZIL**

Leonardo Soares  
*Hospital Eduardo de Menezes, Belo Horizonte, Brazil*

10:40 a.m.

#### **RISK OF YFV OUTBREAKS IN URBAN CENTERS OF SOUTH AMERICA**

Betania Drumond  
*Federal University of Minas Gerais, Belo Horizonte, Brazil*

11:05 a.m.

#### **THE EYE STRATEGY – A GLOBAL FRAMEWORK TO ELIMINATE YELLOW FEVER EPIDEMICS**

Eric Mossel  
*Centers for Disease Control and Prevention, Fort Collins, CO, United States*

11:25 a.m.

#### **NOVEL APPROACHES FOR ENSURING A VACCINATED POPULATION**

Erin Staples  
*Centers for Disease Control and Prevention, Fort Collins, CO, United States*

### **Symposium 70**

#### **Beyond HIV: Caring for Immunocompromised Patients in a Global Context**

*Potomac B (Ballroom Level)*

Friday, November 22, 10:15 a.m. - Noon

While the complications of HIV-associated immunocompromise in patients from low-and-middle income countries (LMICs) and tropical regions have been extensively studied, less is known about the management of patients with immunocompromise due to other causes. Numerous conditions including increasing age, chronic medical diseases such as diabetes and renal disease, and advanced medical treatment such as chemotherapy or organ transplantation cause immunocompromise. As more patients in LMICs are living with these conditions, they are at increased risk of immunocompromise-related complications. Thus, understanding the unique issues faced by these patients is vital to improving global outcomes. Clinicians caring for immunocompromised

patients in LMICs face distinct challenges, including geographically-restricted infections, higher rates of antimicrobial resistance, and limited access to diagnostic tests and medical therapies. In these settings, providers must rely upon empiric guidelines to support clinical decision-making. However, since most clinical guidelines were developed in high-income countries (HIC), their applicability in LMICs and tropical regions is unknown. For example, neither the neutropenic fever nor the organ transplantation guidelines take into account the fact that disseminated tuberculosis is a common source of sepsis in areas with high HIV-prevalence and that parasitic diseases such as malaria are frequent causes of fever in the tropics. Furthermore, with increasing global travel and medical tourism, understanding the way in which a patient's geographic exposures, whether to melioidosis in Lao or multidrug resistant bacteria in Uganda, affects their infection risk and clinical presentation is crucial patient management. This symposium will provide practical information about the care of non-HIV immunocompromised patients living in LMIC and tropical settings. To reflect the breadth of this subject, this session will highlight key issues in clinical management across diverse global practice sites. These include: (1) the microbiology and treatment of post-chemotherapy infections in sub-Saharan Africa, focusing on expanded usage of blood cultures and rates of antibiotic resistance; (2) complications of organ transplantation in Southeast Asia, particularly the monitoring and management of common viruses such as CMV and BK virus; (3) the epidemiology and management of melioidosis, a life-threatening infection associated with common forms of immunocompromise such as diabetes and kidney disease; and (4) the diagnosis and management of primary immune deficiencies, which are underdiagnosed in low-resource settings. This symposium will equip clinicians to care for these challenging patients and highlight a growing area of clinical concern.

#### CHAIR

Beth K. Thielen

*University of Minnesota, Minneapolis, MN, United States*

Elizabeth A. Gulleen

*Fred Hutchinson Cancer Research Center, Seattle, WA, United States*

10:15 a.m.

#### **PRIMARY IMMUNE DEFICIENCY IN A GLOBAL CONTEXT**

Antoine Azar

*Johns Hopkins University, Baltimore, MD, United States*

10:35 a.m.

#### **CHALLENGES OF KIDNEY TRANSPLANT POPULATION AND INFECTIOUS COMPLICATION - A LESSON FROM THAILAND**

Nuttasith Larpparisuth

*Siriraj Hospital, Mahidol University, Bangkok, Thailand*

10:55 a.m.

#### **MICROBIOLOGY AND MANAGEMENT OF NEUTROPENIC FEVER IN SUB-SAHARAN AFRICA: THE UGANDA CANCER INSTITUTE EXPERIENCE**

Margaret Lubwama

*Uganda Cancer Institute, Kampala, Uganda*

11:15 a.m.

#### **EPIDEMIOLOGY AND CLINICAL MANAGEMENT OF MELIOIDOSIS**

Wirongrong Chierakul

*Mahidol University, Bangkok, Thailand*

11:35 a.m.

#### **DISCUSSION**

### **Symposium 71**

## **The Emerging Science on the Interplay of Environmental Stressors, Infectious Diseases and Human Health**

*Potomac D (Ballroom Level)*

Friday, November 22, 10:15 a.m. - Noon

Infectious diseases are among the top five leading causes of death worldwide. In this increasingly complex world, is there an understanding of all factors that contribute to the spread of infectious disease? Do they influence patterns of disease emergence or re-emergence? Answers to these questions are critical for protecting human health and require a multidisciplinary approach to understand and tackle problems that one discipline alone cannot solve. Scientists have long known that the environment plays a defining role in the spread of infectious disease. For example, flooding could increase the populations of mosquitoes that carry malaria and inadequate water sanitation leads to a range of diseases that are often life-threatening. But, could cumulative environmental stressors also play a role in human susceptibility to infection and lead to lifetime adversity? Emerging findings suggest that environmental pollutants such as heavy metals, pesticides and airborne particulate matter may weaken the immune system. Emerging evidence also suggests that exposure to some pollutants may reduce vaccine effectiveness. However, environmental health, the study of the effect of the environment on human health, is rarely combined with studies on infectious diseases and often does not engage effectively with the communities affected by these environmental issues. Collaborative and interdisciplinary research on the interplay between these fields could inform new health practices, public health research and public health policy. This symposium will bring together infectious disease, global public health, toxicology and environmental health experts to explore the growing body of research on the links between environmental stressors, infectious disease and human health and the tools to engage scientists and decision makers in transnational, cross-disciplinary issues.

#### CHAIR

Audrey Thevenon

*National Academies of Sciences, Engineering and Medicine, Washington, DC, United States*

Robert D. Newman

*The Aspen Institute, Washington, DC, United States*

10:15 a.m.

#### **HOW THE INTERPLAY OF PATHOGENS, OTHER BACTERIA AND ENVIRONMENTAL CHEMICALS CAN DRIVE ANTIMICROBIAL RESISTANCE**

Meghan F. Davis

*Johns Hopkins University, Baltimore, MD, United States*

10:35 a.m.

#### **UNDERSTANDING THE MOLECULAR MECHANISMS OF HOW AIR POLLUTION INCREASES SUSCEPTIBILITY TO PULMONARY INFECTIONS**

Kymerly Gowdy

*East Carolina University, Greenville, NC, United States*



10:55 a.m.

**RECONCILING DIVERGENT WORLD VIEWS ON MERCURY POLLUTION- EVOLVING THOUGHTS ON INTERDISCIPLINARY AND TRANSLATIONAL RESEARCH**

Niladri Basu

*McGill University, Sainte-Anne-de-Bellevue, Canada*

11:05 a.m.

**INTERPLAY: THE CASE FOR TRANSDISCIPLINARY SCIENCE IN ADVANCING HEALTH AND DEVELOPMENT**

Robert D. Newman

*The Aspen Institute, Washington, DC, United States*

11:25 a.m.

**DISCUSSION**

**Scientific Session 72**

**American Committee of Molecular, Cellular and Immunoparasitology (ACMCIP): Worms and Trematodes: Molecular and Cellular Biology**

*National Harbor 2 (National Harbor Level)*

Friday, November 22, 10:15 a.m. - Noon

*Supported with funding from the Burroughs Wellcome Fund*

**CHAIR**

Warwick Grant

*La Trobe University, Bundoora, Australia*

Amit Sinha

*New England Biolabs, Ipswich, MA, United States*

10:15 a.m.

**702**

**GENOME SEQUENCES OF THE FILARIAL PARASITES *MANSONELLA PERSTANS* AND *MANSONELLA OZZARDI***

Amit Sinha<sup>1</sup>, Catherine B. Poole<sup>1</sup>, Richard D. Morgan<sup>1</sup>, Zhiru Li<sup>1</sup>, Laurence Ettwiller<sup>1</sup>, Nathalia F. Lima<sup>2</sup>, Marcelo U. Ferreira<sup>2</sup>, Samuel Wanji<sup>3</sup>, Clotilde K. Carlow<sup>1</sup>

<sup>1</sup>New England Biolabs, Ipswich, MA, United States, <sup>2</sup>University of Sao Paulo, Sao Paulo, Brazil, <sup>3</sup>University of Buea, Buea, Cameroon

**(ACMCIP Abstract)**

10:30 a.m.

**703**

**FILARIAL POPULATION GENOMICS AND ITS ROLE IN ELIMINATION PROGRAMS**

Warwick Grant<sup>1</sup>, Michel Boussinesq<sup>2</sup>, Katie Crawford<sup>1</sup>, Patricia Graves<sup>3</sup>, Shannon Hedtke<sup>1</sup>, Annette Kuesel<sup>4</sup>, Colleen Lau<sup>5</sup>

<sup>1</sup>La Trobe University, Bundoora, Australia, <sup>2</sup>IRD UMI 233-INSERM U1175-Montpellier University, Montpellier, France, <sup>3</sup>James Cook University, Cairns, Australia, <sup>4</sup>WHO/TDR, Geneva, Switzerland, <sup>5</sup>Australian National University, Canberra, Australia

**(ACMCIP Abstract)**

10:45 a.m.

**704**

***ONCHOCERCA VOLVULUS* SECRETOMES: A SOURCE OF POTENTIAL TARGETS FOR DETECTING VIABLE PARASITES**

Sasisekhar Bennuru<sup>1</sup>, Sara Lustigman<sup>2</sup>, Thomas Nutman<sup>1</sup>

<sup>1</sup>National Institutes of Health, Bethesda, MD, United States, <sup>2</sup>New York Blood Center, New York, NY, United States

11 a.m.

**705**

**THE ANTHELMINTIC PRAZIQUANTEL ACTIVATES A SCHISTOSOME TRANSIENT RECEPTOR POTENTIAL CHANNEL**

Jonathan S. Marchant, Sang-Kyu Park

*Medical College of Wisconsin, Milwaukee, WI, United States*

**(ACMCIP Abstract)**

11:15 a.m.

**706**

**EVALUATION OF A PROTOTYPE DUAL ANTIGEN RAPID TEST TO DETECT EXPOSURE TO *ONCHOCERCA VOLVULUS***

Vitaliano A. Cama<sup>1</sup>, Guilherme Maerschner Ogawa<sup>1</sup>, Alison Golden<sup>2</sup>, Austin Newsam<sup>1</sup>, Sara Lustigman<sup>3</sup>, Paul T. Cantey<sup>1</sup>, Thomas B. Nutman<sup>4</sup>, Sasisekhar Bennuru<sup>4</sup>

<sup>1</sup>Centers for Disease Control and Prevention, Atlanta, GA, United States, <sup>2</sup>PATH, Seattle, WA, United States, <sup>3</sup>New York Blood Center, New York, NY, United States, <sup>4</sup>National Institutes of Health, Bethesda, MD, United States

11:30 a.m.

**707**

***IN SILICO* IDENTIFICATION OF NEW BIOMARKERS AND DEVELOPMENT OF RAPID DIAGNOSTIC TESTS FOR THE FILARIAL PARASITES *MANSONELLA PERSTANS* AND *MANSONELLA OZZARDI***

Catherine B. Poole<sup>1</sup>, Amit Sinha<sup>1</sup>, Laurence Ettwiller<sup>1</sup>, Lynne Apono<sup>1</sup>, Karen McKay<sup>1</sup>, Vaishnavi Panchapakesa<sup>1</sup>, Nathalia F. Lima<sup>2</sup>, Marcelo U. Ferreira<sup>2</sup>, Samuel Wanji<sup>3</sup>, Clotilde K. Carlow<sup>1</sup>

<sup>1</sup>New England Biolabs, Ipswich, MA, United States, <sup>2</sup>University of São Paulo, São Paulo, Brazil, <sup>3</sup>University of Buea, Buea, Cameroon

**(ACMCIP Abstract)**

11:45 a.m.

**708**

**LOA LOA: DETECTION OF CIRCULATING CELL-FREE DNA IN BODY FLUIDS**

Frimpong Kodua<sup>1</sup>, Sasisekhar Bennuru<sup>1</sup>, Papa Drame<sup>2</sup>, Eric Dahlstrom<sup>3</sup>, Thomas Nutman<sup>1</sup>

<sup>1</sup>National Institutes of Health, Bethesda, MD, United States, <sup>2</sup>Duke Global Health Institute, Duke University, Durham, NC, United States, <sup>3</sup>National Institutes of Health, Hamilton, MT, United States

**Scientific Session 73**

**Mosquitoes - Biochemistry and Molecular Biology**

*National Harbor 3 (National Harbor Level)*

Friday, November 22, 10:15 a.m. - Noon

**CHAIR**

Ehud Inbar

*Sanaria Inc., Rockville, MD, United States*

Kristine Werling

*Harvard T.H. Chan School of Public Health, Boston, MA, United States*



10:15 a.m.

709

**CTL4 GENE-KNOCKOUT TO BLOCK PLASMODIUM INFECTION IN THE VECTOR MOSQUITO**

**Maria L Simoes**, Yuemei Dong, Godfree Mlambo, George Dimopoulos  
*Johns Hopkins University, Baltimore, MD, United States*

10:30 a.m.

710

**INSECT STEROID HORMONE SIGNALING REGULATES NON-COMPETITIVE PLASMODIUM FALCIPARUM DEVELOPMENT IN ANOPHELES GAMBIAE MOSQUITOES**

**Kristine Werling**<sup>1</sup>, W. Robert Shaw<sup>1</sup>, Maurice A. Itoe<sup>1</sup>, Kathleen A. Westervelt<sup>1</sup>, Perrine Marcenac<sup>1</sup>, Douglas G. Paton<sup>1</sup>, Duo Peng<sup>1</sup>, Naresh Singh<sup>1</sup>, Andrea L. Smidler<sup>1</sup>, Adam South<sup>1</sup>, Amy A. Deik<sup>2</sup>, Liliansa Mancio-Silva<sup>3</sup>, Allison R. Demas<sup>3</sup>, Sandra March<sup>3</sup>, Eric Calvo<sup>4</sup>, Serge Rakiswendé Yerbanga<sup>5</sup>, Thierry Lefèvre<sup>5</sup>, Abdoulaye Diabaté<sup>5</sup>, Roch K. Dabiré<sup>5</sup>, Sangeeta N. Bhatia<sup>3</sup>, Clary B. Clish<sup>2</sup>, Flaminia Catteruccia<sup>1</sup>

<sup>1</sup>Harvard TH Chan School of Public Health, Boston, MA, United States, <sup>2</sup>Broad Institute, Cambridge, MA, United States, <sup>3</sup>Institute for Medical Engineering and Science, Massachusetts Institute of Technology, Cambridge, MA, United States, <sup>4</sup>Laboratory of Malaria and Vector Research, National Institutes of Health, National Institute of Allergy and Infectious Diseases, Rockville, MD, United States, <sup>5</sup>Institut de Recherche en Sciences de la Santé/Centre Muraz, Bobo-Dioulasso, Burkina Faso

10:45 a.m.

711

**KNOCKOUT OF ANOPHELES STEPHENSI LRIM1 USING CRISPR-CAS9 REVEALS ITS CRUCIAL ROLE IN VECTOR COMPETENCE**

**Ehud Inbar**<sup>1</sup>, Abraham Eappen<sup>1</sup>, Robert Alford<sup>2</sup>, William Reid<sup>1</sup>, Tao Li<sup>1</sup>, Robert Harrel<sup>2</sup>, Sumana Chakaravarty<sup>1</sup>, Donald F. Ward<sup>1</sup>, Kim Lee Sim<sup>1</sup>, Stephen L. Hoffman<sup>1</sup>, Peter F. Billingsley<sup>1</sup>

<sup>1</sup>Sanaria Inc., Rockville, MD, United States, <sup>2</sup>Insect Transformation Facility, Institute for Bioscience and Biotechnology Research, University of Maryland, Rockville, MD, United States

11 a.m.

712

**BACTERIAL SUPPRESSION OF MALARIA TRANSMISSION BY MOSQUITOES**

**Wei Huang**<sup>1</sup>, Janneth Rodrigue<sup>2</sup>, Alfonso Mendoza-Losana<sup>2</sup>, Marcelo Jacobs-Lorena<sup>1</sup>

<sup>1</sup>Johns Hopkins University, Baltimore, MD, United States, <sup>2</sup>GlaxoSmithKline plc, Tres Cantos, Spain

(ACMCIP Abstract)

11:15 a.m.

713

**NUCLEASES IN THE MOSQUITO GUT REDUCE EFFICIENCY OF RNA INTERFERENCE**

**David J. Giesbrecht**<sup>1</sup>, David Boguski<sup>2</sup>, Ian Wiens<sup>1</sup>, Lisa Zhan<sup>1</sup>, Daniel Heschuk<sup>1</sup>, Steve Whyard<sup>1</sup>

<sup>1</sup>University of Manitoba, Winnipeg, MB, Canada, <sup>2</sup>Fisheries and Oceans Canada, Winnipeg, MB, Canada

11:30 a.m.

714

**INTERACTION BETWEEN PLASMODIUM PHATUBULIN AND ANOPHELES FREP1 ASSISTS MALARIA TRANSMISSION**

Genwei Zhang<sup>1</sup>, Guodong Niu<sup>2</sup>, Manpreet Kaur<sup>2</sup>, Luara Perez<sup>2</sup>, Xiaohong Wang<sup>2</sup>, Jun Li<sup>2</sup>

<sup>1</sup>University of Oklahoma, Norman, OK, United States, <sup>2</sup>Florida International University, Miami, FL, United States

(ACMCIP Abstract)

11:45 a.m.

715

**IMMUNITY AND MEMORY AGAINST MALARIA: AN ATLAS OF THE MOSQUITO IMMUNE SYSTEM AT SINGLE-CELL RESOLUTION**

**Gianmarco Raddi**

*University of Cambridge/Wellcome Sanger Institute, Cambridge, United Kingdom*

**Symposium 74**

**A New Tool for an Old Disease: Using the Latest Data to Inform Typhoid Conjugate Vaccine Implementation**

*National Harbor 4/5 (National Harbor Level)*

Friday, November 22, 10:15 a.m. - Noon

A centuries-old disease, typhoid still results in 10.9 million illnesses and over 116,800 deaths annually, mostly among children and young adults in Asia and sub-Saharan Africa. In Pakistan the rise of extensively drug-resistant typhoid, the first major outbreak due to a strain resistant to extended-spectrum cephalosporins, has limited treatment options, with higher costs and long duration. Recently, researchers, healthcare workers, advocates and decision-makers have answered the call for new tools to prevent typhoid. One new tool is the typhoid conjugate vaccine (TCV). Compared to currently licensed typhoid vaccines, TCVs provide longer-lasting protection, require fewer doses, and are suitable for children less than two years of age. Recent global policy decisions have begun to lay a framework for typhoid prevention using new TCVs, including a revised position paper by the World Health Organization and support by Gavi, the Vaccine Alliance for introduction in low-income countries. Essential to rolling out any new vaccine are data on the burden of disease. Credible data on the burden of typhoid in endemic countries are limited, partially due to the practical diagnostic 'gold standard' – blood culture. Blood culture is costly in low-resource communities and lacks sensitivity, increasing the number of empiric antimicrobial prescriptions and creating further selective pressure, and decreasing the number of detected cases. Reliable and up-to-date data on enteric fever burden are often absent, fueling neglect and undermining the political support needed for prevention and control efforts. Several large, prospective surveillance studies in Asia and Africa have been implemented in the last few years, including the Surveillance for Enteric Fever in Asia Project (SEAP), the Severe Typhoid in Africa project (SETA) and the Surveillance for Enteric Fever in India project (SEFI), all of which are characterizing the burden of typhoid and providing data for the evaluation of effectiveness of vaccines and other interventions. The objective of this session is to describe the burden of typhoid in selected countries in South Asia and Africa and new tools for its control, as well as present a global view of typhoid and the

forecast for its elimination. These projects are filling long-existing knowledge gaps that have hindered the implementation of effective typhoid prevention and control measures in South Asia and Africa. These studies' findings offer new evidence to guide typhoid policy and interventions including strategies for the introduction of TCV. The session will then provide a global view on the implications of this new burden data and present insights on the future of typhoid control.

#### CHAIR

Denise Garrett

*Sabin Vaccine Institute, Washington, DC, United States*

Samir Saha

*Child Health Research Foundation, Dhaka, Bangladesh*

10:15 a.m.

#### **DETAILING THE BURDEN OF TYPHOID IN SOUTH ASIA AND IMPLICATIONS FOR THE IMPLEMENTATION OF NEW TYPHOID CONJUGATE VACCINES**

Denise Garrett

*Sabin Vaccine Institute, Washington, DC, United States*

10:35 a.m.

#### **BURDEN OF TYPHOID IN INDIA: MEASURING WHAT MATTERS FOR VACCINE INTRODUCTION**

Jacob John

*Christian Medical College, Vellore, India*

10:55 a.m.

#### **THE EPIDEMIOLOGY OF INVASIVE SALMONELLA INFECTIONS IN AFRICA: HOW CAN LARGE SURVEILLANCE PROGRAMS CONTRIBUTE TO INTRODUCTION DECISIONS OF NOVEL TYPHOID CONJUGATE VACCINES**

Florian Marks

*University of Cambridge, Cambridge, United Kingdom*

11:15 a.m.

#### **A GLOBAL PERSPECTIVE ON NEW DATA ON TYPHOID FEVER EPIDEMIOLOGY**

John A. Crump

*University of Otago, Dunedin, New Zealand*

11:35 a.m.

#### **DISCUSSION**

### **Symposium 75**

#### **Bubble CPAP and High Flow Nasal Cannula in Low-Resource Settings: Promising Therapies or Have We Burst the Bubble?**

*National Harbor 10 (National Harbor Level)*

Friday, November 22, 10:15 a.m. - Noon

Pneumonia is a leading cause of mortality among children in low-resource settings. World Health Organization (WHO) treatment recommendations include low-flow oxygen for children with severe pneumonia. Bubble continuous positive airway pressure (bCPAP) and high flow nasal cannula (HFNC) are non-invasive respiratory support modalities for children with respiratory failure, including those with severe pneumonia. bCPAP and HFNC may offer benefit to children in low-resource settings with severe pneumonia. Results from three randomized controlled trials comparing bCPAP with standard oxygen therapy among children with clinical pneumonia

have recently been disseminated. However, results differ between trials, as does methodology. One trial included a HFNC arm; further trials examining HFNC are ongoing. This session brings together investigators from each trial and additional clinician/scientists with expertise in intensive care therapies intended for low-resource settings. The session will begin with a review of each RCT by its investigator. Following this review, the investigators will discuss the results of a meta-analysis of the three trials and further lessons learned from the implementation of bCPAP and HFNC. A clinician/scientist will then lead a discussion on the impact of these results with regards to the implementation of bCPAP, HFNC and other intensive care therapies in low-resource settings. In addition, future research needs will be discussed. Audience members will be encouraged to participate throughout the discussion.

#### CHAIR

Andrew G. Smith

*University of Utah School of Medicine, Salt Lake City, UT, United States*

Eric McCollum

*Johns Hopkins University, Baltimore, MD, United States*

10:15 a.m.

#### **BUBBLE CONTINUOUS POSITIVE AIRWAY PRESSURE FOR CHILDREN WITH SEVERE PNEUMONIA AND HYPOXAEMIA IN BANGLADESH**

Mohammad J. Chisti

*International Centre for Diarrhoeal Disease Research, Bangladesh (icddr), Dhaka, Bangladesh*

10:40 a.m.

#### **CONTINUOUS POSITIVE AIRWAY PRESSURE FOR CHILDREN WITH UNDIFFERENTIATED RESPIRATORY DISTRESS IN GHANA**

Patrick T. Wilson

*Columbia University, New York, NY, United States*

11:05 a.m.

#### **CPAP IMPACT: A RANDOMIZED TRIAL OF BUBBLE CONTINUOUS POSITIVE AIRWAY PRESSURE VERSUS STANDARD CARE FOR HIGH-RISK CHILDREN WITH SEVERE PNEUMONIA IN RURAL DISTRICT MALAWI HOSPITAL**

Michelle Eckerle

*Cincinnati Children's Hospital, Cincinnati, OH, United States*

11:30 a.m.

#### **NEXT STEPS FOR BCPAP AND HFNC: A GROUP DISCUSSION**

Ryan W. Carroll

*Massachusetts General Hospital/Harvard Medical School, Boston, MA, United States*

### **Symposium 76**

#### **Surveillance for Lymphatic Filariasis after Validation of Elimination: Country Strategies in the Absence of Formal Guidelines and Recommendations for the Future**

*National Harbor 11 (National Harbor Level)*

Friday, November 22, 10:15 a.m. - Noon

The past 20 years have seen dramatic progress in the global effort to eliminate lymphatic filariasis (LF). Since the launch of the Global Program to Eliminate Lymphatic Filariasis in 2000, fourteen (19%) of the 73 LF-endemic countries have been validated by the WHO as having eliminated LF as a public health problem and most others

are on track to eliminate LF. The steps to validation of elimination have been clearly outlined by the WHO; mass drug administration (MDA) is followed by post-MDA surveillance using transmission assessment surveys (TAS), and after the third successful TAS in all endemic implementation units, the country can submit its dossier for validation. But validation is not the end of the story, as countries must monitor for recrudescence of disease, yet the necessary and best approaches to post-validation surveillance have not yet been defined. This symposium will explore the innovative strategies employed by countries and lessons learned from the implementation of post-validation surveillance (PVS) for LF in the absence of formal guidance. Togo assessed several potential platforms for LF PVS and implemented a laboratory and clinic-based system using nocturnal smears and Og4C3 ELISA. Ghana has investigated testing of antenatal clinic attendees and entomological approaches to PVS. Within the Philippines, provinces have proactively implemented a variety of methods to monitor for recrudescence, including integration with malaria cross-border surveillance. Panelists will present experiences from several countries, elaborate on the opportunities and challenges with different methodologies and diagnostics, and conclude with a look to the future by WHO regarding next steps in PVS and elimination of LF.

#### **CHAIR**

Rachel Bronzan  
FHI 3360, Washington, DC, United States

Molly Brady  
RTI, Washington, DC, United States

10:15 a.m.

#### **POST-VALIDATION SURVEILLANCE FOR LF IN TOGO – PAST SUCCESSES AND FUTURE PLANS**

Ameyo M. Dorkenoo  
Ministry of Health and Social Protection, Togo, Lomé, Togo

10:35 a.m.

#### **EPIDEMIOLOGICAL AND ENTOMOLOGICAL APPROACHES TO POST-MDA SURVEILLANCE FOR LF IN GHANA**

Benjamin Marfo  
Ghana Health Services, Accra, Ghana

10:55 a.m.

#### **FROM THE GROUND UP: HOW POST-MDA SURVEILLANCE METHODOLOGIES AT PROVINCIAL LEVEL IN THE PHILIPPINES CAN INFLUENCE POST-VALIDATION STRATEGIES**

Leda Hernandez  
Department of Health, Manila, Philippines

11:15 a.m.

#### **CURRENT WHO GUIDANCE ON LF SURVEILLANCE AND PRIORITIES POST-2020**

Jonathan King  
World Health Organization, Geneva, Switzerland

11:35 a.m.

#### **DISCUSSION**

### **Exhibit Hall Open and Light Lunch**

*Prince George's Exhibit Hall C (Lower Atrium Level)*  
Friday, November 22, Noon - 1:45 p.m.

### **Poster Session 77**

#### **Poster Session B: Presentations and Light Lunch**

*Prince George's Exhibit Hall D (Lower Atrium Level)*  
Friday, November 22, Noon - 1:45 p.m.

#### **Poster Session B Directory**

Global Health: #716 – 741

Arthropods/Entomology – Other: #742 – 756

Mosquitoes - Biochemistry and Molecular Biology: #757 – 764

Mosquitoes - Insecticide Resistance and Control: #765 - 777

Mosquitoes - Vector Biology-Epidemiology: #778 - 794

Alphaviruses (Includes Chikungunya): #795 - 805

Flaviviridae – Dengue: #806 - 834

Flaviviridae - Other: #835 - 846

Viruses – Other: #847 - 869

Malaria - Biology and Pathogenesis: #870 – 881

Malaria - Chemotherapy and Drug Resistance: #882 - 901

Malaria – Diagnosis: #902 - 921

Malaria - Drug Development - Preclinical Studies: #922 - 933

Malaria – Epidemiology: #934 - 962

Malaria - Genetics/Genomics: #963 - 978

Malaria – Immunology: #979 - 993

Malaria – Modeling: #994 - 1005

Malaria – Other: #1006 - 1019

Malaria – Prevention: #1020 - 1032

Malaria - Strategies for Elimination: #1033 - 1047

Malaria – Vaccines: #1048 - 1064

Malaria - Vector Control: #1065 - 1080

Bacteriology – Enteric Infections: #1081 - 1096

Bacteriology - Other Bacterial Infections: #1097 - 1105

Cestodes - Echinococcosis/Hydatid Disease: #1106

Cestodes - Taeniasis and Cysticercosis: #1107 - 1110

Clinical Tropical Medicine: #1111 - 1143

Helminths - Nematodes - Filariasis (Other): #1144 - 1153

Helminths - Nematodes - Intestinal Nematodes: #1154 - 1164

HIV and Tropical Co-Infections: #1165 - 1175

Kinetoplastida – Epidemiology (Including *Leishmania* and Trypanosomes): #1176 - 1184

One Health: Interface Of Human Health/Animal Diseases: #1185 - 1194

Pneumonia, Respiratory Infections and Tuberculosis: #1195 - 1204

Schistosomiasis and Other Trematodes – Epidemiology and Control: #1205 - 1222

Water, Sanitation, Hygiene and Environmental Health: #1223 - 1235

## Global Health

716

### IMPLEMENTING MALARIA DIAGNOSTIC COMPETENCY ASSESSMENT COURSES IN NON-ENGLISH SPEAKING COUNTRIES OF AFRICA

Mamadou Alpha Diallo<sup>1</sup>, Mame Cheikh Seck<sup>1</sup>, Ibrahima Diallo<sup>2</sup>, Khadim Diongue<sup>1</sup>, Aida Sadih Badiane<sup>1</sup>, Mouhamadou Ndiaye<sup>1</sup>, Daouda Ndiaye<sup>1</sup>

<sup>1</sup>Cheikh Anta Diop University, Dakar, Senegal, <sup>2</sup>National Malaria Control Program, Dakar, Senegal

717

### ENGAGING COMMUNITIES TO SUPPORT CONSENTING FOR MINIMALLY INVASIVE TISSUE SAMPLING (MITS) PROCEDURE: LESSONS LEARNED FROM BANGLADESH

Faruq Hussain<sup>1</sup>, Emily Gurley<sup>2</sup>, Md. Saiful Islam<sup>1</sup>, John Blevins<sup>3</sup>, Ahoua Kone<sup>3</sup>, Abdush Suban Mulla<sup>3</sup>, Abu Uzayer<sup>1</sup>, Afroz Zahan<sup>1</sup>, Aziz Ahmed<sup>1</sup>, Shikha Datta Gupta<sup>1</sup>, Suruj Ali<sup>1</sup>, Abdullah Al Masud<sup>1</sup>, Mamunur Rashid<sup>1</sup>, Ahmed Shahriar<sup>1</sup>, Shams El Arifeen<sup>1</sup>, Shahana Parveen<sup>1</sup>

<sup>1</sup>International Centre for Diarrhoeal Disease Research, Bangladesh, Mohakhali, Dhaka, Bangladesh, <sup>2</sup>Johns Hopkins Bloomberg School of Public Health, Baltimore, MD, United States, <sup>3</sup>Rollins School of Public Health, Emory University, Atlanta, GA, United States

718

### HEALTH AND SAFETY OF UCLA INTERNAL MEDICINE RESIDENTS PARTICIPATING IN SHORT-TERM INTERNATIONAL CLINICAL ELECTIVES

Jesse E. Ross, Noah Kojima, Chris Tymchuk

University of California Los Angeles, Los Angeles, CA, United States

719

### BUSINESS MODEL INITIATIVES TO IMPROVE ACCESS TO ESSENTIAL MEDICINES IN LIMITED RESOURCES COUNTRIES. A PHARMACEUTICAL COMPANY'S APPROACH

Harald Nusser, Tayyab Salimullah, Viviam Canon, Nadine Shecker, Rachel Hinder, Rebecca Stevens

Novartis Social Business, Basel, Switzerland

720

### BURNOUT AND WELLBEING IN GLOBAL HEALTH: OBSERVATIONS FROM RECIPIENTS OF THE CONRAD N. HILTON HUMANITARIAN PRIZE

David G. Addiss<sup>1</sup>, Leslie Leonard<sup>2</sup>, Deirdre Guthrie<sup>3</sup>

<sup>1</sup>Task Force for Global Health, Atlanta, GA, United States, <sup>2</sup>Emory University, Atlanta, GA, United States, <sup>3</sup>Spore Studios, Three Oaks, MI, United States

721

### RISK FACTORS FOR INFECTIOUS DISEASES IN URBAN ENVIRONMENTS IN SUB-SAHARAN AFRICA: A REVIEW

Matthew R. Boyce, Rebecca Katz, Claire J. Standley

Georgetown University, Washington, DC, United States

722

### COSTING ANALYSIS OF SEROLOGICAL SURVEILLANCE FOR MEASLES AND RUBELLA IMMUNITY IN ZAMBIA

Andrea Carcelen<sup>1</sup>, Bryan Patenaude<sup>1</sup>, William J. Moss<sup>1</sup>, Phil Thuma<sup>2</sup>, Simon Mutembo<sup>3</sup>, Kyla Hayford<sup>1</sup>

<sup>1</sup>Johns Hopkins University, Baltimore, MD, United States, <sup>2</sup>Macha Research Trust, Choma, Zambia, <sup>3</sup>Ministry of Health, Choma, Zambia

723

### DEVELOPING GLOBAL HEALTH PRACTITIONERS: A NOVEL INTERNATIONAL HEALTH EXPERIENCE FOR US MEDICAL STUDENTS

Sara U. Schwanke Khilji, Justin Denny

Oregon Health and Science University, Portland, OR, United States

724

### INEQUITIES IN THE BURDEN OF FEVER, DIARRHEA AND ACUTE RESPIRATORY INFECTION IN CHILDREN UNDER FIVE IN LOW- AND MIDDLE-INCOME COUNTRIES AND THE ROLE OF INTEGRATED COMMUNITY CASE MANAGEMENT IN TARGETING THOSE MOST AT RISK

Peter Winskill, Ben Lambert, Alexandra B. Hogan, Patrick G. Walker

Imperial College London, London, United Kingdom

725

### HEALTH SERVICES IN LONG-TERM REFUGEE CAMPS: IMPLICATIONS FOR INTEGRATION WITH NATIONAL SURVEILLANCE SYSTEMS

Aurelia Attal-Juncqua, Aashna Reddy, Erin M. Sorrell, Claire J. Standley

Georgetown University, Washington, DC, United States

726

### INFECTIOUS DISEASE SURVEILLANCE WITH MLAB - AN APP FOR AUTOMATED RAPID DIAGNOSTIC TEST ANALYSIS

Thomas F. Scherr<sup>1</sup>, Carson Moore<sup>1</sup>, Caison Sing'anga<sup>2</sup>, Japhet Matoba<sup>2</sup>, Ben Katowa<sup>2</sup>, Philip Thuma<sup>2</sup>, David Wright<sup>1</sup>

<sup>1</sup>Vanderbilt University, Nashville, TN, United States, <sup>2</sup>Macha Research Trust, Macha, Zambia

727

### A NATIONAL SURVEY OF EMERGENCY MEDICINE PROVIDERS' KNOWLEDGE AND MANAGEMENT OF TROPICAL DISEASES IN THE RETURNING TRAVELER

Nelly Gonzalez-Lepage<sup>1</sup>, Ashley Iannantone<sup>1</sup>, Megan Rech<sup>2</sup>, Theresa Nguyen<sup>2</sup>

<sup>1</sup>Loyola University Medical Center - Stritch School of Medicine, Maywood, IL, United States, <sup>2</sup>Loyola University Medical Center - Department of Emergency Medicine, Maywood, IL, United States

728

### DEVELOPMENT OF GLOBAL HEALTH CURRICULUM, TRAINING AND PARTNERSHIPS IN AN ACCREDITED MPH PROGRAM IN CLEVELAND, OHIO

Daniel J. Tisch, Ronald E. Blanton, Charles H. King, Peter A. Zimmerman

Case Western Reserve University, Cleveland, OH, United States

729

### A QUALITATIVE ASSESSMENT OF VICO (VIGILANCIA INTEGRADA COLABORATIVA) IN GUATEMALA

Mariangeli Freitas Ning<sup>1</sup>, Jahn Jaramillo<sup>2</sup>, Michael Park<sup>3</sup>, Terrence Q. Lo<sup>3</sup>, Loren Cadena<sup>4</sup>, Olga L. Henao<sup>3</sup>, Andres Espinosa-Bode<sup>4</sup>

<sup>1</sup>TEPHINET/Centers for Disease Control and Prevention, Guatemala City, Guatemala, <sup>2</sup>Public Health Institute/Centers for Disease Control and Prevention, Guatemala City, Guatemala, <sup>3</sup>Centers for Disease Control and Prevention, Atlanta, GA, United States, <sup>4</sup>Centers for Disease Control and Prevention, Guatemala City, Guatemala



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**AFRICAN CENTERS OF EXCELLENCE IN BIOINFORMATICS: AN EVIDENCED-BASED APPROACH TO BIOMEDICAL RESEARCH COLLABORATION IN AFRICA**

Darrell E. Hurt<sup>1</sup>, Christopher Whalen<sup>1</sup>, Mamadou Wele<sup>2</sup>, Daudi Jjingo<sup>3</sup>, Michael Tartakovsky<sup>1</sup>

<sup>1</sup>National Institute of Allergy and Infectious Diseases, North Potomac, MD, United States, <sup>2</sup>University of Sciences, Techniques, and Technologies of Bamako, Bamako, Mali, <sup>3</sup>Makerere University, Kampala, Uganda

731

**AN EXPLORATORY STUDY OF THE MIGRATORY PATTERNS OF NOMADIC FULANI OF NORTHEASTERN FOR HEALTH CARE DELIVERY**

Oladele B. Akogun

The Health Programme, Common Heritage Foundation, Yola, Nigeria

733

**WORKING WITH THE COMMUNITY TO ESTABLISH A HEALTH PROMOTION PLAN IN THE KINDERGARTENS IN THE CONTEXT OF A CHILD MORTALITY SURVEILLANCE IN MANHIÇA, MOZAMBIQUE**

Saquina Cossa<sup>1</sup>, Maria Maixenchs<sup>2</sup>, Felismina Tamele<sup>1</sup>, Zubaida Manhenge<sup>1</sup>, John Blevins<sup>3</sup>, Inacio Mandomando<sup>1</sup>, Quique Bassat<sup>2</sup>, Khatia Munguambe<sup>1</sup>

<sup>1</sup>Centro de Investigação em Saúde de Manhiça, Manhiça, Mozambique, <sup>2</sup>ISGlobal, Hospital Clinic, Universitat de Barcelona, Barcelona, Spain, <sup>3</sup>Emory Global Health Institute, CHAMPS Program Office, Emory University, Atlanta, GA, United States

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**BUILDING TRUST, RESPECT AND EMPATHY IN PUBLIC HEALTH INTERVENTIONS: AN ETHIOPIAN CASE STUDY**

Caroline Ackley<sup>1</sup>, Berhanu Damise<sup>2</sup>, Ketema Degefa<sup>2</sup>

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### RISK OF TRANSMISSION AND THE INSECTICIDE SUSCEPTIBILITY STATUS OF THE POTENTIAL VECTORS OF YELLOW FEVER IN THE NORTHERN, UPPER EAST AND UPPER WEST REGIONS OF GHANA

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### EFFECT OF IVERMECTIN ON FERTILITY FECUNDITY AND MORTALITY OF ANOPHELES ARABIENSIS FEED ON TREATED HUMANS

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## Mosquitoes - Vector Biology-Epidemiology

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### POTENTIAL DISTRIBUTION OF ANOPHELES ARABIENSIS IN THE AMERICAN NEOTROPICS

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### PRELIMINARY ENTOMOLOGICAL FINDINGS FROM ROUTINE MONITORING OF MALARIA VECTOR POPULATION IN FOUR SENTINEL SITES IN LIBERIA, WEST AFRICA

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**SEX-SPECIFIC RESPONSES OF ANOPHELES GAMBIAE MOSQUITOES TO A MOSQUITO- BORNE ALPHAVIRUS INFECTION**

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(ACMCIP Abstract)

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**ENHANCED SURVEILLANCE FOR DENGUE, ZIKA AND CHIKUNGUNYA IN THE SOLOMON ISLANDS**

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**MALARIA TRANSMISSION PROFILE ACROSS BENIN DEPARTMENTS: AN ESSENTIAL ELEMENT FOR BETTER PLANNING OF VECTOR CONTROL INTERVENTIONS**

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**CONTRIBUTION OF INSECTICIDE TREATED MOSQUITO NETS DISTRIBUTION IN PRIMARY SCHOOLS IN MAINTAINING HOUSEHOLD COVERAGE, ATLANTIC DEPARTMENT, BENIN, 2018**

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**DIVERGENCES IN BLOOD-FEEDING AND RESTING BEHAVIORS OF ANOPHELES GAMBIAE AND TRANSMISSION OF MALARIA AND LYMPHATIC FILARIASIS IN RICE GROWING AREAS IN CÔTE D'IVOIRE**

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**IMPACTS OF LARVA-ACQUIRED AEDES AEGYPTI MICROBIOTA ON VECTOR COMPETENCE FOR ZIKA VIRUS**

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(ACMCIP Abstract)

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**CHANGING EPIDEMIOLOGICAL PATTERN OF VISCERAL LEISHMANIASIS IN NEPAL**

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**NOSOI: TRANSMISSION CHAIN SIMULATOR IMPLEMENTING WITHIN-HOST DYNAMICS TO LEVERAGE VECTOR COMPETENCE DATA**

Sebastian Lequime<sup>1</sup>, Paul Bastide<sup>1</sup>, Simon Dellicour<sup>2</sup>, Albin Fontaine<sup>3</sup>, Guy Baele<sup>1</sup>, Philippe Lemey<sup>1</sup>  
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**ZIKA VIRUS SEROPREVALENCE DECLINES AND NEUTRALIZATION ANTIBODIES WANE IN ADULTS FOLLOWING OUTBREAKS IN FRENCH POLYNESIA AND FIJI**

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**DETERMINING ENTOMOLOGICAL DRIVERS OF MALARIA TRANSMISSION IN ENDEMIC REGIONS IN NAMIBIA**

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**USING LIVE CATCHES OF MOSQUITOES AS A TOOL TO ASSESS MALARIA TRANSMISSION IN ONE VILLAGE OF MALI: COMMUNITY ACCEPTANCE AND EFFICACY**

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**EVALUATION OF THE BLOOD FEEDING STATUS AND PARITY IN AEDES AEGYPTI IN IQUITOS, PERU**

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**EVOLUTION OF COLD TOLERANCE TRAITS IN THE INVASIVE MOSQUITO AEDES ALBOPICTUS**

Alexandra Mushegian, Zachary Batz, Peter Armbruster  
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**EFFECT OF SUCROSE CONCENTRATION AND FASTING IN PLASMODIUM VIVAX EXPERIMENTAL INFECTIONS OF NYSSORHYNCHUS (AKA ANOPHELES) DARLINGI**

James Beuzeville-Jaen<sup>1</sup>, Carlos Tong<sup>1</sup>, Manuela Herrera-Varela<sup>1</sup>, Carmen Reategui<sup>2</sup>, Joseph M. Vinetz<sup>3</sup>, Jan E. Conn<sup>4</sup>, Marta Moreno<sup>5</sup>  
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### THERMAL PERFORMANCE OF *Aedes Aegypti* AND IMPLICATIONS FOR CLIMATE CHANGE

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## Alphaviruses (Includes Chikungunya)

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### THE USE OF SPATIAL VIDEO GEONARRATIVES TO DESCRIBE LOCALIZED ENVIRONMENTAL RISK PATTERNS FOR ARBOVIRAL TRANSMISSION IN URBAN KENYA

Amy R. Krystosik<sup>1</sup>, Andrew Curtis<sup>2</sup>, Paul Mutuku<sup>3</sup>, Sandra Bempah<sup>2</sup>, Jayakrishnan Ajayakumar<sup>2</sup>, Lorriane Odhiambo<sup>4</sup>, Donal Bisanzio<sup>5</sup>, Jenna Forsyth<sup>6</sup>, Luti Mwashee<sup>7</sup>, Beja Adamz<sup>7</sup>, Francis Mutuku<sup>3</sup>, A. Desiree LaBeaud<sup>1</sup>

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### NANOTRAP PARTICLE EXTENDS THE DURATION OF DETECTABLE VENEZUELAN EQUINE ENCEPHALITIS VIRUS IN HUMAN BLOOD

Shih-Chao Lin<sup>1</sup>, Ivan Akhrymuk<sup>1</sup>, Monique van Hoek<sup>1</sup>, Benjamin Lepene<sup>2</sup>, Kylene Kehn-Hall<sup>1</sup>

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### CHIKUNGUNYA AND DENGUE VIRUS SEROPREVALENCE AMONG CHILDREN IN COASTAL AND WESTERN KENYA AND RISK FACTORS FOR EXPOSURE

Shama Cash-Goldwasser<sup>1</sup>, Jonathan Altamirano<sup>2</sup>, Bryson Ndenga<sup>3</sup>, Charles Muiruri Ng'ang'a<sup>4</sup>, Said Lipi Malumbo<sup>4</sup>, Jael Sagina Amugongo<sup>4</sup>, Loice Lwamba<sup>3</sup>, Francis Denga<sup>3</sup>, Sandra Musaki<sup>3</sup>, Francis Mutuku<sup>5</sup>, A. Desiree LaBeaud<sup>2</sup>

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### IMMUNOLOGICAL INSIGHTS BASED ON ANTIBODY BINDING EPITOPES ON THE CHIKUNGUNYA VIRUS ENVELOPE

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### MAPPING AND FORECASTING CHIKUNGUNYA AT GLOBAL SCALE

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### POPULATION DIVERSITY-ALTERING MUTATIONS AS A METHOD FOR IMPROVING A LIVE-ATTENUATED CHIKUNGUNYA VIRUS VACCINE

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### THE BASIC REPRODUCTION NUMBER ( $R_0$ ) OF CHIKUNGUNYA IN COLOMBIA DURING 2014-2016 AND ITS CORRELATION WITH ECO-ENVIRONMENTAL FACTORS

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### EVALUATION OF TWO COMMERCIALY AVAILABLE CHIKUNGUNYA VIRUS IGM ENZYME-LINKED IMMUNOASSAY (ELISA) IN AN ENDEMIC REGION FOR CHIKUNGUNYA, DENGUE AND ZIKA VIRUSES

Mariana Kikuti<sup>1</sup>, Laura B. Tauro<sup>2</sup>, Patricia S. Moreira<sup>3</sup>, Leile Camila J. Nascimento<sup>3</sup>, Moyra M. Portilho<sup>3</sup>, Gubio C. Soares<sup>4</sup>, Scott C. Weaver<sup>5</sup>, Mitermayer G. Reis<sup>3</sup>, Uriel Kitron<sup>6</sup>, Guilherme S. Ribeiro<sup>4</sup>

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### TRANSMISSION OF CHIKUNGUNYA IN A BRAZILIAN URBAN SLUM SETTING: SEROPREVALENCE AND ASSOCIATED FACTORS

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### AN EMERGING THREAT TO PUBLIC HEALTH IN PERU: DETECTION OF THE MAYARO VIRUS

Miguel A. Aguilar-Luis<sup>1</sup>, Tamara Gil Ramirez<sup>1</sup>, Luis J. del Valle<sup>2</sup>, Saul Levy Blitcheitn<sup>1</sup>, Wilmer Silva Caso<sup>1</sup>, Víctor Zavaleta- Gavidia<sup>3</sup>, Jorge Bazán-Mayra<sup>3</sup>, Daniel Cornejo<sup>3</sup>, Juana M. del Valle-Mendoza<sup>1</sup>

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(ACMCIP Abstract)

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### USING BIG DATA TO MONITOR THE INTRODUCTION AND SPREAD OF CHIKUNGUNYA, EUROPE, 2017

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**SINGLE ADMINISTRATION OF LIVE-ATTENUATED TETRAVALENT DENGUE VACCINE CANDIDATE, KD-382, INDUCED LONG-LASTING (>3.5 YEARS) NEUTRALIZING ANTIBODY AGAINST ALL FOUR SEROTYPES IN DENGUE NAÏVE CYNOMOLGUS MONKEYS**

Yasuhiko Shinmura<sup>1</sup>, Masaya Yoshimura<sup>1</sup>, Kazuhisa Kameyama<sup>1</sup>, Kengo Sonoda<sup>1</sup>, Sutee Yoksan<sup>2</sup>, Kazuhiko Kimachi<sup>1</sup>  
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**CO-CIRCULATION OF DENGUE, ZIKA AND CHIKUNGUNYA IN THE PERUVIAN AMAZON**

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**PERFORMANCE EVALUATION OF A RDT DENGUE IGG ASSAY FOR PRE-VACCINAL SEROSTATUS DETERMINATION**

Anthony Palvadeau, Muriel Cardona, Catherine Bachard, Muriel Costaille, Nadia Sagot, Akram Yahia-Ammar, Gaëlle-Anne Cremer, Stéphanie Antil-Delbeke, Patrice Sarfati  
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**HUMAN MAJOR HISTOCOMPATIBILITY COMPLEX CLASS I CHAIN-RELATED (MIC) GENE ASSOCIATIONS WITH DENGUE INFECTIONS IN BANGKOK**

Henry A. Stephens<sup>1</sup>, Panpimon Luangtrakool<sup>2</sup>, Sasijit Vejbaesya<sup>2</sup>, Komon Luangtrakool<sup>2</sup>, Siripen Kalayanarooj<sup>3</sup>, Anon Srikiatkachorn<sup>4</sup>, Louis Macareo<sup>5</sup>, Stefan Fernandez<sup>5</sup>, Richard Jarman<sup>6</sup>, Alan Rothman<sup>4</sup>  
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**THE CHANGING EPIDEMIOLOGY OF DENGUE FEVER IN EUROPE AS INFLUENCED BY CLIMATE CHANGE, GLOBALIZATION, AND CONFLICT-INDUCED MIGRATION**

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**EPIDEMIOLOGIC TRENDS OF DENGUE IN U.S. TERRITORIES - 2010-2018**

Kyle R. Ryyff, Dania M. Rodriguez, Aidsa Rivera, Tyler M. Sharp, Stephen H. Waterman, Laura E. Adams, Gabriela Paz-Bailey  
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**A UNIVERSAL DENGUE VACCINE ELICITS NEUTRALIZING ANTIBODIES AGAINST STRAINS FROM ALL FOUR DENGUE SEROTYPES**

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**ANTIGENIC EVOLUTION OF DENGUE VIRUSES 1-4 IN BANGKOK, THAILAND IN RELATION TO GLOBAL DENGUE VIRUS ANTIGENIC DIVERSITY**

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**MOLECULAR DETECTION OF DENGUE FEVER VIRUS IN PATIENTS SUSPECTED OF EBOLA VIRUS DISEASE IN GHANA**

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**MAPPING THE CLONAL AND FUNCTIONAL DIVERSITY OF DENV-ELICITED HUMORAL IMMUNITY USING HIGH THROUGHPUT SINGLE CELL RNA SEQUENCING**

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**PRIMARY AND SECONDARY DENGUE VIRUS INFECTIONS ELICIT SIMILAR MEMORY B CELL PROFILES BUT CROSS-REACTIVITY TO ZIKA VIRUS IS HIGHER IN SECONDARY DENGUE**

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**NEW ANTIGENIC EPITOPES ON DENGUE VIRUS SEROTYPE 3**

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**SEROLOGICAL CHARACTERIZATION OF HOMOTYPIC AND HETEROTYPIC REPEAT DENGUE VIRUS INFECTIONS IN A LONG-TERM COHORT STUDY**

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**THE GLOBAL BURDEN OF DENGUE FROM 1990-2017**

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**RE-EMERGENCE OF DENV-2 IN THE STATE OF SAO PAULO, BRAZIL**

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**COST-EFFECTIVENESS OF WOLBACHIA TO REDUCE DENGUE BURDEN IN MAJOR INDONESIAN CITIES**

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**CLINICAL PROFILE OF PATIENTS HOSPITALIZED WITH DENGUE DURING AN EPIDEMIC IN PUERTO RICO**

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**STATISTICAL MODELS TO ESTIMATE THE NUMBER OF INFECTIOUS DENGUE AND ZIKA VIRUSES USING A REAL-TIME PCR**

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**DETECTION OF ZIKA VIRUS IN PATIENTS WITH ACUTE FEBRILE RESPIRATORY SYMPTOMS**

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**PREDICTORS OF ZIKA VIRUS SEROPOSITIVITY AMONG RURAL GUATEMALAN CHILDREN EARLY IN THE 2015-16 EPIDEMIC, USING RAPID ACTIVE SAMPLING SURVEYS AND THE ZIKV NS1 IGG BLOCKADE-OF-BINDING ASSAY**

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### RECENT ZIKA INFECTION AMONG WOMEN OF REPRODUCTIVE AGE IN GUATEMALA, 2017-2018

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### DEVELOPMENT OF LASSA VIRUS GLYCOPROTEIN IMMUNOASSAY TO AID IN LASSA FEVER SURVEILLANCE AND VACCINE DEVELOPMENT

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### LASSA FEVER SEROPREVALENCE IN PLATEAU STATE, NIGERIA

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### RESPIRATORY AND FEBRILE ILLNESSES IN CHILDREN DUE TO HUMAN PARAINFLUENZA VIRUS TYPE 4 (HPIV4) AND HUMAN CORONAVIRUS (HCOV) OC43 IN DHAKA, BANGLADESH

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Peter M. Silvera<sup>1</sup>, Akille Berhanu<sup>2</sup>, Jonathan Prigge<sup>3</sup>, Kady Honeychurch<sup>2</sup>, Doug Grosenbach<sup>2</sup>, Dennis Hruby<sup>2</sup>  
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Linda Peniel Salekwa<sup>1</sup>, Douglas Watts<sup>2</sup>, George Bettinger<sup>2</sup>, Pedro Palermo<sup>2</sup>, Mirende Matiko<sup>1</sup>, Philemon Wambura<sup>1</sup>

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### ENTOMOLOGICAL INVESTIGATIONS AND LABORATORY DETECTION OF A RIFT VALLEY FEVER OUTBREAK IN HUMAN POPULATIONS IN OL KALAU SUB-COUNTY OF NYANDARUA COUNTY, KENYA, 2019

Samson Limbaso Konongoi<sup>1</sup>, Allan Ole Kwallah<sup>2</sup>, Kizito Lubano<sup>3</sup>, Joel Lutomiah<sup>1</sup>, Rosemary Sang<sup>1</sup>

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### PROTOCOL FOR THE SURVEILLANCE STAGE OF A COMMUNITY-BASED RSV (RESPIRATORY SYNCYTIAL VIRUS) MORTALITY STUDY IN KARACHI, PAKISTAN

Abdul Momin Kazi<sup>1</sup>, Asad Ali<sup>1</sup>, Nazia Ahsan<sup>1</sup>, Waliyah Mughis<sup>1</sup>, Saima Jamal<sup>1</sup>, Beryl Guterman<sup>2</sup>, Fauzia Aman Malik<sup>2</sup>, Saad Bin Omer<sup>2</sup>

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### GRIEF SUPPORT TRAINING FOR COMMUNITY HEALTH WORKERS AND NURSES WORKING WITH BEREAVED PARENTS ENROLLED IN A COMMUNITY-BASED RSV MORTALITY STUDY IN KARACHI, PAKISTAN

Waliyah Mughis<sup>1</sup>, Saima Jamal<sup>1</sup>, Ayesha Mian<sup>1</sup>, Nargis Asad<sup>1</sup>, Fauzia Aman Malik<sup>2</sup>, Saad Bin Omer<sup>2</sup>, Abdul Momin Kazi<sup>1</sup>

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### NIPAH VIRUS INFECTION IN 2018-19 NIPAH SEASON IN BANGLADESH

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### DORMANCY OF PLASMODIAL SPOOROZOITES

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### PLASMA TAU AND OTHER BLOOD-BASED BIOMARKERS OF BRAIN INJURY IN CEREBRAL MALARIA AND SEVERE MALARIAL ANEMIA

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### SEVERE ANEMIA IS ASSOCIATED WITH SYSTEMIC INFLAMMATION IN YOUNG CHILDREN PRESENTING TO A TERTIARY HOSPITAL IN UGANDA

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### CHARACTERIZATION OF A NOVEL *PLASMODIUM FALCIPARUM* ARMADILLO-TYPE REPEAT PROTEIN

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### ANALYSIS OF NATURAL ANTIBODY RESPONSE TO NOVEL *PLASMODIUM FALCIPARUM* MEROZOITE PROTEINS

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### ELEVATED PLASMA SOLUBLE ST2 CONCENTRATIONS ARE ASSOCIATED WITH COGNITIVE IMPAIRMENT IN UGANDAN CHILDREN WITH CEREBRAL MALARIA

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Alex Kashaija Musiime<sup>1</sup>, Joseph Okoth<sup>1</sup>, Melissa Conrad<sup>2</sup>, Daniel Ayo<sup>1</sup>, Ismail Onyige<sup>1</sup>, John Rek<sup>1</sup>, Joaniter I. Nankabirwa<sup>3</sup>, Emmanuel Arinaitwe<sup>1</sup>, Moses R. Kanya<sup>3</sup>, Grant Dorsey<sup>2</sup>, Geert-Jan van Gemert<sup>4</sup>, Sarah G. Staedke<sup>5</sup>, Chris Drakeley<sup>5</sup>, Teun Bousema<sup>4</sup>, Chiara Andolina<sup>4</sup>

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Malick Anne<sup>1</sup>, Mamadou Mactar Leye<sup>2</sup>, Doudou Sene<sup>3</sup>, Abdel Kader Dieye<sup>4</sup>, Ibrahima Mbamby Keita<sup>5</sup>, Youssoupha Ndiaye<sup>5</sup>

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Kathy Andrews<sup>1</sup>, Gillian Fisher<sup>1</sup>, Andrews Riches<sup>2</sup>, Oliver Hutt<sup>2</sup>, Karen Jarvis<sup>2</sup>, Tony Wilson<sup>2</sup>, Mark von Itzstein<sup>3</sup>, Pradeep Chopra<sup>3</sup>, Yevgeniya Antonova-Koch<sup>4</sup>, Stephan Meister<sup>4</sup>, Elizabeth Winzeler<sup>4</sup>, Mary Clarke<sup>1</sup>, David Fidock<sup>5</sup>, Jeremy Burrows<sup>6</sup>, John Ryan<sup>2</sup>, Tina Skinner-Adams<sup>1</sup>

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### GENOTYPES AND PHENOTYPES OF RESISTANCE IN ECUADORIAN *PLASMODIUM FALCIPARUM*

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### USING AMPLICON-BASED NEXT GENERATION SEQUENCING TO DETECT DRUG RESISTANCE MARKERS IN *PLASMODIUM FALCIPARUM* FROM AFRICA

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### EFFICACY AND SAFETY OF ARTEMETHER-LUMEFANTRINE, ARTESUNATE-AMODIAQUINE AND DIHYDROARTEMISININ-PIPERAQUINE IN THE TREATMENT OF UNCOMPLICATED *PLASMODIUM FALCIPARUM* MALARIA IN THE DEMOCRATIC REPUBLIC OF CONGO IN 2017: AN OPEN-LABEL RANDOMIZED TRIAL

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### IDENTIFICATION OF NOVEL ANTIMALARIALS BY HIGH THROUGHPUT SCREENING OF *P. FALCIPARUM* PROTEASOME

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### QUIESCENT ARTEMISININ-RESISTANT *PLASMODIUM FALCIPARUM* PARASITES ARE ABLE TO SURVIVE MOST ANTIMALARIAL DRUGS, INCLUDING ARTEMISININ PARTNER DRUGS: WHAT CONSEQUENCES?

Lucie Paloque<sup>1</sup>, Thibaud Reyser<sup>1</sup>, Manel Ouji<sup>1</sup>, Sandie Ménard<sup>2</sup>, Benoit Witkowski<sup>3</sup>, Jean-Michel Augereau<sup>1</sup>, Françoise Benoit-Vical<sup>1</sup>

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(ACMCIP Abstract)

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### CHANGES IN ANTIMALARIAL DRUG SENSITIVITY OVER TIME IN EASTERN UGANDA

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(ACMCIP Abstract)

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### CORRELATIONS OF *EX VIVO* ANTIMALARIAL DRUG SENSITIVITIES BETWEEN STANDARD AND NEW ANTIMALARIAL COMPOUNDS IN TORORO, UGANDA

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### SEASONAL MALARIA CHEMOPREVENTION AND COMPLIANCE DURING FOUR MONTHLY TREATMENTS WITH SULFADOXINE-PYRIMETHAMINE AND AMODIAQUINE AT 3 STUDY SITES IN MALI

Lansana Sangare<sup>1</sup>, Oumar Kone<sup>1</sup>, Youssouf Diarra<sup>1</sup>, Lassina Doumbia<sup>1</sup>, Haidara D. Bouye<sup>1</sup>, Vincent Sanogo<sup>1</sup>, Bassi Coulibaly<sup>1</sup>, Amadou Bouare<sup>1</sup>, Abdoul K. Diallo<sup>1</sup>, Zakaria Haidara<sup>1</sup>, Modibo Telly<sup>1</sup>, Jules Mihigo<sup>2</sup>, Erin Eckert<sup>3</sup>, Moustapha Coulibaly<sup>1</sup>, Etienne Coulibaly<sup>1</sup>, Mouctar Diallo<sup>1</sup>, Ababacar Maiga<sup>1</sup>, Donald J. Krogstad<sup>4</sup>, Ousmane A. Koita<sup>1</sup>

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### FUNCTIONAL ANALYSIS OF THE ANTIMALARIAL TARGET *PLASMODIUM FALCIPARUM* PHOSPHATIDYLINOSITOL 4-KINASE

Anna R. Sternberg, Matthew R. Hassett, Paul D. Roepe  
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### TARGETING PHOSPHATIDYLINOSITOL 3' KINASE TO DESIGN NOVEL COMBINATION THERAPIES AGAINST ARTEMISININ RESISTANT *PLASMODIUM FALCIPARUM*

Kalpana Iyengar, Paul Roepe  
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### THE SUBSTANDARD ARTEMISININ EPIDEMIC - ACCELERATING RESISTANCE IN *P. FALCIPARUM* MALARIA?

Matthew R. Hassett, Paul D. Roepe  
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Bryce E. Riegel, Paul D. Roepe  
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### USING A SMALL FLUORESCENT PROBE TO MEASURE REDOX POTENTIAL IN THE *PLASMODIUM FALCIPARUM* DIGESTIVE VACUOLE

Andreas V. Willems, Paul D. Roepe  
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### *IN VIVO* EFFICACY AND FREQUENCY OF MOLECULAR MARKERS OF RESISTANCE OF *P. FALCIPARUM* TO SULFADOXINE-PYRIMETHAMINE PLUS AMODIAQUINE IN BOUGOUNI, MALI AND HOUNDÉ, BURKINA FASO

Issaka Sagara<sup>1</sup>, Issaka Zongo<sup>2</sup>, Irene Kuepfer<sup>3</sup>, Matthew Cairns<sup>3</sup>, Modibo Diarra<sup>1</sup>, Amadou Barry<sup>1</sup>, Frederic Nikiema<sup>2</sup>, Amadou Tapily<sup>1</sup>, Samba Coumaré<sup>1</sup>, Ismaila Thera<sup>1</sup>, JeanBosco Ouedraogo<sup>4</sup>, Paul Milligan<sup>3</sup>, Daniel Chandrahaman<sup>3</sup>, Abdoulaye Djimde<sup>1</sup>, Brian Greenwood<sup>3</sup>, Alassane Dicko<sup>1</sup>

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### GUT MICROBIOME PREDICTS LUMEFANTRINE PHARMACOKINETICS IN HEALTHY MICE

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### EXPANSION OF CHLOROQUINE SENSITIVE HAPLOTYPES IN THE *PLASMODIUM FALCIPARUM* RESERVOIR IN BONGO DISTRICT, GHANA

Charles A. Nah<sup>1</sup>, Kathryn E. Tiedje<sup>1</sup>, Michael F. Duffy<sup>1</sup>, Anita Ghansah<sup>2</sup>, Abraham R. Oduro<sup>3</sup>, Kwadwo A. Koram<sup>2</sup>, Karen P. Day<sup>1</sup>

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## Malaria – Diagnosis

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### LABORATORY EVALUATION OF INTRODUCED PROCEDURAL ERRORS ON MALARIA RAPID DIAGNOSTIC TEST PERFORMANCE

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Carson P. Moore, Nathaniel Z. Piety, David W. Wright  
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Mamadou Alpha Diallo, **Ndeye Anna Seck**, Khadim Diongue, Mouhamadou Ndiaye, Aida Sadih Badiane, Mame Cheikh Seck, Daouda Ndiaye  
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*National Malaria Control Program, Cotonou, Benin*

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Ewurama D. Owusu, Augustina Frimpong, **Seda Yerlikaya**, Xavier Ding  
*FIND, Geneva, Switzerland*

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**Catherine Olufunke Falade**<sup>1</sup>, IkeOluwapo Oyeneye Ajayi<sup>1</sup>, Ayodele Samuel Jegede<sup>1</sup>, Chinenye Afonne<sup>1</sup>, Tolulope Ogunesin<sup>1</sup>, Roland I. Ibenipere Funwei<sup>1</sup>, Olusola Ojurongbe<sup>2</sup>, Jan Singlovic<sup>3</sup>, Melba Gomes<sup>3</sup>  
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**ASSESSMENT OF COMPETENCE OF PARTICIPANTS BEFORE AND AFTER 6-DAY INTENSIVE MALARIA MICROSCOPY TRAINING IN RWANDA**

**Noella Umulisa**<sup>1</sup>, Veneranda Umubyeyi<sup>1</sup>, Tharcisse Munyaneza<sup>2</sup>, Ruzindana Emmanuel<sup>2</sup>, Aline Uwimana<sup>3</sup>, Stephen Mutwiwa<sup>1</sup>, Aimable Mbituyumuremyi<sup>3</sup>  
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**PERFORMANCE OF A HIGH SENSITIVITY MUSE® MALARIA Pf-PV DETECTION ASSAY IN A STUDY IN LAGOS, NIGERIA**

Wellington Oyibo<sup>1</sup>, Chinonye Anabike<sup>1</sup>, Bummi Olalekan<sup>1</sup>, Ginika Onuachwusi<sup>1</sup>, Adeyanju Adeyinka<sup>1</sup>, Gracemary Ndidium<sup>1</sup>, Uche Igbasi<sup>1</sup>, Julie Clor<sup>2</sup>, James Mulry<sup>3</sup>, **Kamala Tyagarajan**<sup>2</sup>  
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**DIAGNOSIS OF RED CELL GLUCOSE-6-PHOSPHATE DEHYDROGENASE (G6PD) DEFICIENCY IN BURKINA FASO: COMPARISON OF QUANTITATIVE AND QUALITATIVE TESTS**

**Edith C. Bougouma**<sup>1</sup>, Emelie Badoum<sup>2</sup>, Sam Coulibaly<sup>1</sup>, Samuel Serme<sup>1</sup>, Issiaka Soulama<sup>1</sup>, Alphonse Ouedraogo<sup>1</sup>, Alfred B. Tiono<sup>1</sup>, Sodiomon B. Sirima<sup>1</sup>  
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**PERFORMANCE OF THE PFHRP2 BASED RAPID DIAGNOSTIC TEST (CARESTART™) IN THE DETECTION OF ASYMPTOMATIC PLASMODIUM FALCIPARUM INFECTION IN BOUGOUNI, MALI**

**Modibo Diarra**<sup>1</sup>, Amadou Tapily<sup>1</sup>, Issaka Sagara<sup>1</sup>, Hama Yalcouyé<sup>1</sup>, Amadou Barry<sup>1</sup>, Aly Tiama<sup>1</sup>, Seydou Goro<sup>1</sup>, Samba Coumaré<sup>1</sup>, Mohamed Koné<sup>1</sup>, Ismaila Thera<sup>1</sup>, Irene Kuepfer<sup>2</sup>, Matthew Cairns<sup>2</sup>, Paul Milligan<sup>2</sup>, Daniel Chandrahaman<sup>2</sup>, Brian Greenwood<sup>2</sup>, Alassane Dicko<sup>1</sup>  
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**MALARIA PRESCRIBING PRACTICES AT AN URBAN HEALTH CENTER IN KUMASI, GHANA**

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**EVALUATING SEROLOGY-BASED RAPID DIAGNOSTIC TESTS AS A TOOL TO IMPROVE PLASMODIUM FALCIPARUM SURVEILLANCE IN LOW-TRANSMISSION SETTINGS**

**Monique Ambrose**<sup>1</sup>, Victoria M. Hunt<sup>2</sup>, Christine M. Bachman<sup>2</sup>, David Cate<sup>3</sup>, Bernhard H. Weigl<sup>3</sup>, David Bell<sup>3</sup>, Chris Drakeley<sup>4</sup>, Caitlin Bever<sup>1</sup>, Jaline Gerardin<sup>5</sup>  
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**IMPACT OF ULTRASENSITIVE MALARIA DIAGNOSTICS ON ASYMPTOMATIC PREGNANT MOTHERS IN AMHARA REGION, ETHIOPIA**

Banchamlak Tegegne<sup>1</sup>, Gizachew Yismaw<sup>1</sup>, Ranmalee Amarasekara<sup>2</sup>, Abu Naser Mohon<sup>2</sup>, James Cheaveau<sup>2</sup>, **Dylan R. Pillai**<sup>2</sup>  
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**PLATE-BASED ASSAY FOR TYPING AND CHARACTERIZING PLASMODIUM ANTIGENS USING MICROCAPILLARY CYTOMETRY**

**Julie Clor**, Xuemei Wan, Kamala Tyagarajan  
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**OPERATIONAL PERFORMANCE OF A HIGHLY-SENSITIVE DIAGNOSTIC METHOD FOR DETECTION OF MALARIA INFECTIONS IN PREGNANCY IN PAPUA NEW GUINEA**

Benishar Kombut<sup>1</sup>, Pele Melepia<sup>2</sup>, Ruth Fidelis<sup>2</sup>, Elma Nate<sup>3</sup>, Lina Lorry<sup>3</sup>, Livingstone Tavul<sup>3</sup>, Maria Ome-Kaius<sup>4</sup>, Michelle JL Scoullar<sup>5</sup>, Philippe Boeuf<sup>5</sup>, Shazia Ruybal-Pesántez<sup>6</sup>, Michaela Riddell<sup>6</sup>, Lisa Valley<sup>6</sup>, Andrew Valley<sup>6</sup>, Chris Morgan<sup>6</sup>, Freya Ji Fowkes<sup>5</sup>, James Beeson<sup>5</sup>, Jack Richards<sup>5</sup>, Benedict Mode<sup>7</sup>, William Pomat<sup>8</sup>, Ewurama Owusu<sup>9</sup>, Sandra Incardona<sup>9</sup>, Xavier C. Ding<sup>9</sup>, Stenard Hiasihri<sup>2</sup>, Moses Laman<sup>3</sup>, **Leanne J. Robinson**<sup>5</sup>  
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## FACTORS ASSOCIATED WITH SEVERE MALARIA DEATHS: LESSONS FROM A MORTALITY AUDIT CONDUCTED IN HEALTH FACILITIES IN UGANDA

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## AN ULTRA-SENSITIVE PF-HRP2 ELISA FOR THE DETECTION OF LOW-DENSITY *FALCIPARUM* MALARIA

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## MALARIA RAPID DIAGNOSTIC TESTS AS DNA STORAGE TOOL TO QUANTIFY *PLASMODIUM SPP* INFECTION

Etienne A. Guirou<sup>1</sup>, Tobias Schindler<sup>1</sup>, Maximilian Mpina<sup>1</sup>, Salome Hosch<sup>1</sup>, Glenda Cosi<sup>1</sup>, Anna Deal<sup>1</sup>, Silvan Wehner<sup>1</sup>, Kamaka Ramadhani<sup>2</sup>, Jongo Said<sup>2</sup>, Carlos Cortes<sup>3</sup>, Wonder Phiri<sup>3</sup>, Jose Osa Osa Nfumu<sup>3</sup>, Charity Okoro Eribo<sup>3</sup>, Olivier Tresor Donfack<sup>3</sup>, Guillermo A. Garcia<sup>4</sup>, Claudia Daubenberger<sup>1</sup>

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(ACMCIP Abstract)

## PERFORMANCE OF A NOVEL HEMATOLOGY ANALYZER FOR MALARIA DIAGNOSIS IN AN ENDEMIC REGION OF COLOMBIA

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## Malaria - Drug Development - Preclinical Studies

## SYNTHESIS AND EVALUATION OF METABOLITES OF ANTIMALARIAL PYRIDO[1,2-A]BENZIMIDAZOLES

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## EVALUATION OF ANTIOXIDANT AND ANTIMALARIAL ACTIVITY OF LEAF EXTRACTS OF *LUFFA CYLINDRICA*

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## USE OF AN *IN VITRO* *P. CYNOMOLGI* LIVER MODEL FOR RAPID DISCOVERY OF NEXT-GENERATION ANTIMALARIAL DRUGS

Alison E. Roth<sup>1</sup>, Samantha O. Aylor<sup>1</sup>, Erica C. Penn<sup>1</sup>, Ratawan Ubalee<sup>2</sup>, Gregory A. Reichard<sup>1</sup>, Susan E. Leed<sup>1</sup>, Norma E. Roncal<sup>1</sup>, Brian A. Vesely<sup>2</sup>, Silas A. Davidson<sup>2</sup>, Norman C. Waters<sup>2</sup>, Mara Kreishman-Deitrick<sup>1</sup>, Brandon S. Pybus<sup>1</sup>

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## A NEW AND IMPROVED COLLABORATIVE SYSTEM TO EFFICIENTLY EVALUATE NATURAL PRODUCT EXTRACTS FOR ANY THERAPEUTIC AREA: PROOF-OF-CONCEPT IN MALARIA, MULTI-DRUG RESISTANT BACTERIA AND LEISHMANIASIS

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## TNRND315, A TORIN-2 DERIVATIVE TARGETS PI4K AND HAS POTENT ACTIVITY AGAINST *P. FALCIPARUM* ASEXUAL, SEXUAL AND MOSQUITO STAGES

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(ACMCIP Abstract)

## ARTESUNATE RESPONSE OF *P. FALCIPARUM* K13 MUTANT (C580Y) IN HUNSG MOUSE MODEL

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## IDENTIFYING COMPOUNDS THAT TARGET RESISTANT PARASITES AS A STRATEGY TO SUPPRESS THE EMERGENCE OF ANTIMALARIAL RESISTANCE

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### THE POTENTIAL IMPACT OF MATERNAL DEPRESSION ON PARENT-CHILD INTERACTIONS AND PARASITIC INFECTION IN BENINESE INFANTS

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### SHIFT OF DEMOGRAPHIC BURDEN OF MALARIA CASE OF RWANDA USING HMIS

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### DEMOGRAPHIC SURVEILLANCE TO MONITOR PREGNANCY OUTCOMES IN MALARIA ENDEMIC AREA IN OUELESSEBOUGOU, MALI

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### PREVALENCE OF MALARIA INFECTION IN PREGNANT WOMEN IN OUELESSEBOUGOU, MALI

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### IMPROVING THE SPATIAL GRANULARITY FOR TARGETING INDOOR RESIDUAL SPRAYING ON BIKO ISLAND

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**SELECTIVE WHOLE GENOME AMPLIFICATION OF DNA IN LOW PARASITEMIA SAMPLES OF *PLASMODIUM VIVAX* FROM PERU**

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**AMPLICON DEEP SEQUENCING VERSUS TRADITIONAL GENOTYPING OF MSP1 AND MSP2**

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**EVOLUTION OF *PLASMODIUM FALCIPARUM* AFTER AN OUTBREAK FACILITATES LOW ENDEMICITY MALARIA TRANSMISSION IN ECUADOR**

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**VARIED PREVALENCE OF MARKERS OF ANTIMALARIAL DRUG SENSITIVITY ACROSS UGANDA**

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**SEEKING GENES AND THEIR EXPRESSION PROFILES THAT CONTROL SEXUAL ASSIGNMENT IN *P. FALCIPARUM***

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**MAPPING COMPETITIVE GROWTH OF MALARIA PARASITES TO ASSESS THE FITNESS IMPACT OF ARTEMISININ RESISTANCE**

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**ATG10 GENETIC VARIANTS ARE NOVEL PREDICTORS OF LONGITUDINAL SUSCEPTIBILITY TO SEVERE MALARIAL ANEMIA AND ALL-CAUSE MORTALITY IN KENYAN CHILDREN**

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**POINT MUTATIONS IN COMPLEMENT C3 ALTER LONGITUDINAL RISK PROFILES FOR MALARIA AND SMA EPISODES IN KENYAN CHILDREN**

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**USE OF MOLECULAR INVERSION PROBES TO ELUCIDATE WITHIN-COUNTRY POPULATION STRUCTURE OF TANZANIAN *PLASMODIUM FALCIPARUM* ISOLATES**

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**MLMOI - AN R-PACKAGE TO ESTIMATE MULTIPLICITY OF INFECTION**

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**ASSOCIATION OF ALPHA GLOBIN VARIANTS WITH *PLASMODIUM KNOWLESII* MALARIA DISEASE SEVERITY AND INFECTION SUSCEPTIBILITY**

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**MULTIPLEXED AMPLICON SEQUENCING OF *PLASMODIUM FALCIPARUM* FOR DRUG RESISTANCE GENOTYPING AND BARCODING**

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**MOLECULAR AND IMMUNOLOGICAL CHARACTERIZATION OF *PLASMODIUM FALCIPARUM* GAMETOCYTE-SPECIFIC GENES**

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**POPULATION GENETICS, SEQUENCE DIVERSITY, SELECTION AND COMPLEXITY OF INFECTION OF *PLASMODIUM FALCIPARUM* APICAL MEMBRANE ANTIGEN 1 GENE IN TWO ECOLOGICAL ZONES IN GHANA**

Benedicta Ayiedu Mensah<sup>1</sup>, Benjamin Abuaku<sup>1</sup>, James Myers Hansen<sup>1</sup>, ozkan Aydemir<sup>2</sup>, Patrick Marsh<sup>2</sup>, Francis Anto<sup>3</sup>, Jeffrey Bailey<sup>2</sup>, Anita Ghansah<sup>1</sup>

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**RELATEDNESS BETWEEN MALARIA PARASITES: PORTABLE INSIGHTS ACROSS SETTINGS**

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**PROTECTION AGAINST MALARIA IN HETEROZYGOUS GIRLS FOR G6PD DEFICIENCY IN ANGOLA**

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**Malaria – Immunology**

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**HUMAN ANTIBODIES TO AN EPITOPE IN PVDBP BLOCK ADHESION OF *P. FALCIPARUM* PLACENTAL PARASITES VIA CRYPTIC EPITOPES IN VAR2CSA**

Catherine J. Mitran<sup>1</sup>, Angie Mena<sup>1</sup>, Hazel Lugo<sup>1</sup>, Ali Salanti<sup>2</sup>, Francis B. Ntumngia<sup>3</sup>, John H. Adams<sup>3</sup>, Eliana M. Arango<sup>4</sup>, Amanda Maestre<sup>4</sup>, Michael F. Good<sup>5</sup>, Stephanie K. Yanow<sup>1</sup>

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**MEASUREMENT OF *PLASMODIUM FALCIPARUM*- AND *P. VIVAX*-SPECIFIC ANTIBODY PROFILES ON PROTEIN MICROARRAYS FROM DRIED BLOOD SPOTS**

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**ANTIBODY LEVELS TO *PLASMODIUM FALCIPARUM* INFECTED ERYTHROCYTES INCREASE OVER SUCCESSIVE PREGNANCIES**

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**ANTIBODY PROFILES INDUCED BY IMMUNIZATION WITH RADIATION ATTENUATED *PLASMODIUM FALCIPARUM* SPOROZOITES (PFSPZ VACCINE) IN MALARIA NAIVE VOLUNTEERS**

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**GUT MICROBIOTA MODULATION OF GERMINAL CENTER REACTIONS IMPACTS SEVERITY OF *PLASMODIUM* INFECTIONS**

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**VACCINE OPTIMIZATION BY IDENTIFICATION, CHARACTERIZATION, AND DOWNSELECTION OF HUMAN T CELL EPITOPES FROM *PLASMODIUM FALCIPARUM* CIRCUMSPOROZOITE PROTEIN**

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### MALARIA-SPECIFIC B CELL RESPONSES IN CHILDREN AND ADULTS FROM UGANDA

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### PLASMODIUM-DERIVED HEMOZOIN IMPAIRS ANTIBACTERIAL INNATE IMMUNITY TO SYSTEMIC INFECTIONS

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### PEDIATRIC PARTICIPATION RATES IN A LONGITUDINAL MALARIA IMMUNOLOGY STUDY

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### THE EFFECT OF ADDING AZITHROMYCIN TO THE ANTIMALARIALS (SULPHADOXINE/PYRIMETHAMINE AND AMODIAQUINE) USED FOR SEASONAL MALARIA CHEMOPREVENTION ON THE IMMUNE RESPONSE TO PLASMODIUM FALCIPARUM

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### RECEPTOR TRANSPORTER PROTEIN 4 (RTP4) NEGATIVELY REGULATES IFN- $\gamma$ RESPONSE AND ANTI-MALARIAL IMMUNITY

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### FUNCTIONAL CHARACTERIZATION OF ANTI-RH5 ANTIBODIES FROM A MALARIA ENDEMIC AREA FOR FUTURE VACCINE DEVELOPMENT

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### SEROLOGIC MARKERS OF PREVIOUS MALARIA EXPOSURE AND FUNCTIONAL ANTIBODIES INHIBITING PARASITE GROWTH ARE ASSOCIATED WITH PARASITE KINETICS FOLLOWING A PLASMODIUM FALCIPARUM CONTROLLED HUMAN INFECTION

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**Catherine S. Forconi**<sup>1</sup>, Cliff Oduor<sup>2</sup>, John M. Ong'echa<sup>3</sup>, Jeff A. Bailey<sup>2</sup>, Ann M. Moormann<sup>1</sup>

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### UTILIZING HIGH RESOLUTION MALARIA MAPS AND FUTURE FORECASTS TO OPTIMIZE SITE SELECTION FOR CLINICAL TRIALS IN MALARIA

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### TRACKING PROGRESS TOWARDS MALARIA IN ELIMINATION IN CHINA: A MODELLING STUDY

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### PROSPECTIVELY ESTIMATING THE HEALTH IMPACT OF UPCOMING PRESIDENT'S MALARIA INITIATIVE IMPACT MALARIA PROJECT-SUPPORTED SEASONAL MALARIA CHEMOPREVENTION CAMPAIGNS IN 70 DISTRICTS ACROSS NIGER, MALI AND CAMEROON IN 2019

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### DEVELOPING OPEN SOURCE SOFTWARE TO SUPPORT CLIMATE DATA INTEGRATION FOR OPERATIONAL MALARIA FORECASTS IN ETHIOPIA

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### MACHINE LEARNING APPROACHES TO BETTER UNDERSTANDING DRIVERS OF *P. FALCIPARUM* MALARIA AND ANEMIA CO-INCIDENCE IN SOUTHWESTERN MADAGASCAR

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### MODELLING HYPOTHESIZED INTERACTIONS OF *PLASMODIUM FALCIPARUM* AND *PLASMODIUM VIVAX*

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### THE INFLUENCE OF CHOICE OF METHOD, SEASONALITY AND MOVEMENT ON THE DETECTION OF MALARIA HOTSPOTS

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### MODELLING THE ROLE OF *AN. FUNESTUS* IN AN EAST-AFRICAN SETTING WHERE INSECTICIDE-TREATED NETS ARE ALREADY WIDELY USED BUT MALARIA TRANSMISSION PERSISTS

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### EFFECTIVE TREATMENT WITH ANTIMALARIALS AGAINST *PLASMODIUM FALCIPARUM* MALARIA 1992 - 2016

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### USING PREDICTIVE MODELING FOR THE PROACTIVE IDENTIFICATION OF MALARIA HOTSPOTS IN SENEGAL

**Maya Fraser**<sup>1</sup>, Jean-Louis Lankia<sup>2</sup>, Michael Betancourt<sup>3</sup>, Michael Hainsworth<sup>1</sup>, Yakou Dieye<sup>2</sup>, Kammerle Schneider<sup>1</sup>, Hana Bilak<sup>1</sup>, Laurence Slutsker<sup>1</sup>, Hannah Slater<sup>1</sup>  
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### SHARING THE KNOWLEDGE: THE PRESIDENT'S MALARIA INITIATIVE (PMI) HOSTS A SCIENTIFIC CONFERENCE IN HONOR OF WORLD MALARIA DAY, ANTANANARIVO, MADAGASCAR, 2018

**Catherine M. Dentinger**<sup>1</sup>, Jocelyn Razafindrakoto<sup>1</sup>, Laurent Kapesa<sup>1</sup>, Jemima Andriamihamina<sup>1</sup>, Andritiana Tsarafihavy<sup>2</sup>, Eliane Razafimandimby<sup>3</sup>, Henintsoa Rabarijaona<sup>4</sup>, Sedera Mioramalala<sup>5</sup>  
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### ZAMBIA MALARIA INDICATOR SURVEY 2018: CONTINUED PROGRESS TOWARD NATIONAL COVERAGE AND BURDEN REDUCTION TARGETS

**Busiku Hamainza**<sup>1</sup>, Maya Fraser<sup>2</sup>, Elizabeth Chizema-Kawesha<sup>1</sup>, Kafula Silumbe<sup>3</sup>, Mercy Mwanza-Ingwe<sup>1</sup>, Hawela Moonga<sup>1</sup>, Anthony Yeta<sup>1</sup>, Mutinta Mudenda<sup>1</sup>, Fred Masaninga<sup>4</sup>, John M Miller<sup>3</sup>  
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Kristin Banek<sup>1</sup>, Deborah D. DiLiberto<sup>2</sup>, Emily L. Webb<sup>1</sup>, Samuel Juana Smith<sup>3</sup>, Daniel Chandramohan<sup>1</sup>, Sarah G. Staedke<sup>1</sup>

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**Matt Cairns**<sup>1</sup>, Issaka Sagara<sup>2</sup>, Issaka Zongo<sup>3</sup>, Irene Kuepfer<sup>1</sup>, Frederic Nikiema<sup>3</sup>, Serge Yerbanga<sup>3</sup>, Modibo Diarra<sup>2</sup>, Amadou Barry<sup>2</sup>, Amadou Tapily<sup>2</sup>, Ismaila Thera<sup>2</sup>, Halidou Tinto<sup>3</sup>, Paul Milligan<sup>1</sup>, Jean Bosco Ouédraogo<sup>3</sup>, Daniel Chandramohan<sup>1</sup>, Adoulaye Djimde<sup>2</sup>, Brian Greenwood<sup>1</sup>, Alassane Dicko<sup>2</sup>

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**WHAT CAN DESCRIPTIVE NORMS TELL US ABOUT CARE-SEEKING FOR CHILDREN WITH FEVER IN AFRICA?: A MULTI-COUNTRY STUDY**

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**FACTORS ASSOCIATED WITH SEEKING CARE FOR FEVER IN CHILDREN UNDER FIVE YEARS OF AGE IN CÔTE D'IVOIRE**

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**IMPROVING INTERMITTENT PREVENTIVE TREATMENT FOR PREGNANT WOMEN (IPTP) COVERAGE USING COMMUNITY-BASED OUTREACH STRATEGY (CBOS) IN 2 HEALTH ZONES IN BENIN: ADD (APLAHOUÉ-DOGBO -DJAKOTOMEY) AND DAGLA (DASSA GLAZOUE)**

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**EVALUATION OF MALARIA PARASITAEMIA AND ASSESSING THE KNOWLEDGE, ATTITUDE AND PRACTICE OF PREGNANT WOMEN ATTENDING HEALTH FACILITIES IN OWERRI METROPOLIS TOWARDS MALARIA PREVENTION AND TREATMENT**

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**KEY LEARNINGS OF INTERMITTENT PREVENTIVE TREATMENT IN PREGNANT WOMEN ATTENDING ANTENATAL CARE SERVICES IN SEGOU AND MOPTI REGIONS IN MALI**

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**IMPACT OF SEASONAL MALARIA CHEMOPREVENTION AMONG CHILDREN 5 TO 10 YEARS OF AGE IN KITA AND BAFLOULABE DISTRICTS, MALI**

Sory I. Diawara<sup>1</sup>, Erin Eckert<sup>2</sup>, Jules Mihigo<sup>3</sup>, **Beh Kamate**<sup>4</sup>, Drissa Ouattara<sup>4</sup>, Diakalia Kone<sup>5</sup>, Mariam Tall<sup>5</sup>, Eric Swedberg<sup>6</sup>, Samba Coumaré<sup>4</sup>, Drissa Konate<sup>1</sup>, Moctar Tounkara<sup>1</sup>, Mahamadou Diakit<sup>1</sup>, Seydou Doumbia<sup>1</sup>, Nathalie Gamache<sup>4</sup>, Protails Ndamamenye<sup>4</sup>

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**AVAILABILITY AND COST OF ANTIMALARIAL CHEMOPROPHYLAXIS AND TREATMENT IN THE UNITED STATES FOR TRAVELERS AT HIGH RISK OF ACQUIRING MALARIA**

**Beth K. Thielen**<sup>1</sup>, Emily Walz<sup>1</sup>, Hannah R. Volkman<sup>1</sup>, Jonathan D. Alpern<sup>2</sup>, William M. Stauffer<sup>3</sup>, Danushka Wanduragala<sup>4</sup>, Mackenzie L. Smith<sup>5</sup>, Wilhelmina V. Tolbert Holder<sup>6</sup>, Anne Frosch<sup>7</sup>

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**MALARIA PREVENTIVE PRACTICES AMONG UNDER-FIVES IN DELTA STATE, NIGERIA**

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**MALARIA PREVENTIVE PRACTICES AMONG PREGNANT WOMEN IN AKWA IBOM STATE, SOUTHERN NIGERIA**

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**EFFECT OF MALARIA BEHAVIOR CHANGE COMMUNICATION PACKAGING ON ITN USE AND INCIDENCE OF MALARIA IN RURAL WESTERN KENYA: A RANDOMIZED THREE ARM CONTROLLED TRIAL**

**Judith Mangeni**<sup>1</sup>, Jane Namae<sup>1</sup>, Lucy Abel<sup>1</sup>, Stephen Karuru<sup>1</sup>, Wendy Prudhomme O'Meara<sup>2</sup>  
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**BED NET USE AND KNOWLEDGE OF MALARIA PREVENTION IN SIERRA LEONE**

**Beah Joe Lebby**<sup>1</sup>, Haja Abie Manasaray<sup>2</sup>, Ivan Macauley-Black<sup>1</sup>, Julian Mattia<sup>1</sup>  
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**DETERMINANTS OF MALARIA TESTING AT HEALTH FACILITIES: THE CASE OF UGANDA**

**Ruth N. Kigozi**<sup>1</sup>, John Baptist Bwanika<sup>1</sup>, Emily Goodwin<sup>1</sup>, Peter E. Thomas<sup>2</sup>, Patrick Bukoma<sup>1</sup>, Persis Nabyonga<sup>1</sup>, Fred Isabirye<sup>1</sup>, Paul Oboth<sup>1</sup>, Carol Kyozira<sup>3</sup>, Mame Niang<sup>4</sup>, Kassahun Belay<sup>5</sup>, Gloria Ssebikaari<sup>5</sup>, James K. Tibenderana<sup>5</sup>, Sam S. Gudozi<sup>1</sup>  
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**EFFECTIVENESS OF MALARIA BOOTCAMP TRAINING: EQUIPPING PEACE CORPS VOLUNTEERS AND THEIR COUNTERPARTS TO IMPLEMENT MALARIA PREVENTION ACTIVITIES IN RURAL MADAGASCAR, 2018**

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**QUANTIFYING THE POTENTIAL IMPACT OF MASS DRUG ADMINISTRATION ON THE PARASITE RESERVOIR IN AN AREA OF DECLINING MALARIA TRANSMISSION IN UGANDA**

**Joaniter I. Nankabirwa**<sup>1</sup>, Jessica Briggs<sup>2</sup>, John Rek<sup>3</sup>, Emmanuel Arinaitwe<sup>3</sup>, Sarah G. Staedke<sup>4</sup>, Philip J. Rosenthal<sup>2</sup>, Moses R. Kamya<sup>1</sup>, Grant Dorsey<sup>2</sup>, Isabel Rodriguez-Barraquer<sup>2</sup>, Bryan Greenhouse<sup>2</sup>  
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**ROLLOUT OF SINGLE LOW-DOSE PRIMAQUINE IN TWO SOUTH AFRICAN DISTRICTS TARGETING MALARIA ELIMINATION: ASSESSING PROGRESS AND CHALLENGES**

**Jaishree Raman**<sup>1</sup>, Elizabeth Allen<sup>2</sup>, Theresa Mwesigwa<sup>1</sup>, Aaron Mabuza<sup>2</sup>, Bheki Qwabe<sup>3</sup>, Gillian Malatje<sup>4</sup>, Frank M. Kagoro<sup>2</sup>, Karen I. Barnes<sup>2</sup>  
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**FACTORS ASSOCIATED WITH ADHERENCE TO PRIMAQUINE 8 WEEK REGIMEN AMONG P. VIVAX CASES IN KAYIN STATE, MYANMAR**

**Myint Oo**  
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**USE OF STRATEGIC INFORMATION TO DRIVE IMPACT: OPERATIONALIZING THE 'HIGH BURDEN TO HIGH IMPACT' APPROACH IN UGANDA**

**Daniel J. Kyabayinze**<sup>1</sup>, Damian Rutaazana<sup>1</sup>, Paul Mbaka<sup>2</sup>, Catherine Maiteki-Sebuguzi<sup>1</sup>, Peter Mbabazi<sup>1</sup>, Julius Ssempiira<sup>3</sup>, Jimmy Opigo<sup>1</sup>, Charles Katureebe<sup>2</sup>, Bayo Fatunmbi<sup>2</sup>, Abdisalan Noor<sup>4</sup>, Maru W. Aregawi<sup>4</sup>  
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**SENEGAL CHARTERING THE PATH TO MALARIA ELIMINATION: A PROCESS DESCRIPTION**

**Moustapha Cisse**  
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**COMBINED SEMI-FIELD STUDIES AND A VILLAGE-BASED TRIAL TO ASSESS THE IMPACT ON ANOPHELINE POPULATIONS OF ZOOPHYLAXIS-AIDED IVERMECTIN-BASED VECTOR ELIMINATION (ZAIVE) USING PERI-DOMESTIC CATTLE TREATMENT IN THE HIGHLANDS OF VIETNAM**

**Andrew Lover**<sup>1</sup>, Ian Mendenhall<sup>2</sup>, Jeffrey Hertz<sup>3</sup>, Nguyen X. Quang<sup>4</sup>, Huynh H. Quang<sup>4</sup>  
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**INITIATING CASE NOTIFICATION AND CASE INVESTIGATION FOR P. FALCIPARUM CASES IN CAMBODIA**

**Dr. Siv Sovannaroth**<sup>1</sup>, Peng By Ngor<sup>1</sup>, Abishek Thiagaraj<sup>2</sup>, Bunmeng Chhun<sup>2</sup>, Pedro Pagalday-Olivares<sup>2</sup>  
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**1042****THE IMPACT OF MORBIDITY AND MORTALITY RATE REDUCTION CONTRIBUTED BY VILLAGE MALARIA WORKERS AND MOBILE MALARIA WORKERS IN CAMBODIA 2004 - 2018**

Po Ly<sup>1</sup>, Siv Sovannaroth<sup>1</sup>, Huy Rekol<sup>1</sup>, Khengthavrin Bou<sup>1</sup>, Kimhong Gove<sup>2</sup>, Josh Christenson<sup>2</sup>

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**1043****ADHERENCE TO RADICAL CURE FOR P. VIVAX MALARIA IN PAPUA, INDONESIA**

Annisa Rahmalia<sup>1</sup>, Jeanne R. Poespoprodjo<sup>1</sup>, Chandra U. Landuwulang<sup>1</sup>, Maya Ronse<sup>2</sup>, Enny Kenangalem<sup>1</sup>, Faustina H. Burdam<sup>1</sup>, Benedikt Ley<sup>3</sup>, Ric N. Price<sup>3</sup>, Kamala Thriemer<sup>3</sup>, Koen Peeters Grietens<sup>3</sup>, Charlotte Gryseels<sup>2</sup>

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**1044****MALARIA SURVEILLANCE IN ZANZIBAR PATTERNS OF CASE NOTIFICATION AND INVESTIGATION IN LINE WITH WHO'S 1-3-7 DAYS APPROACH**

Shabbir Lalji<sup>1</sup>, Humphrey Mkali<sup>1</sup>, Abdul-wahid Al-mafazy<sup>1</sup>, Ssanyu Nyinondi<sup>1</sup>, Joseph Joseph<sup>1</sup>, Mike McKay<sup>2</sup>, Abdallah Ali<sup>3</sup>, Wahida Hassan<sup>3</sup>, Mohamed Kitwasi<sup>3</sup>, Chonge Kitojo<sup>4</sup>, Naomi Kaspar<sup>4</sup>, George Greer<sup>4</sup>, Eric Reaves<sup>5</sup>, Richard Reithinger<sup>2</sup>, Jeremiah Ngondi<sup>2</sup>

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**1045****DO MALARIA INFECTIONS CLUSTER AT THE HOUSEHOLD LEVEL? A REVIEW OF THE EVIDENCE TO INFORM ACTIVE INFECTION DETECTION STRATEGIES FOR MALARIA CONTROL PROGRAMS**

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**1046****IMPLEMENTING 24-HOUR MALARIA CASE NOTIFICATION SYSTEMS FOR THE PRIVATE SECTOR IN ELIMINATION SETTINGS: LESSONS LEARNED FROM MYANMAR AND VIETNAM**

Rebecca Potter<sup>1</sup>, Ngo Thi Thuy Nga<sup>2</sup>, Nguyen N. Loan<sup>2</sup>, Pham Van Chau<sup>2</sup>, Khaing Wai Wai Phy<sup>3</sup>, Phone Si Hein<sup>3</sup>

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**1047****ASSESSING IMPACTS OF GOVERNMENTAL CONTROLS OF ILLEGAL LOGGING ON MALARIA TRANSMISSION IN SOUTHERN LAO PDR**

Emily Dantzer<sup>1</sup>, Andrew A. Lover<sup>2</sup>, Bouasy Hongvanthong<sup>3</sup>, Francois Rerolle<sup>1</sup>, Sophia Hocini<sup>4</sup>, Rattanaxay Phetsouvanh<sup>5</sup>, Adam Bennett<sup>1</sup>

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**Malaria – Vaccines**

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**1048****A TWO DOSE SPOROZOITE CHALLENGE MODEL IN MICE HIGHLIGHTS LIVER STAGE DURATION AS ONE OF THE MOST IMPORTANT DIFFERENCES BETWEEN MURINE AND HUMAN PLASMODIUM FOR VACCINE DEVELOPMENT**

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University of Washington, Center for Emerging and Re-Emerging Infectious Diseases, Seattle, WA, United States

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**1049****SAFETY AND PROTECTIVE EFFICACY AGAINST CONTROLLED HUMAN MALARIA INFECTION OF MULTI-DOSE PRIMING REGIMENS OF PFSPZ VACCINE WITH AND WITHOUT BOOST IN EQUATORIAL GUINEAN ADULTS**

Said A. Jongo<sup>1</sup>, Thomas Richie<sup>2</sup>, Kamaka Kassimu<sup>1</sup>, Raul Chuquiyaure<sup>3</sup>, Peter F. Billingsley<sup>2</sup>, Elizabeth Nyakarungu<sup>1</sup>, Maximilian Mpina<sup>4</sup>, Ali Mtoro<sup>1</sup>, Ali Hamad<sup>1</sup>, Jose Raso<sup>3</sup>, Anna Deal<sup>4</sup>, Tobias Schindler<sup>4</sup>, Vicente Urbano<sup>3</sup>, Maria Silvia A. Lopez<sup>3</sup>, Beltran Pasialo<sup>5</sup>, Marta Alene Owono Eyang<sup>5</sup>, Escolastica Raquel Mansogo Maye<sup>3</sup>, Gertrudis Owono Bidjimi<sup>3</sup>, Martin Eka Ondo<sup>3</sup>, Matilde Riloha Rivas<sup>6</sup>, Gabriel Mba Abegue<sup>3</sup>, Yolanda Rimoy Veri<sup>3</sup>, Carlos Cortes Falla<sup>3</sup>, Federico Comsil Chochi<sup>3</sup>, Dolores Mbang Ondo Mandumbi<sup>3</sup>, Guillermo Garcia<sup>3</sup>, Manuel Francisco Nfumi Machimbo<sup>3</sup>, Ines Toichoa Bela<sup>3</sup>, Juan Carlos Momo<sup>3</sup>, Carl Maas<sup>7</sup>, B. Kim Lee Sim<sup>2</sup>, Bonifacio Manguire<sup>7</sup>, Preston Church<sup>2</sup>, Marcel Tanner<sup>1</sup>, Claudia A. Daubenberger<sup>4</sup>, Salim Abdula<sup>1</sup>, Stephen L. Hoffman<sup>2</sup>

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**1050****IMMUNE ACTIVATION AND MAGNITUDE AND BREADTH OF PLASMODIUM FALCIPARUM HUMORAL IMMUNITY IN MALARIA PRE-EXPOSED VOLUNTEERS WITH OR WITHOUT HIV INFECTION DURING PFSPZ VACCINATION AND CONTROLLED HUMAN MALARIA INFECTION**

Anneth-Mwasi N. Tumbo<sup>1</sup>, Freia-Raphaella Lorenz<sup>2</sup>, Jean-Pierre Dangy<sup>3</sup>, Maximilian Mpina<sup>1</sup>, Tobias Schindler<sup>3</sup>, Florence A. Milando<sup>1</sup>, Gloria Nyaulingo<sup>1</sup>, Matthieu Perreau<sup>4</sup>, Kamaka Ramadhani<sup>1</sup>, Said Jongo<sup>1</sup>, Philip L. Felgner<sup>5</sup>, Benjamin Mordmueller<sup>2</sup>, Thomas Richie<sup>6</sup>, B. Kim Lee Sim<sup>6</sup>, Marcel Tanner<sup>3</sup>, Salim Abdulla<sup>1</sup>, Stephen L. Hoffman<sup>5</sup>, Rolf Fendel<sup>2</sup>, Claudia Daubenberger<sup>3</sup>

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(ACMCIP Abstract)

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### CHEMOPROPHYLAXIS VACCINATION (PFSPZ-CVAC) WITH HIGH DOSE OF SANARIA® PFSPZ CHALLENGE NF54 UNDER PYRIMETHAMINE OR CHLOROQUINE LEADS TO PROTECTIVE EFFICACY AGAINST HETEROLOGOUS CONTROLLED HUMAN MALARIA INFECTION IN MALARIA NAÏVE ADULTS

Agnes Mwakingwe-Omari<sup>1</sup>, Jacquelyn Lane<sup>1</sup>, David M. Cook<sup>1</sup>, Sara A. Healy<sup>1</sup>, Susan Pfeiffer<sup>1</sup>, Sahand Kalhori<sup>1</sup>, Charles Wyatt<sup>1</sup>, Omely Marte-Salcedo<sup>1</sup>, Alemush Imeru<sup>1</sup>, Martha Nason<sup>2</sup>, Irfan Zaidi<sup>1</sup>, Junhui Duan<sup>1</sup>, Jillian Neal<sup>1</sup>, Jake Raiten<sup>1</sup>, Jen C.C. Hume<sup>1</sup>, Esther J. Jeon<sup>3</sup>, Gary Fahle<sup>4</sup>, Tooba Murshedkar<sup>5</sup>, Adam J. Ruben<sup>5</sup>, Sumana Chakravarty<sup>5</sup>, Anita Manoj<sup>5</sup>, Anusha Gunasekera<sup>5</sup>, B. Kim Lee Sim<sup>5</sup>, Peter F. Billingsley<sup>5</sup>, Eric R. James<sup>5</sup>, Thomas L. Richie<sup>5</sup>, Stephen L. Hoffman<sup>5</sup>, Patrick E. Duffy<sup>1</sup>

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### COMPLETE PLASMODIUM FALCIPARUM LIFE CYCLE USING FRG HUHEP MICE AS A MODEL FOR SPOROZOITE INFECTIVITY

Tao Li<sup>1</sup>, Christiane Urgena<sup>1</sup>, Sumana Chakravarty<sup>1</sup>, Abraham G. Eappen<sup>1</sup>, Asha Patil<sup>1</sup>, Yonas Abebe<sup>1</sup>, Adam Frock<sup>1</sup>, Minglin Li<sup>2</sup>, BKL Sim<sup>2</sup>, Stephen L. Hoffman<sup>1</sup>

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### COMPARATIVE REGULATORY PATHWAYS FOR CLINICAL DEVELOPMENT AND COMMERCIALIZATION OF PFSPZ VACCINE IN THE US, EUROPE AND AFRICA

Asqual Getachew, Anusha Gunasekera, Shachi Shah, BKL Sim, Thomas L. Richie, Stephen L. Hoffman, Tooba Murshedkar

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### THE REGULATORY PRODUCT DEVELOPMENT EXPECTATIONS AND REQUIREMENTS FOR INVESTIGATIONAL USE AND COMMERCIALIZATION OF A MALARIA VACCINE IN THE US, EUROPE AND AFRICA

Shachi Shah, Asqual Getachew, Anusha Gunasekera, Anita Manoj, BKL Sim, Stephen L. Hoffman, Tooba Murshedkar

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### QUALIFICATION OF THE MICROBIAL GROWTH TEST FOR IN-PROCESS SAMPLES FOR PRODUCTION OF SANARIA® PFSPZ VACCINE

Minglin Li<sup>1</sup>, Anita Manoj<sup>1</sup>, Bing Jing<sup>1</sup>, Lixin Gao<sup>1</sup>, Abraham G. Eappen<sup>2</sup>, Tao Li<sup>2</sup>, BKL Sim<sup>1</sup>, Stephen L. Hoffman<sup>2</sup>

<sup>1</sup>Protein Potential LLC, Rockville, MD, United States, <sup>2</sup>Sanaria Inc, Rockville, MD, United States

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### STATUS OF BIOLOGICAL CONDITIONS AND PATHOLOGIES EXCLUDING VOLUNTEERS FROM MALARIA VACCINE CLINICAL TRIALS (PFSPZ) IN 2014 AND 2016 IN DONEGUEBOUGOU, MALI

Amatigue Zeguime<sup>1</sup>, M'Bouye Doucoure<sup>1</sup>, Sidiki Perou<sup>1</sup>, Boucary Ouologuem<sup>1</sup>, Souleymane Traore<sup>1</sup>, Abdoulaye Katile<sup>1</sup>, Allaye Tolo<sup>1</sup>, Baba Djiguiba<sup>1</sup>, Mahamadou S. Sissoko<sup>1</sup>, Boubacar Traore<sup>1</sup>, Jordyn Manucci<sup>2</sup>, Jen C.C. Hume<sup>3</sup>, Patrick E. Duffy<sup>3</sup>, Ogobara Doumbo<sup>1</sup>

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### THE EFFECT OF IMMUNIZATION WITH PFSPZ VACCINE ON EPSTEIN-BARR ANTIBODY LEVELS AS A MARKER OF VIRAL REACTIVATION AND AS A SURROGATE RISK MARKER OF ENDEMIC BURKITT LYMPHOMA

Ann Moormann<sup>1</sup>, LW Preston Church<sup>2</sup>, Catherine Forconi<sup>1</sup>, Said Jongo<sup>3</sup>, Ali Mtoro<sup>3</sup>, Maximilian Mpina<sup>3</sup>, Claudia Daubenberger<sup>4</sup>, Thomas Richie<sup>2</sup>, B. Kim Lee Sim<sup>2</sup>, Salim Abdulla<sup>3</sup>, Stephen L. Hoffman<sup>2</sup>

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### SAFETY OF TWO PLASMODIUM FALCIPARUM SPOROZOITE VACCINE (PFSPZ) SCHEDULES IN HEALTHY ADULTS IN OUELESSEBOUGOU, MALI

Halimatou Diawara<sup>1</sup>, Agnes Mwakingwe-Omari<sup>2</sup>, Djibrilla Issiaka<sup>1</sup>, Jacquelyn Lane<sup>2</sup>, Seydou Traore<sup>1</sup>, Ibrahim Soumbounou<sup>1</sup>, Mahamoudou Samassekou<sup>1</sup>, Gaoussou Santara<sup>1</sup>, Oumar Attaher<sup>1</sup>, Almahamoudou Mahamar<sup>1</sup>, Kaïfa Diarra<sup>1</sup>, Amadou Konate<sup>1</sup>, Adama Dembele<sup>1</sup>, Amatigue Zeguime<sup>1</sup>, Zonghui Hu<sup>3</sup>, Michal Fried<sup>2</sup>, Amagana Dolo<sup>1</sup>, Peter Billingsley<sup>4</sup>, B. Kim Lee Sim<sup>4</sup>, Thomas L. Richie<sup>4</sup>, Stephen L. Hoffman<sup>4</sup>, Alassane Dicko<sup>1</sup>, Patrick E. Duffy<sup>2</sup>

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### PREVALENCE OF HEPATITIS B AND HIV INFECTIONS AMONG HEALTHY VOLUNTEERS TO PARTICIPATE IN A PFSPZ VACCINE CLINICAL TRIAL IN EQUATORIAL GUINEA

Maria Silvia A. Lopez<sup>1</sup>, Ali Hamad<sup>2</sup>, Kamaka Ramadhani<sup>2</sup>, Vicente Urbano<sup>1</sup>, Gertrudis Owono<sup>1</sup>, Fortunata Lobede<sup>1</sup>, Ali Mtoro<sup>2</sup>, Said Jongo<sup>2</sup>, Jose Raso<sup>1</sup>, Maximilian Mpina<sup>2</sup>, Elizabeth Nyakarungu<sup>2</sup>, Matilde Riloha Rivas<sup>1</sup>, Carlos Cortes<sup>3</sup>, Guillermo A. Garcia<sup>4</sup>, Raul Chuquiyaui<sup>5</sup>, L.W. Preston Church<sup>6</sup>, Peter Billingsley<sup>6</sup>, Claudia Daubenberger<sup>7</sup>, Thomas Richie<sup>8</sup>, Salim Abdulla<sup>8</sup>, Stephen L. Hoffman<sup>6</sup>

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Friday  
November 22

## BASELINE MALARIA EPIDEMIOLOGY STUDY IN PREPARATION FOR A PHASE 3 MALARIA VACCINE TRIAL IN BIKO ISLAND, EQUATORIAL GUINEA

**Gertrudis Owono**<sup>1</sup>, Vicente Urbano<sup>1</sup>, Fortunata Lobede<sup>1</sup>, Maria L. Gozo<sup>1</sup>, Ali Mtoro<sup>2</sup>, Ali Hamad<sup>2</sup>, Said Jongo<sup>2</sup>, Kamaka Ramadhani<sup>2</sup>, Jose Raso<sup>1</sup>, Maximilian Mpina<sup>2</sup>, Elizabeth Nyakarungu<sup>2</sup>, Carlos Cortes<sup>3</sup>, Guillermo A. Garcia<sup>4</sup>, Matilde Riloha Rivas<sup>1</sup>, Raul Chuquiyaui<sup>5</sup>, L.W. Preston Church<sup>6</sup>, Peter Billingsley<sup>6</sup>, Claudia Daubenberger<sup>7</sup>, Thomas Richie<sup>8</sup>, Salim Abdulla<sup>9</sup>, Stephen L. Hoffman<sup>6</sup>

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## SPZ VACCINE: FOUR BILLION+ ATTENUATED PLASMODIUM FALCIPARUM SPOROZOITES INJECTED WITH NO BREAKTHROUGH INFECTIONS

**Eric Robert James**, Steve Matheney, James Overby, B Kim Lee Sim, Abraham G. Eappen, Tao Li, Ming Lin Li, Anita Manoj, Peter F. Billingsley, Thomas L. Richie, LW Preston Church, Sumana Chakravarty, Anusha Gunasekera, Tooba Murshedkar, Stephen L. Hoffman

Sanaria, Rockville, MD, United States

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## CONTROLLED HUMAN MALARIA INFECTION PRODUCT TO PROBE HETEROLOGOUS PROTECTIVE EFFICACY, INFECTIONS AND STRAIN DIFFERENCES IN PLASMODIUM FALCIPARUM

**B. Kim Lee Sim**<sup>1</sup>, Eric R. James<sup>1</sup>, Yonas Abebe<sup>1</sup>, Anita Manoj<sup>1</sup>, Henry Huang<sup>1</sup>, Peter F. Billingsley<sup>1</sup>, Benjamin Mordmueller<sup>2</sup>, Peter Kremsner<sup>2</sup>, Patrick Duffy<sup>3</sup>, Agnes Mwakingwe<sup>3</sup>, Kirsten Lyke<sup>4</sup>, Matthew B. Laurens<sup>4</sup>, Thomas L. Richie<sup>1</sup>, Stephen L. Hoffman<sup>1</sup>

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## A HIGH CONTENT SCREENING PLATFORM FOR ABSOLUTE QUANTITATION OF PLASMODIUM SPOROZOITES

**Urvashi Rai**<sup>1</sup>, Timothy Hackett<sup>2</sup>, Richard Fan<sup>1</sup>, Anita Manoj<sup>1</sup>, B. Kim Lee Sim<sup>1</sup>, Stephen L. Hoffman<sup>1</sup>, Sumana Chakravarty<sup>1</sup>

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## 1064

## TRANSLATING A SEMI-AUTOMATED MOSQUITO MICRODISSECTION SYSTEM FOR MANUFACTURING PFSPZ VACCINES UNDER CGMPs

**Hajar Hazime**<sup>1</sup>, Urvashi Rai<sup>1</sup>, Mariah Schrum<sup>2</sup>, B. Kim Lee Sim<sup>1</sup>, Stephen L. Hoffman<sup>1</sup>, Russell H. Taylor<sup>2</sup>, Sumana Chakravarty<sup>1</sup>

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## 1065

## INSECTICIDES SUSCEPTIBILITY AND PREVALENCE OF KDR AND ACE1 MUTATIONS AMONG WILD ANOPHELES ARABIENSIS AND AN. MELAS POPULATIONS IN THE COASTAL ZONE OF LOW MALARIA TRANSMISSION IN SENEGAL

**Ousmane Sy**<sup>1</sup>, Elhadji Amadou Niang<sup>1</sup>, Abdoulaye Kane Dia<sup>1</sup>, Kevin Ochieng Opondo<sup>2</sup>, Benoit S Assogba<sup>2</sup>, Magatt Ndiaye<sup>1</sup>, Mouhamed A Nouridine<sup>1</sup>, Pape Cheikh Sarr<sup>1</sup>, Lassana Konaté<sup>1</sup>, Oumar Gaye<sup>1</sup>, David Weetman<sup>3</sup>, Martin Donnelly<sup>3</sup>, Ousmane Faye<sup>1</sup>

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## 1066

## NEXT GENERATION VECTOR SURVEILLANCE TECHNIQUES TO GUIDE NATIONAL MALARIA CONTROL PROGRAMS

**Robert Farlow**<sup>1</sup>, Thomas R. Burkot<sup>2</sup>, Tanya L. Russell<sup>3</sup>

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## 1067

## ONE YEAR OF MONITORING PHYSICAL DURABILITY OF LONG LASTING INSECTICIDAL NETS IN MALI

**Moussa Bm Cisse**<sup>1</sup>, Ibrahim Traore<sup>1</sup>, Lansana Sangare<sup>1</sup>, Abdourhamane Dicko<sup>2</sup>, Yacouba Dansoko<sup>1</sup>, Alice Dembele<sup>1</sup>, Jean Marie Sanou<sup>1</sup>, Jean Bedel Evi<sup>3</sup>, Jules Mihigo<sup>4</sup>, Aliou Diallo<sup>4</sup>, Erin Eckert<sup>5</sup>, Ousmane Koita<sup>1</sup>

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## 1068

## CITIZEN SCIENCE FOR MOSQUITO MONITORING AND MALARIA VECTOR CONTROL IN RUHUHA, RWANDA

**Marilyn Milumbu Murindahabi**<sup>1</sup>, Constantianus J. Koenraad<sup>2</sup>, Willem Takken<sup>2</sup>, Leon Mutesa<sup>3</sup>, Emmanuel Hakizimana<sup>4</sup>, P. Marijn Poortvliet<sup>5</sup>, Arnold J.H. van Vliet<sup>6</sup>

<sup>1</sup>College of Science and Technology, University of Rwanda, Kigali, Rwanda, <sup>2</sup>Wageningen University and Research, Wageningen, Netherlands, <sup>3</sup>College of Medicine and Health Sciences, University of Rwanda, Kigali, Rwanda, <sup>4</sup>Malaria and other Parasitic Diseases Division, Rwanda Biomedical Center, Kigali, Rwanda, <sup>5</sup>Strategic Communication Group, Wageningen University & Research, Wageningen, Netherlands, <sup>6</sup>Environmental Systems Analysis Group, Wageningen University & Research, Wageningen, Netherlands

## 1069

## IS FLUDORA FUSION A VIABLE ALTERNATIVE TO DDT?

**Rajendra Maharaj**<sup>1</sup>, Bheki Qwabe<sup>2</sup>, Moses Mkhabela<sup>2</sup>, Nomfundo Mfeka<sup>3</sup>, Melanie Holder<sup>3</sup>, Vishan Lakan<sup>1</sup>

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## 1070

## VECTOR SURVEILLANCE FOR EVIDENCE-BASED DECISION MAKING IN MALARIA VECTOR CONTROL IN BURUNDI

**Virgile Gnanguenon**<sup>1</sup>, Anatolie Ndashyimiye<sup>2</sup>, Jeanne d'Arc<sup>2</sup>, Denis Sinzikayo<sup>2</sup>, Lievin Nsabayumva<sup>3</sup>, Jenny Carlson<sup>4</sup>, Aklilu Seyoum<sup>5</sup>

<sup>1</sup>Abt Associates/PMI A/RS, Bujumbura, Benin, <sup>2</sup>NMCP, Bujumbura, Burundi, <sup>3</sup>United States Agency for International Development, Bujumbura, Burundi, <sup>4</sup>United States Agency for International Development, Washington, DC, United States, <sup>5</sup>Abt Associates/PMI VectorLink, Washington, DC, United States



**1071****DIAGNOSTIC DOSE DETERMINATION AND EFFICACY OF CHLORFENAPYR AND CLOTHIANIDIN INSECTICIDES AGAINST ANOPHELES MALARIA VECTOR POPULATIONS OF WESTERN KENYA**Silas Okoth Agumba  
*Maseno University, Kisumu, Kenya***1072****PROGRESS TOWARD FIELD APPLICATION OF TRANSGENIC MOSQUITOCIDAL ENTOMOPATHOGENIC FUNGI: A SEMI FIELD TRIAL TEST IN A MOSQUITO-SPHERE IN BURKINA FASO**Etienne Bilgo  
*IRSS/Centre Muraz, Bobo Dioulasso, Burkina Faso***1073****THE COST-EFFECTIVENESS OF ITN DISTRIBUTION STRATEGIES IN SUB-SAHARAN AFRICA**Sara Scates<sup>1</sup>, Olivier Briët<sup>2</sup>, Janna Wisniewski<sup>1</sup>, Angela Acosta<sup>3</sup>, Hannah Koenker<sup>3</sup>, Joshua Yukich<sup>1</sup>  
<sup>1</sup>Tulane University School of Public Health and Tropical Medicine, New Orleans, LA, United States, <sup>2</sup>Swiss Tropical and Public Health Institute, Basel, Switzerland, <sup>3</sup>Johns Hopkins Center for Communications Programs, Baltimore, MD, United States**1074****DECREASING INSECTICIDE-TREATED MOSQUITO NET EFFECTIVENESS ASSOCIATED WITH INCREASING PYRETHROID PREVALENCE ACROSS SUB-SAHARAN AFRICA**David A. Larsen, Rachael Church  
*Syracuse University, Syracuse, NY, United States***1075****INSECTICIDE SUSCEPTIBILITY STATUS OF ANOPHELES GAMBIAE S.L. AND AN. FUNESTUS S.L. TO PUBLIC HEALTH INSECTICIDES FROM SENTINEL SITE SURVEYS IN UGANDA**Michael Okia  
*Abt Associates Inc, Kampala, Uganda***1076****POSITIVE IMPACT OF PIRIMIPHOS-METHYL BASED IRS ON ENTOMOLOGICAL INOCULATION RATE (EIR) IN A CONTEXT OF MULTIPLE RESISTANCE MECHANISMS TO INSECTICIDES IN MALARIA VECTORS IN ALIBORI AND DONGA, TWO REGIONS OF NORTHERN BENIN**Razaki Osse  
*Cotonou Entomological Research Center, Cotonou, Benin***1077****PHYSICAL AND INSECTICIDAL DURABILITY OF PERMANET 2.0 AND DAWAPLUS 2.0 LLINS AFTER 36 MONTHS IN THE FIELD: FINDINGS FROM A COHORT STUDY IN MYANMAR**Si Thu Thein<sup>1</sup>, Ye Kyaw Aung<sup>1</sup>, Aye Aye Myint<sup>2</sup>, Feliciano Monti<sup>3</sup>, Than Htike Win<sup>4</sup>, Phyu Khine Thet<sup>4</sup>, Sean Blaufuss<sup>5</sup>, Hannah Koenker<sup>6</sup>, Albert Kilian<sup>6</sup>, Aung Thi<sup>7</sup>  
<sup>1</sup>U.S. President's Malaria Initiative (PMI) VectorWorks Project, Population Services International Myanmar, Yangon, Myanmar, <sup>2</sup>Vector-Borne Disease Control Program, Ministry of Health and Sports, Yangon, Myanmar, <sup>3</sup>U.S. President's Malaria Initiative (PMI), United States Agency for International Development, Yangon, Myanmar, <sup>4</sup>Department of Food and Drug Administration, Ministry of Health and Sports, Nay Pyi Taw, Myanmar, <sup>5</sup>U.S. President's Malaria Initiative (PMI) VectorWorks Project, Johns Hopkins Bloomberg School of Public Health Center for Communication Programs, Baltimore, MD, United States, <sup>6</sup>U.S. President's Malaria Initiative (PMI) VectorWorks Project, Tropical Health LLP, Montagu, Spain, <sup>7</sup>National Malaria Control Program, Ministry of Health and Sports, Nay Pyi Taw, Myanmar**1078****FIPRONIL AND IVERMECTIN TREATMENT OF CATTLE REDUCES SURVIVAL AND OVARIAN DEVELOPMENT OF FIELD-COLLECTED ANOPHELES ALBIMANUS IN NORTHERN BELIZE**Jefferson A. Vaughan<sup>1</sup>, Staci M. Dreyer<sup>1</sup>, Donovan Leiva<sup>2</sup>, Marla Magaña<sup>2</sup>, Marie Pott<sup>2</sup>, John P. Grieco<sup>3</sup>, Nicole L. Achee<sup>3</sup>  
<sup>1</sup>University of North Dakota, Grand Forks, ND, United States, <sup>2</sup>Belize Vector and Ecology Center, Orange Walk Town, Belize, <sup>3</sup>University of Notre Dame, South Bend, IN, United States**1079****ANOPHELES REPRODUCTIVE SWARM TRAPPING AS A POTENTIAL NEW MALARIA VECTOR CONTROL INITIATIVE IN THE GAMBIA**Benoît Sessinou Sessinou Assogba<sup>1</sup>, Kevin O. Opondo<sup>1</sup>, Musa Jawara<sup>1</sup>, Jane Achan Achan<sup>1</sup>, Charles Wondji<sup>2</sup>, Abdoulaye Diabaté<sup>3</sup>, Umberto D'Alessandro D'Alessandro<sup>1</sup>  
<sup>1</sup>MRC, Unit The Gambia at London School of Hygiene & Tropical Medicine, Banjul, Gambia, <sup>2</sup>Vector Group, Liverpool School of Tropical Medicine, Liverpool, United Kingdom, <sup>3</sup>Institut de Recherche en Science de la Santé/Centre Muraz, Bobodioulasso, Burkina Faso**1080****A FOUR-COUNTRY COMPARISON BETWEEN HUMAN-LANDING COLLECTION AND TWO NOVEL ADULT VECTOR MOSQUITO SURVEILLANCE METHODS FOR OUTDOOR-BITING ADULT ANOPHELES THROUGH THE ASIA PACIFIC MALARIA ELIMINATION NETWORK**Ratchadawan Ngoen-klan<sup>1</sup>, Jeffrey L. Hii<sup>2</sup>, Thomas R. Burkot<sup>3</sup>, Frances M. Hawkes<sup>4</sup>, Michael J. Bangs<sup>5</sup>, Perada W. Putit<sup>6</sup>, Mihirini Hewavitharane<sup>7</sup>, Vu Duc Chinh<sup>8</sup>, Boonserm Aum-aung<sup>9</sup>, Wannapa Suwonkerd<sup>9</sup>, Theeraphap Chareonviriyaphap<sup>1</sup>  
<sup>1</sup>Department of Entomology, Faculty of Agriculture, Kasetsart University, Bangkok, Thailand, <sup>2</sup>Malaria Consortium Asia Regional Office, Faculty of Tropical Medicine, Mahidol University, Bangkok, Thailand, <sup>3</sup>Australian Institute of Tropical Health and Medicine, James Cook University, Queensland, Australia, <sup>4</sup>Department of Agriculture, Health and Environment, Natural Resources Institute, University of Greenwich, London, United Kingdom, <sup>5</sup>Public Health and Malaria Control Department, PT Freeport Indonesia, International SOS, Jl. Kertajasa, Kuala Kencana, Papua, Indonesia, <sup>6</sup>Vector Borne Disease Sector, Disease Control Division, MOH, Kuala Lumpur, Malaysia, <sup>7</sup>Anti Malaria Campaign, Ministry of Health, Colombo, Sri Lanka, <sup>8</sup>Department of Entomology, National Institute of Malariology, Parasitology and Entomology (NIMPE), Hanoi, Vietnam, <sup>9</sup>Bureau of Vector Borne Disease, Department of Disease Control, MOPH, Bangkok, Thailand**Bacteriology - Enteric Infections****1081****ENDEMIC TYPHOID INCIDENCE, KILIMANJARO REGION, TANZANIA, 2007-2018**Elena R. Cutting<sup>1</sup>, Deng B. Madut<sup>2</sup>, Michael J. Maze<sup>3</sup>, Nathaniel H. Kalengo<sup>4</sup>, Manuela Carugati<sup>2</sup>, Blandina T. Mmbaga<sup>4</sup>, Ronald M. Mbwasia<sup>4</sup>, Kajiru G. Kilonzo<sup>4</sup>, Annette Marandu<sup>5</sup>, Calvin Moshia<sup>5</sup>, Furaha S. Lyamuya<sup>4</sup>, Grace D. Kinabo<sup>4</sup>, Anne B. Morrissey<sup>2</sup>, Venance P. Maro<sup>4</sup>, Matthew P. Rubach<sup>2</sup>, John A. Crump<sup>3</sup>  
<sup>1</sup>Duke University School of Medicine, Durham, NC, United States, <sup>2</sup>Division of Infectious Diseases and International Health, Department of Medicine, Duke University, Durham, NC, United States, <sup>3</sup>Centre for International Health, University of Otago, Dunedin, New Zealand, <sup>4</sup>Kilimanjaro Christian Medical Centre, Moshi, United Republic of Tanzania, <sup>5</sup>Mawenzi Regional Referral Hospital, Moshi, United Republic of Tanzania

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### ANTIGEN-SPECIFIC GUT-HOMING B CELL RESPONSES IN HUMANS FOLLOWING CONTROLLED INFECTION WITH LYOPHILIZED *SHIGELLA SONNEI* 53G (CGMP LOT 1794)

**Brielle A. Barnard**<sup>1</sup>, Kristen A. Clarkson<sup>1</sup>, Robert W. Frenck, Jr.<sup>2</sup>, Michelle Dickey<sup>2</sup>, Akamol E. Suvarnapunya<sup>1</sup>, Lakshmi Chandrasekaran<sup>1</sup>, Kevin T. Lerner<sup>1</sup>, Hailey P. Weerts<sup>1</sup>, Monica McNeal<sup>2</sup>, Katherine DeTizio<sup>3</sup>, Susan Parker<sup>2</sup>, Amy Hoeper<sup>2</sup>, Chad K. Porter<sup>3</sup>, Nicole Maier<sup>4</sup>, Alan Fix<sup>4</sup>, Lou Bourgeois<sup>4</sup>, Malabi Venkatesan<sup>1</sup>, Robert W. Kaminski<sup>1</sup>

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## 1083

### CHILDHOOD STUNTING AND *CAMPYLOBACTER* COLONIZATION IN RURAL ETHIOPIA - FINDINGS FROM FORMATIVE RESEARCH OF THE *CAMPYLOBACTER* GENOMICS AND ENVIRONMENTAL ENTERIC DYSFUNCTION (CAGED) PROJECT

**Dehao Chen**<sup>1</sup>, Sarah McKune<sup>1</sup>, Nitya Singh<sup>1</sup>, Jemal Y. Hassen<sup>2</sup>, Wondwossen Gebreyes<sup>3</sup>, Mark Manary<sup>4</sup>, Kevin Bardosh<sup>5</sup>, Yang Yang<sup>1</sup>, Abdulmuen Mohammed<sup>2</sup>, Yitagele Terefe<sup>2</sup>, Kedir T. Roba<sup>2</sup>, Mengistu Ketema<sup>2</sup>, Negasi Ameha<sup>2</sup>, Nega Assefa<sup>2</sup>, Gireesh Rajashekara<sup>3</sup>, Loic Deblais<sup>3</sup>, Getnet Yimer<sup>3</sup>, Isabel Ordiz<sup>4</sup>, Nicholas Diaz<sup>1</sup>, Arie H. Havelaar<sup>1</sup>

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### GENOME-WIDE ASSOCIATION STUDY OF ASTROVIRUS DIARRHEAL INFECTIONS IN BANGLADESHI INFANTS

**Laura Chen**<sup>1</sup>, Rashidul Haque<sup>2</sup>, Dylan Duchon<sup>1</sup>, Genevieve Wojcik<sup>3</sup>, Poonum Korpe<sup>1</sup>, Beth Kirkpatrick<sup>4</sup>, William A. Petri, Jr.<sup>5</sup>, Priya Duggal<sup>1</sup>

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## 1085

### TYPHOID OUTBREAKS, 1989-2018: IMPLICATIONS FOR PREVENTION AND CONTROL

**Grace D. Appiah**<sup>1</sup>, Alexandria Chung<sup>2</sup>, Adwoa Bentsi-Enchill<sup>3</sup>, Sunkyung Kim<sup>1</sup>, John A. Crump<sup>4</sup>, Vittal Mogasale<sup>5</sup>, Rachel B. Slayton<sup>1</sup>, Eric D. Mintz<sup>1</sup>

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### REAL CONDITION SIMULATION STUDY ON THE THERMOSTABILITY FOR EUVICHOL-PLUS

**Sunmi Han**<sup>1</sup>, Namseon Beck<sup>1</sup>, Yun Chon<sup>1</sup>, Yongsoo Chung<sup>1</sup>, Julia Lynch<sup>1</sup>, Jose Paolo M. Langa<sup>2</sup>, Jucunu J. Chitio<sup>2</sup>, Seukkeun Choi<sup>3</sup>, Youngjin Lee<sup>3</sup>

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## 1087

### UPDATING OUR UNDERSTANDING OF SEVERE COMPLICATIONS OF TYPHOID FEVER: A CLINICAL STUDY IN BLANTYRE, MALAWI

**Jillian S. Gauld**<sup>1</sup>, Franziska Olgemoeller<sup>2</sup>, J.J. Waluza<sup>3</sup>, Dalitso Zeka<sup>3</sup>, Thomas Edwards<sup>4</sup>, Steve Kamiza<sup>3</sup>, Chisomo Msefula<sup>3</sup>, Angeziwa Chirambo<sup>5</sup>, Emma Thomson<sup>3</sup>, Tiyamike Chilunjika<sup>6</sup>, Jonathan Read<sup>7</sup>, Eric Borgstein<sup>3</sup>, Peter J. Diggle<sup>7</sup>, Nicholas A. Feasey<sup>4</sup>

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**Karen Levy**<sup>1</sup>, Maria J. Soto-Girón<sup>2</sup>, Lorena Montero<sup>3</sup>, Shanon M. Smith<sup>1</sup>, Angela Pena-Gonzalez<sup>2</sup>, Maritza Paez<sup>3</sup>, Estefania Ortega<sup>3</sup>, Janet K. Hatt<sup>2</sup>, Pablo Endara<sup>3</sup>, William Cevallos<sup>4</sup>, Gabriel Trueba<sup>3</sup>, Konstantinos Konstantinidis<sup>2</sup>

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### IMMUNE RESPONSE TO ORAL CHOLERA VACCINE IN FORCIBLY DISPLACED MYANMAR NATIONALS IN BANGLADESH

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Robert C. Reiner, Kirsten Wiens, Aniruddha Deshpande, Paulina Lindstedt, Brigitte Blacker, Simon Hay

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David Adams, Valerie Adams

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**A NOVEL METHOD FOR ASSESSING THE CASE DEFINITION SENSITIVITY, SPECIFICITY AND OVERLAP BETWEEN CO-CIRCULATING INFECTIOUS DISEASES APPLIED TO DENGUE, CHIKUNGUNYA AND ZIKA**

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Chano Hamiden<sup>1</sup>, Mahamane Abdou<sup>1</sup>, **Hadiara Adamou**<sup>2</sup>, Kadri Boubacar<sup>1</sup>, Tchouloum Toudja<sup>2</sup>, Youssouf Yayé<sup>2</sup>, Josette Vignon<sup>2</sup>, Abdou Amza<sup>1</sup>, Amy Veinoglou<sup>3</sup>, Yaobi Zhang<sup>4</sup>  
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**CHARACTERIZATION OF DENV-2 INFECTIONS OCCURRING IN A DENGUE ENDEMIC AREA AND PRESENTING WITH AN INCREASED NUMBER OF SEVERE CASES**

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Janet C. Lindow<sup>1</sup>, **Annie J. Tsay**<sup>1</sup>, Ruth R. Montgomery<sup>2</sup>, Eliana AG Reis<sup>3</sup>, Elsie A. Wunder Jr<sup>1</sup>, Guilherme Araújo<sup>3</sup>, Nivison RR Nery Jr<sup>3</sup>, Subhasis Mohanty<sup>2</sup>, Albert C. Shaw<sup>2</sup>, Patty J. Lee<sup>2</sup>, Mitermayer G. Reis<sup>3</sup>, Albert I. Ko<sup>1</sup>  
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**SOCIO-ECONOMIC BEHAVIORAL INDICATORS OF FALCIPARUM MALARIA PARASITEMIA AND MODERATE TO SEVERE ANEMIA AMONG PREGNANT WOMEN ATTENDING ANTENATAL CLINICS IN LAGOS, SOUTHWEST NIGERIA**

**Adeola Y. Olukosi**<sup>1</sup>, Oluwagbemiga O. Aina<sup>1</sup>, Abiodun kanmi Olakiigbe<sup>1</sup>, Olusola S. Ajibaye<sup>1</sup>, Bassey A. Orok<sup>1</sup>, Samuel Akindele<sup>1</sup>, Adebayo T. Onajole<sup>2</sup>, Samson T. Awolola<sup>1</sup>, Tolulope Moji Arowolo<sup>1</sup>, Bamgboye M. Afolabi<sup>3</sup>  
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**PUTTING THE THREE DELAYS MODEL TO WORK: A PRAGMATIC 12-MONTH COMMUNITY-BASED COHORT STUDY TO ASSESS ACCESS TO EMERGENCY OBSTETRICAL AND NEONATAL CARE IN A REMOTE ISLAND COMMUNITY IN WESTERN KENYA**

**Nicholas DesLauriers**<sup>1</sup>, Evance Ogola<sup>2</sup>, Gor Ouma<sup>3</sup>, Brian Mattah<sup>3</sup>, Louisa Ndunyu<sup>2</sup>, Lily Muldoon<sup>4</sup>, Richard Magerenge<sup>3</sup>, Peres Okinyi<sup>3</sup>, Marcus Salmen<sup>3</sup>, Kelsi Hines<sup>3</sup>, Robinson Okeyo<sup>3</sup>, Ben Pedersen<sup>5</sup>, John Ssenkusu<sup>6</sup>, Shailey Prasad<sup>1</sup>, Molly McCoy<sup>1</sup>, Walter Opiyo<sup>3</sup>, Hanna Nedrud<sup>1</sup>, Kelsey Finn<sup>1</sup>, Charles Salmen<sup>1</sup>  
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**CARDIAC INVOLVEMENT IN SCRUB TYPHUS IN A NORTHWESTERN INDIAN HOSPITAL**

**Navneet Sharma**, Manisha Biswal, Manoj Kumar Debnath, Jyotdeep Kaur, Ashish Bhalla, Rajesh Vijayvergiya  
PGIMER, Chandigarh, India

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**EFFICACY OF IPOMEA PES-CAPRAE OINTMENT AS AN ADD-ON THERAPY FOR JELLYFISH DERMATITIS: FINAL RESULT OF A SELF-CONTROLLED CLINICAL TRIAL**

**Watcharapong Piyaphanee**<sup>1</sup>, Vorada Choovichian<sup>1</sup>, Keawmala Palakul<sup>1</sup>, Jutarmas Olanwijitvong<sup>1</sup>, Thitiya Ponam<sup>1</sup>, Wasin Matsee<sup>1</sup>, Thanasawat Chaiyakul<sup>2</sup>  
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**PROTEIN-ENERGY MALNUTRITION IN COMMUNITY-BASED EDUCATION AND SERVICE (COBES) CENTERS IN WESTERN KENYA DURING THE PERIOD 2017-2018**

**Arthur M. Kwena**  
Moi University, Eldoret, Kenya

Friday  
November 22

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**OCCURRENCE OF TYPHOID FEVER COMPLICATIONS AND ASSOCIATED RISK FACTORS: A SYSTEMATIC LITERATURE REVIEW AND META-ANALYSIS**

Ligia Maria Cruz Espinoza<sup>1</sup>, Ellen McCreedy<sup>2</sup>, Marianne Holm<sup>1</sup>, Justin Im<sup>1</sup>, **Ondari Mogeni<sup>1</sup>**, Prerana Parajulee<sup>1</sup>, Ursula Panzner<sup>1</sup>, Se Eun Park<sup>1</sup>, Trevor Toy<sup>1</sup>, Andrea Haselbeck<sup>1</sup>, Hye Jin Seo<sup>1</sup>, Hyon Jin Jeon<sup>1</sup>, Jong Hoon Kim<sup>1</sup>, Soo Young Kwon<sup>1</sup>, Jerome H. Kim<sup>1</sup>, Christopher M. Parry<sup>3</sup>, Florian Marks<sup>1</sup>

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**CLINICAL MANIFESTATIONS AMONG INDIVIDUALS BITTEN BY TRIATOMINES (KISSING BUGS) IN SOUTHERN ARIZONA**

**Norman L. Beatty<sup>1</sup>**, Nicole Behrens-Bradley<sup>2</sup>, Shannon Smith<sup>1</sup>, Maria Love<sup>2</sup>, Justin O. Schmidt<sup>3</sup>, Patricia L. Dorn<sup>4</sup>, Nafees Ahmad<sup>2</sup>, Stephen A. Klotz<sup>1</sup>

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**A SINGLE CENTER, OPEN LABEL PILOT STUDY TO EVALUATE THE SAFETY AND EFFICACY OF CC-11050, A NOVEL PHOSPHODIESTERASE 4 INHIBITOR, IN NEPALESE PATIENTS WITH *ERYTHEMA NODOSUM LEPROSUM***

**Mahesh Shah<sup>1</sup>**, Divya RSJB Rana<sup>2</sup>, Kapil D. Neupane<sup>2</sup>, Ken Arakawa<sup>3</sup>, David M. Scollard<sup>4</sup>, Preeti Maharjan<sup>2</sup>, Vikram Khetani<sup>3</sup>, Indra B. Napat<sup>1</sup>, Deanna A. Hagge<sup>2</sup>  
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**ANTIBIOTICS AND ANTIMALARIAL DRUGS FOR CHILDREN AGED <5 YEARS HOSPITALIZED WITH ACUTE FEBRILE ILLNESS IN KENYA**

**Naillah Smith<sup>1</sup>**, Eric Ng'eno<sup>2</sup>, Eric Osoro<sup>2</sup>, Peninah Munyua<sup>3</sup>, Doris Marwanga<sup>4</sup>, George Agogo<sup>3</sup>, Godfrey Bigogo<sup>4</sup>, Victor Bandika<sup>5</sup>, Paul Etai<sup>6</sup>, John Wagacha Burton<sup>7</sup>, John Kiogora<sup>8</sup>, Terrence Lo<sup>1</sup>, Lynda Makayotto<sup>9</sup>, Joel M. Montgomery<sup>1</sup>, Marc-Alain Widdowson<sup>3</sup>, Jennifer R. Verani<sup>3</sup>

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**NEUROLOGICAL SYNDROMES IN THE PEDIATRIC POPULATION DURING THE ZIKA VIRUS EPIDEMIC IN COLOMBIA 2015 TO 2016**

**Diana Marcela Walteros<sup>1</sup>**, Marcela Daza<sup>2</sup>, Ana Cristina Suarez<sup>1</sup>, Marcela Mercado<sup>1</sup>, Franklyn Prieto<sup>1</sup>, Angelica Rico<sup>1</sup>, Maritza Gonzalez<sup>1</sup>, Martha Opsina<sup>1</sup>

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**PUBLIC HEALTH AND COST-EFFECTIVENESS IMPACTS OF "SCREEN-AND-VACCINATE" APPROACH WITH CYD-TDV IN PUERTO RICO**

**Edward W. Thommes<sup>1</sup>**, Laurent Coudeville<sup>2</sup>, Riyadh Muhammad<sup>1</sup>, Maria P. Martin<sup>1</sup>, Christopher C. Nelson<sup>1</sup>, Ayman Chit<sup>1</sup>

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**APPLICATION OF TAQMAN ARRAY CARD IN THE PROJECT TO UNDERSTAND AND RESEARCH PRETERM PREGNANCY OUTCOMES AND STILLBIRTHS IN SOUTH ASIA (PURPOSE)**

**Jean Kim<sup>1</sup>**, Anna Aceituno<sup>1</sup>, Elizabeth McClure<sup>1</sup>, Robert Goldenberg<sup>2</sup>, PURPOSE study investigators<sup>3</sup>

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**VALIDATING A TOOL TO MEASURE THE CLINICAL IMPACT OF MERCURY TOXICITY AMONG INDIGENOUS MACHIGUENGA PEOPLE OF THE PERUVIAN AMAZON**

**George W. Hafzalla<sup>1</sup>**, Raveena Chhabria<sup>1</sup>, Carlos Culquichicón<sup>2</sup>, Stephanie M. Trujillo<sup>2</sup>, Alycia Silman<sup>3</sup>, Luis E. Fernandez<sup>3</sup>, Andres G. Lescano<sup>2</sup>, Claudia M. Vega<sup>3</sup>, John W. Sanders<sup>1</sup>

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**CORRELATES OF FREQUENT HOSPITALIZATIONS IN CHILDREN DISCHARGED FROM HOSPITAL IN WESTERN KENYA (TOTO BORA TRIAL)**

**Rebecca Brander<sup>1</sup>**, Benson Singa<sup>2</sup>, Kirkby Tickell<sup>1</sup>, Christine McGrath<sup>1</sup>, Hannah Atlas<sup>1</sup>, Lucy Bunyige<sup>2</sup>, Bertha Odhiambo<sup>2</sup>, Grace John-Stewart<sup>1</sup>, Barbra Richardson<sup>1</sup>, Patricia Pavlinac<sup>1</sup>, Judd Walson<sup>1</sup>

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**IN VITRO SUSCEPTIBILITY TESTING OF TEBIPENEM AGAINST EXTENSIVELY DRUG RESISTANT (XDR) *SALMONELLA TYPHI* ISOLATES**

**Sonia Qureshi<sup>1</sup>**, Farah Naz Qamar<sup>1</sup>, Bushra Jamil<sup>1</sup>, Elena Fernandez Alvaro<sup>2</sup>, Nosheen Nasir<sup>1</sup>, Aneeta Hotwani<sup>1</sup>, Stephen Baker<sup>3</sup>

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**EFFECT OF LYMPHATIC FILARIASIS AND HOOKWORM INFECTION ON PREGNANCY COURSE AND OUTCOME IN WOMEN OF REPRODUCTIVE AGE IN THE DEMOCRATIC REPUBLIC OF THE CONGO**

**Jérémy Campillo<sup>1</sup>**, Cédric B. Chesnais<sup>1</sup>, Jean Paul Tambwe<sup>2</sup>, Naomi P. Awaca-Uvon<sup>2</sup>, Michel Boussinesq<sup>1</sup>, Sebastien Pion<sup>1</sup>

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**EXPOSURE TO HOUSEHOLD AIR POLLUTION FROM BIOMASS COOKSTOVES AND BIOMARKERS OF SYSTEMIC INFLAMMATION FROM DRIED BLOOD SPOTS AMONG WOMEN IN RURAL HONDURAS**

Megan L. Benka-Coker<sup>1</sup>, Maggie L. Clark<sup>2</sup>, Sarah Rajkumar<sup>2</sup>, Bonie N. Young<sup>2</sup>, Annette M. Bachand<sup>2</sup>, David Diaz-Sanchez<sup>3</sup>, Lucas M. Neas<sup>3</sup>, Robert Brook<sup>4</sup>, Tray Nelson<sup>5</sup>, John Volckens<sup>6</sup>, Steve J. Reynolds<sup>2</sup>, Ander Wilson<sup>7</sup>, Christian L'Orange<sup>6</sup>, Nicholas Good<sup>2</sup>, Casey Quinn<sup>6</sup>, Kiersten Koehler<sup>8</sup>, Sebastian Africano<sup>9</sup>, Anibal Osorto Pinel<sup>10</sup>, Jennifer L. Peel<sup>2</sup>

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**ACUTE FEBRILE ILLNESS SURVEILLANCE AT FOUR MILITARY SITES IN GHANA**

Janice A. Tagoe<sup>1</sup>, Clara Yeboah<sup>1</sup>, Selassie Kumordzie<sup>1</sup>, Shirley Nimo-Painstil<sup>2</sup>, Naiki Attram<sup>2</sup>, Eric Behene<sup>1</sup>, David Wolfe<sup>2</sup>, Anne Fox<sup>2</sup>, Andrew Letizia<sup>2</sup>

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**ANTIPYRETIC USE AMONG FEBRILE PATIENTS ATTENDING EMERGENCY DEPARTMENTS IN RIO DE JANEIRO, BRAZIL: A CROSS-SECTIONAL, OBSERVATIONAL STUDY**

José Moreira, Roxana Mamani, Patricia Brasil, Andre Siqueira  
Instituto Nacional de Infectologia Evandro Chagas, Rio de Janeiro, Brazil

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**URINARY FINDINGS AT HEALTHY COMMUNITY SCREENINGS IN A REGION OF NICARAGUA WITH A HIGH BURDEN OF UNEXPLAINED KIDNEY DISEASE**

Anna Strasma<sup>1</sup>, Hannah Worrall<sup>2</sup>, Sreedhar Mandayam<sup>1</sup>, Reyna Silva<sup>3</sup>, Rebecca S. Fischer<sup>4</sup>

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**Helminths - Nematodes - Filariasis (Other)**

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**FINE SCALE LYMPHATIC FILARIASIS MICROFILARIAE AND RISK FACTOR MAPPING IN A HIGHLY ENDEMIC VILLAGE IN THE MADANG PROVINCE OF PAPUA NEW GUINEA**

Melinda Susapu<sup>1</sup>, Leo Makita<sup>1</sup>, Winter Deikore<sup>1</sup>, Hannah Betts<sup>2</sup>, Louise Kelly-Hope<sup>2</sup>  
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**COMPARISON OF HEMATOLOGICAL INDICES BETWEEN MICROFILAREMIC AND IVERMECTIN TREATED AMICROFILAREMIC ONCHOCERCIASIS PATIENTS IN THE UPPER PART OF THE VOLTA REGION OF GHANA**

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West African Centre for Cell Biology of Infectious Pathogens, Accra, Ghana

(ACMCIP Abstract)

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**DRUG DISCOVERY AND DEVELOPMENT APPROACHES FOR THE TREATMENT OF HELMINTHIASIS**

Natalie A. Hawryluk  
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**HOW PHARMACOKINETICS IMPACT DRUG OPTIMIZATION IN NEGLECTED DISEASES**

Julius Lim Apuy, Geraldine Hernandez  
Celgene Corporation, San Diego, CA, United States

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**ACCEPTABILITY AND EFFECTIVENESS OF IVERMECTIN MASS DRUG ADMINISTRATION AND DOXYCYCLINE TEST AND TREAT IN SEMI-NOMADIC COMMUNITIES IN MASSAGAM HEALTH DISTRICT, CAMEROON**

Rogers Nditanchou<sup>1</sup>, Laura Senyonjo<sup>2</sup>, Kareen Atekem<sup>1</sup>, Ruth Dixon<sup>2</sup>, Benjamin Biholong<sup>3</sup>, Joseph Oye<sup>1</sup>, Joseph Kamgno<sup>4</sup>, Joseph Okeibunor<sup>5</sup>, Daniel Boakye<sup>6</sup>, Elena Schmidt<sup>2</sup>

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**LONG-TERM IMPACT OF ALBENDAZOLE PLUS IVERMECTINE DOUBLE DOSE, TWICE-YEARLY ON THE SUPPRESSION OF M. PERSTANS MICROFILARIAL LOAD**

Yaya I. Coulibaly<sup>1</sup>, Housseini Dolo<sup>1</sup>, Tounko Fayinke<sup>1</sup>, Abdoul F. Diabate<sup>1</sup>, Siaka Y. Coulibaly<sup>1</sup>, Moussa B. Sangare<sup>1</sup>, Lamine Soumaoro<sup>1</sup>, Michel E. Coulibaly<sup>1</sup>, Salif S. Doumbia<sup>1</sup>, Abdallah A. Diallo<sup>1</sup>, Benoit Dembele<sup>2</sup>, Dramane Sanogo<sup>1</sup>, Siaka Konate<sup>3</sup>, Sekou F. Traore<sup>1</sup>, Adama D. Keita<sup>4</sup>

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**BIOACCUMULATION OF COMPOUNDS IN VARIOUS FILARIAL PARASITES**

Geraldine Hernandez<sup>1</sup>, Julius L. Apuy<sup>2</sup>, Natalie A. Hawryluk<sup>1</sup>, Tamara Kreiss<sup>3</sup>, John Siekierka<sup>3</sup>  
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**EVALUATION OF THREE DIAGNOSTIC TESTS FOR MONITORING OF LYMPHATIC FILARIASIS ELIMINATION IN AHANTA WEST, NZEMA EAST AND ELLEMBELLE DISTRICTS, WESTERN REGION, GHANA**

Frances Amonoo McCarthy<sup>1</sup>, Dzedzom K. de Souza<sup>1</sup>, Francis Anto<sup>2</sup>, Michael D. Wilson<sup>1</sup>, Irene O. Owusu<sup>1</sup>

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**IN VITRO MAINTENANCE OF MANSONELLA PERSTANS MICROFILARIAE AND ITS RELEVANCE FOR DRUGS SCREENING**

Abdel Jelil Njooundou<sup>1</sup>, Chi Anizette Kien<sup>1</sup>, Manuel Ritter<sup>2</sup>, Mathias Eyong Esum<sup>1</sup>, Patrick W. Ndongmo<sup>1</sup>, Fanny Fri Fombad<sup>1</sup>, Narcisse Victor Gandjui<sup>1</sup>, Flobert Njiokou<sup>1</sup>, Peter Enyong<sup>1</sup>, Kenneth Pfarr<sup>2</sup>, Joseph Turner<sup>3</sup>, Laura E. Layland<sup>4</sup>, Achim Hoerauf<sup>4</sup>, Samuel Wanji<sup>1</sup>

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**OPTIMIZATION AND EVALUATION OF THE ESPERANZA WINDOW TRAP TO REDUCE BITING RATES OF SIMULIUM DAMNOSUM SENSU LATO IN NORTHERN UGANDA**

Denis Loum<sup>1</sup>, Devon Cozart<sup>2</sup>, Thomson Lakwo<sup>3</sup>, Peace Habomugisha<sup>4</sup>, Benjamin Jacob<sup>2</sup>, Eddie W. Cupp<sup>2</sup>, Thomas R. Unnasch<sup>2</sup>

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**Helminths - Nematodes - Intestinal Nematodes**

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**TESTING STRATEGIES TO BETTER INFORM PARTICIPANTS OF AN ANTHELMINTHIC CLINICAL TRIAL**

Marta S. Palmeirim<sup>1</sup>, Shaali M. Ame<sup>2</sup>, Said M. Ali<sup>2</sup>, Ulfat A. Mohammed<sup>2</sup>, Jan Hattendorf<sup>1</sup>, Brigit Obrist<sup>1</sup>, Jennifer Keiser<sup>1</sup>

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**FORECASTING THE IMPACT OF MASS DRUG ADMINISTRATION IN A HETEROGENEOUS ENVIRONMENT WITHIN THE DEWORM3 TRAIL IN BENIN, MALAWI AND INDIA**

James Truscott<sup>1</sup>, Robert J. Hardwick<sup>1</sup>, Marleen Werkman<sup>1</sup>, Judd Walson<sup>2</sup>, Roy M. Anderson<sup>1</sup>, DeWorm3 Trial Team<sup>2</sup>

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**STATUS OF SOIL TRANSMITTED HELMINTH INFECTIONS IN SEMARANG, CENTRAL JAVA, INDONESIA**

Johanna M. Kurscheid<sup>1</sup>, Budi Laksono<sup>2</sup>, Archie Clements<sup>3</sup>, James McCarthy<sup>4</sup>, Susana V. Nery<sup>5</sup>, Donald Stewart<sup>6</sup>, Darren Gray<sup>1</sup>

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**COMPLIANCE TO TREATMENT IN THE GESHIYARO PROJECT: TESTING THE FEASIBILITY OF INTERRUPTING TRANSMISSION**

Alison K. Ower<sup>1</sup>, Nebiyu Nigussu<sup>2</sup>, Fikreselasie Seife<sup>2</sup>, Kalkidan Mekete<sup>3</sup>, James Truscott<sup>1</sup>, Robert Hardwick<sup>1</sup>, Heven Sime<sup>3</sup>, Gemechu Tadesse<sup>3</sup>, Julia Dunn<sup>1</sup>, Obiora Eneanya<sup>1</sup>, Emily McNaughton<sup>1</sup>, Ebba Abate<sup>3</sup>, Anna Phillips<sup>1</sup>, Roy Anderson<sup>1</sup>

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**SOIL-TRANSMITTED HELMINTH INFECTIONS IN PRE-SCHOOL AND SCHOOL-AGED CHILDREN AND THE SCHOOL ENVIRONMENT IN SOUTHERN INDIA: BASELINE SURVEY RESULTS FROM THE DEWORM3 STUDY**

Saravanakumar Puthupalayam Kaliappan<sup>1</sup>, Katherine E. Halliday<sup>2</sup>, Gokila Palanisamy<sup>1</sup>, Janarthanan Maniyarasu<sup>1</sup>, Jasmine Farzana<sup>1</sup>, Rajeshkumar Rajendiran<sup>1</sup>, Chinnadurai Pandi<sup>1</sup>, David Kennedy<sup>2</sup>, William Oswald<sup>2</sup>, Kristjana Ásbjörnsdóttir<sup>3</sup>, Gagandeep Kang<sup>1</sup>, Judd L. Walson<sup>3</sup>, Sitara S R Ajjampur<sup>1</sup>

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**CLINICAL CASE OF INFANTILE HOOKWORM IN THE PERUVIAN AMAZON AND LITERATURE REVIEW OF EFFICACY OF CURRENT ANTI-HELMINTHIC THERAPIES**

Brian J. Medernach<sup>1</sup>, Steven Goicoechea<sup>2</sup>, Ravi Durvasula<sup>3</sup>, Prakasha Kempaiah<sup>3</sup>

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**IDENTIFICATION OF PARASITES WITH METAGENOMIC BARCODING CONFIRMS MICROSCOPY FINDINGS AND DETECTS ADDITIONAL ORGANISMS**

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**COMPARISON OF REAL-TIME POLYMERASE CHAIN REACTION AND PARASITOLOGICAL METHODS FOR DETECTION AND POSTTREATMENT FOLLOW-UP OF STRONGYLOIDES STERCORALIS IN FECAL SPECIMENS OF PATIENTS COINFECTED WITH HTLV-1**

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**APPLICATION OF STH QPCR DIAGNOSTIC ASSAYS TO SCREENING ENVIRONMENTAL SAMPLES**

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**INDOOR EXPOSURE OF INTESTINAL PARASITES AND RELATION TO INFECTION IN ECUADORIAN CHILDREN**

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(ACMCIP Abstract)



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### A CLUSTER-RANDOMIZED CONTROLLED TRIAL COMPARING SCHOOL AND COMMUNITY-BASED DEWORMING FOR SOIL TRANSMITTED HELMINTH CONTROL IN SCHOOL-AGE CHILDREN: THE CODE-STH TRIAL PROTOCOL

Naomi E. Clarke<sup>1</sup>, Dinh Ng-Nguyen<sup>2</sup>, Rebecca J. Traub<sup>3</sup>, Archie CA Clements<sup>4</sup>, Kate Halton<sup>5</sup>, Roy M. Anderson<sup>6</sup>, Darren J. Gray<sup>7</sup>, Luc E. Coffeng<sup>8</sup>, **Susana Vaz Nery**<sup>1</sup>  
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## HIV and Tropical Co-Infections

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### MALARIA CARE-SEEKING BEHAVIOR AMONG HIV-INFECTED PATIENTS RECEIVING ANTIRETROVIRAL TREATMENT IN SOUTHEASTERN NIGERIA: A CROSS-SECTIONAL STUDY

**Uchechukwu Chukwuocha**<sup>1</sup>, Gregory Iwuoha<sup>2</sup>, Geoffrey Nwakwu<sup>3</sup>, Chidinma Ezeihekaibe<sup>4</sup>, Christopher Ekiyor<sup>3</sup>, Ikechukwu Dozie<sup>2</sup>, Sahai Burrowes<sup>4</sup>  
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### HIGH PREVALENCE OF HIV AMONG PREGNANT WOMEN ATTENDING ANTENATAL CLINICS IN GABON

**Saskia Dede Davi**<sup>1</sup>, Ghyslain Mombo-Ngoma<sup>1</sup>, Johannes Mischlinger<sup>2</sup>, Marylyn Addo<sup>2</sup>, Michael Ramharter<sup>2</sup>  
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### HOMOZYGOUS DELETION OF BOTH GSTM1 AND GSTT1 GENES IS ASSOCIATED WITH HIGHER CD4+ T CELL COUNTS IN GHANAIAN HIV PATIENTS

**Joshua A. Kuleape**<sup>1</sup>, Emmanuel A. Tagoe<sup>2</sup>, Peter Pupilampu<sup>3</sup>, Evelyn Y. Bonney<sup>4</sup>, Osbourne Quay<sup>5</sup>  
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### FEMALE GARMENT WORKERS' UNDERSTANDINGS OF HIV/AIDS IN BANGLADESH

**Shakeel Ahmed Ibne Mahmood**  
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### THE MISSING 90 IN THE HIV CASCADE OF CARE: LATE PRESENTATION IN CARE IN THE DOMINICAN REPUBLIC

**Leandro Tapia**<sup>1</sup>, Rosa M. Rodriguez-Lauzurique<sup>1</sup>, Merelin Muñoz<sup>2</sup>, Robert Paulino-Ramirez<sup>1</sup>  
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### EPIDEMIOLOGY OF TUBERCULOSIS AND HIV COINFECTION AND ITS COLLABORATIVE SERVICES TOWARDS ENDING THE TB EPIDEMIC IN ETHIOPIA

**Yalemzewod Assefa Gelaw**<sup>1</sup>, Ricardo J. Soares Magalhães<sup>2</sup>, Yibeltal Assefa<sup>1</sup>, Gail Williams<sup>1</sup>  
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### HIGH RESISTANCE TO NEVIRAPINE AND EFAVIRENZ IN HIV-1 SUBTYPE CRF02\_AG AND DUAL CRF02\_AG/G -INFECTED PATIENTS IN GHANA

**Selase D. Deletsu**<sup>1</sup>, Edward K. Maina<sup>2</sup>, Osbourne Quay<sup>3</sup>, William K. Ampofo<sup>4</sup>, Gordon A. Awandare<sup>3</sup>, Evelyn Y. Bonney<sup>4</sup>  
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### RETROSPECTIVE ANALYSIS OF HIV-TB CO-INFECTION IN GOVERNMENT MEDICAL COLLEGE AURANGABAD

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### PREDICTORS OF MORTALITY IN HIV PATIENTS WITH SEVERE PNEUMOCYSTIS CARINII PNEUMONIA ADMITTED TO INTENSIVE CARE UNIT: A SYSTEMATIC REVIEW

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### DETERMINANTS OF ADHERENCE TO ANTIRETROVIRAL THERAPY AMONG PERSONS LIVING WITH HUMAN IMMUNE DEFICIENCY VIRUS IN THE UPPER EAST REGION

**Gifty Apiung Aninanya**, Gilbert A. Abiuro, Michael W. Wombeogo  
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### INTESTINAL PARASITES INFECTIONS AMONG HIV INFECTED CHILDREN UNDER ANTIRETROVIRALS TREATMENT IN YAOUNDE, CAMEROON

**Celine N. Nkenfou**<sup>1</sup>, William B. Abange<sup>2</sup>, Hortense G. Kamga<sup>3</sup>, Clement N. Assob<sup>2</sup>, William Estrin<sup>4</sup>  
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## Kinetoplastida - Epidemiology (Including Leishmania and Trypanosomes)

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### EPIDEMIOLOGY OF CUTANEOUS AND MUCOCUTANEOUS LEISHMANIASIS IN NICARAGUA

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**SEROPREVALENCE OF CHAGAS DISEASE AMONG BLOOD DONORS IN THE STATE OF BAHIA, BRAZIL**

Diego L. Miranda<sup>1</sup>, Gilmar R. Júnior<sup>2</sup>, Fernanda C. Lanza<sup>2</sup>, Fred Luciano Santos<sup>2</sup>, Renato B. Reis<sup>2</sup>, Deborah B. Fraga<sup>2</sup>, Luciano K. Silva<sup>2</sup>, Marinho M. Neto<sup>3</sup>, Iraídes J. Santana<sup>3</sup>, **Mitermayer G. Reis**<sup>2</sup>

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**INTEGRATION OF PHLEBOTOMINE ECOLOGICAL NICHE MODELLING, AND MAPPING OF CUTANEOUS LEISHMANIASIS SURVEILLANCE DATA TO IDENTIFY AREAS AT RISK OF UNDER-REPORTING**

**Clara B. Ocampo**<sup>1</sup>, Lina Guzmán-Rodríguez<sup>1</sup>, Mabel Soraya Moreno<sup>2</sup>, Carlos Valderrama Ardila<sup>3</sup>, Neal Alexander<sup>1</sup>

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**HOTSPOTS OF TRANSMISSION OF LEISHMANIASIS IN SRI LANKA**

Nadira Karunaweera<sup>1</sup>, **Guofa Zhou**<sup>2</sup>, Samitha Ginige<sup>3</sup>, Sanath Senanayake<sup>1</sup>, Hermali Silva<sup>1</sup>, Nuwani Manamperi<sup>4</sup>, Nilakshi Samaranyake<sup>1</sup>, Yamuna Siriwardana<sup>1</sup>, Deepa Gamage<sup>3</sup>, Upul Senerath<sup>1</sup>

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**LEISHMANIASIS IN ABANCAY (PERU) DURING THE LAST DECADES. RETROSPECTIVE ANALYSIS AND STUDY OF THERAPEUTIC RESISTANCE**

Natalia Cánovas García<sup>1</sup>, **Roque Diaz Diaz**<sup>1</sup>, Jesus Lopez Fidalgo<sup>2</sup>, Bartolome Ribas<sup>3</sup>, Jose Juarez<sup>4</sup>, Paul Nguewa<sup>1</sup>

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Nourhane Msalem<sup>1</sup>, Malek Trimeche<sup>1</sup>, Ifhem Chelbi<sup>1</sup>, Abhay Satoskar<sup>2</sup>, **Elyes Zhioua**<sup>1</sup>, Thouraya Boussofara<sup>1</sup>

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**HIGH VARIABILITY BETWEEN THE INCIDENCE OF CLINICAL LESION OF LEISHMANIASIS AMONG THREE HIGH ENDEMICITY NEIGHBORING VILLAGES OF DIEMA DISTRICT IN 2016: A WESTERN PART OF MALI**

**Oumar Thiero**<sup>1</sup>, Bourama Traoré<sup>1</sup>, Ousmane Faye<sup>1</sup>, Dieudonne Somboro<sup>2</sup>, Adama Dicko<sup>2</sup>, Cheick A. Coulibaly<sup>1</sup>, Ibrahim M. Sissoko<sup>1</sup>, Samake Sibiry<sup>1</sup>, Sekou F. Traoré<sup>1</sup>, Seydou Doumbia Doumbia<sup>1</sup>

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**EVALUATING THE INCIDENCE OF LEISHMANIASIS SKIN TEST POSITIVITY (LST+) WITHOUT CLINICAL DISEASE IN DIEMA DISTRICT, IN 2016: A HIGH ENDEMICITY AREA IN WESTERN MALI**

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**One Health: Interface Of Human Health/ Animal Diseases**

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**BRUCellosis CONTROL IN TANZANIA - THE EFFECTS OF PASTORALISTS' PERCEPTIONS AND PRACTICES**

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**ONGOING RIFT VALLEY FEVER TRANSMISSION AT HUMAN-ANIMAL INTERFACES IN TWO DISTINCT CLIMATIC ZONES IN TANZANIA**

**Robert D. Sumaye**<sup>1</sup>, Goodluk Paul<sup>2</sup>, Brian H. Bird<sup>3</sup>, Christopher Kilonzo<sup>3</sup>, David J. Wolking<sup>3</sup>, Amina Abdalla<sup>1</sup>, Peter I. Pazia<sup>1</sup>, Walter Simon<sup>2</sup>, Feisal Hassan<sup>1</sup>, Honorati Masanja<sup>1</sup>, Jonna K. Mazet<sup>3</sup>, Rudovick R. Kazwala<sup>2</sup>, Woutrina A. Smith<sup>3</sup>

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**THE EPIDEMIOLOGY OF RICKETTSIAL DISEASES, SCRUB TYPHUS AND Q FEVER IN BHUTAN: A FIRST REPORT**

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### TRENDS AND CLINICO-EPIDEMIOLOGICAL FEATURES OF HUMAN RABIES CASES IN BANGLADESH 2006-2018

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### MOLECULAR DETECTION OF *BARTONELLA* IN SOUTH AMERICAN FUR SEALS (*ARCTOCEPHALUS AUSTRALIS*) FROM CHILEAN PATAGONIA

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### NEW HIGH RESOLUTION MELTING SYSTEM FOR GENOTYPIFICATION OF PATHOGENIC *LEPTOPIRA* SUBSPECIES IN URINE SAMPLES OF DOMESTICATED ANIMAL RESERVOIRS FROM BELEN, IQUITOS, PERU

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### AVIAN INFLUENZA SURVEILLANCE IN WILD BIRDS AT NORTHERN AND SOUTHERN PERU DURING MIGRATORY SEASON

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### POLITICAL ECONOMY OF BAT HUNTING: BAT-BORNE DISEASES PERSPECTIVE IN BANGLADESH

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### INFLUENZA SURVEILLANCE IN SMALL SCALE SWINE PRODUCTION SYSTEMS IN PERU

Maria Claudia Guezala<sup>1</sup>, Yeny O. Tinoco<sup>1</sup>, Jorge Mantilla<sup>2</sup>, María E. Silva<sup>1</sup>, Christopher D. Cruz<sup>1</sup>, Gilda Troncos<sup>1</sup>, Roger M. Castillo<sup>1</sup>, Christian Quiroz<sup>3</sup>, Eugenio J. Abente<sup>1</sup>

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### SELF-MEDICATION AS THE FIRST RECOURSE FOR THE CARE OF SICK ANIMALS IN COTE D'IVOIRE

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## Pneumonia, Respiratory Infections and Tuberculosis

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### EVALUATION OF THE ROLE OF MMPL3 GENE AS A CANDIDATE GENE FOR PYRAZINAMIDE RESISTANCE IN *MYCOBACTERIUM SMEGMATIS*

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(ACMCIP Abstract)

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### RISK FACTORS FOR UNFAVORABLE OUTCOMES IN DRUG-SUSCEPTIBLE *MYCOBACTERIUM TUBERCULOSIS* TREATMENT IN UGANDA

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### A STUDY OF THE DETERMINANTS OF TB DIAGNOSIS DELAY IN THE BAMBEY HEALTH DISTRICT IN 2017 (SENEGAL)

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### COMPARISON OF CLINICAL CHARACTERISTICS BETWEEN INFLUENZA A AND INFLUENZA B VIRUS INFECTIONS IN IQUITOS, PERU

Crystyan Siles<sup>1</sup>, Joan Neyra<sup>2</sup>, Anna Kawiecki<sup>3</sup>, Stalin Vilcarrromero<sup>1</sup>, Amy C. Morrison<sup>3</sup>, Carolina Guevara<sup>2</sup>, Julia S. Ampuero<sup>2</sup>

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### EPIDEMIOLOGY AND VIRAL ETIOLOGY OF ACUTE RESPIRATORY INFECTIONS IN AN ACTIVE SURVEILLANCE IN THE PERUVIAN AMAZON FROM 2009-2017

Isabel Bazán<sup>1</sup>, Eugenio Abente<sup>1</sup>, Amy C. Morrison<sup>2</sup>, Carolina Guevara<sup>1</sup>, Juan Pérez<sup>1</sup>, Regina Fernández<sup>1</sup>, Stalin Vilcarrromero<sup>1</sup>, Carlos Alvarez<sup>3</sup>, Julia S. Ampuero<sup>1</sup>

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### LUNG ULTRASOUND FINDINGS IN PULMONARY TUBERCULOSIS

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### HUMAN BOCAVIRUS DETECTED IN UGANDAN CHILDREN WITH HYPOXEMIC PNEUMONIA: PATHOGEN OR BYSTANDER?

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<sup>1</sup>University of Alberta, Edmonton, AB, Canada, <sup>2</sup>Makerere University, Kampala, Uganda, <sup>3</sup>Indiana University School of Medicine, Indianapolis, IN, United States, <sup>4</sup>Kabale Regional Referral Hospital, Kabale, Uganda

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### INFLUENZA INFECTION IN THE YUCATAN DURING THE YEAR 2018

Luis O. Bobadilla-Rosado<sup>1</sup>, Rodrigo G Díaz-Novelo<sup>1</sup>, Diego O. Quijano-Torres<sup>1</sup>, Nina Mendez-Dominguez<sup>1</sup>, Salvador Gómez-Carro<sup>2</sup>, Barbara C. Hoil Vales<sup>1</sup>  
<sup>1</sup>Universidad Marista de Merida, Merida, Mexico, <sup>2</sup>Epidemiological Unit, General hospital Agustin O'horán, Merida, Mexico

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### IMPACT OF EBOLA OUTBREAK ON TB TREATMENT ADHERENCE AND OUTCOMES IN SIERRA LEONE

Kathryn M. Hogan<sup>1</sup>, Jia-Fu Jiang<sup>2</sup>, Henry S. Bangura<sup>3</sup>, Stephen Sevalie<sup>2</sup>, Ya-Jun Song<sup>2</sup>, Yi Sun<sup>2</sup>, Jing Li<sup>2</sup>, Zhong-Peng Zhao<sup>2</sup>, Jun Jiao<sup>2</sup>, Foday Sahr<sup>4</sup>  
<sup>1</sup>George Mason University, Glendora, NJ, United States, <sup>2</sup>Beijing Institute of Microbiology and Epidemiology, Beijing, China, <sup>3</sup>Public Health Department, 34 Military Hospital, Wilberforce, Sierra Leone, <sup>4</sup>College of Medicine and Allied Health Sciences, Freetown, Sierra Leone

1204

### A CLINICAL CHALLENGE TRIAL DELIVERING AEROSOL BCG AS A CONTROLLED HUMAN INFECTION IN HEALTHY BCG-NAÏVE, UK ADULTS: ESTABLISHING OPTIMAL DOSE AND EVALUATING SAFETY

Julia L. Marshall<sup>1</sup>, Iman Satti<sup>1</sup>, Stephanie Harris<sup>1</sup>, Rachel Wittenberg<sup>1</sup>, Raquel Lopez Ramon<sup>1</sup>, Michael Riste<sup>1</sup>, Pedro Folegatti<sup>1</sup>, Rebecca Powell-Doherty<sup>1</sup>, Alison M. Lawrie<sup>1</sup>, Samantha Vermaak<sup>1</sup>, Morven Wilkie<sup>1</sup>, Paul Moss<sup>2</sup>, Henry Bettinson<sup>3</sup>, Helen McShane<sup>1</sup>  
<sup>1</sup>University of Oxford, Oxford, United Kingdom, <sup>2</sup>NIHR / Wellcome Trust Birmingham Clinical Research Facility, Birmingham, United Kingdom, <sup>3</sup>Oxford Centre for Respiratory Medicine, Oxford, United Kingdom

## Schistosomiasis and Other Trematodes – Epidemiology and Control

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### NATIONAL MAPPING OF SOIL-TRANSMITTED HELMINTHIASIS AND SCHISTOSOMIASIS IN ETHIOPIA

Gemechu Tadesse Leta<sup>1</sup>, Kalkidan Mekete<sup>1</sup>, Yonas Wuletaw<sup>1</sup>, Abeba Gebretsadik<sup>1</sup>, Heven Sime<sup>1</sup>, Sindew Mekasha<sup>1</sup>, Adugna woyessa<sup>1</sup>, Oummer Shafi<sup>2</sup>, Michael French<sup>3</sup>, Jozef Vercruyssen<sup>4</sup>, Bruno Levecke<sup>4</sup>, Jack Grimes<sup>5</sup>, Lasely Drake<sup>5</sup>, Iain Gardiner<sup>6</sup>, Wendy Harisson<sup>6</sup>, Alan Fenwick<sup>6</sup>  
<sup>1</sup>Ethiopian Public Health Institute, Addis Ababa, Ethiopia, <sup>2</sup>Federal Ministry of Health, Addis Ababa, Ethiopia, <sup>3</sup>RTI International, USA, Washington, DC, United States, <sup>4</sup>Ghent University, Merelbeke, Belgium, <sup>5</sup>Partnership for Child Development, London, United Kingdom, <sup>6</sup>Schistosomiasis Control Initiative, London, United Kingdom

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### EVIDENCE OF HYBRIDIZATION BETWEEN SCHISTOSOMA HAEMATOBIIUM AND SCHISTOSOMA BOVIS IN CÔTE D'IVOIRE

Kpongbo Etienne Angora<sup>1</sup>, Jean-François Allienne<sup>2</sup>, Olivier Rey<sup>2</sup>, Hervé Menan<sup>3</sup>, William Yavo<sup>3</sup>, André Offianan Touré<sup>4</sup>, Jean Coulibaly<sup>5</sup>, Giovanna Raso<sup>1</sup>, Jürg Utzinger<sup>1</sup>, Oliver Balmer<sup>1</sup>, Jérôme Boissier<sup>2</sup>  
<sup>1</sup>Swiss Tropical and Public Health Institute, Basel, Switzerland, <sup>2</sup>IHPE, University Montpellier, CNRS, Ifremer, University Perpignan Via Domitia, Perpignan, France, <sup>3</sup>Université Félix Houphouët-Boigny, BPV 34, Abidjan, Côte D'Ivoire, <sup>4</sup>Institut Pasteur de Côte d'Ivoire, Abidjan, Côte D'Ivoire, <sup>5</sup>Centre Suisse de Recherches Scientifiques en Côte d'Ivoire, Abidjan, Côte D'Ivoire

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### EFFECT OF SCHISTOSOMIASIS ON THE HEMATOLOGICAL PROFILE OF SCHOOL CHILDREN LIVING IN LAMBARÉNÉ, A SEMI-URBAN AREA IN GABON

Jean Claude Dejon Agobé<sup>1</sup>, Yabo Josiane Honkpehedji<sup>1</sup>, Jeannot Fréjus Zinsou<sup>1</sup>, Jean-Ronald Edoa<sup>1</sup>, Bayodé Roméo Adégbitè<sup>1</sup>, Bertrand Lell<sup>1</sup>, Peter Gottfried Kreamsner<sup>2</sup>, Ayola Akim Adegnika<sup>1</sup>, Martin Peter Grobusch<sup>3</sup>  
<sup>1</sup>Centre de Recherches Médicales de Lambaréné, Lambaréné, Gabon, <sup>2</sup>Institut für Tropenmedizin, Eberhad Karls Universität Tübingen and German Center for Infection Research (DZIF), Tübingen, Germany, <sup>3</sup>Academic Medical Center, University of Amsterdam, Amsterdam, Netherlands

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### ASSOCIATION OF RIVERINE PRAWNS AND INTERMEDIATE HOST SNAIL AND CORRELATION WITH HUMAN SCHISTOSOMIASIS IN TWO RIVER SYSTEMS IN SOUTHEASTERN COTE D'IVOIRE

Nana Rose Diakite epse Ngoran  
Universite Felix Houphouet Boigny, Abidjan, Côte D'Ivoire

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### PREGNANCY INCREASES RISK OF SCHISTOSOMA HAEMATOBIIUM INFECTION AND DISEASE SEVERITY AMONG REPRODUCTIVE AGE WOMEN IN MUNYENGE, SOUTH WEST REGION, CAMEROON. A CASE-CONTROL STUDY

Judith K. Anchang-kimbi<sup>1</sup>, Godlove B. Wepnje<sup>1</sup>, Vicky D. Ndassi<sup>1</sup>, Irene U. Sumblele<sup>1</sup>, Helen K. Kimbi<sup>2</sup>  
<sup>1</sup>University of Buea, Buea, Cameroon, <sup>2</sup>The University of Bamenda, Bamili, Cameroon

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### EVALUATION OF THE EFFECT OF ARTEMISININ-BASED COMBINATION THERAPIES ON URINARY SCHISTOSOMA HAEMATOBIIUM WHEN ADMINISTERED FOR THE TREATMENT OF MALARIAL CO-INFECTION

Dearrie Glory Okwu, Rella Zoleko Manego, Michael Ramharter, Ghyslain Mombongoma  
Centre de Recherche Médicales de Lambaréné (CERMEL), Lambaréné, Gabon, Lambarene, Gabon

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### PERFORMANCE OF THE POINT OF CARE URINE CIRCULATING CATHODIC ANTIGEN TEST IN A SCHISTOSOMIASIS CONTROL PROGRAM SETTING IN WESTERN KENYA, 2017-2018

Anne Straily<sup>1</sup>, Emmy K. Awino<sup>2</sup>, Madeline Usey<sup>1</sup>, Susan P. Montgomery<sup>1</sup>, Ryan E. Wiegand<sup>1</sup>, Alie Eleveld<sup>2</sup>, Alex Mwaki<sup>2</sup>, William E. Secor<sup>1</sup>, Maurice R. Odier<sup>3</sup>  
<sup>1</sup>Centers for Disease Control and Prevention (CDC), Atlanta, GA, United States, <sup>2</sup>Safe Water and AIDS Project (SWAP), Kisumu, Kenya, <sup>3</sup>Kenya Medical Research Institute (KEMRI), Kisumu, Kenya

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### UTILIZATION OF THE COVERAGE SUPERVISION TOOL DURING SCHISTOSOMIASIS MASS DRUG ADMINISTRATION

Ibrahim Kargbo Labour<sup>1</sup>, Habib I. Kamara<sup>2</sup>, Mohamed Turay<sup>2</sup>, Abdul Conteh<sup>1</sup>, Abdulai Kande<sup>2</sup>, Victoria Redwood-Sawyer<sup>2</sup>, Mohamed Kallon<sup>2</sup>, Mustapha Sonnie<sup>2</sup>, Mary Hodges<sup>2</sup>  
<sup>1</sup>Neglected Tropical Disease Program, Ministry of Health and Sanitation, Freetown, Sierra Leone, <sup>2</sup>Helen Keller International, Freetown, Sierra Leone



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**POST-TREATMENT SURVEILLANCE CRITERIA FOR *SCHISTOSOMA MANSONI*: WILL ELIMINATION OR RESURGENCE OCCUR AFTER STOPPING MASS DRUG ADMINISTRATION?**

Jaspreet Toor<sup>1</sup>, James E. Truscott<sup>1</sup>, Marleen Werkman<sup>1</sup>, Hugo C. Turner<sup>2</sup>, Anna E. Phillips<sup>1</sup>, Charles H. King<sup>3</sup>, Graham F. Medley<sup>4</sup>, Roy M. Anderson<sup>1</sup>

<sup>1</sup>Imperial College London, London, United Kingdom, <sup>2</sup>Oxford University Clinical Research Unit, Ho Chi Minh City, Vietnam, <sup>3</sup>Case Western Reserve University, Cleveland, OH, United States, <sup>4</sup>London School of Hygiene & Tropical Medicine, London, United Kingdom

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**OPTIMIZING SURVEY STRATEGIES FOR PRECISION MAPPING OF SCHISTOSOMIASIS TO GUIDE MASS DRUG ADMINISTRATION: A VALUE-OF-INFORMATION ANALYSIS**

Nathan C. Lo<sup>1</sup>, Yi Liu<sup>2</sup>, Giovanna Raso<sup>3</sup>, Jean T. Coulibaly<sup>4</sup>, Hugh J.W. Sturrock<sup>5</sup>, Jürg Utzinger<sup>3</sup>, Isaac I. Bogoch<sup>6</sup>, Jason R. Andrews<sup>7</sup>

<sup>1</sup>Stanford University School of Medicine; University of California San Francisco, Stanford; San Francisco, CA, United States, <sup>2</sup>University of Chicago, Chicago, IL, United States, <sup>3</sup>Swiss Tropical and Public Health Institute, University of Basel, Basel, Switzerland, <sup>4</sup>Swiss Tropical and Public Health Institute, University of Basel, Université Félix Houphouët-Boigny, Centre Suisse de Recherches Scientifiques en Côte d'Ivoire, Abidjan, Côte d'Ivoire, <sup>5</sup>University of California San Francisco, San Francisco, CA, United States, <sup>6</sup>University of Toronto, Toronto, ON, Canada, <sup>7</sup>Stanford University School of Medicine, Stanford, CA, United States

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**A BETTER UNDERSTANDING OF THE BASIC PARASITE LIFE CYCLE AND TRANSMISSION DYNAMICS IS CRUCIAL TO MOVE TOWARD THE ELIMINATION OF SCHISTOSOMIASIS**

Louis-Albert Tchuem Tchuenté  
University of Yaoundé I, Yaoundé, Cameroon

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**INDIVIDUAL AND VILLAGE-LEVEL CONNECTIVITY AND RISK OF *SHISTOSOMA JAPONICUM* INFECTION IN SICHUAN, CHINA**

Andrea Geri Buchwald<sup>1</sup>, Elise Grover<sup>1</sup>, Julia Van Dyke<sup>1</sup>, Ding Lu<sup>2</sup>, Yang Liu<sup>2</sup>, Bo Zhong<sup>2</sup>, Elizabeth J. Carlton<sup>1</sup>

<sup>1</sup>University of Colorado School of Public Health, Aurora, CO, United States, <sup>2</sup>Sichuan Centers for Disease Control, Chengdu, China

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**BIOGEOGRAPHICAL CHARACTERISTICS OF *SCHISTOSOMA MANSONI* ENDEMIC AREAS IN ETHIOPIA**

Keerati Ponpetch<sup>1</sup>, Berhanu Erko<sup>2</sup>, Lindsay Richards<sup>3</sup>, Yang Yang<sup>4</sup>, Song Liang<sup>1</sup>

<sup>1</sup>Department of Environmental and Global Health, University of Florida, Gainesville, FL, United States, <sup>2</sup>Aklilu Lemma Institute of Pathobiology, Addis Ababa University, Addis Ababa, Ethiopia, <sup>3</sup>Department of Microbiology and Cell Science, University of Florida, Gainesville, FL, United States, <sup>4</sup>Department of Biostatistics, University of Florida, Gainesville, FL, United States

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**MODELLING THE IMPACT OF VACCINATION STRATEGIES ON THE TRANSMISSION OF SCHISTOSOMIASIS**

Klodeta Kura, James Truscott, Jaspreet Toor, Roy Anderson  
Imperial College London, London, United Kingdom

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**SCHISTOSOMIASIS IN BURKINA FASO: TIME TO CHANGE CONTROL STRATEGY IN FOUR PERSISTENT HOTSPOTS**

Hamado Ouédraogo<sup>1</sup>, Clarisse Bougouma<sup>1</sup>, Dieudonné Nare<sup>2</sup>, Jean-Paul Djiatsa<sup>2</sup>, Amy Veinoglou<sup>3</sup>, Achille Kaboré<sup>4</sup>, Fanny Yago-Wienne<sup>2</sup>, Yaobi Zhang<sup>5</sup>

<sup>1</sup>NTD Control Program, Ministry of Health, Ouagadougou, Burkina Faso, <sup>2</sup>Helen Keller International, Ouagadougou, Burkina Faso, <sup>3</sup>Helen Keller International, New York, NY, United States, <sup>4</sup>Family Health International 360, Washington, DC, United States, <sup>5</sup>Helen Keller International, Regional Office for Africa, Dakar, Senegal

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**EFFICACY OF BIENNIAL TREATMENT OF SCHISTOSOMIASIS IN MODERATE AND HIGH ENDEMIC AREAS IN BURKINA FASO**

Hamado Ouédraogo<sup>1</sup>, Clarisse Bougouma<sup>1</sup>, Dieudonné Nare<sup>2</sup>, Jean-Paul Djiatsa<sup>2</sup>, Amy Veinoglou<sup>3</sup>, Achille Kaboré<sup>4</sup>, Fanny Yago-Wienne<sup>2</sup>, Yaobi Zhang<sup>5</sup>

<sup>1</sup>NTD Control Program, Ministry of Health, Ouagadougou, Burkina Faso, <sup>2</sup>Helen Keller International, Ouagadougou, Burkina Faso, <sup>3</sup>Helen Keller International, New York, NY, United States, <sup>4</sup>Family Health International 360, Washington, DC, United States, <sup>5</sup>Helen Keller International, Regional Office for Africa, Dakar, Senegal

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**DECISION MAKING FOR MASS DRUG ADMINISTRATION FOR SCHISTOSOMIASIS AFTER IMPACT SURVEYS IN SENEGAL, 2016-2018**

Boubacar Diop<sup>1</sup>, Fatou Ndiaye Badiane<sup>1</sup>, Amadou Doucoure<sup>1</sup>, Mawo Fall<sup>2</sup>, Daniel Albert Cohn<sup>3</sup>, Achille Kabore<sup>3</sup>

<sup>1</sup>Direction de Lutte contre la Maladie, Ministère de la Santé et de l'Action Sociale, Dakar, Senegal, <sup>2</sup>RTI International, Dakar, Senegal, <sup>3</sup>FHI 360, Washington, DC, United States

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**RELATIONSHIP BETWEEN GUT MICROBIOTA AND *FASCIOLA HEPATICA* INFECTION IN CHILDREN FROM A COMMUNITY IN CAJAMARCA, PERU**

Hugo Carrillo-Ng<sup>1</sup>, Yordi Tarazona<sup>1</sup>, Miguel A. Aguilar-Luis<sup>2</sup>, Wilmer Silva-Caso<sup>2</sup>, Carmen Tinco-Valdez<sup>1</sup>, Carlos Palomares-Reyes<sup>2</sup>, Ronald Aquino-Ortega<sup>1</sup>, Johanna Martins-Luna<sup>1</sup>, Isaac Peña-Tuesta<sup>1</sup>, Juana M. del Valle-Mendoza<sup>2</sup>

<sup>1</sup>Instituto de Investigación Nutricional, Lima, Peru, <sup>2</sup>Investigation Center and Innovation of the Health Sciences Faculty, Universidad Peruana de Ciencias Aplicadas (UPC), Lima, Peru

**Water, Sanitation, Hygiene and Environmental Health**

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**ACCESSIBLE-OMICS: ADVANCES IN SCRNA TRANSCRIPTIONAL SIGNALING AND THE CREATION OF A TRANSCRIPTOMIC ATLAS OF ZAMBIAN ADULTS WITH LIKELY ENVIRONMENTAL ENTEROPATHY**

Thomas Wallach<sup>1</sup>, Conner Kummerlowe<sup>2</sup>, Travis Hughes<sup>2</sup>, Paul Kelly<sup>3</sup>, Alex Shalek<sup>2</sup>, Zev Gartner<sup>1</sup>

<sup>1</sup>University of California San Francisco, San Francisco, CA, United States, <sup>2</sup>Massachusetts Institute of Technology, Cambridge, MA, United States, <sup>3</sup>University Teaching Hospital, Lusaka, Zambia

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**A WATERBORNE DISEASE INDEX (WBDI) FOR RURAL COMMUNITIES IN THE CARIBBEAN**

Akilah T. Stewart<sup>1</sup>, Vrijesh Tripathi<sup>1</sup>, Azad Mohammed<sup>1</sup>, Catherine Seepersad<sup>1</sup>, Adrian Cashman<sup>2</sup>, Dave D. Chadee<sup>1</sup>, Adesh Ramsubhag<sup>1</sup>

<sup>1</sup>The University of the West Indies, St. Augustine, Trinidad and Tobago, <sup>2</sup>The University of the West Indies, Cavehill, Barbados

Friday  
November 22

## 1225

### RECOMMENDATIONS FOR BUCKET CHLORINATION IMPLEMENTATIONS IN EMERGENCY CONTEXTS AND CHOLERA OUTBREAKS

**Gabrielle String**, Mustafa Sikder, Yarmina Kamal, Annie Huang, Karin Gallandat, Daniele Lantagne  
*Tufts University, Medford, MA, United States*

## 1226

### IDENTIFYING PSYCHOSOCIAL DETERMINANTS OF WASH BEHAVIORS FOR THE DEVELOPMENT OF THE EVIDENCE-BASED BABY WASH INTERVENTIONS (REDUCE PROGRAM)

**Ronald Saxton**<sup>1</sup>, Jennifer Kuhl<sup>1</sup>, Jamie Perin<sup>1</sup>, Nicole Coglianese<sup>2</sup>, Elizabeth Thomas<sup>1</sup>, Sarah Bauler<sup>2</sup>, Anthony Koomson<sup>2</sup>, Phil Moses<sup>2</sup>, Geoffrey A. Nyakuni<sup>3</sup>, Amagana Togo<sup>3</sup>, Ruthly Francois<sup>1</sup>, Patrick Mirindi<sup>3</sup>, Lucien Bisimwa<sup>3</sup>, Christine Marie George<sup>1</sup>

<sup>1</sup>Johns Hopkins University, Baltimore, MD, United States, <sup>2</sup>Food for the Hungry, Phoenix, AZ, United States, <sup>3</sup>Food for the Hungry, Bukavu, Democratic Republic of the Congo

## 1227

### EVIDENCE-BASED DEVELOPMENT OF BABY WASH INTERVENTIONS TO REDUCE EXPOSURE TO FECAL PATHOGENS (REDUCE PROGRAM)

**Jennifer Kuhl**<sup>1</sup>, Ronald Saxton<sup>1</sup>, Jamie Perin<sup>1</sup>, Nicole Coglianese<sup>2</sup>, Elizabeth Thomas<sup>1</sup>, Sarah Bauler<sup>2</sup>, Anthony Koomson<sup>2</sup>, Phil Moses<sup>2</sup>, Geoffrey A. Nyakuni<sup>3</sup>, Amagana Togo<sup>3</sup>, Ruthly Francois<sup>1</sup>, Patrick Mirindi<sup>3</sup>, Lucien Bisimwa<sup>3</sup>, Christine Marie George<sup>1</sup>

<sup>1</sup>Johns Hopkins University, Baltimore, MD, United States, <sup>2</sup>Food for the Hungry, Phoenix, AZ, United States, <sup>3</sup>Food for the Hungry, Bukavu, Democratic Republic of the Congo

## 1228

### COMPARISON OF SANIPATH EXPOSURE ASSESSMENTS IN LOW-INCOME URBAN AREAS IN EIGHT COUNTRIES

Wolfgang Mairinger, Yuke Wang, Suraja Raj, Habib Yakubu, Casey Siesel, Jamie Green, Sarah Durry, **Christine Moe**  
*Emory University, Atlanta, GA, United States*

## 1229

### RANDOMIZED CONTROLLED TRIAL OF THE CHOB17 MOBILE HEALTH PROGRAM TO REDUCE PEDIATRIC DIARRHEA

**Christine Marie George**<sup>1</sup>, Fatema Zohura<sup>2</sup>, Shirajum Monira<sup>2</sup>, Elizabeth Thomas<sup>1</sup>, Tasdik Hasan<sup>2</sup>, Tahmina Parvin<sup>2</sup>, Maynul Hasan<sup>2</sup>, Khaled Hasan<sup>1</sup>, Mahamud-ur Rashid<sup>2</sup>, Md. Sazzadul Islam Bhuyian<sup>2</sup>, Camille Morgan<sup>1</sup>, Peter J. Winch<sup>1</sup>, Ronald Saxton<sup>1</sup>, Alain Labrique<sup>1</sup>, Kelsey Zeller<sup>1</sup>, Farzana Begum<sup>1</sup>, David A. Sack<sup>1</sup>, R. Bradley Sack<sup>1</sup>, Jamie Perin<sup>1</sup>, Munirul Alam<sup>1</sup>

<sup>1</sup>Johns Hopkins University, Baltimore, MD, United States, <sup>2</sup>International Centre for Diarrhoeal Disease Research, Bangladesh (icddr), Dhaka, Bangladesh

## 1230

### FORMATIVE RESEARCH FOR THE DESIGN OF THE CHOB17 BABY WASH MOBILE HEALTH PROGRAM

**Shwapon Biswas**<sup>1</sup>, Jahed Masud<sup>1</sup>, Elizabeth D. Thomas<sup>2</sup>, Fatema Zohura<sup>1</sup>, Tasdik Hasan<sup>1</sup>, Tahmina Parvin<sup>1</sup>, Md. Sazzadul Islam Bhuyian<sup>1</sup>, Fatema Tuz Johura<sup>1</sup>, Marzia Sultana<sup>1</sup>, Jamie Perin<sup>2</sup>, Shirajum Monira<sup>1</sup>, Munirul Alam<sup>1</sup>, Christine Marie George<sup>2</sup>  
<sup>1</sup>International Centre for Diarrhoeal Disease Research, Bangladesh (icddr), Dhaka, Bangladesh, <sup>2</sup>Johns Hopkins University, Baltimore, MD, United States

## 1231

### A LONGITUDINAL STUDY OF CHRONIC LEAD EXPOSURE IN BENINESE CHILDREN

Shukrullah Ahmadi<sup>1</sup>, Roméo Zoumenou<sup>2</sup>, Barbara Le Bot<sup>3</sup>, Séverine Durand<sup>3</sup>, Nadine Fievet<sup>2</sup>, Pierre Ayotte<sup>4</sup>, Achille Massougbodji<sup>5</sup>, Michel Cot<sup>6</sup>, Philippe Glorennec<sup>3</sup>, **Florence Bodeau-Livinec**<sup>3</sup>

<sup>1</sup>INSERM U1153, Paris, France, <sup>2</sup>IRD MERIT, Cotonou, Benin, <sup>3</sup>EHESP, Paris, France, <sup>4</sup>INSPQ, Québec, QC, Canada, <sup>5</sup>IRCB, Cotonou, Benin, <sup>6</sup>IRD MERIT, Paris, France

## 1232

### IDENTIFICATION OF COCCIDIAN ISOLATES PATHOGENIC TO HUMANS IN SOURCES OF POTABLE WATER IN CAPE COAST METROPOLIS, GHANA

**Priscilla Ankamaa Opare**<sup>1</sup>, Samuel Addo Akwetey<sup>2</sup>, Joana C. Silva<sup>3</sup>, Godwin Kwakye-Nuako<sup>1</sup>

<sup>1</sup>University of Cape Coast, Department of Biomedical Sciences, School of Allied Health Sciences, College of Health and Allied Sciences, Cape Coast, Ghana, <sup>2</sup>University of Cape Coast, Department of Microbiology and Immunology, School of Medical Sciences, College of Health and Allied Sciences, Cape Coast, Ghana, <sup>3</sup>University of Maryland School of Medicine, Institute for Genome Sciences and Department of Microbiology and Immunology, Baltimore, MD, United States

## 1233

### IDENTIFYING BARRIERS TO ADOPTION OF HOUSEHOLD DISINFECTION KITS FOR ENVIRONMENTAL INFECTION CONTROL OF CHOLERA TRANSMISSION

**Camille Heylen**, Daniele Lantagne  
*Tufts University, Medford, MA, United States*

## 1234

### PREVALENCE OF FECAL PATHOGENS IN SOIL, FOOD, HAND AND SURFACE SAMPLES FROM HOUSEHOLDS IN SLUMS OF DHAKA, BANGLADESH (CHOB17 TRIAL): EVIDENCE-BASED DEVELOPMENT OF BABY WASH INTERVENTIONS

**Fatema Tuz Johura**<sup>1</sup>, Christine Marie George<sup>2</sup>, Indrajeet Barman<sup>1</sup>, Fatema Tuz Jubayda<sup>1</sup>, Mohd. Riajul Islam<sup>1</sup>, Jarin Tasnim<sup>1</sup>, Sahitya Ranjan Biswas<sup>1</sup>, Kazi Sumaita Nahar<sup>1</sup>, Md. Wali Ullah<sup>1</sup>, Shirajum Monira<sup>1</sup>, Fatema Zohura<sup>1</sup>, Tasdik Hasan<sup>1</sup>, Tahmina Parvin<sup>1</sup>, Md. Sazzadul Islam Bhuyian<sup>1</sup>, Shwapon Biswas<sup>1</sup>, Jamie Perin<sup>2</sup>, Elizabeth Thomas<sup>2</sup>, Marzia Sultana<sup>1</sup>, Munirul Alam<sup>1</sup>

<sup>1</sup>International Centre for Diarrhoeal Disease Research, Bangladesh (icddr), Dhaka, Bangladesh, <sup>2</sup>Johns Hopkins University, Baltimore, MD, United States

## 1235

### A SYSTEMATIC REVIEW AND META-ANALYSIS OF THE ASSOCIATION BETWEEN WATER, SANITATION, HYGIENE AND FOOD EXPOSURES AND TYPHOID FEVER IN CASE-CONTROL STUDIES

Sarah Brockett<sup>1</sup>, **Marlene Wolfe**<sup>1</sup>, Asa Hamot<sup>1</sup>, Grace Appiah<sup>2</sup>, Eric Mintz<sup>2</sup>, Daniele Lantagne<sup>1</sup>

<sup>1</sup>Tufts University, Medford, MA, United States, <sup>2</sup>Centers for Disease Control and Prevention, Atlanta, GA, United States

## Mid-Day Session 78

### Charting Your Research Career in Global Health: A Conversation with Francis Collins

Maryland D (Ballroom Level)

Friday, November 22, Noon - 1 p.m.



**Francis Collins, MD, PhD**  
*Director, National Institutes of Health*

Join us for a conversation with Francis Collins, MD, PhD, Director of the National Institutes of Health and Chandy John, MD, MS, FASTMH, President of ASTMH. Dr. John was inspired by Dr. Collins during his own training and will sit down with him

for a discussion about global health and tropical medicine. Dr. Collins is known for many things, foremost his pioneering research mapping the human genome. Some may be less aware of his lifelong commitment to global health clinical work and research, and the stewardship of this next generation of tropical medicine/global health researchers.

We'll hear Dr. Collins' thoughts on what NIH is doing to help build career opportunities for trainees, in particular global health trainees, what he has learned from trainees that has helped him shape NIH policies, and what he would tell his younger self as he was starting his own research career. The session is open to all registered attendees but will focus on the interests of trainees. This will be a dynamic session, with questions from attendees and questions selected from those solicited prior to the session on Twitter.

Francis S. Collins, M.D., Ph.D. was appointed the 16th Director of the National Institutes of Health (NIH) by President Barack Obama and confirmed by the Senate. He was sworn in on August 17, 2009. On June 6, 2017, President Donald Trump announced his selection of Dr. Collins to continue to serve as the NIH Director. In this role, Dr. Collins oversees the work of the largest supporter of biomedical research in the world, spanning the spectrum from basic to clinical research. Dr. Collins is a physician-geneticist noted for his landmark discoveries of disease genes and his leadership of the international Human Genome Project, which culminated in April 2003 with the completion of a finished sequence of the human DNA instruction book. He served as director of the National Human Genome Research Institute at NIH from 1993-2008. Before coming to NIH, Dr. Collins was a Howard Hughes Medical Institute investigator at the University of Michigan. He is an elected member of the National Academy of Medicine and the National Academy of Sciences, was awarded the Presidential Medal of Freedom in November 2007, and received the National Medal of Science in 2009.

#### CHAIR

Chandy C. John  
*Indiana University School of Medicine, Indianapolis, IN, United States*

## Late-Breaker Abstract Session 79

### Late-Breakers in Basic Sciences

National Harbor 3 (National Harbor Level)

Friday, November 22, 12:15 p.m. - 1:30 p.m.

This session is specifically designed for brief presentations of new data obtained after the closing date for abstract submission. See

the Meeting App or Late-Breaker Abstract Presentation Schedule booklet (available online) for the presentation schedule.

#### CHAIR

Naomi Forrester  
*University of Texas Medical Branch, Galveston, TX, United States*

Rebekah Kading  
*Colorado State University, Fort Collins, CO, United States*

## Meet the Professors 80

### Meet the Professors B: Enigmatic and Teaching Cases

National Harbor 10 (National Harbor Level)

Friday, November 22, 12:15 p.m. - 1:30 p.m.

The professors will present interesting clinical case(s) of tropical diseases or relevant public health challenges that they have encountered over the course of their careers. The professors will discuss how their careers have developed, as an example to others. Students and trainees are especially encouraged to attend these interactive sessions, which are open to all meeting attendees.

#### CHAIR

David R. Boulware  
*University of Minnesota, Minneapolis, MN, United States*

#### PRESENTER

Bobbi Pritt  
*Mayo Clinic, Rochester, MN, United States*

## Tropical Medicine/Global Health Subspecialty Exploratory Committee Meeting

Chesapeake 1 (Ballroom Level)

Friday, November 22, 12:15 p.m. - 1:30 p.m.

## Poster Session B Viewing

Prince George's Exhibit Hall D (Lower Atrium Level)

Friday, November 22, 1:45 p.m. - 4 p.m.

## Scientific Session 81

### Diagnosis of Malaria: Are the Available Tools Sufficient to Eliminate the Disease?

Maryland A (Ballroom Level)

Friday, November 22, 1:45 p.m. - 3:30 p.m.

#### CHAIR

Susanta K. Ghosh  
*National Institute of Malaria Research, Bangalore, India*

Sandra Incardona  
*FINN, Geneva, Switzerland*

1:45 p.m.

1236

### HRP2 AND HRP3 ANTIGEN CROSS-REACTIVITY ON HRP2-BASED MALARIA RAPID DIAGNOSTIC TESTS AND ITS IMPLICATIONS FOR HRP2 GENE DELETION SURVEILLANCE

Michael Aidoo<sup>1</sup>, Amy Kong<sup>1</sup>, Scott Wilson<sup>2</sup>, Ah Yong<sup>2</sup>, Jeffrey Glenn<sup>1</sup>, Eric Rogier<sup>1</sup>  
<sup>1</sup>Centers for Disease Control and Prevention, Atlanta, GA, United States, <sup>2</sup>The CDC Foundation, Atlanta, GA, United States

(ACMCIP Abstract)

2 p.m.

1237

**SURVEILLANCE FOR PFHRP2/3 DELETIONS AND NON-FALCIPARUM MALARIA IN THREE PROVINCES IN MOZAMBIQUE, 2018**

Mateusz Plucinski<sup>1</sup>, Baltazar Candrinho<sup>2</sup>, Mercia Dimene<sup>2</sup>, James Colborn<sup>3</sup>, Austin Lu<sup>4</sup>, Doug Nace<sup>5</sup>, Rose Zulliger<sup>6</sup>, Eric Rogier<sup>6</sup>

<sup>1</sup>CDC Malaria Branch and United States President's Malaria Initiative, Atlanta, GA, United States, <sup>2</sup>National Malaria Control Program, Maputo, Mozambique, <sup>3</sup>Clinton Health Access Initiative, Maputo, Mozambique, <sup>4</sup>Georgia State University, Atlanta, GA, United States, <sup>5</sup>CDC Malaria Branch, Atlanta, GA, United States, <sup>6</sup>CDC Malaria Branch and United States President's Malaria Initiative, Maputo, Mozambique

2:15 p.m.

1238

**AUTOMATED DIGITAL MICROSCOPY USING ARTIFICIAL INTELLIGENCE FOR THE POINT-OF-CARE MALARIA DIAGNOSIS**

Hans-Peter Beck<sup>1</sup>, Armin Passeecker<sup>1</sup>, Youngmin Shin<sup>2</sup>, Chae Y. Bae<sup>2</sup>, Younghoon Song<sup>2</sup>, Jiyeon Lee<sup>2</sup>, Mijin Kim<sup>2</sup>, Raeun Chung<sup>2</sup>, Douglas Lungu<sup>3</sup>, Donyoung Lee<sup>2</sup>  
<sup>1</sup>Swiss Tropical and Public Health Institution, Basel, Switzerland, <sup>2</sup>Noul Inc. Ltd., Yongin-si Gyeonggi-do, Republic of Korea, <sup>3</sup>Wezi Medical Centre, Mzuzu, Malawi

2:30 p.m.

1239

**A NOVEL LATERAL FLOW ASSAY FORMAT WITH INTEGRATED CATCH-AND-RELEASE BIOMARKER CONCENTRATION FOR DETECTION OF LOW PARASITEMIAS AT THE POINT-OF-CARE**

Nathaniel Z. Piety, Carson P. Moore, Kristina A. Pieterston, David W. Wright  
Vanderbilt University, Nashville, TN, United States

2:45 p.m.

1240

**AUTOMATIC BLOOD SMEAR ANALYSIS WITH ARTIFICIAL INTELLIGENCE AND SMARTPHONES**

Hang Yu<sup>1</sup>, Stefan Jaeger<sup>1</sup>, Feng Yang<sup>1</sup>, Kamolrat Silamut<sup>2</sup>, Richard Maude<sup>2</sup>  
<sup>1</sup>National Institutes of Health, North Bethesda, MD, United States, <sup>2</sup>Mahidol-Oxford Tropical Medicine Research Unit, Bangkok, Thailand

3 p.m.

1241

**DETECTION OF SUB-MICROSCOPIC BLOOD LEVELS OF PLASMODIUM FALCIPARUM USING TANDEM OLIGONUCLEOTIDE REPEAT CASCADE AMPLIFICATION (TORCA) ASSAY WITH AN ATTOMOLAR DETECTION LIMIT**

Andrey L. Ghindilis<sup>1</sup>, Olga Chesnokov<sup>2</sup>, Billy Ngasala<sup>3</sup>, Maria W. Smith<sup>1</sup>, Kenneth Smith<sup>1</sup>, Andreas Mårtensson<sup>4</sup>, Andrew V. Oleinikov<sup>2</sup>  
<sup>1</sup>TORCATECH, LLC, Mukilteo, WA, United States, <sup>2</sup>Florida Atlantic University, Boca Raton, FL, United States, <sup>3</sup>Muhimbili University of Health and Allied Sciences, Dar es Salaam, United Republic of Tanzania, <sup>4</sup>International Maternal and Child Health (IMCH), Uppsala University, Uppsala, Sweden

(ACMCIP Abstract)

3:15 p.m.

1242

**PROSPECTIVE PERFORMANCE EVALUATION OF A COMBINED MALARIA/CRP RAPID DIAGNOSTIC TEST IN INDIA**

Sandra Incardona<sup>1</sup>, Bina Srivastava<sup>2</sup>, Supriya Sharma<sup>2</sup>, Stefano Ongarello<sup>1</sup>, Shubhada Shenai<sup>3</sup>, Prabakaran Loganathan<sup>3</sup>, Sanjay Sarin<sup>3</sup>, Anupkumar R. Anvikar<sup>2</sup>, Sabine Dittrich<sup>1</sup>  
<sup>1</sup>FIND, Geneva, Switzerland, <sup>2</sup>National Institute of Malaria Research, New Delhi, India, <sup>3</sup>FIND India, New Delhi, India

**Symposium 82**

**Seasonal Malaria Chemoprevention (SMC): Current and Future Perspectives**

Maryland B (Ballroom Level)

Friday, November 22, 1:45 p.m. - 3:30 p.m.

This symposium will present a summary of the current situation in each country, an assessment of the impact of large-scale SMC deployment on the development of drug resistance, and perspectives on how SMC might be extended to increase its impact. The first presentation will address the progress and challenges with SMC implementation, the current scale of implementation and the gaps, and will feedback from the 2019 meeting of the SMC Working Group, which supports SMC implementing countries and meets annually to review progress. The second talk will describe new results from large scale monitoring of drug resistance in SMC countries. These are the first results on the impact that SMC at scale has had on frequencies of molecular makers of resistance to amodiaquine and sulfadoxine-pyrimethamine, from large-scale surveys in seven countries conducted in 2018. The second part of the symposium will consider whether countries with successful SMC programs could increase impact on morbidity and mortality by adapting the SMC strategy or combining it with other interventions. The session will consider when it is likely to be cost-effective to provide more than four monthly cycles, or to include older children in SMC programs, and the expected impact on the burden of malaria morbidity and mortality. In addition, the symposium will consider which interventions might be usefully combined with SMC, including seasonal vaccination, nutritional screening, community case management and the possible use of transmission-reducing agents added to SMC regimens.

**CHAIR**

Andre T. Tchouatieu  
Medicines for Malaria Venture, Geneva, Switzerland

Paul Milligan  
London School of Hygiene & Tropical Medicine, London, United Kingdom

1:45 p.m.

**IMPLEMENTATION OF SMC SEVEN YEARS SINCE THE POLICY RECOMMENDATION: SUMMARY OF PROGRESS IN 13 COUNTRIES FROM THE SMC WORKING GROUP**

Keziah L. Malm  
National Malaria Control Program, Accra, Ghana

2:05 p.m.

**ASSESSMENT OF THE FREQUENCY OF MOLECULAR MARKERS OF RESISTANCE OF P. FALCIPARUM TO SP-AQ, BEFORE AND AFTER TWO YEARS OF DEPLOYMENT OF SMC IN 7 COUNTRIES IN THE SUB-SAHEL REGION**

Khalid Beshir  
London School of Hygiene & Tropical Medicine, London, United Kingdom

2:20 p.m.

**ADAPTING SMC: NUMBER OF CYCLES AND AGE RANGE. EVIDENCE FROM FIELD STUDIES AND MODELLING**

Matthew Cairns  
London School of Hygiene & Tropical Medicine, London, United Kingdom



2:35 p.m.

### **ADDITIONAL INTERVENTIONS THAT COULD BE ADDED TO SEASONAL MALARIA CHEMOPREVENTION TO REDUCE MORTALITY AND MORBIDITY IN CHILDREN**

Alassane Dicko  
MRTC, Mali, Bamako, Mali

2:50 p.m.

### **DISCUSSION**

## **Symposium 83**

### **Hallmarks of Protection: Cellular and Molecular Signatures of Durable Immunity**

*Maryland C (Ballroom Level)*

Friday, November 22, 1:45 p.m. - 3:30 p.m.

The rational design and rapid functional assessment of any vaccine product can be significantly streamlined by understanding the cellular and molecular signatures associated with protective and durable immunity shortly after immunization. While the identification of reliable correlates of protection has been a longstanding goal of vaccinology, the mechanisms underlying the establishment of durable and protective immunity are incompletely understood at best, making the identification of reliable and broadly applicable correlates of protection following vaccination a significant challenge. However, thanks to recent technological and analytical advances, vaccine-elicited immunity can now be dissected with a previously unachievable degree of refinement, allowing for identification of sophisticated and mechanistic correlates of protection. The goal of this symposium is to highlight both shared and unique cellular and molecular signatures of durable and/or protective immunity following infection or vaccination. This symposium will bring together experts in the fields of cellular, molecular and humoral immunity who will discuss the unique and overlapping features of persistent immunity against diverse pathogens including HIV, dengue and malaria. This symposium will begin with a discussion of some of the key cellular and molecular signatures associated with protective and durable immunity following dengue infection or vaccination. The next speaker will dive deeper into the transcriptional signatures of protective vaccine-elicited immunity and provide insight into some mechanistic processes driving the development of vaccine-elicited immunity. The next presentation will continue the mechanistic theme of durable memory, and discuss some of the transcriptional and metabolic requirements of nascent memory precursor cells elicited by dengue virus vaccination. The symposium will conclude with a presentation that provides insight into the features and mechanism behind durable and efficacious humoral immunity, leveraging a "Systems Serology" analysis strategy. Together, the speakers will provide a uniquely rounded perspective on the development of vaccine-elicited immunity, and how novel correlates of protection can be leveraged to drive rational vaccine design and rapid functional assessment of existing vaccine candidates.

#### **CHAIR**

Adam Waickman  
*Walter Reed Army Institute of Research, Silver Spring, MD, United States*  
Robert A. Seder  
*National Institute of Allergy and Infectious Diseases, Bethesda, MD, United States*

1:45 p.m.

### **DENGUE VIRUS SPECIFIC CD4 AND CD8 T CELL MEMORY**

Daniela Weiskopf  
*La Jolla Institute for Allergy and Immunology, La Jolla, CA, United States*

2:05 p.m.

### **VACCINE-INDUCED GENE SIGNATURE CORRELATE OF PROTECTION AGAINST SIV/HIV ACQUISITION**

Rasmi Thomas  
*US Military HIV Research Program, Silver Spring, MD, United States*

2:25 p.m.

### **TRANSCRIPTIONAL AND METABOLIC FEATURES OF PERSISTENT DENGUE T CELL IMMUNITY**

Adam Waickman  
*Walter Reed Army Institute of Research, Silver Spring, MD, United States*

2:45 p.m.

### **USING SYSTEMS SEROLOGY TO DEFINE NOVEL CORRELATES OF IMMUNITY**

Galit Alter  
*Ragon Institute, Massachusetts General Hospital/Massachusetts Institute of Technology/Harvard, Cambridge, MA, United States*

3:05 p.m.

### **DISCUSSION**

## **Symposium 84**

### **Malaria: Getting Back on Track in High Burden Countries**

*Maryland D (Ballroom Level)*

Friday, November 22, 1:45 p.m. - 3:30 p.m.

While tremendous strides have been made over recent years in reducing the number of cases and deaths from malaria, the latest estimates in the World Malaria Report (2018) demonstrate that progress has stalled in high burden countries. Too many people, particularly the poorest and most marginalized, continue to die from a preventable and treatable illness. It is time for collective action to accelerate progress in malaria. The High Burden High Impact (HBHI) approach was launched in November 2018 by the World Health Organization and the Roll Back Malaria Partnership To End Malaria, as a country-driven response to achieve rapid and sustainable malaria impact. Appropriate mixes of interventions will be scaled up using accessible and affordable frontline services. The approach is founded on four pillars: 1) The translation of political will into resources and tangible actions for impact; 2) The use of strategic information to pinpoint where to deploy the most effective malaria control tools for maximum impact; 3) The provision of evidence informed global guidance; 4) The alignment behind a coordinated country-led malaria response. High burden countries are taking forward the approach and the session provides an opportunity to hear and learn from their experience.

#### **CHAIR**

Alastair Robb  
*World Health Organization, Geneva, Switzerland*  
Pedro Alonso  
*World Health Organization, Geneva, Switzerland*

1:45 p.m.

### **INDIA: MAKING AN IMPACT IN HIGH BURDEN SETTING**

Neeraj Dhingra

National Vector Borne Diseases Control Programme, Ministry of Health and Family Welfare, Delhi, India

2 p.m.

### **KEY ACTIONS TO ACCELERATE PROGRESS IN UGANDA'S FIGHT AGAINST MALARIA**

Jimmy Opigo

Uganda Ministry of Health, National Malaria Control Programme, Kampala, Uganda

2:15 p.m.

### **USING LOCAL DATA AND INFORMATION FOR PLANNING AND IMPLEMENTATION OF MALARIA CONTROL IN CAMEROON**

Dorothy Kah Fosah Achu

National Malaria Control Programme, Yaounde, Cameroon

2:30 p.m.

### **ROLE OF PARTNERS IN SUPPORTING A COUNTRY LED RESPONSE TO MALARIA**

Abdourahmane Diallo

Roll Back Malaria Partnership to End Malaria, Geneva, Switzerland

2:45 p.m.

### **DISCUSSION**

## **Symposium 85**

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### **“The Tropical Bookshelf” Authors’ Panel with Douglas Preston and Richard Preston**

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*Potomac A (Ballroom Level)*

Friday, November 22, 1:45 p.m. - 3:30 p.m.

In this inaugural ASTMH literary panel, best-selling authors and brothers Douglas and Richard Preston will discuss their work at the intersection of tropical infectious disease, natural history, and archaeological discovery. One of Douglas Preston's latest books, “The Lost City of the Monkey God” — a 2017 #1 *New York Times* bestseller — interweaves heroic adventures in the Mosquitia Honduran rainforest with real-life encounters with venomous snakes and leishmaniasis (for the latter, he and several other expedition members received anti-parasitic treatment at NIH). Douglas's presentation will also feature video clips of several recent expeditions to the site and discussion of still-unanswered questions about the sudden, cataclysmic demise of a once-thriving and sophisticated, non-Mayan civilization.

Following publication of “The Hot Zone” in 1994, renowned, *New York Times* bestselling author Richard Preston has written about infectious diseases, bioterrorism, and redwoods among other subjects. “The Hot Zone” recently aired to critical acclaim as a National Geographic television mini-series. “Crisis in the Red Zone — The Story of the Deadliest Ebola Outbreak in History, and of the Outbreaks to Come,” Richard's latest book published in July 2019, chronicles the 2013-2016 Ebola outbreak in West Africa in riveting medical and scientific detail. The book also shares inspiring human stories and chilling predictions of the future toll of emerging viruses in our increasingly-interconnected world. The symposium will feature individual presentations by each author plus a moderated

discussion and audience Q&A.

### **CHAIR**

Claire Panosian

University of California Los Angeles School of Medicine, Los Angeles, CA, United States

Philip J. Rosenthal

University of California San Francisco, San Francisco, CA, United States

1:45 p.m.

### **INTRODUCTION AND WELCOME**

Claire Panosian

University of California Los Angeles School of Medicine, Los Angeles, CA, United States

Philip J. Rosenthal

University of California San Francisco, San Francisco, CA, United States

1:55 p.m.

### **LEISHMANIA AND THE LOST CITY**

Douglas Preston

Santa Fe, NM, United States

2:25 p.m.

### **EBOLA AND MONSTERS OF THE FUTURE**

Richard Preston

Random House Author, Princeton, NJ, United States

2:55 p.m.

### **PANEL DISCUSSION**

## **Symposium 86**

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### **Hot Topics in Travel Medicine and Migrant Health 2019**

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*Potomac B (Ballroom Level)*

Friday, November 22, 1:45 p.m. - 3:30 p.m.

Travel plays an intricate role in the spread of microbes along the journey and at destinations. Travel medicine, migrant health and tropical medicine have great overlap. The International Society of Travel Medicine has organized this symposium to address priority topics. There have been many emerging and re-emerging infections that impact travelers/migrants, and new guidelines for treating and preventing travel-related illnesses. This symposium will cover these topic areas: epidemiology, migration health, vaccine developments (guidelines, vaccine studies, as well as development of new vaccines), and malaria prevention and treatment.

### **CHAIR**

Lin H. Chen

Mount Auburn Hospital, Cambridge, MA, United States

Christina Coyle

Albert Einstein College of Medicine, Bronx, NY, United States

1:45 p.m.

### **CURRENT CHALLENGES IN MIGRATION HEALTH (AND POTENTIAL SOLUTIONS?)**

Martin S. Cetron

Centers for Disease Control and Prevention, Atlanta, GA, United States

2:10 p.m.

### **RECENT EPIDEMIOLOGY OF VPD AND ADVANCES IN VACCINE STUDIES IMPACTING TRAVELERS**

Leo Visser

2:35 p.m.  
**HIGHLIGHTS OF TRAVEL-RELATED DISEASE EPIDEMIOLOGY**

Priscilla Rupali  
Christian Medical College, Vellore, India

3 p.m.  
**WORLDWIDE MALARIA PREVENTION STRATEGIES: SIMILARITIES AND DIFFERENCES**

Blaise Genton  
Swiss Tropical and Public Health Institute, Basel, Switzerland

**Scientific Session 87**

**HIV and Tropical Co-Infections**

Potomac C (Ballroom Level)

Friday, November 22, 1:45 p.m. - 3:30 p.m.

**CHAIR**

Victor Akelo  
Centers for Disease Control and Prevention, Kisumu, Kenya

Christine McGrath  
University of Washington, Seattle, WA, United States

1:45 p.m.  
**Presentation by Burroughs Wellcome Fund-ASTMH Fellowship Recipient**

**1243**

**TRANSPLACENTAL ANTIBODY TRANSFER AMONG WOMEN LIVING WITH HIV**

Lisa M. Bebell<sup>1</sup>, Mark J. Siedner<sup>1</sup>, Joseph Ngonzi<sup>2</sup>, Audrey L. Butler<sup>3</sup>, Julian Adong<sup>2</sup>, Sepideh Dolatshahi<sup>3</sup>, Ingrid V. Bassett<sup>1</sup>, Drucilla J. Roberts<sup>1</sup>, Galit Alter<sup>3</sup>  
<sup>1</sup>Massachusetts General Hospital, Boston, MA, United States, <sup>2</sup>Mbarara University of Science and Technology, Mbarara, Uganda, <sup>3</sup>The Ragon Institute of Massachusetts General Hospital, Massachusetts Institute of Technology, and Harvard, Cambridge, MA, United States

2 p.m.  
**1244**

**HUMAN MILK OLIGOSACCHARIDES AND GROWTH IN HIV EXPOSED UNINFECTED INFANTS IN KENYA**

Christine J. McGrath<sup>1</sup>, Judd L. Walson<sup>1</sup>, Lars Bode<sup>2</sup>, Chloe Yonemitsu<sup>2</sup>, Rose Bosire<sup>3</sup>, James A. Berkley<sup>4</sup>, Dorothy Mbori-Ngacha<sup>5</sup>, Grace C. John-Stewart<sup>1</sup>  
<sup>1</sup>University of Washington, Seattle, WA, United States, <sup>2</sup>University of California San Diego, San Diego, CA, United States, <sup>3</sup>Kenya Medical Research Institute, Nairobi, Kenya, <sup>4</sup>KEMRI/Wellcome Trust Collaborative Research Programme, Kilifi, Kenya, <sup>5</sup>United Nations Children's Fund (UNICEF), Nairobi, Kenya

2:15 p.m.  
**1245**

**SOCIAL FACTORS ASSOCIATED WITH VIROLOGIC SUPPRESSION IN CHILDREN AND ADOLESCENTS LIVING WITH HIV INITIATED ON ANTIRETROVIRAL THERAPY IN LILONGWE, MALAWI**

Bryan J. Vonasek<sup>1</sup>, Tsogolo Itaye<sup>2</sup>, Joseph Mhango<sup>2</sup>, Andrea Dean<sup>1</sup>, Peter Kazembe<sup>2</sup>  
<sup>1</sup>Baylor College of Medicine, Houston, TX, United States, <sup>2</sup>Baylor College of Medicine Children's Foundation Malawi, Lilongwe, Malawi

2:30 p.m.  
**1246**

**VIROLOGICAL SUPPRESSION AMONG HIV INFECTED ADOLESCENTS AND YOUTHS RECEIVING ART IN THE NATIONAL TEACHING AND REFERRAL HOSPITAL IN KENYA**

James M. Kangethe  
Kenya National National/University of Nairobi, Nairobi, Kenya

2:45 p.m.  
**1247**

**SERUM VITAMIN D IS DIFFERENTIALLY ASSOCIATED WITH SOCIOEMOTIONAL ADJUSTMENT IN EARLY SCHOOL-AGED UGANDAN CHILDREN ACCORDING TO PERINATAL HIV STATUS AND IN UTERO OR PERIPARTUM ANTIRETROVIRAL EXPOSURE HISTORY.**

Amara E. Ezeamama<sup>1</sup>, William Yakah<sup>1</sup>, Jenifer Fenton<sup>1</sup>, Robert Tuke<sup>1</sup>, Sarah K. Zalwango<sup>2</sup>, Alla Sikorskii<sup>1</sup>, Bruno Giordani<sup>3</sup>, Michael J. Boivin<sup>1</sup>, Philippa M. Musoke<sup>4</sup>  
<sup>1</sup>Michigan State University, East Lansing, MI, United States, <sup>2</sup>Kampala Capital City Authority, Kampala, Uganda, <sup>3</sup>University of Michigan, Ann Arbor, MI, United States, <sup>4</sup>Makerere University School of Medicine, Kampala, Uganda

3 p.m.  
**1248**

**HIV CARE CASCADE REVIEW: CASE REPORTS FROM KENYA CHILD HEALTH AND MORTALITY PREVENTION SURVEILLANCE NETWORK (CHAMPS) PROGRAM**

Victor Akelo<sup>1</sup>, Emily Zielinski-Gutierrez<sup>2</sup>, Aggrey Igunza<sup>3</sup>, Dickens Onyango<sup>4</sup>, Dianna M. Blau<sup>5</sup>, Pratima L. Raghunathan<sup>5</sup>, Robert F. Breiman<sup>6</sup>, Beth A. Tippet Barr<sup>1</sup>  
<sup>1</sup>Centers for Disease Control and Prevention, Kisumu, Kenya, <sup>2</sup>Centers for Disease Control and Prevention, Nairobi, Kenya, <sup>3</sup>Kenya Medical Research Institute, Kisumu, Kenya, <sup>4</sup>Kisumu County Public Health Department, Kisumu, Kenya, <sup>5</sup>Centers for Disease Control and Prevention, Atlanta, GA, United States, <sup>6</sup>Emory Global Health Institute, Emory University, Atlanta, GA, United States

3:15 p.m.  
**1249**

**THE SAFETY AND ACTIVITY OF POMALIDOMIDE IN THE TREATMENT OF KAPOSI SARCOMA IN INDIVIDUALS WITH OR WITHOUT HIV: LONG-TERM OUTCOMES**

Ramya Ramaswami<sup>1</sup>, Mark N. Polizzotto<sup>1</sup>, Thomas S. Uldrick<sup>1</sup>, Kathryn A. Lurain<sup>1</sup>, Anaida Widell<sup>1</sup>, Kathleen M. Wyvill<sup>1</sup>, Priscila H. Goncalves<sup>1</sup>, Vikram Khetani<sup>2</sup>, Ken Arakawa<sup>2</sup>, Jerome B. Zeldis<sup>2</sup>, Robert Yarchoan<sup>1</sup>  
<sup>1</sup>National Institutes of Health, Bethesda, MD, United States, <sup>2</sup>Celgene Corporation, Summit, NJ, United States

**Scientific Session 88**

**American Committee of Molecular, Cellular and Immunoparasitology (ACMCIP): Malaria - Molecular Mechanisms of Pathogenesis and Resistance**

Potomac D (Ballroom Level)

Friday, November 22, 1:45 p.m. - 3:30 p.m.

Supported with funding from the Burroughs Wellcome Fund

**CHAIR**

Jean Popovici  
Institut Pasteur of Cambodia, Phnom Penh, Cambodia

Aabha Sharma  
Harvard T. H. Chan School of Public Health, Boston, MA, United States

1:45 p.m.

2009

**LIPID TRANSPORT AT THE MALARIA PARASITE PLASMODIUM FALCIPARUM - RED BLOOD CELL INTERFACE IS FACILITATED AT MEMBRANE CONTACT SITES**

Matthias Garten<sup>1</sup>, Josh R. Beck<sup>2</sup>, Robyn Roth<sup>3</sup>, Tatyana Tenkova-Heuser<sup>1</sup>, John Heuser<sup>1</sup>, Christopher K. E. Bleck<sup>4</sup>, Daniel E. Goldberg<sup>3</sup>, Joshua Zimmerberg<sup>1</sup>  
<sup>1</sup>National Institutes of Health/NICHD, Bethesda, MD, United States, <sup>2</sup>Iowa State University, Ames, IA, United States, <sup>3</sup>Washington University, St. Louis, MO, United States, <sup>4</sup>National Institutes of Health/NHLBI, Bethesda, MD, United States

2 p.m.

1250

**TENSION IN THE RED BLOOD CELL MEMBRANE REGULATES PLASMODIUM FALCIPARUM INVASION: FROM SINGLE CELL HOST/PATHOGEN LIVE IMAGING TO RESISTANCE IN HUMAN POPULATIONS**

Viola Introi<sup>1</sup>, Yen-Chun Lin<sup>1</sup>, Silvia N. Kariuki<sup>2</sup>, Alejandro Marin-Menendez<sup>3</sup>, Jurij Kotar<sup>1</sup>, Thomas N. Williams<sup>2</sup>, Julian C. Rayner<sup>3</sup>, Pietro Cicuta<sup>1</sup>  
<sup>1</sup>University of Cambridge, Cambridge, United Kingdom, <sup>2</sup>KEMRI-Wellcome Trust Research Programme, Kilifi, Kenya, <sup>3</sup>Wellcome Sanger Institute, Cambridge, United Kingdom

(ACMCIP Abstract)

2:15 p.m.

1251

**SHED EBA-175 MEDIATES RED BLOOD CELL CLUSTERING THAT ENHANCES MALARIA PARASITE GROWTH AND ENABLES IMMUNE EVASION**

Nichole D. Salinas<sup>1</sup>, May M. Paing<sup>2</sup>, Yvonne Adams<sup>3</sup>, Anna Oksman<sup>2</sup>, Anja T. Jensen<sup>2</sup>, Daniel E. Goldberg<sup>2</sup>, Niraj H. Tolia<sup>1</sup>  
<sup>1</sup>Laboratory of Malaria Immunology and Vaccinology, National Institute of Allergy and Infectious Diseases, National Institutes of Health, Bethesda, MD, United States, <sup>2</sup>Washington University School of Medicine, St. Louis, MO, United States, <sup>3</sup>Centre for Medical Parasitology at Department of Immunology and Microbiology, Faculty of Health and Medical Sciences, University of Copenhagen, Denmark, Copenhagen, Denmark

2:30 p.m.

1252

**PVDBP AMPLIFICATION PROTECTS PLASMODIUM VIVAX AGAINST ANTI-PVDBP HUMORAL IMMUNITY**

Jean Popovici<sup>1</sup>, Camille Roesch<sup>1</sup>, Lenore Carias<sup>2</sup>, Nimol Khim<sup>1</sup>, Amelie Vantaux<sup>1</sup>, Ivo Mueller<sup>2</sup>, Chetan Chitnis<sup>3</sup>, Christopher L. King<sup>2</sup>, Benoit Witkowski<sup>1</sup>  
<sup>1</sup>Institut Pasteur of Cambodia, Phnom Penh, Cambodia, <sup>2</sup>Center for Global Health and Diseases, Case Western Reserve University, Cleveland, OH, United States, <sup>3</sup>Institut Pasteur, Paris, France

(ACMCIP Abstract)

2:45 p.m.

1253

**MULTIPLE PLASMODIUM FALCIPARUM K13 MUTATIONS CONFER ARTEMISININ RESISTANCE AND MODULATE PARASITE FITNESS IN ASIAN AND AFRICAN STRAINS**

Barbara H. Stokes<sup>1</sup>, Kelly Rubiano<sup>1</sup>, Nina F. Gnädig<sup>1</sup>, Judith Straimer<sup>1</sup>, Tim J. Anderson<sup>2</sup>, Frédéric Arie<sup>3</sup>, Didier Ménard<sup>4</sup>, Sachel Mok<sup>1</sup>, David A. Fidock<sup>5</sup>  
<sup>1</sup>Department of Microbiology and Immunology, Columbia University Medical Center, New York, NY, United States, <sup>2</sup>Texas Biomedical Research Institute, San Antonio, TX, United States, <sup>3</sup>Cochin Institute, University Paris Descartes, Paris, France, <sup>4</sup>Malaria Genetics and Resistance Group, Pasteur Institute, Paris, France, <sup>5</sup>Department of Microbiology and Immunology and Division of Infectious Diseases, Department of Medicine, Columbia University Medical Center, New York, NY, United States

(ACMCIP Abstract)

3 p.m.

1254

**VESICULAR MECHANISMS PROVIDE PHENOTYPIC ASSAYS OF ARTEMISININ RESISTANCE IN PLASMODIUM FALCIPARUM MALARIA**

Niraja Suresh<sup>1</sup>, Maisha Khair Nima<sup>1</sup>, Isabelle Coppens<sup>2</sup>, Souvik Bhattacharjee<sup>3</sup>, Mehdi Ghorbal<sup>1</sup>, Kasturi Halder<sup>1</sup>  
<sup>1</sup>University of Notre Dame, Notre Dame, IN, United States, <sup>2</sup>Johns Hopkins University, Baltimore, MD, United States, <sup>3</sup>Jawaharlal Nehru University, New Delhi, India

(ACMCIP Abstract)

3:15 p.m.

1255

**STUDY OF BIOLOGICAL MECHANISM OF REDUCED ARTEMISININ SUSCEPTIBILITY IN WEST AFRICAN PLASMODIUM FALCIPARUM ISOLATES**

Aabha Sharma<sup>1</sup>, Allison R. Demas<sup>2</sup>, Selina Bopp<sup>1</sup>, Sarah V. Volkman<sup>1</sup>, Daniel L. Hart<sup>3</sup>, Dyann F. Wirth<sup>1</sup>  
<sup>1</sup>Harvard T. H. Chan School of Public Health, Boston, MA, United States, <sup>2</sup>Ragon Institute of Massachusetts General Hospital, Massachusetts Institute of Technology, and Harvard, Cambridge, MA, United States, <sup>3</sup>Harvard University, Cambridge, MA, United States

(ACMCIP Abstract)

**Symposium 89**

**Unmeasured Risk Factors Impacting Arboviral Transmission, Outbreaks and Prevention**

*National Harbor 2 (National Harbor Level)*

Friday, November 22, 1:45 p.m. - 3:30 p.m.

This symposium will discuss risk factors and solutions often unmeasured in traditional epidemiological studies including: built environment, community and policy-maker engagement, violence and solid waste pollution. Experts in the timely and emerging fields of arbovirology, planetary health, violence and contextualized spatial data collection will present original data and concepts that promote broad debate and synthesis. They include: 1) policy and community building and barriers to arboviral work focusing on solutions; 2) the built environment, specifically how architecture and water storage impacts risk and presents an interesting solution for decreasing disease risk; 3) how neighborhood violence impedes health-seeking behavior and public-health service delivery and increases risk of arboviral outbreaks in predictable ways; and 4) impact of solid waste pollution on disease and future focused solutions.

**CHAIR**

Amy R. Krystosik  
Stanford University School of Medicine, Stanford, CA, United States

A. Desiree LaBeaud  
Stanford University, Stanford, CA, United States

1:45 p.m.

**ELEVATING COMMUNITY DATA TO POLICY: BARRIERS AND BRIDGES TO DECREASING DISEASE RISK**

Josefina Coloma  
Instituto de Ciencias Sostenibles, Los Robles II, Managua, Nicaragua and University of California Berkeley, Berkeley, CA, United States



2:05 p.m.

**BUILT ENVIRONMENT, ARCHITECTURE AND WATER STORAGE IMPACT ARBOVIRAL OUTBREAK RISK: SOLUTIONS FOR DECREASING DISEASE RISK**

Steve W. Lindsay  
Durham University, Durham City, United Kingdom

2:25 p.m.

**SOLID WASTE POLLUTION: IMPACTS ON DISEASE RISK AND FUTURE FOCUSED SOLUTIONS**

Andrew Curtis  
Kent State University: GIS Health and Hazards Lab and Case Western Reserve University School of Medicine, Department of Population and Quantitative Health Sciences, Kent, OH, United States

2:45 p.m.

**COMMUNITY VIOLENCE AND ARBOVIRAL SURVEILLANCE: LOCAL EXPERIENCES OF SOCIAL AND ENVIRONMENTAL THREATS TO HEALTH**

Amy R. Krystosik  
Stanford University School of Medicine, Stanford, CA, United States

3:05 p.m.

**DISCUSSION**

**Scientific Session 90**

**Mosquitoes: Molecular Genetics and Genomics**

National Harbor 3 (National Harbor Level)  
Friday, November 22, 1:45 p.m. - 3:30 p.m.

**CHAIR**

Rebekah Reynolds  
Iowa State University, Ames, IA, United States  
Yuemei Dong  
Johns Hopkins University, Baltimore, MD, United States

1:45 p.m.

**1256**

**HIDDEN SPECIES BOUNDARIES AMONG MOSQUITOES OF THE MALARIA-TRANSMITTING ANOPHELES GAMBIAE COMPLEX FROM BURKINA FASO**

Jacob A. Tennessen<sup>1</sup>, Victoria A. Ingham<sup>2</sup>, Hyacinthe K. Toé<sup>3</sup>, N'Falé Sagnon<sup>3</sup>, Hilary Ranson<sup>2</sup>, Daniel E. Neafsey<sup>1</sup>  
<sup>1</sup>Harvard T.H. Chan School of Public Health, Boston, MA, United States, <sup>2</sup>Liverpool School of Tropical Medicine, Liverpool, United Kingdom, <sup>3</sup>Centre National de Recherche et de Formation sur le Paludisme, Ouagadougou, Burkina Faso

2 p.m.

**1257**

**ENGINEERED RESISTANCE TO DENGUE AND ZIKA VIRUSES IN TRANSGENIC Aedes OVER-EXPRESSING RNAI PATHWAY**

Yuemei Dong, Shengzhang Dong, Nahid Borhani Dizaji, Natalie Rutkowski, Mary Gebhardt, George Dimopoulos  
Johns Hopkins University, Baltimore, MD, United States

2:15 p.m.

**1258**

**20-HYDROXYECDYSONE (20E) PRIMES AN. GAMBIAE INNATE IMMUNE RESPONSE TO BACTERIA AND MALARIA PARASITES**

Rebekah Reynolds, Hyeogsun Kwon, Ryan Smith  
Iowa State University, Ames, IA, United States

2:45 p.m.

**1259**

**IR8A MUTANT MOSQUITOES LOSE STRONG ATTRACTION TO HUMANS**

Joshua Raji  
Florida International University, Miami, FL, United States

3 p.m.

**1260**

**SEX-SPECIFIC YEAST INTERFERING RNA LARVICIDES FOR EFFECTIVE SORTING OF MALE DISEASE VECTOR MOSQUITOES**

Molly Duman-Scheel, Longhua Sun, Ping Li, Joseph Roethele, Limb K. Hapairai, Keshava Mysore  
Indiana University School of Medicine, South Bend, IN, United States

3:15 p.m.

**1261**

**CIRCADIAN GENE KNOCKOUT REDUCES FITNESS AND ALTERS BEHAVIOR IN Aedes Aegypti**

Jacob I. Meyers, Michel A. Slotman  
Texas A&M University, College Station, TX, United States

3:30 p.m.

**1262**

**USING EVOLUTIONARY APPROACHES TO DISSECT THE GENETIC BASIS OF WOLBACHIA-MEDIATED BLOCKING OF DENGUE VIRUS IN Aedes Aegypti**

Suzanne Ford<sup>1</sup>, Scott Allen<sup>2</sup>, Aswathy Sebastian<sup>1</sup>, Istvan Albert<sup>1</sup>, Stephen Chenoweth<sup>2</sup>, Elizabeth McGraw<sup>1</sup>  
<sup>1</sup>Pennsylvania State University, University Park, PA, United States, <sup>2</sup>The University of Queensland, Brisbane, Australia

**Scientific Session 91**

**Protozoa**

National Harbor 4/5 (National Harbor Level)  
Friday, November 22, 1:45 p.m. - 3:30 p.m.

**CHAIR**

Amidou Samie  
University of Venda for Science and Technology, Thohoyandou, South Africa  
Genevieve Wojcik  
Stanford University School of Medicine, Stanford, CA, United States

1:45 p.m.

**1263**

**GENOME-WIDE ASSOCIATION STUDY OF CRYPTOSPORIDIOSIS IN BANGLADESHI INFANTS REVEALS ROLE FOR PKRCA**

Genevieve Wojcik<sup>1</sup>, Poonum Korpe<sup>2</sup>, Chelsea Marie<sup>3</sup>, Beth D. Kirkpatrick<sup>4</sup>, Rashidul Haque<sup>5</sup>, William A. Petri<sup>3</sup>, Priya Duggal<sup>2</sup>  
<sup>1</sup>Stanford University School of Medicine, Stanford, CA, United States, <sup>2</sup>Johns Hopkins Bloomberg School of Public Health, Baltimore, MD, United States, <sup>3</sup>University of Virginia School of Medicine, Charlottesville, VA, United States, <sup>4</sup>University of Vermont Larner College of Medicine, Burlington, VT, United States, <sup>5</sup>International Centre for Diarrhoeal Disease Research, Dhaka, Bangladesh

2 p.m.

1264

**GIARDIA DUODENALIS INFECTIONS IN THE CONTEXT OF A WASH AND DEWORMING TRIAL IN TIMOR-LESTE**

Naomi E. Clarke<sup>1</sup>, Jessica Aw<sup>2</sup>, James S. McCarthy<sup>3</sup>, Rebecca J. Traub<sup>4</sup>, Archie C. Clements<sup>5</sup>, **Susana Vaz Nery**<sup>1</sup>

<sup>1</sup>University of New South Wales, Kensington NSW, Australia, <sup>2</sup>Australian National University, Canberra ACT, Australia, <sup>3</sup>QIMR Berghofer Medical Research Institute, Brisbane QLD, Australia, <sup>4</sup>University of Melbourne, Parkville VIC, Australia, <sup>5</sup>Curtin University, Perth WA, Australia

2:15 p.m.

1265

**TRANSMISSION OF CRYPTOSPORIDIUM SPP. IN CONTACT NETWORKS IN SUB-SAHARAN AFRICA**

**Daniel Eibach**<sup>1</sup>, Ralf Krümkamp<sup>1</sup>, Simone Caccio<sup>2</sup>, Akim Adegniko<sup>3</sup>, John Amuasi<sup>4</sup>, John Lusungu<sup>5</sup>, Raphael Rakotozandrindrany<sup>6</sup>, Jürgen May<sup>1</sup>

<sup>1</sup>Bernhard Nocht Institute for Tropical Medicine, Hamburg, Germany, <sup>2</sup>Istituto Superiore di Sanità, Rome, Italy, <sup>3</sup>Centre de Recherches Médicales de Lambaréné, Lambaréné, Gabon, <sup>4</sup>Kumasi Centre for Collaborative Research in Tropical Medicine, Kumasi, Ghana, <sup>5</sup>National Institute for Medical Research, Korogwe, United Republic of Tanzania, <sup>6</sup>Université d'Antananarivo, Antananarivo, Madagascar

2:30 p.m.

1266

**THE EPIDEMIOLOGY AND IMPACT OF ENTEROCYTOZOOM BIENEUSI AND ENCEPHALITOOZOOM INTESTINALIS INFECTIONS AMONG CHILDREN FROM LOW RESOURCES SETTINGS IN THE MALED COHORT**

**Amidou Samie**<sup>1</sup>, Elizabeth Rowgokii<sup>2</sup>, Mal-ed Network Investigators<sup>1</sup>

<sup>1</sup>University of Venda for Science and Technology, Thohoyandou, South Africa, <sup>2</sup>University of Virginia, Charlottesville, VA, United States

2:45 p.m.

1267

**GIARDIA DUODENALIS MODULATES IMMUNE RESPONSE TO TOXOPLASMA GONDII DURING MURINE CO-INFECTION**

**Camila H. Coelho**<sup>1</sup>, Aline Sardinha-Silva<sup>1</sup>, Marc Fink<sup>2</sup>, Diego L. Costa<sup>1</sup>, Pedro Gazzinelli-Guimaraes<sup>1</sup>, Michael E. Grigg<sup>1</sup>, Steven M. Singer<sup>2</sup>

<sup>1</sup>National Institute of Allergy and Infectious Diseases/National Institutes of Health, Bethesda, MD, United States, <sup>2</sup>Georgetown University, Department of Biology, Washington, DC, United States

(ACMCIP Abstract)

3 p.m.

1268

**HIGH-THROUGHPUT SEQUENCING-BASED ANALYSES OF 3,528 INFANT DIARRHEAL SAMPLES FROM THE GLOBAL ENTERIC MULTICENTER STUDY (GEMS) TO IDENTIFY NOVEL PATHOGENIC VIRUSES AND PARASITES**

**Matthew V. Cannon**, Claudia Perez, Jennifer Jones, GEMS consortium, Sharon M. Tennant, David Serre

University of Maryland, Baltimore, Baltimore, MD, United States

(ACMCIP Abstract)

3:15 p.m.

1269

**DIRECT VALIDATION OF SCREENING HITS IN A CRYPTOSPORIDIOSIS IN VIVO EFFICACY MODEL**

**Dale Robinson**<sup>1</sup>, Natalie Hawryluk<sup>1</sup>, Stacie Canan<sup>1</sup>, Joseph Camardo<sup>2</sup>, Robert K.M. Choy<sup>3</sup>, Eugenio L. de Hostos<sup>3</sup>, Wesley C. Van Voorhis<sup>4</sup>, Matthew A. Hulverson<sup>4</sup>, Ryan Choi<sup>4</sup>, Molly C. McCloskey<sup>4</sup>, Grant R. Whitman<sup>4</sup>, Lynn K. Barrett<sup>4</sup>, Samuel L.M. Arnold<sup>4</sup>

<sup>1</sup>Celgene Global Health, San Diego, CA, United States, <sup>2</sup>Celgene Global Health, Summit, NJ, United States, <sup>3</sup>PATH, San Francisco, CA, United States, <sup>4</sup>Center for Emerging and Re-emerging Infectious Disease, Division of Allergy and Infectious Diseases, Department of Medicine, University of Washington, Seattle, WA, United States

**Scientific Session 92**

**Intestinal and Tissue Nematodes: Soil-Transmitted Helminths - Biology and Immunology**

National Harbor 10 (National Harbor Level)

Friday, November 22, 1:45 p.m. - 3:30 p.m.

**CHAIR**

Pedro Gazzinelli-Guimaraes

National Institute of Allergy and Infectious Diseases, National Institutes of Health, Bethesda, MD, United States

Meta Roestenberg

Leiden University Medical Center, Leiden, Netherlands

1:45 p.m.

1270

**ATP-BINDING ABILITY OF R1OK-2 PROTEIN KINASE IS ESSENTIAL FOR STRONGYLOIDES STERCORALIS EGG HATCHING**

**Huan Zhou**, Weiqiang Lei, Jinyang Hu, Ying Zhang, Min Hu  
Huazhong Agricultural University, Wuhan, China

2 p.m.

1271

**IDENTIFICATION OF LONG NONCODING RNAS IN STRONGYLOIDES STERCORALIS**

Ying Zhang, Huan Zhou, Weiqiang Lei, Jinyang Hu, **Min Hu**  
Huazhong Agricultural University, Wuhan, China

2:15 p.m.

1272

**IL-13RA1 SIGNALING DRIVEN BY ALLERGEN SENSITIZATION TRIGGERS EOSINOPHIL-DEPENDENT LUNG-SPECIFIC ARREST OF HELMINTH DEVELOPMENT**

**Pedro Gazzinelli-Guimaraes**<sup>1</sup>, Rafael de Queiroz Prado<sup>1</sup>, Alessandra Ricciardi<sup>1</sup>, Sandra Bonne-Annee<sup>1</sup>, Joshua Scieurba<sup>1</sup>, Erik Karmele<sup>1</sup>, Ricardo Fujiwara<sup>2</sup>, Thomas Nutman<sup>1</sup>

<sup>1</sup>NIH, National Institutes of Health, Bethesda, MD, United States, <sup>2</sup>UFMG, Belo Horizonte, Brazil

(ACMCIP Abstract)

2:30 p.m.

1273

**VACCINATION WITH AN ATTENUATED HOOKWORM VACCINE: PRELIMINARY RESULTS FROM A PHASE 1B CLINICAL TRIAL**

**Paul R. Chapman**<sup>1</sup>, Paul Giacomini<sup>2</sup>, Peter O'Rourke<sup>1</sup>, Stacey Llewellyn<sup>1</sup>, Christian Engwerda<sup>1</sup>, Alex Loukas<sup>2</sup>, James S. McCarthy<sup>1</sup>

<sup>1</sup>Queensland Institute of Medical Research - Berghofer, Herston, Australia, <sup>2</sup>Australian Institute of Tropical Health and Medicine, Cairns, Australia

2:45 p.m.

1274

**REPEATED CONTROLLED HUMAN HOOKWORM INFECTION IMPROVES VARIABILITY IN EGG EXCRETION: THE ROAD TO TESTING VACCINES**

Marie-Astrid Hoogerwerf<sup>1</sup>, Jan Pieter Koopman<sup>1</sup>, Jacqueline Janse<sup>1</sup>, Eric Brienen<sup>1</sup>, Marijke Langenberg<sup>1</sup>, Yvonne Kruize<sup>1</sup>, Luc Coffeng<sup>2</sup>, Sake de Vlas<sup>2</sup>, Leo Visser<sup>1</sup>, Lisette van Lieshout<sup>1</sup>, Maria Yazdanbakhsh<sup>1</sup>, **Meta Roestenberg**<sup>1</sup>

<sup>1</sup>Leiden University Medical Center, Leiden, Netherlands, <sup>2</sup>Erasmus Medical Center, Rotterdam, Netherlands

3 p.m.

1275

**A COMPARISON OF QUANTITATIVE PCR, KATO-KATZ TECHNIQUE, AND SODIUM NITRATE FLOTATION FOR THE DIAGNOSIS OF HOOKWORM INFECTIONS IN VIETNAM**

Naomi Clarke<sup>1</sup>, Dinh Ng-Nguyen<sup>2</sup>, Rebecca Traub<sup>3</sup>, Archie Clements<sup>4</sup>, Roy Anderson<sup>5</sup>, Susana Vaz Nery<sup>1</sup>  
<sup>1</sup>University of New South Wales, Kensington NSW, Australia, <sup>2</sup>Tay Nguyen University, Dak Lak, Vietnam, <sup>3</sup>University of Melbourne, Parkville VIC, Australia, <sup>4</sup>Curtin University, Perth WA, Australia, <sup>5</sup>Imperial College London, London, United Kingdom

3:15 p.m.

1276

**VALIDATION OF A MULTIPLEX REAL-TIME PCR GASTROINTESTINAL HELMINTH PANEL**

Jason Kwan<sup>1</sup>, Kimberley Marks-Beaubrun<sup>1</sup>, Rachel Lau<sup>2</sup>, Filip Ralevski<sup>2</sup>, Amanda Wang<sup>2</sup>, Ruben Cudiamat<sup>2</sup>, Ellen Min Chen<sup>2</sup>, Krista Orejana<sup>2</sup>, Andrea K. Boggild<sup>1</sup>  
<sup>1</sup>Tropical Disease Unit, Toronto General Hospital and University of Toronto, Toronto, ON, Canada, <sup>2</sup>Public Health Ontario, Toronto, ON, Canada

(ACMCIP Abstract)

**Scientific Session 93**

**Filariasis - Clinical**

National Harbor 11 (National Harbor Level)  
Friday, November 22, 1:45 p.m. - 3:30 p.m.

**CHAIR**

Negar Niki Alami  
AbbVie, North Chicago, IL, United States

Linda Batsa Debrah  
School of Medical Sciences, Kwame Nkrumah University of Science and Technology (KNUST), Kumasi, Ghana

1:45 p.m.

1277

**COMPREHENSIVE ANTIBODY PROFILING IN NODDING SYNDROME: CONTINUED ASSOCIATION BETWEEN ONCHOCERCA-INDUCED ANTIBODIES AND CROSS-REACTIVE AUTOANTIBODIES TO HUMAN BRAIN EXPRESSED LEIOMODIN-1 AND DJ-1**

Joseph Kubofcik<sup>1</sup>, Rodney Ogwang<sup>2</sup>, Thomas B. Nutman<sup>1</sup>, Richard Idro<sup>2</sup>  
<sup>1</sup>National Institutes of Health, Bethesda, MD, United States, <sup>2</sup>Makerere University College of Health Sciences, Kampala, Uganda

2 p.m.

1278

**A TRIAL OF REPEATED DOSES OF IVERMECTIN VERSUS ALBENDAZOLE PLUS IVERMECTIN FOR TREATMENT OF ONCHOCERCIASIS**

Nicholas Opoku<sup>1</sup>, Seidu A. Mahmood<sup>2</sup>, Simon K. Attah<sup>2</sup>, James W. Kazura<sup>3</sup>, Katiucia O'Brian<sup>4</sup>, Kerstin Fischer<sup>4</sup>, Peter U. Fischer<sup>4</sup>, Gary J. Weil<sup>4</sup>, Christopher L. King<sup>3</sup>  
<sup>1</sup>University of Health and Allied Sciences, Hohoe, Ghana, <sup>2</sup>College of Health Sciences, University of Ghana Medical School, Korle-Bu Accra, Ghana, <sup>3</sup>Case Western Reserve University, Cleveland, OH, United States, <sup>4</sup>Washington University School of Medicine, St. Louis, MO, United States

2:15 p.m.

1279

**DRUG DEVELOPMENT FOR THE TREATMENT AND CONTROL OF ONCHOCERCIASIS: A POPULATION PHARMACOKINETIC ANALYSIS OF EMODEPSIDE (BAY 44-4400) IN HEALTHY VOLUNTEERS**

Frauke Assmus<sup>1</sup>, Richard M. Hoglund<sup>1</sup>, Ivan Scandale<sup>2</sup>, Joel Tarning<sup>1</sup>  
<sup>1</sup>Mahidol-Oxford Tropical Medicine Research Unit, Bangkok, Thailand, <sup>2</sup>Drugs for Neglected Diseases initiative, Geneva, Switzerland

2:30 p.m.

1280

**ANTI-WOLBACHIA CANDIDATE ABBV-4083: PHASE 1 SAFETY AND PHARMACOKINETICS CLINICAL TRIAL IN HEALTHY ADULTS**

Negar Niki Alami, David C. Carter, Nisha V. Kwatra, Weihang Zhao, Linda Snodgrass, Ariel R. Porcalla, Cheri E. Klein, Daniel E. Cohen, Loretta A. Gallenberg, Robert A. Carr, Kennan C. Marsh, Dale J. Kempf  
AbbVie, North Chicago, IL, United States

2:45 p.m.

1281

**PRECLINICAL EFFICACY OF THE NOVEL MACROFILARICIDAL DRUG CANDIDATE ABBV-4083**

Marc P. Hübner<sup>1</sup>, Thomas W. von Gedern<sup>2</sup>, Kennan Marsh<sup>2</sup>, Sabine Specht<sup>1</sup>, Marianne Koschel<sup>1</sup>, Alexandra Ehrens<sup>1</sup>, Stefan J. Frohberger<sup>1</sup>, Emma Gunderson<sup>3</sup>, Christina Bulman<sup>3</sup>, KC Lim<sup>3</sup>, Mark J. Taylor<sup>4</sup>, Joseph D. Turner<sup>4</sup>, Stephen A. Ward<sup>4</sup>, Judy Sakanari<sup>3</sup>, Dale Kempf<sup>2</sup>, Achim Hoerauf<sup>1</sup>  
<sup>1</sup>University Hospital Bonn, Bonn, Germany, <sup>2</sup>AbbVie, North Chicago, IL, United States, <sup>3</sup>University of California San Francisco, San Francisco, CA, United States, <sup>4</sup>Liverpool School of Tropical Medicine, Liverpool, United Kingdom

3 p.m.

1282

**MANSONELLA PERSTANS IN LYMPHATIC FILARIASIS HOTSPOTS IN SIERRA LEONE**

Yakuba M. Bah<sup>1</sup>, Mustapha Sonnie<sup>2</sup>, Abdulai Conteh<sup>1</sup>, Victoria Sawyerr<sup>1</sup>, Alhassan Konneh<sup>2</sup>, Amy Veinoglou<sup>3</sup>, Mary Hodges<sup>2</sup>, Yaobi Zhang<sup>4</sup>  
<sup>1</sup>Neglected Tropical Disease Program, Ministry of Health and Sanitation, Freetown, Sierra Leone, <sup>2</sup>Helen Keller International, Freetown, Sierra Leone, <sup>3</sup>Helen Keller International, New York City, NY, United States, <sup>4</sup>Helen Keller International, Regional Office for Africa, Dakar, Senegal

3:15 p.m.

1283

**MORBIDITY MANAGEMENT AND SURVEILLANCE OF LYMPHATIC FILARIASIS PATHOLOGY AND ACUTE DERMATOLYMPHANGIOADENITIS (ADLA) ATTACKS USING A MOBILE PHONE-BASED TOOL BY COMMUNITY HEALTH VOLUNTEERS IN GHANA**

Linda Batsa Debrah<sup>1</sup>, Jubin Osei-Mensah<sup>2</sup>, Yusif Mubarik<sup>2</sup>, Aliyu Mohammed<sup>3</sup>, Olivia Agbenyega<sup>4</sup>, Nana Kwame Ayisi-Boateng<sup>1</sup>, Janina M. Kuehlwein<sup>5</sup>, Ute Klarmann-Schulz<sup>5</sup>, Achim Hoerauf<sup>6</sup>, Alexander Yaw Debrah<sup>6</sup>  
<sup>1</sup>School of Medical Sciences, Kwame Nkrumah University of Science and Technology (KNUST), Kumasi, Ghana, <sup>2</sup>Kumasi Centre for Collaborative Research in Tropical Medicine (KCCR), Kumasi, Ghana, <sup>3</sup>School of Public Health, Kwame Nkrumah University of Science and Technology (KNUST), Kumasi, Ghana, <sup>4</sup>Faculty of Renewable Natural Resources, Kwame Nkrumah University of Science and Technology (KNUST), Kumasi, Ghana, <sup>5</sup>Institute for Medical Microbiology, Immunology and Parasitology (IMMIP), University Hospital Bonn, Bonn, Germany, <sup>6</sup>Faculty of Allied Health Sciences, Kwame Nkrumah University of Science and Technology (KNUST), Kumasi, Ghana

Friday  
November 22

## TropStop - Career Chats

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*Maryland 5/6 (Ballroom Level)*

Friday, November 22, 3 p.m. - 4 p.m.

The TropStop schedule will include a daily one-hour afternoon session to meet professionals in the fields of tropical medicine and global health who will share their career stories and discuss topics and strategies to help you along your career path.

### HOW TO ACE THAT GRANT APPLICATION

Cristina Cassetti

*National Institute of Allergy and Infectious Diseases, National Institutes of Health, Rockville, MD, United States*

Lark Coffey

*University of California Davis, Davis, CA, United States*

Albert Ko

*Yale School of Public Health, New Haven, CT, United States*

## Exhibit Hall Open

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*Prince George's Exhibit Hall C (Lower Atrium Level)*

Friday, November 22, 3:15 p.m. - 4:15 p.m.

### Coffee Break

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*Prince George's Exhibit Hall C (Lower Atrium Level)*

Friday, November 22, 3:30 p.m. - 4 p.m.

### Poster Session B Dismantle

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*Prince George's Exhibit Hall D (Lower Atrium Level)*

Friday, November 22, 4 p.m. - 6:15 p.m.

## Symposium 94

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### Bridging the Gap between Malaria Mathematical Modeling and Country Application to Inform Strategic and Operational Decision-Making

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*Maryland B (Ballroom Level)*

Friday, November 22, 4 p.m. - 5:45 p.m.

Malaria modeling provides a unique and powerful platform to better understand the transmission and epidemiology of this disease, to guide decision-making, and to inform malaria strategy by testing the impact of multiple scenarios on future transmission trends. However, there remain challenges for the use of malaria mathematical models to inform country strategic and operational decision-making, and models remain too often a theoretical exercise. Ensuring models can be applied in countries would rely on close collaboration between modelers and country decision-maker to define the objective of the country program, collate available data, test different scenarios through an iterative and participatory approach, and communicate complex analysis. This symposium will present the use of mathematical models by global malaria organizations and national malaria control programs (NMCPs) to guide decision-making at different levels, from the development of global and national malaria strategies to country-level stratification for the purposes of optimal implementation of interventions. The symposium will highlight how close and long-standing partnerships between malaria modelers and other groups of malaria policy makers have enabled productive collaborations, combining diverse and multidisciplinary skillsets

to optimize our learnings and provide a data-driven platform for developing evidence-based malaria strategies. The first speaker will describe how malaria modeling has been used by the World Health Organization to guide decision-making, with a focus on the role modeling is playing in the "High burden to high impact" initiative. The second speaker will describe how a collaborative modeling exercise between Tanzanian NMCP and the Swiss TPH was used to evaluate the feasibility of the objectives set by the Tanzanian country program and later to inform the update of the latest National Strategic Plan that include a stratification of interventions in Tanzania. The next speaker will present results from a collaboration with MACEPA/PATH detailing the how strengthened surveillance and data systems in Zambia, in combination with mathematical modeling, have been used to evaluate past interventions and to guide stratification and the optimal targeting of malaria interventions. Finally, the last presenter will describe how modeling has been used to estimate the feasibility of malaria elimination in Colombia, and to use this evidence package to elicit the mobilization of national financial and political will to achieve this goal.

### CHAIR

Emilie Pothin

*Swiss Tropical Public Health Institute, Clinton Health Access Initiative, Basel, Switzerland*

Hannah Slater

*PATH, Seattle, WA, United States*

4 p.m.

### USING MATHEMATICAL MODELING TO INFORM STRATIFICATION AND INTERVENTION PRIORITIZATION IN THE WHO 'HIGH BURDEN TO HIGH IMPACT' INITIATIVE

Beatriz Galatas

*World Health Organization, Geneva, Switzerland*

4:20 p.m.

### HOW COLLABORATIVE MODELING CAN EVALUATE AND INFORM NATIONAL MALARIA PLANNING: LESSONS FROM TANZANIA

Fabrizio Molteni

*Swiss Tropical Public Health Institute, Tanzania National Malaria Control Program, Dar es Salaam, United Republic of Tanzania*

4:40 p.m.

### HOW STRENGTHENED SURVEILLANCE, DATA SYSTEMS AND MATHEMATICAL MODELING ARE USED TO STRATIFY AND TARGET MALARIA INTERVENTION USE IN ZAMBIA

Busiku Hamainza

*Zambia National Malaria Elimination Program, Lusaka, Zambia*

5 p.m.

### HOW MODELING HAS BEEN USED TO PROVIDE TECHNICAL SUPPORT TO NATIONAL MALARIA CONTROL PROGRAMS

Arnaud Le Menach

*Clinton Health Access Initiative, Boston, MA, United States*

5:20 p.m.

### DISCUSSION



## Symposium 95

### Understanding Malaria Resurgence through Studies of Host Immunity and Parasite Diversity

Maryland C (Ballroom Level)

Friday, November 22, 4 p.m. - 5:45 p.m.

Following a two-decade period of declining malaria rates due to intensified control efforts, global progress against the disease has stagnated, and in some countries, malaria has resurged. Successful control measures lead to increasingly focal residual malaria and may also lead to significant reductions in parasite diversity locally, but increasing genetic differentiation between parasite populations in different geographic areas. These conditions could favor the emergence of multidrug resistant strains and potentially to a refocusing of naturally acquired immunity towards local parasites and thereby greater susceptibility to disease from imported strains from other regions. Post-elimination, in the absence of malaria infection, it is thought that naturally acquired immunity declines relatively quickly, increasing the probability of infections progressing to clinical disease and leading to epidemics if malaria transmission resurges. The emergence of clinical cases in a previously immune population has its advantages in that all infections result in a clinical case and are subsequently detected, treated and eliminated. However, in semi-immune populations, resurgence in submicroscopic infections (infections undetected by conventional microscopy) also occur. These infections are undetected, their source unknown and they maintain the transmission of malaria, including drug resistant parasites, in a population. In low transmission areas it is unclear how immunity predicts whether resurgence will be clinical or submicroscopic; the current general view is that in low transmission pre-elimination areas, little effective immunity develops and a high proportion of malaria infections progress to clinical disease. However, this view is challenged by several recent studies reporting high prevalences of submicroscopic malaria infections in geographical clusters in low transmission areas. This symposium will feature presentations from researchers from the Australian Centre of Research Excellence in Malaria Elimination (ACREME), including malaria endemic country partners, who aim to accelerate malaria elimination in the Asia Pacific region by undertaking multidisciplinary, collaborative research to guide malaria control and elimination policies. The symposium will highlight recent advances in our understanding of the role of immunity and parasite diversity in malaria resurgence (clinical and submicroscopic infection), and the impact of malaria control and elimination, in diverse malaria-endemic areas in the Asia-Pacific. Discussion will focus on the implications for malaria resurgence from the perspective of the epidemiologist/immunologist/parasite geneticist and how this information can help guide surveillance and new tools for malaria in the elimination era.

#### CHAIR

Freya Fowkes

Burnet Institute, Melbourne, Australia

Alyssa Barry

Walter and Eliza Hall Institute of Medical Research, Melbourne, Australia

4 p.m.

#### IMMUNITY AND RESURGENCE OF SUBMICROSCOPIC RESISTANT MALARIA IN TRIALS OF MASS DRUG ADMINISTRATION

Aung Pyae Phyto

Myanmar Oxford Clinical Research Unit, Yangon, Myanmar

4:20 p.m.

#### IMPACT OF DECLINING MALARIA TRANSMISSION ON FUNCTIONAL IMMUNITY AND THE RISK OF MALARIA RESURGENCE

James Beeson

Burnet Institute, Melbourne, Australia

4:40 p.m.

#### UNEXPECTED CHANGES IN MALARIA PARASITE DIVERSITY AND POPULATION STRUCTURE WITH TRANSMISSION DECLINE AND RESURGENCE IN PAPUA NEW GUINEA

Alyssa Barry

Walter and Eliza Hall Institute of Medical Research, Melbourne, Australia

5 p.m.

#### MOLECULAR INSIGHTS INTO CHANGING PATTERNS OF *P. VIVAX* TRANSMISSION AND ADAPTATION IN DIFFERENT ENDEMIC SETTINGS

Ric Price

Menzies School of Health Research, Darwin, Australia

5:20 p.m.

#### DISCUSSION

### Scientific Session 96

#### Integrated Control Measures for Neglected Tropical Diseases

Maryland D (Ballroom Level)

Friday, November 22, 4 p.m. - 5:45 p.m.

#### CHAIR

Emily Griswold

The Carter Center, Atlanta, GA, United States

Charles H. King

Case Western Reserve University, Cleveland, OH, United States

4 p.m.

1284

#### MULTI-COUNTRY ANALYSIS OF REPORTED AND SURVEYED COVERAGE FROM 222 MASS DRUG ADMINISTRATIONS IN 15 COUNTRIES TO FACILITATE DECISION-MAKING IN NEGLECTED TROPICAL DISEASE PROGRAMS

**Kathryn L. Zoerhoff**<sup>1</sup>, Pamela S. Mbabazi<sup>2</sup>, Katherine Gass<sup>3</sup>, John Kraemer<sup>4</sup>, Brian Fuller<sup>5</sup>, Lynsey Blair<sup>6</sup>, Roland Bougma<sup>7</sup>, Aboulaye Meité<sup>8</sup>, Nebiyu Negussu<sup>9</sup>, Bizuayehu Gashaw<sup>10</sup>, Scott Nash<sup>11</sup>, Nana-Kwadwo Biritwum<sup>12</sup>, Jean Frantz Lemoine<sup>13</sup>, Helena U. Pangaribuan<sup>14</sup>, Eksi Wijayanti<sup>14</sup>, Karsor Kollie<sup>15</sup>, Clara F. Rasoamananjaja<sup>16</sup>, Lazarus Juziwelo<sup>17</sup>, John Chiphwanya<sup>17</sup>, Pradip Rimal<sup>18</sup>, Issa Gnandou<sup>19</sup>, Bocar Diop<sup>20</sup>, Ameyo M. Dorkenoo<sup>21</sup>, Rachel Bronzan<sup>22</sup>, Edridah M. Tukahebwa<sup>23</sup>, Fatima Kabole<sup>24</sup>, Violetta Yevstigneyeva<sup>25</sup>, Lauren Courtney<sup>1</sup>, Joseph Koroma<sup>26</sup>, Egide Ndayishimye<sup>27</sup>, Richard Reithinger<sup>1</sup>, Margaret Baker<sup>1</sup>, Fiona Fleming<sup>6</sup>

<sup>1</sup>RTI International, Washington, DC, United States, <sup>2</sup>World Health Organization, Geneva, Switzerland, <sup>3</sup>Task Force for Global Health, Decatur, GA, United States, <sup>4</sup>Georgetown University, Washington, DC, United States, <sup>5</sup>Helen Keller International, Washington, DC, United States, <sup>6</sup>Schistosomiasis Control Initiative, London, United Kingdom, <sup>7</sup>Burkina Faso Ministry of Health, Ouagadougou, Burkina Faso, <sup>8</sup>Côte d'Ivoire Ministry of Health, Abidjan, Côte d'Ivoire, <sup>9</sup>Ethiopia Federal Ministry of Health, Addis Ababa, Ethiopia, <sup>10</sup>Amhara Regional Health Bureau, Federal Ministry of Health, Amhara, Ethiopia, <sup>11</sup>The Carter Center, Atlanta, GA, United States

States, <sup>12</sup>The Bill & Melinda Gates Foundation, Seattle, WA, United States, <sup>13</sup>Haiti Ministry of Public Health and Population, Port-au-Prince, Haiti, <sup>14</sup>Indonesia Ministry of Health, Jakarta, Indonesia, <sup>15</sup>Liberia Ministry of Health and Social Welfare, Monrovia, Liberia, <sup>16</sup>Madagascar Ministry of Public Health, Antananarivo, Madagascar, <sup>17</sup>Malawi Ministry of Health, Lilongwe, Malawi, <sup>18</sup>Nepal Ministry of Health and Population, Kathmandu, Nepal, <sup>19</sup>Niger Ministry of Public Health, Niamey, Niger, <sup>20</sup>Senegal Ministry of Health and Social Action, Dakar, Senegal, <sup>21</sup>Togo Ministry of Health, Lome, Togo, <sup>22</sup>FHI 360, Washington, DC, United States, <sup>23</sup>Uganda Ministry of Health, Kampala, Uganda, <sup>24</sup>Zanzibar Ministry of Health, Zanzibar City, United Republic of Tanzania, <sup>25</sup>United States Agency for International Development, Washington, DC, United States, <sup>26</sup>Consultant, Freetown, Sierra Leone, <sup>27</sup>FHI 360, Accra, Ghana

4:15 p.m.

**1285**

### ASSESSING THE RESILIENCE OF COMMUNITY DRUG DISTRIBUTORS (CDDS) CONDUCTING MASS DRUG ADMINISTRATION (MDA) FOR LYMPHATIC FILARIASIS AND ONCHOCERCIASIS IN CÔTE D'IVOIRE

**Daniel Dillio<sup>1</sup>**, David Addiss<sup>2</sup>, Margaret Gyapong<sup>3</sup>, Deborah McFarland<sup>4</sup>, Mary Amuyunzu-Nyamongo<sup>5</sup>, Esther Comoe<sup>6</sup>, Adam Mama Djima<sup>6</sup>, Amos Wung Buh<sup>1</sup>, Alison Krentel<sup>1</sup>

<sup>1</sup>Bruyère Research Institute, Ottawa, ON, Canada, <sup>2</sup>The Task Force for Global Health, Decatur, GA, United States, <sup>3</sup>University of Health and Allied Sciences, Ho, Ghana, <sup>4</sup>Rollins School of Public Health, Emory University, Atlanta, GA, United States, <sup>5</sup>African Institute for Health and Development, Nairobi, Kenya, <sup>6</sup>Ministère de la Santé et de l'Hygiène Publique, Abidjan, Côte D'Ivoire

4:30 p.m.

**1286**

### EVALUATING THE IMPACT OF INTERVENTIONS ON SCHISTOSOMIASIS AND SOIL-TRANSMITTED HELMINTHS IN NORTH-CENTRAL NIGERIA

**Emily Griswold<sup>1</sup>**, Abel Eigege<sup>2</sup>, John Umaru<sup>2</sup>, Solomon Adalamo<sup>2</sup>, Bulus Mancha<sup>2</sup>, Andrew Nute<sup>1</sup>, Obiageli Nebe<sup>3</sup>, Chukwuma Anyaike<sup>3</sup>, Evelyn Ngige<sup>3</sup>, Jonathan Kadimbo<sup>4</sup>, Jacob Danboyi<sup>5</sup>, Emmanuel Miri<sup>2</sup>, Frank Richards<sup>1</sup>

<sup>1</sup>The Carter Center, Atlanta, GA, United States, <sup>2</sup>The Carter Center, Jos, Nigeria, <sup>3</sup>Federal Ministry of Health, Abuja, Nigeria, <sup>4</sup>Plateau State Ministry of Health, Jos, Nigeria, <sup>5</sup>Nasarawa State Ministry of Health, Lafia, Nigeria

4:45 p.m.

**1287**

### TREND ANALYSIS OF SOIL TRANSMITTED HELMINTHS AND SCHISTOSOME INFECTIONS PREVALENCE OVERLAID WITH PROGRAMMATIC TREATMENT COVERAGE STRATIFIED BY COUNTIES IN KENYA: LONGITUDINAL STUDY DESIGN

**Collins Okoyo<sup>1</sup>**, Suzy J. Campbell<sup>2</sup>, Sammy Njenga<sup>1</sup>, Simon J. Brooker<sup>3</sup>, Charles Mwandawiro<sup>1</sup>

<sup>1</sup>Kenya Medical Research Institute, Nairobi, Kenya, <sup>2</sup>Evidence Action, Washington, DC, United States, <sup>3</sup>London School of Hygiene and Tropical Medical Medicine, London, United Kingdom

5 p.m.

**1288**

### SUCCESSFUL INTEGRATION OF STH SURVEY WITH LF TRANSMISSION ASSESSMENT SURVEYS IN TEN EVALUATION UNITS IN MALI

**Massitan Dembélé<sup>1</sup>**, Mahamadou Traoré<sup>1</sup>, Benoit Dembélé<sup>2</sup>, Boubacar Guindo<sup>2</sup>, Mama Niélé Doumbia<sup>2</sup>, Seydou Goita<sup>2</sup>, Modibo Keita<sup>2</sup>, Yaya I Coulibaly<sup>3</sup>, Salif S Doumbia<sup>3</sup>, Moussa Sacko<sup>4</sup>, Renion Saye<sup>4</sup>, Abdoulaye Guindo<sup>1</sup>, Abdoul Karim Sidibé<sup>1</sup>, Steven Reid<sup>5</sup>, Fama Kondo<sup>2</sup>, Mohamed Lamine Yattara<sup>2</sup>, Yaobi Zhang<sup>6</sup>

<sup>1</sup>Directorate General of Health, Ministry of Health and Public Hygiene, Bamako, Mali, <sup>2</sup>Helen Keller International, Bamako, Mali, <sup>3</sup>Filariasis Unit, International Center of Excellence in Research, Faculty of Medicine and Odontostomatology, Point G, Bamako, Mali, <sup>4</sup>Institut National de Recherche en Santé publique, Bamako, Mali, <sup>5</sup>Helen Keller International, New York, NY, United States, <sup>6</sup>Helen Keller International, Regional Office for Africa, Dakar, Senegal

5:15 p.m.

**1289**

### COMMUNITY EFFECTIVENESS AND INDIVIDUAL EFFICACY OF IVERMECTIN, DIETHYLCARBAMAZINE AND ALBENDAZOLE MASS DRUG ADMINISTRATION FOR LYMPHATIC FILARIASIS, SCABIES AND SOIL TRANSMITTED HELMINTHS IN FIJI

**Myra Hardy<sup>1</sup>**, Josaia Samuela<sup>2</sup>, Mike Kama<sup>2</sup>, Meciusela Tuicakau<sup>2</sup>, Lucia Romani<sup>3</sup>, Margot Whitfeld<sup>3</sup>, John Kaldor<sup>3</sup>, Leanne J. Robinson<sup>4</sup>, Andrew Steer<sup>1</sup>

<sup>1</sup>Murdoch Children's Research Institute, Melbourne, Australia, <sup>2</sup>Ministry of Health and Medical Services, Suva, Fiji, <sup>3</sup>Kirby Institute, Sydney, Australia, <sup>4</sup>Burnet Institute, Melbourne, Australia

5:30 p.m.

**1290**

### PHARMACOKINETIC STUDY OF YAWS AND LYMPHATIC FILARIASIS DRUGS INTERACTIONS

**Lucy Ninmongo John<sup>1</sup>**, Catherine Bjerum<sup>2</sup>, Christopher King<sup>2</sup>, Darryl Murry<sup>3</sup>, Oriol Mitja<sup>4</sup>, Michael Marks<sup>5</sup>

<sup>1</sup>National Department of Health, Port Moresby, Papua New Guinea, <sup>2</sup>Case Western Reserve University, Cleveland, OH, United States, <sup>3</sup>Nebraska University Medical Centre, Omaha, NE, United States, <sup>4</sup>University of Barcelona, Barcelona, Spain, <sup>5</sup>London School of Hygiene & Tropical Medicine, London, United Kingdom

## Scientific Session 97

### Viral Hemorrhagic Fevers

Potomac B (Ballroom Level)

Friday, November 22, 4 p.m. - 5:45 p.m.

#### CHAIR

Muhammed O. Afolabi

London School of Hygiene & Tropical Medicine, London, United Kingdom

Lekilay G. Tehmeh

Ministry of Health, Monrovia, Liberia

4 p.m.

**1291**

### A RANDOMIZED CLINICAL TRIAL OF THE SAFETY AND IMMUNOGENICITY OF A 2-DOSE HETEROLOGOUS EBOLA VACCINE REGIMEN WITH AD26. ZEBOV AND MVA-BN®-FILO IN HEALTHY AND HIV+ AFRICAN ADULTS

**Houreratou Barry<sup>1</sup>**, Gaudensia Mutua<sup>2</sup>, Hannah Kibuuka<sup>3</sup>, Zacchaeus Anywaine<sup>4</sup>, Jennifer Serwanga<sup>4</sup>, Joseph Blehou<sup>5</sup>, Christine Bétard<sup>6</sup>, Laura Richert<sup>6</sup>, Georgi Shukarev<sup>7</sup>, Cynthia Robinson<sup>7</sup>, Auguste Gaddah<sup>8</sup>, Dirk Heerwegh<sup>8</sup>, Viki Bockstal<sup>7</sup>, Kerstin Luhn<sup>7</sup>, Maarten Leyssen<sup>7</sup>, Sirima Sodiomon<sup>9</sup>, Omu Anzala<sup>2</sup>, Salim Wakabi<sup>3</sup>, Nicolas Meda<sup>1</sup>, Serge Eholie<sup>9</sup>, Macaya Dougouih<sup>8</sup>, Rodolphe Thiebaut<sup>6</sup>

<sup>1</sup>Centre MURAZ, Bobo-Dioulasso, Burkina Faso, <sup>2</sup>KAVI - Institute of Clinical Research University of Nairobi, Nairobi, Kenya, <sup>3</sup>Makerere University - Walter Reed Project, Kampala, Uganda, <sup>4</sup>Medical Research Council/Uganda Virus Research Institute and London School of Hygiene & Tropical Medicine Uganda Research Unit, Entebbe, Uganda, <sup>5</sup>Programme PACCI/EBOVAC2, CHU Treichville, Centre Medical SAPH Toupah, Toupah, Côte D'Ivoire, <sup>6</sup>INSERM, U1219 Bordeaux Population Health research centre, and Euclid/IF-CRIN Clinical Trials Platform, University Bordeaux, Bordeaux, France, <sup>7</sup>Janssen Vaccines and Prevention, Leiden, Netherlands, <sup>8</sup>Janssen Research & Development, Beerse, Belgium, <sup>9</sup>Centre National de Recherche et de Formation sur le Paludisme (CNRFP), Unité de Recherche Clinique de Banfora, Ouagadougou, Burkina Faso

4:15 p.m.

1292

**RVSVA-G-ZEBOV-GP EBOLA VACCINE (MERCK & CO., INC., KENILWORTH, NJ, USA): UPDATED SAFETY, IMMUNOGENICITY, AND EFFICACY**

Jakub Simon, Matthew Onorato, Kenneth Liu, Rebecca Grant-Klein, Sheri Dubey, Melissa Hughes, Sharon Rudo, Jayanthi Wolf, Beeth-Ann Collier  
Merck & Co., Inc., Kenilworth, NJ, United States

4:30 p.m.

1293

**SAFETY AND IMMUNOGENICITY OF A 2-DOSE HETEROLOGOUS VACCINE AGAINST EBOLA IN AFRICAN CHILDREN AND ADOLESCENTS**

Muhammed Afolabi<sup>1</sup>, Gaudensia Mutua<sup>2</sup>, Zacchaeus Anywaine<sup>3</sup>, Hannah Kibuuka<sup>4</sup>, David Ishola<sup>1</sup>, Bailah Leigh<sup>5</sup>, Frank Baiden<sup>1</sup>, Kwabena Owusu-Kyei<sup>1</sup>, Omu Anzala<sup>2</sup>, Mohamed Samai<sup>1</sup>, Joseph Blehou<sup>6</sup>, Brian Greenwood<sup>7</sup>, Daniela Manno<sup>1</sup>, Viki Bockstal<sup>8</sup>, Auguste Gaddah<sup>9</sup>, Dirk Heerwegh<sup>9</sup>, Georgi Shukarev<sup>8</sup>, Babajide Keshinro<sup>8</sup>, Kerstin Luhn<sup>8</sup>, Maarten Leysen<sup>8</sup>, Cynthia Robinson<sup>8</sup>, Debby-Watson Jones<sup>1</sup>, Rodolphe Thiebaut<sup>10</sup>, Macaya Douoguih<sup>9</sup>, Houreratou Barry<sup>11</sup>

<sup>1</sup>Clinical Research Department, London School of Hygiene & Tropical Medicine, London, United Kingdom, <sup>2</sup>KAVI-Institute of Clinical Research University of Nairobi, Nairobi, Kenya, <sup>3</sup>Medical Research Council/Uganda Virus Research Institute and London School of Hygiene & Tropical Medicine Uganda Research Unit, Entebbe, Uganda, <sup>4</sup>Makerere University Walter Reed Project, Kampala, Uganda, <sup>5</sup>College of Medicine and Allied Health Sciences (COMAHS), COMAHS Secretariat, New England, Freetown, Sierra Leone, <sup>6</sup>Centre Medical SAPH Toupah, Toupah, Côte D'Ivoire, <sup>7</sup>Department of Disease Control, London School of Hygiene & Tropical Medicine, London, United Kingdom, <sup>8</sup>Janssen Vaccines and Prevention B.V., Leiden, Netherlands, <sup>9</sup>Janssen Research & Development, Beerse, Belgium, <sup>10</sup>INSERM, U1219 Bordeaux Population Health research centre, and Euclid/IF-CRIN Clinical Trials Platform, University Bordeaux, Bordeaux, France, <sup>11</sup>Centre MURAZ, BoboDioulasso, Burkina Faso

4:45 p.m.

1294

**AD26.ZEBOV EBOLA BOOSTER VACCINATION INDUCES A STRONG ANAMNESTIC RESPONSE IN PREVIOUSLY VACCINATED PEOPLE AND PROVIDES RAPID PROTECTION AGAINST LETHAL EBOLA VIRUS CHALLENGE IN NHP**

Viki Bockstal<sup>1</sup>, Ramon Roozendaal<sup>1</sup>, Daniela Manno<sup>2</sup>, Zacchaeus Anywaine<sup>3</sup>, Muhammed Afolabi<sup>2</sup>, Gaudensia Mutua<sup>4</sup>, Frank Baiden<sup>2</sup>, Houreratou Barry<sup>5</sup>, Kwabena Owusu-Kyei<sup>2</sup>, David Ishola<sup>2</sup>, Brian Greenwood<sup>6</sup>, Bailah Leigh<sup>7</sup>, Mohamed Samai<sup>7</sup>, Omu Anzala<sup>4</sup>, Brett Lowe<sup>8</sup>, Sodiomon Sirima<sup>9</sup>, Cynthia Robinson<sup>1</sup>, Auguste Gaddah<sup>10</sup>, Dirk Heerwegh<sup>10</sup>, Laura Solfrosi<sup>1</sup>, Jenny Hendriks<sup>1</sup>, Roland Zahn<sup>1</sup>, Kerstin Luhn<sup>1</sup>, Rodolphe Thiebaut<sup>11</sup>, Deborah Watson-Jones<sup>2</sup>, Maarten Leysen<sup>1</sup>, Macaya Douoguih<sup>1</sup>

<sup>1</sup>Janssen Vaccines & Prevention, Leiden, Netherlands, <sup>2</sup>Clinical Research Department, London School of Hygiene & Tropical Medicine, London, United Kingdom, <sup>3</sup>Medical Research Council/Uganda Virus Research Institute and London School of Hygiene & Tropical Medicine Uganda Research Unit, Entebbe, Uganda, <sup>4</sup>KAVI-Institute of Clinical Research University of Nairobi, Nairobi, Kenya, <sup>5</sup>Centre MURAZ, Bobo-Dioullasso Dioullasso, Burkina Faso, <sup>6</sup>Department of Disease Control, London School of Hygiene & Tropical Medicine, London, United Kingdom, <sup>7</sup>College of Medicine and Allied Health Sciences (COMAHS), COMAHS Secretariat, New England, Freetown, Sierra Leone, <sup>8</sup>University of Oxford, Oxford, United Kingdom, <sup>9</sup>Centre National de Recherche et de Formation sur le Paludisme (CNRFP), Unité de Recherche Clinique de Banfora, Ouagadougou, Burkina Faso, <sup>10</sup>Janssen Research & Development, Beerse, Belgium, <sup>11</sup>INSERM, U1219 Bordeaux Population Health research centre, and Euclid/IF-CRIN Clinical Trials Platform, University Bordeaux, Bordeaux, France

5 p.m.

1295

**THE EFFECT OF INTENSIVE CARE TREATMENT BUNDLE ON SERUM CYTOKINES AND VIRAL LOAD DURING EBOLA VIRUS (ZAIRE) INFECTION**

Paul W. Blair<sup>1</sup>, Karen A. Martins<sup>2</sup>, Mark G. Kortepeter<sup>3</sup>, Michael W. Keebaugh<sup>2</sup>, Isaac L. Downs<sup>2</sup>, Anthony P. Cardile<sup>2</sup>

<sup>1</sup>Johns Hopkins University School of Medicine, Baltimore, MD, United States, <sup>2</sup>United States Army Medical Research Institute of Infectious Diseases (USAMRIID), Fort Detrick, MD, United States, <sup>3</sup>University of Nebraska College of Public Health, Omaha, NE, United States

5:15 p.m.

1296

**EBOLA EDUCATIONAL OUTREACH LED BY LOCAL MEDICAL STUDENTS IN EASTERN DEMOCRATIC REPUBLIC OF CONGO**

Michael T. Hawkes<sup>1</sup>, Kasereka Masumbuko Claude<sup>2</sup>

<sup>1</sup>University of Alberta, Edmonton, AB, Canada, <sup>2</sup>Université Catholique du Graben, Butembo, Democratic Republic of the Congo

5:30 p.m.

1297

**FINDINGS FROM POST EBOLA SURVEILLANCE: ACUTE FEBRILE ILLNESS IN TWO HIGH VOLUME HEALTHCARE FACILITIES IN MONROVIA, LIBERIA, 2019**

Lekilay Tehmeh<sup>1</sup>, Elijah Paa Edu-Quansah<sup>2</sup>, Terrence Lo<sup>3</sup>, Daniel Martin<sup>3</sup>, Jolie Dennis<sup>4</sup>, Gulu Gwesa<sup>4</sup>, John Dogba<sup>5</sup>, April Baller<sup>6</sup>, Eric Houpt<sup>7</sup>, Jie Liu<sup>7</sup>, Darwin Operario<sup>7</sup>, Maame Pokuah Amo-Addae<sup>2</sup>, Davis Ashaba<sup>2</sup>, Barry Fields<sup>3</sup>, Mosoka Fallah<sup>5</sup>, Desmond Williams<sup>4</sup>

<sup>1</sup>Ministry of Health, Monrovia, Liberia, <sup>2</sup>African Field Epidemiology Network, Monrovia, Liberia, <sup>3</sup>Centers for Disease Control and Prevention, Atlanta, GA, United States, <sup>4</sup>Centers for Disease Control and Prevention, Monrovia, Liberia, <sup>5</sup>National Public Health Institute of Liberia, Monrovia, Liberia, <sup>6</sup>World Health Organization, Monrovia, Liberia, <sup>7</sup>University of Virginia, Charlottesville, VA, United States

**Symposium 98**

**Poor Quality Drugs and Antimicrobial Resistance**

*Potomac C (Ballroom Level)*

Friday, November 22, 4 p.m. - 5:45 p.m.

The pervasiveness of falsified and substandard (FS) drugs, particularly in low- and middle-income countries, has been well-documented. The effect of FS drugs on development and spread of antimicrobial resistance (AMR) has not been quantified adequately – particularly for malaria, tuberculosis, bacterial pneumonia and other high-burden pathogens in tropical countries. The symposium will review the mechanisms of AMR. Selection of resistant microbes in humans and veterinary animals when exposed to FS drugs will be analyzed; recent *in vitro* evidence will be presented of Mycobacteria developing resistance when exposed to substandard rifampin and *E. coli* developing AMR to fluoroquinolones. Biomathematical models assessing AMR evolution in environments with varying amounts of poor quality drugs will be presented. Macro-epidemiological studies will define the impact of FS drugs on AMR and on the burden of infection. The goal of the presentations is to lead to improved understanding, and better control of, the problem of FS drug-induced AMR, especially in poor countries.

**CHAIR**

Joel G. Breman

Fogarty International Center, National Institutes of Health, Bethesda, MD, United States

Abdoulaye Djimde

University of Mali, Bamako, Mali

4 p.m.

**PROBING THE LINK BETWEEN POOR QUALITY MEDICINES AND ANTIMICROBIAL RESISTANCE IN HUMAN AND VETERINARY HEALTH: THE CASE OF RIFAMPIN AND FLUOROQUINOLONES**

Muhammad Zaman  
*Boston University, Boston, MA, United States*

4:15 p.m.

**MODELING THE HEALTH AND ECONOMIC COSTS OF SUBSTANDARD AND FALSIFIED DRUGS IN SUB-SAHARAN AFRICA**

Shunmay Yeung  
*London School of Hygiene & Tropical Medicine, London, United Kingdom*

4:30 p.m.

**MODELLING THE IMPACT OF POOR QUALITY ANTIMICROBIALS ON PATIENT OUTCOME AND DRUG RESISTANCE**

Lisa White  
*Mahidol-Oxford, Oxford, United Kingdom*

4:45 p.m.

**ANTIMICROBIAL QUALITY AND ANTIMICROBIAL RESISTANCE – EXPLORING THE RELATIONSHIP**

Paul Newton  
*Lao-Oxford-Mahosot-Wellcome Trust Research Unit, Vientiane, Lao People's Democratic Republic*

5 p.m.

**DISCUSSION**

**Scientific Session 99**

**Global Health: Prevention, Control and Surveillance of Infectious Diseases**

*Potomac D (Ballroom Level)*

Friday, November 22, 4 p.m. - 5:45 p.m.

**CHAIR**

Sonia T. Hegde  
*Johns Hopkins University, Leawood, KS, United States*

Julie Pavlin  
*National Academies of Sciences, Engineering and Medicine, Bethesda, MD, United States*

4 p.m.

**1298**

**MODELING AND MAPPING PATHOGEN-SPECIFIC ENTERIC INFECTIOUS DISEASE RISK USING EARTH OBSERVATION-DERIVED AND HOUSEHOLD-LEVEL COVARIATES**

Josh M. Colston<sup>1</sup>, Benjamin Zaithchik<sup>2</sup>, Margaret Kosek<sup>3</sup>, Hamada Badr<sup>2</sup>, Gagandeep Kang<sup>4</sup>, Tahmeed Ahmed<sup>5</sup>, Pablo Peñataro Yori<sup>3</sup>, Aldo Lima<sup>6</sup>, Esto Mduma<sup>7</sup>, Prakash S. Shrestha<sup>8</sup>, Pascal Bessong<sup>9</sup>, Karen Kotloff<sup>10</sup>, Anna Roose<sup>10</sup>, Imran Nisar<sup>11</sup>, Uma Onwuchekwa<sup>10</sup>, AS Faruque<sup>5</sup>, Jahangir Hossain<sup>12</sup>, Inácio Mandomando<sup>13</sup>

<sup>1</sup>Johns Hopkins School of Public Health, Baltimore, MD, United States, <sup>2</sup>Johns Hopkins Krieger School of Arts and Sciences, Baltimore, MD, United States, <sup>3</sup>University of Virginia, Charlottesville, VA, United States, <sup>4</sup>Christian Medical College, Vellore, India, <sup>5</sup>International Centre for Diarrhoeal Disease Research, Bangladesh (ICDDR,B), Dhaka, Bangladesh, <sup>6</sup>Federal University of Ceará, Fortaleza, Brazil, <sup>7</sup>Haydom Global Health Institute, Haydom, United Republic of Tanzania, <sup>8</sup>Institute of Medicine of Tribhuvan University, Kathmandu, Nepal, <sup>9</sup>University of Venda, Thohoyandou, South Africa, <sup>10</sup>University of Maryland, Baltimore, MD, United States, <sup>11</sup>Aga Khan University, Karachi, Pakistan, <sup>12</sup>MRC Unit The Gambia, Basse, Gambia, <sup>13</sup>Centro de Investigação em Saúde de Manhiça, Manhiça, Mozambique

4:15 p.m.

**1299**

**THE GEOGRAPHIC DISTRIBUTION OF CHOLERA IN BANGLADESH**

Sonia T. Hegde<sup>1</sup>, Ashraf Khan<sup>2</sup>, Fahima Chowdhury<sup>2</sup>, Md. Taufiqul Islam<sup>2</sup>, Joshua Kaminsky<sup>1</sup>, Emily S. Gurley<sup>1</sup>, Justin Lessler<sup>1</sup>, Firdausi Qadri<sup>2</sup>, Andrew Azman<sup>1</sup>  
<sup>1</sup>Johns Hopkins University, Baltimore, MD, United States, <sup>2</sup>International Centre for Diarrhoeal Disease Research, Bangladesh, Dhaka, Bangladesh

4:30 p.m.

**1300**

**GEOGRAPHIC VARIATION IN ORAL REHYDRATION THERAPY COVERAGE IN LOW- AND MIDDLE-INCOME COUNTRIES, 2000–2017**

Kirsten E. Wiens, Paulina Lindstedt, Mathew Baumann, Brigette Blacker, Aniruddha Deshpande, Simon I. Hay, Robert C. Reiner, Jr  
*University of Washington, Seattle, WA, United States*

4:45 p.m.

**1301**

**THE PERSISTENT IMPACT OF THE EBOLA EPIDEMIC ON HEALTH SEEKING BEHAVIOR IN KENEMA, SIERRA LEONE**

Mikaela R. Koch<sup>1</sup>, Lansana Kanneh<sup>2</sup>, Foday Alhasan<sup>2</sup>, Robert F. Garry<sup>3</sup>, Jeffrey G. Shaffer<sup>3</sup>, John S. Schieffelin<sup>3</sup>, Donald S. Grant<sup>4</sup>  
<sup>1</sup>Stanford University, Stanford, CA, United States, <sup>2</sup>Viral Hemorrhagic Fever Program, Kenema Government Hospital, Kenema, Sierra Leone, <sup>3</sup>Tulane University, New Orleans, LA, United States, <sup>4</sup>Ministry of Health and Sanitation, Freetown, Sierra Leone

5 p.m.

**1302**

**BEHAVIORAL, ECOLOGICAL AND SOCIO-DEMOGRAPHIC CORRELATES FOR VISCERAL LEISHMANIASIS TRANSMISSION IN BARINGO, KENYA**

Hellen Nyakundi<sup>1</sup>, Mwatela Kitondo<sup>1</sup>, Moses Atuko<sup>2</sup>, Elijah Elijah<sup>2</sup>, Joseph K. Wang'ombe<sup>1</sup>, Damaris Matoke<sup>3</sup>, Daniel Masiga<sup>4</sup>, Richard Wamai<sup>5</sup>  
<sup>1</sup>School of Public Health, University of Nairobi, Nairobi, Kenya, <sup>2</sup>Kaperur Community-Based Organization, Chemolingot, Kenya, <sup>3</sup>Kenya Medical Research Institute, Nairobi, Kenya, <sup>4</sup>International Centre of Insect Physiology and Ecology, Nairobi, Kenya, <sup>5</sup>Northeastern University, Boston, MA, United States

5:15 p.m.

**1303**

**DECLINING MASS DRUG ADMINISTRATION COVERAGE FOR LYMPHATIC FILARIASIS IN PORT-AU-PRINCE, HAITI: A PROGRAMMATIC CASE STUDY AND RECOMMENDATIONS**

Breanna K. Wodnik<sup>1</sup>, Didié H. Louis<sup>2</sup>, Michel Joseph<sup>3</sup>, Lee T. Wilkerson<sup>1</sup>, Susan D. Landskroener<sup>1</sup>, Jean F. Lemoine<sup>2</sup>, James V. Lavery<sup>1</sup>  
<sup>1</sup>Emory University, Atlanta, GA, United States, <sup>2</sup>Ministry of Public Health and Population, Port-au-Prince, Haiti, <sup>3</sup>Radio Caraïbes, Port-au-Prince, Haiti

5:30 p.m.

**1304**

**GENDER EQUITY IN MASS DRUG ADMINISTRATION CAMPAIGN FOR NEGLECTED TROPICAL DISEASES (NTDS) IN MALI**

Mahamadou Traoré<sup>1</sup>, Massitan Dembélé<sup>1</sup>, Benoit Dembele<sup>2</sup>, Boubacar Guindo<sup>2</sup>, Mama Niélé Doumbia<sup>2</sup>, Seydou Goita<sup>2</sup>, Modibo Keita<sup>2</sup>, Abdoulaye Guindo<sup>1</sup>, Adboul Karim Sidibé<sup>1</sup>, Steven D. Reid<sup>3</sup>, Fama Kondo<sup>2</sup>, Mohamed Lamine Yattara<sup>2</sup>, Yaobi Zhang<sup>4</sup>  
<sup>1</sup>National Direction of Health, Ministry of Health and Public Hygiene, Bamako, Mali, <sup>2</sup>Helen Keller International, Bamako, Mali, <sup>3</sup>Helen Keller International, New York, NY, United States, <sup>4</sup>Helen Keller International, Regional Office for Africa, Dakar, Senegal



## Scientific Session 100

### Kinetoplastida: Epidemiology and Diagnosis

National Harbor 2 (National Harbor Level)

Friday, November 22, 4 p.m. - 5:45 p.m.

#### CHAIR

Caryn Bern

University of California San Francisco, San Francisco, CA, United States

Natalie M. Bowman

University of North Carolina Chapel Hill, Chapel Hill, NC, United States

4 p.m.

1305

#### ESTIMATION OF INCIDENCE RATE OF MORTALITY FOR ANTELEISHMANIAL THERAPIES: A SYSTEMATIC REVIEW OF PUBLISHED LITERATURE FROM 1980 TO 2018

Sauman Singh<sup>1</sup>, Prabin Dahal<sup>1</sup>, Roland Ngu<sup>1</sup>, Brittany Maguire<sup>1</sup>, Piero Olliaro<sup>1</sup>, Kasia Stepniewska<sup>1</sup>, Christine Halleux<sup>2</sup>, Fabiana Alves<sup>3</sup>

<sup>1</sup>University of Oxford, Oxford, United Kingdom, <sup>2</sup>World Health Organization, Geneva, Switzerland, <sup>3</sup>DNDi, Geneva, Switzerland

4:15 p.m.

1306

#### LOCAL AND REGIONAL TRANSMISSION DYNAMICS OF VISCERAL LEISHMANIASIS AND INDICATORS OF ONGOING TRANSMISSION

Luc E. Coffeng, Johanna Munoz, Epke A. Le Rutte, Sake J. De Vlas  
Erasmus MC, University Medical Center, Rotterdam, Netherlands

4:30 p.m.

1307

#### DEEP SEQUENCING TO EXPLORE CONGENITAL TRANSMISSION OF CHAGAS DISEASE

Natalie M. Bowman<sup>1</sup>, Freddy Tinajeros<sup>2</sup>, Oksana Kharabora<sup>1</sup>, Edith Malaga Machaca<sup>3</sup>, Manuela Verastegui<sup>3</sup>, Nery Tirabante<sup>3</sup>, Maria del Carmen Meduina<sup>4</sup>, Billy Scola<sup>2</sup>, Cristian Roca<sup>3</sup>, Edward Valencia Ayala<sup>3</sup>, Steven R. Meshnick<sup>1</sup>, Jonathan J. Juliano<sup>1</sup>, Robert H. Gilman<sup>5</sup>

<sup>1</sup>University of North Carolina-Chapel Hill, Chapel Hill, NC, United States, <sup>2</sup>Asociacion Benefica PRISMA, Lima, Peru, <sup>3</sup>Universidad Peruana Cayetano Heredia, Lima, Peru, <sup>4</sup>Hospital Maternidad Percy Boland, Santa Cruz, Plurinational State of Bolivia, <sup>5</sup>Johns Hopkins Bloomberg School of Public Health, Baltimore, MD, United States

(ACMCIP Abstract)

4:45 p.m.

1308

#### SEQUENCE HETEROGENEITY IN *LEISHMANIA* RNA VIRUS-1 (LRV-1) DETECTED IN STRAINS OF *LEISHMANIA VIANNIA* SPP.

Ruwandi Kariyawasam<sup>1</sup>, Rachel Lau<sup>2</sup>, Eric Shao<sup>3</sup>, Braulio M. Valencia<sup>4</sup>, Alejandro Llanos-Cuentas<sup>5</sup>, Andrea Boggild<sup>5</sup>

<sup>1</sup>Institute of Medical Sciences, Department of Medicine, University of Toronto, Toronto, ON, Canada, <sup>2</sup>Public Health Ontario Laboratories, Toronto, ON, Canada, <sup>3</sup>Tropical Disease Unit, Toronto General Hospital and University of Toronto, Toronto, ON, Canada, <sup>4</sup>Kirby Institute, University of New South Wales, Sydney, Australia, <sup>5</sup>Instituto de Medicina Tropical "Alexander von Humboldt", Lima, Peru

(ACMCIP Abstract)

5 p.m.

1309

#### TRANSMISSION DYNAMICS OF VISCERAL LEISHMANIASIS IN INDIA - ROLE OF ASYMPTOMATICALLY INFECTED INDIVIDUALS

Shyam Sundar

Institute of Medical Sciences, Banaras Hindu University, Varanasi, India

5:15 p.m.

1310

#### NOVEL DETECTION OF *LEISHMANIA* RNA VIRUS-1 (LRV-1) IN *LEISHMANIA VIANNIA PANAMENSIS* CLINICAL ISOLATES

Ruwandi Kariyawasam<sup>1</sup>, Rachel Lau<sup>2</sup>, Braulio M. Valencia<sup>3</sup>, Alejandro Llanos-Cuentas<sup>4</sup>, Andrea Boggild<sup>5</sup>

<sup>1</sup>Institute of Medical Sciences, Department of Medicine, University of Toronto, Toronto, ON, Canada, <sup>2</sup>Public Health Ontario Laboratories, Toronto, ON, Canada, <sup>3</sup>Kirby Institute, University of New South Wales, Sydney, Australia, <sup>4</sup>Instituto de Medicina Tropical "Alexander von Humboldt", Lima, Peru, <sup>5</sup>Tropical Disease Unit, Toronto General Hospital, Toronto, ON, Canada

(ACMCIP Abstract)

5:30 p.m.

1311

#### PREVALENCE OF CHRONIC COMORBIDITIES AMONG PEOPLE WITH CHAGAS DISEASE IN LOS ANGELES, CALIFORNIA

Salvador Hernandez, Colin J. Forsyth, Gisele Munoz, José Amadeo Flores, Michelle Toruno Alonso, Lesner Suncin Rivas, Sheba K. Meymandi  
Center of Excellence for Chagas Disease, Sylmar, CA, United States

## Symposium 101

### Cutting-Edge Technology and Challenges to Map Human Settlements for Planning, Implementation and Monitoring of Community Interventions to Optimize Impact

National Harbor 3 (National Harbor Level)

Friday, November 22, 4 p.m. - 5:45 p.m.

From Indoor Residual Spraying (IRS) to vaccine campaigns, many global health interventions involve door-to-door delivery, with program success dependent on maximizing coverage in high-risk populations. To plan, deploy and measure these resource-intensive interventions efficiently and effectively, target communities must be identified and enumerated to provide accurate population counts and household- or structure-level maps. Remote sensing data and high-resolution satellite imagery have catalyzed a new toolbox for mapping populations and built structures. Population is estimated by combining national census data with more frequently collected indicators like remotely sensed nighttime lights. Settlements, households and buildings may be mapped using remote crowd-sourced tools, such as OpenStreetMap, or estimated using rapidly evolving machine learning algorithms to trace manmade construction from satellite imagery. The use of novel technology has accelerated mapping of population and settlements. However, accuracy of these outputs is limited by imagery dates, and requires methods for verification that range from triangulating image sources to field-based validation. This symposium will describe the latest strategies and technological innovations for creating and validating high-resolution maps for community interventions, presenting the unique crossover of demography, geography, epidemiology and technology from the varied perspectives of an academic institution, non-governmental organizations and a Ministry of Health. The first

two talks will explore novel approaches for mapping and improving validity and accuracy of georeferenced population and manmade structures. Then a real-world case study will be presented to show how validated geo-referenced population and household data are used to quantify human resources and commodities, guide field implementation of the interventions, form the foundational denominators for monitoring and evaluation indicators in the context of indoor residual spray (IRS) and mass drug administration (MDA) campaigns for malaria prevention. Finally, the symposium will look toward the future, introducing pilot results for a powerful new mobile tool for spatial data collection and monitoring that enables on-the-fly updates to census datasets to improve data quality and sustainability of maintaining updated census geodatabases for future campaigns. This will lead to a discussion of lessons learned from experiences in collecting and validating population and household data that is relevant to a broad global health community involved with door-to-door interventions.

#### **CHAIR**

Abigail Ward

*Clinton Health Access Initiative, Inc., Boston, MA, United States*

Jess Beutler

*Humanitarian OpenStreetMap Team, Washington, DC, United States*

4 p.m.

#### **THE LATEST METHODS AND TOOLS FOR MAPPING AND VALIDATION OF POPULATION**

Andrew Tatem

*University of Southampton, Southampton, United Kingdom*

4:20 p.m.

#### **THE LATEST METHODS AND TOOLS FOR MAPPING AND VALIDATION OF MANMADE STRUCTURES**

Jess Beutler

*Humanitarian OpenStreetMap Team, Washington, DC, United States*

4:40 p.m.

#### **POPULATION AND HOUSEHOLD MAPPING IN PLANNING, IMPLEMENTATION, MONITORING AND EVALUATION OF IRS CAMPAIGNS IN BOTSWANA**

Davies Sedisa Ntebela

*Botswana Ministry of Health and Wellness, Gaborone, Botswana*

5 p.m.

#### **PILOTING REVEAL: A MOBILE TOOL AND APPROACH FOR FIELD-BASED MEASUREMENT AND REAL-TIME MAP UPDATES**

Anna Winters

*Akros, Lusaka, Zambia*

5:20 p.m.

#### **DISCUSSION**

### **Symposium 102**

#### **Early Lessons with TCV Introduction: Decision-Making, Pre-Introduction and Implementation**

*National Harbor 4/5 (National Harbor Level)*

Friday, November 22, 4 p.m. - 5:45 p.m.

One of the primary goals of the Typhoid Vaccine Acceleration Consortium (TyVAC) is to reduce the global burden of typhoid by accelerating the introduction of typhoid conjugate vaccines (TCVs) in

countries eligible for support from Gavi, the Vaccine Alliance (Gavi). TCVs can be safely administered to children less than two-years-old, elicits a greater immunogenic response than previous typhoid vaccines and has been recommended by WHO. Gavi has also approved WHO-prequalified TCVs for introduction support in its eligible countries. TyVAC provides technical assistance to countries to apply to Gavi and works with countries through the introductory campaigns and transition to routine immunization. However, decision-making for TCV introduction can be a demanding task for low-income countries (LICs) that may have several new vaccines that are being considered for introduction. Countries need to weigh the value and the cost of introducing one new vaccine relative to another, taking into account the specific vaccination strategy. In addition, the country-specific burden of disease may be needed to justify the cost of introduction. In the absence of high quality, population-based typhoid surveillance data, other types of data such as modelling data and infrastructure assessment must also be considered. This symposium explores the decision-making process for TCV introduction in three African and Asian countries. It examines the activities that were involved with decision-making, Gavi application and preparation for introduction. In each country, limited country-specific typhoid surveillance data demanded that alternative factors such as disease modelling, the presence of typhoid outbreaks, infrastructure assessment, the presence of highly resistant typhoid strains and examination of the typhoid burden in neighboring countries to be considered. Although this limits the ability to identify specific at-risk age groups or geographic areas, it provides good idea of the overall need for a typhoid vaccine relative to other endemic countries where traditional typhoid surveillance is present. The primary objectives of the session are to (1) provide an overview of TCV introduction activities; (2) understand challenges and derive lessons from the three countries that have applied or are in the decision-making phase for TCV introduction; and (3) present a framework to help guide countries that are considering introduction of TCVs in future. The session will feature presentations on TCV introduction from the three countries, use of modelling to determine typhoid burden and will end with a presentation on the guiding framework for TCV introduction in LICs, with ample time for discussion.

#### **CHAIR**

Anthony A. Marfin

*PATH, Seattle, WA, United States*

Kathy Neuzil

*University of Maryland, Baltimore, MD, United States*

4 p.m.

#### **FRAMEWORK FOR SUPPORTING BANGLADESH WITH SIMULTANEOUS VACCINE INTRODUCTION INCLUDING TCVS**

Farzana Muhib

*PATH, Washington, DC, United States*

4:15 p.m.

#### **USING MODELING DATA TO ASSESS DISEASE RISK AND JUSTIFY INTRODUCTION OF TCVS**

Virginia Pitzer

*Yale University, New Haven, CT, United States*

4:30 p.m.  
**TYPHOID BURDEN, DECISION MAKING AND PRE-INTRODUCTORY PROCESSES FOR TCVS IN LIBERIA**

Adolphus Clarke  
Ministry of Health, Monrovia, Liberia

4:45 p.m.  
**INTRODUCING TCV IN EPIDEMIC SITUATION AND PAVING THE WAY FOR EPI ROUTINE INTRODUCTION: LESSONS FROM ZIMBABWE**

Portia Manangazira  
Ministry of Health, Harare, Zimbabwe

5 p.m.  
**DECISION-MAKING FOR INTRODUCTION OF TCVS: A GUIDING FRAMEWORK FOR LOWER INCOME COUNTRIES**

Aziza Mwisongo  
INESS, PATH, Seattle, WA, United States

5:15 p.m.  
**DISCUSSION**

**Symposium 103**

**Applied Helminth Genomics – Translational Aspects**

*National Harbor 10 (National Harbor Level)*  
Friday, November 22, 4 p.m. - 5:45 p.m.

This symposium will review the current status of helminth genomics and will provide an overview of resources available to the research community. The presenters will focus on parasitic worms of medical importance. This session will provide specific examples on how genomic information is successfully used to advance drug development for helminth parasites and how population genomic data can be used to detect the potential development of drug resistance or reintroduction of parasites into areas cleared of helminth infection after mass drug administration. Furthermore, the symposium will provide examples on how genome-wide data can be used to improve DNA diagnostics and serodiagnostics for helminth infections. Furthermore, while in the past genome sequencing for helminth parasites was concentrated in several large sequencing centers in the U.S. and Europe, helminth genome sequencing is nowadays more affordable and more decentralized. Therefore, there is a need for better coordination between all players in the helminth genomics field and this symposium is a step in this direction. Proper sample selection is critical to achieve the best results and linking helminth genome researchers with scientists that collect samples is crucial. This is a key aim of the symposium. In addition, the target audience of this symposium includes researchers involved in drug development, epidemiology and development of diagnostics for helminth infection to strengthen the use of genome information in the respective fields. While helminth genome information for many helminth species is exponentially increasing, the interrogation of this data for translational research is underutilized and this symposium aims to fill this gap.

**CHAIR**

Makedonka Mitreva  
Washington University School of Medicine, St. Louis, MO, United States  
Peter Fischer  
Washington University School of Medicine, St. Louis, United States

4 p.m.  
**GENOMES OF MAJOR PARASITIC WORMS**

Matthew Berriman  
Wellcome Sanger Institute, Hinxton, United Kingdom

4:20 p.m.  
**STRATEGIES TO DEVELOP DNA, ANTIBODY AND ANTIGEN DETECTION ASSAYS FOR HELMINTHS USING GENOMICS DATA**

Peter Fischer  
Washington University School of Medicine, St. Louis, United States

4:40 p.m.  
**CORRELATING PHENOTYPES AND GENOTYPES FOR FILARIAL RESPONSE TO IVERMECTIN: PATHWAYS TO TOOL DEVELOPMENT AND IMPLEMENTATION**

Warwick Grant  
La Trobe University, Bundoora, Australia

5 p.m.  
**FROM MULTIOMICS DATA TO ANTHELMINTIC DRUG DISCOVERY FOR PARASITIC NEMATODES**

Makedonka Mitreva  
Washington University School of Medicine, St. Louis, United States

5:20 p.m.  
**DISCUSSION**

**Scientific Session 104**

**Ectoparasite-Borne Disease**

*National Harbor 11 (National Harbor Level)*  
Friday, November 22, 4 p.m. - 5:45 p.m.

**CHAIR**

Maria P. Fernandez  
Columbia University, New York, NY, United States  
Bekah McMinn  
Colorado State University, Fort Collins, CO, United States

4 p.m.

**1312**

**EXTENSIVE PHENOTYPIC DIVERSITY OF NORTH AMERICAN POWASSAN VIRUS**

Bekah McMinn<sup>1</sup>, Erica Normandin<sup>2</sup>, Sam R. Telford<sup>3</sup>, Anne Piantadosi<sup>2</sup>, Gregory D. Ebel<sup>1</sup>  
<sup>1</sup>Colorado State University, Fort Collins, CO, United States, <sup>2</sup>Broad Institute, Cambridge, MA, United States, <sup>3</sup>Tufts University, N. Grafton, MA, United States

4:15 p.m.

**1313**

**WITHIN-SITE HETEROGENEITY OF LARVAL BLOODMEAL SOURCES FOR NYMPHAL DEER TICKS**

Heidi Goethert, Sam Telford  
Tufts Cummings School of Veterinary Medicine, N. Grafton, MA, United States

4:30 p.m.

**1314**

**VECTOR COMPETENCE OF THE HUMAN FLEA PULEX IRRITANS TO TRANSMIT YESINIA PESTIS**

Adelaide Miarinjara, David M. Bland, Joseph B. Hinnebusch  
Laboratory of Bacteriology, Rocky Mountain Laboratories, National Institute of Allergy and Infectious Diseases, National Institutes of Health, Hamilton, MT, United States

4:45 p.m.

**1315**

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**DIFFERENTIAL EXPRESSION OF *IXODES SCAPULARIS* SALIVARY FACTORS DURING POWASSAN VIRUS-INFECTED TICK FEEDING**

Meghan Hermance<sup>1</sup>, Jose M. Ribeiro<sup>2</sup>, Steven G. Widen<sup>3</sup>, Saravanan Thangamani<sup>1</sup>  
<sup>1</sup>SUNY Upstate Medical University, Syracuse, NY, United States, <sup>2</sup>National Institute of Allergy and Infectious Diseases, Rockville, MD, United States, <sup>3</sup>The University of Texas Medical Branch, Galveston, TX, United States

5 p.m.

**1316**

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**SCRUB TYPHUS PROTOTYPE STRAINS OF *ORIENTIA TSUTSUGAMUSHI*: CURRENT STATUS AND THEIR RELATIONSHIP TO RECENT ISOLATES**

Allen L. Richards<sup>1</sup>, Daryl J. Kelly<sup>2</sup>, Paul A. Fuerst<sup>2</sup>  
<sup>1</sup>Uniformed Services University of the Health Sciences, Bethesda, MD, United States, <sup>2</sup>Ohio State University, Columbus, OH, United States

5:15 p.m.

**1317**

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**TICK GUT MICROBIOTA-GATEWAYS OR GATE KEEPERS?**

Sukanya Narasimhan, Rajeevan Nallakkandi, Ming-Jie Wu, Kathleen DePonte, Morven Graham, Erol Fikrig  
Yale University, New Haven, CT, United States

5:30 p.m.

**1318**

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**PREDICTING THE EXPANSION OF LYME DISEASE TO IDENTIFY GAPS IN CASE REPORTING IN NORTHEASTERN U.S.**

Donal Bisanzio<sup>1</sup>, Maria P. Fernandez<sup>2</sup>, Elisa Martello<sup>3</sup>, Richard Reithinger<sup>1</sup>, Maria Diuk-Wasser<sup>2</sup>  
<sup>1</sup>RTI International, Washington, DC, United States, <sup>2</sup>Columbia University, New York, NY, United States, <sup>3</sup>Independent researcher, Beeston, United Kingdom

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**Special Session 105**

**Speed-Networking with the Experts**

Riverview 1/2/3

Friday, November 22, 5 p.m. - 6:45 p.m.

The sixth annual speed-networking session is organized by the five ASTMH subgroups: ASTMH Committee on Global Health (ACGH), the American Committee on Clinical Tropical Medicine and Travelers' Health (ACCTMTH/Clinical Group), the American Committee of Medical Entomology (ACME), the American Committee on Arthropod-Borne Viruses (ACAV) and the American Committee of Molecular, Cellular and Immunoparasitology (ACMCIP). The session is designed to facilitate interactions between senior scientists, physicians and trainees in an informal setting in order to provide an array of important information on possible career paths in tropical medicine. During this session, students and young career scientists will have an opportunity to briefly meet experts who represent each of the subgroup fields, including scientists in global health, clinicians, epidemiologists, entomologists and basic research scientists. Experts will have a broad range of career experiences working in international posts, policy, federal government, and the military, among others. Experts will share information with students about their career choices, trajectories, challenges along the way, and how they see their work fitting into the larger tropical medicine arena. Students in this session will be designated to a subgroup to match their interests and current educational paths. Please note that this meeting is limited to those who pre-registered for the event.

**CHAIR**

Koya C. Allen (Trainee Member Committee)  
KCA Consulting, Brooklyn, NY, United States

Krutika Kuppalli (Trainee Member Committee)  
Stanford University School of Medicine, Palo Alto, CA, United States

Stephen Fischer (ACGH)  
Naval Medical Research Center, Silver Spring, MD, United States

Jessica Manning (ACGH)  
National Institute of Allergy and Infectious Diseases/National Institutes of Health, Phnom Penh, Cambodia

Michael Harper (ACCTMTH/Clinical Group)  
Johns Hopkins University School of Medicine, Baltimore, MD, United States

Austin T. Jones (ACCTMTH/Clinical Group)  
Tulane University, New Orleans, LA, United States

Maria G. Onyango (ACAV)  
Wadsworth Center, New York State Department of Health, Slingerlands, NY, United States

Diana Ortiz (ACME)  
Westminster College, New Wilmington, PA, United States

Andrew Golnar (ACME)  
U.S. Department of Agriculture-WS NWRC, Fort Collins, CO, United States

Jenna Oberstaller (ACMCIP)  
University of South Florida, Tampa, FL, United States

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**Plenary Session 106**

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**Plenary Session III: Commemorative Fund Lecture**

Maryland C (Ballroom Level)

Friday, November 22, 6:15 p.m. - 7 p.m.

The Commemorative Fund Lecture is presented annually by an invited senior researcher resident in the tropics.

**CHAIR**

Chandy C. John  
Indiana University School of Medicine, Indianapolis, IN, United States

6:15 p.m.

**COMMEMORATIVE FUND LECTURE:  
THE PROSPECTS OF ELIMINATING MALARIA IN HIGH  
BURDEN AFRICAN COUNTRIES**



**Moses R. Kamya, MBChB, MMed, MPH, PhD**

Professor and Dean, School of Medicine, Makerere University, Kampala, Uganda  
Executive Director, Infectious Diseases Research Collaboration (IDRC), Uganda  
Champion of social justice and fighter of infectious diseases in Uganda

Dr. Kamya is a Ugandan physician, academic, researcher, and academic administrator who serves as professor and Dean of the Makerere University School of Medicine in Kampala, Uganda. He is founder member of the Makerere University Joint AIDS Program (MJAP), the Infectious Diseases Institute (IDI) and the Infectious Diseases Research Collaboration (IDRC) in Uganda. For more than 20 years, Dr. Kamya has been researching and teaching infectious diseases, with a particular interest in malaria, HIV and the interaction between malaria and HIV. He is a central figure in training at multiple levels at Makerere University and significantly contributes to shaping the malaria and HIV treatment policies in Uganda. Dr. Kamya has a passion for capacity building of young African scientists. In 2018, Dr. Kamya received the University of California Berkeley (UCB) School



of Public Health honor as one of the 75 most influential public health alumni over UCB's 75-year history.

## Sponsored Symposium

### Gender Dimensions in the Prevention and Control of Neglected Tropical Diseases

*National Harbor 11 (National Harbor Level)*

Friday, November 22, 7:15 p.m. – 9 p.m.

**Sponsored by UNDP, TDR and Liverpool School of Tropical Medicine**

See page 46 for information.

## Saturday, November 23

### Registration

*Potomac Ballroom Lobby (Ballroom Level)*

Saturday, November 23, 7 a.m. - 5 p.m.

### Speaker Ready Room

*Chesapeake A (Ballroom Level)*

Saturday, November 23, 7 a.m. - 5 p.m.

### TropStop - Student/Trainee Lounge

*Maryland 4/5/6 Foyer (Ballroom Level)*

Saturday, November 23, 7 a.m. - 5 p.m.

This casual setting, designed with students, trainees and residents in mind (coffee, internet), is your place for a break from the fast-pace of the meeting and relax with colleagues and friends. Check out the "Career Chats," held next to the TropStop in Maryland 5/6. This will be your opportunity to meet professionals in the fields of tropical medicine and global health who will share their personal career paths and answer your questions about the various bumps and forks in the road.

### Meeting Sign-Up Room

*Chesapeake 6 and Chesapeake 9 (Ballroom Level)*

Saturday, November 23, 7 a.m. - 10 p.m.

### ASTMH Past Presidents Meeting

*National Harbor 12 (National Harbor Level)*

Saturday, November 23, 7 a.m. - 8 a.m.

### Diploma Course Certification Committee Meeting

*Chesapeake 1 (Ballroom Level)*

Saturday, November 23, 7 a.m. - 8 a.m.

## CTropMed® Exam Committee Meeting

*Chesapeake 5 (Ballroom Level)*

Saturday, November 23, 7 a.m. - 8:30 a.m.

## Scientific Program Committee Meeting

*National Harbor 6/7 (National Harbor Level)*

Saturday, November 23, 7 a.m. - 8 a.m.

## Press Room

*Chesapeake 2 (Ballroom Level)*

Saturday, November 23, 7:45 a.m. - 5 p.m.

## Symposium 107

### Can Pyronaridine-Artesunate Be Considered as a Potential Tool for Use in Malaria Elimination Settings?

*Maryland A (Ballroom Level)*

Saturday, November 23, 8 a.m. - 9:45 a.m.

Pyronaridine-artesunate (PA) is the most recent artemisinin-based combination therapy (ACT) to reach the market for the treatment of acute uncomplicated *Plasmodium falciparum* and *P. vivax* malaria in infants >5 kgs, children and adults. This new ACT has been developed in partnership between Shin Poong Pharmaceutical (SPP) and Medicines for Malaria Venture (MMV). The aim of this fixed-dose combination of pyronaridine and artesunate is to provide rapid reduction in parasitemia (artesunate) and to reduce the risk of recrudescence through the slow elimination of pyronaridine. Since the medicine received its first positive scientific opinion through article 58 with the European Medicines Agency in 2012, two large Phase IV studies have been carried out, one with the West African Network for Clinical trials of AntiMalarial drugs (WANECAM), involving 1342 patients and 3360 malaria episodes treated with PA and one with the Central African Network on Tuberculosis AIDS/ HIV and Malaria (CANTAM) involving 7315 patients and 8572 malaria episodes. These two studies have confirmed the favorable safety profile of PA after repeated dosing and in a real-world setting respectively and added to the database of experience in children <1 year. Several groups working in the Greater Mekong subregion (GMS) have already shown interest in using PA in Mass Drug Administration (MDA) settings as a component of accelerated malaria elimination efforts in this region. Before the drug can be considered in this setting, two points need to be taken into consideration; the first is related to the efficacy of PA in this region of the world where the emergence and spread of malaria multidrug resistance is a major concern and where this drug could be used to contain multidrug resistance. The second point relates to the adherence to treatment, since in MDA, a full therapeutic course of antimalarial drug is given irrespective of the presence of symptoms or infection and subjects without malaria symptoms may not be compliant with the full three days of treatment. The first part of this symposium will focus on the efficacy of PA by reporting recent efficacy data from the Therapeutic Efficacy Studies (TES) carried out by the WHO in Cambodia, Vietnam and Myanmar. These studies will inform us about the efficacy of PA in the different countries of the GMS. The second part will present the results of a study carried

out in a population of asymptomatic *P. falciparum* carriers from The Gambia and from Zambia, receiving 1, 2 or 3 days of treatment with PA. This study illustrates the efficacy of PA in asymptomatic carriers when they only take 1 or 2 days of treatment, as might be the case when used in real-world elimination settings.

#### **CHAIR**

Stephan Duparc  
*Medicines for Malaria Venture, Geneva, Switzerland*

Jane E. Achan  
*Medical Research Council, Banjul, Gambia*

8 a.m.

#### **EFFICACY OF PYRONARIDINE-ARTESUNATE AND SINGLE DOSE OF PRIMAQUINE IN EASTERN AND WESTERN CAMBODIA, AREA OF MULTIDRUG RESISTANCE**

Rithea Leang  
*National Center for Parasitology, Entomology and Malaria Control (CNM), Phnom Penh, Cambodia*

8:20 a.m.

#### **EVALUATION OF THE THERAPEUTIC EFFICACY AND SAFETY OF PYRONARIDINE-ARTESUNATE FOR THE TREATMENT OF UNCOMPLICATED FALCIPARUM MALARIA IN AREAS OF ARTEMISININ-RESISTANT FALCIPARUM MALARIA IN VIETNAM**

Ta T. Tinh  
*National Institute of Malariology, Parasitology and Entomology, Malaria Research and Treatment, Hanoi, Vietnam*

8:40 a.m.

#### **EFFICACY OF PYRONARIDINE-ARTESUNATE IN SEVERAL SITES OF MYANMAR**

Kay T. Han  
*Ministry of Health and Sports, Department of Medical Research, Yangon, Myanmar*

9 a.m.

#### **EFFICACY OF 1, 2 AND 3 DAYS OF PYRONARIDINE-ARTESUNATE IN ASYMPTOMATIC PLASMODIUM FALCIPARUM CARRIERS FROM THE GAMBIA AND ZAMBIA**

Jane E. Achan  
*Medical Research Council (MRC) Unit, The Gambia, Banjul, Gambia*

9:20 a.m.  
**DISCUSSION**

### **Symposium 108**

#### **Malaria Resurgence in Venezuela and Its Regional Implications**

*Maryland B (Ballroom Level)*

Saturday, November 23, 8 a.m. - 9:45 a.m.

Venezuela is suffering a man-made complex humanitarian emergency. During the last decade, the country has been under a severe economic, political and social crisis and all national institutions are severely affected. Venezuela leads the World Health Organization (WHO) list as the first country that eradicated malaria in most of its territory in 1961; by now, the country is at the opposite end. Malaria transmission (reported cases) has increased by 1284% (from 29K in 2000 to 411K in 2017). Venezuela had 53% and 80% of the malaria cases and deaths in the Americas region in 2017. The Venezuelan national malaria health information system continues collecting malaria weekly data (cases) and reporting

rates still >80% nationwide, although data quality issues remain. Despite censoring the publication of the malaria epi data by the Venezuelan government, innovative approaches have been used by civil society organizations to monitor this resurgence. At the end of 2018 data showed a worsening scenario with approximately 617K malaria cases. Other malaria indicators such as slide positivity rate, incidence and the population at risk are at historically high levels. Key and vulnerable populations include children, adolescents, young adults and indigenous groups; illegal mining remains the main occupational risk factor. The causes of this malaria resurgence are multifactorial and, occurring as part of the complex humanitarian emergency: internal/external migration, illegal mining, limited funding and operations, implementation of inadequate interventions, etc. Venezuela has a broken health system coping with several challenges, malaria is not an exception. Prevention interventions -people covered by IRS/LLINs and current interventions are limited. Stock-out of antimalarial drugs is common, thus, exacerbating the malaria transmission. The consequences of Venezuela's crisis have even spilled beyond its borders. More than 3.4 million people have left the country since 2015 and malaria cases originated from Venezuela have been brought to neighboring countries. This malaria resurgence in Venezuela is jeopardizing previous gains in the region. This symposium will present an update of the malaria epidemiological situation, the spill over the region, affected populations and the potential solutions to curtail the spread of this epidemic. The speakers come from a wide range of academic disciplines including law, tropical and infectious diseases, pediatrics, public health and ethnobiology. All speakers are involved in the response to this complex humanitarian emergency and in malaria activities, all of them being Venezuelan citizens themselves.

#### **CHAIR**

Mary Ann Torres  
*International Council of AIDS Service Organizations, Toronto, ON, Canada*

Leopoldo Villegas  
*Asociacion Civil Impacto Social (ASOCIS), Tumeremo, Bolivarian Republic of Venezuela*

8 a.m.

#### **MALARIA RESURGENCE IN A COMPLEX HUMANITARIAN EMERGENCY: THINKING OUT OF THE BOX**

Leopoldo Villegas  
*ASOCIS, Tumeremo, Bolivarian Republic of Venezuela*

8:15 a.m.

#### **ENTOMOLOGY SURVEILLANCE IN A CHALLENGING OPERATING ENVIRONMENT**

Yasmin Rubio-Palis  
*Universidad de Carabobo, Maracay, Bolivarian Republic of Venezuela*

8:30 a.m.

#### **MALARIA DYNAMICS AMONG CHILDREN, ADOLESCENT GIRLS AND YOUNG WOMEN IN BOLIVAR STATE, VENEZUELA**

Maria Eugenia Guevara  
*Asociacion Civil Impacto Social, Tumeremo, Bolivarian Republic of Venezuela*

8:45 a.m.

## **INDIGENOUS POPULATIONS AND MALARIA: AN ETHNOBIOLOGIST VIEW**

Eglee Zent

*Instituto Venezolano de Investigaciones Cientificas (IVIC), Altos de Pipe, Bolivarian Republic of Venezuela*

9 a.m.

## **DISCUSSION**

### **Symposium 109**

#### **Rethinking Gametocyte Biology in Malaria Parasites in an Era of Elimination**

*Maryland C (Ballroom Level)*

Saturday, November 23, 8 a.m. - 9:45 a.m.

Gametocytes are the only malaria parasite stage capable of transmission to mosquitoes, and hence there has been a resurgence in gametocyte research in the wake of renewed efforts for malaria elimination. Such efforts have been directed towards developing assays for anti-gametocyte drugs and for gametocyte diagnostics, to improving specific serology for parasite transmission epidemiology and to refining mathematical modeling to describe and predict transmission dynamics. Underlying the successful development of these tools in recent years has been unprecedented interest in gametocyte biology across the malaria scientific community. The symposium aims to provide an update of how recent results on diverse fundamental aspects of gametocyte biology are impacting on developing and improving tools and strategies to target the *Plasmodium* transmission cycle, with a perspective on malaria elimination and parasite eradication.

#### **CHAIR**

Matthias Marti

*University of Glasgow, Glasgow, United Kingdom*

Pietro Alano

*Istituto Superiore di Sanità, Rome, Italy*

8 a.m.

#### **HOST PARASITE INTERPLAY IN *P. FALCIPARUM* GAMETOCYTE DEVELOPMENT: A STICKY BUSINESS?**

Pietro Alano

*Istituto Superiore di Sanità, Rome, Italy*

8:20 a.m.

#### **REMODELLING OF THE PARASITE CYTOSKELETON AND THE HOST ERYTHROCYTE IN *PLASMODIUM FALCIPARUM* GAMETOCYTES**

Leann Tilley

*University of Melbourne, Parkville, Australia*

8:40 a.m.

#### **TARGETING BIOMECHANICAL PROPERTIES OF INFECTED RED BLOOD CELLS TO BLOCK MALARIA PARASITE TRANSMISSION**

Catherine Lavazec

*CNRS 8104, Institut Cochin, Paris, France*

9 a.m.

#### **KILLING THE 'WALKING DEAD': THE CHALLENGES IN FINDING TRANSMISSION-BLOCKING ANTIMALARIALS**

Lyn-Marie Birkholtz

*University of Pretoria, Pretoria, South Africa*

9:20 a.m.

#### **GAMETOCYTES IN THE BONE MARROW: BIOLOGY AND TRANSLATION**

Matthias Marti

*University of Glasgow, Glasgow, United Kingdom*

### **Symposium 110**

#### **Achieving and Monitoring High Mass Drug Administration Treatment Coverage in Soil-Transmitted Helminth Control and Elimination Programs**

*Maryland D (Ballroom Level)*

Saturday, November 23, 8 a.m. - 9:45 a.m.

In order to achieve sustained control or elimination of Preventive Chemotherapy (PC) NTDs, it is necessary for programs to attain and measure high mass drug administration (MDA) treatment coverage, and rapidly respond when targeted thresholds are not achieved. This symposium will highlight strategies and tools to deliver school-age targeted or community-wide MDA for STH with high coverage and to measure MDA treatment coverage using a variety of distinct approaches including real-time MDA coverage monitoring, post-MDA coverage surveys, and urine assays to measure albendazole metabolites. This symposium will focus on findings from the DeWorm3 Project, a series of cluster randomized trials testing the feasibility of interrupting STH transmission. The symposium co-chair will give a brief introduction to the symposium, describing the importance of measuring MDA coverage in the context of WHO NTD progress reports and global control and elimination objectives. The first presentation will present on efforts to enumerate populations in Vellore, India using annual censusing to provide an accurate denominator for determining STH treatment coverage. The speaker will highlight challenges and potential solutions to achieving coverage during MDA including socio-demographic factors and the importance of identifying migratory populations in order to understand how coverage dynamics are affected. The second speaker will discuss MDA coverage levels achieved during implementation of the DeWorm3 Project across different contexts including a remote setting in Malawi; a peri-urban setting in Benin; and tribal and plains communities in India; with discussion of challenges and opportunities unique to each context considered. The coverage data reported from routine data monitoring, coverage surveys, and urine-based validation surveys will be compared and discussed in the context of triangulation of coverage measures. The third speaker will present a novel, open-source electronic treatment register and dynamic data system for strengthening implementation of MDA through household visit tracking, real-time monitoring, and improved reporting. The presentation will describe the development of the system and potential application for other PC-NTDs and linkage with national NTD information management systems. The final speaker will present on implementation science tools used to identify factors that facilitate or impede delivery of MDA with high treatment coverage. The discussion includes a description

of community sensitization activities and their influence on MDA treatment coverage, as well as findings from coverage surveys regarding factors influencing participation. The session will conclude with questions and participant discussion.

#### CHAIR

Arianna Means  
*University of Washington, Seattle, WA, United States*

Judd Walson  
*University of Washington, Seattle, United States*

8 a.m.

#### **THE ROLE OF ANNUAL CENSUSING IN DETERMINING POPULATION DENOMINATORS FOR ACCURATE ESTIMATION OF NTD TREATMENT COVERAGE**

Sitara S. Ajjampur  
*Christian Medical College and Hospital, Vellore, Tamil Nadu, India*

8:20 a.m.

#### **DETERMINING AND COMPARING MDA TREATMENT COVERAGE USING MULTIPLE DATA SOURCES: INTERIM COVERAGE RESULTS FROM THE DEWORM3 PROJECT**

Parfait Houngbegnon  
*Institut de Recherche Clinique du Bénin (IRCB), Cotonou, Benin*

8:40 a.m.

#### **DYNAMIC DATA SYSTEM FOR STRENGTHENING IMPLEMENTATION OF MDA AND IMPROVING TREATMENT COVERAGE DATA**

William E. Oswald  
*London School of Hygiene & Tropical Medicine, London, United Kingdom*

9 a.m.

#### **CORRELATES OF HIGH AND LOW MDA TREATMENT COVERAGE: AN IMPLEMENTATION SCIENCE APPROACH**

Arianna Means  
*University of Washington, Seattle, WA, United States*

9:20 a.m.

#### **DISCUSSION**

### **Scientific Session 111**

#### **Dengue: Transmission and Virus-Host Interactions**

*Potomac A (Ballroom Level)*

Saturday, November 23, 8 a.m. - 9:45 a.m.

#### CHAIR

Leah Katzelnick  
*University of California Berkeley, Berkeley, CA, United States*

Tyler M. Sharp  
*Centers for Disease Control and Prevention, San Juan, PR, United States*

8 a.m.

**1319**

#### **PRIOR DENGUE VIRUS INFECTION IS ASSOCIATED WITH INCREASED VIRAL LOAD IN PATIENTS INFECTED WITH DENGUE BUT NOT ZIKA VIRUS**

Tyler M. Sharp<sup>1</sup>, Gilberto Santiago<sup>1</sup>, Eli Rosenberg<sup>2</sup>, Iris I. Sosa Cardona<sup>1</sup>, Luisa Alvarado<sup>3</sup>, Gabriela Paz-Bailey<sup>1</sup>, Jorge L. Munoz-Jordan<sup>1</sup>  
<sup>1</sup>Centers for Disease Control and Prevention, San Juan, PR, United States, <sup>2</sup>University at Albany School of Public Health, Department of Epidemiology and Biostatistics, Rensselaer, NY, United States, <sup>3</sup>San Lucas Episcopal Hospital, Ponce, PR, United States

8:15 a.m.

**1320**

#### **FLAVIVIRUS NS1 PROTEINS FACILITATE VIRUS DISSEMINATION THROUGH ENDOTHELIAL CELLS AND ENHANCE VIRUS INFECTION**

Scott B. Biering<sup>1</sup>, Henry Puerta-Guardo<sup>1</sup>, Michael J. DiBiasio-White<sup>2</sup>, Chunling Wang<sup>1</sup>, Thu Cao<sup>2</sup>, Diego A. Espinosa<sup>1</sup>, Dustin R. Glasner<sup>1</sup>, Richard J. Kuhn<sup>2</sup>, Eva Harris<sup>1</sup>

<sup>1</sup>Division of Infectious Diseases and Vaccinology, School of Public Health, University of California Berkeley, Berkeley, CA, United States, <sup>2</sup>Department of Biological Sciences, Purdue University, West Lafayette, IN, United States

8:30 a.m.

**1321**

#### **THE WING DOMAIN OF DENGUE VIRUS NON-STRUCTURAL PROTEIN 1 IS REQUIRED FOR BINDING TO ENDOTHELIAL CELLS AND INDUCING HYPERPERMEABILITY**

Nicholas T.N. Lo, Chunling Wang, Scott B. Biering, Kendall E. Lee, Mark Patana, Eva Harris

*Division of Infectious Diseases and Vaccinology, School of Public Health, University of California Berkeley, Berkeley, CA, United States*

8:45 a.m.

**1322**

#### **CAUGHT ON CAMERA: VISUAL AND BIOCHEMICAL EVIDENCE OF ENDOTHELIAL GLYCOCALYX DISRUPTION IN DENGUE AND ASSOCIATION WITH PLASMA LEAK SEVERITY**

Lam K. Phung<sup>1</sup>, Angela McBride<sup>1</sup>, Quyen T. Nguyen<sup>1</sup>, Duyen T. Huynh<sup>1</sup>, Hans Vink<sup>2</sup>, Bridget Wills<sup>3</sup>, Sophie Yacoub<sup>1</sup>

<sup>1</sup>Oxford University Clinical Research Unit - HCMC, Ho Chi Minh City, Vietnam, <sup>2</sup>Maastricht University, Maastricht, Netherlands, <sup>3</sup>University of Oxford, Oxford, United Kingdom

9 a.m.

**1323**

#### **PRIMARY DENGUE SEROTYPE 2 INFECTION IN HUMANS IMPRINTS A BLOOD TRANSCRIPTOMIC PROFILE AFTER VIRUS CLEARANCE**

Sean A. Diehl<sup>1</sup>, John Hanley<sup>1</sup>, Korin Eckstrom<sup>1</sup>, Dorothy M. Dickson<sup>1</sup>, Nicholas Selig<sup>1</sup>, Stephen S. Whitehead<sup>2</sup>, Anna P. Durbin<sup>3</sup>, Kristen K. Pierce<sup>1</sup>, Beth D. Kirkpatrick<sup>1</sup>, Julie Dragon<sup>1</sup>, Donna Rizzo<sup>1</sup>, Sam V. Scarpino<sup>4</sup>

<sup>1</sup>University of Vermont, Burlington, VT, United States, <sup>2</sup>National Institute of Allergy and Infectious Diseases, Bethesda, MD, United States, <sup>3</sup>Johns Hopkins University School of Public Health, Baltimore, MD, United States, <sup>4</sup>Northeastern University, Boston, MA, United States

9:15 a.m.

**1324**

#### **DENGUE VIRUS 2 GENOTYPIC VARIATION MEDIATES NEUTRALIZATION SENSITIVITY TO HUMAN ANTIBODY RESPONSES**

David R. Martinez, Boyd Yount, Ralph S. Baric  
*University of North Carolina at Chapel Hill, Chapel Hill, NC, United States*

9:30 a.m.

**1325**

#### **ANTI-FLAVIVIRUS ANTIBODY DYNAMICS BEFORE, DURING AND AFTER THE ARRIVAL OF ZIKA IN THE AMERICAS**

Leah Katzelnick<sup>1</sup>, Damaris Collado<sup>2</sup>, Douglas Elizondo<sup>2</sup>, Juan Carlos Mercado<sup>3</sup>, Lionel Gresh<sup>2</sup>, José Victor Zambrana<sup>2</sup>, Amy Schiller<sup>4</sup>, Sonia Arguello<sup>2</sup>, Raquel Burger-Calderon<sup>2</sup>, Tatiana Miranda<sup>2</sup>, Sergio Ojeda<sup>2</sup>, Nery Sanchez<sup>2</sup>, Brenda Lopez<sup>2</sup>, M. Elizabeth Halloran<sup>5</sup>, Josefina Coloma<sup>1</sup>, Aubree Gordon<sup>4</sup>, Guillermina Kuan<sup>6</sup>, Angel Balmaseda<sup>3</sup>, Eva Harris<sup>1</sup>

<sup>1</sup>Division of Infectious Diseases and Vaccinology, School of Public Health, University of California Berkeley, Berkeley, CA, United States, <sup>2</sup>Sustainable Sciences Institute, Managua, Nicaragua, <sup>3</sup>Laboratorio Nacional de Virología, Centro Nacional de Diagnóstico y Referencia, Ministry of Health, Managua, Nicaragua, <sup>4</sup>Department of Epidemiology, School of Public Health, University of Michigan, Ann Arbor, MI,



## Symposium 112

### Climate Change and Tropical Medicine: The Issue of Our Day

Potomac B (Ballroom Level)

Saturday, November 23, 8 a.m. - 9:45 a.m.

Overwhelming evidence collected in recent decades shows that the Earth's climate is warming as a result of human activity. The effects on our natural ecosystems are documented with increasing clarity and precision by natural scientists. Combined with the impacts of population growth and anthropogenic habitat perturbation, the results are potentially catastrophic for life on earth, including humans. While the natural science data (e.g. warming of the earth) are irrefutable, less clear are the immediate and long-term impacts on human health. In this symposium, we will explore both the direct (e.g. heat-stroke, injury due to severe weather events) and indirect (e.g. ecological changes in abundance and distribution of arthropod vectors and vertebrate reservoirs, potentially altering probability of pathogen transmission) risks climate change and habitat perturbation pose to human health, and what steps must be taken to mitigate these risks.

#### CHAIR

Anna Stewart Ibarra  
Scientific Director, InterAmerican Institute for Global Change Research, Montevideo, Uruguay

Rachel J. Sippy  
State University of New York Upstate Medical University, Syracuse, NY, United States

#### 8 a.m. CLIMATE CHANGE IMPACTS ON EMERGING ZOOLOGICAL INFECTION DISEASES

Town Peterson  
University of Kansas, Lawrence, KS, United States

#### 8:25 a.m. HEAT, CHRONIC KIDNEY DISEASE OF UNKNOWN ORIGIN (CKDU) AND WORKER HEALTH IN CENTRAL AMERICA

Lee H. Newman  
University of Colorado, Denver, CO, United States

#### 8:50 a.m. THE INTERACTION OF CLIMATE AND POLITICAL CONFLICT: VECTOR BORNE DISEASES AND THE SITUATION IN VENEZUELA

Maria Grillet  
Central University of Venezuela, Caracas, Bolivarian Republic of Venezuela

#### 9:15 a.m. GLOBAL STRATEGIES AND BEST PRACTICES TO MITIGATE THE EFFECTS OF CLIMATE ON HEALTH

Marcelo Korc  
Pan American Health Organization, Washington, DC, United States

## Symposium 113

### From Biomarker Discovery to Differential Diagnosis in Malaria Endemic Settings

Potomac C (Ballroom Level)

Saturday, November 23, 8 a.m. - 9:45 a.m.

Limited human and laboratory capacity, indistinguishable clinical syndromes and a wide range of potential pathogens make diagnosis and management of febrile illness challenging in rural tropical settings. Host biomarker testing represents a strategy that can complement conventional pathogen-directed tests, with the potential to be robust to heterogeneity in fever etiology and add value for patients with variable illness trajectories. This translational approach could support treatment decisions in resource-limited regions, and contribute to improved patient outcomes and allocation of scarce resources, while reducing drug pressure and decelerating the development of antimicrobial resistance.

#### CHAIR

Nicole S. Struck  
Bernhard Nocht Institute for Tropical Medicine, Hamburg, Germany  
Sabine Dittrich  
Foundation for Innovative New Diagnostics (FIND), Geneva, Switzerland

#### 8 a.m. CAN HOST BIOMARKERS PREDICT SEVERE FEBRILE ILLNESS AND IMPROVE CLINICAL OUTCOME WHEN USED DURING MANAGEMENT AT PRIMARY CARE LEVEL?

Valérie D'Acremont  
Swiss Tropical and Public Health Institute (SwissTPH), Basel, Switzerland

#### 8:20 a.m. CYTOKINE PROFILE DISTINGUISHES CHILDREN WITH *P. FALCIPARUM* MALARIA FROM THOSE WITH BACTERIAL BLOOD STREAM INFECTIONS

Nicole S. Struck  
Bernhard Nocht Institute for Tropical Medicine, Hamburg, Germany

#### 8:40 a.m. COULD HOST BIOMARKERS SUPPORT MANAGEMENT OF FEBRILE ILLNESS IN REMOTE TROPICAL SETTINGS: WHAT COULD BE DONE NOW AND IN THE FUTURE?

Arjun Chandna  
Mahidol University, Bangkok, Thailand

#### 9 a.m. BM2DX - INTRODUCTION TO OPEN ACCESS BIOMARKER DEVELOPMENT TRACKER TO GUIDE DIAGNOSTIC DEVELOPMENT FOR BACTERIAL VERSUS NON-BACTERIAL TESTS

Sabine Dittrich  
Foundation for Innovative New Diagnostics (FIND), Geneva, Switzerland

#### 9:20 a.m. DISCUSSION

## Symposium 114

### Clinical Research in Public Health Emergencies: Bridging the Last Gap in the Medical Countermeasures Pathway

Potomac D (Ballroom Level)

Saturday, November 23, 8 a.m. - 9:45 a.m.

The landscape for medical countermeasures (MCM) is complex; fraught with potential failure points. MCMs may include vaccines, therapeutics and diagnostic platforms for public health emergencies. Shepherding MCMs to approval is challenging, lengthy and often cost prohibitive. One critical crossroad is conducting efficient and effective clinical trials for drugs that have successfully traversed the pathway far enough to warrant evaluation in humans. As many of the high-risk diseases involve outbreaks with small affected populations at any given time, often in low-resource settings, it is of utmost importance that human subjects research is conducted carefully and systematically, and with enough foresight to reach an efficiency in operationalizing trials early in the outbreak. This symposium will explore the challenges of systematically and rigorously evaluating MCMs in the outbreak setting and beyond into global public health emergencies. The session will evaluate best practices for implementing ethics and Institutional review board-approved studies in low- and high-resource settings in the face of an outbreak. This symposium will feature speakers from several invested parties along the MCM pathway, including the U.S. Food and Drug Administration (FDA), the National Institutes of Health (NIH), the Biomedical Advanced Research and Drug Authority (BARDA) and the National Ebola Training and Education Center's (NETEC's) Special Pathogens Research Network (SPRN). The speakers will also include on-the-ground experience dealing with use of investigational products and running clinical trials in remote settings, specifically related to the current Ebola outbreak in the DRC and prior West Africa Ebola outbreak.

#### CHAIR

Lauren M. Sauer

Johns Hopkins University, Baltimore, MD, United States

Mark Kortepeter

University of Nebraska, Omaha, NE, United States

8 a.m.

#### FUNDING NEEDS AND AGENDA SETTING

Jo Ellen Schweinle

Biomedical Advanced Research and Development Authority, Washington, DC, United States

8:10 a.m.

#### THE REGULATORY ENVIRONMENT

Barbara A. Styr

U.S. Food and Drug Administration, Washington, DC, United States

8:20 a.m.

#### DEVELOPING THE INTERNATIONAL PROTOCOL

Kevin Barrett

National Institutes of Health, Bethesda, MD, United States

8:30 a.m.

#### OPERATIONAL CONSIDERATIONS FOR FIELD IMPLEMENTATION

William A. Fischer

University of North Carolina School of Medicine, Chapel Hill, NC, United States

8:40 a.m.

#### OPERATIONALIZING RESEARCH PROTOCOLS WITH LOCAL CONTEXT

Julius Lutwama

Uganda Virus Research Institute, Entebbe, Uganda

8:50 a.m.

#### DISCUSSION

### Scientific Session 115

#### Kinetoplastida: Molecular Biology and Immunology

National Harbor 2 (National Harbor Level)

Saturday, November 23, 8 a.m. - 9:45 a.m.

#### CHAIR

Edgar M. Carvalho

Serviço de Imunologia, Federal University of Bahia, Salvador, Brazil

Hira L. Nakhasi

Food and Drug Administration, Bethesda, MD, United States

8 a.m.

1326

#### INTERACTION OF LIVE ATTENUATED *LEISHMANIA* PARASITES INFECTED NEUTROPHILS WITH DENDRITIC CELLS AUGMENTS CD4<sup>+</sup>TH1 CELL PRIMING IN C57BL/6 MOUSE

Parna Bhattacharya<sup>1</sup>, Nevien Ismail, Subir Karmakar, Kazuyo Takeda, Ranadhir Dey,

Hira L. Nakhasi

Food and Drug Administration, Silver Spring, MD, United States

8:15 a.m.

1327

#### CHAGAS DISEASE IN THE NEW YORK CITY METROPOLITAN AREA

Crystal Zheng<sup>1</sup>, Orlando Quintero<sup>2</sup>, Elizabeth K. Revere<sup>3</sup>, Michael B. Oey<sup>3</sup>, Fabiola Espinoza<sup>4</sup>, Yoram A. Puius<sup>2</sup>, Diana Ramirez-Baron<sup>5</sup>, Carlos R. Salama<sup>6</sup>, Luis F. Hidalgo<sup>7</sup>, Fabiana S. Machado<sup>8</sup>, Omar Saeed<sup>2</sup>, Jooyoung Shin<sup>2</sup>, Snehal R. Patel<sup>2</sup>, Christina M. Coyle<sup>9</sup>, Herbert B. Tanowitz<sup>9</sup>

<sup>1</sup>Tulane University, New Orleans, LA, United States, <sup>2</sup>Montefiore Medical Center, Bronx, NY, United States, <sup>3</sup>Donald and Barbara Zucker School of Medicine at Hofstra, Manhasset, NY, United States, <sup>4</sup>Metro Infectious Diseases Consultants, Burr Ridge, IL, United States, <sup>5</sup>Grameen VidaSana Clinic, Queens, NY, United States, <sup>6</sup>Icahn School of Medicine at the Mount Sinai Hospital, Queens, NY, United States, <sup>7</sup>University of Kentucky College of Medicine, Lexington, KY, United States, <sup>8</sup>Federal University of Minas Gerais, Belo Horizonte, Brazil, <sup>9</sup>Albert Einstein College of Medicine, Bronx, NY, United States

8:30 a.m.

1328

**THE TRANSCRIPTION FACTORS BLIMP-1 AND HOBIT DETERMINE THE PATHOGENIC PHENOTYPE CD8 T CELLS EXHIBIT IN LEISHMANIAL LESIONS**

Fernanda O. Novais, Phillip Scott  
University of Pennsylvania, Philadelphia, PA, United States

8:45 a.m.

1329

**MARKER FREE LIVE ATTENUATED LEISHMANIA MAJOR (LMCEN-/-) INDUCES STRONG HOST PROTECTIVE IMMUNE RESPONSE AGAINST VECTOR BITE TRANSMITTED VISCERAL LEISHMANIASIS**

Ranadhir Dey<sup>1</sup>, Subir Karmakar<sup>1</sup>, Nevien Ismail<sup>1</sup>, Fabiano Oliveira<sup>2</sup>, Wenwei Zhang<sup>3</sup>, Shinjiro Hamano<sup>4</sup>, Greg Matlashewski<sup>3</sup>, Shaden Kamhawi<sup>2</sup>, Abhay Satoskar<sup>5</sup>, Jesus G. Valenzuela<sup>2</sup>, Hira L. Nakhasi<sup>1</sup>  
<sup>1</sup>CBER/Food and Drug Administration, Silver Spring, MD, United States, <sup>2</sup>National Institute of Allergy and Infectious Diseases/National Institutes of Health, Rockville, MD, United States, <sup>3</sup>McGill University, Montreal, QC, Canada, <sup>4</sup>Nagasaki University, Nagasaki, Japan, <sup>5</sup>Ohio State University, Ohio, MD, United States

9 a.m.

1330

**PARASITE LOAD AND HOST CYTOTOXICITY-RELATED GENE EXPRESSION ARE POTENTIAL BIOMARKERS FOR TREATMENT OUTCOME**

Camila Farias Amorim<sup>1</sup>, Fernanda Novais<sup>1</sup>, Ba Nguyen<sup>1</sup>, Ana M. Mistic<sup>1</sup>, Lucas P. Carvalho<sup>2</sup>, Edgar M. Carvalho<sup>2</sup>, Daniel Beiting<sup>1</sup>, Phillip Scott<sup>1</sup>  
<sup>1</sup>University of Pennsylvania, Philadelphia, PA, United States, <sup>2</sup>Universidade Federal da Bahia, Salvador, Brazil

(ACMCIP Abstract)

9:15 a.m.

1331

**DISSEMINATED LEISHMANIASIS IS ASSOCIATED WITH THE ABILITY OF *L. BRAZILIENSIS* TO SURVIVE IN NEUTROPHILS AND MONOCYTES AND IN DOWN MODULATE PHAGOCYTES FUNCTION**

Edgar M. Carvalho<sup>1</sup>, Olívia Bacellar<sup>1</sup>, Thiago Marconi<sup>2</sup>, Andreza Dórea<sup>1</sup>, Walker Nonato<sup>1</sup>, Lucas P. Carvalho<sup>1</sup>, Albert Schriefer<sup>1</sup>, Paulo Machado<sup>1</sup>, Luiz Henrique Guimarães<sup>3</sup>  
<sup>1</sup>Federal University of Bahia, Salvador, Brazil, <sup>2</sup>Gonçalo Moniz Institute (IGM), Fiocruz, Bahia, Salvador, Brazil, <sup>3</sup>Federal University of the South of Bahia, Itabuna, Brazil

(ACMCIP Abstract)

9:30 a.m.

1332

**EVALUATION OF PROTECTIVE IMMUNITY INDUCED BY *LDCEN*<sup>-/-</sup> IN PRESENCE OF PRE-EXISTING *PLASMODIUM YOELII* INFECTION**

Sreenivas Gannavaram, Charles Thomas, Abraar Muneem, Hong Zheng, Sanjai Kumar, Hira L. Nakhasi  
US Food and Drug Administration, Silver Spring, MD, United States

(ACMCIP Abstract)

**Scientific Session 116**

**Mosquitoes - Vector Biology - Epidemiology I**

National Harbor 3 (National Harbor Level)  
Saturday, November 23, 8 a.m. - 9:45 a.m.

**CHAIR**

Talya Shragai  
Cornell University, Ithaca, NY, United States

Michael C. Wimberly  
University of Oklahoma, Norman, OK, United States

8 a.m.

1333

**THE 'PREMONITION PROVING GROUND': A SIMULATED FIELD ENVIRONMENT FOR DEVELOPING NOVEL MOSQUITO SURVEILLANCE TOOLS**

Isaiah Hoyer<sup>1</sup>, Michael R. Reddy<sup>1</sup>, Douglas E. Norris<sup>2</sup>, Nicolas Villar<sup>1</sup>, Marcel Gavrilu<sup>1</sup>, Ethan K. Jackson<sup>1</sup>  
<sup>1</sup>Microsoft Research, Redmond, WA, United States, <sup>2</sup>Johns Hopkins University Bloomberg School of Public Health, Baltimore, MD, United States

8:15 a.m.

1334

**ARBOMAP: SOFTWARE INTEGRATING ENVIRONMENTAL MONITORING WITH PUBLIC HEALTH SURVEILLANCE FOR ARBOVIRUS FORECASTING**

Michael C. Wimberly<sup>1</sup>, Justin K. Davis<sup>1</sup>, Michael C. Hildreth<sup>2</sup>, Joshua Clayton<sup>3</sup>  
<sup>1</sup>University of Oklahoma, Norman, OK, United States, <sup>2</sup>South Dakota State University, Brookings, SD, United States, <sup>3</sup>South Dakota Department of Health, Pierre, SD, United States

8:30 a.m.

1335

**NEW INSIGHTS ON DIAPAUSE CUES: INVASIVE *Aedes albopictus* USE A BET-HEDGING STRATEGY ALONG THEIR NORTHEASTERN UNITED STATES EDGE**

Talya Shragai, Laura Harrington  
Cornell University, Ithaca, NY, United States

8:45 a.m.

1336

**SEASONAL TRANSCRIPTIONAL CHANGES OF *An. coluzzii* MOSQUITOES DURING DRY SEASON AESTIVATION**

Benjamin J. Krajacich<sup>1</sup>, Adama Dao<sup>2</sup>, Alpha Yaro<sup>2</sup>, Moussa Diallo<sup>2</sup>, Djibril Samake<sup>2</sup>, Zana Lamissa<sup>2</sup>, Ousmane Yossi<sup>2</sup>, Margery Sullivan<sup>1</sup>, Roy Faiman<sup>1</sup>, Jose Ribeiro<sup>1</sup>, Tovi Lehmann<sup>1</sup>  
<sup>1</sup>National Institute of Allergy and Infectious Diseases, Rockville, MD, United States, <sup>2</sup>Malaria Research and Training Center, University of Sciences, Techniques and Technologies, Bamako, Mali

9 a.m.

1337

**ANALYSIS OF THE GENETIC AND NON-GENETIC FACTORS THAT INFLUENCE THE MICROBIAL COMPOSITION OF MOSQUITOES**

Haikel N. Bogale<sup>1</sup>, Matthew Cannon<sup>1</sup>, Kalil Keita<sup>2</sup>, Denka Camara<sup>2</sup>, Yaya Barry<sup>2</sup>, Moussa Keita<sup>2</sup>, Drissa Coulibaly<sup>3</sup>, Abdoulaye Kone<sup>3</sup>, Ogobara Doumbo<sup>4</sup>, Mahamadou Thera<sup>3</sup>, Christopher Plowe<sup>5</sup>, Mark Travassos<sup>1</sup>, Seth Irish<sup>6</sup>, David Serre<sup>1</sup>  
<sup>1</sup>University of Maryland, Baltimore, MD, United States, <sup>2</sup>National Malaria Control Program, Conakry, Guinea, <sup>3</sup>Malaria Research and Training Center, Bamako, Mali, <sup>4</sup>Malaria Research Training Center, Bamako, Mali, <sup>5</sup>Duke Global Health Institute, Durham, NC, United States, <sup>6</sup>Centers for Disease Control and Prevention, Atlanta, GA, United States

9:15 a.m.

1338

**CHARACTERIZING VECTORS OF *PLASMODIUM FALCIPARUM* RESIDUAL TRANSMISSION IN AN ELIMINATION SETTING IN CHOMA DISTRICT, ZAMBIA**

Mary E. Gebhardt<sup>1</sup>, Kelly M. Searle<sup>2</sup>, Tamaki Kobayashi<sup>1</sup>, Timothy M. Shields<sup>1</sup>, Harry Hamapumbu<sup>3</sup>, Limonty Simubali<sup>3</sup>, Twig Mudenda<sup>3</sup>, Philip E. Thuma<sup>3</sup>, Jennifer C. Stevenson<sup>1</sup>, William J. Moss<sup>1</sup>, Douglas E. Norris<sup>1</sup>

<sup>1</sup>Johns Hopkins Bloomberg School of Public Health, Baltimore, MD, United States, <sup>2</sup>Division of Epidemiology and Community Health, Minneapolis, MN, United States, <sup>3</sup>Macha Research Trust, Macha, Zambia

9:30 a.m.

1339

**PREDICTING SPILLOVER OF YELLOW FEVER VIRUS TO HUMANS USING VECTOR AND PRIMATE ECOLOGY**

Marissa L. Childs, Nicole Nova, Justine Colvin, Erin A. Mordecai  
Stanford University, Stanford, CA, United States

**Scientific Session 117**

**Bacteriology: Cholera and Other Intestinal Infections**

National Harbor 4/5 (National Harbor Level)

Saturday, November 23, 8 a.m. - 9:45 a.m.

**CHAIR**

Richelle C. Charles

Massachusetts General Hospital, Boston, MA, United States

Shirlee Wohl

Johns Hopkins Bloomberg School of Public Health, Baltimore, MD, United States

8 a.m.

1340

**EVALUATION OF IMMUNE RESPONSES TO O-SPECIFIC POLYSACCHARIDE (OSP) IN NORTH AMERICAN HEALTHY ADULTS CHALLENGED WITH *VIBRIO CHOLERA* O1 INABA**

Motaher Hossain<sup>1</sup>, Kamrul Islam<sup>1</sup>, Meagan Kelly<sup>2</sup>, Leslie M. Mayo-Smith<sup>2</sup>, Richelle C. Charles<sup>2</sup>, Ana Weil<sup>2</sup>, Taufiqur R. Bhuiyan<sup>1</sup>, Pavol Kovac<sup>3</sup>, Peng Xu<sup>4</sup>, Regina C. LaRocque<sup>2</sup>, Stephen B. Calderwood<sup>2</sup>, Jakub K. Simon<sup>5</sup>, Wilbur H. Chen<sup>6</sup>, Douglas Haney<sup>7</sup>, Michael Lock<sup>7</sup>, Caroline E. Lyon<sup>8</sup>, Beth D. Kirkpatrick<sup>9</sup>, Mitchell Cohen<sup>9</sup>, Myron M. Levine<sup>6</sup>, Marc Gurwith<sup>7</sup>, Daniel T. Leung<sup>10</sup>, Andrew Azman<sup>11</sup>, Jason B. Harris<sup>12</sup>, Firdausi Qadri<sup>1</sup>, Edward T. Ryan<sup>2</sup>

<sup>1</sup>Infectious Diseases Division, International Centre for Diarrhoeal Disease Research, Bangladesh, Dhaka, Bangladesh, <sup>2</sup>Division of Infectious Diseases, Massachusetts General Hospital - Harvard Medical School, Boston, MA, United States, <sup>3</sup>National Institute of Diabetes, Digestive and Kidney Diseases (NIDDK), Laboratory of Bioorganic Chemistry (LBC), National Institutes of Health, Bethesda, MD, United States, <sup>4</sup>Merck & Co., Inc., Kenilworth, NJ, United States, <sup>5</sup>Center for Vaccine Development, University of Maryland School of Medicine, Baltimore, MD, United States, <sup>6</sup>PaxVax, Inc., Redwood City, CA, United States, <sup>7</sup>Vaccine Testing Center, Department of Medicine, University of Vermont College of Medicine, Burlington, VT, United States, <sup>8</sup>Cincinnati Children's Hospital Medical Center, and the Department of Pediatrics, University of Cincinnati College of Medicine, Cincinnati, OH, United States, <sup>9</sup>Division of Infectious Diseases, University of Utah School of Medicine, Salt Lake City, UT, United States, <sup>10</sup>Department of Epidemiology, Johns Hopkins Bloomberg School of Public Health, Baltimore, MD, United States, <sup>11</sup>Division of Infectious Diseases, Massachusetts General Hospital - Department of Pediatrics, Harvard Medical School, Boston, MA, United States

8:15 a.m.

1341

**IMPACT OF BACKGROUND EXPOSURE DOSE ON DIRECT AND INDIRECT EFFECT OF KILLED ORAL CHOLERA VACCINES**

Qifang Bi, Andrew S. Azman, Justin Lessler

Johns Hopkins Bloomberg School of Public Health, Baltimore, MD, United States

8:30 a.m.

1342

**LARGEST PRE-EMPTIVE VACCINATION WITH ORAL CHOLERA VACCINE PREVENTS CHOLERA OUTBREAKS AMONG THE ROHINGYA PEOPLE IN COX'S BAZAR: A 360 DEGREES OF LEARNING**

Firdausi Qadri

International Centre for Diarrhoeal Disease Research, Bangladesh, Dhaka, Bangladesh

8:45 a.m.

1343

**LONG READ SEQUENCING OF *VIBRIO CHOLERA* REVEALS REGIONAL TRANSMISSION PATTERNS IN MALAWI**

Shirlee Wohl<sup>1</sup>, Watipaso Kasambara<sup>2</sup>, Innocent Chibwe<sup>2</sup>, Amanda Debes<sup>1</sup>, David Mohr<sup>3</sup>, Justin Lessler<sup>1</sup>, Andrew Azman<sup>1</sup>

<sup>1</sup>Johns Hopkins Bloomberg School of Public Health, Baltimore, MD, United States, <sup>2</sup>Public Health Institute of Malawi, Ministry of Health, Lilongwe, Malawi, <sup>3</sup>McKusick Nathans Institute of Genetic Medicine, Johns Hopkins University School of Medicine, Baltimore, MD, United States

9 a.m.

1344

***VIBRIO CHOLERA* TRANSMISSION IN BANGLADESH: INSIGHTS FROM A NATIONAL SEROSURVEY**

Andrew S. Azman<sup>1</sup>, Justin Lessler<sup>1</sup>, Daniel Leung<sup>2</sup>, Francisco J. Luquero<sup>3</sup>, Jason Harris<sup>4</sup>, Stephen Lauer<sup>1</sup>, Fatema Khaton<sup>5</sup>, Kishor K. Paul<sup>6</sup>, Md. Taufiqur Rahman Bhuiyan<sup>5</sup>, Henrik Salje<sup>6</sup>, Firdausi Qadri<sup>6</sup>, Emily S. Gurley<sup>1</sup>

<sup>1</sup>Johns Hopkins School of Public Health, Baltimore, MD, United States, <sup>2</sup>University of Utah, Salt Lake City, UT, United States, <sup>3</sup>Epicentre, Paris, France, <sup>4</sup>Massachusetts General Hospital, Boston, MA, United States, <sup>5</sup>International Centre for Diarrhoeal Disease Research, Bangladesh, Dhaka, Bangladesh, <sup>6</sup>Institut Pasteur, Paris, France

9:15 a.m.

1345

**PREVALENCE AND MOLECULAR EPIDEMIOLOGY OF NOROVIRUS AMONG CHILDREN WITH MODERATE-TO-SEVERE DIARRHEA IN THREE SUB-SAHARAN AFRICAN COUNTRIES: PRELIMINARY FINDINGS FROM THE VACCINE IMPACT ON DIARRHEA IN AFRICA (VIDA) STUDY, 2015 -2018**

Richard Omere<sup>1</sup>, Anna Roose<sup>2</sup>, Samba Sow<sup>3</sup>, Sanogo Doh<sup>3</sup>, M. Jahangir Hossain<sup>4</sup>, Benjamin Ochieng<sup>1</sup>, Joquina Chiquita Jones<sup>4</sup>, Syed M. Zaman<sup>4</sup>, Henry Badji<sup>4</sup>, Sharon M. Tennant<sup>2</sup>, Irene Kasumba<sup>2</sup>, Helen Powell<sup>2</sup>, Dilruba Nasrin<sup>2</sup>, Jie Liu<sup>5</sup>, James Platts-Mills<sup>5</sup>, Martin Antonio<sup>4</sup>, Eric D. Mintz<sup>6</sup>, Jacqueline E. Tate<sup>7</sup>, Jennifer R. Verani<sup>8</sup>, Marc-Alain Widdowson<sup>8</sup>, Eric Houpt<sup>5</sup>, Umesh D. Parashar<sup>7</sup>, Karen L. Kotloff<sup>2</sup>

<sup>1</sup>Kenya Medical Research Institute, Center for Global Health Research [KEMRI-CGHR], Kisumu, Kenya, <sup>2</sup>Center for Vaccine Development and Global Health, University of Maryland School of Medicine, Baltimore, MD, United States, <sup>3</sup>Center for Vaccine Development, Bamako, Mali, <sup>4</sup>Medical Research Council Unit The Gambia at the London School of Hygiene & Tropical Medicine, Banjul, Gambia, <sup>5</sup>Division of Infectious Diseases and International Health, Department of Medicine, University of Virginia, Charlottesville, VA, United States, <sup>6</sup>Division of Foodborne, Waterborne, and Environmental Diseases, Centers for Disease Control and Prevention, Atlanta, GA, United States, <sup>7</sup>Division of Viral Diseases, US Centers for Disease Control and Prevention, Atlanta, GA, United States, <sup>8</sup>Division of Global Health Protection, Centers for Disease Control and Prevention, Nairobi, Kenya



9:30 a.m.

1346

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### USING KERNEL DENSITY ESTIMATES IN LIKELIHOOD RATIOS TO OPTIMIZE ETIOLOGICAL PREDICTIONS OF INFECTIOUS DIARRHEA IN RESOURCE-LIMITED SETTINGS

Benjamin J. Brintz<sup>1</sup>, Joel Howard<sup>1</sup>, Benjamin Haaland<sup>1</sup>, Andrew Pavia<sup>1</sup>, Tom Greene<sup>1</sup>, Dennis Chao<sup>2</sup>, Joshua Proctor<sup>2</sup>, Adam Levine<sup>3</sup>, Karen Kotloff<sup>4</sup>, James Platts-Mills<sup>5</sup>, Daniel Leung<sup>1</sup>

<sup>1</sup>University of Utah, Salt Lake City, UT, United States, <sup>2</sup>Institute of Disease Modeling, Seattle, WA, United States, <sup>3</sup>Brown University, Providence, RI, United States, <sup>4</sup>University of Maryland, College Park, MD, United States, <sup>5</sup>University of Virginia, Charlottesville, VA, United States

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## Symposium 118

### Expanding Impact of Tick-Borne Diseases Around the World: Pathogenesis and Prevention

National Harbor 10 (National Harbor Level)  
Saturday, November 23, 8 a.m. - 9:45 a.m.

Tick-borne diseases are common worldwide infectious diseases impacting both tropical and nontropical regions of the world. Tick-borne diseases of the tropics include African spotted fever, Relapsing fever and Crimean-Congo hemorrhagic fever. Lyme disease is the most common tick-borne disease in the Northern Hemisphere of the world. As land use patterns have changed in the last century, the cases of Lyme disease have continued to expand, both in number and geographic extent. This symposium will present an overview in tick-borne disease in the world and emerging trends in ticks and tick-borne diseases. The recent example of the invasive tick species *Haemaphysalis longicornis* will be described. The role of climate change and its potential for impacting tick-borne disease around the world will be examined. The session will cover prevention of tick-borne diseases with a focus on reservoir host interventions. Projects related to the development of reservoir-targeted vaccines against spirochetal diseases, such as Lyme disease and Leptospirosis will be presented. The microbiologic properties of *Borrelia burgdorferi* and antibiotic efficacy against Lyme disease, will be reviewed. The session will describe the use of animal models to evaluate aspects of microbial persistence and in evaluating antibiotic efficacy against Lyme disease including identifying treatments that can eradicate *B. burgdorferi* infection. New information on patterns of host immune response to *Borrelia* infection, including observations from both human and murine disease. The presenters will discuss unique aspects of the innate and adaptive immune system in response to *B. burgdorferi* infection.

#### CHAIR

John N. Aucott  
Johns Hopkins University School of Medicine, Baltimore, MD, United States

Monica Embers  
Tulane University, New Orleans, LA, United States

8 a.m.

### RESERVOIR HOST INTERVENTIONS IN THE PREVENTION OF TICK-BORNE DISEASES

Maria Gomes-Solecki  
University of Tennessee Health Sciences Center, Memphis, TN, United States

8:20 a.m.

### RHESUS MACAQUE MODEL OF LYME DISEASE

Monica Embers  
Tulane University, New Orleans, LA, United States

8:40 a.m.

### HUMAN IMMUNE RESPONSE TO INFECTION WITH *BORRELIA BURGDORFERI*

Maria Gutierrez  
Johns Hopkins University, Baltimore, MD, United States

9 a.m.

### TICK-BORNE DISEASES AROUND THE WORLD: EMERGING TRENDS AND UPDATES

John Aucott  
Johns Hopkins, Lutherville, MD, United States

9:20 a.m.

### DISCUSSION

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## Symposium 119

### Epidemiology of Coupled Natural-Human Systems: Integrating Ecological and Human Data to Understand the Socio-Ecological Drivers of Vector-Borne and Zoonotic Disease Emergence

National Harbor 11 (National Harbor Level)  
Saturday, November 23, 8 a.m. - 9:45 a.m.

Zoonotic diseases occur at the interface of human and ecosystem health, which are both interrelated and simultaneously affected by human activity, changes in land use and climate change. The lack of sufficient knowledge on the complex relationships between humans and nature has been a major barrier to the effective implementation of sustainable development of human societies. This symposium will describe the application of the integrative framework of Coupled Natural and Human systems (CNH) to investigate the socio-ecological drivers of the emergence of three groups of zoonotic diseases that are strongly influenced by the interaction between human behavior and ecological contexts. These include tick-borne pathogens (including Lyme disease) which have emerged following exurban development into forested areas; *Aedes*-borne pathogens (including dengue, Zika and chikungunya), linked to urbanization and poor water management and Chagas disease, linked to rural poverty and lack of infrastructure. No vaccines are available for either of these diseases, thus environmental management and behavioral modification are still the main control tools. Three case study talks will describe novel approaches to study the complex dynamics of both biophysical-and human-driven systems and their feedbacks, providing insights into the processes behind the emergence and spread of zoonotic diseases. The fourth talk will provide a methodological framework and present recent advances in the study of host movement and heterogeneities for these complex diseases. A deeper understanding of host-vector-pathogen dynamics in complex anthropogenic landscapes is required to guide ongoing or future interventions and propose new approaches to target these highly impactful diseases.

#### CHAIR

Maria A. Diuk-Wasser  
Columbia University, New York, NY, United States

Maria Pilar Fernandez  
Columbia University, New York, NY, United States

8 a.m.

### **HUMAN-TICK INTERACTIONS IN ANTHROPOGENIC LANDSCAPES: LYME DISEASE AS A COUPLED NATURAL AND HUMAN SYSTEM**

Maria Pilar Fernandez  
Columbia University, New York, NY, United States

8:20 a.m.

### **HUMAN INFLUENCES ON Aedes Aegypti ABUNDANCE IN DESERT ENVIRONMENTS**

Kacey C. Ernst  
University of Arizona, Tucson, AZ, United States

8:40 a.m.

### **SOCIOECONOMIC AND ECOLOGICAL DRIVERS OF CO-OCCURRING VECTOR-BORNE ZOOLOGICAL DISEASE TRANSMISSION IN RURAL LANDSCAPES OF PANAMA**

Nicole Gottdenker  
University of Georgia, Athens, GA, United States

9 a.m.

### **QUANTIFYING THE ROLE OF HOST MOVEMENT ON VECTOR-BORNE AND ZOOLOGICAL PATHOGEN TRANSMISSION DYNAMICS**

Gonzalo M. Vazquez-Prokopec  
Emory University, Atlanta, GA, United States

9:20 a.m.

### **DISCUSSION**

## **Exhibit Hall Open**

Prince George's Exhibit Hall C (Lower Atrium Level)  
Saturday, November 23, 9:30 a.m. - 10:30 a.m.

## **Poster Session C Set-Up**

Prince George's Exhibit Hall D (Lower Atrium Level)  
Saturday, November 23, 9:45 a.m. - 10:15 a.m.

## **Coffee Break**

Prince George's Exhibit Hall C (Lower Atrium Level)  
Saturday, November 23, 9:45 a.m. - 10:15 a.m.

## **Get a Shot. Give a Shot.®**

Potomac Ballroom Lobby (Ballroom Level)  
Saturday, November 23, 10 a.m. - 1 p.m.

Walgreens' Get a Shot. Give a Shot.® campaign has helped provide more than 20 million lifesaving vaccines to children in need around the world through the United Nations Foundation's Shot@Life campaign. Now, TropMed19 is giving attendees an opportunity to give back to the global health communities we serve. Receive your annual flu shot and provide lifesaving vaccines to families in developing countries. Immunizations are one of the world's biggest public health success stories, but not all communities have the same access to vaccines.

## **Poster Session C Viewing**

Prince George's Exhibit Hall D (Lower Atrium Level)  
Saturday, November 23, 10:15 a.m. - Noon

## **Scientific Session 120**

### **Malaria: Vaccines**

Maryland A (Ballroom Level)  
Saturday, November 23, 10:15 a.m. - Noon

#### **CHAIR**

Mehreen Dattoo  
Jenner Institute, University of Oxford, Oxford, United Kingdom

Moriya Tsuji  
Aaron Diamond AIDS Research Center/Rockefeller University, New York, NY, United States

10:15 a.m.

**1347**

### **MEMORY B AND FUNCTIONAL ANTIBODY RESPONSES TO PAMVAC VACCINE IN BENINESE NULLIGRAVID WOMEN DURING PHASE IB CLINICAL TRIAL**

Tatiana Sandrine Hountohotegbe<sup>1</sup>, Déo-Gracias Berry<sup>2</sup>, Wina Hasang<sup>3</sup>, Elizabeth Aitken<sup>3</sup>, Komi Bienvenu Gbedande<sup>1</sup>, Firmine Viwami<sup>1</sup>, Florentin Auussenac<sup>4</sup>, Saadou Issifou<sup>5</sup>, Euripide Avokpaho<sup>5</sup>, Morten Nielsen<sup>6</sup>, Benjamin Mordmüller<sup>7</sup>, Odile Leroy<sup>8</sup>, Achille Massougbodji<sup>2</sup>, Nadine Fievet<sup>4</sup>, Stephen Rogerson<sup>3</sup>, Adrian Luty<sup>4</sup>

<sup>1</sup>Centre d'Etude et de Recherche sur le Paludisme Associé à la Grossesse et à l'enfance (CERPAGE), UMR261, Cotonou, Benin, <sup>2</sup>Centre d'Etude et de Recherche sur le Paludisme Associé à la Grossesse et à l'enfance (CERPAGE), Cotonou, Benin, <sup>3</sup>Peter Doherty Institute, Laboratory of Malaria, Department of Immunology and Microbiology, University of Melbourne, Melbourne, Australia, <sup>4</sup>UMR261, Laboratoire de Parasitologie, Université Paris Descartes, Faculté de Pharmacie, Paris, France, <sup>5</sup>Institut de Recherche Clinique du Bénin, Fondation pour la Recherche Scientifique, Calavi, Benin, <sup>6</sup>Department of Immunology and Microbiology, University of Copenhagen, Copenhagen, Denmark, <sup>7</sup>Institut für Tropenmedizin, Eberhard Karls Universität Tübingen, Tübingen, Germany, <sup>8</sup>European Vaccine Initiative, Heidelberg, Germany

#### **(ACMCIP Abstract)**

10:30 a.m.

**1348**

### **HUMAN MAB BLOCKS MALARIA TRANSMISSION IN PLASMODIUM-INFECTED MOSQUITOES**

Camila H. Coelho<sup>1</sup>, Marty Butkhardt<sup>1</sup>, Issaka Sagara<sup>2</sup>, Jacob D. Galson<sup>3</sup>, Thiago A. Silva<sup>4</sup>, Justin Taylor<sup>5</sup>, Miranda Byrne-Steele<sup>6</sup>, Nichole Salinas<sup>1</sup>, David Narum<sup>1</sup>, Niraj Tolia<sup>1</sup>, Jonathan Renn<sup>1</sup>, Patrick E. Duffy<sup>1</sup>

<sup>1</sup>Laboratory of Malaria Immunology and Vaccinology/National Institute of Allergy and Infectious Diseases/National Institutes of Health, Rockville, MD, United States, <sup>2</sup>University of Bamako, Bamako, Mali, <sup>3</sup>Kymab, UK, United Kingdom, <sup>4</sup>Laboratory of Malaria and Vector Research/National Institute of Allergy and Infectious Diseases/National Institutes of Health, Rockville, MD, United States, <sup>5</sup>Fred Hutchinson Cancer Research Center, Seattle, WA, United States, <sup>6</sup>Repertoire, Huntsville, AL, United States

#### **(ACMCIP Abstract)**

10:45 a.m.

**1349**

### **UNDERSTANDING THE PROCESSES GOVERNING THE POPULATION-LEVEL IMPACT OF A TRANSMISSION BLOCKING VACCINE AGAINST MALARIA IN FIELD TRIAL SETTINGS**

Joseph D. Challenger<sup>1</sup>, Issaka Sagara<sup>2</sup>, Daniela Olivera<sup>1</sup>, Sara A. Healy<sup>3</sup>, Mahamadou H. Assadou<sup>2</sup>, Abdoulaye Katile<sup>2</sup>, Olga Muratova<sup>3</sup>, Patrick E. Duffy<sup>3</sup>, Thomas S. Churcher<sup>1</sup>

<sup>1</sup>Imperial College London, London, United Kingdom, <sup>2</sup>University of Science, Techniques and Technologies of Bamako, Bamako, Mali, <sup>3</sup>National Institute of Allergy and Infectious Diseases, National Institutes of Health, Rockville, MD, United States

11 a.m.

1350

**NEUTRALIZATION OF P. VIVAX BY NATURALLY-ACQUIRED HUMAN ANTIBODIES THAT TARGET THE DUFFY BINDING PROTEIN**

Darya Urusova<sup>1</sup>, Lenore Carias<sup>2</sup>, Yining Huang<sup>3</sup>, Vanessa C. Nicolete<sup>4</sup>, Jean Popovici<sup>5</sup>, Camille Roesch<sup>6</sup>, Nichole D. Salinas<sup>6</sup>, Benoit Witkowski<sup>5</sup>, Marcelo U. Ferreira<sup>4</sup>, John H. Adams<sup>7</sup>, Michael L. Gross<sup>1</sup>, Christopher L. King<sup>2</sup>, **Niraj Harish Tolia<sup>8</sup>**  
<sup>1</sup>Washington University in St. Louis, St. Louis, MO, United States, <sup>2</sup>Case Western Reserve University, Cleveland, OH, United States, <sup>3</sup>Eli Lilly and Company, Indianapolis, IN, United States, <sup>4</sup>University of Sao Paulo, Sao Paulo, Brazil, <sup>5</sup>Institute Pasteur in Cambodia, Phnom Penh, Cambodia, <sup>6</sup>National Institute of Allergy and Infectious Diseases, Bethesda, MD, United States, <sup>7</sup>University of South Florida, Tampa, FL, United States

(ACMCIP Abstract)

11:15 a.m.

1351

**PRIME-TARGET IMMUNIZATION WITH LIVER-STAGE MALARIA VACCINES: A FIRST-IN-HUMAN CHALLENGE TRIAL**

**Mehreen Dattoo<sup>1</sup>**, Daniel Jenkin<sup>1</sup>, Fernando Ramos-Lopez<sup>1</sup>, Megan Baker<sup>1</sup>, Amy Flaxman<sup>1</sup>, Duncan Bellamy<sup>1</sup>, Nick J. Edwards<sup>1</sup>, Rebecca Makinson<sup>1</sup>, Andres Noe<sup>1</sup>, Pedro Folegatti<sup>1</sup>, Ian Poulton<sup>1</sup>, Daniel Silman<sup>1</sup>, David Lewis<sup>2</sup>, Saul Faust<sup>3</sup>, Rachel Roberts<sup>1</sup>, Alison M. Lawrie<sup>1</sup>, Alexandra J. Spencer<sup>1</sup>, Mohammad Ali Husainy<sup>4</sup>, Katie J. Ewer<sup>1</sup>, Adrian V. Hill<sup>1</sup>  
<sup>1</sup>Jenner Institute, University of Oxford, Oxford, United Kingdom, <sup>2</sup>NIHR Imperial CRF, London, United Kingdom, <sup>3</sup>Southampton NIHR Wellcome Trust Clinical Research Facility, Southampton, United Kingdom, <sup>4</sup>Oxford University Hospitals NHS Foundation Trust, Oxford, United Kingdom

11:30 a.m.

1352

**NOVEL METHODS TO DETERMINE LIVER-STAGE MALARIA VACCINE CORRELATES OF PROTECTION: KINETICS, DEEP IMMUNE PHENOTYPING AND TRANSCRIPTOMICS**

**Andrés Noé<sup>1</sup>**, Duncan Bellamy, Amy Flaxman, Mehreen Dattoo, Daniel Jenkin, Ali Husainy, Katie J. Ewer, Adrian V. Hill, Alexandra J. Spencer  
*The Jenner Institute, University of Oxford, Oxford, United Kingdom*

11:45 a.m.

1353

**DEVELOPMENT OF MULTI-STRAIN AND MULTI-STRAIN HYBRID PLASMODIUM FALCIPARUM SPOOROZITE VACCINES**

**BKL Sim<sup>1</sup>**, Ashley M. Vaughan<sup>2</sup>, Tao Li<sup>3</sup>, Christiane Urgena<sup>3</sup>, Asha Patil<sup>3</sup>, Yonas Abebe<sup>3</sup>, Adam Frock<sup>3</sup>, Lauren Smith<sup>3</sup>, Ayyappan Rathakrishnan<sup>3</sup>, Felix Ikanzo<sup>3</sup>, Tanima Mallik<sup>3</sup>, Abraham G. Eappen<sup>3</sup>, Donald Ward III<sup>3</sup>, Sumana Chakravarty<sup>3</sup>, Minglin Li<sup>1</sup>, Eric R. James<sup>3</sup>, Stefan H. I. Kappe<sup>2</sup>, Stephen L. Hoffman<sup>3</sup>  
<sup>1</sup>Protein Potential LLC, Rockville, MD, United States, <sup>2</sup>Seattle Children's Research Institute, Seattle, WA, United States, <sup>3</sup>Sanaria Inc, Rockville, MD, United States

**Scientific Session 121**

**Malaria: Evidence for Malaria Elimination**

Maryland B (Ballroom Level)

Saturday, November 23, 10:15 a.m. - Noon

**CHAIR**

Monica Shah  
*Centers for Disease Control and Prevention, Atlanta, GA, United States*  
Prayuth Sudathip  
*Bureau of Vector Borne Diseases, Ministry of Public Health, Nonthaburi, Thailand*

10:15 a.m.

1354

**USING MALARIA STRATIFICATION TO IMPROVE PROGRAM INTERVENTION TARGETING IN ZAMBIA**

**Hannah Slater<sup>1</sup>**, John M Miller<sup>2</sup>, Busiku Hamainza<sup>3</sup>, Kammerle Schneider<sup>1</sup>, Laurence Slutsker<sup>1</sup>, Duncan Earle<sup>2</sup>, Jeff Bernson<sup>4</sup>  
<sup>1</sup>PATH Malaria Control and Elimination Partnership in Africa (MACEPA), Seattle, WA, United States, <sup>2</sup>PATH Malaria Control and Elimination Partnership in Africa (MACEPA), Lusaka, Zambia, <sup>3</sup>National Malaria Elimination Centre, Lusaka, Zambia, <sup>4</sup>PATH, Seattle, WA, United States

10:30 a.m.

1355

**CHOOSING THE RIGHT TOOL FOR THE JOB: ESTIMATING EFFECT SIZES FOR MULTIPLE OVERLAPPING INTERVENTIONS IN SOUTHERN PROVINCE, ZAMBIA**

**Joshua G. Suresh<sup>1</sup>**, Jaline Gerardin<sup>2</sup>, John Miller<sup>3</sup>, Busiku Haimanza<sup>4</sup>, Thom Eisele<sup>5</sup>, Edward A. Wenger<sup>1</sup>, Caitlin A. Bever<sup>1</sup>  
<sup>1</sup>Institute for Disease Modeling, Bellevue, WA, United States, <sup>2</sup>Northwestern University Feinberg School of Medicine, Chicago, IL, United States, <sup>3</sup>PATH, Lusaka, Zambia, <sup>4</sup>National Malaria Elimination Centre, Lusaka, Zambia, <sup>5</sup>Tulane University, New Orleans, LA, United States

10:45 a.m.

1356

**MASS DRUG ADMINISTRATION FOR MALARIA: AN UPDATED COCHRANE SYSTEMATIC REVIEW**

**Monica Shah<sup>1</sup>**, Jimee Hwang<sup>2</sup>, Leslie Choi<sup>3</sup>, S. Patrick Kachur<sup>4</sup>, Meghna Desai<sup>1</sup>  
<sup>1</sup>Malaria Branch, Centers for Disease Control and Prevention, Atlanta, GA, United States, <sup>2</sup>U.S. President's Malaria Initiative, Malaria Branch, Centers for Disease Control and Prevention; Global Health Group, University of California San Francisco, San Francisco, CA, United States, <sup>3</sup>Department of Clinical Sciences, Liverpool School of Tropical Medicine, Liverpool, United Kingdom, <sup>4</sup>Malaria Branch, Centers for Disease Control and Prevention, Atlanta, Georgia; Heilbrunn Department of Population and Family Health, Columbia University, Mailman School of Public Health, New York, NY, United States

11 a.m.

1357

**RESULTS OF A PILOT OF TARGETED MASS DRUG ADMINISTRATION WITH SULFADOXINE-PYRIMETHAMINE AND PRIMAQUINE AS A COMPONENT OF A MALARIA ELIMINATION PACKAGE IN HAITI**

**Michelle A. Chang<sup>1</sup>**, Daniel Impoinvil<sup>1</sup>, Karen E. Hamre<sup>1</sup>, Alain Javel<sup>2</sup>, Paul-Emile Dalexis<sup>2</sup>, Jean-Baptiste Mériilien<sup>3</sup>, Amber M. Dismar<sup>1</sup>, Bernadette Fouché<sup>1</sup>, Emilie Pothin<sup>5</sup>, Katherine Battle<sup>6</sup>, Ewan Cameron<sup>6</sup>, Kathleen Holmes<sup>1</sup>, Luccene Desir<sup>7</sup>, Gregory Noland<sup>7</sup>, Alyssa Young<sup>8</sup>, Justin Cohen<sup>8</sup>, Willy Lafortune<sup>3</sup>, Lotus van den Hoogen<sup>9</sup>, Gillian Stresman<sup>9</sup>, Chris Drakeley<sup>9</sup>, Eric Rogier<sup>1</sup>, Ruth Ashton<sup>10</sup>, Thomas Druetz<sup>10</sup>, Thomas P. Eisele<sup>10</sup>, Jean Frantz Lemoine<sup>3</sup>  
<sup>1</sup>Malaria and Entomology Branches, Division of Parasitic Diseases and Malaria, Center for Global Health, Centers for Disease Control and Prevention, Atlanta, GA, United States, <sup>2</sup>IMA Worldhealth, Port-au-Prince, Haiti, <sup>3</sup>Programme National de la Contrôle de Malaria, Ministère de la Santé Publique et de la Population, Port-au-Prince, Haiti, <sup>4</sup>Emergency Response and Recovery Branch, Division of Global Health Protection, Center for Global Health, Centers for Disease Control and Prevention, Atlanta, GA, United States, <sup>5</sup>Swiss Tropical Public Health Institute, Basel, Switzerland, <sup>6</sup>Malaria Atlas Project, Oxford, United Kingdom, <sup>7</sup>The Carter Center, Atlanta, GA, United States, <sup>8</sup>Clinton Health Access Initiative, Boston, MA, United States, <sup>9</sup>London School of Hygiene & Tropical Medicine, London, United Kingdom, <sup>10</sup>Center for Applied Malaria Research and Evaluation, Tulane School of Public Health and Tropical Medicine, New Orleans, LA, United States

Saturday  
November 23

11:15 a.m.

**1358**

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**THE MAGUDE PROJECT: DRASTIC REDUCTION OF MALARIA BURDEN AND SUSTAINED GAINS AFTER A MALARIA ELIMINATION PROJECT IN SOUTHERN MOZAMBIQUE**

Beatriz Galatas<sup>1</sup>, Helena Marti-Soler<sup>1</sup>, Caterina Guinovart<sup>1</sup>, Lidia Nhamussua<sup>2</sup>, Wilson Simone<sup>2</sup>, Humberto Munguambe<sup>2</sup>, Arlindo Chidimatembue<sup>2</sup>, Júlia Montaña<sup>1</sup>, Fabião Luis<sup>2</sup>, Krijn Paaijmans<sup>1</sup>, Quique Bassat<sup>1</sup>, Alfredo Mayor<sup>1</sup>, Clara Menéndez<sup>1</sup>, Baltazar Candrinho<sup>3</sup>, Regina Rabinovich<sup>1</sup>, Pedro Alonso<sup>1</sup>, Francisco Saúte<sup>2</sup>, Pedro Aide<sup>2</sup>

<sup>1</sup>ISGlobal, Barcelona, Spain, <sup>2</sup>CISM, Manhiça, Mozambique, <sup>3</sup>National Malaria Control Programme, Ministry of Health, Maputo, Mozambique

11:30 a.m.

**1359**

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**A FOCI COHORT ANALYSIS TO ASSESS MALARIA ELIMINATION IN THAILAND**

Prayuth Sudathip<sup>1</sup>, Julien Zwang<sup>2</sup>, Rungrawee Tipmontree<sup>1</sup>, Suravadee Kitcharkarn<sup>1</sup>, Thannikar Thongrad<sup>1</sup>, Felicity Young<sup>3</sup>, Richard Reithinger<sup>3</sup>, Jui A. Shah<sup>2</sup>, David Sintasath<sup>4</sup>, Preecha Prempre<sup>1</sup>, Darin Areechokchai<sup>1</sup>, Jersuda Kajanasuwan<sup>1</sup>, Cheewanan Lertpiriyasuwat<sup>1</sup>

<sup>1</sup>Bureau of Vector Borne Diseases, Department of Disease Control, Ministry of Public Health, Nonthaburi, Thailand, <sup>2</sup>Inform Asia: United States Agency for International Development's Health Research Program, RTI International, Bangkok, Thailand, <sup>3</sup>RTI International, Washington, DC, United States, <sup>4</sup>U.S. President's Malaria Initiative, Regional Development Mission for Asia, United States Agency for International Development, Bangkok, Thailand

11:45 a.m.

**1360**

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**OVERCOMING BARRIERS TO LOW MALARIA TESTING RATES IN AN ELIMINATION CONTEXT: RESULTS FROM MIXED METHODS RESEARCH IN LAO PDR**

Samuel Haddad<sup>1</sup>, Malaykham Duangdara<sup>1</sup>, Rebecca Potter<sup>2</sup>, Saysana Phanalasy<sup>1</sup>  
<sup>1</sup>Population Services International, Vientiane, Lao People's Democratic Republic, <sup>2</sup>Population Services International, Laos, Lao People's Democratic Republic

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**Symposium 122**

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**Learning From Experience to Optimize Chemoprevention Strategies For Malaria**

*Maryland C (Ballroom Level)*

Saturday, November 23, 10:15 a.m. - Noon

Intermittent preventive treatment in pregnancy (IPTp) and Seasonal Malaria Chemoprevention (SMC) are two of the WHO-recommended preventive chemotherapies that aim to prevent malarial illness in vulnerable populations. IPTp, implemented to date in 39 African countries, has been shown to reduce maternal malaria episodes and neonatal mortality, as well as other adverse effects of malaria in pregnancy. SMC could avert millions of cases and thousands of deaths among children aged 3 to 59 months living in areas of highly seasonal malaria transmission. This symposium addresses the latest advances in malaria chemoprevention and the challenges faced when translating and scaling up from the trials to the field. The two chemoprevention strategies have followed differing paths in terms of the research approaches to test their impact, the delivery mechanisms used and the policy-making process. This has influenced the coverage, the actions taken by the different actors and the uptake of the interventions in a different manner, and therefore, valuable lessons can be learned and applied to future strategies. IPTp and SMC will be used as examples to discuss the importance of fitting the strategies into the overall countries' health

systems and to think about what is needed to prepare interventions at large scale, and questions about safety and resistance will be raised, as well. The possibility of adding more drugs to the chemoprevention arsenal will be discussed in the last presentation, opening the floor to a final discussion about the impact and challenges when translating from trials to large scale in an effort to learn from experience and achieve the interventions' full potential.

**CHAIR**

Regina Rabinovich

*Barcelona Institute for Global Health (ISGlobal), Barcelona, Spain*

David Schellenberg

*Global Malaria Programme, World Health Organization, Geneva, Switzerland*

10:15 a.m.

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**LESSONS IN ACCESSING IPTP THROUGH HEALTH SYSTEMS AND COMMUNITY DELIVERY**

Clara Menendez

*Barcelona Institute for Global Health, Barcelona, Spain*

10:30 a.m.

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**LESSONS IN TRANSLATING SMC TO SCALE**

Alassane Dicko

*Malaria Research and Training Center, Bamako, Mali*

10:45 a.m.

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**DRUG EFFICACY, SAFETY AND EVALUATION OF DRUG RESISTANCE IN IPTP AND SMC CHEMOPREVENTION STRATEGIES**

Oumar Gaye

*Universite Cheikh Anta Diop, Dakar, Senegal*

11 a.m.

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**AZITHROMYCIN TO IMPROVE SURVIVAL: A SOLUTION FOR EVERYONE?**

Judd Walson

*University of Washington, Department of Global Health, Seattle, WA, United States*

11:15 a.m.

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**DISCUSSION**

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**Scientific Session 123**

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**Dengue: Vaccines and Immunity**

*Potomac A (Ballroom Level)*

Saturday, November 23, 10:15 a.m. - Noon

**CHAIR**

Priscila Mayrelle da Silva Castanha

*University of Pittsburgh, Pittsburgh, PA, United States*

Alan L. Rothman

*University of Rhode Island, Providence, RI, United States*



10:15 a.m.

1361

**EVALUATION OF EXTENDED EFFICACY OF TETRAVALENT CHIMERIC YELLOW FEVER-DENGUE (CYD) VACCINE AGAINST SYMPTOMATIC AND SUBCLINICAL DENGUE VIRUS INFECTIONS AMONG FILIPINO CHILDREN**

Alan L. Rothman<sup>1</sup>, Mary N. Chua<sup>2</sup>, Mary T. Alera<sup>3</sup>, Henrik Salje<sup>4</sup>, Damon Ellison<sup>5</sup>, Anon Srikiatkachorn<sup>1</sup>, Richard G. Jarman<sup>5</sup>, In-Kyu Yoon<sup>6</sup>, Louis R. Macareo<sup>6</sup>  
<sup>1</sup>University of Rhode Island, Providence, RI, United States, <sup>2</sup>Chong Hua Hospital, Cebu City, Philippines, <sup>3</sup>Philippines-Armed Forces Research Institute of Medical Sciences Virology Research Unit, Cebu City, Philippines, <sup>4</sup>Institut Pasteur, Paris, France, <sup>5</sup>Walter Reed Army Institute of Research, Washington, DC, United States, <sup>6</sup>Armed Forces Research Institute of Medical Sciences, Bangkok, Thailand

10:30 a.m.

1362

**EFFICACY OF A TETRAVALENT DENGUE VACCINE IN HEALTHY 4 TO 16 YEAR-OLD CHILDREN**

Shibadas Biswal<sup>1</sup>, TIDES Study Group<sup>2</sup>  
<sup>1</sup>Takeda Vaccines Pte Ltd, Singapore, Singapore

10:45 a.m.

1363

**PREEXISTING IMMUNITY ENHANCES RECRUITMENT AND INFECTION OF MYELOID CELLS WITH DENGUE AND ZIKA VIRUSES IN HUMAN SKIN**

Priscila Mayrelle da Silva Castanha, Parichat Duangkhae, Geza Erdos, Simon C. Watkins, Louis D. Falo Jr, Ernesto T. Marques Jr, Simon M. Barratt-Boyes  
University of Pittsburgh, Pittsburgh, PA, United States

11 a.m.

1364

**PREVIOUS ZIKA EXPOSURE IMPROVES IMMUNE RESPONSE AGAINST DENGUE WITHOUT PATHOGENESIS ENHANCEMENT IN RHESUS MACAQUES**

Erick X. Pérez-Guzmán<sup>1</sup>, Petraleigh Pantoja<sup>1</sup>, Crisanta Serrano-Collazo<sup>1</sup>, Mariah A. Hassert<sup>2</sup>, Alexandra Ortiz<sup>3</sup>, Idia V. Rodriguez<sup>4</sup>, Luis Giavedoni<sup>4</sup>, Vida Hodara<sup>4</sup>, Laura Parodi<sup>4</sup>, Lorna Cruz<sup>1</sup>, Teresa Arana<sup>1</sup>, Laura White<sup>5</sup>, Melween I. Martinez<sup>1</sup>, Daniela Weiskopf<sup>6</sup>, James D. Brien<sup>2</sup>, Aravinda de Silva<sup>5</sup>, Amelia Pinto<sup>2</sup>, Carlos A. Sario<sup>1</sup>  
<sup>1</sup>University of Puerto Rico Medical Sciences Campus, San Juan, PR, United States, <sup>2</sup>St. Louis University School of Medicine, St. Louis, MO, United States, <sup>3</sup>University of Puerto Rico Rio Piedras Campus, San Juan, PR, United States, <sup>4</sup>Texas Biomedical Research Institute, San Antonio, TX, United States, <sup>5</sup>University of North Carolina, Chapel Hill, NC, United States, <sup>6</sup>La Jolla Institute for Immunology, La Jolla, CA, United States

11:15 a.m.

1365

**CROSSREACTIVITY OF CD8+T CELL RESPONSES AMONG FLAVIVIRUSES AFTER DENV OR YF VACCINATION**

Alba Grifoni<sup>1</sup>, Hannah Voic<sup>1</sup>, Aruna D. de Silva<sup>2</sup>, Anna Durbin<sup>3</sup>, Stephen Whitehead<sup>4</sup>, Sean A. Diehl<sup>5</sup>, Eva Harris<sup>6</sup>, Alessandro Sette<sup>1</sup>, Daniela Weiskopf<sup>1</sup>  
<sup>1</sup>La Jolla Institute for Immunology, La Jolla, CA, United States, <sup>2</sup>Kotelawala Defense University, Ratmalana, Sri Lanka, <sup>3</sup>Johns Hopkins University, Baltimore, MD, United States, <sup>4</sup>National Institute of Allergy and Infectious Diseases, National Institutes of Health, Bethesda, MD, United States, <sup>5</sup>University of Vermont, School of Medicine, Burlington, VT, United States, <sup>6</sup>University of California, Division of Infectious Diseases and Vaccinology, School of Public Health, Berkeley, CA, United States

11:30 a.m.

1366

**VACCINATION AND PRIOR DENGUE EXPOSURE CORRELATE WITH VIREMIA LEVEL AMONG SYMPTOMATIC DENGUE 1 AND DENGUE 2 INFECTIONS IN COHORT SUBJECTS IN THE PHILIPPINES**

Simon Pollett<sup>1</sup>, Maria Alera<sup>2</sup>, Wiriya Rutvisuttinunt<sup>1</sup>, Anon Srikiatkachorn<sup>3</sup>, Abhinaya Srikanth<sup>1</sup>, In-Kyu Yoon<sup>4</sup>, Irina Maljkovic Berry<sup>1</sup>, Damon Ellison<sup>5</sup>, Louis Macareo<sup>5</sup>, Alan L. Rothman<sup>3</sup>, Richard G. Jarman<sup>1</sup>  
<sup>1</sup>Walter Reed Army Institute of Research, Silver Spring, MD, United States, <sup>2</sup>Armed Forces Research Institute of Medical Sciences Virology Research Unit, Cebu, Philippines, <sup>3</sup>University of Rhode Island, Providence, RI, United States, <sup>4</sup>International Vaccine Institute, Seoul, Republic of Korea, <sup>5</sup>Armed Forces Research Institute of Medical Sciences, Bangkok, Thailand

11:45 a.m.

1367

**PRIOR VACCINATION WITH CYD-TDV DID NOT POTENTIATE SYMPTOMATIC ZIKA IN DENGUE ENDEMIC AREAS OF LATIN AMERICA**

Betzana Zambrano<sup>1</sup>, Doris Maribel Rivera<sup>2</sup>, José Luis Arredondo<sup>3</sup>, Humberto Reynales<sup>4</sup>, Kleber Luz<sup>5</sup>, Carmen Deseda<sup>6</sup>, Matthew Bonaparte<sup>7</sup>, Edith Langevin<sup>8</sup>, Yukun Wu<sup>7</sup>, Margarita Cortes<sup>9</sup>, Gustavo H. Dayan<sup>7</sup>, Carlos Diaz Granados<sup>7</sup>, Stephen Savarino<sup>7</sup>, Fernando Noriega<sup>7</sup>  
<sup>1</sup>Sanofi Pasteur, Montevideo, Uruguay, <sup>2</sup>Inversiones en Investigación Médica, Tegucigalpa, Honduras, <sup>3</sup>Instituto Nacional de Pediatría, Mexico City, Mexico, <sup>4</sup>Centro de Atención e Investigación Médica, Bogota, Colombia, <sup>5</sup>Universidade Federal do Rio Grande do Norte, Natal, Brazil, <sup>6</sup>Caribbean Travel Medicine Clinic, San Juan, Puerto Rico, <sup>7</sup>Sanofi Pasteur, Swiftwater, PA, United States, <sup>8</sup>Sanofi Pasteur, Marcy L'Etoile, France, <sup>9</sup>Sanofi Pasteur, Bogota, Colombia

**Symposium 124**

**The Challenges of Implementing NTD Assessments in Conflict Areas and Fragile States**

Potomac B (Ballroom Level)

Saturday, November 23, 10:15 a.m. - Noon

Conflict settings have long presented challenges to the NTD community, both in terms of providing interventions to communities in need and assessing the effectiveness of those interventions. Baseline and impact surveys for disease elimination programs are indispensable for programmatic decision-making. As lymphatic filariasis (LF) and trachoma programs are successfully completing the rounds of mass drug administration recommended to lower prevalence, most endemic countries are currently implementing impact assessments. A growing number of Trachoma Impact and Surveillance Surveys (TIS/TSS) and LF Transmission Assessment Surveys (TAS) are planned or implemented worldwide. However, due to security issues and instability, many districts have not been able to carry out the needed assessments as planned. It is unclear what impact the postponed or modified surveys have on the country programs. Also, there is a lack of guidance about how to handle areas with uncertainty around the epidemiological status of LF or trachoma after many years of mass drug distribution. The Democratic Republic of Congo (DRC) has learned lessons from mapping trachoma in insecure areas that will be applicable when they start implementing trachoma impact surveys in 2019. In 2018 and 2019, the Ethiopia national LF program has had to revise LF survey methodologies to account for inaccessibility of certain villages. In Cameroon there is a staggering number of 86 TAS planned in 2019, with a significant number happening in unsafe and conflict zones in the north and far north regions. Finally, several districts in fragile and security compromised northern regions of Mali

Saturday  
November 23

have implemented TAS but have had to revise the methodology to account for limitations in visiting certain villages within the survey area. By discussing these challenges, this symposium will foster a dialogue on the unique challenge conflict areas offer the global NTD community and proffer tailored approaches to address them.

#### **CHAIR**

Scott McPherson  
*RTI International, Durham, NC, United States*

Achille M. Kabore  
*FHI 360, Washington, DC, United States*

10:15 a.m.

#### **WHEN THE WINDOW OF SAFETY CLOSES: USING LESSONS FROM TRACHOMA MAPPING TO BETTER PLAN FOR TRACHOMA IMPACT SURVEYS IN CONFLICT AREAS IN DRC**

Jeremiah M. Ngondi  
*RTI International, Washington, DC, United States*

10:30 a.m.

#### **WHEN CLUSTERS DON'T MEET MUSTER: INSECURITY, INACCESSIBILITY AND ASSESSMENT METHODOLOGY DURING ETHIOPIA PRE-TAS**

Heven Sime  
*Ethiopia Public Health Institute, Addis Ababa, Ethiopia*

10:45 a.m.

#### **CHALLENGES IN THE IMPLEMENTATION OF NTD BASELINE AND IMPACT SURVEYS IN CONFLICT AND INSECURE DISTRICTS IN THE NORTH AND WESTERN PROVINCES OF CAMEROON**

Ebene Clarisse  
*Ministry of Health - Cameroon, Yaounde, Cameroon*

11 a.m.

#### **IMPLEMENTING TAS IN FRAGILE AND SECURITY COMPROMISED DISTRICTS IN THE NORTH OF MALI**

Benoit Dembele  
*Helen Keller International, Bamako, Mali*

11:15 a.m.

#### **DISCUSSION**

### **Symposium 125**

#### **Advances in Sero-Epidemiology: Expanding the Toolkit for Disease Modeling and Prediction**

*Potomac C (Ballroom Level)*

Saturday, November 23, 10:15 a.m. - Noon

The detection and quantitation of immune responses in serum (serosurveillance) is increasingly recognized as an important public health and scientific tool to aid in estimation of pathogen exposure and disease risk. Sero-epidemiological methods have been proposed and utilized as tools to guide vaccination strategies for several vaccine-preventable diseases, as well as to target control interventions. However, most applications up to now have focused on specific diseases. Recent advances in serologic assay technologies and computational modeling have increased the potential of seroepidemiology to inform control interventions across broad groups of pathogens. In particular, the development of multiplexed serological methods that allow quantifying antibody responses to multiple (tens to hundreds) pathogens from a single

sample offer unprecedented opportunities for disease surveillance. This symposium has assembled a group of speakers who are on the cutting edge of technological and methodological advances in sero-epidemiology. Speakers will highlight advances in, 1) phage-display, 2) bead-based multiplex assays, and 3) field deployment of multiplex assays. A final speaker will present on 4) field challenges for conducting high quality serosurveillance studies. A panel discussion with audience participation will follow these talks.

#### **CHAIR**

Isabel Rodriguez-Barraquer  
*University of California San Francisco, San Francisco, CA, United States*

Daniel T. Leung  
*University of Utah, Salt Lake City, UT, United States*

10:15 a.m.

#### **PHAGE DISPLAY FOR HIGH THROUGHPUT PATHOGEN-PEPTIDOME WIDE ANTIBODY PROFILING TO ADVANCE INFECTIOUS DISEASE SURVEILLANCE, RESEARCH AND POLICY**

Michael Mina  
*Brigham and Women's Hospital, Boston, MA, United States*

10:35 a.m.

#### **DEVELOPMENT OF BEAD-BASED MULTIPLEX ASSAYS TO MONITOR POPULATION IMMUNITY AGAINST VACCINE PREVENTABLE DISEASES**

Fiona van der Klis  
*Dutch Public Health Institute, Bilthoven, Netherlands*

10:55 a.m.

#### **TECHNICAL CONSIDERATIONS FOR MULTIPLEX ASSAY DEPLOYMENT IN THE FIELD**

Chris Drakeley  
*London School of Hygiene & Tropical Medicine, London, United Kingdom*

11:15 a.m.

#### **SEROLOGICAL SURVEYS TO GUIDE IMMUNIZATION PROGRAMS IN ZAMBIA AND INDIA: DESIGNING AND IMPLEMENTING ROBUST POPULATION-BASED SEROSURVEYS TO ANSWER THE QUESTIONS POLICYMAKERS AND PROGRAMS WANT TO KNOW**

Kyla Hayford  
*Johns Hopkins School of Public Health, Baltimore, MD, United States*

11:35 a.m.

#### **DISCUSSION**

### **Symposium 126**

#### **Controversies in Personal Protective Equipment: The Ins and Outs of What Health Workers Wear at the Frontline**

*Potomac D (Ballroom Level)*

Saturday, November 23, 10:15 a.m. - Noon

There is little evidence-based research on the protective effects of the personal protective equipment (PPE) worn by health workers (HW) at the frontline working to care for Ebola patients, but PPE users believe infection prevention control practices (IPC) and wearing protection is essential for their safety. HW on the frontline were at 21 to 32 times greater risk of contracting Ebola virus disease (EVD) during the West Africa epidemic and this risk

continues today in the Democratic Republic of Congo outbreak. PPE was strongly suspected as a source of infection given the complicated donning and doffing procedures, poor IPC practices while working under stressful, hot and humid conditions, lasting often only 45 minutes while caring for patients. With exception of a strict PPE and IPC system that Doctors without Borders (MSF) uses, HW have to struggle to fit multiple styles of PPE product for complete coverage. PPE worn during previous Ebola and Marburg outbreak responses had been more basic without full head-to-toe coverage and, some argue, because it was more about IPC than PPE itself, that fewer HW got infected. There is no global standard for PPE. PPE worn by HW are off-the-shelf pieces (gowns, eye protection, suits, gloves, masks, aprons), each piece meets its individual product specifications but has not been rigorously tested as an ensemble to protect against highly transmissible pathogens. Recognizing that improvements to PPE need to be addressed, WHO has provided guidance for preferred product characteristics in hopes of better designed products. Advances have been made to our scientific understanding of PPE use, material, design, interoperability, interfaces of PPE junctions and inclusion of human design. However, controversy still exists on the adequacy of protection, types and styles of PPE use. ASTMH members participate in high transmissible disease outbreaks and this session brings this controversy to the audience to present what evidence has been generated in new material sciences, human design technologies and testing capability. It is anticipated that ASTMH members can provide needed insights to inform better decisions on PPE wear and practices. The session will present the evidence through presentations and a panel to discuss the pros and cons of PPE use. From the symposium, the goal is to share the information and receive feedback on how to improve PPE use and wear for the future.

#### CHAIR

May C. Chu  
Colorado School of Public Health, Aurora, CO, United States

Adriana Velazquez  
World Health Organization, Geneva, Switzerland

10:15 a.m.

#### A DOCTOR'S EXPERIENCE: THE DILEMMA FACED USING PPE WHILE WORKING IN AN EBOLA TREATMENT UNIT

Mohammad Boie Jalloh  
Republic of Sierra Leone Armed Forces, Freetown, Sierra Leone

10:30 a.m.

#### ENGINEERING WHAT TO WEAR, MATERIALS, STRESS TESTING AND RE-THINKING PPE

Fatima Selcen Klinik  
National Institute of Safety and Health, Washington, DC, United States

10:45 a.m.

#### FLUORESCENCE VISUALIZATION AS A TRAINING AND EVALUATION TOOL FOR PERSONAL PROTECTION AGAINST HIGH CONSEQUENCE INFECTIOUS DISEASES

Samantha Hall  
Health and Safety Executive, Buxton, United Kingdom

11 a.m.

#### PANEL DISCUSSION

Daniel G. Bausch  
UK Public Health Rapid Support Team, London, United Kingdom

Brian Lyons  
International Enviroguard, Mesquite, TX, United States

Trish Perl  
UT Southwestern Medical Center, Dallas, TX, United States

Armand Sprecher  
Doctors without Borders, Brussels, Belgium

### Scientific Session 127

#### Mosquitoes - Vector Biology - Epidemiology II

National Harbor 3 (National Harbor Level)  
Saturday, November 23, 10:15 a.m. - Noon

#### CHAIR

Maria G. Onyango  
Wadsworth Centre, New York State Department of Health, Slingerlands, NY, United States

Mgeni M. Tambwe  
Ifakara Health Institute, Bagamoyo, United Republic of Tanzania

10:15 a.m.

1368

#### TRACKING MOSQUITOES OVER TIME: TESTING THE ROLE OF AESTIVATION IN DRY SEASON PERSISTENCE

Roy Faiman<sup>1</sup>, Adama Dao<sup>2</sup>, Alpha S. Yaro<sup>2</sup>, Moussa Diallo<sup>2</sup>, Djibril Samake<sup>2</sup>, Zana L. Sonogo<sup>2</sup>, Yossi Ousmane<sup>2</sup>, Margery Sullivan<sup>1</sup>, Laura Veru<sup>1</sup>, Benjamin J. Krajacich<sup>1</sup>, Joy Matthews<sup>3</sup>, Christine A. France<sup>4</sup>, Gabriel Hamer<sup>5</sup>, Leland Graber<sup>1</sup>, Tovi Lehmann<sup>1</sup>  
<sup>1</sup>National Institutes of Health, Rockville, MD, United States, <sup>2</sup>Malaria Research and Training Center, Faculty of Medicine, Bamako, Mali, <sup>3</sup>University of California Stable Isotope Facility, Davis, CA, United States, <sup>4</sup>Smithsonian Institution Museum Support Center, Suitland, MD, United States, <sup>5</sup>Texas A&M University, College Station, TX, United States

10:30 a.m.

1369

#### INVESTIGATING THE MOLECULAR PLASTICITY OF Aedes albopictus IN RESPONSE TO ZIKA VIRUS INFECTION UNDER INCREASED TEMPERATURES

Maria G. Onyango, Sean Bialosuknia, Anne Payne, Mathias Nicholas, Lilli Kuo, Alexander Ciota, Laura D. Kramer  
Wadsworth Centre, New York State Department of Health, Slingerlands, NY, United States

10:45 a.m.

1370

#### THERMAL ECOLOGY OF MALARIA TRANSMISSION AND THE POTENTIAL IMPACT OF BEHAVIORAL RESISTANCE

Eunho Suh<sup>1</sup>, Marissa K. Grossman<sup>1</sup>, Jessica L. Waite<sup>1</sup>, Ellie Sherrard-Smith<sup>2</sup>, Thomas S. Churcher<sup>2</sup>, Matthew B. Thomas<sup>1</sup>  
<sup>1</sup>Pennsylvania State University, University Park, PA, United States, <sup>2</sup>Imperial College London, London, United Kingdom

11 a.m.

1371

#### A NEW BIO-ASSAY TO MEASURE MOSQUITO MORTALITY AND OUTDOOR BITE PREVENTION STRATEGIES UNDER SEMI FIELD CONDITIONS

Mgeni M. Tambwe, Sarah Moore, Jason Moore, Hassan Chilumba, Adam Saddler  
Ifakara Health Institute, Bagamoyo, Tanzania, United Republic of Tanzania

11:15 a.m.

1372

### VECTOR CHIP: A MINIATURIZED PLATFORM FOR HIGH-THROUGHPUT INTERROGATION OF MOSQUITO-PATHOGEN DYNAMICS

Shailabh Kumar, Felix Hol, Manu Prakash  
Stanford University, Stanford, CA, United States

11:30 a.m.

1373

### ACTIVATION OF MOSQUITO IMMUNITY BLOCKS THE DEVELOPMENT OF TRANSMISSION-STAGE FILARIAL NEMATODES

Abigail R. McCrea, Elizabeth B. Edgerton, Corbett T. Berry, Yukwah Kwok, Brittany Watson, Letitia K. Thompson, Thomas J. Nolan, James B. Lok, Michael Povelones  
University of Pennsylvania, Philadelphia, PA, United States

(ACMCIP Abstract)

11:45 a.m.

1374

### DIFFERENTIAL CONTRIBUTION OF ANOPHELES VECTORS TO MALARIA TRANSMISSION IN TWO NEIGHBORING VILLAGES IN THE RURAL COMMUNE OF ANDRIBA, MADAGASCAR

Jessy Marlene Goupeyou-Youmsi<sup>1</sup>, Tsiriniaina Rakotondranaivo<sup>2</sup>, Mandaniaina Radotiana Andriamiarimanana<sup>2</sup>, Tsikiniaina Rasoloharimanana<sup>2</sup>, Nicolas Puchot<sup>2</sup>, Rado Lalaina Rakotoarison<sup>2</sup>, Emma Rakotomalala<sup>2</sup>, Romain Girod<sup>2</sup>, Mamadou Ousmane Ndiath<sup>2</sup>, Ines Vigan-Womas<sup>2</sup>, Catherine Bourgouin<sup>3</sup>  
<sup>1</sup>University of Malawi College of Medicine, Blantyre, Malawi, <sup>2</sup>Institut Pasteur de Madagascar, Antananarivo, Madagascar, <sup>3</sup>Institut Pasteur, Paris, France

## Scientific Session 128

### Bacteriology: Systemic Infections

National Harbor 4/5 (National Harbor Level)  
Saturday, November 23, 10:15 a.m. - Noon

#### CHAIR

Lukman Abdurrahim  
Boston Children's Hospital, Boston, MA, United States

Jennifer R. Verani  
Centers for Disease Control and Prevention, Nairobi, Kenya

10:15 a.m.

1375

### CHILD DEATHS CAUSED BY KLEBSIELLA PNEUMONIAE IN KENYA: FINDINGS FROM THE CHILD HEALTH AND MORTALITY PREVENTION SURVEILLANCE (CHAMPS)

Jennifer R. Verani<sup>1</sup>, Victor Akelo<sup>2</sup>, Dianna M. Blau<sup>3</sup>, Aggrey Igunza<sup>4</sup>, Gunturu Revathi<sup>5</sup>, Florence Murila<sup>6</sup>, Magdalene Kuria<sup>1</sup>, Emily Rogena<sup>6</sup>, Paul Mitei<sup>7</sup>, Emily Zielinski-Gutierrez<sup>1</sup>, Bernard Ogonny<sup>4</sup>, Elizabeth Oele<sup>8</sup>, Samuel Omondi<sup>9</sup>, Pratima Raghunathan<sup>10</sup>, Clayton Onyango<sup>2</sup>, Marc-Alain Widdowson<sup>1</sup>, Beth A. Tippet Barr<sup>2</sup>, Dickens Onyango<sup>8</sup>, Robert F. Breiman<sup>11</sup>  
<sup>1</sup>Centers for Disease Control and Prevention, Nairobi, Kenya, <sup>2</sup>Centers for Disease Control and Prevention, Kisumu, Kenya, <sup>3</sup>Centers for Disease Control and Prevention and Emory Global Health Institute, Emory University, Atlanta, GA, United States, <sup>4</sup>Kenya Medical Research Institute, Kisumu, Kenya, <sup>5</sup>Aka Khan University, Nairobi, Kenya, <sup>6</sup>University of Nairobi, Nairobi, Kenya, <sup>7</sup>Kisumu Specialists Hospital, Kisumu, Kenya, <sup>8</sup>Kisumu County Department of Health, Kisumu, Kenya, <sup>9</sup>Siaya County Department of Health, Siaya, Kenya, <sup>10</sup>Centers for Disease Control and Prevention, Atlanta, GA, United States, <sup>11</sup>Emory Global Health Institute, Emory University, Atlanta, GA, United States

10:30 a.m.

1376

### STREPTOCOCCUS PNEUMONIAE ASSOCIATED CHILD MORTALITY IN THE PNEUMOCOCCAL CONJUGATE VACCINE ERA

Adriana C. Gibby<sup>1</sup>, Dianna M. Blau<sup>2</sup>, Shabir Madhi<sup>3</sup>, Richard Chawana<sup>4</sup>, Dickens Onyango<sup>5</sup>, Inacio Mandomando<sup>6</sup>, Samba O. Sow<sup>7</sup>, Shams El Arifeen<sup>8</sup>, Emily Gurley<sup>9</sup>, Beth A. Tippet Barr<sup>10</sup>, Victor Akelo<sup>10</sup>, Karen Kotloff<sup>11</sup>, Quique Bassat<sup>12</sup>, Robert F. Breiman<sup>1</sup>

<sup>1</sup>Emory Global Health Institute, Emory University, Atlanta, GA, United States, <sup>2</sup>Centers for Disease Control and Prevention, Atlanta, GA, United States, <sup>3</sup>Medical Research Council: Respiratory and Meningeal Pathogens Research Unit, Faculty of Health Sciences, University of Witwatersrand, Johannesburg, South Africa, <sup>4</sup>Department of Science/National Research Foundation: Vaccine Preventable Diseases, University of Witwatersrand, Faculty of Health Sciences, Johannesburg, South Africa, <sup>5</sup>Kisumu County Public Health Department, Kisumu, Kenya, <sup>6</sup>Centro de Investigação em Saúde de Manhiça (CISM), Maputo, Mozambique, <sup>7</sup>Center for Vaccine Development, Bamako, Mali, <sup>8</sup>icddr (International Centre for Diarrhoeal Disease Research, Bangladesh), Dhaka, Bangladesh, <sup>9</sup>Johns Hopkins Bloomberg School of Public Health, Baltimore, MD, United States, <sup>10</sup>US Centers for Disease Control and Prevention-Kenya, Kisumu, Kenya, <sup>11</sup>University of Maryland School of Medicine, Baltimore, MD, United States, <sup>12</sup>ISGlobal, Hospital Clinic - Universitat de Barcelona, Barcelona, Spain

10:45 a.m.

1377

### NEAR UNIVERSAL MULTIDRUG RESISTANCE OF BACTERIAL INFECTIONS AMONG STILLBIRTHS, NEONATES AND CHILDREN UNDER FIVE YEARS OF AGE AT A TERTIARY CARE HOSPITAL IN BANGLADESH

Muntasir Alam<sup>1</sup>, Dilruba Ahmed<sup>1</sup>, Mariya Kibtiya Sumiya<sup>1</sup>, Kyu Han Lee<sup>2</sup>, Mohammed Ziaur Rahman<sup>1</sup>, Jannatul Rafeya<sup>1</sup>, Farzana Islam<sup>1</sup>, Afruna Rahman<sup>1</sup>, Shahana Parveen<sup>1</sup>, Sanwarul Bari<sup>1</sup>, Dianna M. Blau<sup>3</sup>, Robert F. Breiman<sup>4</sup>, Emily S. Gurley<sup>2</sup>, Shams El Arifeen<sup>1</sup>, Mustafizur Rahman<sup>1</sup>

<sup>1</sup>International Centre for Diarrhoeal Disease Research, Bangladesh, Dhaka, Bangladesh, <sup>2</sup>Johns Hopkins Bloomberg School of Public Health, Baltimore, MD, United States, <sup>3</sup>Centers for Disease Control and Prevention, Atlanta, GA, United States, <sup>4</sup>Emory Global Health Institute, Atlanta, GA, United States

11 a.m.

1378

### RISK FACTORS ASSOCIATED WITH NOSOCOMIAL BACTEREMIA AMONG NEONATES AT UNIVERSITY TEACHING HOSPITAL LUSAKA, ZAMBIA

Lukman Abdurrahim<sup>1</sup>, Carter L. Cowden<sup>2</sup>, Lawrence Mwanayanda<sup>3</sup>, James Mwansa<sup>4</sup>, Chilese Lukwesa-Musyani<sup>5</sup>, Cassandra Pierre<sup>6</sup>, Russell Localio<sup>7</sup>, Davidson Hamer<sup>8</sup>, Susan E. Coffin<sup>2</sup>

<sup>1</sup>Boston Children's Hospital, Boston, MA, United States, <sup>2</sup>Division of Infectious Diseases, The Children's Hospital of Philadelphia, Philadelphia, PA, United States, <sup>3</sup>Right to Care Zambia, Lusaka, Zambia, <sup>4</sup>Department of Pathology and Microbiology, Lusaka Apex Medical University, Lusaka, Zambia, <sup>5</sup>Department of Pathology and Microbiology, University Teaching Hospital, Lusaka, Zambia, <sup>6</sup>Section of Infectious Diseases, Department of Medicine, Boston University School of Medicine, Boston, MA, United States, <sup>7</sup>Department of Biostatistics and Epidemiology, University of Pennsylvania School of Medicine, Philadelphia, PA, United States, <sup>8</sup>Department of Global Health, Boston University School of Public Health, Boston, MA, United States

11:15 a.m.

1379

### THE ROLE OF NEONATAL SEPSIS IN THE OVERALL BURDEN OF ANTIMICROBIAL RESISTANCE IN NOSOCOMIAL PATHOGENS

Sulochana Manandhar<sup>1</sup>, Sabina Dongol<sup>1</sup>, Suchita Joshi<sup>2</sup>, Shreejana Shrestha<sup>2</sup>, Sameer Mani Dixit<sup>3</sup>, Buddha Basnet<sup>1</sup>, Stephen Baker<sup>4</sup>, Abhilasha Karkey<sup>1</sup>  
<sup>1</sup>Oxford University Clinical Research Unit, Patan Academy of Health Sciences, Kathmandu, Nepal, <sup>2</sup>Patan Academy of Health Sciences, Kathmandu, Nepal, <sup>3</sup>Center for Molecular Dynamics Nepal, Kathmandu, Nepal, <sup>4</sup>The Hospital for Tropical Diseases, Wellcome Trust Major Overseas Programme, Oxford University Clinical Research Unit, Ho Chi Minh City, Vietnam



11:30 a.m.

1380

**PREVALENCE OF BACTEREMIA AND ANTIMICROBIAL RESISTANCE IN KENYAN CHILDREN FROM A HOLOENDEMIC *PLASMODIUM FALCIPARUM* TRANSMISSION REGION**

**Tessa LeCuyer**<sup>1</sup>, Vincent Otieno<sup>2</sup>, Nicholas Kondiek<sup>2</sup>, Collins Ouma<sup>3</sup>, Benjamin H. McMahon<sup>4</sup>, Philip Seidenberg<sup>5</sup>, Douglas J. Perkins<sup>1</sup>  
<sup>1</sup>University of New Mexico Center for Global Health, Albuquerque, NM, United States, <sup>2</sup>University of New Mexico-Kenya Global Health Programs, Kisumu, Kenya, <sup>3</sup>Department of Biomedical Sciences and Technology, School of Public Health and Community Development, Maseno University, Kisumu, Kenya, <sup>4</sup>Theoretical Biology and Biophysics Group, Theoretical Division, Los Alamos National Laboratory, Los Alamos, NM, United States, <sup>5</sup>University of New Mexico Center for Global Health and Department of Emergency Medicine, Albuquerque, NM, United States

11:45 a.m.

1381

**EFFECTS OF SULFADOXINE-PYRIMETHAMINE INTERMITTENT PREVENTIVE THERAPY IN PREGNANCY ON MATERNAL CARRIAGE OF ENTEROPATHOGENS AND GUT MICROBIOMES AND INFANT BIRTH OUTCOMES**

**Andreea Waltmann**<sup>1</sup>, Jobiba Chinkhumba<sup>2</sup>, Megumi Itoh<sup>3</sup>, Fatsani Gadama<sup>2</sup>, Enala Mzembe<sup>2</sup>, Michael Kayange<sup>4</sup>, Sydney M. Puerto-Meredith<sup>5</sup>, Elizabeth T. Rogawski McQuade<sup>6</sup>, Darwin J. Operario<sup>6</sup>, Jeffrey Roach<sup>7</sup>, Don P. Mathanga<sup>2</sup>, Ian Carroll<sup>8</sup>, Julie R. Gutman<sup>3</sup>, Steven R. Meshnick<sup>9</sup>  
<sup>1</sup>Institute for Global Health and Infectious Diseases, School of Medicine, University of North Carolina at Chapel Hill, Chapel Hill, NC, United States, <sup>2</sup>Malaria Alert Centre (MAC), University of Malawi College of Medicine, Blantyre, Malawi, <sup>3</sup>Malaria Branch, Division of Parasitic Diseases and Malaria, Center for Global Health, Centers for Disease Control and Prevention, Atlanta, GA, United States, <sup>4</sup>National Malaria Control Program, Lilongwe, Malawi, <sup>5</sup>Undergraduate Biology Program, University of North Carolina at Chapel Hill, Chapel Hill, NC, United States, <sup>6</sup>Division of Infectious Diseases and International Health, Department of Medicine, University of Virginia, Charlottesville, VA, United States, <sup>7</sup>Microbiome Core Facility, University of North Carolina at Chapel Hill, Chapel Hill, NC, United States, <sup>8</sup>Department of Nutrition, Gillings School of Global Public Health, University of North Carolina at Chapel Hill, Chapel Hill, NC, United States, <sup>9</sup>Department of Epidemiology, Gillings School of Global Public Health, University of North Carolina at Chapel Hill, Chapel Hill, NC, United States

**Symposium 129**

**Ticks and Tick-Borne Diseases – Progress of the Congressionally-Directed Medical Research Programs/Tick-Borne Diseases Research Program**

*National Harbor 10 (National Harbor Level)*  
Saturday, November 23, 10:15 a.m. - Noon

Surprisingly, among vector-borne infectious diseases in the U.S., most are caused by pathogens which are transmitted by ticks. Over 20 different tick-borne diseases can occur in humans, and of these, only a limited group are considered nationally reportable, confounding efforts to tabulate the real burden that they impose. Tick-borne diseases that affect animals are perhaps an equally daunting challenge that drives enormous economic costs domestically, but also in low- and middle-income countries that can ill afford the challenge. Included among these are Lyme disease, Spotted fever rickettsiosis, Babesiosis, Anaplasmosis, Ehrlichiosis and emerging viruses such as Powassan, Heartland and Bourbon viruses. Owing to the increasing domestic threat of these infections and their consequences in humans, the U.S. Department of Defense's Congressionally-Directed Medical Research Programs implemented the Tick-Borne Disease Research Program (TBDRP) in 2016 to support innovative and impactful research that addresses

fundamental issues and knowledge gaps in tick-borne diseases. Hallmarks of TBDRP funding include the involvement of Lyme and tick-borne disease advocates in a two-tier review process, as well as the mission of addressing tick-borne diseases as a threat to military forces and their dependents. This symposium will provide the background and impetus for creating the program and highlight several of the promising research programs and outcomes gleaned over the first two years of its existence within the domains of diagnosis, pathogenesis, prevention and treatment.

**CHAIR**

J. Stephen Dumler  
*Uniformed Services University of the Health Sciences, Bethesda, MD, United States*  
David H. Walker  
*University of Texas Medical Branch, Galveston, TX, United States*

10:15 a.m.

**OVERVIEW OF THE CDMRP AND TBDRP**

Angel Davey  
*Congressionally Directed Medical Research Program, Fort Detrick, MD, United States*

10:20 a.m.

**GLOBAL EXPRESSION PROFILING OF PERSISTENT INFECTIONS IN A MAJOR NATURAL HOST FOR TICK-BORNE DISEASES**

Alan G. Barbour  
*University of California Irvine, Irvine, CA, United States*

10:45 a.m.

**HERITABLY IMMUNIZING WHITE-FOOTED MICE AGAINST TICK-BORNE DISEASE**

Kevin M. Esvelt  
*Massachusetts Institute of Technology Media Lab, Cambridge, MA, United States*

11:10 a.m.

**DEVELOPMENT AND VALIDATION OF A COMBINED PATHOGEN-HOST GENOMIC ASSAY FOR DIAGNOSIS OF LYME DISEASE AND OTHER TICK-BORNE INFECTIONS**

Charles Y. Chiu  
*University of California San Francisco, San Francisco, CA, United States*

11:35 a.m.

**DISCUSSION**

Saturday  
November 23

## Scientific Session 130

### American Committee of Molecular, Cellular and Immunoparasitology (ACMCIP): Protozoans - Molecular and Cellular Biology

National Harbor 11 (National Harbor Level)  
Saturday, November 23, 10:15 a.m. - Noon

**Supported with funding from the Burroughs Wellcome Fund**

#### CHAIR

Scott E. Lindner  
*Pennsylvania State University, University Park, PA, United States*  
Miho Usui  
*Uniformed Services University of the Health Sciences, Bethesda, MD, United States*

10:15 a.m.

**2010**

#### EARLY IFN- $\gamma$ PRODUCTION BY INNATE LYMPHOID CELLS MEDIATES PROTECTION TO *CRYPTOSPORIDIUM TYZZERI*

Jodi Gullicksrud, Adam Sateriale, Julie Engiles, Christopher Hunter, Boris Striepen  
*University of Pennsylvania, Philadelphia, PA, United States*

10:30 a.m.

**2011**

#### COMPARATIVE CHEMICAL GENOMICS IN *BABESIA* SPECIES IDENTIFIES A NOVEL APICOMPLEXAN DRUG TARGET

Caroline D. Keroack, Brendan Elsworth, Jacob A. Tennessen, Cristina K. Moreira, Aditya S. Paul, Manoj T. Duraisingh  
*Department of Immunology and Infectious Diseases, Harvard T. H. Chan School of Public Health, Boston, MA, United States*

10:45 a.m.

**2012**

#### IDENTIFICATION OF A MASTER REGULATOR OF DIFFERENTIATION IN *TOXOPLASMA*

Benjamin S. Waldman<sup>1</sup>, Dominic Schwarz<sup>2</sup>, Marc H. Wadsworth II<sup>3</sup>, Jeroen P. Saeij<sup>4</sup>, Alex K. Shalek<sup>3</sup>, Sebastian Lourido<sup>1</sup>  
<sup>1</sup>Whitehead Institute for Biomedical Research and Department of Biology, Massachusetts Institute of Technology, Cambridge, MA, United States, <sup>2</sup>Whitehead Institute for Biomedical Research, Cambridge, MA, United States, <sup>3</sup>Institute for Medical Engineering & Science (IMES), Department of Chemistry, and Koch Institute for Integrative Cancer Research, Massachusetts Institute of Technology, Cambridge, MA, United States, <sup>4</sup>Department of Pathology, Microbiology and Immunology, School of Veterinary Medicine, University of California Davis, Davis, CA, United States

11 a.m.

**1382**

#### EXTENSIVE TRANSCRIPTIONAL AND TRANSLATIONAL REGULATION OCCUR DURING THE MATURATION OF MALARIA PARASITE SPOROZOITES

Scott E. Lindner<sup>1</sup>, Kristian E. Swearingen<sup>2</sup>, Melanie Shears<sup>3</sup>, Michael P. Walker<sup>1</sup>, Erin N. Vrana<sup>1</sup>, Kevin J. Hart<sup>1</sup>, Allen M. Minns<sup>1</sup>, Photini Sinnis<sup>4</sup>, Robert L. Moritz<sup>2</sup>, Stefan H. Kappe<sup>5</sup>  
<sup>1</sup>Pennsylvania State University, University Park, PA, United States, <sup>2</sup>Institute for Systems Biology, Seattle, WA, United States, <sup>3</sup>University of Washington, Seattle, WA, United States, <sup>4</sup>Johns Hopkins Bloomberg School of Public Health, Baltimore, MD, United States, <sup>5</sup>Center for Global Infectious Disease Research, Seattle Children's Research Institute, Seattle, WA, United States

**(ACMCIP Abstract)**

11:15 a.m.

**1383**

#### PLASMEPSIN V IS ESSENTIAL IN *PLASMODIUM* LIVER STAGES AND DIRECTS EXPORT TO THE INFECTED HEPATOCYTE

Pravin Rajasekaran, Ryan Steel, Matthew O'Neill, Bethany Davey, Annie Yang, Brad Sleebs, Alan Cowman, Justin Boddey  
*Walter and Eliza Hall Institute of Medical Research, Melbourne, Australia*

**(ACMCIP Abstract)**

11:30 a.m.

**1384**

#### PHOSPHORYLATION OF THE VAR2CSA EXTRACELLULAR REGION IS ASSOCIATED WITH ENHANCED ADHESIVE PROPERTIES TO THE PLACENTAL RECEPTOR CSA

Dominique Dorin-Semblat<sup>1</sup>, Marilou tetard<sup>1</sup>, Aurélie Claës<sup>2</sup>, Jean-Philippe Semblat<sup>1</sup>, Sébastien Dechavanne<sup>1</sup>, Zeineb Fourati<sup>1</sup>, Romain Hamelin<sup>3</sup>, Florence Armand<sup>3</sup>, Graziella Matesic<sup>1</sup>, Sofia Nunes-Silva<sup>1</sup>, Anand Srivastava<sup>1</sup>, Stéphane Gangnard<sup>1</sup>, Jose-Juan Lopez-Rubio<sup>4</sup>, Marc Moniatte<sup>3</sup>, Christian Doerig<sup>5</sup>, Artur Scherf<sup>2</sup>, Benoit Gamain<sup>1</sup>  
<sup>1</sup>INSERM, Paris, France, <sup>2</sup>Institut Pasteur, Paris, France, <sup>3</sup>EPFL, Lausanne, Switzerland, <sup>4</sup>MIVEGEC, Montpellier, France, <sup>5</sup>Monash University, Melbourne, Australia

**(ACMCIP Abstract)**

11:45 a.m.

**1385**

#### IN VITRO AND IN VIVO EVIDENCE THAT GDV1 REGULATES SEXUAL DIFFERENTIATION UPSTREAM OF AP2-G

Miho Usui<sup>1</sup>, Surendra K. Prajapati<sup>1</sup>, Ruth Ayanful-Torgby<sup>2</sup>, Festus K. Acquah<sup>2</sup>, Elizabeth Cudjoe<sup>2</sup>, Courage Kakaney<sup>2</sup>, Jones A. Amponsah<sup>2</sup>, Evans Obboh<sup>3</sup>, Deepti K. Reddy<sup>1</sup>, Michelle C. Barbeau<sup>1</sup>, Lacy M. Simons<sup>4</sup>, Beata Czesny<sup>4</sup>, Sorana Raiciulescu<sup>1</sup>, Cara Olsen<sup>1</sup>, Benjamin K. Abuaku<sup>2</sup>, Linda E. Amoah<sup>2</sup>, Kim C. Williamson<sup>1</sup>  
<sup>1</sup>Uniformed Services University of the Health Sciences, Bethesda, MD, United States, <sup>2</sup>Noguchi Memorial Institute for Medical Research, University of Ghana, Accra, Ghana, <sup>3</sup>School of Medical Sciences, University of Cape Coast, Cape Coast, Ghana, <sup>4</sup>Loyola University Chicago, Chicago, IL, United States

## Special Session

### Social Media Pop-up: A How-To for Using Social Media as an Advocacy Tool

Maryland 5/6 (Ballroom Level)

Saturday, November 23, 11 a.m. - Noon

A one-hour informal session offering how-to's from a communications professional on strategies and tactics to communicate via social media platforms about the value of tropical medicine research/global health overall. Gideon Hertz is a Senior Associate at Burness, a global communications firm that works with nonprofits, foundations and universities. He works on a variety of issues including, global and public health, biomedical research, environmental science and education. Gideon is a member of Burness' training team where he plans, develops and leads trainings on social media, message development, media relations, storytelling, presentation, persuasive writing and crisis communications. He has worked with ASTMH and the *American Journal of Tropical Medicine and Hygiene* for more than six years supporting the Society's media outreach and communications. He has led several communications and social media training sessions at Annual Meetings.

#### PRESENTER

Gideon Hertz

Burness, Bethesda, MD, United States

## Exhibit Hall Open and Light Lunch

Prince George's Exhibit Hall C (Lower Atrium Level)

Saturday, November 23, Noon - 1:45 p.m.

### Poster Session 131

#### Poster Session C: Presentations and Light Lunch

Prince George's Exhibit Hall D (Lower Atrium Level)

Saturday, November 23, Noon - 1:45 p.m.

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Ectoparasite-Borne Disease - Babesiosis and Lyme Disease:  
#1425 - 1431

Mosquitoes - Insecticide Resistance and Control: #1432 - 1443

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*Flaviviridae* - Dengue: #1462 - 1491

*Flaviviridae* - Other: #1492 - 1504

*Flaviviridae* - West Nile: #1505 - 1508

Viruses - Other: #1509 - 1529

Malaria - Biology and Pathogenesis: #1530 - 1542

Malaria - Chemotherapy and Drug Resistance: #1543 - 1564

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Malaria - Epidemiology: #1596 - 1623

Malaria - Genetics/Genomics: #1624 - 1640

Malaria - Immunology: #1641 - 1655

Malaria - Modeling: #1656 - 1668

Malaria - Other: #1669 - 1684

Malaria - Prevention: #1685 - 1697

Malaria - Strategies for Elimination: #1698 - 1712

Malaria - Vaccines: #1713 - 1724

Malaria - Vector Control: #1725 - 1741

Bacteriology - Enteric Infections: #1742 - 1753

Bacteriology - Other Bacterial Infections: #1754 - 1764

Bacteriology - Trachoma: #1765 - 1776

Clinical Tropical Medicine: #1777 - 1809

Helminths - Nematodes - Filariasis (Epidemiology): #1810 - 1826

HIV and Tropical Co-Infections: #1827 - 1838

Kinetoplastida - Cellular and Molecular Biology (Including *Leishmania*  
and Trypanosomes): #1839 - 1840

Kinetoplastida - Diagnosis and Treatment (Including *Leishmania* and  
Trypanosomes): #1841 - 1857

One Health: Interface Of Human Health/Animal Diseases:  
#1858 - 1867

Pneumonia, Respiratory Infections and Tuberculosis: #1868 - 1878

Water, Sanitation, Hygiene and Environmental Health: #1879 - 1890

## Global Health

### 1386

#### GEOGRAPHIC ACCESSIBILITY AND FACILITY-BASED HEALTHCARE IN ZAMBIA: A GEOSTATISTICAL MAPPING STUDY

Roy Burstein<sup>1</sup>, Felix Masiye<sup>2</sup>, Nancy Fullman<sup>3</sup>, Simon Hay<sup>4</sup>

<sup>1</sup>Institute for Disease Modeling, Bellevue, WA, United States, <sup>2</sup>University of Zambia, Lusaka, Zambia, <sup>3</sup>University of Washington, Seattle, WA, United States, <sup>4</sup>Institute for Health Metrics and Evaluation, Seattle, WA, United States

### 1387

#### DATA ACCESS COMMITTEES: WHAT SHOULD THEIR ROLES AND RESPONSIBILITIES BE AND WHO SHOULD BE ON THEM?

Phaik Yeong Cheah<sup>1</sup>, Jan Piasecki<sup>2</sup>

<sup>1</sup>Mahidol Oxford Tropical Medicine Research Unit, Bangkok, Thailand, <sup>2</sup>Jagiellonian University Medical College, Krakow, Poland

### 1388

#### BEACON: A TOOL FOR EVALUATING MHEALTH READINESS IN GLOBAL HEALTH

Thomas F. Scherr<sup>1</sup>, Carson Moore<sup>1</sup>, Saidon Mbambara<sup>2</sup>, Philip Thuma<sup>2</sup>, David Wright<sup>1</sup>

<sup>1</sup>Vanderbilt University, Nashville, TN, United States, <sup>2</sup>Macha Research Trust, Macha, Zambia

1389

**TRANSLATING CHILD HEALTH AND MORTALITY PREVENTION SURVEILLANCE (CHAMPS) RESULTS INTO ACTION AT THE DISTRICT LEVEL: THE EXPERIENCE OF MOZAMBIQUE**

**Inaco Mandomando**<sup>1</sup>, Pio Victorino<sup>1</sup>, Saquina Cossa<sup>1</sup>, Maria Maixenchs<sup>2</sup>, Bento Nhancale<sup>1</sup>, Esteveo Mucavele<sup>1</sup>, Madalena Ripinga<sup>1</sup>, Rosauro Varo<sup>2</sup>, Jaume Ordí<sup>2</sup>, Elizabeth O'Mara<sup>3</sup>, John Blevens<sup>3</sup>, Navit Salzberg<sup>3</sup>, Robert Breiman<sup>3</sup>, Dianna Blau<sup>3</sup>, Carla Carrilho<sup>4</sup>, Quique Bassat<sup>2</sup>, Khatia Munguambe<sup>1</sup>  
<sup>1</sup>Manhica Health Research Centre, Maputo, Mozambique, <sup>2</sup>ISGlobal, Hospital Clínic - Universitat de Barcelona, Barcelona, Spain, <sup>3</sup>Emory Global Health Institute, Atlanta, GA, United States, <sup>4</sup>Hospital Central de Maputo, Maputo, Mozambique

1390

**EXPANDING GLOBAL PARTNERSHIPS TO STRENGTHEN PATHOLOGY-BASED MORTALITY SURVEILLANCE**

**Tia R. Paganelli**<sup>1</sup>, Norman J. Goco<sup>2</sup>, Lindsay M. Parberg<sup>2</sup>, Elizabeth M. McClure<sup>2</sup>  
<sup>1</sup>RTI International, Seattle, WA, United States, <sup>2</sup>RTI International, Research Triangle Park, NC, United States

1391

**ELECTRONIC DATA MANAGEMENT FOR GLOBAL HEALTH FIELD RESEARCH PROJECTS**

**Katiuscia K. O'Brian**<sup>1</sup>, Amy Rigney<sup>2</sup>, Gary J. Weil<sup>1</sup>  
<sup>1</sup>Washington University School of Medicine, St Louis, MO, United States, <sup>2</sup>SPRI Clinical Trials, Pittsboro, NC, United States

1392

**STRENGTHENING THE VACCINE SAFETY SYSTEM IN KENYA: ASSESSMENT OF BEST PRACTICES FOR VACCINE SAFETY AMONG HEALTHCARE WORKERS IN KENYA**

**Zunera Gilani**<sup>1</sup>, Dorothy C. Koech<sup>2</sup>, Lucy Mecca<sup>3</sup>, Christabel Khaemba<sup>4</sup>, Martha Mandale<sup>4</sup>, Wilbrod Mwanje<sup>5</sup>, Laura Conklin<sup>1</sup>, Tabu Collins<sup>3</sup>, Jane Gidudu<sup>1</sup>  
<sup>1</sup>Centers for Disease Control and Prevention, Atlanta, GA, United States, <sup>2</sup>African Field Epidemiology Network, Nairobi, Kenya, <sup>3</sup>Kenya National Vaccines and Immunization Program, Nairobi, Kenya, <sup>4</sup>Kenya Pharmacy and Poisons Board, Nairobi, Kenya, <sup>5</sup>African Epidemiology Network, Kampala, Uganda

1393

**SOCIAL ACCEPTABILITY OF COMPLETE DIAGNOSTIC AUTOPSY AND MINIMALLY INVASIVE TISSUE SAMPLING IN THE KILIMANJARO REGION OF NORTHERN TANZANIA**

**Francis P. Karia**<sup>1</sup>, Martha O. Mwangi<sup>2</sup>, Elizabeth F. Msoka<sup>2</sup>, Venance P. Maro<sup>1</sup>, John A. Crump<sup>3</sup>, Matthew P. Rubach<sup>3</sup>, Lauren S. Blum<sup>4</sup>  
<sup>1</sup>Kilimanjaro Christian Medical University College, Moshi, United Republic of Tanzania, <sup>2</sup>Kilimanjaro Christian Medical Centre, Moshi, United Republic of Tanzania, <sup>3</sup>Division of Infectious Diseases and International Health, Department of Medicine, Duke University Medical Center, Durham, NC, United States, <sup>4</sup>Consultant, Duke University, Durham, NC, United States

1394

**THE ROLE OF TRUST IN EMERGENCY PREPAREDNESS: INSIGHTS FROM A QUALITATIVE STUDY ON ZOOONOTIC DISEASES IN CÔTE D'IVOIRE**

**Natalie Tibbels**<sup>1</sup>, Danielle Naugle<sup>1</sup>, Abdul Dosso<sup>2</sup>, William Benié<sup>2</sup>, Walter Kra<sup>3</sup>, Corinne Fordham<sup>1</sup>, Mieke McKay<sup>2</sup>, Valère Konan<sup>4</sup>, Jeanne Brou<sup>5</sup>, Jocelyne Nebre<sup>5</sup>, Adaman Kouadio<sup>4</sup>, Zandra Andre<sup>6</sup>, Diarra Kamara<sup>2</sup>, Stella Babalola<sup>1</sup>  
<sup>1</sup>Johns Hopkins University, Baltimore, MD, United States, <sup>2</sup>Johns Hopkins University, Abidjan, Côte D'Ivoire, <sup>3</sup>Alassane Ouattara University, Bouaké, Côte D'Ivoire, <sup>4</sup>Department of Veterinarian Services Ministry of Animal Resources and Fisheries, Abidjan, Côte D'Ivoire, <sup>5</sup>National Institute of Public Hygiene, Abidjan, Côte D'Ivoire, <sup>6</sup>U.S. Agency for International Development, Abidjan, Côte D'Ivoire

1395

**IMPLEMENTATION OF THE SMITHSONIAN'S OUTBREAK DIY TOOLKIT FOR LOCAL COMMUNITIES OF LAIKIPIA, KENYA: SUCCESSES, CHALLENGES AND LESSONS LEARNED**

**Jennifer H. Yu**<sup>1</sup>, Sabrina Sholts<sup>2</sup>, Dawn Zimmerman<sup>1</sup>, Joseph Kamau<sup>3</sup>, Elizabeth Ashby<sup>1</sup>, Dino Martins<sup>4</sup>, Fardosa Hassan<sup>4</sup>, Suzan Murray<sup>1</sup>, Kerri Dean<sup>5</sup>  
<sup>1</sup>Global Health Program, Smithsonian's National Zoo and Conservation Biology Institute, Washington, DC, United States, <sup>2</sup>Department of Anthropology, Smithsonian National Museum of Natural History, Washington, DC, United States, <sup>3</sup>Molecular Biology Unit, Institute of Primate Research, Karen-Nairobi, Kenya, <sup>4</sup>Mpala Research Centre and Wildlife Foundation, Laikipia, Kenya, <sup>5</sup>Department of Exhibitions, Smithsonian National Museum of Natural History, Washington, DC, United States

1396

**IMPACT OF A FACILITY-BASED INTERVENTION ON PROVIDERS' CASE-MANAGEMENT SKILLS RELATED TO CHILDHOOD DIARRHEA: LEARNING FROM A QUASI-EXPERIMENTAL STUDY CONDUCTED IN UTTAR PRADESH, INDIA**

**Lopamudra Ray Saraswati**, Prince Bhandari, Animesh Rai, Ambrish Chandan, Ashutosh Mishra  
*RTI International India, New Delhi, India*

1397

**TRAVEL HEALTH PERCEPTIONS AND BEHAVIOR AMONGST PARTICIPANTS IN A TROPICAL MEDICINE DIPLOMA COURSE**

**Kyle Denison Martin**<sup>1</sup>, Sophie Dunin de Skrzywno<sup>2</sup>, Yvonne Wekesa<sup>3</sup>, Alex Fleming-Nouri<sup>4</sup>, Stephanie Laura Wilson<sup>5</sup>, Adam Boggon<sup>2</sup>, Tembe Carveth-Johnson<sup>2</sup>, Maria Henriksson<sup>2</sup>, Joy Jones<sup>2</sup>, Christopher Sanford<sup>6</sup>  
<sup>1</sup>Brown University, Providence, RI, United States, <sup>2</sup>London School of Hygiene & Tropical Medicine, London, United Kingdom, <sup>3</sup>Tenwek Mission Hospital, Bomet, Kenya, <sup>4</sup>Oxford University Hospitals, Oxford, United Kingdom, <sup>5</sup>University College of London Hospital, London, United Kingdom, <sup>6</sup>University of Washington, Seattle, WA, United States

1398

**MANAGEMENT OF CDTI CAMPAIGN DURING INSECURITY IN THE SOUTHWEST REGION OF CAMEROON**

**Georges Nko' Ayissi**<sup>1</sup>, Victor Mbome Njie<sup>1</sup>, Nde Bea<sup>1</sup>, Biholong Benjamin Didier<sup>1</sup>, Julie Akame<sup>2</sup>, Patrick Mbia<sup>2</sup>, Yaobi Zhang<sup>3</sup>, Steven D. Reid<sup>4</sup>, Ismael Teta<sup>2</sup>  
<sup>1</sup>Ministry of Public Health, NTD Coordination Unit, Yaoundé, Cameroon, <sup>2</sup>Helen Keller International, Yaoundé, Cameroon, <sup>3</sup>Helen Keller International, Regional Office for Africa, Dakar, Senegal, <sup>4</sup>Helen Keller International, New York, NY, United States

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**NEMO: AN OPEN SOURCE SOFTWARE FOR SURVEY FORM DESIGN AND AGGREGATION FOR USE WITH OPEN DATA KIT COLLECT**

**Dottie Hunt**, Andrew W. Nute, Gregory S. Noland, Emily Griswold, Lindsay J. Rakers, Brianna Poovey, Avery Davis-Roberts, Seseni Nu, Adam J. Weiss, E. Kelly Callahan, Scott D. Nash  
*The Carter Center, Atlanta, GA, United States*



1400

**A MULTI-SECTOR ENGAGEMENT APPROACH TO DEVELOPING A PLATFORM FOR ETIOLOGICAL DIAGNOSIS OF FEBRILE ILLNESSES IN WEST AFRICA**

**Edward O. Nyarko**<sup>1</sup>, Andrew Letizia<sup>2</sup>, William Asiedu<sup>1</sup>, Patricia Adams<sup>1</sup>, Mihret F. Amare<sup>3</sup>, Jayda Jones<sup>3</sup>, Suzanne Mate<sup>4</sup>, Kara Lombardi<sup>3</sup>, Leigh Ann Eller<sup>3</sup>, Inger-Marie Vilcins<sup>3</sup>, Zahra Parker<sup>3</sup>, Abdulwasii B. Tihamiyu<sup>5</sup>, Edward Akinwale<sup>5</sup>, Amy Castellano<sup>3</sup>, Ayesha Rashid<sup>3</sup>, Mark Milazzo<sup>3</sup>, Heather Lieu<sup>3</sup>, Jarrett Headley<sup>3</sup>, Michael Iroezindu<sup>5</sup>, Joseph Diclaro<sup>6</sup>, Paul Scott<sup>4</sup>, Merlin Robb<sup>3</sup>, Nelson Michael<sup>4</sup>, Julie Ake<sup>4</sup>, Kayvon Modjarrad<sup>4</sup>

<sup>1</sup>37 Military Hospital, Accra, Ghana, <sup>2</sup>Navy Medical Research Unit-3 Ghana Detachment, Accra, Ghana, <sup>3</sup>Henry M. Jackson Foundation for the Advancement of Military Medicine, Bethesda, MD, United States, <sup>4</sup>Walter Reed Army Institute of Research, Silver Spring, MD, United States, <sup>5</sup>Henry M. Jackson Foundation Medical Research International, Abuja, Nigeria, <sup>6</sup>Navy Entomological Center of Excellence, Jacksonville, FL, United States

1401

**BUILDING AN EBOLA-READY WORKFORCE: LESSONS LEARNED ON STRENGTHENING THE GLOBAL WORKFORCE THROUGH UNIVERSITY NETWORKS**

Katey Pelican<sup>1</sup>, Saul Tzipori<sup>2</sup>, **Jeff Bender**<sup>3</sup>

<sup>1</sup>University of Minnesota, St. Paul, MN, United States, <sup>2</sup>Tufts University, North Grafton, MA, United States, <sup>3</sup>University of Minnesota, Minneapolis, MN, United States

1402

**CAPITALIZING ON A COLLABORATIVE MODEL TO STRENGTHEN INSTITUTIONAL HEALTH SERVICE DELIVERY: A SUCCESSFUL PARTNERSHIP BETWEEN THE AUSTERE ENVIRONMENTS CONSORTIUM FOR ENHANCED SEPSIS OUTCOMES (ACESO) AND A GHANAIAI TERTIARY HOSPITAL**

**George Oduro**<sup>1</sup>, Chris Oppong<sup>1</sup>, Alex Owusu-Ofori<sup>2</sup>, Daniel Ansong<sup>3</sup>, Anne Fox<sup>4</sup>, Andrew Letizia<sup>4</sup>, Josh Chenoweth<sup>5</sup>, Charmagne Beckett<sup>6</sup>, Benjamin Espinosa<sup>6</sup>, Danielle Clark<sup>6</sup>

<sup>1</sup>Komfo Anokye Teaching Hospital, Kumasi, Ghana, <sup>2</sup>Department of Clinical Microbiology, School of Medical Sciences, Kwame Nkrumah University of Science and Technology, Kumasi, Ghana, <sup>3</sup>Department of Child Health, School of Medical Sciences, Kwame Nkrumah University of Science and Technology, Kumasi, Ghana, <sup>4</sup>Naval Medical Research Unit Number 3, Accra, Ghana, <sup>5</sup>Henry M Jackson Foundation, Austere Environments Consortium for Enhanced Sepsis Outcomes, Bethesda, MD, United States, <sup>6</sup>Naval Medical Research Center, Frederick, Austere Environments Consortium for Enhanced Sepsis Outcomes, Frederick, MD, United States

1403

**CHOLERA IN INTERNALLY DISPLACED PERSONS CAMPS IN BORNO STATE – NIGERIA, 2017: A QUALITATIVE STUDY OF THE MULTI-SECTORIAL EMERGENCY RESPONSE TO STOP THE SPREAD OF THE OUTBREAK**

**Moise C. Ngwa**<sup>1</sup>, Alemu Wondimagednehu<sup>2</sup>, Ifeanyi Okudo<sup>3</sup>, Collins Owili<sup>4</sup>, Uzoma Ugochukwu<sup>3</sup>, Clement Peter<sup>3</sup>, Isabelle Devaux<sup>5</sup>, Lorenzo Pezzoli<sup>6</sup>, Chikwe Ihekweazu<sup>7</sup>, David A. Sack<sup>1</sup>

<sup>1</sup>Johns Hopkins Bloomberg School of Public Health, Baltimore, MD, United States, <sup>2</sup>International Health Consultancy, LLC, Atlanta, GA, United States, <sup>3</sup>World Health Organization Country Office, Nigeria, Abuja, Nigeria, <sup>4</sup>World Health Organization Country Office, Nigeria, Abuja, Nigeria, <sup>5</sup>World Health Organization Country Office, Borno State, Nigeria, Maiduguri, Nigeria, <sup>6</sup>World Health Organization, Geneva, Switzerland, <sup>7</sup>Nigeria Centre for Disease Control, Nigeria, Abuja, Nigeria

1404

**OBSTETRICS-GYNECOLOGY GRAND ROUNDS AS A MEANS TO EVALUATE AND IMPROVE PROVIDER KNOWLEDGE OF CONGENITAL CHAGAS DISEASE**

**Erica L. Crosley**, Federico Palacio-Bedoya

Emory University School of Medicine, Atlanta, GA, United States

1405

**PRECOSAN: CONCERTED RESEARCH PROGRAM IN HEALTH ECONOMICS AT KINSHASA SCHOOL OF PUBLIC HEALTH**

**Aimée Lulebo Mampasi**<sup>1</sup>, Serge Mayaka Manitu<sup>1</sup>, Patrick Suykerbuyk<sup>2</sup>, Diana De Graeve<sup>2</sup>

<sup>1</sup>Kinshasa School of Public Health, Kinshasa, Democratic Republic of the Congo, <sup>2</sup>University of Antwerp, Antwerp, Belgium

1406

**GEOSPATIAL ANALYSIS REVEALS SUBNATIONAL VARIATION IN CHILD MORTALITY SURVEILLANCE COMPLETENESS ACROSS CENTRAL AND SOUTH AMERICA**

**Nathaniel Henry**<sup>1</sup>, Roy Burstein<sup>2</sup>, Michael Collison<sup>1</sup>

<sup>1</sup>Institute for Health Metrics and Evaluation, Seattle, WA, United States, <sup>2</sup>Institute for Disease Modeling, Bellevue, WA, United States

1407

**INCREASED ACCESS TO ESSENTIAL HEALTH COMMODITIES THROUGH SUPPLY CHAIN AND INFORMATION SYSTEM INTEGRATION IN LAO PDR**

**Bounxou Keohavong**<sup>1</sup>, Many Thammavong<sup>2</sup>, Lauren Theis<sup>3</sup>, Dalavone Sengamphay<sup>3</sup>

<sup>1</sup>Ministry of Health Food and Drug Department, Vientiane, Lao People's Democratic Republic, <sup>2</sup>Ministry of Health Medical Product Supply Center, Vientiane, Lao People's Democratic Republic, <sup>3</sup>Clinton Health Access Initiative, Vientiane, Lao People's Democratic Republic

1408

**MANAGING OPERATIONAL AND FUNDAMENTAL RESEARCH TO CREATE SYNERGIES IN PUBLIC AND MILITARY HEALTH EFFORTS ADDRESSING MALARIA**

**Nicole Y. Zdrojewski**, Thi Phuong Hoa Nguyen, John W. Fallon

Vysnova Partners, Inc., Landover, MD, United States

1409

**PORTABLE SCREENING DEVICES TO ASSESS MEDICINES QUALITY FOR NATIONAL MEDICINES REGULATORY AUTHORITIES**

**Céline Caillet**, Paul N. Newton

Lao-Oxford Mahosot Hospital Wellcome Trust Research Unit, Vientiane, Lao People's Democratic Republic

1410

**UNDERWEIGHT AND STUNTING AMONG BANGLADESHI FEMALE ADOLESCENTS: FINDINGS OF A NATIONALLY REPRESENTATIVE SURVEY**

**Kazi Istiaque Sanin**, Ahshanul Haque, Mansura Khanam, Gulshan Ara, Tahmeed Ahmed

International Centre for Diarrhoeal Disease Research, Bangladesh, Dhaka, Bangladesh

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**MENTAL ILLNESS AND HOMELESSNESS FROM THE FEMALE PERSPECTIVE: INSIGHTS FROM LOS ANGELES COUNTY**

**Hannah L. Stewart**

University of Southern California, Los Angeles, CA, United States

## Arthropods/Entomology – Other

1412

### COMPARATIVE BEHAVIORAL RESPONSES OF *Aedes* Aegypti, *Aedes albopictus* and *Culex* *quequinfasciatus* (Diptera: Culicidae) to plants base repellent of vetiver compounds

Jirod Nararak<sup>1</sup>, Sylvie Manguin<sup>2</sup>, Theeraphap Chareonviriyaphap<sup>1</sup>  
<sup>1</sup>Department of Entomology, Faculty of Agriculture, Kasetsart University, Bangkok, Thailand, <sup>2</sup>HydroSciences Montpellier (HSM), Institut de Recherche pour le Développement (IRD), CNRS, Université Montpellier, Montpellier, France

1413

### ASSESSING THE IMPACT OF CLIMATE CHANGE ON SLEEPING SICKNESS IN ZIMBABWE USING A GEOSPATIAL MODEL OF TSETSE POPULATION DYNAMICS

Joshua Longbottom, Jennifer Lord, Stephen Torr  
Liverpool School of Tropical Medicine, Liverpool, United Kingdom

1414

### RISK OF TRANSMISSION OF DENGUE, CHIKUNGUNYA AND ZIKA IN SOME YELLOW FEVER HOTSPOT AREAS IN NORTHERN GHANA

Joannitta Joannides<sup>1</sup>, Mawuli Dzodzomenyo<sup>2</sup>, Faustus Azerigyik<sup>1</sup>, Esinam E. Agbosu<sup>3</sup>, Deborah Pratt<sup>3</sup>, Joseph H. Osei<sup>1</sup>, Rebecca Pwalia<sup>1</sup>, Godwin K. Amlalo<sup>1</sup>, Maxwell A. Appawu<sup>1</sup>, Hayashi Takashi<sup>1</sup>, Andrea Buchwald<sup>4</sup>, Rosemary Rochford<sup>5</sup>, Daniel A. Boakye<sup>1</sup>, Kwadwo A. Koram<sup>6</sup>, Kofi Bonney<sup>3</sup>, Samuel K. Dadzie<sup>1</sup>  
<sup>1</sup>Department of Parasitology, Noguchi Memorial Institute for Medical Research, Accra, Ghana, <sup>2</sup>Department of Biological, Environmental and Occupational Health, School of Public Health, University of Ghana, Accra, Ghana, <sup>3</sup>Department of Virology, Noguchi Memorial Institute for Medical Research, Accra, Ghana, <sup>4</sup>Department of Environmental and Occupational Health, School of Public Health, University of Colorado, Denver, CO, United States, <sup>5</sup>Department of Immunology and Microbiology, University of Colorado, Anschutz Medical Campus, Denver, CO, United States, <sup>6</sup>Department of Epidemiology, School of Public Health, University of Ghana, Legon, Accra, Ghana

1415

### KENYAN LONG-TERM EXCLUSION EXPERIMENT REPLICATION STUDY INVESTIGATING POTENTIAL INFLUENCE OF CATTLE ACARICIDES ON ENVIRONMENTAL TICK DENSITIES

Sheryne Zeitoun<sup>1</sup>, Rachel Morrison<sup>1</sup>, Lindsey Shields<sup>2</sup>, Dawn Zimmerman<sup>2</sup>, Dino Martins<sup>3</sup>, Duncan Kimuyu<sup>3</sup>, Wilfred Odadi<sup>4</sup>, Michael E. von Fricken<sup>1</sup>  
<sup>1</sup>George Mason University, Fairfax, VA, United States, <sup>2</sup>Smithsonian Institution, Washington, DC, United States, <sup>3</sup>Mpala Research Center and Wildlife Foundation, Laikipia, Kenya, <sup>4</sup>Egerton University, Department of Natural Resources, Nakuru, Kenya

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### TISSUE-CULTURE PLATE-BASED FECUNDITY AND FERTILITY ASSAY SYSTEM FOR *Aedes* MOSQUITOES

Hitoshi Tsujimoto, Zachary N. Adelman  
Texas A&M University, College Station, TX, United States

1417

### COMPARATIVE EFFICACY OF CATTLE-BAITED NET TRAPS (CBNT), CDC LIGHT TRAPS (LT) AND BG SENTINEL TRAPS (BG) FOR COLLECTION OF SANDFLIES IN SELECTED FIELD SITES IN SRI LANKA

Sanath C. Senanayake<sup>1</sup>, Raushan Siraj<sup>1</sup>, Nissanka De Silva<sup>2</sup>, Nadira Karunaweera<sup>1</sup>  
<sup>1</sup>University of Colombo, Colombo 10, Sri Lanka, <sup>2</sup>University of Sri Jayawardenepura, Nugegoda, Sri Lanka

1418

### COMPARISONS OF TEMPERATURE-STABILIZING MATERIALS FOR LIVING ARTHROPOD SHIPMENTS

Catherine M. Hunt<sup>1</sup>, Mark Q. Benedict<sup>1</sup>, C. Matilda Collins<sup>2</sup>, Ellen M. Dotson<sup>1</sup>  
<sup>1</sup>Centers for Disease Control and Prevention, Atlanta, GA, United States, <sup>2</sup>Centre for Environmental Policy, Imperial College London, London, United Kingdom

1419

### MOLECULAR ANALYSIS OF ENGORGED SAND FLIES FOR IDENTIFICATION OF BLOOD MEAL SOURCES AND DETECTION OF *Leishmania* and *Bartonella* DNA

Marisa Lozano<sup>1</sup>, Liz Espada<sup>1</sup>, Victor Zorrilla<sup>1</sup>, Michael Kosoy<sup>2</sup>, Clifton McKee<sup>2</sup>, Lynn Osikowicz<sup>2</sup>, Heriberto Arevalo<sup>3</sup>, Mario Troyes<sup>4</sup>, Craig Stoops<sup>1</sup>, Gissella Vasquez<sup>1</sup>, Michael Fisher<sup>1</sup>  
<sup>1</sup>US Naval Medical Research Unit-6, Callao, Peru, <sup>2</sup>Centers for Disease Control and Prevention, Fort Collins, CO, United States, <sup>3</sup>Peruvian Ministry of Health – San Martin Regional Health Directorate, San Martin, Peru, <sup>4</sup>Peruvian Ministry of Health – Jaen Health Directorate, Cajamarca, Peru

1420

### DISTRIBUTION OF TICK SPECIES COLLECTED FROM THREE WEST AFRICAN COUNTRIES

Shirley C. Nimo-Paintsil<sup>1</sup>, Mba-Tihssommah Mosore<sup>2</sup>, OgheneKaro Omiodior<sup>3</sup>, Seth O. Addo<sup>2</sup>, Nermeen T. Fahmy<sup>4</sup>, Reham Tageldin<sup>4</sup>, Eric Behene<sup>2</sup>, Arthur B. Kamuah<sup>5</sup>, Andrew G. Letizia<sup>1</sup>, Fatorma Bolay<sup>6</sup>, Samuel Dadzie<sup>2</sup>, Hanayo Arimoto<sup>7</sup>, Joseph W. Diclaro II<sup>8</sup>  
<sup>1</sup>Naval Medical Research Unit No. 3 Ghana Detachment, Accra, Ghana, <sup>2</sup>Noguchi Memorial Institute for Medical Research, Accra, Ghana, <sup>3</sup>Indiana University Bloomington, School of Public Health, Bloomington, IN, United States, <sup>4</sup>Naval Medical Research Unit No. 3, Cairo, Egypt, <sup>5</sup>Central Agriculture Research Institute, Suakoko District, Bong County, Monrovia, Liberia, <sup>6</sup>Liberia Institute for Biomedical Research, Margibi County, Charlesville, Liberia, <sup>7</sup>Camp Pendleton, 1st Medical Battalion, Oceanside, CA, United States, <sup>8</sup>Navy Entomology Center for Excellence, Jacksonville, FL, United States

1421

### THE ROLE OF RELISH IN *R. rickettsii* INFECTION WITHIN THE AMERICAN DOG TICK

Chanida Fongsaran, Krit Jirakanwisal, Victoria I. Verhoeve, Kevin R. Macaluso  
School of Vet Med, Louisiana State University, Baton Rouge, LA, United States

1422

### *Galleria mellonella* (Lepidoptera) A POTENTIAL IN VIVO MODEL FOR ASSESSING THE PATHOGENESIS OF GROUP B STREPTOCOCCUS

Maria del Pilar Crespo-Ortiz, Maria Elena Burbano-Torres, Mauricio Barreto-Parra  
Universidad del Valle, Cali, Colombia

(ACMCIP Abstract)

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### LAND USE IN RELATION TO COMPOSITION AND ABUNDANCE OF PHLEBOTOMINES (DIPTERA: PSYCHODIDAE) IN FIVE FOCI OF DOMICILIARY TRANSMISSION OF CUTANEOUS LEISHMANIASIS IN THE ANDEAN REGION OF COLOMBIA

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Christopher M. Owusu-Asenso<sup>1</sup>, Julius A. Mingle<sup>1</sup>, David Weetmann<sup>2</sup>, Yaw Asare Afrane<sup>1</sup>

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Evelyn Adhiambo Olanga<sup>1</sup>, Wolfgang Richard Mukabana<sup>2</sup>, Lucy Wachuhi Irungu<sup>3</sup>

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Renee Ali<sup>1</sup>, Azad Mohammed<sup>1</sup>, Jayaraj Jayaraman<sup>1</sup>, Chinnaraja Chinnadurai<sup>1</sup>, Christine Carrington<sup>1</sup>, Dave W. Severson<sup>2</sup>, Adesh Ramsubhag<sup>1</sup>

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Zachary R. Popkin-Hall, Michel A. Slotman  
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Irina Maljkovic Berry<sup>1</sup>, Melanie C. Melendrez<sup>2</sup>, Simon Pollett<sup>1</sup>, Chonticha Klungthong<sup>3</sup>, Katherine Figueroa<sup>1</sup>, Butsay Thaisomboonsuk<sup>3</sup>, Tao Li<sup>1</sup>, Michael Panciera<sup>1</sup>, Louis Macareo<sup>3</sup>, Alan L. Rothman<sup>4</sup>, In-Kyu Yoon<sup>5</sup>, Stephen J. Thomas<sup>6</sup>, Timothy Endy<sup>6</sup>, Richard G. Jarman<sup>1</sup>

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**IDENTIFICATION OF TRANSCRIPTIONAL SIGNATURES OF DISEASE-INDUCED HOST RESPONSE AS PROSPECTIVE PREDICTORS OF SEVERITY AND VIRUS MICROEVOLUTION IN DENGUE PATIENTS**

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**NEUROLOGIC ILLNESS AMONG HOSPITALIZED PATIENTS WITH ARBOVIRUS INFECTION, PUERTO RICO, 2012-2018**

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**IDENTIFICATION OF GENES THAT ARE DIFFERENTIALLY EXPRESSED IN RESPONSE TO DENGUE, ZIKA OR CHIKUNGUNYA VIRUS INFECTION IN NICARAGUAN PATIENTS**

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**A PHASE 1, RANDOMIZED, OPEN-LABEL, SINGLE-CENTER COMPARISON OF HETEROLOGOUS PRIME-BOOST VACCINATION SCHEDULES OF TETRAVALENT DENGUE VIRUS PURIFIED INACTIVATED VACCINE (PIV) AND TETRAVALENT DENGUE VIRUS LIVE ATTENUATED VACCINE (LAV) IN HEALTHY ADULTS IN A NONENDEMIC REGION THROUGH 28 DAYS POST VACCINATION**

Michael Koren, Simon Pollett, Keisha Akerle, Christine Lee, Kristin Mills, James Moon, Paul Keiser, Jack Hutter, Melinda Hamer, Justin Curley, Nathaniel Copeland, Mark Sanborn, Wiriya Rutvisuttinunt, Rafael De La Barrera, Richard Jarman  
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**MICROSCALE SPATIOTEMPORAL TRANSMISSION DYNAMICS OF DENGUE IN PUERTO RICO, 2009-2013**

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**ASSESSING RISK FOR DENGUE LIVE ATTENUATED VACCINE VIRUS ANTIBODY DEPENDENT ENHANCEMENT IN INDIVIDUALS PRIMED WITH A PURIFIED INACTIVATED DENGUE VACCINE**

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**DISCOVERY OF EPITOPE BIOMARKERS FOR THE DIAGNOSIS OF DENGUE AND ZIKA VIRUS INFECTION**

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**ANALYSIS OF ANTIBODIES INDUCED BY A LIVE ATTENUATED TETRAVALENT DENGUE VACCINE IN CHILDREN WHO SUBSEQUENTLY EXPERIENCED DENGUE SEROTYPE 1 BREAKTHROUGH INFECTIONS**

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### EVALUATION OF DUAL PLATFORM IMMUNIZATION APPROACH USING TETRAVALENT DENGUE DNA VACCINE AND TETRAVALENT INACTIVATED WHOLE VIRUS DENGUE VACCINES

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### SEQUENCING OF ZIKA VIRUS ISOLATE FROM THE AMNIOTIC FLUID OF A FETUS WITH MICROCEPHALY DURING AN OUTBREAK IN HONDURAS-2016

Leda Parham<sup>1</sup>, Mónica García<sup>2</sup>, Brett Pickett<sup>3</sup>, Gene S. Tan<sup>3</sup>, Nadia Fedorova<sup>3</sup>, Paolo Amedeo<sup>3</sup>, Kimberly García<sup>1</sup>, Pilar Viedma<sup>3</sup>, Alan Durbin<sup>3</sup>, Torrey Williams<sup>3</sup>, Ivette Lorenzana<sup>1</sup>

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### AGARICUS BRASILIENSIS SULFATED POLYSACCHARIDE INHIBITS DENGUE VIRUS INFECTION AND DENGUE VIRUS NS1-MEDIATED PATHOGENESIS

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### ANTIBODY-DEPENDENT CELLULAR PHAGOCYTOSIS IS A CORRELATE OF PROTECTION AGAINST SYMPTOMATIC DENGUE VIRUS INFECTION

Magelda Montoya<sup>1</sup>, Vicky Roy<sup>2</sup>, Laura White<sup>3</sup>, Antonio Gregorio Dias Junior<sup>1</sup>, Parnal Narvekar<sup>1</sup>, Leah Katzelnick<sup>1</sup>, Sandra Henein<sup>3</sup>, Premkumar Lakshmanane<sup>3</sup>, Angel Balmaseda<sup>4</sup>, Josefina Coloma<sup>1</sup>, Aravinda de Silva<sup>3</sup>, Galit Alter<sup>2</sup>, Eva Harris<sup>1</sup>

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### ROBUST GENOMIC DETECTION OF VACCINE VIREMIA IN DENGUE NAÏVE AND IMMUNE SUBJECTS FROM A PHASE II TRIAL OF THE NIH TETRAVALENT DENGUE LIVE ATTENUATED VACCINE IN A DENGUE ENDEMIC SETTING DEMONSTRATES EFFECTIVE VACCINE VIRUS REPLICATION

Marya Carmolli<sup>1</sup>, Connor Klopfer<sup>1</sup>, Mary Claire Walsh<sup>1</sup>, Sean Diehl<sup>1</sup>, Kristen Pierce<sup>1</sup>, Dorothy Dickson<sup>1</sup>, Elisabeth R. Colgate<sup>1</sup>, Benjamin McElvany<sup>1</sup>, Mohammad Shafiu Alam<sup>2</sup>, Sajia Afreen<sup>2</sup>, Masud Alam<sup>2</sup>, Mohammad Kibria Golam<sup>2</sup>, Rashidul Haque<sup>1</sup>, Anna Durbin<sup>3</sup>, Steve Whitehead<sup>4</sup>, Beth D. Kirkpatrick<sup>1</sup>

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### TYPE-SPECIFIC AND CROSS-REACTIVE B CELL RESPONSES ELICITED BY A LIVE-ATTENUATED TETRAVALENT DENGUE VACCINE

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### EFFECTS OF DENGUE PRE-IMMUNITY ON ANTIBODY EFFECTOR PROPERTIES FOLLOWING INFECTION WITH A SUBSEQUENT HETEROTYPIC DENGUE INFECTION

Ruklanthi de Alwis<sup>1</sup>, Tom Agnero-Rigot<sup>1</sup>, Koh Min Jie<sup>1</sup>, Leong Yan Shan<sup>1</sup>, Eng Eong Ooi<sup>1</sup>, Tun Linn Thein<sup>2</sup>, Katja Fink<sup>3</sup>, Leo Yee Sin<sup>2</sup>, Raphael Zellweger<sup>1</sup>

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### EVOLUTION AND EPIDEMIOLOGIC DYNAMICS OF DENGUE VIRUS SEROTYPES IN NICARAGUA DURING THE EMERGENCE OF CHIKUNGUNYA AND ZIKA VIRUSES

Sean V. Edgerton<sup>1</sup>, Chunling Wang<sup>2</sup>, Panpim Thongsripong<sup>1</sup>, Saira I. Saborio<sup>3</sup>, Magelda Montoya<sup>2</sup>, Josefina Coloma<sup>2</sup>, Angel Balmaseda<sup>3</sup>, Eva Harris<sup>2</sup>, Shannon N. Bennett<sup>1</sup>

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### SUSTAINABLE, HEALTHY CITIES: PROTOCOL OF A MIXED METHODS CLUSTER RANDOMIZED CONTROLLED TRIAL FOR Aedes CONTROL IN BRAZIL

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### ANALYSIS OF THE POST-VACCINATION ANTIBODY RESPONSE OF DENGUE SEROTYPE 2 BREAKTHROUGH INFECTIONS

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### A COMBINATION OF INCIDENCE DATA AND MOBILITY PROXIES FROM SOCIAL MEDIA PREDICTS THE INTRA-URBAN SPREAD OF DENGUE IN YOGYAKARTA, INDONESIA

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### IDENTIFYING DENGUE ILLNESS PHENOTYPES USING LATENT TRAJECTORY ANALYSIS

Robert C. Reiner<sup>1</sup>, William Elson<sup>2</sup>, Gonzalo Vazquez-Prokopec<sup>3</sup>, John Elder<sup>4</sup>, Valerie Paz-Soldan<sup>5</sup>, Alan Rothman<sup>6</sup>, Amy Morrison<sup>7</sup>, Thomas Scott<sup>7</sup>

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### DENGUE AS A CAUSE OF NON-MALARIAL FEBRILE ILLNESS IN SOUTHWEST UGANDA

Ross Mathew Boyce<sup>1</sup>, Matthew C. Collins<sup>2</sup>, Rabbison Muhindo<sup>3</sup>, Regina Nakakande<sup>3</sup>, Emily Ciccone<sup>1</sup>, Samantha Grounds<sup>1</sup>, Matte Michael<sup>3</sup>, Moses Ntaro<sup>3</sup>, Dan Nyehange<sup>4</sup>, Edgar Mulogo<sup>3</sup>, Jonathan J. Juliano<sup>1</sup>

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### DENGUE VIRUS DEFECTIVE INTERFERING PARTICLES IN MOSQUITOES

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### SEROLOGICAL SCREENING FOR INAPPARENT FLAVIVIRUS INFECTION IN U.S. TRAVELERS

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### DENGUE ENDEMICITY AND EMERGENCE OF OTHER ARBOVIRUSES IN PIEDECUESTA, COLOMBIA

Maria Isabel Estupiñan Cardenas<sup>1</sup>, Anyela Lozano-Parra<sup>1</sup>, Rosa Margarita Gelvez<sup>1</sup>, Victor Mauricio Herrera<sup>1</sup>, Jessica Vanhomwegen<sup>2</sup>, Henrik Salje<sup>2</sup>, Jean Claude Manuguerra<sup>2</sup>, Derek A. Cummings<sup>3</sup>, Maria Consuelo Miranda Montoya<sup>1</sup>, Luis Angel Villar Centeno<sup>1</sup>, Isabel Rodriguez-Barraquer<sup>4</sup>

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### INTEGRATED SURVEILLANCE QUICKLY FOLLOWED BY COMMUNITY EDUCATION SUCCESSFULLY PREVENTED LARGE-SCALE OUTBREAKS OF DENGUE IN SOUTHERN TAIWAN, 2016-2018

Chwan-Chuen King<sup>1</sup>, TingChia Weng<sup>2</sup>, Yi-Hua Pan<sup>1</sup>, Tzong-Shiann Ho<sup>3</sup>, Thomas C. Tsai<sup>4</sup>, Marie Wu<sup>4</sup>, Hui-Ying Ko<sup>1</sup>, Chris Chin<sup>1</sup>, Ping-Wei Kate Shih<sup>1</sup>, Po-Yau Chen<sup>1</sup>, Chih-Huan Chung<sup>5</sup>, Chao-Ying Joe Pan<sup>6</sup>, Liang-Yi Wang<sup>7</sup>, Yi-Yeh Chen<sup>8</sup>, Wu-Chun Tu<sup>9</sup>, Chin-Gi Huang<sup>10</sup>, Ta-Chien Chan<sup>11</sup>, Kun-Hsien Tsai<sup>12</sup>, Yen-Jen Oyang<sup>13</sup>, Chia-Chi Ku<sup>14</sup>

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## Flaviviridae – Other

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### FLAVIVIRUS ANTIBODY SCREENING ASSAY UTILIZATION FOR DIFFERENTIATION OF FLAVIVIRUS-NAÏVE AND EXPOSED SUBJECTS

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### DECLINE IN MAGNITUDE OF ZIKA VIRUS-SPECIFIC LONG TERM MEMORY T-CELLS

Hannah Greig

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### ESTIMATING JAPANESE ENCEPHALITIS BURDEN AND IMPACT OF VACCINATION

Tran Minh Quan<sup>1</sup>, Nguyen Manh Duy<sup>2</sup>, Tran Minh Nhat<sup>2</sup>, Tran Thi Nhu Thao<sup>3</sup>, Hannah Clapham<sup>4</sup>

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### PRECLINICAL EVALUATION OF ZIKA VIRUS VACCINE CANDIDATES BASED ON COVALENTLY STABLE E DIMERS

Giuditta De Lorenzo<sup>1</sup>, Jennifer Doig<sup>1</sup>, Rapeepat Tandavanitj<sup>1</sup>, Monica Poggianella<sup>2</sup>, Ricardo Sanchez-Velazquez<sup>1</sup>, Chayane Setthapramote<sup>1</sup>, Hannah Scales<sup>3</sup>, Jose Luis Slon Campos<sup>2</sup>, Alain Kohl<sup>1</sup>, James Brewer<sup>3</sup>, Oscar R. Burrone<sup>2</sup>, Arvind Patel<sup>1</sup>

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### PREGNANCY AND INFANT OUTCOMES POST-ZIKA VIRUS INFECTION IN NICARAGUA

Anna Gajewski<sup>1</sup>, Oscar Ortega<sup>1</sup>, Liliam Llufrío<sup>1</sup>, Douglas Elizondo<sup>1</sup>, Magelda Montoya<sup>2</sup>, Damaris Collado<sup>1</sup>, Anna Urbina<sup>1</sup>, William Rivas<sup>1</sup>, Guillermina Kuan<sup>3</sup>, Angel Balmaseda<sup>4</sup>, Eva Harris<sup>2</sup>

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### DENGUE VIRUS IMMUNE STATUS AND ANTIBODY TITERS AMONG ASYMPTOMATIC PREGNANT WOMEN DURING THE ZIKA OUTBREAK IN SALVADOR, BRAZIL

Kaitlin Driesse<sup>1</sup>, Wen-Yang Tsai<sup>1</sup>, Carlos Brites<sup>2</sup>, Celia Pedrosa<sup>2</sup>, Wei-Kung Wang<sup>1</sup>

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**SURVEY FOR CELL FUSING AGENT VIRUS (FLAVIVIRUS) IN Aedes Aegypti MOSQUITOES FROM TEXAS, USA AND THE INFLUENCE ON ZIKA VIRUS VECTOR COMPETENCE**

Estelle Martin, Selene Garcia-Luna, Jose Juarez, Megan Wise de Valdez, Ismael Badillo-Vargas, Gabriel Hamer  
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**ZIKA VIRUS SEROPREVALENCE ESTIMATES IN A U.S. MILITARY POPULATION INDICATE POSSIBLE CRYPTIC ZIKV TRANSMISSION IN PUERTO RICO BY EARLY 2015**

Caitlin H. Kuklis<sup>1</sup>, Simon D. Pollett<sup>1</sup>, David A. Barvir<sup>1</sup>, Richard G. Jarman<sup>1</sup>, Brett M. Forshey<sup>2</sup>, Gregory D. Gromowski<sup>1</sup>  
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**PRETREATMENT WITH PUTATIVE NOVEL ADJUVANTS MODULATE T FOLLICULAR HELPER AND B CELL RESPONSES TO ZIKV-E ANTIGEN**

Brian K. Haun, Albert To, Teri Wong, Lishomwa Ndhlovu, Axel Lehrer  
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**INTERFERON LAMBDA (IFNL1,IFNL2, ANDIFNL3) ENHANCES ZIKA VIRUS REPLICATION IN GLIAL CELLS**

William G. Valiant, Joseph John Mattapallil  
Uniformed Services University, Bethesda, MD, United States

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**ZIKA VIRUS MEMORY B CELL RESPONSES DIFFER IN DENGUE IMMUNE AND DENGUE NAIVE INDIVIDUALS WITHIN A US-BASED TRAVELER STUDY COHORT**

Alena Janda Markmann<sup>1</sup>, Huy Tu<sup>2</sup>, Stephen Graham<sup>1</sup>, Matthew Collins<sup>3</sup>, Sean Diehl<sup>2</sup>, Aravinda de Silva<sup>1</sup>  
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**DETERMINING THE BINDING SITES OF NEUTRALIZING ANTIBODIES ISOLATED FROM A ZIKA VIRUS INFECTED INDIVIDUAL**

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**ZIKV ANTIBODY DEPENDENT ENHANCEMENT OF INFECTION MEDIATED BY WNV AND DENV SEROPOSITIVE CORD-BLOOD SAMPLES FROM MOTHERS IN EL PASO-TEXAS**

Jeanette Orbeagozo<sup>1</sup>, Pedro M. Palermo<sup>1</sup>, Anjali Joshi<sup>2</sup>, Himanshu Garg<sup>2</sup>, Douglas M. Watts<sup>1</sup>  
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**Flaviviridae - West Nile**

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**EXPERIMENTAL WEST NILE VIRUS TRANSMISSION CYCLES USING WILD BIRDS AND MOSQUITOES**

Alex D. Byas<sup>1</sup>, Angela M. Bosco-Lauth<sup>1</sup>, Claudia Rückert<sup>1</sup>, Alexis Robison<sup>1</sup>, Michael C. Young<sup>1</sup>, Dalit Talmi-Frank<sup>1</sup>, Todd A. Felix<sup>2</sup>, Aaron Brault<sup>3</sup>, Richard Bowen<sup>1</sup>, Gregory D. Ebel<sup>1</sup>  
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**ARTHROPOD-BORNE VIRAL ENCEPHALITIDES IN THE DOMINICAN REPUBLIC: THE VIRAL-HUMAN INTERFACE AND UNDERESTIMATION IN A REGION WITH VIRAL CIRCULATION**

Leandro Tapia<sup>1</sup>, Miguel Delgadillo<sup>2</sup>, Wenceslao Hernandez<sup>2</sup>, Zayda Menier<sup>2</sup>, Ricardo Domingo<sup>1</sup>, Robert Paulino-Ramirez<sup>1</sup>  
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**EXPANDING FORECASTS OF HUMAN ARBOVIRAL DISEASE: PREDICTING WEST NILE VIRUS IN LOUISIANA**

Justin K. Davis<sup>1</sup>, Raoult Ratard<sup>2</sup>, Mike Wimberly<sup>1</sup>  
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**SEROLOGICAL EVIDENCE OF WEST NILE VIRUS INFECTION IN WHITE-TAILED DEER FROM 2014 TO 2018 IN TEXAS**

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**Viruses – Other**

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**SYSTEMATIC REVIEW OF MARBURG VIRUS VACCINE CLINICAL TRIALS**

Melinda J. Hamer  
Walter Reed Army Institute of Research, Silver Spring, MD, United States

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**SOCIAL RESISTANCE DRIVES PERSISTENT TRANSMISSION OF EBOLA IN THE EASTERN DEMOCRATIC REPUBLIC OF CONGO, 2018: A MIXED-METHODS STUDY**

Jack Underschultz<sup>1</sup>, Claude Kasereka Masumbuko<sup>2</sup>, Michael Hawkes<sup>1</sup>  
<sup>1</sup>University of Alberta, Edmonton, AB, Canada, <sup>2</sup>Université Catholique de Graben, Butembo, Democratic Republic of the Congo

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Carolyn Fisher<sup>1</sup>, Bryan Lanning<sup>1</sup>, Irina Tiper<sup>1</sup>, Moussa Kourout<sup>1</sup>, Krishnamurthy Konduru<sup>1</sup>, Anjan Purkayastha<sup>2</sup>, Gerardo Kaplan<sup>1</sup>, Robert Duncan<sup>1</sup>  
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**ESTIMATING SUBNATIONAL FIRST-DOSE MEASLES-CONTAINING VACCINE (MCV1) COVERAGE USING MODEL-BASED GEOSTATISTICS IN LOW AND MIDDLE INCOME COUNTRIES FROM 2000 TO 2018**

**Alyssa N. Sbarra**, Jason Q. Nguyen, Sam Rolfe, Lucas Earl, Ashley Marks, Natalie C. Galles, Di Zheng, Simon I. Hay, Jonathan F. Mosser, Stephen S. Lim  
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**Afruna Rahman**<sup>1</sup>, Kyu Han Lee<sup>2</sup>, Sanwarul Bari<sup>1</sup>, Farzana Islam<sup>1</sup>, Mustafizur Rahman<sup>1</sup>, Muntasir Alam<sup>1</sup>, Sabbir Ahmed<sup>1</sup>, Shams El Arifeen<sup>1</sup>, Emily Gurley<sup>2</sup>  
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**Fauzia A. Malik**<sup>1</sup>, Lauren B. Guterman<sup>1</sup>, Saima Jamal<sup>2</sup>, Asad Ali<sup>2</sup>, Saad B. Omer<sup>1</sup>, Abdul Momin Kazi<sup>2</sup>  
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**Mike Holbrook**<sup>1</sup>, Yu Cong<sup>1</sup>, Dima Hammoud<sup>2</sup>, Ji Hyun Lee<sup>1</sup>, Elena Postnikova<sup>1</sup>, Jonathan Kurtz<sup>1</sup>, Louis Huzella<sup>1</sup>, Vincent Munster<sup>3</sup>  
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**GLOBAL EL NIÑO-SOUTHERN OSCILLATION TELECONNECTIONS AND PATTERNS OF DISEASE OUTBREAKS**

**Assaf Anyamba**<sup>1</sup>, Radina P. Soebiyanto<sup>1</sup>, Jennifer L. Small<sup>1</sup>, Sarah Hutchinson<sup>1</sup>, Richard Damoah<sup>1</sup>, Brett M. Forshey<sup>2</sup>, Christine Toolin<sup>2</sup>, Seth C. Britch<sup>3</sup>, Compton J. Tucker<sup>1</sup>, William Karesh<sup>4</sup>, Wassila Thiaw<sup>5</sup>, Jean-Paul Chretien<sup>6</sup>, Jose L. Sanchez<sup>2</sup>, Kenneth J. Linthicum<sup>3</sup>  
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**SAFETY AND IMMUNOGENICITY OF A COMPRESSED SCHEDULE 2-DOSE HETEROLOGOUS EBOLA VACCINE REGIMEN IN HIV INFECTED AND UNINFECTED ADULTS**

**Julie A. Ake**<sup>1</sup>, Kristopher Paolino<sup>2</sup>, Kristin Mills<sup>2</sup>, Jack Hutter<sup>2</sup>, Susan Biggs Cicatelli<sup>3</sup>, Leigh Anne Eller<sup>1</sup>, Michael Eller<sup>1</sup>, Chi L. Tran<sup>1</sup>, Lalaine Anova<sup>1</sup>, Linda Jagodzinski<sup>1</sup>, Lucy Ward<sup>4</sup>, Nicole Kilgore<sup>4</sup>, Janice Rusnak<sup>4</sup>, Callie Bounds<sup>4</sup>, Christopher Badorrek<sup>4</sup>, Ine Ilsbroux<sup>5</sup>, Dickson Anumendem Nkafu<sup>6</sup>, Auguste Gaddah<sup>6</sup>, Georgi Shukarev<sup>5</sup>, Viki Bockstal<sup>5</sup>, Kerstin Luhn<sup>5</sup>, Macaya Douoguih<sup>5</sup>, Cynthia Robinson<sup>5</sup>  
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**ENSURING COMPLETE INACTIVATION OF ARBOVIRUSES BY HEAT WITH STRINGENT SAFETY TESTING**

**Michael Parker**, Jessica Shifflett, Sujatha Rashid  
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**URBAN ARBOVIRAL EPIDEMICS AND HEALTH SYSTEM RESPONSE IN EL SALVADOR**

**Mirna P. Amaya Amaya**  
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**THE COMPOSITION AND CLINICAL RELEVANCE OF THE BLOOD VIROME IN FEBRILE PEDIATRIC OUTPATIENTS IN TANZANIA BY UNBIASED NEXT GENERATION SEQUENCING**

**Mary-Anne Hartley**<sup>1</sup>, Samuel Cordey<sup>2</sup>, Florian Laubscher<sup>2</sup>, Kristina Keitel<sup>3</sup>, Thomas Junier<sup>4</sup>, Francisco J. Pérez-Rodriguez<sup>5</sup>, Gael Vieille<sup>2</sup>, Josephine Samaka<sup>6</sup>, Tarsis Mlaganile<sup>6</sup>, Frank Kagoro<sup>6</sup>, Zainab Mbarack<sup>7</sup>, Mylène Docquier<sup>6</sup>, Laurent Kaiser<sup>2</sup>, Valérie D'Acromont<sup>3</sup>  
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**A METAPOPOPULATION MODEL FOR THE 2018 EBOLA VIRUS DISEASE OUTBREAK IN EQUATEUR PROVINCE IN THE DEMOCRATIC REPUBLIC OF THE CONGO**

**Sophie Meakin**, Mike Tildesley, Emma Davis, Matt Keeling  
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**CLINICAL DEVELOPMENT OF LHF-535 AS AN ORAL THERAPEUTIC FOR LASSA FEVER**

**Sean M. Amberg**<sup>1</sup>, Portia A. Vliett-Gregg<sup>1</sup>, Alison E. Heald<sup>2</sup>, Eric J. Tarcha<sup>1</sup>, Jeff Posakony<sup>1</sup>, Kristin M. Bedard<sup>1</sup>, Clinical Network Services (CNS) Pty Ltd<sup>3</sup>, Nucleus Network<sup>4</sup>  
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Edgar Davidson<sup>1</sup>, Tabb Sullivan<sup>1</sup>, Aubrey L. Bryan<sup>1</sup>, Andrew Flyak<sup>2</sup>, James E. Crowe<sup>2</sup>, Benjamin J. Doranz<sup>1</sup>

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Gislaine Celestino da Silva<sup>1</sup>, Marcílio Jorge Fumagalli<sup>2</sup>, Victor Miranda Hernandez<sup>1</sup>, Bruno Henrique Milhim<sup>1</sup>, Caroline Rodrigues da Silva<sup>1</sup>, Lucas Celestino Araujo<sup>1</sup>, Nathalia Zini<sup>1</sup>, Eliane Aparecida Favaro<sup>1</sup>, Luiz Tadeu Figueiredo<sup>2</sup>, Ana Carolina Terzian<sup>1</sup>, Mauricio Lacerda Nogueira<sup>1</sup>

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**THE SECRET 'LIVES' OF MOSQUITO-ASSOCIATED VIRUSES: METAGENOMIC RNA SHOTGUN SEQUENCING HELPS DECIPHER VIRAL ECOLOGY BUT SHOWS THAT HOST SPECIES IS THE MOST IMPORTANT DRIVER OF VIROME COMPOSITION**

Panpim Thongsripong<sup>1</sup>, James Angus Chandler<sup>2</sup>, Amy B. Green<sup>3</sup>, Pattamaporn Kittayapong<sup>4</sup>, Bruce A. Wilcox<sup>5</sup>, Durrell D. Kapan<sup>6</sup>, Shannon N. Bennett<sup>1</sup>

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Andrew Azman<sup>1</sup>, Kishor K. Paul<sup>2</sup>, Taufiq Rahman Bhuiyan<sup>2</sup>, Firdausi Qadri<sup>2</sup>, Henrik Salje<sup>3</sup>, Emily Gurley<sup>1</sup>

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**EVALUATION OF A TWO TARGET RT-PCR ASSAY FOR DETECTION OF LASSA VIRUS**

Ketan Patel<sup>1</sup>, Bobbie Rae Erickson<sup>1</sup>, Timothy Flietstra<sup>1</sup>, Leonie-Sophie Hecht<sup>2</sup>, Hussein El Halas<sup>2</sup>, Stuart Nichol<sup>1</sup>, John Klena<sup>1</sup>

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**DRUG REPURPOSING FOR SEVERE FEVER WITH THROMBOCYTOPENIA SYNDROME VIRUS**

Jasper Chan, Shuofeng Yuan, Lei Wen, Zi-Wei Ye, Dong-Yan Jin, Kwok-Yung Yuen  
The University of Hong Kong, Hong Kong, Hong Kong

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**FIRST REPORT OF THE OROPOUCHE VIRUS IN COLOMBIA**

Doris Esther Gomez<sup>1</sup>, Jorge A. Egorrola<sup>1</sup>, Cristopher Cruz<sup>2</sup>, Margarita Ochoa<sup>1</sup>, Carolina Guevara<sup>2</sup>, Maria Silva<sup>2</sup>, Julia S. Ampuero<sup>2</sup>

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**THE ROLE OF RON4 IN PLASMODIUM SPOROZOITE INFECTION OF THE LIVER**

Minami Baba, Mamoru Nozaki, Mayumi Tachibana, Motomi Torii, Takafumi Tsuboi, Tomoko Ishino  
Ehime University, Toon, Japan

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**VISIBLE AND BIOCHEMICAL EVIDENCE OF ENDOTHELIAL GLYCOCALYX DEGRADATION IN TANZANIAN CHILDREN WITH FALCIPARUM MALARIA**

Salvatore M. Florence<sup>1</sup>, Ayam Kalingonji<sup>1</sup>, Margaret A. Bush<sup>2</sup>, Youwei Chen<sup>2</sup>, Tsin W. Yeo<sup>3</sup>, Nicholas M. Anstey<sup>4</sup>, Matthew P. Rubach<sup>5</sup>, Donald L. Granger<sup>6</sup>, Esther D. MwaiKambo<sup>1</sup>, J. Brice Weinberg<sup>2</sup>

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(ACMCIP Abstract)

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**PLACENTAL PATHOLOGY AND THE RISK OF PREECLAMPSIA IN WOMEN EXPOSED TO PLASMODIUM FALCIPARUM INFECTIONS IN THE PLACENTA**

Dorotheah Obiri<sup>1</sup>, Isaac Erskine<sup>2</sup>, Kwame Adu-Bonsaffoh<sup>3</sup>, Daniel Oduro<sup>4</sup>, Kwadwo A. Kusi<sup>5</sup>, Michael F. Ofori<sup>5</sup>, Ben Gyan<sup>5</sup>

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**CHARACTERIZATION OF A PLASMODIUM FALCIPARUM HECT E3 UBIQUITIN LIGASE**

Brajesh Kumar Singh, Xin-zhuan Su  
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**A POTENTIAL ROLE FOR ANTIBODY-MEDIATED THROMBOCYTOPENIA IN PEDIATRIC CEREBRAL MALARIA**

Iset Medina Vera<sup>1</sup>, Anne Kessler<sup>2</sup>, Visopo Harawa<sup>3</sup>, Wilson Mandala<sup>4</sup>, Stephen J. Rogerson<sup>5</sup>, Terrie Taylor<sup>6</sup>, Karl Seydel<sup>6</sup>, Morayma Reyes<sup>7</sup>, Kami Kim<sup>1</sup>

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**PLASMODIUM YOELII ERYTHROCYTE BINDING-LIKE PROTEIN MODULATES HOST CELL MEMBRANE, IMMUNITY AND VIRULENCE**

Yu Chih Peng<sup>1</sup>, Yanwei Qi<sup>2</sup>, Cui Zhang<sup>1</sup>, Xiangyu Yao<sup>3</sup>, Jian Wu<sup>1</sup>, Xia Lu<sup>1</sup>, Keyla Tumas<sup>1</sup>, Xiao He<sup>1</sup>, Chen-Feng Qi<sup>1</sup>, Anthony Holder<sup>4</sup>, Osamu Kaneko<sup>5</sup>, Timothy Myers<sup>1</sup>, Carole Long<sup>1</sup>, Jian Li<sup>6</sup>, Xinzhuan Su<sup>1</sup>

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Saturday  
November 23

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**THE IMPACT OF ALPHA-GLOBIN GENE VARIANTS ON ENDOTHELIAL FUNCTION IN ADULTS WITH SEVERE MALARIA**

Jessica Nino de Rivera<sup>1</sup>, Matthew Grigg<sup>2</sup>, Dongying Ma<sup>1</sup>, Yu Yang<sup>1</sup>, Bridget Barber<sup>2</sup>, Timothy William<sup>2</sup>, Kim Piera<sup>2</sup>, J. Brice Weinberg<sup>3</sup>, Tsin W. Teo<sup>2</sup>, Nicholas M. Anstey<sup>2</sup>, Hans C. Ackerman<sup>1</sup>

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**ASSOCIATION OF EPCR POLYMORPHISMS RS867186-GG WITH PROTECTION AGAINST HUMAN CEREBRAL MALARIA (HCM)**

Mingli Liu<sup>1</sup>, Juan Cespedes<sup>1</sup>, Bharti Praveen<sup>2</sup>, Sri Krishna<sup>2</sup>, Jonathan Stiles<sup>1</sup>

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(ACMCIP Abstract)

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**USING SEASONAL MALARIA CHEMOPREVENTION (SMC) TO SCREEN FOR ACUTE MALNUTRITION**

Moumouni Bonkoungou<sup>1</sup>, Youssouf Sawadogo<sup>1</sup>, Stanislas Nebie<sup>1</sup>, Thierry Ouedraogo<sup>1</sup>, Yacouba Savadogo<sup>2</sup>, William Brieger<sup>3</sup>, Gladys Tetteh<sup>4</sup>, Blami Dao<sup>4</sup>

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**PROBING THE REGULATION OF TARGETABLE METABOLIC PATHWAYS IN MALARIA PARASITES**

Philip M. Frasse, Audrey R. Odom John

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(ACMCIP Abstract)

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**ELEVATED LEVELS OF HEMOZOIN AND ERYTHROPHAGOCYTOSIS PREDICT LONGITUDINAL EPISODES OF SEVERE MALARIAL ANEMIA IN KENYAN CHILDREN**

Samuel B. Anyona<sup>1</sup>, Evans Raballah<sup>1</sup>, Elly Munde<sup>1</sup>, Caroline Ndege<sup>1</sup>, Qiuying Cheng<sup>2</sup>, Paul Fenimore<sup>3</sup>, Benjamin H. McMahon<sup>3</sup>, Nick Hengartner<sup>3</sup>, Collins Ouma<sup>4</sup>, Christophe G. Lambert<sup>2</sup>, Douglas J. Perkins<sup>2</sup>

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**TEMPERATURE DRIVES MALARIA TRANSMISSION: IMPLICATIONS FOR DISEASE CONTROL**

Courtney Murdock<sup>1</sup>, Kerri Miazgowicz<sup>1</sup>, Erin Mordecai<sup>2</sup>, Sadie Ryan<sup>3</sup>, Richard Hall<sup>1</sup>

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**SINGLE STEP MEROZOITE RELEASE STRATEGY FOR RED BLOOD CELL INVASION ASSAYS**

Jurgen Bosch, Quentin D. Watson, Rajeev K. Mehlotra, Howard J. Meyerson, Peter A. Zimmerman

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(ACMCIP Abstract)

**Malaria - Chemotherapy and Drug Resistance**

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**MODELING RESISTANCE-CONFERRING MUTATIONS AND ANTIMALARIAL DRUG INTERACTIONS IN THE PFCRT 3.2 Å CRYO-EM STRUCTURE**

Kathryn J. Wicht, Jonathan Kim, Yong Zi Tan, Filippo Mancina, David A. Fidock  
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**MOLECULAR STUDIES OF PFDHPS AND PFDHFR DURING SEASONAL MALARIA CHEMOPREVENTION AT THREE STUDY SITES IN MALI**

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**USE OF ARTEMISININ COMBINATION THERAPIES HAS NOT CHANGED THE GENETIC DIVERSITY OF THE K13 PROPELLER DOMAIN IN UGANDAN PLASMODIUM FALCIPARUM POPULATIONS**

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**TREATMENT PILOT IN BURKINA FASO, 2017-2018**

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Jhpiego, Ouagadougou, Burkina Faso

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**ANTI-PARASITIC PROPERTIES FOR NEEM DERIVATIVES: POTENTIAL NOVEL THERAPEUTIC OPTIONS FOR CONTROLLING RESISTANT PLASMODIUM FALCIPARUM MALARIA**

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### ASSESSMENT OF PARASITE CLEARANCE AFTER TREATMENT WITH PYRONARIDINE-ARTESUNATE, ARTESUNATE-AMODIAQUINE, ARTEMETHER-LUMEFANTRINE AND DIHYDROARTEMISININ-PIPERAQUINE IN *PLASMODIUM FALCIPARUM* MALARIA: RESULTS FROM THE WEST AFRICAN NETWORK (WANECAM) TRIAL

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### COMBINATION THERAPIES FACILITATING THE SPREAD OF ARTEMISININ-RESISTANCE IN THE GREATER MEKONG SUBREGION

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### CHARACTERIZATION OF DORMANT *PLASMODIUM FALCIPARUM* PARASITES IN HUMAN PARTICIPANTS FOLLOWING ARTESUNATE THERAPY

Chris Peatey<sup>1</sup>, Nanhua Chen<sup>1</sup>, Karryn Gresty<sup>1</sup>, Karen Anderson<sup>1</sup>, Paul Pickering<sup>1</sup>, Rebecca Watts<sup>2</sup>, James McCarthy<sup>2</sup>, Qin Cheng<sup>1</sup>

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### IN-VITRO AND EX-VIVO SUSCEPTIBILITY OF *PLASMODIUM FALCIPARUM* TO ANTIMALARIAL DRUGS IN BINH PHUOC PROVINCE OF VIETNAM FROM 2018 TO 2019

Thu Huong Pham, Tong Thanh Nguyen, Thanh Viet Ngo, Thuy Thu Do, Guy Thwaites, Hien Tinh Tran

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### GAMETOCYTE CLEARANCE IN KENYAN CHILDREN WITH UNCOMPLICATED *PLASMODIUM FALCIPARUM* MALARIA AFTER ARTEMETHER LUMEFANTRINE OR DIHYDROARTEMISININ PIPERAQUINE TREATMENT

Francis T. Kimani, Protus O. Omondi, Kelvin K. Thiong'o, Eva A. Nambati, Edwin K. Too, William K. Chege, Maureen A. Otinga

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### EXAMINING THE EPISTATIC INTERACTION BETWEEN PLASMEPSIN II AND PFCRT IN *P. FALCIPARUM* PIPERAQUINE RESISTANCE

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### MOLECULAR MECHANISMS AND SELECTIVE REVERSAL OF PIPERAQUINE, LUMEFANTRINE AND AMODIAQUINE RESISTANCE IN *PLASMODIUM BERGHEI* ANKA

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### IDENTIFICATION OF THE *PLASMODIUM FALCIPARUM* ACETYL-COA SYNTHETASE AS AN EMERGING ANTIPLASMODIAL DRUG TARGET

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### INVESTIGATION OF MOLECULAR MARKERS OF ANTIMALARIAL RESISTANCE DURING A THERAPEUTIC EFFICACY STUDY CONDUCTED IN THE DEMOCRATIC REPUBLIC OF THE CONGO, 2017

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(ACMCIP Abstract)

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### DISTRIBUTION OF PFCRT MUTATIONS ASSOCIATED WITH PIPERAQUINE RESISTANCE IN CAMBODIA

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**SELECTION OF DRUG-RESISTANCE MARKERS FOLLOWING TREATMENT WITH ARTEMETHER-LUMEFANTRINE IN HIV-INFECTED AND HIV-UNINFECTED CHILDREN AND ASSOCIATION WITH LUMEFANTRINE PK EXPOSURE**

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**DUAL PRONGED ATTACK ON MALARIA: DRUGS WITH ANTIPARASITIC AND IMMUNOMODULATORY PROPERTIES**

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**SPATIAL PATTERNS OF ANTI-MALARIAL DRUG QUALITY AND AVAILABILITY PROVIDED BY PRIVATE AND PUBLIC OUTLETS IN EQUATORIAL GUINEA**

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**DUAL SITE AND MECHANISM OF ACTION OF ARTEMISININ ANTIMALARIALS**

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**MOLECULAR SURVEILLANCE OF *PLASMODIUM FALCIPARUM* DRUG RESISTANCE IN NIGERIA**

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**MALARIA PARASITEMIA INCIDENCE AMONG DIFFERENT AGE GROUPS IN A STABLE TRANSMISSION AREA OF MALI RECEIVING SEASONAL MALARIA CHEMOPREVENTION**

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**DECREASING *IN VITRO* ARTEMISININ SENSITIVITY OF *PLASMODIUM FALCIPARUM* ACROSS INDIA**

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**Malaria – Diagnosis**

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**CHARACTERIZATION AND ANALYSIS OF FALSE-NEGATIVE RAPID DIAGNOSTIC TESTS DUE TO PFHRP2 AND PFHRP3 DELETIONS IN WESTERN KENYA *PLASMODIUM FALCIPARUM* POPULATION**

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**DETECTION OF DRUG RESISTANCE SNPS IN *PLASMODIUM FALCIPARUM* WITH THE CRISPR-BASED DIAGNOSTIC SHERLOCK**

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**QUALITY OF MALARIA CASE MANAGEMENT IN OUTPATIENT AT HEALTH FACILITIES IN RWANDA**

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**EVALUATION OF A NEW POINT OF CARE MALARIA DIAGNOSTIC DEVICE GAZELLE™: A PILOT STUDY**

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**ASSESSMENT OF MALARIA USING NEW HIGHLY SENSITIVE RAPID DIAGNOSTIC TEST IN TWO TOWNSHIPS SELECTED FOR SUBNATIONAL MALARIA ELIMINATION IN MYANMAR**

**Myaing Myaing Nyunt<sup>1</sup>**, Nay Yi Yi Lin<sup>2</sup>, Zaw Lin<sup>2</sup>, Aung Thi<sup>3</sup>, Tint Wai<sup>2</sup>, Poe Poe Aung<sup>2</sup>, Zaw Win Thein<sup>2</sup>, Thura Htay<sup>2</sup>, Zin Min Tun<sup>2</sup>, Aye Kyawt Paing<sup>2</sup>, Drzayar Han<sup>2</sup>, Kaythwe Han<sup>2</sup>, Christopher Plowe<sup>1</sup>, Norbert Odero<sup>1</sup>, Alyssa . Platt<sup>1</sup>, Elizabeth Turner<sup>1</sup>, Manfred Meng<sup>1</sup>

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**A REPORT ON THE INTEGRATION OF A MALARIA RAPID DIAGNOSTIC TEST IN A POINT OF CARE CLINICAL DECISION SUPPORT PLATFORM, MEDSCINC, FOR USE IN PRIMARY HEALTHCARE SETTINGS IN KANO STATE, NIGERIA**

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**FIELD PERFORMANCE OF CONVENTIONAL AND HIGH-SENSITIVITY MALARIA RAPID DIAGNOSTIC TESTS IN TWO TRANSMISSION SETTINGS IN HAITI**

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**COMPARISON AND EVALUATION OF TWO PCR ASSAYS FOR THE QUALITATIVE DETECTION OF *PLASMODIUM* SPECIES IN CLINICAL SPECIMENS**

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**EVALUATION OF A PAN *PLASMODIUM* LACTATE DEHYDROGENASE DETECTION ASSAY USING MICROCAPILLARY CYTOMETRY**

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**PERFORMANCE EVALUATION OF A NOVEL MULTIPLEXED LATERAL FLOW ASSAY TO IDENTIFY COMMON CAUSES OF FEVER IN ASIA AND INFORM TREATMENT DECISIONS**

**Sonia Arafah**<sup>1</sup>, Stuart Blacksell<sup>2</sup>, Mark Mayo<sup>3</sup>, Bart Currie<sup>3</sup>, Aurelien Macé<sup>1</sup>, Stefano Ongarello<sup>1</sup>, Angelo Gunasekera<sup>4</sup>, Javan Esfandiari<sup>4</sup>, Sabine Dittrich<sup>1</sup>

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**DISTINGUISHING BETWEEN *P. FALCIPARUM* AND *P. VIVAX* BY CONSIDERING BROWNIAN RELAXATION TIMES USING MAGENTO-OPTICAL DETECTION (MOD)**

**Robert J. Deissler**<sup>1</sup>, D'Arbra Blankenship<sup>2</sup>, Emma McCann<sup>2</sup>, Brian T. Grimberg<sup>2</sup>  
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**VALIDATION OF BREATH BIOMARKERS FOR NONINVASIVE DIAGNOSIS OF MALARIA**

Amalia Berna<sup>1</sup>, Lucy Bollinger<sup>2</sup>, Josephine Banda<sup>3</sup>, Patricia Mawindo<sup>3</sup>, Tasha Evanoff<sup>1</sup>, Diana Culbertson<sup>4</sup>, Karl Seydel<sup>5</sup>, **Audrey R. Odom John**<sup>1</sup>  
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**EVALUATION OF A NOVEL HEMATOLOGY ANALYZER FOR MALARIA DIAGNOSIS USING FINGER-PRICK BLOOD IN AN ENDEMIC AREA OF COLOMBIA**

**Tatiana Maria Lopera-Mesa**<sup>1</sup>, Lina Zuluaga-Idarraga<sup>1</sup>, Alexandra Rios<sup>1</sup>, Veronica Sierra<sup>1</sup>, Edwar Garzón<sup>1</sup>, Ikki Takehara<sup>2</sup>, Yuji Toya<sup>2</sup>, Chiaki Takeuchi<sup>2</sup>, Kinya Uchihashi<sup>2</sup>, Alberto Tobón-Castaño<sup>2</sup>

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**INFORMATION ON MALARIA DIAGNOSIS AND TREATMENT INCLUDED IN HEALTH MANAGEMENT INFORMATION SYSTEMS IN 23 COUNTRIES**

**Emily Stammer**, Kate Gilroy, Michel Pacqué  
*John Snow Inc/MCSP, Washington, DC, United States*

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**MALARIA MICROSCOPY PARAMETERS AFFECTING ATTAINMENT OF COMPETENCY LEVELS IN NATIONAL COMPETENCY ASSESSMENTS IN GHANA, 2019**

**Alexander Asamoah**, Mildred Komey, Akosua Gyasi Darkwa, Keziah Lawrence Malm  
*National Malaria Control Program, Accra, Ghana*

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**OPENMM - A LOW-COST, MODULAR, AND AUTONOMOUS MICROSCOPE FOR MALARIA DIAGNOSIS AND BEYOND**

Hongquan Li, Hazel Soto-Montoya, Lucas F. Valenzuela, Maxime Voisin, Manu Prakash  
*Stanford University, Stanford, CA, United States*

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**MALARIA DIAGNOSIS IN THE MOBILE GOLD MINERS' POPULATION OF SURINAME IN 2018: AN EVALUATION OF THE MALARIA SERVICE DELIVERS' SYSTEM USING RAPID DIAGNOSTIC TEST**

**Hedley Cairo**  
*Ministry of Health Malaria Program, Paramaribo, Suriname*

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**ADVANTAGES, DISADVANTAGES AND PITFALLS IN THE DETECTION OF MIXED-SPECIES MALARIA CASES IN A NON-ENDEMIC SETTING**

**Alexander Oberli**, Trang Ha Thu Nguyen, Konrad Mühlethaler  
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**1583****HIGHLY SENSITIVE MALARIA DIAGNOSTICS USING A NOVEL SET OF ANTI-PFHRP2 ANTIBODIES****Rolf Fendel**<sup>1</sup>, Andrea Kreidenweiss<sup>1</sup>, Johanna Griesbaum<sup>1</sup>, Sofia Dembski<sup>2</sup>, Torsten Klockenbring<sup>3</sup><sup>1</sup>Institute of Tropical Medicine, Tübingen, Germany, <sup>2</sup>Fraunhofer Institute for Silicate Research ISC, Würzburg, Germany, <sup>3</sup>Fraunhofer Institute for Molecular Biology and Applied Ecology IME, Aachen, Germany**Malaria - Drug Development - Clinical Trials****1584****SYSTEMATIC REVIEW OF STATISTICAL METHODS FOR ANALYSIS OF SAFETY DATA IN MALARIA CHEMOPREVENTION AND TREATMENT IN PREGNANCY CLINICAL TRIALS****Noel P. Patson**<sup>1</sup>, Miriam K. Laufer<sup>2</sup>, Mavuto Mukaka<sup>3</sup>, Alinune Kabaghe<sup>4</sup>, Don Mathanga<sup>4</sup>, Victor Mwapasa<sup>4</sup>, Lawrence Kazembe<sup>5</sup>, Kennedy N. Otumbe<sup>1</sup>, Marinus J. Eijkemans<sup>6</sup>, Tobias Chirwa<sup>1</sup><sup>1</sup>University of the Witwatersrand, Johannesburg, Johannesburg, South Africa, <sup>2</sup>University of Maryland, School of Medicine, USA, Baltimore, MA, United States, <sup>3</sup>Centre for Tropical Medicine, Nuffield Department of Medicine, University of Oxford, Oxford, United Kingdom, <sup>4</sup>University of Malawi, College of Medicine, Blantyre, Malawi, <sup>5</sup>University of Namibia, Department of Biostatistics, Windhoek, Namibia, <sup>6</sup>University Medical Center Utrecht, Utrecht, Netherlands**1585****EFFICACY AND TOLERANCE OF "SAYE", AN HERBAL REMEDY IN THE TREATMENT OF MALARIA****Maminata Coulibaly Traore**<sup>1</sup>, Ibrahim Fayama<sup>2</sup>, Toussaint Rouamba<sup>1</sup>, Sibidou Yougbare<sup>1</sup>, Daniel Valia<sup>1</sup>, Innocent Valea<sup>1</sup>, Ollo Da<sup>3</sup>, Jean Claude W Ouedraogo<sup>2</sup>, Serge R. Yerbanga<sup>4</sup>, Halidou Tinto<sup>1</sup><sup>1</sup>URCN/IRSS, Nanoro, Burkina Faso, <sup>2</sup>Université Ouaga 1, Ouagadougou, Burkina Faso, <sup>3</sup>IRSS/DRO, Bobo-Dioulasso, Burkina Faso, <sup>4</sup>IRSS-DRO, Bobo-Dioulasso, Burkina Faso**1586****ASSESSMENT OF POTENTIAL PHARMACOKINETIC DRUG INTERACTION BETWEEN ARTEMETHER-LUMEFANTRINE (AL) AND PRIMAQUINE****Jay Prakash Jain**<sup>1</sup>, Helen Gu<sup>2</sup>, Katalin Csermak Renner<sup>3</sup>, Pramod J Math<sup>4</sup><sup>1</sup>Novartis Institutes for BioMedical Research, Inc., Emeryville, CA, United States, <sup>2</sup>Novartis Pharmaceuticals Corporation, East Hanover, NJ, United States, <sup>3</sup>Novartis Pharma AG, Basel, Switzerland, <sup>4</sup>Novartis Healthcare Pvt. Ltd., Hyderabad, India**1587****A POTENTIALLY SAFER RADICAL CURE REGIMEN OF PRIMAQUINE - EARLY RESULTS FROM A PRIMAQUINE CHALLENGE STUDY IN HEALTHY GLUCOSE-6-PHOSPHATE DEHYDROGENASE DEFICIENT MALES**Podjane Jittamala<sup>1</sup>, James Watson<sup>2</sup>, Sasithon Pukrittayakamee<sup>1</sup>, Borimas Hanboonkunupakarn<sup>1</sup>, Cindy Chu<sup>3</sup>, Germana Bancone<sup>3</sup>, Joel Tarning<sup>2</sup>, François Nosten<sup>3</sup>, Nicholas Day<sup>2</sup>, Nicholas White<sup>2</sup>, **Walter Taylor**<sup>2</sup><sup>1</sup>Mahidol University, Bangkok, Thailand, <sup>2</sup>MORU, Bangkok, Thailand, <sup>3</sup>SMRU, Mae Sot, Thailand**1588****EFFECT OF DIHYDROARTEMISININ-PIPERAQUINE AND ARTEMETHER-LUMEFANTRINE WITH AND WITHOUT PRIMAQUINE ON PLASMODIUM VIVAX RECURRENCE: A SYSTEMATIC REVIEW AND INDIVIDUAL PATIENT DATA META-ANALYSIS****Robert J. Commons**<sup>1</sup>, on behalf of the WWARN Vivax ACT Recurrence Study Group<sup>2</sup><sup>1</sup>Menzies School of Health Research, Red Hill, Australia, <sup>2</sup>WorldWide Antimalarial Resistance Network, Oxford, United Kingdom**1589****PHARMAKOCINETICS, EFFICACY AND SAFETY OF ARTEMETHER-LUMEFANTRINE DISPERSIBLE TABLET FORMULATION (1:12) IN THE TREATMENT OF ACUTE UNCOMPLICATED PLASMODIUM FALCIPARUM MALARIA IN NEONATES AND INFANTS <5 KG BODY WEIGHT****Cornelis Winnips**<sup>1</sup>, Jay Prakash Jain<sup>2</sup>, Guoquin Su<sup>3</sup>, Celine Risterucci<sup>1</sup>, Marc Cousin<sup>1</sup>, W. Lin<sup>3</sup>, Katalin Csermak Renner<sup>1</sup><sup>1</sup>Novartis Pharma AG, Basel, Switzerland, <sup>2</sup>Novartis Institutes for Biomedical Research Inc, Emeryville, CA, United States, <sup>3</sup>Novartis Pharmaceuticals Corporation, East Hanover, NJ, United States**1590****COHORT EVENT MONITORING STUDY OF 8572 MALARIA CASES TO EVALUATE, IN REAL-LIFE SETTING, THE SAFETY AND TOLERABILITY OF THE FIXED-DOSE COMBINATION THERAPY PYRONARIDINE-ARTESUNATE FOR THE TREATMENT OF UNCOMPLICATED MALARIA****Michael Ramharter**<sup>1</sup>, Gaston T. Lutete<sup>2</sup>, Ghyslaine Mombo-Ngoma<sup>3</sup>, Serge-Brice Assi<sup>4</sup>, Jude D. Bigoga<sup>5</sup>, Felix Koukouikila-Koussounda<sup>6</sup>, Pierre-Michel Ntamabyaliro Nsengi<sup>2</sup>, Francine Ntoumi<sup>6</sup>, Mirjam Groger<sup>1</sup>, Diane Egger-Adam<sup>7</sup>, Matthias Karnahl<sup>7</sup>, Jorge Liz<sup>8</sup>, Robert M. Miller<sup>9</sup>, Sarah Arbe-Barnes<sup>9</sup>, Jangsik Shin<sup>10</sup>, Peter G. Kremsner<sup>7</sup>, Isabelle Borghini-Fuhrer<sup>8</sup>, Stephan Duparc<sup>8</sup><sup>1</sup>Bernhard Nocht Institute for Tropical Medicine, Hamburg, Germany, <sup>2</sup>University of Kinshasa, Kinshasa, Democratic Republic of the Congo, <sup>3</sup>CERMEL, Lamabrene, Gabon, <sup>4</sup>Institut Pierre Richet / Institut National de Santé Publique, Bouaké, Côte D'Ivoire, <sup>5</sup>University of Yaounde, Yaounde, Cameroon, <sup>6</sup>FCRM, Brazzaville, Republic of the Congo, <sup>7</sup>Institut für Tropenmedizin, Tübingen, Germany, <sup>8</sup>Medicines for Malaria Venture, Geneva, Switzerland, <sup>9</sup>Artemida Pharma Limited, Stevenage, United Kingdom, <sup>10</sup>Shin Poong Pharmaceutical Co., Ltd., Seoul, Republic of Korea**1591****A PHASE 1A, FIRST-IN-HUMAN, DOSE-ESCALATION STUDY OF M5717, A FIRST-IN-CLASS INHIBITOR OF PLASMODIUM FALCIPARUM EUKARYOTIC TRANSLATION ELONGATION FACTOR 2**James McCarthy<sup>1</sup>, Oezkan Yalginoglu<sup>2</sup>, Arnand Odedra<sup>1</sup>, Rebecca Webster<sup>1</sup>, **Claude Oeuvray**<sup>3</sup>, Aliona Tappert<sup>2</sup>, Deon Bezuidenhout<sup>4</sup>, Justin Wilkins<sup>5</sup>, Akash Khandelwal<sup>2</sup>, Wilhelmina Bagchus<sup>6</sup><sup>1</sup>QIMR Berghofer Medical Research Institute, Heston, Australia, <sup>2</sup>Merck KGaA, Darmstadt, Germany, <sup>3</sup>The Global Health Institute of Merck, Eysin, Switzerland, <sup>4</sup>Merck PTY, Modderfontein, South Africa, <sup>5</sup>Occams, Werl, Germany, <sup>6</sup>Merck Institute for Pharmacometrics, Lausanne, Switzerland**1592****SAFETY OF SIPHONCHILUS AETHIOPICUS (AFRICAN GINGER) FOR THE TREATMENT OF TANZANIAN ADULTS AGED 18 TO 45 YEARS BY USING CONTROLLED HUMAN MALARIA INFECTION (CHMI)****Florence Milano**

Ifakara Health Institute, Bagamoyo, United Republic of Tanzania

**1593****EFFICACY OF SIPHONCHILUS AETHIOPICUS (AFRICAN GINGER) FOR THE TREATMENT OF TANZANIAN HEALTHY ADULTS AGED 18 TO 45 YEARS BY USING CONTROLLED HUMAN MALARIA INFECTION (CHMI)****Kamaka Ramadhani Kassimu**

Ifakara Health Institute, Bagamoyo, United Republic of Tanzania



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### PHARMACOLOGICAL PROPERTIES OF PIPERAQUINE IN HEALTHY VOLUNTEERS WITH INDUCED BLOOD-STAGE *P. FALCIPARUM* MALARIA INFECTION: A MECHANISTIC MODELLING APPROACH

Thanaporn Wattanakul<sup>1</sup>, Richard Hoglund<sup>1</sup>, Joerg Möhrle<sup>2</sup>, James McCarthy<sup>3</sup>, Joel Tarning<sup>1</sup>

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### EXTENDED DURATION ARTEMETHER-LUMEFANTRINE FOR THE TREATMENT OF MALARIA IN HIV-UNINFECTED CHILDREN IN UGANDA: THE EXALT RANDOMIZED CONTROLLED PK/PD STUDY

Mwebaza Norah<sup>1</sup>, Whalen Meghan<sup>2</sup>, Francis Orukan<sup>1</sup>, Kacey Richards<sup>3</sup>, Martina Wade<sup>3</sup>, Were Moses<sup>1</sup>, Liusheng Huang<sup>2</sup>, Richard Kajubi<sup>1</sup>, Francesca Aweeka<sup>2</sup>, Sunil Parikh<sup>3</sup>

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## Malaria – Epidemiology

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### MOLECULAR EPIDEMIOLOGICAL STUDY OF MULTIDRUG-RESISTANT *FALCIPARUM* MALARIA IN THE CENTRAL HIGHLANDS OF VIETNAM IN 2018-2019

Huynh H. Quang<sup>1</sup>, Marina Chavchich<sup>2</sup>, Nguyen T. Trinh<sup>1</sup>, Nguyen D. Manh<sup>3</sup>, Michael D. Edstein<sup>2</sup>, Kimberly A. Edgel<sup>4</sup>, Nicholas J. Martin<sup>4</sup>

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### ASSESSMENT THE QUALITY OF ROUTINE MALARIA DATA IN MADAGASCAR

Solo Harimalala Rajaobary

National Malaria Control Program, Antananarivo, Madagascar

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### HOUSEHOLD MEMBERS OF PERSONS WITH MALARIA IN HIGHLAND KENYA AREAS OF UNSTABLE TRANSMISSION ARE AT INCREASED RISK OF DEVELOPING CLINICAL MALARIA WITHIN 30 DAYS

George Ayodo<sup>1</sup>, Lindsey B. Turnbull<sup>2</sup>, Veronicah Knight Adhiambo<sup>1</sup>, Chandy C. John<sup>2</sup>

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### POOR AGREEMENT BETWEEN FACILITY RECORD DATA, ROUTINE HEALTH INFORMATION SYSTEM DATA, AND EXIT INTERVIEW DATA DURING A HEALTH FACILITY SURVEY IN MOZAMBIQUE: CAUSE FOR CONCERN WITH REGARD TO ROUTINE DATA QUALITY?

Baltazar Candrinho<sup>1</sup>, Mariana Da Silva<sup>2</sup>, Guidion Mathe<sup>2</sup>, Mercia Dimene<sup>2</sup>, Ana Rita Chico<sup>3</sup>, Ana Cristina Castel-Branco<sup>3</sup>, Frederico Brito<sup>4</sup>, Marcel Andela<sup>3</sup>, Gabriel Ponce de Leon<sup>5</sup>, Abu Saifodine<sup>6</sup>, Rose Zulliger<sup>7</sup>, Mathew Plucinski<sup>8</sup>, James Colborn<sup>3</sup>

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### THE ASSOCIATION BETWEEN *PLASMODIUM FALCIPARUM* INFECTION IN THE FIRST SIX MONTHS OF LIFE AND SUBSEQUENT INFECTION AMONG CHILDREN UNDER 24 MONTHS IN MALAWI, 2016-2018

Liana R. Andronescu<sup>1</sup>, Andrea G. Buchwald<sup>2</sup>, Andy Bauleni<sup>3</sup>, Patricia Mawindo<sup>3</sup>, Don P. Mathanga<sup>3</sup>, Miriam K. Laufer<sup>1</sup>

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### SPATIAL MODELING OF CATCHMENT AREAS FOR ESTIMATING MALARIA INCIDENCE USING HEALTH FACILITY SURVEILLANCE DATA IN UGANDA

Adrienne Epstein<sup>1</sup>, Victor Kanya<sup>2</sup>, Sarah Staedke<sup>3</sup>, Arthur Mpimbaza<sup>2</sup>, Asadu Sserwanga<sup>2</sup>, Jane Namuganga<sup>2</sup>, James Kapiso<sup>2</sup>, Isabel Rodriguez-Barraquer<sup>1</sup>, Moses Kanya<sup>2</sup>, Grant Dorsey<sup>1</sup>, Bryan Greenhouse<sup>1</sup>

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### EPIDEMIOLOGY OF *PLASMODIUM VIVAX* IN DUFFY NEGATIVE INDIVIDUALS

Lauren Bradley, Guiyun Yan

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### SPATIOTEMPORAL EPIDEMIOLOGY OF MALARIA IN SOUTHERN VENEZUELA: A CRITICAL *PLASMODIUM* HOT-SPOT IN LATIN AMERICA

Maria E. Grillet<sup>1</sup>, Jorge Moreno<sup>2</sup>, Jan E. Conn<sup>3</sup>, Juan V. Hernandez<sup>4</sup>, Maria F. Vicent<sup>5</sup>, Adriana Tami<sup>6</sup>, Alberto Paniz-Mondolfi<sup>7</sup>, Martin Llewellyn<sup>8</sup>, Ananias A. Escalante<sup>9</sup>

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## 1604

### ADAPTING MALARIA INDICATOR SURVEYS TO IMPROVE UPON TRAVEL DATA RELEVANT FOR MALARIA EPIDEMIOLOGY

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## 1605

### REVEALING THE MALARIA MAP: USING SOFTWARE IN A NOVEL APPROACH TO GEOSPATIAL TARGETING OF MALARIA INTERVENTIONS AND SBC MESSAGING

Christina M. Riley<sup>1</sup>, Frazer Bwalya<sup>1</sup>, Todd Jennings<sup>2</sup>, Derek Pollard<sup>1</sup>, Anne C. Martin<sup>1</sup>, Javan Chanda<sup>2</sup>, Reuben Zulu<sup>3</sup>, Emmanuel Kooma<sup>3</sup>, John Miller<sup>2</sup>, Anna M. Winters<sup>1</sup>

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## 1606

### RISK FACTORS OF MALARIA INFECTION IN A LOW ENDEMIC DISTRICT WITH INTENSIFIED VECTOR CONTROL IN MAPUTO PROVINCE, SOUTH OF MOZAMBIQUE

Julia Montana Lopez<sup>1</sup>, Wilson Simone<sup>2</sup>, Beatriz Galatas<sup>1</sup>, Caterina Guinovart<sup>3</sup>, Fernando Laice<sup>2</sup>, Arlindo Chidimatembue<sup>2</sup>, Regina Rabinovich<sup>4</sup>, Baltazar Candrinho<sup>5</sup>, Francisco Saute<sup>1</sup>, Pedro Aide<sup>6</sup>

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## 1607

### COMPARATIVE EFFECTIVENESS TRIAL OF TWO COMMUNITY CASE MANAGEMENT TECHNIQUES FOLLOWING WITHDRAWAL OF INDOOR RESIDUAL SPRAYING IN NE UGANDA

Dorothy Echodu<sup>1</sup>, Kathryn Colborn<sup>2</sup>, Ronald Mulebeke<sup>3</sup>, Thomas Eganyu<sup>4</sup>, Humphrey Wanzira<sup>3</sup>, Fred Bukenya<sup>4</sup>, Richard Elliott<sup>5</sup>, Joaniter Nankabirwa<sup>6</sup>, Jimmy Opigo<sup>7</sup>, Adoke Yeka<sup>8</sup>

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## 1608

### MALARIA AND OTHER PARASITIC INFECTIONS IN PREGNANCY IN GHANA: BURDEN AND EFFECT

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University of Health and Allied Sciences, Ho, Ghana

## 1609

### PREVALENCE OF MALARIA IN EARLY PREGNANCY AMONG NULLIPAROUS WOMEN IN THE DEMOCRATIC REPUBLIC OF THE CONGO, KENYA, ZAMBIA AND PAKISTAN

Sequoia I. Leuba<sup>1</sup>, Melissa Bauserman<sup>1</sup>, Carl L. Bose<sup>1</sup>, Antoinette K. Tshetu<sup>2</sup>, Waldemar A. Carlo<sup>3</sup>, Musaku Mwenechanya<sup>4</sup>, Edward A. Liechty<sup>5</sup>, Fabian Esamai<sup>6</sup>, Robert L. Goldenberg<sup>7</sup>, Saleem Jessani<sup>8</sup>, Elizabeth M. McClure<sup>9</sup>, Jennifer J. Hemingway-Foday<sup>9</sup>, Steven Meshnick<sup>1</sup>

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## 1610

### MULTIPLICITY OF INFECTION AND PARASITE DENSITY BY AGE IN SYMPTOMATIC MALARIA EPISODES IN SOUTHERN MALAWI

Alaina Halbach<sup>1</sup>, Andrea Buchwald<sup>1</sup>, Dominique Earland<sup>1</sup>, Alick Sixpence<sup>2</sup>, Mabvuto Chimanya<sup>2</sup>, Milius Danson<sup>2</sup>, Karl Seydel<sup>3</sup>, Don Mathanga<sup>2</sup>, Terrie Taylor<sup>3</sup>, Miriam Laufer<sup>1</sup>

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## 1611

### PREVALENCE OF MICROSCOPIC AND SUBMICROSCOPIC *PLASMODIUM SPP.* INFECTIONS AND ASSOCIATED FACTORS IN INDIGENOUS AND NON-INDIGENOUS COMMUNITIES IN COLOMBIA

Jehidys Estella Montiel Ramos, Luisa F. Carbal Reyes, Veronica Sierra Cifuentes, Juan C. Perez, Gabriel J. Velez, Daniel C. Aguirre Acevedo, Lina M. Zuluaga Idarraga, Cesar H. Segura Latorre, Alberto Tobon Castaño, Ana M. Vasquez Cardona

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## 1612

### SUBCLINICAL *PLASMODIUM FALCIPARUM* INFECTION AMONG CHILDREN AND ADULTS RESIDING IN A HIGH MALARIA TRANSMISSION COMMUNITY

Tamaki Kobayashi<sup>1</sup>, Matthew M. Ippolito<sup>2</sup>, Jay Sikalima<sup>3</sup>, James S. Lupiya<sup>3</sup>, Mike Chaponda<sup>3</sup>, William J. Moss<sup>1</sup>

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### SEVERE MALARIA SURVEILLANCE IN A RURAL DISTRICT HOSPITAL IN NORTHERN ZAMBIA

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**PRELIMINARY FINDINGS AND LOGISTICAL CHALLENGES FROM AN INTENSIVE LONGITUDINAL COHORT STUDY OF MALARIA TRANSMISSION IN A PRE-ELIMINATION SETTING IN SOUTHERN ZAMBIA**

Jessica Schue<sup>1</sup>, Japhet Matoba<sup>2</sup>, Jennifer C. Stevenson<sup>2</sup>, Harry Hamapumbu<sup>2</sup>, Ben Katowa<sup>2</sup>, Michael Musonda<sup>2</sup>, Tamaki Kobayashi<sup>1</sup>, Timothy Shields<sup>1</sup>, Andre Hackman<sup>1</sup>, Philip E. Thuma<sup>2</sup>, William J. Moss<sup>1</sup>

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**WHEN FEVERS REIGNITE: AN ASSESSMENT OF PLASMODIUM VIVAX RECURRENCES IN PANAMA**

Carmela M. Jackman<sup>1</sup>, Bernardo Garcia Espinosa<sup>2</sup>, Madeline E. Baird<sup>2</sup>, Nicholas Presley<sup>2</sup>, Darlene Bhavnani<sup>2</sup>, Lizbeth Cerezo<sup>1</sup>

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**PLASMODIUM SPECIES FREQUENCY AT BANCOUMANA, A MALARIA VACCINE TESTING CENTER IN MALI**

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**CHARACTERIZATION OF ENDEMIC YEAR-ROUND MALARIA TRANSMISSION IN THE CHITTAGONG HILL TRACTS OF BANGLADESH**

Forrest K. Jones<sup>1</sup>, Amy Wesolowski<sup>1</sup>, Ching S. Phru<sup>2</sup>, Mohammad S. Hossain<sup>2</sup>, David J. Sullivan<sup>1</sup>, Wasif A. Khan<sup>2</sup>, Emily S. Gurley<sup>1</sup>

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**QUANTIFYING THE ROLE OF AGE AND P. FALCIPARUM INFECTION TO ANEMIA PREVALENCE AMONG CHILDREN IN UGANDA**

John M. Henry<sup>1</sup>, David L. Smith<sup>1</sup>, Moses Kanya<sup>2</sup>, John Rek<sup>3</sup>, Bryan Greenhouse<sup>4</sup>, Isabel Rodriguez-Barraquer<sup>4</sup>, Grant Dorsey<sup>4</sup>

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**EVALUATION OF A LINK BETWEEN MALARIA AND HYPERTENSION IN THE UNITED STATES: A CROSS-SECTIONAL POPULATION-BASED COHORT ANALYSIS**

Morgan Birabahan, Andrew Strunk, Amit Garg, Stefan Hagmann  
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**EPIDEMIOLOGIC AND CLINICAL PROFILE OF SEVERE MALARIA CASES TREATED AT THE BEFELATANANA UNIVERSITY HOSPITAL, MADAGASCAR FROM JANUARY 2018 TO FEBRUARY 2019**

Hitsy A. Razafindrazaka<sup>1</sup>, Jocelyn Razafindrakoto<sup>2</sup>, Volatiana Andriananja<sup>1</sup>, Mihaja Raberahona<sup>1</sup>, Rajaonarison Mahan<sup>1</sup>, Laurent Kapesa<sup>2</sup>, Mamy Randria<sup>1</sup>

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**EVALUATING GUIDELINES FOR COMMUNITY HEALTH WORKER PROTOCOLS IN ZAMBIA BASED ON DATA FROM TRIALS AND ROUTINE REPORTING**

Caitlin A. Bever<sup>1</sup>, Reine Rutagwera<sup>2</sup>, Hannah Slater<sup>3</sup>, John Miller<sup>2</sup>, Kammerle Schneider<sup>3</sup>, Thom Eisele<sup>4</sup>, Edward Wenger<sup>1</sup>

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**MALARIA TRANSMISSION MONITORING IN LAGOS STATE, NIGERIA**

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**EPIDEMIOLOGY OF MALARIA IN KT ZONE, SOUTHERN ETHIOPIA: A FIVE YEAR DATA ANALYSIS, 2011-2015**

Abraham Lere Keshabo, Adamu Addissie Nuramo  
Addis Ababa University, Addis Ababa, Ethiopia

**Malaria - Genetics/Genomics**

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**IDENTIFICATION OF EXPRESSED VARS IN WHOLE BLOOD CLINICAL SAMPLES WITH A CUSTOM CAPTURE ARRAY VERSUS RNA ENRICHMENT METHODS**

Emily M. Stucke<sup>1</sup>, Antoine Dara<sup>2</sup>, Ankit Dwivedi<sup>1</sup>, Theresa Hodges<sup>1</sup>, Drissa Coulibaly<sup>2</sup>, Abdoulaye K. Kone<sup>2</sup>, Karim Troaore<sup>2</sup>, Boureima Guindo<sup>2</sup>, Bourama Tangara<sup>2</sup>, Amadou Niangaly<sup>2</sup>, Modibo Daou<sup>2</sup>, Issa Diarra<sup>2</sup>, Youssouf Tolo<sup>2</sup>, Mody Sissoko<sup>2</sup>, Albert E. Zhou<sup>1</sup>, Matthew B. Laurens<sup>1</sup>, Amed Ouattara<sup>1</sup>, Boureima Kouriba<sup>2</sup>, Ogobar K. Duombo<sup>2</sup>, Shannon Takala-Harrison<sup>1</sup>, David Serre<sup>1</sup>, Mahamadou A. Thera<sup>2</sup>, Christopher V. Plowe<sup>3</sup>, Mark A. Travassos<sup>1</sup>, Joana C. Silva<sup>1</sup>

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**GLOBAL GENETIC DIVERSITY AND POPULATION STRUCTURE OF PLASMODIUM FALCIPARUM TRANSMISSION VACCINE TARGETS PFS47, PFS48/45 AND PFS230**

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**THE APOLIPOPROTEIN E3/E3 GENOTYPE IS ASSOCIATED WITH PROTECTION FROM SEVERE MALARIA IN UGANDAN CHILDREN**

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**MALARIA IN VENEZUELA: CHANGES IN THE COMPLEXITY OF INFECTION REFLECTS THE INCREMENT IN TRANSMISSION INTENSITY**

M. Andreina Pacheco<sup>1</sup>, David A. Forero-Peña<sup>2</sup>, Melynar Chavero<sup>3</sup>, Angel Gamardo<sup>4</sup>, Luisamy Figuera<sup>5</sup>, Leopoldo Villegas<sup>5</sup>, María E. Grillet<sup>6</sup>, Kristan Schneider<sup>7</sup>, Ananias A. Escalante<sup>1</sup>

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**DEMOGRAPHIC AND EVOLUTIONARY INSIGHTS FROM RECENT LARGE-SCALE WHOLE-GENOME SEQUENCING EFFORTS OF PLASMODIUM FALCIPARUM IN SOUTH AMERICA**

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**COMPARATIVE TRANSCRIPTOMICS OF P FALCIPARUM IN NORMAL AND SICKLE-TRAIT ERYTHROCYTES USING RNA SEQUENCING**

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(ACMCIP Abstract)

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**EVOLUTION AND EXPANSION OF MULTI-DRUG RESISTANT MALARIA IN SOUTHEAST ASIA**

William L. Hamilton<sup>1</sup>, Roberto Amato<sup>1</sup>, Rob W. van der Pluijm<sup>2</sup>, Arjen M. Dondorp<sup>2</sup>, Dominic P. Kwiatkowski<sup>1</sup>, Olivo Miotto<sup>2</sup>, MalariaGEN Community Project<sup>3</sup>, GenRe-Mekong Project<sup>3</sup>, TRACII collaborations<sup>3</sup>

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**CHARACTERIZING PLASMODIUM FALCIPARUM GENETIC DIVERSITY IN TWO VILLAGES OF MALI BOUGOULA-HAMEAU AND FALADJE**

Aoua Coulibaly<sup>1</sup>, Aminatou Kone<sup>1</sup>, Antoine Dara<sup>1</sup>, Abdoulaye Djimde<sup>1</sup>, Nicola Mulder<sup>2</sup>, Olivo Miotto<sup>3</sup>

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**WHOLE TRANSCRIPTOME IDENTIFICATION OF MICRO RNAS ASSOCIATED WITH SEVERE MALARIAL ANEMIA IN KENYAN CHILDREN**

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**PIPERAQUINE RESISTANCE IS ASSOCIATED WITH DIFFERENTIAL VACUOLAR ACCUMULATION AND PEPTIDOMIC PROFILES IN PLASMODIUM FALCIPARUM**

John Okombo<sup>1</sup>, Sachel Mok<sup>1</sup>, Edward Owen<sup>2</sup>, Zbynek Bozdech<sup>3</sup>, Manuel Llinas<sup>2</sup>, David Fidock<sup>1</sup>

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**HIGH THROUGHPUT PHENOTYPIC SCREEN UNRAVELS PLASMODIUM FALCIPARUM GENES ESSENTIAL TO MALARIA TRANSMISSION**

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**LONGITUDINAL GENOTYPING USING AMPLICON DEEP-SEQUENCING TO DESCRIBE RESIDUAL PARASITEMIA IN THE SETTING OF RAPIDLY DECLINING TRANSMISSION IN NAGONGERA, UGANDA**

Jessica Briggs<sup>1</sup>, Noam Teyssier<sup>1</sup>, Joaniter Nankabirwa<sup>2</sup>, John Rek<sup>2</sup>, Emmanuel Arinaitwe<sup>2</sup>, Moses Kanya<sup>2</sup>, Grant Dorsey<sup>1</sup>, Isabel Rodriguez-Barraquer<sup>1</sup>, Bryan Greenhouse<sup>1</sup>

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**ACCURATE ASSEMBLY OF MULTIGENE FAMILIES AND OTHER REGIONS OF HIGH DIVERSITY IN P. FALCIPARUM FROM WHOLE GENOME SEQUENCING WITH NOVEL ASSEMBLER PATHWEAVER**

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### HOST AND PARASITE TRANSCRIPTOMIC CHANGES UPON SUCCESSIVE *PLASMODIUM FALCIPARUM* INFECTIONS IN MALIAN CHILDREN

**Katie R. Bradwell**<sup>1</sup>, Drissa Coulibaly<sup>2</sup>, Matthew B. Laurens<sup>3</sup>, Ahmadou Dembélé<sup>2</sup>, Youssouf Tolo<sup>2</sup>, Abdoulaye K. Koné<sup>2</sup>, Karim Traoré<sup>2</sup>, Amadou Niangaly<sup>2</sup>, Andrea A. Berry<sup>3</sup>, Bourema Kouriba<sup>2</sup>, Kirsten E. Lyke<sup>3</sup>, Shannon Takala-Harrison<sup>3</sup>, Ogobara K. Doumbo<sup>2</sup>, Christopher V. Plowe<sup>4</sup>, Mahamadou A. Thera<sup>2</sup>, Mark Travassos<sup>3</sup>, David Serre<sup>1</sup>

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### GLOBAL STRUCTURE OF THE VAR GENES ENCODING THE MAJOR VARIANT SURFACE ANTIGEN OF *PLASMODIUM FALCIPARUM*

Gerry Tonkin-Hill<sup>1</sup>, Shazia Ruybal-Pesántez<sup>1</sup>, **Kathryn E. Tiedje**<sup>1</sup>, Virginie Rougeron<sup>2</sup>, Sedigheh Zakeri<sup>3</sup>, Tepanata Pumpaibool<sup>4</sup>, Pingchai Harnyuttanakorn<sup>1</sup>, OraLee H. Branch<sup>5</sup>, Lastenia Ruiz-Mesia<sup>6</sup>, Michael F. Duffy<sup>1</sup>, Thomas S. Rask<sup>1</sup>, Franck Prugnolle<sup>7</sup>, Yao-Ban Yao-Ban Chan<sup>8</sup>, Anthony T. Papenfuss<sup>9</sup>, Karen P. Day<sup>1</sup>

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### IN SILICO CAPTURE AND ASSEMBLY OF HIGHLY VARIABLE LOCI

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### MOLECULAR EPIDEMIOLOGY OF MALARIA UNDER SHIFTING AGRICULTURAL PRACTICES IN AFRICA

**Elizabeth Hemming-Schroeder**<sup>1</sup>, Daibin Zhong<sup>1</sup>, Amanda Chie<sup>1</sup>, Harrysone Atieli<sup>1</sup>, Andrew Githeko<sup>2</sup>, Guiyun Yan<sup>1</sup>

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## Malaria – Immunology

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### EPHRIN B LIGANDS REGULATE HUMORAL IMMUNE RESPONSE TO *PLASMODIUM* PARASITE

**Adesola C. Olatunde**<sup>1</sup>, Patrice N. Mimche<sup>1</sup>, Spencer O. Seely<sup>1</sup>, Taryn P. Stewart<sup>1</sup>, Franklin Maloba<sup>2</sup>, Balotin Fogang<sup>2</sup>, Lawrence Ayong<sup>2</sup>, Tracey J. Lamb<sup>1</sup>

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1642

### MALIAN CHILDREN WITH SEVERE MALARIA EXHIBIT DISTINCT PFEMP1 ANTIBODY PROFILES THAT DIFFER BY BLOOD TYPE

**Albert E. Zhou**<sup>1</sup>, Paul Han<sup>1</sup>, Andrea A. Berry<sup>1</sup>, Drissa Coulibaly<sup>2</sup>, Emily M. Stucke<sup>1</sup>, Amed Ouattara<sup>1</sup>, Biraj Shrestha<sup>1</sup>, Matthew B. Laurens<sup>1</sup>, Rie Nakajima<sup>3</sup>, Aarti Jain<sup>3</sup>, Omid Taghavian<sup>3</sup>, Joshua M. Obiero<sup>3</sup>, Li Liang<sup>3</sup>, Algis Jasinskas<sup>3</sup>, Amadou Niangaly<sup>2</sup>, Bourema Kouriba<sup>2</sup>, Abdoulaye Kone<sup>2</sup>, Ogobara K. Doumbo<sup>2</sup>, J. Alexandra Rowe<sup>4</sup>, Shannon Takala-Harrison<sup>1</sup>, Kirsten E. Lyke<sup>1</sup>, Christopher V. Plowe<sup>5</sup>, Philip L. Felgner<sup>3</sup>, Mahamadou A. Thera<sup>2</sup>, Mark A. Travassos<sup>1</sup>

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### IMMUNOMODULATION OF PREGNANCY-ASSOCIATED MALARIA AND ITS EFFECT ON INFANT IMMUNE RESPONSE AGAINST VACCINE ANTIGENS

**Eliana M. Arango Florez**<sup>1</sup>, Catalina Alvarez Larrotta<sup>1</sup>, Olga M. Agudelo Garcia<sup>1</sup>, Amanda Maestre<sup>1</sup>, Stephanie K. Yanow<sup>2</sup>, Jaime Carmona Fonseca<sup>1</sup>

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### MATERNAL TRANSFER OF IMMUNOGLOBULIN G AND ITS IMMUNITY AGAINST *PLASMODIUM FALCIPARUM* INFECTION AMONG CHILDREN ENROLLED IN A UGANDAN BIRTH COHORT

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(ACMCIP Abstract)

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### CHARACTERIZATION OF DIFFERENCES IN HOST IMMUNE GENE EXPRESSION PROFILE IN MALARIA-PROTECTED AND MALARIA-SUSCEPTIBLE CHILDREN

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(ACMCIP Abstract)

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### CHARACTERIZATION OF NATURALLY-ACQUIRED HUMAN ANTIBODIES TO *P. VIVAX* RETICULOCYTE BINDING PROTEIN 2B (PVRBP2)

**Christopher L. King**<sup>1</sup>, Li-Jin Chan<sup>2</sup>, Lenore Carias<sup>1</sup>, Melanie Dietrich<sup>2</sup>, Camila Franca<sup>2</sup>, Sebastian Menant<sup>2</sup>, Wai-Hong Tham<sup>2</sup>

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### CEREBRAL MALARIA, SICKLE CELL DISEASE AND BURKITT LYMPHOMA: TH1/TH2 CYTOKINE EXPRESSIONS AND CELL ADHESION MOLECULES

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(ACMCIP Abstract)

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**THE EFFECT OF KILLER IMMUNOGLOBULIN-LIKE RECEPTOR GENOTYPE ON MALARIA INCIDENCE AND PARASITEMIA**

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(ACMCIP Abstract)

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**A SERINE PROTEASE HELPS CYTOTOXIC LYMPHOCYTE LYSE INFECTED RBCS AND MANAGE PARASITE DEATH**

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(ACMCIP Abstract)

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**GENERATING LONG-LIVED EFFECTOR/MEMORY T CELLS WITH MOUSE CYTOMEGALOVIRUS VACCINATION TO PROLONG MALARIA IMMUNITY**

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**TH1 DIFFERENTIATION, BUT NOT ANTIBODY PRODUCTION, CORRELATES WITH PROTECTION FROM REINFECTION IN *PLASMODIUM* INFECTION, AND IS REGULATED BY STAT3 IN T CELLS**

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**CIRCULATING T FOLLICULAR HELPER CELL DYNAMICS DURING VACCINATIONS WITH TRANSMISSION BLOCKING CONJUGATED VACCINES PFS230-EPA AND PFS25-EPA ADJUVANTED WITH AS01**

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**HOSPITAL-DERIVED ANTIBODY PROFILES OF MALARIA PATIENTS IN SOUTHWEST INDIA**

Apoorva Venkatesh<sup>1</sup>, Aarti Jain<sup>2</sup>, Huw Davies<sup>2</sup>, Ligia Periera<sup>3</sup>, Jennifer Maki<sup>3</sup>, Edwin Gomes<sup>4</sup>, Phillip L. Felgner<sup>2</sup>, Sanjeeva Srivastava<sup>1</sup>, Swati Patankar<sup>1</sup>, Pradipsinh K Rathod<sup>3</sup>

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(ACMCIP Abstract)

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**PROTECTION-ASSOCIATED IMMUNE RESPONSES FOLLOWING VACCINATION WITH RADIATION-ATTENUATED *PLASMODIUM FALCIPARUM* SPOOROZOITES**

Nina Hertoghs<sup>1</sup>, Katharine V. Schwedhelm<sup>2</sup>, Ying Du<sup>1</sup>, Fergal Duffy<sup>1</sup>, Stefan H. Kappe<sup>1</sup>, M. Juliana McElrath<sup>2</sup>, Stephen C. De Rosa<sup>2</sup>, Kenneth D. Stuart<sup>1</sup>

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(ACMCIP Abstract)

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**PROTECTIVE ANTIGENS AND ANTIBODIES DURING THE PRE-ERYTHROCYTIC STAGE OF MALARIA**

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**Malaria – Modeling**

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**ENSEMBLE MODELING FOR PRECLINICAL ANTIMALARIAL DRUG DEVELOPMENT: PROVIDING MECHANISTIC INSIGHTS INTO PARASITE-HOST BEHAVIOR**

Lydia Burgert<sup>1</sup>, Matthias Rottmann<sup>1</sup>, Sergio Wittlin<sup>1</sup>, Andreas Krause<sup>2</sup>, Nathalie Gobeau<sup>3</sup>, Joerg Moehrl<sup>3</sup>, Melissa Penny<sup>1</sup>

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**DEFINING MINIMAL TARGET PRODUCT PROFILES OF NEW MALARIA INTERVENTIONS: A MODELLING STUDY**

Melissa A. Penny<sup>1</sup>, Guojing Yang<sup>1</sup>, Flavia Camponovo<sup>1</sup>, Nakul Chitnis<sup>1</sup>, Ewan Cameron<sup>2</sup>, Monica Golumbeanu<sup>1</sup>

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***PLASMODIUM VIVAX* LACTATE DEHYDROGENASE IN INDUCED BLOOD STAGE MALARIA INFECTION: UNDERSTANDING BIOMARKER DYNAMICS FOR THE PURPOSE OF MALARIA ELIMINATION**

Sumudu Britton<sup>1</sup>, Lachlan Webb<sup>1</sup>, Deborah Akinlotan<sup>1</sup>, Ihn K. Jang<sup>2</sup>, Bridget Barber<sup>1</sup>, Ellie Sherrard-Smith<sup>3</sup>, Kim Piera<sup>4</sup>, Anstey Nicholas<sup>4</sup>, Gonzalo J. Domingo<sup>2</sup>, McCarthy S. James<sup>1</sup>

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**PREDICTING MALARIA ELIMINATION USING MATHEMATICAL MODELLING AND MACHINE LEARNING**

Theresa Reiker, Monica Golumbeanu, Munir Winkel, Emilie Pothin, Nakul Chitnis, Thomas A. Smith, Melissa Penny

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**COST ANALYSIS OF MALARIA CONTROL AND ELIMINATION ACTIVITIES IN HETEROGENEOUS MALARIA TRANSMISSION AREAS OF MYANMAR**

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**1661****MODELING PLASMODIUM FALCIPARUM INFECTION IN AN IMMUNOCOMPROMISED JUVENILE MOUSE MODEL****Jeanine A. Ursitti<sup>1</sup>**, Biraj Shrestha<sup>2</sup>, Amed Ouattara<sup>2</sup>, Matthew Adams<sup>2</sup>, Christopher V. Plowe<sup>3</sup>, Mark A. Travassos<sup>2</sup>, Steven A. Fisher<sup>1</sup><sup>1</sup>Departments of Medicine and Physiology, University of Maryland School of Medicine, Baltimore, MD, United States, <sup>2</sup>Malaria Research Program, Center for Vaccine Development and Global Health, University of Maryland School of Medicine, Baltimore, MD, United States, <sup>3</sup>Duke Global Health Institute, Duke University, Durham, NC, United States**1662****ANTIMALARIAL DRUG-RESISTANCE EVOLUTION DURING AND AFTER MASS DRUG ADMINISTRATION****Maciej F. Boni**, Thu N-A Tran, Tran Dang Nguyen

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**1663****THE ROLE OF DRUG QUALITY IN THE EMERGENCE AND TRANSMISSION OF ANTIMALARIAL RESISTANCE****Aleisha Brock<sup>1</sup>**, Joshua V. Ross<sup>1</sup>, Adrian Esterman<sup>1</sup>, Sunil Parikh<sup>2</sup><sup>1</sup>University of South Australia, Adelaide, Australia, <sup>2</sup>Yale School of Public Health, New Haven, CT, United States**1664****QUANTIFYING MALARIA ACQUIRED DURING TRAVEL AND ITS ROLE IN MALARIA ELIMINATION ON BOKO ISLAND****Daniel T. Citron<sup>1</sup>**, Carlos A. Guerra<sup>2</sup>, Guillermo A. Garcia<sup>2</sup>, Sean L. Wu<sup>3</sup>, Su Yun Kang<sup>4</sup>, Katherine E. Battle<sup>4</sup>, Harry S. Gibson<sup>4</sup>, David L. Smith<sup>1</sup><sup>1</sup>University of Washington, Seattle, WA, United States, <sup>2</sup>Medical Care Development International, Silver Spring, MD, United States, <sup>3</sup>University of California, Berkeley, CA, United States, <sup>4</sup>University of Oxford, Oxford, United Kingdom**1665****THE ECONOMIC IMPACT OF SUBSTANDARD AND FALSIFIED ANTIMALARIAL MEDICATIONS IN NIGERIA****Sarah Laing<sup>1</sup>**, Sarah Beargie<sup>1</sup>, Colleen Higgins<sup>1</sup>, Daniel Evans<sup>2</sup>, Daniel Erim<sup>3</sup>, Sachiko Ozawa<sup>1</sup><sup>1</sup>University of North Carolina at Chapel Hill, Chapel Hill, NC, United States, <sup>2</sup>Duke University, Durham, NC, United States, <sup>3</sup>RTI International, Durham, NC, United States**1666****SPATIAL COVARIATE-BASED CONSTRAINED RANDOMIZATION OF MALARIA INTERVENTIONS****Kathryn Colborn<sup>1</sup>**, Thomas Eganyu<sup>2</sup>, Humphrey Wanzira<sup>2</sup>, Ronald Mulebeke<sup>2</sup>, Fred Bukonya<sup>2</sup>, Richard Elliot<sup>3</sup>, Adoke Yeka<sup>4</sup>, Dorothy Echodu<sup>2</sup><sup>1</sup>University of Colorado Denver, Aurora, CO, United States, <sup>2</sup>Pilgrim Africa, Kampala, Uganda, <sup>3</sup>Boise State University, Boise, ID, United States, <sup>4</sup>Makerere University, Kampala, Uganda**1667****A MODEL-BASED ASSESSMENT OF MALARIA IN VENEZUELA SUGGESTS THAT THE EPIDEMIC IS REVERSIBLE****John Huber<sup>1</sup>**, Luis Chaves<sup>2</sup>, Amir Siraj<sup>1</sup>, Jorge Moreno<sup>3</sup>, Maria Villegas<sup>4</sup>, Leonor Pocater<sup>5</sup>, Leopoldo Villegas<sup>4</sup>, T. Alex Perkins<sup>1</sup><sup>1</sup>University of Notre Dame, Notre Dame, IN, United States, <sup>2</sup>Instituto Costarricense de Investigación y Enseñanza en Nutrición y Salud, Tres Ríos, Costa Rica, <sup>3</sup>Centro de Investigación de Campo Francisco Vitanza, Tumeremo, Bolivarian Republic of Venezuela, <sup>4</sup>Global Development One, Silver Spring, MD, United States, <sup>5</sup>Universidad Central de Venezuela, Caracas, Bolivarian Republic of Venezuela**1668****MOLECULAR SURVEILLANCE AND MODELING REVEAL SPATIO-TEMPORAL TRENDS OF MALARIA TRANSMISSION IN THIÈS, SENEGAL****Albert Lee<sup>1</sup>**, Stephen F. Schaffner<sup>2</sup>, Rachel F. Daniels<sup>3</sup>, Yaye Die Ndiaye<sup>4</sup>, Awa B. Deme<sup>4</sup>, Aida S. Badiane<sup>5</sup>, Bronwyn MacInnis<sup>2</sup>, Sarah K. Volkman<sup>6</sup>, Dyann F. Wirth<sup>6</sup>, Daouda Ndiaye<sup>5</sup>, Daniel L. Hartl<sup>7</sup>, Edward A. Wenger<sup>1</sup>, Joshua L. Proctor<sup>1</sup>  
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**USE OF MALARIA SERVICES AND DATA QUALITY IMPROVEMENT TOOL IN CASCADED SUPERVISION APPROACH IMPROVED QUALITY OF MALARIA SERVICES: EXPERIENCE FROM MWANZA REGION, TANZANIA**

**Emmanuel Lesilwa**<sup>1</sup>, Goodluck Tesha<sup>1</sup>, Jasmine Chadewa<sup>2</sup>, Agnes Kosia<sup>3</sup>, Zahra Mkomwa<sup>1</sup>, Bayoum Awadhi<sup>3</sup>, Rita Noronha<sup>3</sup>, Dunstan Bishanga<sup>3</sup>, Frank Chacky<sup>4</sup>, Abdallah Lusasi<sup>5</sup>, Ally Mohamed<sup>5</sup>, Chonge Kitojo<sup>6</sup>, Erik Reaves<sup>6</sup>  
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**IMPROVEMENT OF HEALTHCARE PROVIDER ATTITUDE TOWARDS DOCUMENTATION THROUGH ON-SITE TRAINING AND SUPPORTIVE SUPERVISION OTSS AND CASE MANAGEMENT TRAINING IN OSUN STATE, SOUTHWEST NIGERIA**

**Victoria Erinle**<sup>1</sup>, Chinedu Chukwu<sup>1</sup>, Faith Benebo<sup>1</sup>, Isaac Adejo<sup>1</sup>, Adeyinka Onikan<sup>1</sup>, Thomas Hall<sup>2</sup>, Mariah Boyd-Boffa<sup>3</sup>, Bala Mohammed Audu<sup>4</sup>, Shekarau Emmanuel<sup>4</sup>, Nnenna Ogbulafor<sup>4</sup>, Sonachi Ezeiru<sup>5</sup>  
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**UTILITY OF MALARIA CASE CLASSIFICATION CALCULATOR FOR CASE CLASSIFICATION AND RESPONSE**

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**KNOWLEDGE, ATTITUDES AND PRACTICES OF MALARIA IN STABLE COMMUNITIES IN THE INTERIOR OF SURINAME**

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**IMPROVING THE QUALITY OF MALARIA CASE MANAGEMENT AND PREVENTION DURING PREGNANCY IN PUBLIC HEALTH FACILITIES IN BURKINA FASO**

**Thierry Ouedraogo**, Ousmane Badolo, Mathurin Dodo, Bonkougou Moumouni, Youssouf Sawadogo, Blami Dao, Stanislas Nébié  
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**RETENTION OF TECHNICAL AND TRAINING KNOWLEDGE AND SKILLS BY MASTER AND GENERAL TRAINERS IN THREE STATES/REGIONS IN MYANMAR**

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**HOW ACCURATE ARE HOUSEHOLD SURVEYS IN ESTIMATING INDOOR RESIDUAL SPRAYING COVERAGE?**

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**IMPROVING BIMONTHLY MALARIA LOGISTICS DATA REPORTING ACROSS 459 HEALTH FACILITIES SUPPORTED BY THE GLOBAL FUND: A CASE STUDY OF STRENGTHENING COORDINATION AND GOVERNANCE SYSTEMS IN JIGAWA STATE, NORTHWESTERN NIGERIA**

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**WHAT DOES SELF-REPORTED BEDNET USE MEAN? EVIDENCE FROM REMOTE ADHERENCE MONITORING IN UGANDAN HOUSEHOLDS**

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**HEALTH SYSTEM STRENGTHENING SUPPORT TO NATIONAL MALARIA PROGRAM ON DATA MANAGEMENT LEADS TO IMPROVEMENT IN THE QUALITY OF DATA REPORTED INTO THE NATIONAL HEALTH MANAGEMENT INFORMATION SYSTEM DATABASE (DHIS2) IN TARABA STATE, NORTHEAST NIGERIA**

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**MALARIA DURING PREGNANCY AND NEWBORN OUTCOME AMONG INPATIENTS IN NON CRITICAL OBSTETRIC UNITS OF PUBLIC HOSPITALS OF THE PERUVIAN AMAZON**

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**PILOTING A CASE-BASED SURVEILLANCE TOOL TARGETED AT PHARMACEUTICAL PRIVATE PROVIDERS (PSPS) IN LAGOS, NIGERIA**

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**Malaria – Prevention**

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**MALARIA PREVENTIVE PRACTICES AMONG UNDER-FIVES IN RIVERS STATE, NIGERIA**

**Nsirimobu Ichendu Paul**, Omosivie Maduka, Chijioke Adonye Nwauche, Ibinabo Laura Oboro, Terhemem Kasso, Lucy Eberechukwu Yaguo-Ide, Abimbola Temitayo Awopeju, Godly Otto, Ifeyinwa Nwogo Chijioke-Nwauche, Carol Iyalla  
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**KNOWLEDGE, ATTITUDES, AND PRACTICES REGARDING MALARIA TRANSMISSION AND PREVENTION AMONG THE MAIJUNA COMMUNITY: A QUALITATIVE STUDY IN THE PERUVIAN AMAZON**

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**ASSOCIATION BETWEEN PLACENTAL MALARIA AND THE INCIDENCE OF MALARIA IN INFANTS BORN TO HIV-UNINFECTED UGANDAN MOTHERS LIVING IN A HIGH MALARIA TRANSMISSION SETTING**

**Abel Kakuru**<sup>1</sup>, Sarah Staedke<sup>2</sup>, Daniel Chandramohan<sup>2</sup>, Richard Kajubi<sup>1</sup>, Teddy Andra<sup>1</sup>, Harriet Adrama Harriet Adrama<sup>1</sup>, Miriam Nakalembe<sup>3</sup>, Tamara D. Clark<sup>4</sup>, Theodore Ruel<sup>4</sup>, Diane V. Havlir<sup>4</sup>, Moses R Kamya R. Kamya<sup>3</sup>, Grant Dorsey<sup>4</sup>, Prasanna Jagannathan<sup>5</sup>  
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**MAINTAINING UNIVERSAL COVERAGE OF LONG LASTING INSECTICIDAL NETS THROUGH DISTRIBUTIONS IN SCHOOLS IN UGANDA**

**JohnBaptist Bwanika**<sup>1</sup>, Ruth Kigozi<sup>1</sup>, Emily Godwin<sup>1</sup>, Patrick Bukoma<sup>1</sup>, Peter Thomas<sup>2</sup>, James Tibenderana<sup>3</sup>, Sam Siduda<sup>1</sup>, Gloria Sebikaari<sup>4</sup>, Belay Kassahun<sup>4</sup>  
<sup>1</sup>United States Agency for International Development's Malaria Action Program for Districts, Kampala, Uganda, <sup>2</sup>US President's Malaria Initiative, Malaria Branch, Centers for Disease Control and Prevention, Atlanta, GA, USA, Kampala, Uganda, <sup>3</sup>Malaria Consortium, London, United Kingdom, <sup>4</sup>US President's Malaria Initiative, US Agency for International Development, Kampala, Uganda

1689

**EFFECT OF FOUR YEARS OF SEASONAL MALARIA CHEMOPREVENTION ON THE ACQUISITION OF ANTIBODIES TO *PLASMODIUM FALCIPARUM* ANTIGENS IN OUELESSEBOUGOU, MALI**

**Almahamoudou Mahamar**<sup>1</sup>, Djibrilla Issiaka<sup>1</sup>, Ahamadou Youssouf<sup>1</sup>, Sidi Mohamed Niambele<sup>1</sup>, Harouna M. Soumare<sup>1</sup>, Oumar Attaher<sup>1</sup>, Amadou Barry<sup>1</sup>, David L. Narum<sup>2</sup>, Patrick E. Duffy<sup>2</sup>, Brian Greenwood<sup>3</sup>, Michal Fried<sup>2</sup>, Alassane Dicko<sup>1</sup>  
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(ACMCIP Abstract)

1690

**COMMUNITY-BASED APPROACH TO REACH MALNOURISHED INFANTS FROM 6 MONTHS TO 5 YEARS DURING A SEASONAL MALARIA CHEMOPREVENTION (SMC) CAMPAIGN IN REMOTE AREAS IN NIGER**

**Hortense Angoran-Benié**<sup>1</sup>, Dr Hadiza Jackou<sup>2</sup>, Chrestien Yameni<sup>1</sup>  
<sup>1</sup>Catholic Relief Services, Baltimore, MD, United States, <sup>2</sup>MNCP program, Niamey, Niger

1691

**IMPROVED UPTAKE OF MALARIA IN PREGNANCY INDICATORS: A CASE FROM USAID LAKE AND WESTERN ZONE, TANZANIA**

**Zipporah Wandia**<sup>1</sup>, Jasmine Chadewa<sup>2</sup>, Agnes Kosia<sup>2</sup>, Goodluck Teshu<sup>1</sup>, Lusekelo Njoge<sup>2</sup>, Zahra Mkomwa<sup>3</sup>, Dunstan Bishanga<sup>2</sup>, Rita Noronha<sup>2</sup>, Bayoum Awadhi<sup>2</sup>, Gaudiosa Tibajjuka<sup>2</sup>, Chonge Kitojo<sup>4</sup>, Erik Reaves<sup>4</sup>, Abdallah Lusasi<sup>5</sup>  
<sup>1</sup>Jhpiego, Dar es Salaam, United Republic of Tanzania, <sup>2</sup>United States Agency for International Development Boshesha Afya Project -Jhpiego Tanzania, Dar es Salaam, United Republic of Tanzania, <sup>3</sup>United States Agency for International Development Boshesha Afya Project -Path Tanzania, Dar es Salaam, United Republic of Tanzania, <sup>4</sup>President's Malaria Initiative/United States Agency for International Development, Dar es Salaam, United Republic of Tanzania, <sup>5</sup>National Malaria Control Program-Tanzania Ministry of Health, Community Development, Gender, Elderly and Children, Tanzania, Dar es Salaam, United Republic of Tanzania

1692

**ACCEPTABILITY AND USE OF LLINS AND TOPICAL REPELLENTS AMONG FOREST-GOERS INVILLAGES OF TANINTHARYI REGION AND KAYIN STATE IN MYANMAR**

**Kaung Myat Thu**<sup>1</sup>, Nay Min Shein<sup>1</sup>, Feliciano Monti<sup>2</sup>, Zar Ni Htun<sup>1</sup>, Bo Bo Thet Ko<sup>1</sup>, Htin Lin Thaw<sup>3</sup>, Sway Minn Htet<sup>1</sup>, Kyaw Myint Tun<sup>1</sup>  
<sup>1</sup>University Research Co., Myanmar, U.S. President's Malaria Initiative (PMI) Defeat Malaria Project, Yangon, Myanmar, <sup>2</sup>United States Agency for International Development, Yangon, Myanmar, <sup>3</sup>American Refugee Committee, Yangon, Myanmar

1693

**HEARING TO UNDERSTAND: ASSOCIATIONS BETWEEN HEARING MALARIA HEALTH MESSAGING AND MALARIA KNOWLEDGE, AWARENESS AND PRACTICE OF PREVENTATIVE MEASURES IN THE 2018 MALARIA INDICATOR SURVEY FOR BIKO ISLAND, EQUATORIAL**

**Tammy Cavanzos**<sup>1</sup>, Matthew Rossheim<sup>1</sup>, Olivier Tresor Donfack<sup>2</sup>, Wonder P. Phiri<sup>2</sup>, Guillermo A. Garcia<sup>3</sup>, Michael E. von Fricken<sup>1</sup>  
<sup>1</sup>Department of Global and Community Health, George Mason University, Fairfax, VA, United States, <sup>2</sup>Medical Care Development International, Malabo, Equatorial Guinea, <sup>3</sup>Medical Care Development International, Silver Spring, MD, United States

Saturday  
November 23

1694

**THE EFFECT OF EDUCATION ON MALARIA PREVENTION BEHAVIOR**

Kevin Croke

Harvard T.H. Chan School of Public Health, Boston, MA, United States

1695

**INCREASING COVERAGE AND USE OF INSECTICIDE-TREATED NETS IN ZAMBIA: RESULTS FROM THE ZAMBIA MALARIA INDICATOR SURVEY 2018**

Maya Fraser<sup>1</sup>, Caterina Guinovart<sup>2</sup>, Busiku Hamainza<sup>3</sup>, Elizabeth Chizema-Kawesha<sup>3</sup>, Kafula Silumbe<sup>4</sup>, Mercy Mwanza-Ingwe<sup>3</sup>, Hawela Moonga<sup>3</sup>, Anthony Yeta<sup>3</sup>, Mutinta Mudenda<sup>3</sup>, Fred Masaninga<sup>3</sup>, John M Miller<sup>4</sup>

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1696

**COMMUNITY APPROACH TO FIGHT AGAINST MALARIA THROUGH THE USE OF DIGITAL HEALTH IN THE HEALTH DISTRICT OF NIORO DU RIP (SENEGAL)**

Malick Anne<sup>1</sup>, Abdoulaye Ndione<sup>1</sup>, Diarga Mballo<sup>1</sup>, Ibrahima Diankha<sup>1</sup>, Mouhamed Gueye<sup>1</sup>, Youssoupha Ndiaye<sup>2</sup>

<sup>1</sup>Senegal Health Ministry and Social Action, Kaolack, Senegal, <sup>2</sup>Senegal Health Ministry and Social Action, Dakar, Senegal

1697

**PHARMACOKINETIC/PHARMACODYNAMIC MODELING TO IDENTIFY OPTIMAL DIHYDROARTEMISININ-PIPERAQUINE INTERMITTENT PREVENTIVE TREATMENT REGIMENS FOR YOUNG UGANDAN CHILDREN**

Erika Wallender<sup>1</sup>, Emma Hughes<sup>1</sup>, Abel Kakuru<sup>2</sup>, Prasanna Jagannathan<sup>3</sup>, Mary Kakuru Muhindo<sup>2</sup>, Bishop Opira<sup>2</sup>, Meghan Whalen<sup>1</sup>, Moses Kamyu<sup>4</sup>, Grant Dorsey<sup>1</sup>, Francesca Aweeka<sup>1</sup>, Philip J. Rosenthal<sup>1</sup>, Rada M. Savic<sup>1</sup>

<sup>1</sup>University of California San Francisco, San Francisco, CA, United States, <sup>2</sup>Infectious Diseases Research Collaboration, Kampala, Uganda, <sup>3</sup>Stanford University, Palo Alto, CA, United States, <sup>4</sup>Makerere University, Kampala, Uganda

**Malaria - Strategies for Elimination**

1698

**MIDLINE RESULTS FROM A MALARIA INTENSIFICATION PLAN IN HIGH BURDEN AREAS OF CAMBODIA**

Dr. Siv Sovannarothe<sup>1</sup>, Michelle Pahl<sup>2</sup>, Kimhong Gove<sup>2</sup>, Chelsea Hanlon<sup>2</sup>

<sup>1</sup>National Center for Parasitology, Entomology and Malaria Control in Cambodia., Phnom Penh, Cambodia, <sup>2</sup>Clinton Health Access Initiative, Phnom Penh, Cambodia

1699

**BUILDING AN EVIDENCE BASE FOR COMMUNITY ENGAGEMENT DURING URBAN MALARIA OUTBREAKS: A QUALITATIVE STUDY IN SANTO DOMINGO, DOMINICAN REPUBLIC**

Hunter Keys<sup>1</sup>, Gregory Noland<sup>2</sup>

<sup>1</sup>University of Amsterdam, Amsterdam, Netherlands, <sup>2</sup>The Carter Center, Atlanta, GA, United States

1700

**DEVELOPING AND PILOTING A SUITE OF DIGITAL SOLUTIONS FOR MALARIA ELIMINATION**

Vivek Agrawal<sup>1</sup>, Anne Liu<sup>1</sup>, Lakshmi Balachandran<sup>1</sup>, Pedro Pagalday Olivares<sup>1</sup>, Sameen Babur<sup>1</sup>, Juan Manuel Acosta<sup>2</sup>, Jose Garcia Munoz<sup>2</sup>, Karoline Tufte Lien<sup>2</sup>, Marta Vila<sup>2</sup>, Rodolfo Melia<sup>2</sup>, Derek Treatman<sup>3</sup>, Pierre Dane<sup>3</sup>, Anna Winters<sup>4</sup>, Annie Martin<sup>4</sup>, Matt Berg<sup>5</sup>, Craig Appl<sup>5</sup>, Abdisalan Noor<sup>6</sup>, Mwalenga Nghimbwa<sup>6</sup>, Arnaud Le Menach<sup>1</sup>

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1701

**MAPPING MALARIA HOTSPOTS IN OUTBREAKS FOR TARGETING INTERVENTIONS IN CAMBODIA IN 2018**

Pengby Ngor<sup>1</sup>, Siv Sovannarothe<sup>2</sup>, Lisa J. White<sup>1</sup>, Po Ly<sup>2</sup>, Richard J. Maude<sup>1</sup>

<sup>1</sup>Mahidol-Oxford Tropical Medicine Research Unit, Bangkok, Thailand, <sup>2</sup>National Centre for Parasitology, Entomology and Malaria Control, Phnom Penh, Cambodia

1702

**REDUCTION IN MALARIA PREVALENCE IN SENTINEL POPULATIONS FOLLOWING INTRODUCTION OF A PACKAGE OF INTERVENTIONS FOR MALARIA ELIMINATION: RESULTS FROM EASY ACCESS GROUP SURVEYS IN 2017 AND 2018, GRANDE-ANSE (HAITI)**

Thomas Druetz<sup>1</sup>, Gillian Stresman<sup>2</sup>, Vena Joseph<sup>1</sup>, Ruth Ashton<sup>1</sup>, Matt Worges<sup>1</sup>, Lotus van den Hoogen<sup>2</sup>, Bernadette Fouche<sup>3</sup>, Eric Rogier<sup>3</sup>, Michelle A. Chang<sup>3</sup>, Jean F. Lemoine<sup>4</sup>, Chris Drakeley<sup>2</sup>, Thomas P. Eisele<sup>1</sup>

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1703

**TIME SERIES ANALYSIS OF MALARIA IN BOTSWANA TO FORECAST FUTURE CASES**

Refilwe Y. Senyatso<sup>1</sup>, Erica P. Berlin<sup>2</sup>, Tjantillili Mosweunyane<sup>1</sup>, Mooketsi Molefi<sup>3</sup>

<sup>1</sup>Botswana National Malaria Programme, Gaborone, Botswana, <sup>2</sup>Clinton Health Access Initiative, Westport, CT, United States, <sup>3</sup>University of Wits, Gaborone, Botswana

1704

**ESTIMATING MALARIA PARASITE MOBILITY IN MOZAMBIQUE USING MOBILE PHONE RECORDS**

Jessica R. Floyd<sup>1</sup>, Pedro Rente Lourenço<sup>2</sup>, Nick W. Ruktanonchai<sup>1</sup>, Andrew J. Tatem<sup>1</sup>, Nuria Oliver<sup>2</sup>

<sup>1</sup>University of Southampton, Southampton, United Kingdom, <sup>2</sup>Vodafone Research, London, United Kingdom

1705

**IMPROVING MALARIA ELIMINATION PLANNING BY ACCOUNTING FOR SEASONAL POPULATION DENSITY AND MOBILITY**

Nick Warren Ruktanonchai<sup>1</sup>, Victor Alegana<sup>2</sup>, Elisabeth zu Erbach-Schoenberg<sup>1</sup>, Andrew Tatem<sup>1</sup>

<sup>1</sup>University of Southampton, Southampton, United Kingdom, <sup>2</sup>Kenya Medical Research Institute-Wellcome Trust Research Programme, Nairobi, Kenya

**1706****GENETIC RELATEDNESS OF MALARIA INFECTIONS IN SENEGAL REVEALS DISTINCT TRANSMISSION PATTERNS**

**Sarah K. Volkman**<sup>1</sup>, Stephen F. Schaffner<sup>2</sup>, Rachel F. Daniels<sup>1</sup>, Timothy Farrell<sup>2</sup>, Yaye Die Ndiaye<sup>3</sup>, Awa B. Deme<sup>3</sup>, Aida S. Badiane<sup>4</sup>, Fatou Ba Fall<sup>5</sup>, Medoune Ndiop<sup>5</sup>, Alioune Badara Gueye<sup>5</sup>, Ibrahima Diallo<sup>5</sup>, Yakou Dieye<sup>6</sup>, Caterina Guinovart<sup>7</sup>, Bronwyn MacInnis<sup>2</sup>, Daniel L. Hartl<sup>8</sup>, Doudou Sene<sup>5</sup>, Daouda Ndiaye<sup>4</sup>, Dyann F. Wirth<sup>1</sup>

<sup>1</sup>Harvard T.H. Chan School of Public Health, Boston, MA, United States, <sup>2</sup>Broad Institute, Cambridge, MA, United States, <sup>3</sup>Dantec Teaching and Research Hospital, Dakar, Senegal, <sup>4</sup>Cheikh Anta Diop University, Dakar, Senegal, <sup>5</sup>Senegal National Malaria Control Program, Dakar, Senegal, <sup>6</sup>PATH MACEPA, Seattle, WA, United States, <sup>7</sup>PATH MACEPA/ISGlobal Collaboration, Barcelona, Spain, <sup>8</sup>Harvard University, Cambridge, MA, United States

**1707****REDUCTIONS IN MALARIA BURDEN THROUGH THE USE OF A SCALABLE INTERVENTION PACKAGE (SIP) IN ACCORDANCE WITH THE ZAMBIA NATIONAL MALARIA ELIMINATION STRATEGIC PLAN 2017-2021: THE CASE OF MULOBEZI DISTRICT IN WESTERN PROVINCE**

**Kafula Silumbe**<sup>1</sup>, Javan Chanda<sup>1</sup>, Ketty Ndhlovu<sup>2</sup>, Marie-Reine Rutagwera<sup>1</sup>, Busiku Hamainza<sup>2</sup>, Anthony Yeta<sup>2</sup>, Mutinta Mudenda-Chilufya<sup>2</sup>, John M Miller<sup>1</sup>

<sup>1</sup>PATH Malaria Control and Elimination Partnership in Africa (MACEPA), Lusaka, Zambia, <sup>2</sup>National Malaria Elimination Centre, Lusaka, Zambia

**1708****FEASIBILITY AND ACCEPTABILITY OF A PEER NAVIGATOR-LED MALARIA FOCAL TEST AND TREAT INTERVENTION TARGETING HIGH-RISK POPULATIONS IN SOUTHERN LAO PDR**

**Emily Dantzer**<sup>1</sup>, Andrew A. Lover<sup>2</sup>, Bouasy Hongvanthong<sup>3</sup>, Khampheng Phongluxa<sup>4</sup>, Francois Rerolle<sup>1</sup>, Sophia Hocini<sup>5</sup>, Rattanaxay Phetsouvanh<sup>6</sup>, Adam Bennett<sup>1</sup>

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**1709****A SURVEY OF COMMUNITY HEALTH WORKERS CONDUCTING MALARIA COMMUNITY SURVEILLANCE IN ZAMBIA**

**Travis Porter**<sup>1</sup>, Elizabeth Chiyende<sup>2</sup>, Todd Jennings<sup>2</sup>, Marie-Reine Rutagwera<sup>2</sup>, Christopher Lungu<sup>2</sup>, Michael Hainsworth<sup>3</sup>, Busiku Hamainza<sup>4</sup>, Thomas P. Eisele<sup>1</sup>, John M. Miller<sup>2</sup>

<sup>1</sup>Tulane University, New Orleans, LA, United States, <sup>2</sup>PATH Malaria Control and Elimination Partnership in Africa (MACEPA), Lusaka, Zambia, <sup>3</sup>PATH Malaria Control and Elimination Partnership in Africa (MACEPA), Seattle, WA, United States, <sup>4</sup>National Malaria Elimination Centre, Ministry of Health, Lusaka, Zambia

**1710****WINDBORNE LONG-DISTANCE MIGRATION OF MOSQUITOES AND PATHOGENS: IMPLICATIONS FOR MALARIA ELIMINATION**

**Tovi Lehmann**<sup>1</sup>, Alpha Yaro<sup>2</sup>, Zana Lamissa<sup>2</sup>, Samake Djibril<sup>2</sup>, Moussa Diallo<sup>2</sup>, Ousman Yossi<sup>2</sup>, Diana L. Huestis<sup>1</sup>, Yvonne M. Linton<sup>3</sup>, Reed Mitchell<sup>4</sup>, Ben Krajacich<sup>1</sup>, Roy Faiman<sup>1</sup>, Laura Veru<sup>1</sup>, Jason W. Chapman<sup>5</sup>, Don R. Reynolds<sup>6</sup>, David Weetman<sup>7</sup>, Martin J. Donnelly<sup>7</sup>, Adama Dao<sup>2</sup>

<sup>1</sup>National Institute of Allergy and Infectious Diseases/National Institutes of Health, Rockville, MD, United States, <sup>2</sup>Malaria Research and Training Center (MRTC)/Faculty of Medicine, Pharmacy and Odonto-stomatology, Bamako, Mali, <sup>3</sup>Walter Reed Biosystematics Unit, Smithsonian Institution Museum Support Center, Suitland, MD, United States, <sup>4</sup>Smithsonian Institution - National Museum of Natural History, Suitland, MD, United States, <sup>5</sup>Centre for Ecology and Conservation, and Environment and Sustainability Institute, University of Exeter, Cornwall, United Kingdom, <sup>6</sup>Natural Resources Institute, University of Greenwich, Kent, United Kingdom, <sup>7</sup>Department of Vector Biology, Liverpool School of Tropical Medicine, Liverpool, United Kingdom

**1711****EVALUATION OF COMMUNITY CASE MANAGEMENT AND REACTIVE CASE DETECTION (COMPONENT D) ON PLASMODIUM FALCIPARUM PARASITE PREVALENCE IN WESTERN PROVINCE, ZAMBIA**

Travis Porter<sup>1</sup>, Maya Fraser<sup>2</sup>, Kafula Silumbe<sup>3</sup>, Busiku Hamainza<sup>4</sup>, Hawela Moonga<sup>4</sup>, Joshua O. Yukich<sup>1</sup>, Adam Bennett<sup>5</sup>, Caterina Guinovart<sup>6</sup>, Kammerle Schneider<sup>2</sup>, Michael Hainsworth<sup>2</sup>, Laurence Slutsker<sup>2</sup>, John M. Miller<sup>3</sup>, **Thomas P. Eisele**<sup>1</sup>

<sup>1</sup>Tulane University School of Public Health and Tropical Medicine, New Orleans, LA, United States, <sup>2</sup>PATH Malaria Control and Elimination Partnership in Africa (MACEPA), Seattle, WA, United States, <sup>3</sup>PATH Malaria Control and Elimination Partnership in Africa (MACEPA), Lusaka, Zambia, <sup>4</sup>National Malaria Elimination Centre, Ministry of Health, Lusaka, Zambia, <sup>5</sup>Global Health Sciences, University of California San Francisco, San Francisco, CA, United States, <sup>6</sup>Barcelona Institute for Global Health, Barcelona, Spain

**1712****A COORDINATED EFFORT: THE INTEGRATION OF MALARIA SURVEILLANCE FOR ELIMINATION INTO THE NATIONAL ELECTRONIC COMMUNICABLE DISEASE REPORTING SYSTEM IN VIETNAM**

**Thanh Duong Tran**<sup>1</sup>, Van Hoang Ho<sup>2</sup>, Thanh Dong Le<sup>3</sup>, Quang Thieu Nguyen<sup>1</sup>, Quy Anh Nguyen<sup>1</sup>, Huu Toan Trinh<sup>2</sup>, Thi Yen Nguyen<sup>3</sup>, Thi Thanh Thuy Cao<sup>4</sup>, Jillian Dunning<sup>4</sup>, Charlene Chinda Barina<sup>4</sup>, Ha Le Phan<sup>4</sup>, Quang Tan Dang<sup>5</sup>

<sup>1</sup>National Institute of Malariology, Parasitology, and Entomology (NIMPE), Hanoi, Vietnam, <sup>2</sup>Institute of Malariology, Parasitology, and Entomology (IMPE), Quy Nhon, Vietnam, <sup>3</sup>Institute of Malariology, Parasitology, and Entomology (IMPE), Ho Chi Minh City, Vietnam, <sup>4</sup>Clinton Health Access Initiative, Boston, MA, United States, <sup>5</sup>General Department of Preventive Medicine, Hanoi, Vietnam

**Malaria – Vaccines****1713****OUTER MEMBRANE PROTEIN COMPLEX AS A CARRIER FOR MALARIA TRANSMISSION BLOCKING ANTIGEN, PFS230**

**Puthupparampil V. Scaria**<sup>1</sup>, Christopher G. Rowe<sup>1</sup>, Beth B. Chen<sup>1</sup>, Olga V. Muratova<sup>1</sup>, Elizabeth R. Fischer<sup>2</sup>, Emma K. Barnafo<sup>1</sup>, Charles F. Anderson<sup>1</sup>, Irfan U. Zaidi<sup>1</sup>, Lynn E. Lambert<sup>1</sup>, Bob J. Lucas<sup>3</sup>, Debbie D. Nahas<sup>3</sup>, David L. Narum<sup>1</sup>, Patrick E. Duffy<sup>1</sup>

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### MANUAL DISSECTION OF MOSQUITO SALIVARY GLANDS WITH SHORTENED TRAINING TIMELINES

Alyssa Arnheim, Urvashi Rai, Hajar Hazime, Stephen L. Hoffman, B. Kim Lee Sim, Sumana Chakravarty  
Sanaria Inc., Rockville, MD, United States

## Malaria - Vector Control

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### CHALLENGES FACING NATIONAL MALARIA CONTROL PROGRAM VECTOR SURVEILLANCE

Tanya Russell<sup>1</sup>, Robert Farlow<sup>2</sup>, Tom Burkot<sup>1</sup>  
<sup>1</sup>James Cook University, Cairns, QLD, Australia, <sup>2</sup>R Farlow Consulting LLC, Burkeville, TX, United States

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### ONE YEAR OF MONITORING INSECTICIDAL DURABILITY OF LONG LASTING INSECTICIDAL NET IN MAI

Moussa Bm Cisse<sup>1</sup>, Ibrahim Traore<sup>1</sup>, Abdourhamane Dicko<sup>2</sup>, Lansana Sangare<sup>1</sup>, Yacouba Dansoko<sup>1</sup>, Alice Dembele<sup>1</sup>, Jean Marie Sanou<sup>1</sup>, Jean Bedel Evi<sup>3</sup>, Jules Mihigo<sup>4</sup>, Aliou Diallo<sup>4</sup>, Erin Eckert<sup>5</sup>, Ousmane Koita<sup>1</sup>  
<sup>1</sup>Laboratoire de Biologie Moléculaire Appliquée/ Université des Sciences Techniques et des Technologies de Bamako, Bamako, Mali, <sup>2</sup>Programme National de Lutte contre le Paludisme, Bamako, Mali, <sup>3</sup>US Agency for International Development Global Health Supply Chain Program Procurement and Supply Management, Bamako, Mali, <sup>4</sup>President's Malaria Initiative US Agency for International Development, Bamako, Mali, <sup>5</sup>President's Malaria Initiative US Agency for International Development, Washington, DC, United States

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### LLIN EVALUATION IN UGANDA PROJECT (LLINEUP) - OWNERSHIP AND USE OF LONG-LASTING INSECTICIDAL NETS WITH, AND WITHOUT, PIPERONYL BUTOXIDE IN UGANDA

Agaba Katureebe<sup>1</sup>, Samuel Gonahasa<sup>1</sup>, Grant Dorsey<sup>2</sup>, Catherine S. Maiteki<sup>3</sup>, Mary Kyohere<sup>1</sup>, Adoke Yeka<sup>1</sup>, Jimmy Opigo<sup>3</sup>, Amy Lynd<sup>4</sup>, Janet Hemingway<sup>4</sup>, Moses R. Kanya<sup>5</sup>, Martin J. Donnelly<sup>4</sup>, Sarah G. Staedke<sup>6</sup>  
<sup>1</sup>Infectious Diseases Research Collaboration, Kampala, Uganda, <sup>2</sup>University of California San Francisco, San Francisco, CA, United States, <sup>3</sup>Ministry of Health, Kampala, Uganda, <sup>4</sup>Liverpool School of Tropical Medicine, Liverpool, United Kingdom, <sup>5</sup>School of Medicine, College of Health Sciences, Makerere University, Kampala, Uganda, <sup>6</sup>London School of Hygiene & Tropical Medicine, London, United Kingdom

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### LLIN EVALUATION IN UGANDA PROJECT (LLINEUP) - IMPACT OF LONG-LASTING INSECTICIDAL NETS WITH AND WITHOUT, PIPERONYL BUTOXIDE ON MALARIA INDICATORS IN UGANDA: A CLUSTER-RANDOMIZED TRIAL

Samuel Gonahasa<sup>1</sup>, Moses R. Kanya<sup>1</sup>, Grant Dorsey<sup>2</sup>, Catherine Maiteki - Sebuguzi<sup>3</sup>, Agaba Katureebe<sup>1</sup>, Mary Kyohere<sup>4</sup>, Adoke Yeka<sup>1</sup>, Amy Lynd<sup>5</sup>, Jimmy Opigo<sup>3</sup>, Janet Hemingway<sup>5</sup>, Martin Donnelly<sup>5</sup>, Sarah G. Staedke<sup>6</sup>  
<sup>1</sup>Infectious Diseases Research Collaboration, Kampala, Uganda, <sup>2</sup>University of California San Francisco, San Francisco, CA, United States, <sup>3</sup>National Malaria Control Division - Ministry of Health, Kampala, Uganda, <sup>4</sup>Makerere University - John Hopkins University Research Collaboration, Kampala, Uganda, <sup>5</sup>Liverpool School of Tropical Medicine, Liverpool, United Kingdom, <sup>6</sup>London School of Hygiene & Tropical Medicine, London, United Kingdom

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### THE LONG ROAD TO A MAINSTREAMED NATIONAL ENTOMOLOGICAL SURVEILLANCE INFORMATION SYSTEM IN UGANDA

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### LONG-LASTING INSECTICIDAL NETS INCORPORATING PERMETHRIN AND PIPERONYL BUTOXIDE REDUCE RISK OF PLASMODIUM INFECTION IN WESTERN KENYA: A CLUSTER RANDOMIZED CONTROLLED TRIAL

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1731

### SURVIVAL OF 8 LLINS TYPES 6, 12, 24 AND 36 MONTHS AFTER A MASS DISTRIBUTION CAMPAIGN IN RURAL AND URBAN SETTINGS IN SENEGAL

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1732

### LEVERAGING THE US PRESIDENT'S MALARIA INITIATIVE AND GLOBAL FUND RESOURCES TO IMPROVE THE OUTCOMES OF THE 2018 MASS CAMPAIGN OF LONG LASTING INSECTICIDE-TREATED NETS TO COMBAT MALARIA

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### INCREASED BITING RATE OF INSECTICIDE-RESISTANT CULEX MOSQUITOES AND COMMUNITY ADHERENCE TO IRS FOR MALARIA CONTROL IN URBAN MALABO, BIKO ISLAND, EQUATORIAL GUINEA

Godwin Fuseini<sup>1</sup>, Raul Ncogo Nguema<sup>1</sup>, Wonder P. Phiri<sup>1</sup>, Olivier Tresor Donfack<sup>1</sup>, Carlos Cortes<sup>1</sup>, Michael E. von Fricken<sup>2</sup>, Jacob I. Meyers<sup>3</sup>, Immo Kleinschmidt<sup>4</sup>, Guillermo A. Garcia<sup>5</sup>, Carl Maas<sup>6</sup>, Christopher Schwabe<sup>5</sup>, Michel A. Slotman<sup>3</sup>  
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**1734****EFFECTS OF POST INDOOR RESIDUAL SPRAYING ON MALARIA ENTOMOLOGICAL PARAMETERS OF MALARIA TRANSMISSION IN MALI**

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**1735****A GOOD SPRAY: ENTOMOLOGICAL SURVEILLANCE RESULTS FROM A CLUSTER RANDOMIZED TRIAL TO EVALUATE THE IMPACT OF A THIRD GENERATION INDOOR RESIDUAL SPRAY PRODUCT ON MALARIA TRANSMISSION IN MOZAMBIQUE**

**Joseph Wagman**<sup>1</sup>, Akililu Seyoum<sup>2</sup>, Stephen Magesa<sup>3</sup>, Kenyssonny Varela<sup>3</sup>, Rodaly Muthoni<sup>3</sup>, Christelle Gogue<sup>1</sup>, Kenzie Tynuv<sup>1</sup>, Carlos Chaccour<sup>1</sup>, Francisco Saute<sup>5</sup>, Rose Zulliger<sup>6</sup>, Abuchahama Saifodine<sup>7</sup>, Baltazar Candrinho<sup>8</sup>, Jason Richardson<sup>9</sup>, Christen Forndel<sup>9</sup>, Laurence Slutsker<sup>10</sup>, Molly Robertson<sup>1</sup>  
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**1736****COULD REPORTING HOUSE-LEVEL INDOOR RESIDUAL SPRAY COVERAGE IN URBAN SETTINGS IN AFRICA BE MISLEADING?**

**Liberato Motobe**<sup>1</sup>, Lucas Ondo<sup>1</sup>, Jordan M. Smith<sup>1</sup>, Jose Antonio Mba Nlang<sup>1</sup>, Wonder P. Phiri<sup>1</sup>, Carlos Cortes<sup>1</sup>, Godwin Fuseini<sup>1</sup>, Carlos A. Guerra<sup>2</sup>, Guillermo A. Garcia<sup>2</sup>  
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**1737****COMBINING LLINS WITH THIRD GENERATION-IRS PROVIDES SIGNIFICANT ADDED PROTECTION COMPARED TO LLINS ALONE IN CHILDREN UNDER FIVE YEARS OF AGE IN A HIGH-TRANSMISSION AREA OF MOZAMBIQUE**

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**1738****COST AND COST-EFFECTIVENESS OF COMBINING LLINS WITH THIRD-GENERATION IRS IN A HIGH-TRANSMISSION AREA OF MOZAMBIQUE**

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**1739****EFFICACY OF SUMISHIELD®50WG FOR INDOOR RESIDUAL SPRAYING AND SUSCEPTIBILITY OF AN. GAMBIAE S.L. TO CLOTHIANIDIN IN NORTHERN GHANA**

**Sylvester Coleman**<sup>1</sup>, Yemane Yihdego<sup>1</sup>, Frank Gyamfi<sup>1</sup>, Edem K. Obum<sup>1</sup>, Lena Kolyada<sup>1</sup>, Jon Eric Tongren<sup>2</sup>, Kristen George<sup>3</sup>, Jennifer Armistead<sup>3</sup>, Sixte Zigurumugabe<sup>4</sup>, Dominic Dery<sup>4</sup>, Samuel Dadzie<sup>5</sup>, Maxwell Appawu<sup>5</sup>, Daniel Boakye<sup>5</sup>, Daniel Szumlas<sup>6</sup>, Dereje Dengela<sup>7</sup>  
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**1740****COVERAGE OF INDOOR RESIDUAL SPRAYING (IRS) AND IMPACT OF IRS IN ANOPHELES POPULATIONS IN SITES OF ELEVATED MALARIA TRANSMISSION IN GRANDE ANSE, HAITI**

**Daniel Impoinvil**<sup>1</sup>, Rodrigue Anagonou<sup>2</sup>, Ffyona Patel<sup>2</sup>, Djenam Jacob<sup>2</sup>, Amber M. Dismer<sup>1</sup>, Jean Baptiste Merilien<sup>3</sup>, Karen E. Hamre<sup>1</sup>, Kathleen Holmes<sup>1</sup>, Willy Lafortune<sup>3</sup>, Jean Frantz Lemoine<sup>3</sup>, Michelle A. Chang<sup>1</sup>  
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**1741****ANOPHELES DYNAMICS, BITING ACTIVITIES IN JABI-THENAN DISTRICT IN NORTHWESTERN ETHIOPIA**

**Alemesh H. Bedasso**<sup>1</sup>, Habte T. Maasho<sup>2</sup>, Sisay D. Lemma<sup>1</sup>, Eliningaya J. Kweka<sup>3</sup>  
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**Bacteriology - Enteric Infections**

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**1742****MORE RESOURCES REQUIRED FOR DEFINITIVE DIAGNOSIS OF CHOLERA IN UGANDA**

**Peterson stephen Kyebambe**<sup>1</sup>, Godfrey Bwire<sup>2</sup>, Timothy Kiggwe<sup>1</sup>, Stephen Alele<sup>1</sup>, Francis Ongole<sup>3</sup>, Douglas Kizito Makanga<sup>1</sup>, Pross Ingabire<sup>1</sup>, Julius Kabali Kuule<sup>1</sup>, Robert Isabirye<sup>1</sup>  
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**TO COMPARE ENVIRONMENTAL SAMPLE COLLECTION POINTS FOR ACUTE FLACCID PARALYSIS (AFP) SURVEILLANCE FOR POLIO BURDEN VERSUS COLLECTION POINT FOR *SALMONELLA TYPHI* CULTURE POSITIVE CASES BURDEN STRATIFIED BY TOWNS IN KARACHI, PAKISTAN**

Abdul Momin Kazi, Ayub Khan, Mohammad Tahir Yousafzai, Zabin Wajidali, Farah Naz Qamar  
Aga Khan University, Karachi, Pakistan

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**MICROBE LITERACY: A NOVEL STRATEGY FOR INCREASING VACCINATION COVERAGE IN SINDH PAKISTAN**

Farah N. Qamar<sup>1</sup>, Mohammad T. Yousafzai<sup>1</sup>, Sultan Karim<sup>1</sup>, Hina Memon<sup>1</sup>, Amber Kashif<sup>1</sup>, Ed Higgins<sup>2</sup>  
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**REDEFINING TYPHOID DIAGNOSIS: WHAT SHOULD A BETTER TEST LOOK LIKE, AND WHAT INNOVATIONS ARE AVAILABLE TO MEET THE NEEDS?**

Richard Mather<sup>1</sup>, Peter J. Dailey<sup>2</sup>, Heidi Hopkins<sup>1</sup>, Sabine Dittrich<sup>2</sup>  
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**NATIONAL FOOD SECURITY AND ANNUAL CHOLERA INCIDENCE RATE: A MULTI-DIMENSIONAL ANALYSIS OF 30 COUNTRIES FROM 2012-2015**

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**CLINICAL PREDICTORS FOR VIRAL ETIOLOGIES OF ACUTE DIARRHEA IN RESOURCE-LIMITED SETTINGS**

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**DETECTION OF *SALMONELLA TYPHI* IN BILE BY QUANTITATIVE REAL-TIME PCR**

Sharon M. Tennant<sup>1</sup>, Ellen Higginson<sup>1</sup>, Joseph Nkeze<sup>1</sup>, Jasnehta Permala-Booth<sup>1</sup>, Irene Kasumba<sup>1</sup>, Rosanna Lagos<sup>2</sup>, Juan Carlos Hormazabal<sup>3</sup>, Gad Frankel<sup>4</sup>, Myron M. Levine<sup>1</sup>  
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**PRODUCTION OF THE FECAL INFLAMMATION MARKERS AFTER ORAL CHALLENGE WITH *SHIGELLA SONNEI*53G IN A CONTROLLED HUMAN INFECTION MODEL**

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**AN EVALUATION OF LOW-COST SPECIMEN PRESERVATION FOR CHARACTERIZATION OF ETEC AND *SHIGELLA* AMONG CHILDREN WITH DIARRHEA AND/OR DYSENTERY IN TWO REGIONS OF CAMEROON**

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**TEMPORAL TRENDS IN NON-TYPHOIDAL *SALMONELLA* GASTROINTESTINAL INFECTIONS IN CHILDREN UNDER FIVE FROM THREE COUNTRIES IN SUB-SAHARAN AFRICA**

Irene N. Kasumba, Helen Powel, Anna Roose, Sunil Sen, Shamima Nasrin, Jasnehta Permala-Booth, Sharon M. Tennant, VIDA Consortium  
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**ISOLATION OF BACTERIOPHAGES FROM WATER SOURCES IN THE AMAZON RIVER BASIN OF PERU WITH LYTIC ACTIVITY AGAINST CLINICALLY RELEVANT MDR *ACINETOBACTER BAUMANNII***

Brian Drury<sup>1</sup>, Dylan Stephens<sup>1</sup>, Emma Baker<sup>1</sup>, Alexandra de la plante<sup>1</sup>, Dallas Hamlin<sup>1</sup>, David Craft<sup>1</sup>, James M. Regeimbal<sup>2</sup>, Ricardo Abadie<sup>2</sup>  
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**MULTI-VALENT ORAL VACCINE AGAINST ENTEROTOXIGENIC *ESCHERICHIA COLI* AND ENTERIC FEVERS (ETEC)**

Tint Wai<sup>1</sup>, MingLin Li<sup>1</sup>, Sumana Chakravarty<sup>2</sup>, Eric R. James<sup>2</sup>, Bruce Liberi<sup>1</sup>, Weiping Zhang<sup>3</sup>, David Sack<sup>4</sup>, Stephen L. Hoffman<sup>2</sup>, B. Kim Lee Sim<sup>1</sup>  
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**Bacteriology - Other Bacterial Infections**

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**EVALUATION OF THE ANTIMYCOBACTERIAL AND ANTIMYCOLACTONE EFFICACY OF KOMBUCHA TEA**

Adiza Abass<sup>1</sup>, Elizabeth Gyamfi<sup>2</sup>, Regina Appiah-Opong<sup>3</sup>, WSK Gbewonyo<sup>2</sup>, Phyllis Addo<sup>3</sup>, Lydia Mosi<sup>2</sup>  
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### FIRST REPORTED HUMAN CASE OF *RICKETTSIA FELIS* IN GUATEMALA

Beatriz Lopez-Castellanos<sup>1</sup>, Maria R. Lopez<sup>2</sup>, Arlyn N. Gleaton<sup>3</sup>, Ida H. Chung<sup>3</sup>, Cecilia Y. Kato<sup>3</sup>, Paige A. Armstrong<sup>3</sup>, Manuel Sagastume<sup>4</sup>, John P. McCracken<sup>2</sup>, Andres Espinosa-Bode<sup>5</sup>

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### INCIDENCE OF MENINGOCOCCAL MENINGITIS SEROGROUP C IN TWO NORTHWESTERN STATES OF NIGERIA

Olaiya Paul Abiodun<sup>1</sup>, Zachary Gwa<sup>2</sup>, Olumide Ajani<sup>1</sup>, Felix Olaniyi Sanni<sup>3</sup>, Abiodun Ogunniyi<sup>4</sup>, Abiola Abiodun<sup>5</sup>

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### SEROLOGICAL EVIDENCE AUGMENTED BY NEXT-GENERATION SEQUENCING IDENTIFIES *ORIENTIA TSUTSUGAMUSHI* AS A CAUSATIVE AGENT OF SEPSIS IN CAMBODIA

Amitha Fitkariwala<sup>1</sup>, Dennis Faix<sup>1</sup>, Tin Som<sup>1</sup>, Pichit Pin<sup>1</sup>, Sokhun Song<sup>1</sup>, Daraden Vang<sup>1</sup>, Heng Bun<sup>1</sup>, John Brooks<sup>1</sup>, Te Vantha<sup>2</sup>, Logan Voegtly<sup>3</sup>, Regina Z. Cer<sup>4</sup>, Kimberly A. Bishop-Lilly<sup>3</sup>, Casandra Philipson<sup>5</sup>, Chien-Chung Chao<sup>6</sup>, Kevin L. Schully<sup>7</sup>, Danielle V. Clark<sup>8</sup>

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### *STENOTROPHOMONAS MALTOPHILIA*: SELDOM ALONE, NON-INVASIVE

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### UTILITY OF NEXT GENERATION SEQUENCING (NGS) BASED METHODS AND THE GENE MEDIATED ANTI-MICROBIAL RESISTANCE (AMR) IN DEFINING MICROBIAL COMMUNITIES IN CHRONIC DIABETIC FOOT ULCERS IN RURAL SRI LANKA

Sandani Yasara Weerasundara, Harshika Sachini Welgama, Hiruni Shermila Weerasingha, Iruni Weerathunga, Kusal Dulanjala Weerakkody, Sudaraka Harindu Wageesha, Suneth Buddhika Agampodi  
Faculty of Medicine and Allied Sciences, Rajarata University of Sri Lanka, Anuradhapura, Sri Lanka

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### A CLUSTER OF MELIOIDOSIS CASES FOLLOWING HEAVY RAINS IN BATTICALOA, SRI LANKA

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### DETERMINATION OF AREAS WITH POTENTIAL RISK OF HUMAN LEPTOSPIROSIS IN THE DEPARTMENT OF CÓRDOBA, COLOMBIA

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1762

### ANTIBACTERIAL EFFECT OF *CORRYOCACTUS BREVI-STYLUS* (SANKY) AGAINST *ACINETOBACTER BAUMANII*

Hugo Carrillo-Ng<sup>1</sup>, Ronald Aquino-Ortega<sup>2</sup>, Miguel A. Aguilar-Luis<sup>1</sup>, Wilmer Silva-Caso<sup>1</sup>, Luz M. Paucar-Menacho<sup>3</sup>, Juana M. del Valle<sup>4</sup>  
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1763

### REPORT OF HIGH PREVALENCE OF INFECTION IN PEDIATRIC PATIENTS IN PERU

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(ACMCIP Abstract)

1764

### IDENTIFICATION OF THE INTESTINAL MICROBIOTA OF TYPE 2 DIABETIC PATIENTS CONTROLLED METABOLICALLY AND UNCONTROLLED

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## Bacteriology – Trachoma

1765

### THE BURDEN OF AND RISK FACTORS FOR TRACHOMA IN SELECTED DISTRICTS OF ZIMBABWE: RESULTS OF 16 POPULATION-BASED PREVALENCE SURVEYS

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**QUALITY ASSURANCE THROUGH POSTOPERATIVE FOLLOW-UP OF OPERATED TRACHOMATOUS TRICHIASIS (TT) CASES IN BURKINA FASO AND CAMEROON**

**Whitney Goldman**<sup>1</sup>, Assumpta Lucienne Bella<sup>2</sup>, Clarisse Bougouma<sup>3</sup>, Emilienne Epée<sup>2</sup>, Martin Kabore<sup>3</sup>, Issouf Bamba<sup>4</sup>, Fanny Yago-Weinne<sup>4</sup>, Jean-Paul Djijatsa<sup>4</sup>, Albert Kiemde<sup>4</sup>, Philippe Bayala<sup>4</sup>, Marc Sepama<sup>4</sup>, Julie Akame<sup>5</sup>, Jules Patrick Evenga<sup>5</sup>, Michel Hendji<sup>5</sup>, Yannick Nkoumou<sup>5</sup>, Carine Fokam Tagne<sup>5</sup>, Stephanie Parker<sup>1</sup>

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**USING PHOTOS OF OPERATED TRACHOMATOUS TRICHIASIS (TT) CASES AS A TOOL TO FACILITATE SURGEON AND TECHNICAL SUPERVISOR DISCUSSION**

**Whitney Goldman**<sup>1</sup>, Assumpta Lucienne Bella<sup>2</sup>, Clarisse Bougouma<sup>3</sup>, Emilienne Epée<sup>2</sup>, Martin Kabore<sup>3</sup>, Issouf Bamba<sup>4</sup>, Jean-Paul Djijatsa<sup>4</sup>, Albert Kiemde<sup>4</sup>, Philippe Bayala<sup>4</sup>, Marc Sepama<sup>4</sup>, Julie Akame<sup>5</sup>, Jules Patrick Evenga<sup>5</sup>, Michel Hendji<sup>5</sup>, Yannick Nkoumou<sup>5</sup>, Carine Fokam Tagne<sup>5</sup>, Lauren Johnson<sup>1</sup>, Katherine Nerses<sup>1</sup>, Stephanie Parker<sup>1</sup>, Emily Gower<sup>6</sup>

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1768

**TRACHOMA PREVALENCE FOLLOWING DISCONTINUATION OF MASS AZITHROMYCIN DISTRIBUTION**

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1769

**HOW TO DETERMINE WHERE TO SURVEY FOR TRACHOMA: LESSONS LEARNED FROM THE DEMOCRATIC REPUBLIC OF CONGO**

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1770

**VALIDATING AND COSTING A TRACHOMATOUS TRICHIASIS "SUPER SURVEY"**

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1771

**USING DATA FROM DOOR TO DOOR (RATISSAGE) TRACHOMATOUS TRICHIASIS SURGERY CAMPAIGNS TO DEMONSTRATE ACHIEVING ELIMINATION CRITERIA IN MALI**

**Lamine Traoré**<sup>1</sup>, Modibo Keita<sup>2</sup>, Benoit Demelele<sup>2</sup>, Famolo Coulibaly<sup>1</sup>, Mamadou Demelele<sup>1</sup>, Boubacar Guindo<sup>2</sup>, Dramane Traoré<sup>2</sup>, Brehima Mariko<sup>1</sup>, Seydou Goita<sup>2</sup>, Abdoul Karim Sidibé<sup>1</sup>, Fama Kondo<sup>2</sup>, Mama Niele Doumbia<sup>2</sup>, Mohamed Lamine Yattara<sup>2</sup>, Yaobi Zhang<sup>3</sup>, Steven Reid<sup>4</sup>

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1772

**TRACHOMATOUS TRICHIASIS MANAGEMENT IN TANZANIA: INVESTIGATION OF THE PRODUCTIVITY OF CASE FINDING AND REFERRAL OF PATIENTS TO SURGERY SERVICES**

**George Kabona**<sup>1</sup>, Jeremiah Ngondi<sup>2</sup>, Alistidia Simon<sup>1</sup>, Upendo Mwingira<sup>1</sup>, Rebecca Flueckiger<sup>3</sup>

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1773

**HOUSE-TO-HOUSE CASE FINDING FOR TRICHIASIS SURGERY IN AMHARA REGIONAL STATE, ETHIOPIA: AN END GAME STRATEGY**

**Eshetu Sata**<sup>1</sup>, Yirga Bieza<sup>1</sup>, Ayalew Shiferaw<sup>1</sup>, Berhanu Melak<sup>1</sup>, Sintayehu Aweke<sup>1</sup>, Abebe Fissha<sup>1</sup>, Mengesha Halefom<sup>1</sup>, Mulat Zerihun<sup>1</sup>, Temesgen Minas<sup>1</sup>, Tedla Desta<sup>1</sup>, Getachew Mekonnen<sup>1</sup>, Demis Assegie<sup>1</sup>, Scott D. Nash<sup>2</sup>, Aisha E.P. Stewart<sup>2</sup>, Zerihun Tadesse<sup>1</sup>, E. Kelly Callahan<sup>2</sup>, Melkamu Beyene<sup>3</sup>

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1774

**MASS DRUG ADMINISTRATION OF AZITHROMYCIN FOR TRACHOMA ALONG THE CROSS-BORDER COMMUNITIES OF KENYA AND UGANDA IN MARCH/APRIL 2019**

**Getrude Nasike Barasa**<sup>1</sup>, Daniel Esimit Echakan<sup>1</sup>, Samson Lokele Akichem<sup>1</sup>, Hadley Sultani Matendehero<sup>2</sup>, Peter Otinda<sup>3</sup>

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1775

**TRACHOMA ELIMINATION IN CAMEROON: RESULTS FROM A BASELINE MAPPING OF A REFUGEE CAMP IN MINAWAO**

**Emillienne Epée**<sup>1</sup>, Bella Assumpta<sup>1</sup>, Georges Nko'Ayissi<sup>1</sup>, Mahamat Fane<sup>1</sup>, Julie Akame<sup>2</sup>, Patrick Mbia<sup>2</sup>, Carine Fokam<sup>2</sup>, Steven D. Reid<sup>3</sup>, Yaobi Zhang<sup>4</sup>, Jean Jacques Tougué<sup>5</sup>, Ismael Teta<sup>2</sup>

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1776

**TRACHOMA PREVALENCE IN REFUGEE CAMPS IN THE EAST REGION OF CAMEROON**

**Assumpta Bella**<sup>1</sup>, Sidi Coulibaly<sup>2</sup>, Georges Nko'Ayissi<sup>1</sup>, Bidjang Mathurin<sup>1</sup>, Julie Akame<sup>3</sup>, Carine Fokam<sup>3</sup>, Patrick Mbia<sup>3</sup>, Ismael Teta<sup>3</sup>, Yaobi Zhang<sup>4</sup>, Jean Jacques Tougué<sup>5</sup>, Steven D. Reid<sup>6</sup>

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## Clinical Tropical Medicine

1777

### OUTCOMES WITHIN AN ANEMIA SCREENING AND TREATMENT SERVICE EMBEDDED IN A WELL-BABY CLINIC IN THE DOMINICAN REPUBLIC

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1778

### MORBIDITY AMONG SPECIAL AIR SERVICE (SAS) PERSONNEL DURING THE MALAY EMERGENCY

David Adams, Valerie Adams

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### ENHANCING VACCINE IMMUNOGENICITY AND STABILITY USING A GEL-DEPOT ADJUVANT

Vanessa Silva-Moraes<sup>1</sup>, Lisa M. Shollenberger<sup>2</sup>, Jessica C. Ramadhin<sup>1</sup>, Ted M. Ross<sup>1</sup>, Justine C. Shiau<sup>1</sup>, Ashutosh K. Pathak<sup>1</sup>, Demba Sarr<sup>1</sup>, Courtney Murdock<sup>1</sup>, Donald E. Champagne<sup>1</sup>, Evelina Angov<sup>3</sup>, Donald A. Harn<sup>1</sup>

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(ACMCIP Abstract)

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### INTEGRATING OPT-OUT HEPATITIS C SCREENING WITH EMERGENCY SERVICES FOR HIGH RISK POPULATIONS

Austin T. Jones<sup>1</sup>, Lisa Moreno-Walton<sup>2</sup>, Kanayo R. Okeke-Eweni<sup>2</sup>, Jenna Miller<sup>2</sup>, Dylan Soderstrum<sup>2</sup>, Patricia Kissinger<sup>1</sup>

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### TT CASE FINDERS AND THEIR IMPACT IN PATIENT IDENTIFICATION AND UPTAKE OF SURGICAL SERVICES. CASE STUDY OF DODOMA AND LINDI REGIONS OF TANZANIA

Alistidia Simon<sup>1</sup>, Hope Rusibamayila<sup>1</sup>, Jeremiah Ngondi<sup>2</sup>, Upendo Mwingira<sup>1</sup>, Jennifer Harding<sup>3</sup>, Harran Mkocha<sup>4</sup>, Peter Kivumbi<sup>5</sup>, Gosbert Katunzi<sup>6</sup>, George Kabona<sup>7</sup>, Andreas M. Nshala<sup>8</sup>

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### INTEGRATING CHAGAS DISEASE CARE INTO PRIMARY CARE: THE STRONG HEARTS/CORAZONES FUERTES/CORAÇÕES FORTES PROJECT IN BOSTON, MASSACHUSETTS

Jillian Davis<sup>1</sup>, Jennifer Manne-Goehler<sup>2</sup>, Juan Huanuco Perez<sup>1</sup>, Ingrid Carmelo<sup>3</sup>, Hong Sun Park<sup>4</sup>, Katherine M. Collins<sup>4</sup>, Natasha S. Hochberg<sup>3</sup>, Davidson H. Hamer<sup>3</sup>, Elizabeth D. Barnett<sup>3</sup>, Julia R. Köhler<sup>1</sup>

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### ANALYTICAL PERFORMANCE OF THE FILMARRAY® GLOBAL FEVER PANEL

Jared R. Helm, Corrike Toxopeus, Pascal Belgique, Lex Border, Olivia Jackson, Alex Kelley, Micah Mortenson, Cynthia Phillips  
BioFire Defense, Salt Lake City, UT, United States

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### SEVERE MUCOSAL LEISHMANIASIS: CLINICAL MANIFESTATIONS AND BRONCHOSCOPIC FINDINGS

Alejandro Elmer Llanos<sup>1</sup>, Braulio Valencia<sup>1</sup>, Cesar Colunche<sup>2</sup>, Ana A. Ramos<sup>1</sup>, Fiorela Alvarez<sup>1</sup>, Oscar Gayoso-Liviac<sup>1</sup>, Oscar Gayoso<sup>1</sup>

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1785

### RISK FACTORS AND TRENDS IN NEONATAL MORTALITY IN A SPECIAL CARE NEWBORN UNIT IN A TERTIARY CARE HOSPITAL

Ananya Kumar<sup>1</sup>, Kyu Han Lee<sup>1</sup>, Abu Faisal Pervez<sup>2</sup>, Sanwarul Bari<sup>3</sup>, Shams El Arifeen<sup>3</sup>, Farzana Islam<sup>3</sup>, Emily S. Gurley<sup>1</sup>

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### FACTORS ASSOCIATED WITH MORTALITY IN PRETERM NEONATES AND INFANTS WITHIN THE CHILD HEALTH AND MORTALITY PREVENTION SURVEILLANCE (CHAMPS) NETWORK

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### CHILDHOOD GROWTH AND NEUROCOGNITION ARE ASSOCIATED WITH DISTINCT SETS OF METABOLITES

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### CLINEPIDB: THE CLINICAL EPIDEMIOLOGY DATABASE RESOURCE

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**GAZELLE, A PROMISING POINT-OF-CARE DIAGNOSTIC FOR HEMOGLOBIN DISORDERS IN INDIA: BRIDGING THE GAP IN CONTROL PROGRAM**

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**SUCCESSFUL MANAGEMENT OF POISONING WITH IVERMECTIN (MECTIZAN®) IN THE OBALA HEALTH DISTRICT (CENTRE REGION, CAMEROON): A CASE REPORT**

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1791

**IMPACT OF PRENATAL MATERNAL STRESS ON BIRTH ANTHROPOMETRICS AND PREGNANCY OUTCOMES IN RURAL GHANA**

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**PREVALENCE AND CORRELATES OF STUNTING AMONG CHILDREN 1-59 MONTHS DISCHARGED FROM THREE HOSPITALS IN WESTERN KENYA**

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**IMPACT OF TOXOPLASMOSIS AND CYTOMEGALOVIRUS ON PREGNANT WOMEN AND THEIR NEWBORNS IN LIMA, PERU**

Grace Trompeter<sup>1</sup>, José Camones Huerta<sup>2</sup>, Alexander Cordero Campos<sup>2</sup>, Mayra Ochoa Porras<sup>2</sup>, Sonia Apaza Chayña<sup>2</sup>, Andrea Diestra Calderón<sup>2</sup>, Erasmo Huertas Tacchino<sup>3</sup>, Mónica Pajuelo Travezaño<sup>2</sup>, Maritza Calderón Sanchez<sup>2</sup>, Robert Gilman<sup>4</sup>

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**OUR EXPERIENCE WITH HISTOPATHOLOGIC, MICROBIOLOGIC AND GENETIC CHARACTERISTICS OF THE PARASITIC OOMYCETE, *PYTHIUM INSIDIOSUM***

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(ACMCIP Abstract)

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**INCIDENCE OF ACUTE GASTROENTERITIS AND NOROVIRUS IN A COMMUNITY COHORT, CUSCO, PERU, 2015-2018**

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1796

**UNBIASED METAGENOMIC SEQUENCING FOR MICROBIAL DETECTION AND IDENTIFICATION USING THE IDSEQ PLATFORM**

Vida Ahyong<sup>1</sup>, Maira Phelps<sup>1</sup>, Michelle Tan<sup>1</sup>, Rene Sit<sup>1</sup>, Norma Neff<sup>1</sup>, Joseph DeRisi<sup>1</sup>, Cristina Tato<sup>1</sup>, IDseq Engineering team Chan Zuckerberg Initiative<sup>2</sup>

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1797

**THE WEST AFRICAN CENTER OF EXCELLENCE FOR GLOBAL HEALTH BIOINFORMATICS TRAINING PROGRAM IN MALI, A MODEL FOR STRENGTHENING DATA SCIENCE CAPACITY BUILDING IN AFRICA**

Mamadou Wele<sup>1</sup>, Jian Li<sup>2</sup>, Cheickna Cisse<sup>1</sup>, Mahamadou Diakit<sup>1</sup>, Alia Benkahl<sup>3</sup>, Cheick Oumar Tangara<sup>1</sup>, Darryl Hurt<sup>4</sup>, Christopher Whalen<sup>4</sup>, Doulaye Dembele<sup>5</sup>, Donald J. Krogstad<sup>2</sup>, Frances J. Mather<sup>2</sup>, Seydou O. Doumbia<sup>1</sup>, Jeffrey G. Shaffer<sup>2</sup>  
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1798

**PREVALENCE OF ANTIMICROBIAL RESISTANCE IN COMMENSAL *E. COLI* FROM CHILDREN DISCHARGED FROM HOSPITAL IN WESTERN KENYA**

Stephanie N. Tornberg-Belanger<sup>1</sup>, Doreen Rwigy<sup>2</sup>, Rebecca L. Brander<sup>1</sup>, Kirkby D. Tickell<sup>1</sup>, Christine J. McGrath<sup>1</sup>, Michael Muraya<sup>2</sup>, Lynnete Kitheka<sup>2</sup>, Nancy Onamu<sup>2</sup>, Derrick Ounga<sup>2</sup>, Samuel M. Kariuki<sup>2</sup>, Benson O. Singa<sup>2</sup>, Judd L. Watson<sup>1</sup>, Patricia B. Pavlinac<sup>1</sup>

<sup>1</sup>University of Washington, Seattle, WA, United States, <sup>2</sup>Kenya Medical Research Institute, Nairobi, Kenya

1799

**ANTIBIOTIC PRESCRIPTION IN FEBRILE PATIENTS ATTENDING AN EMERGENCY DEPARTMENT IN RIO DE JANEIRO, BRAZIL**

José Moreira, Roxana Mamani, Patricia Brasil, Andre Siqueira  
Instituto Nacional de Infectologia Evandro Chagas, Rio de Janeiro, Brazil

## 1800

### LEADING CAUSES OF DEATH IN INFANTS AND CHILDREN UNDER 5 FROM THE CHAMPS NETWORK

**Claudia M. Moya**<sup>1</sup>, Dianna M. Blau<sup>2</sup>, Shabir Madhi<sup>3</sup>, Victor Akelo<sup>4</sup>, Quique Bassat<sup>5</sup>, Karen L. Kotloff<sup>6</sup>, Shams E. Arifeen<sup>7</sup>, Richard Chawana<sup>8</sup>, Emily S. Gurley<sup>6</sup>, Inacio Mandomando<sup>9</sup>, Dickens Onyango<sup>10</sup>, Samba O. Sow<sup>11</sup>, Robert F. Breiman<sup>1</sup>, for the CHAMPS Network Consortium<sup>1</sup>

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## 1801

### UNDERSTANDING AND RELATING THE EFFECTS OF INFECTIOUS PARAMETERS WITH G6PD DEFICIENCY

**Tina Marye Slusher**<sup>1</sup>, Sarayu Patturi<sup>2</sup>, Troy Lund<sup>1</sup>, Stephanie Lauden<sup>3</sup>, Grace Edowohorhu<sup>4</sup>, Kolade Ernest<sup>5</sup>, Daniel Gbadero<sup>4</sup>

<sup>1</sup>University of Minnesota, Minneapolis, MN, United States, <sup>2</sup>Wayzata High School, Plymouth, MN, United States, <sup>3</sup>Nationwide Children's Hospital, Columbus, OH, United States, <sup>4</sup>Bowen University Teaching Hospital, Ogbomoso, Nigeria, <sup>5</sup>University of Ilorin Teaching Hospital, Ilorin, Nigeria

## 1802

### FACTORS ASSOCIATED WITH DELAYS IN DIAGNOSIS AND TREATMENT OF MALARIA IN RETURNED TRAVELERS

**Ariella Goldblatt**<sup>1</sup>, Emily Shaffer<sup>2</sup>, Adrienne Showler<sup>3</sup>

<sup>1</sup>MedStar Georgetown University Hospital Department of Internal Medicine and Pediatrics, Washington, DC, United States, <sup>2</sup>Georgetown University School of Medicine, Washington, DC, United States, <sup>3</sup>MedStar Georgetown University Hospital Division of Infectious Disease, Washington, DC, United States

## 1803

### CLINICAL EVALUATION OF THE FILMARRAY® GLOBAL FEVER PANEL

**Brian W. Jones**, David Rabiger, Mark A. Gurling, Wendy Smith, Madeline Veloz, Olivia Jackson, Nathan King, Marisssa Burton, Christa Shorter, Cynthia D. Andjelic, Cynthia L. Phillips

BioFire Defense, LLC, Salt Lake City, UT, United States

## 1804

### HIGH REACTIVITY FOR HEPATITIS B AND OTHER TRANSFUSION-TRANSMISSIBLE INFECTIONS IN THE PREDONATION SCREENING OF BLOOD DONOR BY RAPID TEST IN A PUBLIC HOSPITAL OF THE PERUVIAN AMAZON

**Mary Jeanette Rios**<sup>1</sup>, Andrea Saavedra<sup>1</sup>, Jessye Cubas<sup>1</sup>, Maher Zapana<sup>1</sup>, Stalín Vilcarromero<sup>2</sup>, Graciela Meza<sup>1</sup>, Amy Morrison<sup>3</sup>, Jaime Ramos-Flores<sup>4</sup>

<sup>1</sup>Universidad Nacional de la Amazonia Peruana (UNAP), Iquitos, Peru, <sup>2</sup>Department of Medicine, Division of Infectious Diseases, Stony Brook University, New York, NY, United States, <sup>3</sup>Department of Entomology and Nematology, University of California Davis, Davis, CA, United States, <sup>4</sup>Hospital Regional de Loreto, Iquitos, Peru

## 1805

### INTEGRATING COMMUNITY CASE MANAGEMENT (ICCM) PAST THE BEND IN THE RIVER IN THE DEMOCRATIC REPUBLIC OF CONGO (DRC)

**Kate E. Gilroy**<sup>1</sup>, Jocelyne Kibungu<sup>2</sup>, Elizabeth Hourani<sup>1</sup>, Jimmy Anzolo<sup>3</sup>, Osée Lieke Likunda<sup>3</sup>, Emmanuel Likunde<sup>4</sup>, Papy Luntadila<sup>2</sup>, Michel Pacque<sup>1</sup>

<sup>1</sup>MCSP/JSI, Washington, DC, United States, <sup>2</sup>MCSP/JSI, Kinshasa, Democratic Republic of the Congo, <sup>3</sup>MCSP/JSI, Kisangani, Democratic Republic of the Congo, <sup>4</sup>MCSP/JSI, Kinsangani, Democratic Republic of the Congo

## 1806

### SHARED PATHOGEN-SPECIFIC RESERVOIRS AND TRANSMISSION PATHWAYS ASSOCIATED WITH ENTERIC PATHOGEN CO-INFECTIONS AMONG CHILDREN FROM THE KOLKATA, INDIA SITE OF THE GLOBAL ENTERIC MULTICENTER STUDY

**Kurt Z. Long**<sup>1</sup>, Suman Kanungo<sup>2</sup>, Inong Gunanti<sup>3</sup>, Johanna Sanchez<sup>4</sup>, James P. Nataro<sup>5</sup>, Dilruba Nasrin<sup>6</sup>, Myron Levine<sup>6</sup>, Karen Kotloff<sup>7</sup>

<sup>1</sup>Swiss Tropical and Public Health Institute, Basel, Switzerland, <sup>2</sup>National Institute of Cholera and Enteric Diseases, Kolkata, India, <sup>3</sup>Faculty of Medicine and Biomedical Sciences, University of Queensland, Brisbane, Australia, <sup>4</sup>Faculty of Medicine and Biomedical Sciences, University of Queensland, Brisbane, Australia, <sup>5</sup>Department of Pediatrics, University of Virginia School of Medicine, Charlottesville, VA, United States, <sup>6</sup>Center for Vaccine Development, University of Maryland School of Medicine, Baltimore, MD, United States, <sup>7</sup>Department of Pediatrics, University of Maryland School of Medicine, Baltimore, MD, United States

## 1807

### IDENTIFYING POTENTIALLY PREVENTABLE UNDERLYING CIRCUMSTANCES THAT LED TO INFANT DEATH IN LUSAKA, ZAMBIA: AN EXTENDED APPROACH TO THE THREE DELAYS MODEL

**Andrew William Enslin**<sup>1</sup>, Ronke Olowojesiku<sup>1</sup>, Anna Larson<sup>2</sup>, William Macleod<sup>2</sup>, Rotem Lapidot<sup>2</sup>, Christopher J. Gill<sup>2</sup>

<sup>1</sup>Harvard TH Chan School of Public Health, Boston, MA, United States, <sup>2</sup>Boston University School of Public Health, Boston, MA, United States

## 1808

### HIGHER TREATMENT TO DIAGNOSIS RATIO IN MALARIA CASE MANAGEMENT IN NIGERIA

Wellington A. Oyibo<sup>1</sup>, **Wellington Oyibo**<sup>2</sup>, Diwe Ekweremadu<sup>3</sup>, Genevieve Eke<sup>3</sup>, Chukwudi Uche<sup>3</sup>, Victoria Erinle<sup>3</sup>, Victor Adebayo<sup>3</sup>, Temitope Ipinmoye<sup>3</sup>

<sup>1</sup>College of Medicine of the University of Lagos, Nigeria, Lagos, Nigeria, <sup>2</sup>College of Medicine, University of Lagos, Department of Medical Microbiology and Parasitology, Lagos, Nigeria, <sup>3</sup>Catholic Relief Services, Abuja, Nigeria

## 1809

### COMPARISON OF RISKS OF READMISSION AFTER BREAST CANCER RECONSTRUCTION PROCEDURES: AN ANALYSIS OF 2011 TO 2014 NATIONAL READMISSION DATABASE

**Oumar Thiero**<sup>1</sup>, Meghan Garstka<sup>2</sup>, Alan Stolier<sup>2</sup>, Emad Kandil<sup>2</sup>

<sup>1</sup>International Center of excellence in research (ICER-MALI), University of Sciences, Techniques and Technology of Bamako (USTTB), Bamako, Mali, <sup>2</sup>Tulane University, School of Medicine, New Orleans, LA, United States



## Helminths - Nematodes - Filariasis (Epidemiology)

1810

### LYMPHATIC FILARIASIS ENDGAME: UNDERSTANDING HOTSPOTS IN ELIMINATION PROGRAMS

**Sellase A. Pi-Bansa**<sup>1</sup>, Joseph Harold Osei<sup>1</sup>, Kwadwo Kyeremeh Frempong<sup>1</sup>, Elisabeth Elhassan<sup>2</sup>, David Agyemang<sup>2</sup>, Samuel Dadzie<sup>1</sup>, Maxwell Alexander Appawu<sup>1</sup>, Michael David Wilson<sup>1</sup>, Benjamin Guibehi Koudou<sup>3</sup>, Dziedzom Komi de Souza<sup>1</sup>, Jürg Utzinger<sup>4</sup>, Daniel Adjei Boakye<sup>1</sup>  
<sup>1</sup>Noguchi Memorial Institute for Medical Research (N.M.I.M.R), Accra, Ghana, <sup>2</sup>Sights Savers International, Accra, Ghana, <sup>3</sup>Centre Suisse de Recherches Scientifiques en Côte d'Ivoire, Abidjan, Côte D'Ivoire, <sup>4</sup>Swiss Tropical and Public Health Institute, Basel, Switzerland

1811

### MICROFILARIAE CIRCULATING IN DOGS FROM CALI, COLOMBIA

**Luisa M. Nieto Ramirez**<sup>1</sup>, Tania Gaviria<sup>1</sup>, Claudia L. Villegas<sup>2</sup>, Isabel C. Garcia<sup>2</sup>, Leidy L. Diaz<sup>3</sup>, Beatriz E. Ferro<sup>3</sup>  
<sup>1</sup>Universidad Santiago de Cali, Cali, Colombia, <sup>2</sup>Laboratorio Zoolavet, Cali, Colombia, <sup>3</sup>Universidad Icesi, Cali, Colombia

1812

### MAPPING THE PRE-CONTROL PREVALENCE OF LYMPHATIC FILARIASIS ACROSS NIGERIA

**Obiora A. Eneanya**<sup>1</sup>, Claudio Fronterre<sup>2</sup>, Ifeoma Anagbogu<sup>3</sup>, Chukwu Okoronkwo<sup>3</sup>, Tini Garske<sup>1</sup>, Jorge Cano<sup>2</sup>, Christl Donnelly<sup>1</sup>  
<sup>1</sup>Imperial College London, London, United Kingdom, <sup>2</sup>London School of Hygiene & Tropical Medicine, London, United Kingdom, <sup>3</sup>Federal Ministry of Health, Abuja, Nigeria

1813

### DOSING POLE RECOMMENDATIONS FOR MASS DRUG ADMINISTRATION OF IVERMECTIN AND DIETHYLCARBAMAZINE FOR LYMPHATIC FILARIASIS ELIMINATION: A HEIGHT-WEIGHT QUANTILE REGRESSION MODELING APPROACH

**Charles W. Goss**<sup>1</sup>, Katuscia O'Brian<sup>1</sup>, Peter U. Fischer<sup>1</sup>, Myra Hardy<sup>2</sup>, Purushothaman Jambulingam<sup>3</sup>, Christopher L. King<sup>4</sup>, Moses Laman<sup>5</sup>, Jean Frantz Lemoine<sup>6</sup>, Leanne Robinson<sup>7</sup>, Josai Samuela<sup>8</sup>, Swaminathan Subramanian<sup>9</sup>, Taniawati Supali<sup>9</sup>, Gary J. Weil<sup>1</sup>, Kenneth B. Schechtman<sup>1</sup>  
<sup>1</sup>Washington University, St Louis, MO, United States, <sup>2</sup>Murdoch Children's Research Institute, Melbourne, Australia, <sup>3</sup>ICMR-Vector Control Research Centre, Puduchery, India, <sup>4</sup>Case Western Reserve University, Cleveland, OH, United States, <sup>5</sup>Papua New Guinea Institute of Medical Research, Madang, Papua New Guinea, <sup>6</sup>Ministère de la Santé Publique et de la Population (MSPP), Port au Prince, Haiti, <sup>7</sup>Burnet Institute, Melbourne, Australia, <sup>8</sup>Fiji Ministry of Health and Medical Services, Suva, Fiji, <sup>9</sup>Universitas Indonesia, Jakarta, Indonesia

1814

### COMPARISON OF MICROSCOPY TO REAL-TIME POLYMERASE CHAIN REACTION AND LOOP MEDIATED ISOTHERMAL AMPLIFICATION (LAMP) ASSAYS IN MONITORING OF SKIN MICROFILARIAE OF ONCHOCERCA VOLVULUS WITHIN SIX MONTHS OF DIRECT OBSERVED TREATMENT WITH IVERMECTIN

**Samuel Wanji**<sup>1</sup>, Raphael Awah Abong<sup>1</sup>, Glory Amambo<sup>1</sup>, Patrick W. Ndongmo<sup>1</sup>, Abdel Jeilil Njouendou<sup>1</sup>, Manuel Ritter<sup>2</sup>, Amuam Andrew Mbeng<sup>1</sup>, Mathias Eyong Esum<sup>1</sup>, Kebede Deribe<sup>3</sup>, Jerome Fru<sup>1</sup>, Fanny Fri Fombad<sup>1</sup>, Theobald Mue Nji<sup>1</sup>, Peter Ivo Nyonyong<sup>1</sup>, Catherine B. Poole<sup>4</sup>, Kenneth Pfarr<sup>2</sup>, Achim Hoerauf<sup>2</sup>, Clotilde K. Carlow<sup>5</sup>  
<sup>1</sup>University of Buea, Buea, Cameroon, <sup>2</sup>Institute of Medical Microbiology, Immunology and Parasitology, University Hospital, Bonn, Germany, <sup>3</sup>Global Health and Infection Department, Brighton and Sussex Medical School, Brighton, United Kingdom, <sup>4</sup>New England Biolabs, Ipswich, MA, United States, <sup>5</sup>New England Biolabs, Ipswich, MA, United States

1815

### ACCOUNTING FOR PREFERENTIAL SAMPLING IN SPATIOTEMPORAL MODELS OF LYMPHATIC FILARIASIS PREVALENCE

**Chris Schmidt**, Kevin Kwong, Katie Donkers, Elex Hill, David Pigott, Shreya Shirude, Simon Hay, Elizabeth Cromwell  
University of Washington, Seattle, WA, United States

1816

### IMPACT OF REPEATED ANNUAL MASS DRUG ADMINISTRATION WITH IVERMECTIN THROUGH COMMUNITY DIRECTED TREATMENT ON THE ENTOMOLOGICAL INDICATORS OF LOA LOA TRANSMISSION IN CAMEROON

**Patrick W. Ndongmo**, Glory Ngongeh, Fanny Fri Fombad, Abdel Jeilil Njouendou, Bertrand Ndzeschang, Mathias Eyong Esum, Peter Enyong, Samuel Wanji  
University of Buea, Buea, Cameroon

1817

### INDIVIDUAL RISK OF POST-IVERMECTIN SEVERE ADVERSE EVENTS IN INDIVIDUALS INFECTED WITH LOA LOA

**Cédric B. Chesnais**<sup>1</sup>, Sebastien D. Pion<sup>1</sup>, Jacques Gardon<sup>1</sup>, Nathalie Gardon-Wendel<sup>2</sup>, Joel Fokom-Domgue<sup>3</sup>, Joseph Kamgno<sup>4</sup>, Michel Boussinesq<sup>1</sup>  
<sup>1</sup>Institut de recherche pour le Développement, Montpellier, France, <sup>2</sup>Antenne ORSTOM auprès du Centre Pasteur, Yaoundé, Cameroon, <sup>3</sup>The University of Texas MD Anderson Cancer Center, Houston, TX, United States, <sup>4</sup>Centre for Research on Filariasis and other Tropical Diseases, Yaoundé, Cameroon

1818

### THE EFFECT OF ALBENDAZOLE TREATMENT ON LOA LOA: A SYSTEMATIC REVIEW, META-ANALYSIS AND MODELLING STUDY

**Charles Whittaker**<sup>1</sup>, Joseph Kamgno<sup>2</sup>, Amy Klion<sup>3</sup>, Martin Walker<sup>4</sup>, Sébastien D.S. Pion<sup>5</sup>, Cédric B. Chesnais<sup>6</sup>, Benjamin Lambert<sup>1</sup>, Annette Kuesel<sup>6</sup>, Maria-Gloria Basañez<sup>1</sup>, Michel Boussinesq<sup>5</sup>  
<sup>1</sup>Department of Infectious Disease Epidemiology, Imperial College London, London, United Kingdom, <sup>2</sup>Centre for Research on Filariasis and Other Tropical Diseases, and Faculty of Medicine and Biomedical Sciences, University of Yaoundé I, Yaoundé, Cameroon, <sup>3</sup>Human Eosinophil Section, Laboratory of Parasitic Diseases, National Institute of Allergy and Infectious Diseases, National Institutes of Health, Bethesda, MD, United States, <sup>4</sup>Department of Pathobiology and Population Sciences, Royal Veterinary College, Hatfield, UK, Hatfield, United Kingdom, <sup>5</sup>Institut de Recherche pour le Développement (IRD), Montpellier, Montpellier, France, <sup>6</sup>UNICEF/UNDP/World Bank/World Health Organization Special Programme on Research and Training in Tropical Diseases (TDR), Geneva, Switzerland

1819

### THE CURRENT EVIDENCE BASE FOR LYMPHATIC FILARIASIS ELIMINATION THRESHOLDS: IDENTIFYING THE KEY UNKNOWNNS

**Emma L. Davis**<sup>1</sup>, Lisa J. Reimer<sup>2</sup>, Lorenzo Pellis<sup>3</sup>, T Deirdre Hollingsworth<sup>4</sup>  
<sup>1</sup>University of Warwick, Coventry, United Kingdom, <sup>2</sup>Liverpool School of Tropical Medicine, Liverpool, United Kingdom, <sup>3</sup>University of Manchester, Manchester, United Kingdom, <sup>4</sup>Big Data Institute, University of Oxford, Oxford, United Kingdom

1820

### ASSESSMENT OF LYMPHATIC FILARIASIS (LF) PREVALENCE TRENDS ALONG THE COASTAL REGIONS OF TANZANIA

**Upendo John Mwingira**<sup>1</sup>, Denis Kailembo<sup>2</sup>, Andreas Nshala<sup>3</sup>, Veronica Kabona<sup>4</sup>, Cecilia Uisso<sup>1</sup>, Mwelecele Malecela<sup>5</sup>  
<sup>1</sup>National Institute for Medical Research, Dar Es Salaam, United Republic of Tanzania, <sup>2</sup>NTD Control Program, Dar Es Salaam, United Republic of Tanzania, <sup>3</sup>Uppsala University, Uppsala, Sweden, <sup>4</sup>IMA World Health, Dar Es Salaam, United Republic of Tanzania, <sup>5</sup>World Health Organization, Geneva, Switzerland

## 1821

### THE ENVIRONMENTAL SUITABILITY OF ONCHOCERCIASIS IN AFRICA

Elizabeth Cromwell, Joshua Osborne, Kimberly Johnson, Elex Hill, Shreya Shirude, Katie Donkers, David Pigott, Simon I. Hay  
*University of Washington (IHME), Seattle, WA, United States*

## 1822

### COVERAGE ASSESSMENT FOLLOWING MASS DRUG ADMINISTRATION OF THE NEW WHO-RECOMMENDED THREE-DRUG REGIMEN FOR LYMPHATIC FILARIASIS ELIMINATION IN AMERICAN SAMOA

Tara A. Brant<sup>1</sup>, Rebecca J. Chancey<sup>1</sup>, Lynette Suiiaunoa-Scanlan<sup>2</sup>, Tamara Buhagiar<sup>2</sup>, Ryan E. Wiegand<sup>1</sup>, Emily A. Dodd<sup>1</sup>, Kimberly Y. Won<sup>1</sup>, Emi Chutaro<sup>3</sup>, Fara Utu<sup>4</sup>, Motusa Tuileama Nua<sup>4</sup>

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## 1823

### DETECTION OF RESIDUAL FOCI OF LYMPHATIC FILARIASIS TRANSMISSION TWO YEARS AFTER STOPPING MASS DRUG ADMINISTRATION: CASE OF DANO HEALTH DISTRICT IN BURKINA FASO

Roland Bougma<sup>1</sup>, Mamadou Serme<sup>1</sup>, Christophe Nassa<sup>1</sup>, Micheline Ouedraogo<sup>2</sup>, Appolinaire Kima<sup>1</sup>, Clarisse Bougouma<sup>1</sup>, Dieudonné Nare<sup>2</sup>, Jean-Paul Djatsa<sup>2</sup>, Fanny Yago-Wienne<sup>2</sup>, Amy Veinoglou<sup>3</sup>, Yaobi Zhang<sup>4</sup>

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## 1824

### EPIDEMIOLOGY OF LYMPHATIC FILARIASIS DURING MASS DRUG ADMINISTRATION IN DREIKIKIR, PAPUA NEW GUINEA

Daniel J. Tisch<sup>1</sup>, Brooke Mancuso<sup>2</sup>, Nelly Sanuku<sup>3</sup>, Philip Lus<sup>3</sup>, Estee Cramer<sup>1</sup>, Willie Pomat<sup>4</sup>, Christopher L. King<sup>1</sup>, Peter A. Zimmerman<sup>1</sup>, James W. Kazura<sup>1</sup>

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## 1825

### ILLUMINA SEQUENCING TO MONITOR WUCHERERIA BANCROFTI INFECTION DURING AND AFTER MASS DRUG ADMINISTRATION

Daniel J. Tisch<sup>1</sup>, E. Ricky Chan<sup>1</sup>, Krufinta Bun<sup>1</sup>, Scott T. Small<sup>2</sup>, James W. Kazura<sup>1</sup>, Peter A. Zimmerman<sup>1</sup>

<sup>1</sup>Case Western Reserve University, Cleveland, OH, United States, <sup>2</sup>University of Notre Dame, Notre Dame, IN, United States

## 1826

### PROGRESS TOWARD ELIMINATION OF LF AFTER IMPACT SURVEYS IN 11 HD OF 3 REGIONS IN CAMEROON

Biholong Benajmin<sup>1</sup>, Ebene Clarisse<sup>1</sup>, Georges NKO'Ayissi<sup>2</sup>, Julie Akame<sup>3</sup>, Patrick Mbia<sup>3</sup>, Carine Fokam<sup>3</sup>, Michel Hendji<sup>3</sup>, Yaobi Zhang<sup>4</sup>, Steven D. Reid<sup>5</sup>, Ismael Teta<sup>3</sup>

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## HIV and Tropical Co-Infections

## 1827

### SEROPREVALENCE AND DETERMINANTS OF TRANSFUSION TRANSMISSIBLE INFECTIONS AMONG VOLUNTARY BLOOD DONORS IN HOMABAY KISUMU AND SIAYA COUNTIES IN WESTERN KENYA

George Calleb Onyango<sup>1</sup>, Lilian Ogonda<sup>2</sup>

<sup>1</sup>Kenya Medical Training College, Kisumu, Kenya, <sup>2</sup>Maseno University, Kisumu, Kenya

## 1828

### AWARENESS, ACCEPTABILITY AND WILLINGNESS TO USE A PROSPECTIVE HIV VACCINE AMONG HEALTHCARE WORKERS IN SOUTHEAST NIGERIA

Ikechukwu N. Dozie, Chiamaka C. Eluwa-Onkonkwo, Chikere I. Ebirim, Uchechukwu M. Chukwuocha

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## 1829

### A CASE OF SEVERE CRYPTOCOCCAL IMMUNE RECONSTITUTION INFLAMMATORY SYNDROME PRESENTING WITH BRAIN AND INTRADURAL ABSCESSSES IN AN HIV PATIENT

Thomas Michael Kalinoski<sup>1</sup>, Arthur Jeng<sup>1</sup>, Jason Malenfant<sup>2</sup>, Catherine Yim<sup>1</sup>, Wenchang Guo<sup>3</sup>

<sup>1</sup>Olive View - University of California Los Angeles Medical Center, Sylmar, CA, United States, <sup>2</sup>University of California Los Angeles, Los Angeles, CA, United States, <sup>3</sup>LAC+USC Medical Center, Los Angeles, CA, United States

## 1830

### HIGH FREQUENCIES OF TUMOR-INFILTRATING AND CIRCULATING $\Gamma$ T CELLS IN ENDEMIC BURKITT LYMPHOMA PATIENTS

Cecilia Smith-Togobo<sup>1</sup>, Maria del Pilar Quintana<sup>2</sup>, Michael F. Ofori<sup>1</sup>, Lars Hviid<sup>2</sup>

<sup>1</sup>University of Ghana, Accra, Ghana, <sup>2</sup>University of Copenhagen, Copenhagen N, Denmark

(ACMCIP Abstract)

## 1831

### FIVE-YEAR VIH INCIDENCE, PREVALENCE AND MORTALITY IN CANADA, MEXICO AND USA: OBSERVATIONAL DESCRIPTIVE STUDY

Nina Mendez-Dominguez<sup>1</sup>, Sabrina Fajardo-Ruiz<sup>1</sup>, Peter Gulick<sup>2</sup>, Andrea Cámara<sup>1</sup>, Martin Inurreta<sup>1</sup>

<sup>1</sup>Universidad Marista de Merida, Merida, Mexico, <sup>2</sup>Michigan State University, Michigan, MI, United States

## 1832

### FACTORS ASSOCIATED WITH DIARRHEAL ILLNESS AMONG HIV PATIENTS IN AN OUTPATIENT CLINIC IN JAMAICA

Obinna Nnaemeka Nnedu<sup>1</sup>, Rasheedah Godfrey<sup>1</sup>, Clara Engmann<sup>2</sup>, Alaa Mohammed<sup>1</sup>, Tamara Thompson<sup>3</sup>

<sup>1</sup>Ochsner Clinic Foundation, New Orleans, LA, United States, <sup>2</sup>Tulane University School of Medicine, New Orleans, LA, United States, <sup>3</sup>University of West Indies Mona, Mona, Kingston, Jamaica

1833

**DIAGNOSIS OF NEUROLOGICAL TOXOPLASMOSIS IN URINE IN PERSONS LIVING WITH HIV**

Hannah Steinberg<sup>1</sup>, Andrea Diestra<sup>2</sup>, Cusi Ferradas<sup>2</sup>, Maritza Calderón<sup>2</sup>, Catherine Apaza<sup>2</sup>, Marilly Donayre Urquiza<sup>3</sup>, Melanie Ayachi López<sup>4</sup>, Viviana Pinedo Cancino<sup>3</sup>, Lastenia Ruiz<sup>3</sup>, Cesar Ramal<sup>4</sup>, Paul Russo<sup>5</sup>, Natalie Bowman<sup>6</sup>, Lance Liotta<sup>5</sup>, Alessandra Luchini<sup>5</sup>, Robert H. Gilman<sup>7</sup>

<sup>1</sup>University of Illinois Chicago, Chicago, IL, United States, <sup>2</sup>Universidad Peruana Cayetano Heredia, Lima, Peru, <sup>3</sup>Universidad Nacional de la Amazonía Peruana, Iquitos, Peru, <sup>4</sup>Hospital Regional de Loreto, Iquitos, Peru, <sup>5</sup>George Mason University, Manassas, VA, United States, <sup>6</sup>University of North Carolina Chapel Hill, Chapel Hill, NC, United States, <sup>7</sup>Johns Hopkins Bloomberg School of Public Health, Baltimore, MD, United States

1834

**HUMAN IMMUNODEFICIENCY VIRUS ASSOCIATED MULTICENTRIC CASTLEMAN'S DISEASE (MCD) WITH COEXISTING KAPOSI SARCOMA (KS) TRIGGERING POTENTIALLY FATAL HEMOPHAGOCYTIC LYMPHOHISTIOCYTOSIS (HLH)**

Vijai Bhola<sup>1</sup>, Steven Hatch<sup>2</sup>, Nicole Theodoropoulos<sup>2</sup>, Salwa Khedr<sup>2</sup>

<sup>1</sup>University of Massachusetts Medical School, Shrewsbury, MA, United States, <sup>2</sup>University of Massachusetts Medical School, Worcester, MA, United States

1835

**COUMARIN ANTIFUNGAL LEAD COMPOUNDS FROM MILLETTIA THONNINGII AND THEIR PREDICTED MECHANISM OF ACTION**

Sylvester Kaminta<sup>1</sup>, Daniel M. Ayine-Tora<sup>2</sup>, Abdul-Salim Musah<sup>3</sup>, Felix C. Mills-Robertson<sup>4</sup>

<sup>1</sup>Monash University, Clayton, Melbourne, Austria, <sup>2</sup>University of Auckland, Auckland, New Zealand, <sup>3</sup>St. Theresa's Hospital, Nandom, Upper-west region, Ghana, <sup>4</sup>Kwame Nkrumah University of Science and Technology, Kumasi, Ghana

1836

**HISTOPLASMOSIS AND TUBERCULOSIS COINFECTION IN PEOPLE LIVING WITH HIV: A RETROSPECTIVE CASE-SERIES**

Audrey Valdes, Pierre Couppie, Roxane Schaub, Romain Blaizot, Felix Djossou, Loic Epelboin, Mathieu Nacher, Denis Blanchet, Magalie Demar, Antoine Adenis  
Centre Hospitalier de Cayenne, Cayenne, French Guiana

1837

**FREQUENCY OF NON-AIDS DEFINING EVENTS IN PATIENTS INFECTED WITH HIV IN AN OUTPATIENT CLINIC IN SANTO DOMINGO, DOMINICAN REPUBLIC**

Guillermo Alexander Asmar Vargas, Mylene Gisela Asmar-Rios, Leandro Tapia, Robert Paulino-Ramirez

Institute for Tropical Medicine and Global Health, Universidad Iberoamericana, Santo Domingo, Dominican Republic

1838

**RAPID DIAGNOSIS OF CO-INFECTION WITH INVASIVE ASPERGILLOSIS AND ACTIVE HEPATITIS B INFECTION IN A HIV INFECTED PATIENT**

Rone-Chun Lin, Joseph Y. Kim

University of Illinois, COM at Peoria, Peoria, IL, United States

**Kinetoplastida - Cellular and Molecular Biology (Including *Leishmania* and Trypanosomes)**

1839

**A SYSTEMATIC REVIEW OF VIRULENCE FACTORS IN THE LEISHMANIA GENUS**

Osaru Omoruna<sup>1</sup>, Avinash N. Mukkala<sup>1</sup>, Ruwandi Kariyawasam<sup>2</sup>, Eric Shao<sup>1</sup>, Priyanka Challa<sup>1</sup>, Michael A. Klowak<sup>1</sup>, Shareese Clarke<sup>1</sup>, Jamie Sookhoo<sup>1</sup>, Dylan Kain<sup>1</sup>, Tianna Chong-Kit<sup>1</sup>, Olamide Egbewumi<sup>1</sup>, Andrea K. Boggild<sup>1</sup>

<sup>1</sup>Tropical Disease Unit, Toronto General Hospital and University of Toronto, Toronto, ON, Canada, <sup>2</sup>Institute of Medical Sciences, Department of Medicine, University of Toronto, Toronto, ON, Canada

(ACMCIP Abstract)

1840

**NEW LEISHMANIA SPECIES AND ITS POTENTIAL NEW VECTOR, RESPONSIBLE FOR CUTANEOUS LEISHMANIASIS (CL) IN SOUTHEASTERN GHANA**

Godwin Kwakye-Nuako<sup>1</sup>, Mba-Tihssommah Mosore<sup>2</sup>, Priscilla Ankamaa Opare<sup>1</sup>, Michelle Bates<sup>3</sup>, Rod James Dillon<sup>3</sup>, Mary E. Wilson<sup>4</sup>, Paul A. Bates<sup>5</sup>

<sup>1</sup>University of Cape Coast, Department of Biomedical Sciences, School of Allied Health Sciences, College of Health and Allied Sciences, Cape Coast, Ghana, <sup>2</sup>Department of Parasitology, Noguchi Memorial Institute for Medical Research, University of Ghana, Legon, Accra, Ghana, <sup>3</sup>Division of Biomedical and Life Sciences, Faculty of Health and Medicine, Lancaster University, Lancaster, United Kingdom, <sup>4</sup>University of Iowa, Departments of Internal Medicine, Microbiology and Immunology, and the Veterans' Affairs Medical Center, Iowa City, IA, United States, <sup>5</sup>Division of Biomedical and Life Sciences, Faculty of Health and Medicine, Lancaster University, Lancaster, United Kingdom

(ACMCIP Abstract)

**Kinetoplastida - Diagnosis and Treatment (Including *Leishmania* and Trypanosomes)**

1841

**ACCURACY OF DIAGNOSTICS IN TEGUMENTARY LEISHMANIASIS: A SYSTEMATIC REVIEW**

Sonia Igboanugo<sup>1</sup>, Melissa S. Phuong<sup>1</sup>, Rachel Lau<sup>2</sup>, Robert Chris<sup>1</sup>, Eric Shao<sup>1</sup>, Ruwandi Kariyawasam<sup>3</sup>, Hira Raheel<sup>1</sup>, Sharmistha Mishra<sup>4</sup>, Andrea K. Boggild<sup>1</sup>

<sup>1</sup>Tropical Disease Unit, Toronto General Hospital and University of Toronto, Toronto, ON, Canada, <sup>2</sup>Public Health Ontario, Toronto, ON, Canada, <sup>3</sup>Institute of Medical Sciences, Department of Medicine, University of Toronto, Toronto, ON, Canada, <sup>4</sup>Li Ka Shing Knowledge Institute, St. Michael's Hospital, Toronto, ON, Canada

1842

**ETHNOPHARMACEUTICALS FOR THE TREATMENT OF OLD WORLD CUTANEOUS LEISHMANIASIS: A SYSTEMATIC REVIEW OF TOPICAL APPLICATION OF TUMERIC**

Priyanka Challa<sup>1</sup>, Michael A. Klowak<sup>1</sup>, Ruwandi Kariyawasam<sup>2</sup>, Emma Hagopian<sup>1</sup>, Eric Shao<sup>1</sup>, Jason Kwan<sup>1</sup>, Hira Raheel<sup>1</sup>, Tianna Chong - Kit<sup>1</sup>, Swana Kopalakrishnan<sup>1</sup>, Anjola Ogunsina<sup>1</sup>, Andrea K. Boggild<sup>1</sup>

<sup>1</sup>Tropical Disease Unit, Toronto General Hospital and University of Toronto, Toronto, ON, Canada, <sup>2</sup>Institute of Medical Sciences, Department of Medicine, University of Toronto, Toronto, ON, Canada

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**1843****ETHNOPHARMACEUTICALS FOR THE TREATMENT OF NEW WORLD CUTANEOUS LEISHMANIASIS: A SYSTEMATIC REVIEW OF TOPICAL APPLICATION OF PEPPER AND ALLIUM**

Anjola Ogunsina<sup>1</sup>, Ruwandi Kariyawasam<sup>2</sup>, Olamide Egbewumi<sup>1</sup>, Sonia Igboanugo<sup>1</sup>, Shveta Bhasker<sup>1</sup>, Shareese Clarke<sup>1</sup>, Paul Dunn<sup>1</sup>, Avinash N. Mukkala<sup>1</sup>, David Harris<sup>1</sup>, Andrea K. Boggild<sup>1</sup>

<sup>1</sup>Tropical Disease Unit, Toronto General Hospital and University of Toronto, Toronto, ON, Canada, <sup>2</sup>Institute of Medical Sciences, Department of Medicine, University of Toronto, Toronto, ON, Canada

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**1844****AN UPDATE ON THE ROLE OF WOUND CARE IN THE MANAGEMENT OF OLD WORLD CUTANEOUS LEISHMANIASIS**

David Harris<sup>1</sup>, Ruwandi Kariyawasam<sup>2</sup>, Avinash N. Mukkala<sup>1</sup>, Christian Lecce<sup>1</sup>, Evan Belsky<sup>1</sup>, Andrea K. Boggild<sup>1</sup>

<sup>1</sup>Tropical Disease Unit, Toronto General Hospital and University of Toronto, Toronto, ON, Canada, <sup>2</sup>Institute of Medical Sciences, Department of Medicine, University of Toronto, Toronto, ON, Canada

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**1845****A SYSTEMATIC REVIEW OF WOUND CARE IN THE MANAGEMENT OF NEW WORLD CUTANEOUS LEISHMANIASIS**

Ruwandi Kariyawasam<sup>1</sup>, David Harris<sup>2</sup>, Christian Lecce<sup>2</sup>, Avinash N. Mukkala<sup>2</sup>, Evan Belsky<sup>2</sup>, Andrea K. Boggild<sup>2</sup>

<sup>1</sup>Institute of Medical Sciences, Department of Medicine, University of Toronto, Toronto, ON, Canada, <sup>2</sup>Tropical Disease Unit, Toronto General Hospital and University of Toronto, Toronto, ON, Canada

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**1846****PHENOTYPIC CHARACTERIZATION OF TRYPANOSOMES CELLS TREATED WITH TETRACYCLIC IRIDOID, ML F52 SUPPRESSION OF FLAGELLA ATTACHMENT PROTEINS**

Georgina I. Djameh<sup>1</sup>, Thelma Tetteh<sup>1</sup>, Takuhiro Uto<sup>2</sup>, Frederick Ayertey<sup>2</sup>, Michael Amoah-Bosompem<sup>4</sup>, Faustus I. Azerigyik<sup>1</sup>, Kofi D. Kwofei<sup>4</sup>, Tomoe Ohta<sup>2</sup>, Irene Ayi<sup>1</sup>, Shiro Iwanaga<sup>4</sup>, Nobuo Ohta<sup>4</sup>, Yukihiro Shoyama<sup>2</sup>, Mitsuko Ohashi<sup>4</sup>

<sup>1</sup>Noguchi Memorial Institute for Medical Research, Accra, Ghana, <sup>2</sup>Nagasaki International University, Nagasaki, Japan, <sup>3</sup>Centre for Plant Medicine Research, Mampong-Akuapem, Ghana, <sup>4</sup>Tokyo Medical and Dental University, Tokyo, Japan

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**1847****VISCERAL LEISHMANIASIS ELISA TESTING: EVALUATION OF SERIAL SERUM SAMPLES REVEALS AN UNANTICIPATED FINDING**

Naomi E. Aronson<sup>1</sup>, Nancy Koles<sup>1</sup>, Saule Nurmukhambetova<sup>1</sup>, Rupal Mody<sup>2</sup>, Edgie Mark Co<sup>3</sup>, Dutchabong Shaw<sup>1</sup>, Robert DeFraitres<sup>1</sup>, Ines Lakhali-Naouar<sup>1</sup>

<sup>1</sup>Uniformed Services University of the Health Sciences, Bethesda, MD, United States, <sup>2</sup>William Beaumont Army Medical Center, El Paso, TX, United States, <sup>3</sup>Walter Reed National Military Medical Center, Bethesda, MD, United States

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**1848****IN VITRO ANTI-LEISHMANIAL ACTIVITY OF UNRIPE LIME OIL AGAINST *L. MAJOR***

Elvis Suatley Lomotey<sup>1</sup>, Godwin Kwakye-Nuako<sup>2</sup>, Christian Kweku Adokoh<sup>2</sup>, Joan Amoanab<sup>2</sup>

<sup>1</sup>Noguchi Memorial Institute for Medical Research, Legon-Accra, Ghana, <sup>2</sup>University of Cape Coast, Cape Coast, Ghana

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**1849****USE OF IMAGE PROCESSING FOR A MHEALTH BASED APPROACH TO SCREEN CUTANEOUS LEISHMANIASIS LESIONS IN REMOTE AREAS**

Hermali Silva<sup>1</sup>, Shahirah Shaik<sup>2</sup>, Kalaivani Chellappan<sup>2</sup>, Nadira D. Karunaweera<sup>1</sup>

<sup>1</sup>Faculty of Medicine, University of Colombo, Colombo 8, Sri Lanka, <sup>2</sup>Faculty of Engineering and Built Environment, Universiti Kebangsaan Malaysia, Bangi, Selangor, Malaysia

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**1850****MONITORING EFFICACY OF NIFURTIMOX IN CHILDREN WITH CHAGAS DISEASE: RESULTS OF ELISA F-29 OBTAINED IN A PHASE 3 TRIAL (CHICO)**

Ulrike Grossman<sup>1</sup>, Luis Castro<sup>2</sup>, Juan Dib<sup>3</sup>, Jimy Pinto Rocha<sup>4</sup>, Teresa Ramirez<sup>5</sup>, Guillermo Moscatelli<sup>6</sup>, Erya Huang<sup>7</sup>, Olivia Ding<sup>8</sup>, Jaime Altcheh<sup>9</sup>, on behalf of the CHICO Study Group<sup>9</sup>

<sup>1</sup>Bayer AG, Berlin, Germany, <sup>2</sup>Centro de Atencion e Investigacion Medica S.A, Yopal, Colombia, <sup>3</sup>Centro de Investigacion – Fundacion Hospital Universidad del Norte, Soledad – Baranquilla, Colombia, <sup>4</sup>Fundación CEADES – Plataforma de Chagas, Cochabamba, Plurinational State of Bolivia, <sup>5</sup>Centro de Enfermedad de Chagas y Patologías Regionales, Santiago del Estero, Argentina, <sup>6</sup>Hospital de Niños Ricardo Gutiérrez, Buenos Aires, Argentina, <sup>7</sup>Bayer US LLC, Whippany, NJ, United States, <sup>8</sup>Bayer Healthcare Co. Ltd, Beijing, China

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**1851****DISEASE AWARENESS, CLINICAL FEATURES AND TREATMENT OUTCOME ASSOCIATED WITH CUTANEOUS LEISHMANIASIS IN ANURADHAPURA, SRI LANKA**

Hasna F. Riyal<sup>1</sup>, Nilakshi T. Samaranayake<sup>1</sup>, Deepani Munidas<sup>2</sup>, Nadira D. Karunaweera<sup>1</sup>

<sup>1</sup>Faculty of Medicine, University of Colombo, Colombo 08, Sri Lanka, <sup>2</sup>Teaching Hospital, Anuradhapura, Anuradhapura, Sri Lanka

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**1852****NEW PEDIATRIC FORMULATION ALLOWS INDIVIDUALIZED DOSING OF ORAL NIFURTIMOX FOR TREATMENT OF CHILDREN WITH CHAGAS DISEASE**

Heino H. Stass<sup>1</sup>, Ethel C. Feleder<sup>2</sup>, Gustavo Yerino<sup>2</sup>, Facundo Garcia-Bournisen<sup>3</sup>, Boris Weimann<sup>4</sup>, Jaime Altcheh<sup>3</sup>

<sup>1</sup>Bayer AG, Wuppertal, Germany, <sup>2</sup>Pharmacokinetic Unit FP Clinical Pharma SRL, Buenos Aires, Argentina, <sup>3</sup>Servicio Parasitología – Chagas, Hospital de Niños R. Gutiérrez, Buenos Aires, Argentina, <sup>4</sup>Chrestos Concept GmbH & Co. KG, Essen, Germany

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**1853****EVALUATING NEW REGIMENS FOR THE TREATMENT OF CHRONIC CHAGAS DISEASE: THE BENDITA TRIAL**

Fabiana Barreira da Silva Rocha, Bethania Blum, Sergio Estani  
*Drugs for Neglected Diseases initiative, Rio de Janeiro, Brazil*

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**1854****DEVELOPING TOOLS FOR THE COLLECTION AND EVALUATION OF COSTS OF HUMAN AFRICA TRYPANOSOMIASIS INTERVENTION PROGRAMS**

Xia Wang-Steverding<sup>1</sup>, Marina Antillon<sup>2</sup>, Alex P. Shaw<sup>3</sup>, Ron Crump<sup>1</sup>, Ching-I Huang<sup>1</sup>, Fabrizio Tediosi<sup>2</sup>, Jason Madan<sup>1</sup>, Paul Bessell<sup>4</sup>, Kat S. Rock<sup>1</sup>

<sup>1</sup>University of Warwick, Coventry, United Kingdom, <sup>2</sup>Swiss Tropical and Public Health Institute, Basel, Switzerland, <sup>3</sup>Division of Infection and Pathway Medicine, The University of Edinburgh and AP Consultants, Andover, Edinburgh, United Kingdom, <sup>4</sup>Epi Interventions, Glasgow, United Kingdom



**1855****EFFORTS AGAINST GAMBIESE HUMAN AFRICAN TRYPANOSOMIASIS IN CHAD: A MATHEMATICAL AND ECONOMIC MODELING STUDY OF END-GAME INTERVENTIONS****Marina Antillon<sup>1</sup>**, Xia Wang-Steverding<sup>2</sup>, Ron E. Crump<sup>2</sup>, Ching-I Huang<sup>2</sup>, Rian Snijders<sup>3</sup>, Mallaye Peka<sup>4</sup>, Severine Mbainda<sup>4</sup>, Kat S. Rock<sup>2</sup>, Fabrizio Tediosi<sup>1</sup><sup>1</sup>Swiss Tropical and Public Health Institute, Basel, Switzerland, <sup>2</sup>Warwick University, Warwick, United Kingdom, <sup>3</sup>Institute of Tropical Medicine, Antwerp, Belgium, <sup>4</sup>Ministry of Health, N'Djaména, Chad**1856****ANTI-LEISHMANIAL ACTIVITIES OF COMPUTER-DESIGNED PROTEIN DISULFIDE ISOMERASE INHIBITORS****Susie Pham<sup>1</sup>**, Peter Sedillo<sup>1</sup>, Nouredine Ben Khalaf<sup>2</sup>, Valeria Pittala<sup>3</sup>, Ivy Hurwitz<sup>1</sup><sup>1</sup>University of New Mexico, Albuquerque, NM, United States, <sup>2</sup>Arabian Gulf University, Manama, Bahrain, <sup>3</sup>University of Catania, Catania, Italy**1857****DETERMINATION OF A MURINE MODEL TO EVALUATE NEW THERAPIES IN THE CHRONIC PHASE OF TRYPANOSOMA CRUZI H1 INFECTION ACCORDING TO ITS CARDIAC ELECTRICAL FUNCTION****Bárbara Carolina Arias Argáez<sup>1</sup>**, Xenia López Blanco<sup>1</sup>, Landy Pech Pisté<sup>1</sup>, Paulina Haro<sup>2</sup>, Eric Dumonteil<sup>3</sup>, Miguel Rosado Vallado<sup>1</sup><sup>1</sup>Laboratorio de Parasitología, Centro de Investigaciones Regionales Dr. Hideyo Noguchi, Universidad Autónoma de Yucatán, Mérida, Mexico, <sup>2</sup>CONACYT-Centro de Investigaciones Regionales Dr. Hideyo Noguchi, Universidad Autónoma de Yucatán, Mérida, Mexico, <sup>3</sup>Department of Tropical Medicine, School of Public Health and Tropical Medicine, and Vector-Borne and Infectious Disease Research Center, Tulane University, New Orleans, LA, United States**One Health: Interface Of Human Health/ Animal Diseases****1858****BURDEN OF ANGIOSTRONGYLUS CANTONENSIS LARVAE IN JUVENILE PARMARION MARTENSII****William L. Gosnell<sup>1</sup>**, Randi Rollins, Kenton Kramer, Jourdan Posner, Robert Cowie  
<sup>1</sup>University of Hawai'i at Manoa, Honolulu, HI, United States**1859****IDENTIFYING THE ROLE OF THE DIFFERENT RESERVOIR HOSTS OF ZONOTIC SCHISTOSOMIASIS IN WEST AFRICA****Elsa Leger<sup>1</sup>**, Stefano Catalano<sup>1</sup>, Anna M. Borlase<sup>1</sup>, Cheikh B. Fall<sup>2</sup>, Samba D. Diop<sup>3</sup>, Bonnie L. Webster<sup>4</sup>, David Rollinson<sup>4</sup>, Nicolas D. Diouf<sup>5</sup>, Khalilou Bâ<sup>6</sup>, Mariama Sene<sup>3</sup>, Joanne P. Webster<sup>1</sup><sup>1</sup>Royal Veterinary College, Hatfield, United Kingdom, <sup>2</sup>University Cheikh Anta Diop, Dakar, Senegal, <sup>3</sup>University of Thies, Bambey, Senegal, <sup>4</sup>Natural History Museum, London, United Kingdom, <sup>5</sup>University Gaston Berger, Saint-Louis, Senegal, <sup>6</sup>CBGP, Institut de Recherche pour le Développement, Dakar, Senegal**1860****LOW RISK PERCEPTION AROUND HANDLING OF LIVING AND DEAD ANIMALS POSES BARRIERS TO ZONOTIC DISEASE PREVENTION AND PREPAREDNESS IN COTE D'IVOIRE****Danielle Naugle<sup>1</sup>**, Natalie Tibbels<sup>1</sup>, Abdul Dosso<sup>2</sup>, William Benié<sup>2</sup>, Walter Kra<sup>3</sup>, Corinne Fordham<sup>1</sup>, Mieke McKay<sup>2</sup>, Valère Konan<sup>4</sup>, Jeanne Brou<sup>5</sup>, Jocelyne Nebre<sup>5</sup>, Adaman Kouadio<sup>4</sup>, Zandra Andre<sup>6</sup>, Diarra Kamara<sup>2</sup>, Stella Babalola<sup>1</sup><sup>1</sup>Johns Hopkins University, Baltimore, MD, United States, <sup>2</sup>Johns Hopkins University, Abidjan, Côte D'Ivoire, <sup>3</sup>Alassane Ouattara University, Bouaké, Côte D'Ivoire, <sup>4</sup>Department of Veterinarian Services Ministry of Animal Resources and Fisheries, Abidjan, Côte D'Ivoire, <sup>5</sup>National Institute of Public Hygiene, Abidjan, Côte D'Ivoire, <sup>6</sup>U.S. Agency for International Development, Abidjan, Côte D'Ivoire**1861****CONCEPTUALIZING CHICKFLOWS IN MAPUTO, MOZAMBIQUE: HIGH-RISK BEHAVIORS AND PATHWAYS FOR CHILDHOOD EXPOSURE TO CHICKEN FECES****Frederica Lamar<sup>1</sup>**, Matthew C. Freeman, Karen Levy  
<sup>1</sup>Emory University, Atlanta, GA, United States**1862****PATTERNS AND RISK FACTORS FOR ANTIBIOTIC RESISTANCE AMONG COAGULASE-POSITIVE STAPHYLOCOCCUS (CPS) ISOLATED FROM DOGS AND CATS THAT RESIDE WITH A PATIENT RECENTLY DIAGNOSED WITH METHICILLIN-RESISTANT STAPHYLOCOCCUS AUREUS SKIN OR SOFT-TISSUE INFECTION****Cusi Ferradas<sup>1</sup>**, Caitlin Cotter<sup>2</sup>, Jonathan Shahbazian<sup>2</sup>, Sally Ann Iverson<sup>2</sup>, Patrick Baron<sup>2</sup>, Ana Misis<sup>3</sup>, Amy M. Brazil<sup>2</sup>, Irving Nachamkin<sup>3</sup>, Jacqueline M. Ferguson<sup>2</sup>, Ebbing Lautenbach<sup>3</sup>, Daniel O. Morris<sup>4</sup>, Andrés G. Lescano<sup>1</sup>, Meghan F. Davis<sup>2</sup>  
<sup>1</sup>School of Public Health and Administration, Universidad Peruana Cayetano Heredia, Lima, Peru, <sup>2</sup>Bloomberg School of Public Health, Johns Hopkins University, Baltimore, MD, United States, <sup>3</sup>School of Medicine, University of Pennsylvania, Philadelphia, PA, United States, <sup>4</sup>School of Veterinary Medicine, University of Pennsylvania, Philadelphia, PA, United States**1863****CHICKEN OWNERSHIP IS NOT ASSOCIATED WITH CAMPYLOBACTER INFECTION OR ANEMIA AMONG CHILDREN 6 TO 59 MONTHS OLD IN THE GREATER ACCRA REGION, GHANA****Nathalie J. Lambrecht<sup>1</sup>**, Dave Bridges<sup>1</sup>, Bright Adu<sup>2</sup>, Mark L. Wilson<sup>1</sup>, Andrew D. Jones<sup>1</sup><sup>1</sup>University of Michigan, Ann Arbor, MI, United States, <sup>2</sup>Noguchi Memorial Institute for Medical Research, College of Health Sciences, University of Ghana, Legon, Ghana**1864****CHARACTERIZING ANTIBIOTIC RESISTOMES IN HUMANS AND DOMESTIC ANIMALS FROM RURAL AND URBAN BANGLADESH****Jenna Swarthout<sup>1</sup>**, Erica R. Fuhrmeister<sup>2</sup>, Angela R. Harris<sup>3</sup>, Emily S. Gurley<sup>4</sup>, Syed M. Satter<sup>5</sup>, Alexandria B. Boehm<sup>6</sup>, Amy J. Pickering<sup>1</sup><sup>1</sup>Tufts University, Medford, MA, United States, <sup>2</sup>University of California Berkeley, Berkeley, CA, United States, <sup>3</sup>North Carolina State University, Raleigh, NC, United States, <sup>4</sup>Johns Hopkins University, Baltimore, MD, United States, <sup>5</sup>International Centre for Diarrhoeal Disease Research, Bangladesh, Dhaka, Bangladesh, <sup>6</sup>Stanford University, Stanford, CA, United States**1865****DETERMINING THE PRESENCE OF AN ANIMAL RESERVOIR FOR GAMBIAN HAT VIA MATHEMATICAL MODELLING****Ron E. Crump<sup>1</sup>**, Ching-I Huang<sup>1</sup>, Erick M. Miaka<sup>2</sup>, Matt J. Keeling<sup>1</sup>, Kat S. Rock<sup>1</sup><sup>1</sup>The University of Warwick, Coventry, United Kingdom, <sup>2</sup>Programme National de Lutte contre la Trypanosomiase Humaine Africaine, Kinshasa, Democratic Republic of the Congo**1866****LAND USE AND HUMAN BEHAVIORAL RISK FACTORS FOR ZONOTIC DISEASE EXPOSURE IN LAIKIPIA COUNTY, KENYA****Elizabeth Ashby<sup>1</sup>**, Joseph Kamau<sup>2</sup>, James Hassell<sup>3</sup>, Dawn Zimmerman<sup>3</sup>, Jennifer Yu<sup>3</sup>, Lindsey Shields<sup>4</sup>, Suzan Murray<sup>3</sup><sup>1</sup>George Mason University, Fairfax, VA, United States, <sup>2</sup>Institute of Primate Research, Nairobi, Kenya, <sup>3</sup>Smithsonian Institution, Global Health Program, Washington, DC, United States, <sup>4</sup>PATH, Washington, DC, United States

1867

**ONE HEALTH SURVEILLANCE FOR BAT-BORNE VIRUSES AT CAVE TOURISM DESTINATIONS IN SOUTHEAST ASIA**

Heather S. Davies<sup>1</sup>, Alexis C. Garretson<sup>2</sup>, Kathryn Hogan<sup>1</sup>, A. Alonso Aguirre<sup>1</sup>, Michael von Fricken<sup>1</sup>  
<sup>1</sup>George Mason University, Fairfax, VA, United States, <sup>2</sup>Brigham Young University, Provo, UT, United States

**Pneumonia, Respiratory Infections and Tuberculosis**

1868

**LEPROSY CHEMOPROPHYLAXIS OF HOUSEHOLD CONTACTS: A SURVEY OF CANADIAN INFECTIOUS DISEASE AND TROPICAL MEDICINE SPECIALISTS**

Carl Boodman<sup>1</sup>, Jay Keystone<sup>2</sup>  
<sup>1</sup>University of British Columbia, Vancouver, BC, Canada, <sup>2</sup>University of Toronto, Toronto, ON, Canada

1869

**MODELING THE IMPACT OF THE USE OF INFLUENZA VACCINE IN CHILDREN UNDER FIVE YEARS OF AGE ON THE CUMULATIVE CASE COUNT OF INFLUENZA IN MALI**

Nancy Ortiz<sup>1</sup>, Adama Mamby Keita<sup>2</sup>, Flanon Coulibaly<sup>2</sup>, Uma Onwuchekwa<sup>2</sup>, Samba O. Sow<sup>2</sup>, Arthur L. Reingold<sup>1</sup>, Milagritos Tapia<sup>3</sup>  
<sup>1</sup>University of California Berkeley, Berkeley, CA, United States, <sup>2</sup>Centre pour le Développement des Vaccins-Mali, Bamako, Mali, <sup>3</sup>Center for Vaccine Development, University of Maryland School of Medicine, Baltimore, MD, United States

1870

**SYNTHESIS AND ANTIMYCOBACTERIAL EVALUATION OF D-CYCLOSERINE ANALOGUES**

Shoneeze Simone Renga, Vinayak Singh, Kelly Chibale  
University of Cape Town, Cape Town, South Africa

1871

**MULTIPLEXED DETECTION OF PATHOGENS IN RESPIRATORY ILLNESS IN LATIN AMERICA**

Julia S. Ampuero<sup>1</sup>, Ivette Lorenzana<sup>2</sup>, Doris Gomez<sup>3</sup>, Margarita Ochoa-Diaz<sup>3</sup>, Ana Arango<sup>4</sup>, Nicolas Aguayo<sup>5</sup>, Marina Gonzalez<sup>6</sup>, Yelin Roca<sup>7</sup>, Victor Ocaña<sup>8</sup>, Edward Chavez<sup>9</sup>, Kimberly Garcia<sup>2</sup>, Crystyan Siles<sup>10</sup>, Maria Silva<sup>1</sup>  
<sup>1</sup>U.S. Naval Medical Research Unit No. 6 (NAMRU-6), Lima, Peru, <sup>2</sup>Universidad Nacional Autónoma de Honduras-UNAH, Tegucigalpa, Honduras, <sup>3</sup>Doctorado en Medicina Tropical, Grupo UNIMOL, Universidad de Cartagena, Cartagena, Colombia, <sup>4</sup>Grupo Inmunovirología, Universidad de Antioquia, Medellín, Colombia, <sup>5</sup>NGO Rayos de Sol, Asuncion, Paraguay, <sup>6</sup>Laboratorio de Salud Pública, Secretaría de Salud del Meta, Villavicencio, Colombia, <sup>7</sup>Centro de Enfermedades Tropicales, CENETROP, Santa Cruz, Plurinational State of Bolivia, <sup>8</sup>Centro de Salud Pachitea. Ministerio de Salud, Piura, Peru, <sup>9</sup>Centro Médico Militar, 32a Brigada de Infantería, Trujillo, Peru, <sup>10</sup>U.S. Naval Medical Research Unit No. 6 (NAMRU-6), Iquitos, Peru

1872

**STREPTOCOCCUS PNEUMONIAE COLONIZATION OF THE NASOPHARYNX IN MOTHER-INFANT PAIRS: A CROSS-SECTIONAL STUDY**

Dennis Gyasi Konadu<sup>1</sup>, Kaali Seyram<sup>1</sup>, Darby Jack<sup>2</sup>, Abena Konadu Yawson<sup>1</sup>, Louisa F. Iddrisu<sup>1</sup>, Zuwera Yidana<sup>1</sup>, Farrid Boadu<sup>1</sup>, Felix Boakyie Oppong<sup>1</sup>, Dennis Adu-Gyasi<sup>1</sup>, Steven Chillrud<sup>3</sup>, David K. Dosoo<sup>1</sup>, Patrick Kinney<sup>4</sup>, Kwaku Poku Asante<sup>1</sup>  
<sup>1</sup>Kintampo Health Research Centre, Kintampo, Ghana, <sup>2</sup>Columbia University Mailman School of Public Health, New York, NY, United States, <sup>3</sup>Lamont-Doherty Earth Observatory at Columbia University, Palisades, NY, United States, <sup>4</sup>Boston University School of Public Health, Boston, MA, United States

1873

**ETIOLOGY OF ACUTE RESPIRATORY INFECTIONS IN CHILDREN UNDER 5 YEARS OLD. RESULTS FROM AN ACTIVE COMMUNITY SURVEILLANCE AND PASSIVE HOSPITAL SURVEILLANCE IN LIMA, PERU**

Yeny O. Tinoco<sup>1</sup>, Candice Romero<sup>1</sup>, Felices Vidal<sup>1</sup>, Giselle Soto<sup>1</sup>, Maria Silva<sup>1</sup>, Danielle Iuliano<sup>2</sup>, Andrea J. McCoy<sup>1</sup>  
<sup>1</sup>Naval Medical Research Unit-6, Callao, Peru, <sup>2</sup>Centers for Disease Control and Prevention, Atlanta, GA, United States

1874

**EVALUATING COMMUNITY KNOWLEDGE OF TUBERCULOSIS AND ISONIAZID PREVENTATIVE THERAPY IN RURAL SOUTH AFRICA**

Carlo Foppiano Palacios<sup>1</sup>, Tejaswi Kompala<sup>2</sup>, Anthony Moll<sup>3</sup>, Laurie Andrews<sup>4</sup>, Sheela Sheno<sup>4</sup>  
<sup>1</sup>University of Maryland Medical Center, Baltimore, MD, United States, <sup>2</sup>University of California San Francisco, San Francisco, CA, United States, <sup>3</sup>Church of Scotland Hospital, Tugela Ferry, South Africa, <sup>4</sup>Yale University School of Medicine, New Haven, CT, United States

1875

**IMPROVED LATENT TUBERCULOSIS THERAPY COMPLETION RATES IN REFUGEE PATIENTS THROUGH USE OF A CLINICAL PHARMACIST**

Kimberly L. Carter<sup>1</sup>, Joseph Garland<sup>2</sup>  
<sup>1</sup>University of Pennsylvania, Philadelphia, PA, United States, <sup>2</sup>Alpert Medical School, Brown University, RI, United States

1876

**INFLUENZA AND OTHER RESPIRATORY PATHOGENS AMONG HOSPITALIZED CHILDREN IN PUBLIC HOSPITALS IN PERU**

Candice Romero<sup>1</sup>, Giselle Soto<sup>1</sup>, Isabel Bazan<sup>2</sup>, Wilma Casanova<sup>3</sup>, Hugo Rodriguez<sup>3</sup>, Roger Hernandez<sup>4</sup>, Yeny Tinoco<sup>1</sup>, Andrea Mc Coy<sup>1</sup>  
<sup>1</sup>U.S. Naval Medical Research Unit - 6, Lima, Peru, <sup>2</sup>U.S. Naval Medical Research Unit - 6, Iquitos - Loreto, Peru, <sup>3</sup>Universidad Nacional de la Amazonia Peruana, Iquitos- Loreto, Peru, <sup>4</sup>Hospital Nacional Cayetano Heredia, Lima, Peru

1877

**TOWARD A NANOTECHNOLOGY-BASED RAPID DIAGNOSTIC TEST FOR TUBERCULOSIS SCREENING IN LOW-RESOURCE SETTINGS**

Ruben Magni, Marissa Howard, Sara Sharif, Sameen Yusuf, Lance Liotta, Alessandra Luchini  
George Mason University, Manassas, VA, United States

1878

**EVALUATING THE RELATIONSHIP BETWEEN INTRODUCTION OF ACELLULAR PERTUSSIS VACCINE AND WHOOPING COUGH REEMERGENCE IN THE UNITED STATES**

Jeegan U. Parikh, Miguel Reina, Ricardo Izurieta  
College of Public Health, University of South Florida, Tampa, FL, United States

## Water, Sanitation, Hygiene and Environmental Health

1879

### DEVELOPMENT OF SUSTAINABLE WATER INFRASTRUCTURE FOR SCHISTOSOMIASIS CONTROL IN ETHIOPIA

Meseret Desalegn<sup>1</sup>, Feleke Zewge<sup>1</sup>, Muluwork Maru<sup>1</sup>, Laura Braun<sup>2</sup>, Michael R. Templeton<sup>2</sup>

<sup>1</sup>Addis Ababa University, Addis Ababa, Ethiopia, <sup>2</sup>Imperial College London, London, United Kingdom

1880

### EFFECTIVITY OF WASH/MALARIA EDUCATIONAL COMMUNITY-BASED INTERVENTION IN REDUCING ANEMIA AMONG PRESCHOOL CHILDREN FROM BENGU, ANGOLA

Claudia Fançonny, Ania Soares, Miguel Brito

CISA - Health Research Centre in Angola, Caxito, Angola

1881

### IMPACT OF WATER, SANITATION AND HYGIENE ON COMMUNITY-LEVEL INTESTINAL PARASITES IN ETHIOPIA: THE GESHIYARO PROJECT

Anna E. Phillips<sup>1</sup>, Kalkidan Mekete<sup>2</sup>, Alison Ower<sup>1</sup>, Ebba Abate<sup>2</sup>, Julia Dunn<sup>1</sup>, Heven Sime<sup>2</sup>, Gemechu Tadesse<sup>2</sup>, Roy Malcolm Anderson<sup>1</sup>

<sup>1</sup>Imperial College, London, United Kingdom, <sup>2</sup>Ethiopian Public Health Institute, Addis Ababa, Ethiopia

1882

### CHLORINE TABLETS FOR EMERGENCY HOUSEHOLD WATER TREATMENT: QUALITATIVE ASSESSMENT AND DEVELOPMENT OF TABLET SELECTION GUIDELINES

Marlene Wolfe, Brittany Mitro, Mateo Galeano, Mustafa Sikder, Karin Gallandat, Daniele Lantagne

Tufts University, Medford, MA, United States

1883

### SMALL INTESTINE BACTERIAL OVERGROWTH IS ASSOCIATED WITH LINEAR GROWTH DELAY IN A LONGITUDINAL ANALYSIS OF BANGLADESHI CHILDREN

Jeffrey Donowitz<sup>1</sup>, Zhen Pu<sup>2</sup>, Ye Lin<sup>2</sup>, Masud Alam<sup>3</sup>, Mamun Kabir<sup>3</sup>, Tahsin Ferdous<sup>3</sup>, Ayesha Zerim<sup>3</sup>, Uma Nayak<sup>2</sup>, Jennie Z. Ma<sup>2</sup>, Rashidul Haque<sup>3</sup>, William A. Petri<sup>2</sup>

<sup>1</sup>Virginia Commonwealth University, Richmond, VA, United States, <sup>2</sup>University of Virginia, Charlottesville, VA, United States, <sup>3</sup>International Centre for Diarrhoeal Disease Research, Bangladesh, Dhaka, Bangladesh

1884

### EVALUATING FETCHING TIME, WATER USAGE AND DIARRHEA PREVALENCE IN RURAL PIPED WATER SYSTEMS IN SOUTHERN ZAMBIA

James Winter<sup>1</sup>, Jennifer Davis<sup>2</sup>

<sup>1</sup>Stanford University, Palo Alto, CA, United States, <sup>2</sup>Stanford University, Stanford, CA, United States

1885

### SANITATION, PATHOGEN EXPOSURE AND CHILD OUTCOMES IN ADDIS ABABA, ETHIOPIA

Leon Espira<sup>1</sup>, Brook Gesesse<sup>2</sup>, Kaleab Baye<sup>2</sup>, Andrew Jones<sup>1</sup>, Nancy G. Love<sup>1</sup>, Joseph N. Eisenberg<sup>1</sup>

<sup>1</sup>University of Michigan, Ann Arbor, MI, United States, <sup>2</sup>Addis Ababa University, Addis Ababa, Ethiopia

1886

### ANALYSIS OF ENVIRONMENTAL PATTERNS AND LEPROSY IN MINAS GERAIS, BRAZIL USING SPATIAL AND TEMPORAL STATISTICS

Shaiana Oliveira-Streiff<sup>1</sup>, Uriel Kitron<sup>2</sup>, José A. Ferreira<sup>3</sup>, Maria A. de Faria Grossi<sup>3</sup>, Adauto C. Pugedo<sup>4</sup>, Maria do Carmo R. de Miranda<sup>4</sup>, Jessica K. Fairley<sup>5</sup>

<sup>1</sup>Emory Rollins School of Public Health, Atlanta, GA, United States, <sup>2</sup>Emory University, Atlanta, GA, United States, <sup>3</sup>Faculdade de Saude e Ecologia Humana, Vespasiano, Brazil, <sup>4</sup>Secretaria de Estado da Saúde de Minas Gerais, Belo Horizonte, Brazil, <sup>5</sup>Emory University School of Medicine, Atlanta, GA, United States

1887

### BEHAVIORAL AND ENVIRONMENTAL RISK FACTORS ASSOCIATED WITH NEONATAL SEPSIS IN UGANDAN HEALTHCARE FACILITIES

Habib Yakubu<sup>1</sup>, Richard Mugambe<sup>2</sup>, Constance Bwire<sup>2</sup>, Joanne McGriff<sup>1</sup>, Christine Moe<sup>1</sup>

<sup>1</sup>Emory University, Atlanta, GA, United States, <sup>2</sup>Makerere University, Kampala, Uganda

1888

### INVESTIGATING EXPOSURE TO HEAVY METALS AS A POTENTIAL ETIOLOGY OF MESOAMERICAN NEPHROPATHY, AN UNEXPLAINED EPIDEMIC KIDNEY DISEASE IN LATIN AMERICA

Rebecca S. Fischer<sup>1</sup>, Wayne Sanderson<sup>2</sup>, Max Costa<sup>3</sup>, Kristy O. Murray<sup>4</sup>

<sup>1</sup>Texas A&M University Health Science Center, College Station, TX, United States, <sup>2</sup>University of Kentucky, Lexington, KY, United States, <sup>3</sup>New York University, Environmental Medicine, Biochemistry and Molecular Pharmacology, Tuxedo, NY, United States, <sup>4</sup>Baylor College of Medicine, Tropical Medicine and Human Immunobiology, Houston, TX, United States

1889

### ENVIRONMENTAL CONTAMINATION WITH INTESTINAL PARASITES IN THE SOUTHERN USA

Christine C. Blackburn<sup>1</sup>, Macey Lively<sup>1</sup>, Catherine Flowers<sup>2</sup>, Nicholas L. Herrera<sup>3</sup>, Maria Jose Villar Mondragon<sup>3</sup>, Rojelio Mejia<sup>3</sup>

<sup>1</sup>Texas A and M, College Station, TX, United States, <sup>2</sup>Center for Rural Enterprise and Environmental Justice, Montgomery, AL, United States, <sup>3</sup>Baylor College of Medicine, Houston, TX, United States

(ACMCIP Abstract)

1890

### USEFULNESS OF LATERAL FLOW ASSAYS FOR RAPID ON-SITE TESTING FOR DETECTION OF BACTERIAL, VIRAL AND TOXIN AGENTS IN ENVIRONMENTAL SAMPLES

Kodumudi S. Venkateswaran, Thomas O'Brien, Neeraja Venkateswaran Tetracore Inc., Rockville, MD, United States

## Annual Business Meeting 132

### ASTMH Annual Business Meeting

*National Harbor 2 (National Harbor Level)*

Saturday, November 23, 12:15 p.m. - 1:15 p.m.

Open to all attendees! Come learn about the work ASTMH is doing on your behalf.

#### CHAIR

David R. Hill

*Quinnipiac University, Hamden, CT, United States*

Karen A. Goraeski

*American Society of Tropical Medicine and Hygiene, Arlington, VA, United States*

## Late-Breaker Abstract Session 133

### Late-Breakers in Malaria

*National Harbor 3 (National Harbor Level)*

Saturday, November 23, 12:15 p.m. - 1:30 p.m.

This session is specifically designed for brief presentations of new data obtained after the closing date for abstract submission. See the Meeting App or Late-Breaker Abstract Presentation Schedule booklet (available online) for the presentation schedule.

#### CHAIR

Carol H. Sibley

*University of Washington, Seattle, WA, United States*

## Meet the Professors 134

### Meet the Professors C: Enigmatic and Teaching Cases

*National Harbor 10 (National Harbor Level)*

Saturday, November 23, 12:15 p.m. - 1:30 p.m.

The professors will present interesting clinical case(s) of tropical diseases or relevant public health challenges that they have encountered over the course of their careers. The professors will discuss how their careers have developed, as an example to others. Students and trainees are especially encouraged to attend these interactive sessions, which are open to all meeting attendees.

#### CHAIR

David R. Boulware

*University of Minnesota, Minneapolis, MN, United States*

#### PRESENTER

Anne McCarthy

*Ottawa Hospital, Ottawa, ON, Canada*

## Poster Session C Viewing

*Prince George's Exhibit Hall D (Lower Atrium Level)*

Saturday, November 23, 1:45 p.m. - 4 p.m.

## Symposium 135

### PfSPZ-Based Vaccines: Progress Towards Licensure of a Vaccine for Malaria-Naïve and Malaria-Exposed Populations

*Maryland A (Ballroom Level)*

Saturday, November 23, 1:45 p.m. - 3:30 p.m.

This symposium will focus on the current research being done to support the licensure and deployment of PfSPZ-based vaccines. The International *Plasmodium falciparum* (Pf) Sporozoite (SPZ) Vaccine Consortium (I-PfSPZ-C), which includes more than 150 members from 35 organizations in 18 countries, is conducting studies of PfSPZ Vaccine (radiation-attenuated PfSPZ), PfSPZ-CVac (infectious PfSPZ with an antimalarial) and genetically attenuated PfSPZ vaccines. PfSPZ Vaccine is entering late-stage development and on target for Phase 3 testing and FDA/EU licensure. The vaccines will be used to prevent Pf malaria in travelers, including military, and for mass vaccination programs to halt transmission and facilitate eradication of Pf in endemic areas. Phase 1 and 2 clinical trials of PfSPZ Vaccine have been completed or are in progress in the United States, Germany, Tanzania, Kenya, Mali, Burkina Faso, Gabon, and Equatorial Guinea and will soon begin in Indonesia. A condensed immunization regimen of PfSPZ Vaccine for assessment in Phase 3 trials has now been identified. The presentations will include data on the safety, tolerability, immunogenicity and efficacy of condensed PfSPZ Vaccine regimens against homologous and heterologous CHMI and naturally acquired infection, ongoing Phase 2 trials in malaria-naïve and malaria-exposed individuals, plans for upcoming Phase 3 trials in Equatorial Guinea, the EU and the United States and research to increase the level and duration of protective efficacy.

#### CHAIR

Judith E. Epstein

*Naval Medical Research Center, Silver Spring, MD, United States*

Peter Gottfried Kremsner

*Institute of Tropical Medicine, UKT, Germany, Tübingen, Germany*

1:45 p.m.

#### **MOVING A HIGHLY PROTECTIVE CONDENSED REGIMEN OF PFSPZ VACCINE TO THE TARGET POPULATION: A RANDOMIZED, DOUBLE-BLIND PLACEBO-CONTROLLED PHASE 2 CLINICAL TRIAL IN GABONESE 1-12 YEAR OLDS**

Selidji T. Agnandji

*CERMEL, Lambaréné, Gabon*

2:05 p.m.

#### **RESULTS FROM THE REGIMEN OPTIMIZATION STUDY OF PFSPZ VACCINE IN HEALTHY EQUATORIAL-GUINEAN (EG) ADULTS AND PLANS FOR A PHASE 3 CLINICAL TRIAL IN EG**

Said A. Jongo

*Ifakara Health Institute, Dar es Salaam, United Republic of Tanzania*

2:25 p.m.

#### **DEVELOPMENT OF EFFICACIOUS CONDENSED REGIMENS FOR LICENSURE OF PFSPZ VACCINE IN THE EU AND U.S.**

Thomas L. Richie

*Sanaria Inc., Rockville, MD, United States*



2:45 p.m.

**HIGH LEVEL PROTECTION AGAINST HETEROLOGOUS CHMI AT 12 WEEKS BY PFSPZ C-VAC AND ASSESSMENT IN THE FIELD IN MALI**

Agnes Mwakingwe

*National Institutes of Health, Rockville, MD, United States*

3:05 p.m.

**DISCUSSION**

**Symposium 136**

**Updates and Challenges in Measuring Malaria Burden in the Era of Sustainable Development Goals**

*Maryland B (Ballroom Level)*

Saturday, November 23, 1:45 p.m. - 3:30 p.m.

Global malaria burden has declined significantly over the last two decades. However, the risk of a child dying of malaria before his or her fifth birthday remains unacceptably elevated in high burden countries (approximately 20/1000 live births in Nanoro, Burkina Faso). Improved assessments of malaria burden are crucial for control programs to monitor progress, identify at-risk populations, and allocate intervention resources to those most in need in order to meet sustainable development goals. This symposium will bring updates on how: i) global malaria burden is currently assessed, ii) novel source data and methodologies may improve global malaria burden estimation, iii) a better understanding of key drivers underlying malaria mortality may contribute to accelerating burden reduction. Quantitative assessment of malaria burden remains challenging in many areas as routine surveillance data suffer from important spatio-temporal biases, which can have substantial influences. Historically, the quality of data in the highest malaria burden countries has been weak. Therefore, to estimate the burden of malaria globally, the WHO has used various methods to adjust reported values or model estimates, leading to results that were at times controversial as they are informative. As surveillance systems improve, considerable opportunities have emerged for improving existing methods or developing new ones. In this symposium, the technical details and challenges of burden estimation methods used by the WHO and The Malaria Atlas Project (MAP) and a comprehensive plan on the way forward will be discussed. Local spatio-temporal patterns of burden (clinical incidence and mortality) must also be better understood in the context of factors inherent to the health systems, such as delivery and quality of care in order to innovate or improve existing burden reduction strategies in high burden countries. This symposium will present unique cross-cutting analyses between quality verbal autopsy data and clinical trial data obtained from Health and Demographic Surveillance Systems to highlight how malaria progresses from disease to death in Sub-Saharan Africa's health systems. Use cases for how these types of data can be drawn together for improving national and global burden estimation will be discussed.

**CHAIR**

Andre Lin Ouedraogo

*Institute for Disease Modeling, Bellevue, WA, United States*

Jaline Gerardin

*Northwestern University, Chicago, IL, United States*

1:45 p.m.

**HARNESSING THE POWER OF DATA ANALYTICS TO REDUCE MALARIA MORTALITY: EARLY PROGRESS ON THE HIGH BURDEN HIGH IMPACT INITIATIVE**

Abdisalan M. Noor

*World Health Organization, Geneva, Switzerland*

2:05 p.m.

**MAPPING MALARIA BURDEN AT GLOBAL, REGIONAL AND COUNTRY SCALES: DEVELOPING TOOLS FOR INTERVENTION TARGETING**

Katherine E. Battle

*University of Oxford, Oxford, United Kingdom*

2:25 p.m.

**NOVEL SPATIO-TEMPORAL DATA SOURCES TO BETTER INFORM GLOBAL MALARIA BURDEN ESTIMATIONS: EVIDENCE FROM THE NANORO HEALTH AND DEMOGRAPHIC SURVEILLANCE SYSTEM IN BURKINA FASO**

Innocent Valea

*Centre Muraz- Bobo-Dioulasso, Bobo-Dioulasso, Burkina Faso*

2:45 p.m.

**ACCELERATING OUR UNDERSTANDING OF UNDER 5 MALARIA MORTALITY TO INFORM BURDEN REDUCTION STRATEGIES**

Andre Lin Ouedraogo

*Institute for Disease Modeling, Bellevue, WA, United States*

3:05 p.m.

**DISCUSSION**

**Scientific Session 137**

**Malaria: New Drugs and New Insights on Old Drugs**

*Maryland C (Ballroom Level)*

Saturday, November 23, 1:45 p.m. - 3:30 p.m.

**CHAIR**

Chanaki Amaratunga

*Mahidol Oxford Tropical Medicine Research Unit, Bangkok, Thailand*

Mahamadou Diakite

*MRTC-USTTB, Bamako, Mali*

1:45 p.m.

1891

**APACT TRIAL: MULTICENTER THERAPEUTIC EFFICACY ASSESSMENT OF PYRONARIDINE-ARTESUNATE (PYRAMAX®) AND NEW DRUG COMBINATIONS WITH ATOVAQUONE-PROGUANIL FOR THE TREATMENT OF UNCOMPLICATED P. FALCIPARUM MALARIA IN CAMBODIA**

**Mariusz Wojnarski**<sup>1</sup>, Chanthap Lon<sup>1</sup>, Somethy Sok<sup>2</sup>, Darapiseth Sea<sup>1</sup>, Krisada Jongsakul<sup>1</sup>, Michele Spring<sup>1</sup>, Kimberly A. Edgel<sup>3</sup>, Nillawan Buathong<sup>1</sup>, Sabaithip Sriwichai<sup>1</sup>, Soklyda Chann<sup>1</sup>, Chandara Sok<sup>4</sup>, Nichapat Uthaimonkol<sup>1</sup>, Tyler Warkentien<sup>3</sup>, Catherine Berjohn<sup>3</sup>, Panita Gosi<sup>1</sup>, Nonlawat Boonyalai<sup>1</sup>, Piyaporn Saingam<sup>1</sup>, Chaiyaporn Chaisatit<sup>1</sup>, Pattaraporn Vanachayangkul<sup>1</sup>, Bertha Nyagaya-Wojnarski<sup>1</sup>, Kittijarankon Phontham<sup>1</sup>, Worachet Kuntawunginn<sup>1</sup>, Jessica Lin<sup>5</sup>, Shannon Takala-Harrison<sup>6</sup>, Dennis Faix<sup>3</sup>, Prom Satharath<sup>2</sup>, Jurgen Venitz<sup>7</sup>, Pascal Ringwald<sup>8</sup>, Rekol Huy<sup>9</sup>, Dysoley Lek<sup>9</sup>, Philip Smith<sup>1</sup>, John S. Brooks<sup>3</sup>, Nicholas J. Martin<sup>1</sup>, Mark Fukuda<sup>1</sup>, Norman Waters<sup>1</sup>  
<sup>1</sup>Armed Forces Research Institute of Medical Sciences, Bangkok, Thailand, <sup>2</sup>Ministry of National Defense, Department of Health, Phnom Penh, Cambodia, <sup>3</sup>Naval Medical Research Unit 2, Phnom Penh, Cambodia, <sup>4</sup>Armed Forces Research Institute of Medical Sciences, Phnom Penh, Cambodia, <sup>5</sup>University of North Carolina at Chapel Hill, Chapel Hill, NC, United States, <sup>6</sup>University of Maryland School of Medicine, Baltimore, MD, United States, <sup>7</sup>Virginia Commonwealth University, Richmond, VA, United States, <sup>8</sup>World Health Organization, Geneva, Switzerland, <sup>9</sup>National Center for Parasitology, Entomology and Malaria Control, Phnom Penh, Cambodia

2 p.m.

1892

**PYRONARIDINE-ARTESUNATE (PYRAMAX®) FOR THE TREATMENT OF PLASMODIUM VIVAX AND DIHYDROARTEMISININ-PIPERAQUINE RESISTANT FALCIPARUM MALARIA IN DAK NONG PROVINCE IN THE HIGHLANDS OF VIETNAM**

**Nguyen D. Manh**<sup>1</sup>, Marina Chavchich<sup>2</sup>, Nguyen N. San<sup>3</sup>, Huynh H. Quang<sup>4</sup>, Nguyen V. Thanh<sup>1</sup>, Nguyen T. Van<sup>1</sup>, Geoffrey W. Birrell<sup>2</sup>, Kimberly A. Edgel<sup>5</sup>, Nicholas W. Martin<sup>5</sup>, Michael D. Edstein<sup>2</sup>  
<sup>1</sup>Military Institute of Preventive Medicine, Hanoi, Vietnam, <sup>2</sup>Australian Defence Force Malaria and Infectious Disease Institute, Brisbane, Australia, <sup>3</sup>Hanoi Medical University, Hanoi, Vietnam, <sup>4</sup>Institute of Malariology, Parasitology and Entomology, Quy Nhon, Vietnam, <sup>5</sup>U.S. Naval Medical Research Unit - 2, Singapore, Singapore

2:15 p.m.

1893

**EMERGENCE OF ARTEMISININ-RESISTANT PLASMODIUM FALCIPARUM WITH KELCH13 C580Y MUTATIONS IN PAPUA NEW GUINEA**

**Olivo Miotto**<sup>1</sup>, Makoto Sekihara<sup>2</sup>, Shin-Ichiro Tachibana<sup>2</sup>, Masato Yamauchi<sup>2</sup>, Mie Ikeda<sup>2</sup>, Toshiyuki Mori<sup>2</sup>, Makoto Hirai<sup>2</sup>, Richard D. Pearson<sup>3</sup>, Roberto Amato<sup>4</sup>, Sonia Morgado Goncalves<sup>4</sup>, Rintis Noviyanti<sup>5</sup>, Jutta Marfurt<sup>6</sup>, Sarah Auburn<sup>6</sup>, Ric Price<sup>6</sup>, Ivo Mueller<sup>7</sup>, Alyssa Barry<sup>7</sup>, Moses Laman<sup>8</sup>, Livingstone Tavul<sup>8</sup>, Manuel Hetzel<sup>9</sup>, Pascal Ringwald<sup>10</sup>, Jun Ohashi<sup>11</sup>, Francis Hombhanje<sup>12</sup>, Dominic P. Kwiatkowski<sup>4</sup>, Toshihiro Mita<sup>2</sup>  
<sup>1</sup>MORU - University of Oxford, Bangkok, Thailand, <sup>2</sup>Juntendo University Faculty of Medicine, Tokyo, Japan, <sup>3</sup>University of Oxford, Oxford, United Kingdom, <sup>4</sup>Wellcome Sanger Institute, Hinxton, United Kingdom, <sup>5</sup>Eijkman Institute for Molecular Biology, Jakarta, Indonesia, <sup>6</sup>Menzies School of Health Research, Darwin, Australia, <sup>7</sup>Walter and Eliza Hall Institute of Medical Research, Melbourne, Australia, <sup>8</sup>Papua New Guinea Institute of Medical Research, Port Moresby, Papua New Guinea, <sup>9</sup>Swiss Tropical and Public Health Institute, Basel, Switzerland, <sup>10</sup>World Health Organization, Geneva, Switzerland, <sup>11</sup>University of Tokyo, Tokyo, Japan, <sup>12</sup>Divine Word University, Madang, Papua New Guinea

2:30 p.m.

1894

**A LONG-LASTING PROTECTION OF CHEMOPROPHYLAXIS IMPLANT AGAINST MALARIAL INFECTION**

**Hongxing Wang**<sup>1</sup>, Shuanghong Liang<sup>1</sup>, Yinzhou Fan<sup>1</sup>, Zhenping Huang<sup>2</sup>, Xiaoyi Huang<sup>1</sup>, Siting Zhao<sup>3</sup>, Li Qin<sup>2</sup>, Xiaoping Chen<sup>3</sup>  
<sup>1</sup>BlueLight Pharmatech. Co. LTD, Guangzhou, China, <sup>2</sup>CAS Lamvac Biotech Co., Guangzhou, China, <sup>3</sup>Guangzhou GIBH CAS, Guangzhou, China

2:45 p.m.

1895

**TRIPLE ARTEMISININ COMBINATION THERAPIES: A NEW PARADIGM FOR THE TREATMENT OF MALARIA?**

**Chanaki Amaratunga**<sup>1</sup>, Mehul Dhorda<sup>1</sup>, Rob van der Pluijm<sup>1</sup>, Joel Tarning<sup>1</sup>, Ricardo Aguas<sup>1</sup>, Maciej F. Boni<sup>2</sup>, Phaik Yeong Cheah<sup>1</sup>, Paulina Tindana<sup>3</sup>, Freek de Haan<sup>4</sup>, Wouter Boon<sup>4</sup>, Ellen H. Moors<sup>4</sup>, Katherine Plewes<sup>1</sup>, Rupam Tripura<sup>1</sup>, Nick P. Day<sup>1</sup>, Nick J. White<sup>1</sup>, Arjen M. Dondorp<sup>1</sup>  
<sup>1</sup>Mahidol Oxford Tropical Medicine Research Unit, Faculty of Tropical Medicine, Mahidol University, Bangkok, Thailand, <sup>2</sup>Center for Infectious Disease Dynamics, Department of Biology, Pennsylvania State University, University Park, PA, United States, <sup>3</sup>School of Public Health, College of Health Sciences, University of Ghana, Accra, Ghana, <sup>4</sup>Innovation Studies, Copernicus Institute of Sustainable Development, Utrecht University, Utrecht, Netherlands

3 p.m.

1896

**EFFECT OF ARTEMISININ ON THE SEXUAL CONVERSION OF PLASMODIUM FALCIPARUM**

**Harvie P. Portugaliza**<sup>1</sup>, Anna Rosanas-Urgell<sup>2</sup>, Alfred Cortés<sup>1</sup>  
<sup>1</sup>ISGlobal - University of Barcelona, Barcelona, Spain, <sup>2</sup>Institute of Tropical Medicine, Antwerp, Belgium  
**(ACMCIP Abstract)**

3:15 p.m.

1897

**TRANSMISSION-BLOCKING EFFECTS OF PRIMAQUINE AND METHYLENE BLUE SUGGEST P. FALCIPARUM GAMETOCYTE STERILIZATION RATHER THAN EFFECTS ON SEX RATIO**

**John Bradley**<sup>1</sup>, Harouna Soumare<sup>2</sup>, Michelle Roh<sup>3</sup>, Michael Delves<sup>1</sup>, Chris Drakeley<sup>1</sup>, Thomas S. Churcher<sup>4</sup>, Alassane Dicko<sup>2</sup>, Roly Gosling<sup>3</sup>, Teun Bousema<sup>5</sup>  
<sup>1</sup>London School of Hygiene & Tropical Medicine, London, United Kingdom, <sup>2</sup>University of Science, Techniques and Technologies, Bamako, Mali, <sup>3</sup>University of California, San Francisco, CA, United States, <sup>4</sup>Imperial College, London, United Kingdom, <sup>5</sup>Radboud University, Nijmegen, Netherlands

**Symposium 138**

**Ebola in the Democratic Republic of the Congo: The Perfect Public Health Storm**

Maryland D (Ballroom Level)  
Saturday, November 23, 1:45 p.m. - 3:30 p.m.

The second largest outbreak of Ebola virus disease on record continues in eastern Democratic Republic of the Congo (DRC) with over 3000 cases and 2000 deaths (case fatality 67%). Despite tremendous efforts on the part of the DRC Ministry of Health, National Institute for Biomedical Research, World Health Organisation, and a host of national and international partners, the outbreak persists now for over a year. Physical insecurity in the region, a complex cultural and political environment, and ineffective messaging and community engagement on Ebola virus disease have all presented major challenges. In this symposium, leaders in the fight against Ebola in the DRC over the last year will discuss the challenges and successes in controlling this “perfect public health storm.”

**CHAIR**

William Fischer  
University of North Carolina, Chapel Hill, NC, United States  
Anne Rimoin  
Center for Global and Immigrant Health, University of California Los Angeles-DRC Health Research and Training Program, Los Angeles, CA, United States

1:45 p.m.

## ORGANIZING AND IMPLEMENTING THE RESPONSE

Soce Fall

World Health Organization, Geneva, Switzerland

2:05 p.m.

## EPIDEMIOLOGY AND SURVEILLANCE

Olivier le Polain

United Kingdom Public Health Rapid Support Team, London, United Kingdom

2:25 p.m.

## SOCIAL MOBILIZATION

Speaker To Be Announced

2:45 p.m.

## THERAPEUTICS: THE PALM STUDY

Mulangu Sabue

National Institute for Biomedical Research, Kinshasa, Democratic Republic of the Congo

3:05 p.m.

## VACCINATIONS

Daniel G. Bausch

UK Public Health Rapid Support Team, London, United Kingdom

## Scientific Session 139

### Zika I

Potomac A (Ballroom Level)

Saturday, November 23, 1:45 p.m. - 3:30 p.m.

#### CHAIR

Aaron C. Brault

Centers for Disease Control and Prevention, Fort Collins, CO, United States

Chelsea Marie Crooks

University of Wisconsin-Madison, Madison, WI, United States

1:45 p.m.

1898

## THE ROLE OF IP-10 AND CXCR3 SIGNALING IN ZIKA VIRUS PROSTATE CELL INFECTION

Jennifer L.S. Clinton, Linda L. Tran, Megan B. Vogt, David R. Rowley, Jason T.

Kimata, Rebecca R. Rico-Hesse

Baylor College of Medicine, Houston, TX, United States

2 p.m.

1899

## A POINT MUTATION BETWEEN ASIAN AND AFRICAN LINEAGE ZIKA VIRUSES AUGMENTS MOSQUITO INFECTIVITY

Emily Gallichotte<sup>1</sup>, Reyes Murrieta<sup>1</sup>, Eric Bellis<sup>1</sup>, Thomas Friedrich<sup>2</sup>, Matthew Aliota<sup>3</sup>, Gregory Ebel<sup>1</sup>

<sup>1</sup>Colorado State University, Fort Collins, CO, United States, <sup>2</sup>University of Wisconsin, Madison, WI, United States, <sup>3</sup>University of Minnesota, St Paul, MN, United States

2:15 p.m.

1900

## STRUCTURAL PROTEINS (PRME) DICTATE SEXUAL TRANSMISSION POTENTIAL OF ZIKV AND SPONV IN AN *IN VITRO* EPIDIDYMAL EPITHELIAL CELL MODEL

Erin M. McDonald, Aaron C. Brault

Centers for Disease Control and Prevention, Fort Collins, CO, United States

2:30 p.m.

1901

## AFRICAN-LINEAGE ZIKA VIRUS CAUSES PLACENTAL PATHOLOGY IN PREGNANT RHESUS MACAQUES

Chelsea M. Crooks<sup>1</sup>, Anna S. Jaeger<sup>2</sup>, Andrea M. Weiler<sup>3</sup>, Sierra L. Rybarczyk<sup>3</sup>, Mason I. Bliss<sup>3</sup>, Elizabeth A. Brown<sup>1</sup>, Heather A. Simmons<sup>3</sup>, Jennifer M. Hayes<sup>3</sup>, Andres Mejia<sup>2</sup>, Keisuke Yamamoto<sup>4</sup>, Phoenix Shepherd<sup>4</sup>, Megan E. Murphy<sup>5</sup>, Thaddeus G. Golos<sup>5</sup>, Amber Possell<sup>3</sup>, Kara Weaver<sup>3</sup>, Terry K. Morgan<sup>6</sup>, Dawn M. Dudley<sup>4</sup>, Nancy Schultz-Darken<sup>3</sup>, Eric Peterson<sup>3</sup>, David H. O'Connor<sup>4</sup>, Matthew T. Aliota<sup>2</sup>, Thomas C. Friedrich<sup>1</sup>

<sup>1</sup>Department of Pathobiological Sciences, University of Wisconsin-Madison, Madison, WI, United States, <sup>2</sup>Department of Veterinary and Biomedical Sciences, University of Minnesota, St. Paul, MN, United States, <sup>3</sup>Wisconsin National Primate Research Center, University of Wisconsin-Madison, Madison, WI, United States, <sup>4</sup>Department of Pathology and Laboratory Medicine, University of Wisconsin-Madison, Madison, WI, United States, <sup>5</sup>Department of Comparative Biosciences, University of Wisconsin-Madison, Madison, WI, United States, <sup>6</sup>Departments of Pathology and Obstetrics and Gynecology, Oregon Health Sciences University, Portland, OR, United States

2:45 p.m.

1902

## IMPACT OF ZIKA VIRUS EVOLUTION ON MOSQUITO TRANSMISSION DURING THE EPIDEMIC IN THE AMERICAS

Chantal B. Vogels<sup>1</sup>, Glenn Oliveira<sup>2</sup>, Sharada Saraf<sup>2</sup>, Carlos Ontiveros<sup>2</sup>, Rimjhim Agarwal<sup>2</sup>, Raphaëlle Klitting<sup>2</sup>, Joseph R. Fauver<sup>1</sup>, Anderson F. Brito<sup>1</sup>, Emma Allen<sup>1</sup>, James Weger-Lucarelli<sup>3</sup>, Gregory D. Ebel<sup>4</sup>, Kristian G. Andersen<sup>2</sup>, Nathan D. Grubaugh<sup>1</sup>

<sup>1</sup>Yale School of Public Health, New Haven, CT, United States, <sup>2</sup>The Scripps Research Institute, La Jolla, CA, United States, <sup>3</sup>Virginia Polytechnic Institute and State University, Blacksburg, VA, United States, <sup>4</sup>Colorado State University, Fort Collins, CO, United States

3 p.m.

1903

## CHARACTERIZING THE IMMUNE RESPONSE TO ZIKA VIRUS USING EPI TOPE MAPPING, REPORTER VIRUS PARTICLES AND ANTI-ZIKV ANTIBODIES

Edgar Davidson<sup>1</sup>, Chuck Whitbeck<sup>1</sup>, Anu Thomas<sup>1</sup>, Aubrey L. Bryan<sup>1</sup>, Tabb Sullivan<sup>1</sup>, Lewis J. Stafford<sup>1</sup>, Ross Chambers<sup>1</sup>, Michael G. Rossmann<sup>2</sup>, James E. Crowe Jr.<sup>3</sup>, Benjamin J. Doranz<sup>1</sup>

<sup>1</sup>Integral Molecular, Inc., Philadelphia, PA, United States, <sup>2</sup>Department of Biological Sciences, Purdue University, West Lafayette, IN, United States, <sup>3</sup>Departments of Pathology, Microbiology and Immunology, Vanderbilt University, Nashville, TN, United States

3:15 p.m.

1904

## CD8+ LYMPHOCYTES MODULATE ZIKA VIRUS DYNAMICS AND TISSUE DISSEMINATION AND ORCHESTRATE ANTIVIRAL IMMUNITY

Blake Schouest<sup>1</sup>, Marissa Fahlberg<sup>1</sup>, Elizabeth A. Scheef<sup>1</sup>, Matthew J. Ward<sup>2</sup>, Kyra Headrick<sup>2</sup>, Dawn M. Szeltner<sup>1</sup>, Robert V. Blair<sup>1</sup>, Margaret H. Gilbert<sup>1</sup>, Lara A. Doyle-Meyers<sup>1</sup>, Victoria W. Danner<sup>1</sup>, Dawn M. Wesson<sup>2</sup>, Antonito T. Panganiban<sup>1</sup>, Nicholas J. Maness<sup>1</sup>

<sup>1</sup>Tulane National Primate Research Center, Covington, LA, United States, <sup>2</sup>Tulane School of Public Health and Tropical Medicine, New Orleans, LA, United States

## Symposium 140

### The Development and Implementation of Smartphone Applications for Vector-Borne Disease Research and Control: Lessons Learned and New Insights

*Potomac B (Ballroom Level)*

Saturday, November 23, 1:45 p.m. - 3:30 p.m.

The ubiquity of smartphones in the adult population provides a unique opportunity to share and gather information about health and disease. Mobile health technologies, mHealth for short, is becoming an important part of healthcare and is changing the way in which citizens consume health information and communicate with health organizations and health professionals. It allows citizens to access a health service where they need it and when they need it. In the context of public health, mHealth is particularly suited for patient education, disease self-management and remote monitoring of patients. Moreover, the use of mHealth technologies can take advantage of smartphone features to turn them into research tools with the potential to reach a larger section of the population in a cost-effective manner compared to traditional epidemiological interventions. They can transform survey instruments into high-frequency (fine temporal resolution), spatially-resolved data collection tools. Particularly, the widespread use of smartphone applications can be thought as a two-way communication tool between affected users and researchers. However, although their use has been widely implemented in behavioral studies, their potential use in the research of vector-borne diseases has been overlooked. This symposium will provide a unique insight in the development of health-related research applications for vector-borne diseases. The session will provide four examples of smartphone applications which have been developed for different vector-borne diseases (*Aedes aegypti*-borne diseases, Chagas disease and tick-borne diseases) and implemented in different settings (Latin America and United States). The symposium discussion will center around the lessons learned from the development and implementation of these smartphone applications, the barriers encountered, potential solutions and advantages provided by mHealth for epidemiological research and public health interventions.

#### CHAIR

Lyric Bartholomay  
*University of Wisconsin-Madison, Madison, WI, United States*

Maria Pilar Fernandez  
*Columbia University, New York, NY, United States*

1:45 p.m.

### KIDENGA: CHALLENGES AND OPPORTUNITIES IN MOBILE COMMUNITY-BASED SURVEILLANCE AND OUTREACH

Kacey C. Ernst  
*University of Arizona, Tucson, AZ, United States*

2:05 p.m.

### GEOVIN - AN INNOVATIVE CITIZEN SCIENCE PROJECT TO LEARN ABOUT ARGENTINIAN KISSING BUGS

Soledad Ceccarelli  
*CEPAVE, Universidad de La Plata, La Plata, Argentina*

2:25 p.m.

### RISK MAPS, APPS AND INCENTIVES: EXPERIMENTS TOWARDS IMPROVING ACTIVE SURVEILLANCE FOR *TRIATOMA INFESTANS* IN AREQUIPA, PERU

Michael Levy  
*University of Pennsylvania, Philadelphia, PA, United States*

2:45 p.m.

### THE TICK APP - UNDERSTANDING BEHAVIORAL RISK FACTORS OF HUMAN-TICK ENCOUNTERS

Gebbienna M. Bron  
*University of Wisconsin - Madison, Madison, WI, United States*

3:05 p.m.

### DISCUSSION

## Symposium 141

### African-Led Perspectives on Programmatic Challenges to Malaria Elimination

*Potomac C (Ballroom Level)*

Saturday, November 23, 1:45 p.m. - 3:30 p.m.

Malaria infection is still one of the major causes of deaths in populations of the African continent. The global tally of malaria deaths lingers around 400,000-500,000 deaths annually. Since 2000, the incidence of malaria has reduced by 17% and mortality rates by 26%, giving hopes for a possible control towards elimination. Although malaria case incidence has fallen globally since 2010, the rate of decline has stalled and even reversed in some regions. Mortality rates have followed a similar pattern. National Malaria Programs and researchers still battle a plethora of challenges ranging from case management, transmission dynamics, insecticide and drug resistance, requiring innovative approaches. Presumptive treatment is still syndromic in most health establishments. Treatment is frequently interrupted by drug stock outs and systemic dysfunctions of the health sector. With the known 450 *Anopheles species*, of which 60 can potentially transmit malaria, resistance to insecticides has become a worrisome undertaking for malaria control programs in the face of other control program difficulties of effective interventions and environmental hygiene. Besides there is great genetic diversity and a changing epidemiology of resistant parasite populations. The malaria control programs manage these bottle necks amid weak health systems and are still faced with malaria case management inadequacies and poor mass drug administration. Combination options such as with drugs and vaccines or the identification of the anopheline metabolic resistance biomarker in Cameroon, may provide new insights into control efforts. These innovations, in addition to other solutions to overcome programmatic challenges, is being debated as an African-led leadership approach towards malaria elimination. The goal of this symposium is to provide African research leaders' perspectives on challenges and ways to circumvent programmatic challenges for malaria elimination. The specific objectives are: i) to demonstrate the importance of a holistic approach to malaria elimination in Africa; ii) to outline the challenges encountered by National Malaria Control Programs in Africa in vector control, parasite resistance amid mass drug administration, and programmatic related issues; and iii) to propose solutions and directions for further consideration in interventions towards malaria elimination.



## CHAIR

Rose F. Leke

*The Multilateral Initiative on Malaria, Yaounde, Cameroon*

Wilfred Fon Mbacham

*The Multilateral Initiative on Malaria, Yaounde, Cameroon*

1:45 p.m.

### **MALARIA CASE MANAGEMENT: PUBLIC AND PRIVATE SECTORS**

Marielle K. Bouyou-Akotet

*Université des Sciences de la Santé, Libreville, Gabon*

2 p.m.

### **TOOLS FOR MALARIA ELIMINATION: VACCINE AND COMBINATION APPROACHES**

Abdoulaye Djimde

*University of Science, Techniques and Technologies of Bamako, Bamako, Mali*

2:15 p.m.

### **VECTOR CONTROL AND THE EMERGENCE OF RESISTANCE**

Charles S. Wondji

*Liverpool School of Tropical Medicine, Liverpool, United Kingdom*

2:30 p.m.

### **MALARIA ELIMINATION WITHIN A UNIVERSAL HEALTH COVERAGE**

Oumar Gaye

*Université Cheikh Anta Diop, Dakar, Senegal*

2:45 p.m.

### **DISCUSSION**

## **Symposium 142**

### **HIV and Neglected Tropical Disease Co-Infections: Epidemiology and Clinical Features of Important Protozoa and Helminths**

*Potomac D (Ballroom Level)*

Saturday, November 23, 1:45 p.m. - 3:30 p.m.

A large number of co-infections, including tuberculosis and endemic mycoses, are known to complicate the clinical course of HIV infection due to impaired immunological responses. Interactions between HIV and tropical protozoal and helminthic infections are less well understood, and the immunological mechanisms underlying control of these infections are distinct. Tropical protozoal and helminthic infections pose interesting challenges in HIV-infected populations due to significant geographic overlap of regions with high burdens of HIV and neglected tropical diseases. Some tropical protozoal and helminthic infections have been shown to alter patient susceptibility to HIV infection, alter HIV viral loads and transmissibility, and to alter the clinical course of HIV disease. Conversely, HIV infection can have significant impacts on the spread, clinical course, response to therapy, and outcomes of tropical infections. This symposium will highlight specific epidemiological, immunological, diagnostic clinical, and treatment considerations in HIV and tropical co-infections. This symposium will be structured around in-depth discussion of two important tropical protozoal co-infections: visceral leishmaniasis (VL) and malaria, as well as a variety of tropical helminthic infections, including schistosomiasis, strongyloides, hookworm and cestodes. VL co-infection with HIV has been increasing in a number of regions

of the world. VL has been shown to speed the progression of HIV disease, and HIV coinfection leads to increased difficulty in diagnosis, higher rates of treatment failure and relapse, and higher mortality from VL. Malaria has been shown to have bidirectional and synergistic interactions with HIV, including more clinically apparent and severe malarial disease in HIV-infected patients, more severe anemia in co-infection, and more rapid progression of HIV in the setting of infection with malaria. Schistosomiasis has been shown to significantly increase risk of HIV infection in women and to be associated with higher viral load set points. At the same time, a number of studies also suggest that some helminthic infections may have immunological effects that slow the progression of HIV. HIV has also been found to be associated with increased rates of helminthic infection, can modify the clinical characteristics of a number of helminthic infections, including strongyloidiasis and neurocysticercosis, and can have synergistic interactions, including higher rates of anemia in hookworm infection. This symposium will discuss the evidence for both the effects of helminthic infections on HIV, and the effects of HIV on the clinical manifestations of tropical helminth infections.

## CHAIR

John Donald Cahill

*Icahn School of Medicine at Mount Sinai, New York, NY, United States*

Benjamin A. Wyler

*Mount Sinai School of Medicine, New York, NY, United States*

1:45 p.m.

### **HIV AND MALARIA CO-INFECTION**

Denasha Reddy

*Chris Hani Baragwanath Academic Hospital, Johannesburg, South Africa*

2:05 p.m.

### **HIV AND VISCERAL LEISHMANIASIS**

John Cahill

*Icahn School of Medicine at Mount Sinai, New York, NY, United States*

2:25 p.m.

### **HOW DOES HIV IMPACT HELMINTHIC INFECTIONS**

Maria Mileno

*Warren Alpert Medical School of Brown University, Providence, RI, United States*

2:45 p.m.

### **HOW DO HELMINTHIC INFECTIONS IMPACT HIV PROGRESSION AND TRANSMISSION**

Benjamin A. Wyler

*Mount Sinai School of Medicine, New York, NY, United States*

3:05 p.m.

### **DISCUSSION**

## Scientific Session 143

### Water, Sanitation, Hygiene and Environmental Health (WaSH-E): Transmission and Exposure

National Harbor 2 (National Harbor Level)

Saturday, November 23, 1:45 p.m. - 3:30 p.m.

#### CHAIR

David Berendes

Centers for Disease Control and Prevention, Atlanta, GA, United States

Christine Moe

Emory University, Atlanta, GA, United States

1:45 p.m.

1905

#### A LOCALIZED SANITARY SURVEY AS A PROXY FOR FECAL CONTAMINATION IN LOW-INCOME URBAN MAPUTO, MOZAMBIQUE

Drew Capone<sup>1</sup>, David Berendes<sup>2</sup>, David Holcomb<sup>3</sup>, Jackie Knee<sup>1</sup>, Joe Brown<sup>1</sup>

<sup>1</sup>Georgia Institute of Technology, Atlanta, GA, United States, <sup>2</sup>Centers for Disease Control and Prevention, Atlanta, GA, United States, <sup>3</sup>University of North Carolina at Chapel Hill, Chapel Hill, NC, United States

2 p.m.

1906

#### EXPLORING THE POTENTIAL RELATIONSHIP BETWEEN FECAL EXPOSURE PATHWAYS AND SYMPTOMATIC AND ASYMPTOMATIC ENTERIC INFECTIONS IN CHILDREN IN AN URBAN ENVIRONMENT IN VELLORE, INDIA

Yuke Wang<sup>1</sup>, Sydney Hubbard<sup>1</sup>, Gagandeep Kang<sup>2</sup>, Suraja Raj<sup>1</sup>, Habib Yakubu<sup>1</sup>, Arun Karthikeyan<sup>2</sup>, Senthil Kumar<sup>2</sup>, Venkata R. Mohan<sup>2</sup>, Christine Moe<sup>1</sup>

<sup>1</sup>Emory University, Atlanta, GA, United States, <sup>2</sup>Christian Medical College of Vellore, India, Vellore, India

2:15 p.m.

1907

#### TRACKING TRANSMISSION SOURCES OF DIARRHEA: AN INVESTIGATION ON DIARRHEAGENIC *ESCHERICHIA COLI* IN URBAN HOUSEHOLDS OF BANGLADESH

Zenat Zebin Hossain<sup>1</sup>, Rokaia Sultana<sup>1</sup>, Anowara Begum<sup>1</sup>, Peter Kjær Jensen<sup>2</sup>

<sup>1</sup>University of Dhaka, Dhaka, Bangladesh, <sup>2</sup>University of Copenhagen, Copenhagen, Denmark

2:30 p.m.

1908

#### WATER, SANITATION, AND ANIMAL-SPECIFIC RISK FACTORS FOR MODERATE-TO-SEVERE DIARRHEA IN YOUNG CHILDREN IN THE VACCINE IMPACT ON DIARRHEA IN AFRICA (VIDA) STUDY—THE GAMBIA, KENYA, AND MALI, 2015-2018

David Berendes<sup>1</sup>, Kirsten Fagerli<sup>1</sup>, Sunkyoung Kim<sup>1</sup>, Dilruba Nasrin<sup>2</sup>, Helen Powell<sup>2</sup>, Irene Kasumba<sup>2</sup>, Sharon Tennant<sup>2</sup>, Anna Roose<sup>2</sup>, M. Jahangir Hossain<sup>3</sup>, Joquina Chiquita M. Jones<sup>3</sup>, Syed MA Zaman<sup>3</sup>, Richard Omoro<sup>4</sup>, Ben Ochieng<sup>4</sup>, Jennifer Verani<sup>5</sup>, Marc-Alain Widdowson<sup>5</sup>, Samba Sow<sup>2</sup>, Dramane Malle<sup>6</sup>, Sanogo Doh<sup>6</sup>, Eric Mintz<sup>1</sup>, Karen Kotloff<sup>2</sup>

<sup>1</sup>Division of Foodborne, Waterborne, and Environmental Diseases, Centers for Disease Control and Prevention, Atlanta, GA, United States, <sup>2</sup>Center for Vaccine Development and Global Health, University of Maryland School of Medicine, Baltimore, MD, United States, <sup>3</sup>Medical Research Council Unit, The Gambia, Bakau, Gambia, <sup>4</sup>Kenya Medical Research Institute, Kisumu, Kenya, <sup>5</sup>Division of Global Health Protection, Centers for Disease Control and Prevention, Nairobi, Kenya, <sup>6</sup>Center for Vaccine Development-Mali, Bamako, Mali

2:45 p.m.

1909

#### AN INDIVIDUAL PARTICIPANT DATA META-ANALYSIS ON THE ASSOCIATION BETWEEN ENVIRONMENTAL FECAL CONTAMINATION AND CHILD HEALTH

Frederick G. Goddard<sup>1</sup>, Amy J. Pickering<sup>2</sup>, Ayse Ercumen<sup>3</sup>, Joe Brown<sup>4</sup>, Howard H. Chang<sup>1</sup>, Thomas F. Clasen<sup>1</sup>

<sup>1</sup>Emory University, Atlanta, GA, United States, <sup>2</sup>Tufts University, Boston, MA, United States, <sup>3</sup>North Carolina State University, Raleigh, NC, United States, <sup>4</sup>Georgia Institute of Technology, Atlanta, GA, United States

3 p.m.

1910

#### ENVIRONMENTAL PATHOGEN SURVEILLANCE OF WASTEWATER: TIME-VARYING VIRAL SHEDDING INTENSITY IN THE 2013 SILENT POLIO OUTBREAK IN ISRAEL

Andrew F. Brouwer, Joseph N. Eisenberg, James S. Koopman, Lester M. Shulman, Marisa C. Eisenberg

University of Michigan, Ann Arbor, MI, United States

3:15 p.m.

1911

#### ASSOCIATION BETWEEN GASTROINTESTINAL DISEASE IN CHILDREN AND WASTEWATER AGRICULTURAL IRRIGATION IN VALLE DEL MEZQUITAL, MÉXICO

Eunice Elizabeth Félix-Arellano<sup>1</sup>, Sandra Leticia Rodríguez-Dozal<sup>1</sup>, Jesse Contreras<sup>2</sup>, Rafael Meza<sup>2</sup>, Joseph N.S. Eisenberg<sup>2</sup>, Horacio Riojas-Rodríguez<sup>1</sup>

<sup>1</sup>National Institute of Public Health, Cuernavaca, Mexico, <sup>2</sup>University of Michigan, Ann Arbor, MI, United States

## Scientific Session 144

### Mosquitoes: Insecticide Resistance and Control I

National Harbor 3 (National Harbor Level)

Saturday, November 23, 1:45 p.m. - 3:30 p.m.

#### CHAIR

Solomon Kibret

University of California Irvine, Irvine, CA, United States

Stephanie J. Mundis

University of Florida, Gainesville, FL, United States

1:45 p.m.

1912

#### EXPLORING THE EFFECTS OF NEXT-GENERATION NETS ON HIGHLY PYRETHROID-RESISTANT *AN. COLUZZII* MOSQUITOES USING BENCHTOP BEHAVIOR ASSAYS

Natalie Lissenden, Jeff Jones, Hilary Ranson, Philip J. McCall

Liverpool School of Tropical Medicine, Liverpool, United Kingdom

2 p.m.

1913

#### PYRIPROXYFEN REDUCES FECUNDITY IN *ANOPHELES ARABIENSIS*: A NEW POTENTIAL TOOL FOR MALARIA CONTROL IN ETHIOPIA

Solomon Kibret<sup>1</sup>, Delenasaw Yewhalaw<sup>2</sup>, Guofa Zhou<sup>1</sup>, Guiyun Yan<sup>1</sup>

<sup>1</sup>University of California Irvine, Irvine, CA, United States, <sup>2</sup>Tropical and Infectious Diseases Research Center, Jimma University, Jimma, Ethiopia

2:15 p.m.

1914

**ENTOMOLOGICAL EVALUATION OF INDOOR RESIDUAL SPRAYING (PYRIMIPHOS-METHYL) ON MALARIA TRANSMISSION IN DIEBOUGOU DISTRICT, SOUTHWEST BURKINA FASO**

**Dieudonne Diloma Soma**<sup>1</sup>, Jacques Edou Gnambani<sup>1</sup>, Georges Anicet Ouedraogo<sup>2</sup>, Alphonsine Koffi<sup>3</sup>, Cedric Pennetier<sup>4</sup>, Roch K. Dabire<sup>1</sup>, Nicolas Moiroux<sup>4</sup>  
<sup>1</sup>Institut de Recherche en Sciences de la Sante, Bobo-Dioulasso, Burkina Faso, <sup>2</sup>Université Nazi Boni, Bobo-Dioulasso, Burkina Faso, <sup>3</sup>Institut Pierre Richet, Bouake, Côte D'Ivoire, <sup>4</sup>MIVEGEC, IRD, CNRS, University Montpellier, Montpellier, France

2:30 p.m.

1915

**FEEDING AND RESTING BEHAVIOR OF AN. GAMBIAE S.L. IN AREAS GETTING INDOOR RESIDUAL SPRAYING FOR MALARIA VECTOR CONTROL AND AREAS NOT SPRAYED IN NORTHERN GHANA**

**Sylvester Coleman**<sup>1</sup>, Samuel K. Dadzie<sup>2</sup>, Yemane Yihdego<sup>1</sup>, Frank Gyamfi<sup>1</sup>, Lena Kolyada<sup>1</sup>, Dereje Dengela<sup>3</sup>, Aklilu Seyoum<sup>3</sup>, Jon Eric Tongren<sup>4</sup>, Sixte Zigirumugabe<sup>5</sup>, Dominic Dery<sup>5</sup>, Kristen George<sup>6</sup>, Jennifer Armistead<sup>6</sup>, Maxwell Appawu<sup>2</sup>, Kingsley Badu<sup>7</sup>, Kwasi Obiri-Danso<sup>7</sup>, Daniel Boakye<sup>2</sup>, Daniel Szumlas<sup>8</sup>  
<sup>1</sup>U.S. President's Malaria Initiative Vectorlink Project, Accra, Ghana, <sup>2</sup>Noguchi Memorial Institute for Medical Research, University of Ghana, Legon, Accra, Ghana, <sup>3</sup>U.S. President's Malaria Initiative Vectorlink Project, Abt Associates Inc., Bethesda, MD, United States, <sup>4</sup>U.S. President's Malaria Initiative, Malaria Branch, U.S. Centers for Disease Control and Prevention, Accra, Ghana, <sup>5</sup>U.S. President's Malaria Initiative, U.S. Agency for International Development, Accra, Ghana, <sup>6</sup>U.S. President's Malaria Initiative, U.S. Agency for International Development, Washington, DC, United States, <sup>7</sup>Department of Theoretical and Applied Biology, Kwame Nkrumah University of Science and Technology, Kumasi, Ghana, <sup>8</sup>Armed Forces Pest Management Board, Silver Spring, MD, United States

2:45 p.m.

1916

**THE IMPORTANCE OF COPY NUMBER VARIATION IN METABOLIC INSECTICIDE RESISTANCE IN ANOPHELES GAMBIAE**

**Lizzie Bridget Tchongwe**<sup>1</sup>, Eric Lucas<sup>2</sup>, Martin Donnelly<sup>2</sup>  
<sup>1</sup>Malawi Liverpool Wellcome Trust, Blantyre, Malawi, <sup>2</sup>Liverpool School of Tropical Medicine, Liverpool, United Kingdom

(ACMCIP Abstract)

3 p.m.

1917

**USE OF GRAVID OVIPOSITION STICKY (GOS) TRAP AND DENGUE NON-STRUCTURAL 1 (NS1) ANTIGEN TEST FOR EARLY SURVEILLANCE OF DENGUE AMONG AEADES MOSQUITOES TO REDUCE DENGUE OUTBREAK**

**Jonathan Wee Kent Liew**, Sivaneswari Selvarajoo, Wing Tan, Indra Vythilingam  
University of Malaya, Kuala Lumpur, Malaysia

3:15 p.m.

1918

**APPLICATION OF SPATIAL ANALYSIS METHODS TO IDENTIFY AND EXPLAIN INSECTICIDE RESISTANT CLUSTERS OF AEADES AEGYPTI MOSQUITOES IN FLORIDA**

**Stephanie J. Mundis**  
University of Florida, Gainesville, FL, United States

**Scientific Session 145**

**Bacteriology: Typhoid/Shigella/E. coli**

National Harbor 4/5 (National Harbor Level)  
Saturday, November 23, 1:45 p.m. - 3:30 p.m.

**CHAIR**

Kurt Z. Long  
Swiss Tropical and Public Health Institute, Basel, Switzerland  
Krista Vaidya  
Dhulikhel Hospital, Kathmandu University Hospital, Kathmandu, Nepal

1:45 p.m.

1919

**WIDESPREAD ANTIBIOTIC USE AMONG SUSPECTED ENTERIC FEVER CASES IN NEPAL, BANGLADESH AND PAKISTAN**

**Krista Vaidya**<sup>1</sup>, Kristen Aiempoy<sup>2</sup>, Farah N. Qamar<sup>3</sup>, Samir K. Saha<sup>4</sup>, Caitlin Barkume<sup>5</sup>, Denise Garrett<sup>5</sup>, Stephan P. Luby<sup>6</sup>, Jason R. Andrews<sup>6</sup>  
<sup>1</sup>Dhulikhel Hospital, Kathmandu University Hospital, Dhulikhel, Nepal, <sup>2</sup>Stanford University, San Francisco, CA, United States, <sup>3</sup>Aga Khan University, Karachi, Pakistan, <sup>4</sup>Dhaka Shishu (Children) Hospital, Dhaka, Bangladesh, <sup>5</sup>Sabin Vaccine Institute, Washington, DC, United States, <sup>6</sup>Stanford University, Stanford, CA, United States

2 p.m.

1920

**INTEGRATING TRADITIONAL MICROBIOLOGY WITH CUTTING-EDGE METAGENOMICS TO ADVANCE PATHOGEN DETECTION AND ELUCIDATE MICROBIOME SIGNATURES OF E. COLI INFECTION**

**Karen Levy**<sup>1</sup>, Angela Pena-Gonzalez<sup>2</sup>, Maria J. Soto-Girón<sup>2</sup>, Shanon Smith<sup>1</sup>, Jeticia Sistrunk<sup>1</sup>, Lorena Montero<sup>3</sup>, Maritza Paez<sup>3</sup>, Estefanía Ortega<sup>3</sup>, Janet K. Hatt<sup>4</sup>, William Cevallos<sup>5</sup>, Gabriel Trueba<sup>3</sup>, Konstantinos T. Konstantinidis<sup>4</sup>  
<sup>1</sup>Rollins School of Public Health, Emory University, Atlanta, GA, United States, <sup>2</sup>School of Biological Sciences, Georgia Institute of Technology, Atlanta, GA, United States, <sup>3</sup>Instituto de Microbiología, Universidad San Francisco de Quito, Quito, Ecuador, <sup>4</sup>School of Civil and Environmental Engineering, Georgia Institute of Technology, Atlanta, GA, United States, <sup>5</sup>Centro de Biomedicina, Universidad Central del Ecuador, Quito, Ecuador

2:15 p.m.

1921

**HOST GENOME-WIDE ASSOCIATION STUDY OF SHIGELLA-ASSOCIATED DIARRHEA IN A BIRTH COHORT OF BANGLADESHI INFANTS**

**Dylan Duchon**<sup>1</sup>, Rashidul Haque<sup>2</sup>, Genevieve Wojcik<sup>3</sup>, Laura Chen<sup>1</sup>, Poonum Korpe<sup>1</sup>, Beth Kirkpatrick<sup>4</sup>, William A. Petri<sup>5</sup>, Priya Duggal<sup>1</sup>  
<sup>1</sup>Johns Hopkins Bloomberg School of Public Health, Baltimore, MD, United States, <sup>2</sup>International Centre for Diarrhoeal Disease Research, Bangladesh, Dhaka, Bangladesh, <sup>3</sup>Stanford University, Stanford, CA, United States, <sup>4</sup>University of Vermont, Burlington, VT, United States, <sup>5</sup>University of Virginia, Charlottesville, VA, United States

2:30 p.m.

1922

**EPIDEMIOLOGY OF SHIGELLA INFECTIONS AND DIARRHEA IN THE FIRST TWO YEARS OF LIFE USING CULTURE-INDEPENDENT DIAGNOSTICS IN THE MAL-ED STUDY**

**Najeeha Iqbal**<sup>1</sup>, Elizabeth T. Rogawski McQuade<sup>2</sup>, Arjumand Rizvi<sup>1</sup>, Fariha Shaheen<sup>1</sup>, Furqan Kabir<sup>1</sup>, James A. Platts-Mills<sup>2</sup>, Fatima Aziz<sup>1</sup>, Adil Kalam<sup>1</sup>, Shahida Qureshi<sup>1</sup>, Jie Liu<sup>2</sup>, Aldo A. Lima<sup>3</sup>, Gagandeep Kang<sup>4</sup>, Amidou Samie<sup>5</sup>, Rashidul Haque<sup>6</sup>, Estomih R. Mduma<sup>7</sup>, Margaret N. Kosek<sup>2</sup>, Jose Paulo Leite<sup>8</sup>, Ladaporn Bodhidatta<sup>9</sup>, Nicola Page<sup>10</sup>, Ireen Kiwelu<sup>11</sup>, Tahmeed Ahmed<sup>6</sup>, Eric R. Houpt<sup>2</sup>, Zulfiqar Bhutta<sup>1</sup>

<sup>1</sup>Aga Khan University, Karachi, Pakistan, <sup>2</sup>University of Virginia, Charlottesville, VA, United States, <sup>3</sup>Federal University of Ceara, Fortaleza, Brazil, <sup>4</sup>Christian Medical College, Vellore, Vellore, India, <sup>5</sup>University of Venda, Thohoyandou, South Africa, <sup>6</sup>International Centre for Diarrhoeal Disease Research, Bangladesh, Dhaka, Bangladesh, <sup>7</sup>Haydom Global Health Institute, Haydom, United Republic of Tanzania, <sup>8</sup>Fundação Oswaldo Cruz (Fiocruz), Rio de Janeiro, Brazil, <sup>9</sup>Armed Forces Research Institute of Medical Sciences (AFRIMS), Bangkok, Thailand, <sup>10</sup>National Institute for Communicable Diseases, Johannesburg, South Africa, <sup>11</sup>Kilimanjaro Clinical Research Institute, Moshi, United Republic of Tanzania

2:45 p.m.

1923

**IDENTIFICATION OF HOUSEHOLD RESERVOIRS AND TRANSMISSION PATHWAYS ASSOCIATED WITH SHIGELLA FLEXNERI DIARRHEA AMONG CHILDREN FROM THE MIRZAPUR, BANGLADESH SITE OF THE GLOBAL ENTERIC MULTICENTER STUDY**

**Kurt Z. Long**<sup>1</sup>, AGS Faruque<sup>2</sup>, Inong R. Gunanti<sup>3</sup>, Johanna Sanchez<sup>3</sup>, James P. Nataro<sup>4</sup>, Dilruba Nasrin<sup>5</sup>, Myron Levine<sup>6</sup>, Karen Kotloff<sup>7</sup>

<sup>1</sup>Swiss Tropical and Public Health Institute, Basel, Switzerland, <sup>2</sup>International Centre for Diarrhoeal Disease Research, Dhaka, Bangladesh, <sup>3</sup>Faculty of Medicine and Biomedical Sciences, University of Queensland, Brisbane, Australia, <sup>4</sup>Department of Pediatrics, University of Virginia School of Medicine, Charlottesville, VA, United States, <sup>5</sup>Center for Vaccine Development, Baltimore, MD, United States, <sup>6</sup>Center for Vaccine Development, University of Maryland School of Medicine, Baltimore, MD, United States, <sup>7</sup>Department of Pediatrics, University of Maryland School of Medicine, Baltimore, MD, United States

3 p.m.

1924

**DEVELOPMENT OF A MULTIPLEXED SHIGELLA-SPECIFIC BACTERICIDAL ASSAY**

**Hailey Petersen Weerts**, Akamol E. Suvarnapunya, Robert W. Kaminski  
Walter Reed Army Institute of Research, Silver Spring, MD, United States

3:15 p.m.

1925

**SIGNIFICANCE OF DIARRHEAL DISEASES TO UNDER-FIVE MORTALITY AND DIAGNOSTIC VALUE OF RECTAL SWABS IN CHILDREN WITH FATAL DIARRHEAL DISEASES IN SUB-SAHARAN AFRICA**

**Portia Mutevedzi**, Richard Chawana, Shabir Madhi  
RMPRU, Johannesburg, South Africa

**Symposium 146**

**School-Based Health Interventions: Ensuring Children and Adolescents Can Achieve Their Full Potential as Adults**

National Harbor 10 (National Harbor Level)

Saturday, November 23, 1:45 p.m. - 3:30 p.m.

School-age children and adolescents bear a substantial burden of diseases that undermine their health and educational attainment. Yet this age group has little routine interaction with the health care system and is largely neglected in international health research. A

growing number of disease-specific programs are utilizing schools as a platform to provide interventions to this high-risk underserved population. Approximately one-third of the world's children receive meals in school feeding programs, which address micro- and macronutrient deficiencies and have been shown to improve access to schooling and educational outcomes. Similarly, school-based deworming programs are well-established and provide preventive chemotherapy to 63% of school children living in endemic areas. More recently, vaccines against human papilloma virus targeting adolescent girls are being introduced largely through school-based vaccination programs. There is also increasing interest in delivering malaria control interventions via schools. Examples include using schools as distribution points for bed nets or seasonal malaria chemoprophylaxis, as well as providing bed nets or preventive treatment specifically to school-age children. An "essential package" of school-based health interventions targeting these conditions, as well as vision screening and oral and sexual health, is proposed among the World Bank's Disease Control Priorities. In this symposium, a panel of leading school health experts will explore current health policies for school children and adolescents, and the implications for future investment in building human capital. Following the panel, speakers will review of the burden of communicable and non-communicable diseases in the school-age and adolescent populations, provide evidence for interventions to ameliorate this burden and present options for integration with other interventions. Discussion following the presentations will focus on synergy between the health and education sectors, as well as further research and policy needs to develop integrated interventions.

**CHAIR**

Lauren M. Cohee  
University of Maryland School of Medicine, Baltimore, MD, United States

Donald Bundy  
London School of Hygiene & Tropical Medicine, London, United Kingdom

1:45 p.m.

**PANEL DISCUSSION: THE CURRENT SCHOOL HEALTH POLICY ENVIRONMENT**

Donald Bundy  
London School of Hygiene & Tropical Medicine, London, United Kingdom

Carmen Burbano  
World Food Program, Rome, Italy

Lesley Drake  
Imperial College, Partnership for Child Development, London, United Kingdom

Fernando Lavadenz  
World Bank Group, Washington, DC, United States

2:15 p.m.

**DESIGN, COST AND OUTCOMES OF SCHOOL FEEDING PROGRAMS**

Aulo Gelli  
International Food Policy Research Institute, Washington, DC, United States

2:30 p.m.

**SCHOOL-AGE BURDEN OF NTDs AND LESSONS LEARNED FROM SCHOOL-BASED DEWORMING CAMPAIGNS**

Katherine E. Halliday  
London School of Hygiene & Tropical Medicine, London, United Kingdom



2:45 p.m.

## IMPLEMENTATION OF HPV VACCINATION OF PRIMARY SCHOOL GIRLS: INTERSECTORAL COOPERATION

Irene Mwenyango

Ministry of Health Uganda, Kampala, Uganda

3 p.m.

## MALARIA IN SCHOOL-AGE CHILDREN: OPPORTUNITIES FOR IMPROVED HEALTH AND TRANSMISSION REDUCTION

Lauren Cohee

University of Maryland School of Medicine, Baltimore, MD, United States

3:15 p.m.

## DISCUSSION

### Scientific Session 147

## Filariasis - Molecular Biology, Immunology and Diagnostics

National Harbor 11 (National Harbor Level)

Saturday, November 23, 1:45 p.m. - 3:30 p.m.

### CHAIR

Marla Hertz

Washington University, St. Louis, MO, United States

Marc P. Hübner

University Hospital Bonn, Bonn, Germany

1:45 p.m.

1926

## WUCHERERIA BANCROFTI CIRCULATING FILARIAL ANTIGEN EXHIBITS DIFFERENT LECTIN-BINDING SPECIFICITY AND GREATER PROTEASE RESISTANCE COMPARED TO OTHER FILARIAL GLYCOPROTEINS

Marla Hertz<sup>1</sup>, Amy Rush<sup>2</sup>, Philip Budge<sup>2</sup>

<sup>1</sup>Washington University in St. Louis, St. Louis, MO, United States, <sup>2</sup>Washington University in St. Louis, St. Louis, MO, United States

(ACMCIP Abstract)

2 p.m.

1927

## POTENTIAL OF CYTOSOLIC AND ENDOSOMAL PRR-AGONISTS IN IMPROVING VACCINATION EFFICACY AGAINST THE FILARIAL NEMATODE LITOMOSOIDES SIGMODONTIS

Johanna F. Scheunemann, Frederic Risch, Julia J. Reichwald, Alexandra Ehrens, Marianne Koschel, Achim Hoerauf, Christoph Coch, Beatrix Schumak, Marc P. Hübner

University Hospital Bonn, Bonn, Germany

(ACMCIP Abstract)

2:15 p.m.

1928

## LYMPHATIC FILARIASIS ELIMINATION IN SAMOA: EVALUATING THE USE OF MOLECULAR XENOMONITORING AS A SURVEILLANCE TOOL

Brady McPherson<sup>1</sup>, Sarah Sheridan<sup>2</sup>, Kei Owada<sup>3</sup>, Take Naseri<sup>4</sup>, Robert Thomsen<sup>4</sup>, Tautala Mauala<sup>5</sup>, Helen Mayfield<sup>1</sup>, Lisa Rigby<sup>6</sup>, Silvia Ciochetta<sup>3</sup>, Julia Maguire<sup>1</sup>, Nils Pilotte<sup>7</sup>, Andrew M. Gonzalez<sup>7</sup>, Steven A. Williams<sup>7</sup>, Katherine Gass<sup>8</sup>, Patricia M. Graves<sup>9</sup>, Colleen L. Lau<sup>1</sup>

<sup>1</sup>Australian National University, Canberra, Australia, <sup>2</sup>University of New South Wales, Sydney, Australia, <sup>3</sup>University of Queensland, Brisbane, Australia, <sup>4</sup>Samoa Ministry of Health, Apia, Samoa, <sup>5</sup>Samoa Red Cross, Apia, Samoa, <sup>6</sup>Queensland Institute of Medical Research, Brisbane, Australia, <sup>7</sup>Smith College, Northampton, MA, United States, <sup>8</sup>Task Force for Global Health, Atlanta, GA, United States, <sup>9</sup>James Cook University, Cairns, Australia

2:30 p.m.

1929

## DIAGNOSTIC PERFORMANCE OF ELISA, RAPID DIAGNOSTIC TESTS AND MULTIPLEX BEAD ASSAY TO DETECT ONCHOCERCIASIS OV-16 IGG4 ANTIBODY REACTIVITY USING SAMPLES FROM A FORMERLY ENDEMIC AREA

Marisa Hast<sup>1</sup>, Oscar de Leon<sup>2</sup>, Circe McDonald<sup>1</sup>, Renata Mendizabal de Cabrera<sup>2</sup>, Alison Golden<sup>3</sup>, Paul Cantey<sup>1</sup>, Vitaliano Cama<sup>1</sup>

<sup>1</sup>Centers for Disease Control and Prevention, Atlanta, GA, United States, <sup>2</sup>Universidad del Valle de Guatemala, Guatemala City, Guatemala, <sup>3</sup>PATH, Seattle, WA, United States

2:45 p.m.

1930

## ENTOMOLOGICAL SURVEILLANCE GUIDED PARASITOLOGICAL SURVEILLANCE, AN EFFECTIVE POST-ELIMINATION STRATEGY TO CLEAR LAST FEW LYMPHATIC FILARIASIS CASES IN SRI LANKA

Indeewarie Eranga Gunaratna<sup>1</sup>, Dammika de Mel<sup>1</sup>, Manjula W. Punchihewa<sup>2</sup>, Isuri C. Wijethunga<sup>3</sup>, Tharanga D. Dassanayake<sup>1</sup>, Lakmini K. Liyanage<sup>1</sup>, Wimal J. Migelhewa<sup>2</sup>, Sameera R. Meegahapalage<sup>1</sup>, Devika Mendis<sup>1</sup>

<sup>1</sup>Anti Filariasis Campaign, Colombo 05, Sri Lanka, <sup>2</sup>Regional Anti-Filariasis Unit, Galle, Sri Lanka, <sup>3</sup>Office of Medical Officer of Health, Balapitiya, Sri Lanka

3 p.m.

1931

## TESTING A METHOD OF SAMPLING FOR ENTOMOLOGICAL DETERMINATION OF TRANSMISSION OF WUCHERIA BANCROFTI TO INFORM LYMPHATIC FILARIASIS (LF) TREATMENT STRATEGY IN URBAN SETTINGS.

Rogers Nditanchou<sup>1</sup>, Ruth Dixon<sup>2</sup>, Benjamin Koudou<sup>3</sup>, Dung Pam<sup>4</sup>, Sunday Isiyaku<sup>5</sup>, Christian Nwosu<sup>5</sup>, Safiya Sanda<sup>5</sup>, Elena Schmidt<sup>2</sup>, David Molyneux<sup>6</sup>

<sup>1</sup>Sightsavers, Yaounde, Cameroon, <sup>2</sup>Sightsavers, Haywards Heath, United Kingdom, <sup>3</sup>Centre Suisse de Recherches Scientifiques en Cote d'Ivoire, Abidjan, Côte D'Ivoire, <sup>4</sup>Department of Zoology, University of Jos, Jos, Nigeria, <sup>5</sup>Sightsavers, Kaduna, Nigeria, <sup>6</sup>Liverpool School of Tropical Medicine, Liverpool, United Kingdom

3:15 p.m.

1932

## DEVELOPMENT AND EVALUATION OF SCFV (SINGLE-CHAIN VARIABLE FRAGMENT) ANTIBODIES AGAINST RWB-SXP1 AND ITS IMPLICATION IN THE DIAGNOSIS OF FILARIAL SXP-1

Kaliraj Perumal, Kamatchi R, Mahalakshmi N, Prince R. Prabhu, Meenakshisundaram S

Anna University, Chennai, India

## TropStop - Career Chats

Maryland 5/6 (Ballroom Level)

Saturday, November 23, 3 p.m. - 4 p.m.

The TropStop schedule will include a daily one-hour afternoon session to meet professionals in the fields of tropical medicine and global health who will share their career stories and discuss topics and strategies to help you along your career path.

## INCLUSION AND RESPECT AT ASTMH

Koya C. Allen

KCA Consulting, Brooklyn, NY, United States

Denisse Vega Ocasio

University of Rochester Medical Center, Rochester, NY, United States

## Break

Saturday, November 23, 3:30 p.m. - 4 p.m.

## Poster Session C Dismantle

Prince George's Exhibit Hall D (Lower Atrium Level)

Saturday, November 23, 4 p.m. - 5 p.m.

## Symposium 148

### ***The Lancet* Commission on Malaria Eradication**

Maryland A (Ballroom Level)

Saturday, November 23, 4 p.m. - 5:45 p.m.

Since 2000, the fight against malaria has made exceptional progress. Strong political commitment, robust funding and effective tools and strategies have led to tremendous strides forward, and global eradication of the disease could be achievable in the coming decades. Malaria eradication, the permanent cessation of all human malaria species worldwide, will be a tremendous undertaking that will require concerted global efforts across multiple sectors. *The Lancet* Commission on Malaria Eradication is an international group of 26 leading experts that are developing the evidence base to inform strategies to eradicate malaria at national, regional and global levels. The aim of the Commission is to provide the critical research needed to inform the scientific, operational and financial requirements to achieve malaria eradication in the coming decades. This symposium is an opportunity for the Commission to introduce the evidence in its report to the scientific and research community. The symposium chair will introduce the Commission and its objectives. The first speaker will then describe the trajectory to malaria eradication, exploring how malaria trends will be impacted by urbanization, climate change, and population growth in the coming decades, as well as what is achievable by the year 2050 using today's tools at current and enhanced levels of coverage. The second speaker will describe operational challenges to eradication, emphasizing the potential to optimize the existing use of tools through enhanced program management and community mobilization. The third speaker will articulate key biological challenges to eradication, and then map both operational and biological challenges to the innovation pipeline, identifying critical research and development priorities for eradication. The fourth speaker will explore the costs and benefits of eradicating malaria, including the role of international and domestic financing in achieving eradication. The chair will then close the session, demonstrating that malaria eradication is synergistic with global health and development more broadly.

#### CHAIR

Ingrid Chen

University of California San Francisco, San Francisco, CA, United States

Muhammad Ali Pate

Chigari Foundation, Abuja, Nigeria

4 p.m.

#### **THE TRAJECTORY FOR MALARIA ERADICATION**

Peter W. Gething

University of Oxford, Oxford, United Kingdom

4:15 p.m.

#### **BIOLOGICAL CHALLENGES AND INNOVATIONS FOR ERADICATION**

Corine K. Karema

Independent Consultant, Kigali, Rwanda

4:30 p.m.

#### **OPERATIONAL REQUIREMENTS FOR ERADICATION**

Winnie Mpanju-Shumbusho

RBM Partnership to End Malaria, Dar es Salaam, United Republic of Tanzania and Swiss Tropical and Public Health Institute, Basel, Switzerland

4:45 p.m.

#### **FINANCING MALARIA ERADICATION**

Joseph Dieleman

Institute for Health Metrics and Evaluation, Seattle, WA, United States

5 p.m.

#### **DISCUSSION**

### Scientific Session 149

#### **Malaria: Parasite Genetics and Genomic Epidemiology of Malaria**

Maryland B (Ballroom Level)

Saturday, November 23, 4 p.m. - 5:45 p.m.

#### CHAIR

Antoine Claessens

University of Montpellier, Montpellier, France

Jessica Lin

University of North Carolina, Chapel Hill, NC, United States

4 p.m.

**1933**

#### **THE GLOBAL PREVALENCE OF CYP2D6 HAPLOTYPE VARIATION AND PREDICTIONS FOR PRIMAQUINE EFFECTIVENESS IN MADAGASCAR**

Estee Y. Cramer<sup>1</sup>, Rajeev Mehlotra<sup>1</sup>, Ernest Chan<sup>1</sup>, Jacqueline Bartlett<sup>1</sup>, Rosalind Howes<sup>2</sup>, Daniel Tisch<sup>1</sup>, Andrea Gaedigk<sup>3</sup>, Arsene Ratsimbaoa<sup>4</sup>, Scott Williams<sup>1</sup>, Peter Zimmerman<sup>1</sup>

<sup>1</sup>Case Western Reserve University, Cleveland, OH, United States, <sup>2</sup>Big Data Institute, Nuffield Department of Medicine, University of Oxford, Oxford, United Kingdom, <sup>3</sup>University of Missouri, Kansas City, MO, United States, <sup>4</sup>National Malaria Control Programme of Madagascar, Ministry of Health, Antananarivo, Madagascar

4:15 p.m.

**1934**

#### **FUNCTIONAL IMPLICATIONS OF PLASMODIUM-CONSERVED ESSENTIAL GENES IN PLASMODIUM VIVAX MALARIA TRANSMISSION BIOLOGY**

Jenna Oberstaller, Justin Nicholas, John H. Adams

University of South Florida, Tampa, FL, United States

(ACMCIP Abstract)

4:30 p.m.

**1935**

#### **EXAMINING QUININE MECHANISM OF ACTION AND RESISTANCE USING A NOVEL PLASMODIUM FALCIPARUM GENETIC CROSS IN HUMANIZED MICE**

Mariko Kanai<sup>1</sup>, Leila S. Ross<sup>1</sup>, Tomas Yeo<sup>1</sup>, Melanie J. Shears<sup>2</sup>, Abhai Tripathi<sup>2</sup>, Sachel Mok<sup>1</sup>, Photini Sinnis<sup>2</sup>, David A. Fidock<sup>1</sup>

<sup>1</sup>Columbia University Irving Medical Center, New York, NY, United States, <sup>2</sup>Johns Hopkins Bloomberg School of Public Health, Baltimore, MD, United States

(ACMCIP Abstract)

4:45 p.m.

1936

### WHOLE-GENOME ANALYSIS OF *PLASMODIUM FALCIPARUM* TO UNDERSTAND CLINICAL IMMUNITY TO MALARIA

Zalak Shah<sup>1</sup>, Alexis Boleda<sup>2</sup>, Kara Moser<sup>1</sup>, Matthew Adams<sup>1</sup>, Andrea Buchwald<sup>3</sup>, Karl Seydel<sup>4</sup>, Don Mathanga<sup>5</sup>, David Serre<sup>1</sup>, Miriam K. Laufer<sup>1</sup>, Michael Cummings<sup>2</sup>, Joana C. Silva<sup>1</sup>, Shannon Takala-Harrison<sup>1</sup>

<sup>1</sup>University of Maryland School of Medicine, Baltimore, MD, United States, <sup>2</sup>University of Maryland College Park, College Park, MD, United States, <sup>3</sup>University of Colorado School of Public Health, Aurora, CO, United States, <sup>4</sup>Michigan State University, East Lansing, MI, United States, <sup>5</sup>University of Malawi College of Medicine, Blantyre, Malawi

(ACMCIP Abstract)

5 p.m.

1937

### THE MIRAGE PROJECT - MALARIA INFECTIOUS RESERVOIR AND GENOMICS, IN SEARCH OF ELUSIVE MALARIA PARASITES IN THE DRY SEASON

Antoine Claessens<sup>1</sup>, Benoit Aliaga<sup>1</sup>, Sukai Ceasey<sup>2</sup>, Sarah Tarr<sup>3</sup>, David Conway<sup>3</sup>, Teun Bousema<sup>4</sup>, Umberto D'Alessandro<sup>2</sup>

<sup>1</sup>University of Montpellier, Montpellier, France, <sup>2</sup>MRC-Gambia, Banjul, Gambia, <sup>3</sup>London School of Hygiene & Tropical Medicine, London, United Kingdom, <sup>4</sup>RadboudUMC, Nijmegen, Netherlands

(ACMCIP Abstract)

5:15 p.m.

1938

### SPATIAL ANALYSIS OF PARASITE POPULATION GENOMICS DURING MALARIA ELIMINATION EFFORTS IN EASTERN MYANMAR

Xue Li<sup>1</sup>, Grace A. Arya<sup>1</sup>, Ann Reyes<sup>1</sup>, Aung Myint Thu<sup>2</sup>, Gilles Delmas<sup>2</sup>, Daniel M. Parker<sup>3</sup>, Khin Maung Lwin<sup>2</sup>, Kanlaya Sriprawat<sup>2</sup>, François Nosten<sup>4</sup>, Tim Anderson<sup>1</sup>

<sup>1</sup>Texas Biomedical Research Institute, San Antonio, TX, United States, <sup>2</sup>Shoklo Malaria Research Unit, Mae Sot, Thailand, <sup>3</sup>University of California, Irvine, CA, United States, <sup>4</sup>University of Oxford, Oxford, United Kingdom

5:30 p.m.

1939

### SPATIAL-GENETIC ANALYSIS OF *P. FALCIPARUM* IN THE DEMOCRATIC REPUBLIC OF THE CONGO THROUGH MOLECULAR INVERSION PROBES

Robert Verity<sup>1</sup>, Ozkan Aydemir<sup>2</sup>, Nicholas F. Brazeau<sup>3</sup>, Oliver J. Watson<sup>1</sup>, Nicholas J. Hathaway<sup>4</sup>, Melchior K. Mwandagaliwa<sup>5</sup>, Patrick K. Marsh<sup>2</sup>, Travis Fulton<sup>3</sup>, Madeline Denton<sup>3</sup>, Andrew Morgan<sup>3</sup>, Jonathan Parr<sup>3</sup>, Philip J. Rosenthal<sup>6</sup>, Patrick Tumwebaze<sup>7</sup>, Julie Gutman<sup>8</sup>, William Moss<sup>9</sup>, Modest Mulenga<sup>10</sup>, Anita Ghansah<sup>11</sup>, Benedicta Menseh<sup>11</sup>, Antoinette K. Tshetu<sup>12</sup>, Azra C. Ghani<sup>1</sup>, Steven R. Meshnick<sup>3</sup>, Jonathan J. Juliano<sup>3</sup>, Jeffrey A. Bailey<sup>2</sup>

<sup>1</sup>Imperial College London, London, United Kingdom, <sup>2</sup>Brown, Providence, RI, United States, <sup>3</sup>UNC, Raleigh-Durham, NC, United States, <sup>4</sup>UMASS, Worcester, MA, United States, <sup>5</sup>Kinshasa School of Public Health, Kinshasa, Democratic Republic of the Congo, <sup>6</sup>University of California San Francisco, San Francisco, CA, United States, <sup>7</sup>Infectious Diseases Research Collaboration, Kampala, Uganda, <sup>8</sup>Centers for Disease Control and Prevention, Atlanta, GA, United States, <sup>9</sup>John Hopkins, Baltimore, MD, United States, <sup>10</sup>Tropical Disease Research Centre, Ndola, Zambia, <sup>11</sup>Noguchi Memorial Institute for Medical Research, University of Ghana, Noguchi, Ghana, <sup>12</sup>Kinshasa School of Public Health, Hôpital General Provincial de Reference de Kinshasa, Kinshasa, Democratic Republic of the Congo

Scientific Session 150

### Malaria: Updates and Innovations in Malaria Prevention

Maryland C (Ballroom Level)

Saturday, November 23, 4 p.m. - 5:45 p.m.

#### CHAIR

Kent Kester

Sanofi Pasteur, Swiftwater, PA, United States

Issaka Zongo

Institut de Recherche en Sciences de la Santé (IRSS)/Institut des Sciences et Techniques (INSTech), Bobo-Dioulasso, Burkina Faso

4 p.m.

1940

### MALARIA CHEMOPREVENTION WITH MONTHLY TREATMENT WITH DIHYDROARTEMISININ PIPERAQUINE FOR THE POST DISCHARGE MANAGEMENT OF SEVERE ANAEMIA IN CHILDREN AGED LESS THAN 5 YEARS IN UGANDA AND KENYA: A 3 YEAR, MULTI-CENTER, TWO ARM RANDOMIZED PLACEBO CONTROLLED SUPERIORITY TRIAL

Titus K. Kwambai<sup>1</sup>, Aggrey Dhabangi<sup>2</sup>, Richard Idro<sup>2</sup>, Robert Opoka<sup>2</sup>, Simon Kariuki<sup>1</sup>, Victoria Watson<sup>3</sup>, Nickline Ashitiba<sup>1</sup>, Kephass Otieno<sup>1</sup>, Aaron M. Samuels<sup>4</sup>, Meghna Desai<sup>4</sup>, Chandry C. John<sup>5</sup>, Bjarne Robberstad<sup>6</sup>, Michael Boele van Hensbroek<sup>7</sup>, Duolao Wang<sup>3</sup>, Kamija Phiri<sup>8</sup>, Feiko O. ter Kuile<sup>3</sup>

<sup>1</sup>Kenya Medical Research Institute, Kisumu, Kenya, <sup>2</sup>Makerere University College of Health Sciences, Kampala, Uganda, <sup>3</sup>Liverpool School of Tropical Medicine, Liverpool, United Kingdom, <sup>4</sup>Malaria Branch, Division of Parasitic Diseases and Malaria, Centers for Disease Control and Prevention, Atlanta, GA, United States, <sup>5</sup>Ryan White Center for Pediatric Infectious Disease and Global Health, Indiana University School of Medicine, Indianapolis, IN, United States, <sup>6</sup>Centre for International Health, University of Bergen, Bergen, Norway, <sup>7</sup>Emma Children's Hospital, Academic Medical Centre, University of Amsterdam, Amsterdam, Netherlands, <sup>8</sup>School of Public Health and Family Medicine, College of Medicine, University of Malawi, Blantyre, Malawi

4:15 p.m.

1941

### MATERNAL AND CHILD MALARIA CHEMOPREVENTION TO ENHANCE CHILD DEVELOPMENT: A DOUBLE-BLINDED RANDOMIZED CONTROLLED TRIAL

Paul Bangirana<sup>1</sup>, Andrea L. Conroy<sup>2</sup>, Robert O. Opoka<sup>1</sup>, Margaret Semrud-Clikeman<sup>3</sup>, Maria Kroupina<sup>3</sup>, Michael Georgieff<sup>3</sup>, Grant M. Dorsey<sup>4</sup>, Moses R. Kanya<sup>1</sup>, Diane Havlir<sup>4</sup>, Chandry C. John<sup>2</sup>

<sup>1</sup>Makerere University, Kampala, Uganda, <sup>2</sup>Indiana University, Indianapolis, IN, United States, <sup>3</sup>University of Minnesota, Minneapolis, MN, United States, <sup>4</sup>University of California San Francisco, San Francisco, CA, United States

4:30 p.m.

1942

### INTERMITTENT PREVENTIVE TREATMENT WITH SULFADOXINE-PYRIMETHAMINE CONFERS NON-MALARIAL EFFECT ON BIRTHWEIGHT: RESULTS FROM A MEDIATION ANALYSIS

Michelle Roh<sup>1</sup>, M. Maria Glymour<sup>1</sup>, Stephen Shiboski<sup>1</sup>, Roly Gosling<sup>1</sup>, Anne L'lanziva<sup>2</sup>, Abel Kakuru<sup>3</sup>, Richard Kajubi<sup>3</sup>, Meghna Desai<sup>4</sup>, Julie Gutman<sup>4</sup>, Feiko ter Kuile<sup>5</sup>, Moses R. Kanya<sup>6</sup>, Grant Dorsey<sup>1</sup>, R. Matthew Chico<sup>7</sup>

<sup>1</sup>University of California San Francisco, San Francisco, CA, United States, <sup>2</sup>Centers for Disease Control and Prevention (CDC), Kisumu, Kenya, <sup>3</sup>Infectious Diseases Research Collaboration, Kampala, Uganda, <sup>4</sup>Malaria Branch, Division of Parasitic Diseases and Malaria, Center for Global Health, US Centers for Disease Control and Prevention, Atlanta, GA, United States, <sup>5</sup>Liverpool School of Tropical Medicine, London, United Kingdom, <sup>6</sup>School of Medicine, Makerere University College of Health Sciences, Kampala, Uganda, <sup>7</sup>Faculty of Infectious and Tropical Disease, London School of Hygiene & Tropical Medicine, London, United Kingdom

Saturday  
November 23

4:45 p.m.

## 1943

### THE DURATION OF PROTECTION FROM AZITHROMYCIN AGAINST MALARIA, PNEUMONIA AND GASTROENTERITIS WHEN GIVEN ALONGSIDE SEASONAL MALARIA CHEMOPREVENTION: SECONDARY ANALYSIS OF DATA FROM A CLINICAL TRIAL IN HOUNDÉ, BURKINA FASO AND BOUGOUNI, MALI

Matt Cairns<sup>1</sup>, Mphatso Phiri<sup>2</sup>, Issaka Zongo<sup>3</sup>, Issaka Sagara<sup>4</sup>, Irene Kuepfer<sup>1</sup>, Frederic Nikiema<sup>5</sup>, Modibo Diarra<sup>4</sup>, Amadou Barry<sup>4</sup>, Amadou Tapily<sup>4</sup>, Paul Milligan<sup>1</sup>, Jean Bosco Ouédraogo<sup>3</sup>, Daniel Chandramohan<sup>1</sup>, Alassane Dicko<sup>4</sup>, Brian Greenwood<sup>1</sup>

<sup>1</sup>London School of Hygiene & Tropical Medicine, London, United Kingdom, <sup>2</sup>Malawi-Liverpool-Wellcome Trust Clinical Research Programme, London School of Hygiene & Tropical Medicine, Blantyre, Malawi, <sup>3</sup>Institut de Recherche en Sciences de la Santé, Bobo-Dioulasso, Burkina Faso, <sup>4</sup>Malaria Research and Training Center, University of Science, Techniques, and Technologies of Bamako, Bamako, Mali

5 p.m.

## 1944

### THE EFFECTIVENESS OF SEASONAL MALARIA CHEMOPREVENTION (SMC) IN THE OPERATIONAL PROGRAMMING CONTEXT OF GUINEA

Donal Bisanzio<sup>1</sup>, Aissata Fofana<sup>2</sup>, Timothée Guilavogui<sup>3</sup>, Eugene Kaman Lama<sup>4</sup>, Elizabeth Fitch<sup>5</sup>, Adam Preston<sup>6</sup>, Mamadou Aliou Baldé<sup>2</sup>, Jean-Luc Taton<sup>1</sup>, Lamine Bangoura<sup>7</sup>, Richard Reithinger<sup>1</sup>

<sup>1</sup>RTI International, Washington, DC, United States, <sup>2</sup>PMI StopPalu+ Project, RTI International, Conakry, Guinea, <sup>3</sup>National Directorate of Disease Control, Ministry of Health, Conakry, Guinea, <sup>4</sup>National Malaria Control Program, Conakry, Guinea, <sup>5</sup>RTI International, RTP, NC, United States, <sup>6</sup>RTI International, Fort Collins, CO, United States, <sup>7</sup>President's Malaria Initiative, US Agency for International Development, Conakry, Guinea

5:15 p.m.

## 1945

### OPTIMIZING DELIVERY OF SEASONAL MALARIA CHEMOPREVENTION (SMC) FOR CHILDREN UNDER 5 YEARS OF AGE: VERY HIGH COVERAGE CONSISTENTLY ACHIEVED THROUGH DOOR-TO-DOOR CAMPAIGNS IN BURKINA FASO

Issaka Zongo<sup>1</sup>, Jean Bosco Ouédraogo<sup>1</sup>, Yacouba Sawadogo<sup>2</sup>, Sham Lal<sup>3</sup>, Matt Cairns<sup>5</sup>, Paul Snell<sup>6</sup>, Johanna Stenstrom Johansson<sup>4</sup>, Diego Moroso<sup>5</sup>, Paul J. Milligan<sup>3</sup>

<sup>1</sup>Institut de Recherche en Sciences de la Santé (IRSS)/Institut des Sciences et Techniques (INSTech), Bobo Dioulasso, Burkina Faso, <sup>2</sup>Programme Nationale Lutte Contre le Paludisme, Burkina Faso, Ouagadougou, Burkina Faso, <sup>3</sup>London School of Hygiene & Tropical Medicine, London, United Kingdom, <sup>4</sup>Malaria Consortium, Ouagadougou, Burkina Faso, <sup>5</sup>Malaria Consortium, Kampala, Uganda

5:30 p.m.

## 1946

### THE EFFECTIVENESS OF REPELLENT DELIVERED THROUGH VILLAGE HEALTH VOLUNTEERS ON MALARIA INCIDENCE IN SOUTHEAST MYANMAR: A STEPPED-WEDGE CLUSTER-RANDOMIZED CONTROLLED TRIAL

Paul Agius<sup>1</sup>, Win Han Oo<sup>2</sup>, Naanki Pasricha<sup>1</sup>, Katherine O'Flaherty<sup>1</sup>, Kyaw Zayar Aung<sup>2</sup>, Aung Thi<sup>3</sup>, Myat Mon Thein<sup>2</sup>, Nyi Nyi Zaw<sup>2</sup>, Htin Kyaw Thu<sup>2</sup>, Wai Yan Min Htay<sup>2</sup>, Aung Paing Soe<sup>2</sup>, Nicole Romero<sup>1</sup>, Zahra Razoook<sup>4</sup>, Alyssa Barry<sup>4</sup>, Angela Devine<sup>5</sup>, Julie Simpson<sup>6</sup>, Brendan S. Crabb<sup>1</sup>, James G. Beeson<sup>1</sup>, Julia Cutts<sup>1</sup>, Freya J. Fowkes<sup>1</sup>

<sup>1</sup>Burnet Institute, Melbourne, Australia, <sup>2</sup>Burnet Institute, Yangon, Myanmar, <sup>3</sup>Myanmar Ministry of Health and Sports, Nay Pyi Taw, Myanmar, <sup>4</sup>Walter and Eliza Hall Institute, Melbourne, Australia, <sup>5</sup>Menzies School of Health Research, Darwin, Australia, <sup>6</sup>University of Melbourne, Melbourne, Australia

## Scientific Session 151

### Zika II

Potomac A (Ballroom Level)

Saturday, November 23, 4 p.m. - 5:45 p.m.

#### CHAIR

Anna P. Durbin

Johns Hopkins Bloomberg School of Public Health, Baltimore, MD, United States

Graham Simmons

Vitalant Research Institute, San Francisco, CA, United States

4 p.m.

## 1947

### PHASE 1 EVALUATION OF A LIVE ATTENUATED VACCINE FOR THE PREVENTION OF ZIKA

Anna P. Durbin<sup>1</sup>, Kristen K. Pierce<sup>2</sup>, Beth D. Kirkpatrick<sup>2</sup>, Rachel Blankenheim<sup>1</sup>, Jennifer Han<sup>1</sup>, Patricia Lutton<sup>2</sup>, Xi Fang<sup>1</sup>, Radmila Pavlovic<sup>1</sup>, Marya Carmolli<sup>2</sup>, Connor Klopfer<sup>2</sup>, Stephen S. Whitehead<sup>3</sup>

<sup>1</sup>Johns Hopkins Bloomberg School of Public Health, Baltimore, MD, United States, <sup>2</sup>University of Vermont, Burlington, VT, United States, <sup>3</sup>National Institutes of Health, Bethesda, MD, United States

4:15 p.m.

## 1948

### SAFETY OF A PURIFIED INACTIVATED ZIKA VIRUS VACCINE (PIZV) CANDIDATE IN FLAVIVIRUS PRIMED HEALTHY ADULTS

Htay Htay Han<sup>1</sup>, the ZIK-101 Study Group<sup>2</sup>

<sup>1</sup>Takeda Vaccines Inc., Cambridge, MA, United States

4:30 p.m.

## 1949

### ASSOCIATION BETWEEN ZIKA VIRUS MICROCEPHALY IN THE NEWBORN WITH THE RS3775291 VARIANT AT TOLL-LIKE RECEPTOR 3 AND RS1799964 VARIANT AT TNFA GENES

Amélia R. Ribeiro<sup>1</sup>, Camilla N. Santos<sup>1</sup>, Danielle R. Ribeiro<sup>1</sup>, Juliana A. Cardoso<sup>1</sup>, Rodrigo A. Cazzaniga<sup>1</sup>, Lucas S. Magalhães<sup>1</sup>, Mércia S. de Souza<sup>1</sup>, Adriana B. Fonseca<sup>1</sup>, Ana J. Bispo<sup>1</sup>, Roseane L. Porto<sup>1</sup>, Clommar A. dos Santos<sup>1</sup>, Ângela M. da Silva<sup>1</sup>, Mauro M. Teixeira<sup>2</sup>, Roque P. de Almeida<sup>1</sup>

<sup>1</sup>Federal University of Sergipe, Aracaju, Sergipe State, Brazil, <sup>2</sup>Federal University of Minas Gerais, Belo Horizonte, Minas Gerais State, Brazil

4:45 p.m.

## 1950

### MAPPING THE ASSOCIATION BETWEEN ZIKA VIRUS INFECTION AND MICROCEPHALY IN BRAZIL

Oliver J. Brady<sup>1</sup>, Simon I. Hay<sup>2</sup>, Robert C. Reiner<sup>2</sup>, Fatima Marinho<sup>2</sup>

<sup>1</sup>London School of Hygiene & Tropical Medicine, London, United Kingdom, <sup>2</sup>IHME, University of Washington, Seattle, WA, United States

5 p.m.

## 1951

### MOTOR FUNCTION AT 18 MONTHS AMONG INFANTS FROM THE PEDIATRIC OUTCOMES OF PRENATAL ZIKA EXPOSURE (POPZE) STUDY IN SOUTHERN PUERTO RICO

Luisa I. Alvarado-Domenech<sup>1</sup>, Viviana Rosario-Villafañe<sup>1</sup>, Nicole M. Pérez-Rodríguez<sup>2</sup>, Irelis C. Repollet-Carrer<sup>1</sup>, Luzeida Vargas-Lassalle<sup>1</sup>, Vanessa Rivera-Amill<sup>2</sup>, Mary Rodriguez-Rabassa<sup>2</sup>

<sup>1</sup>Ponce Health Sciences University, Saint Luke's Episcopal Hospital, Ponce, Puerto Rico, <sup>2</sup>Ponce Health Sciences University, Ponce, Puerto Rico



5:15 p.m.

1952

**ESTIMATION OF ZIKA VIRUS INFECTION RATES IN BLOOD DONORS FOLLOWING THE 2016 EPIDEMIC IN PUERTO RICO USING TWO SEROLOGICAL ASSAYS**

Graham Simmons<sup>1</sup>, Mars Stone<sup>1</sup>, Magelda Montoya Cruz<sup>2</sup>, Jasmine Larrick<sup>2</sup>, Celine Cheng<sup>1</sup>, Inder Singh<sup>1</sup>, Honey Dave<sup>1</sup>, Phillip Williamson<sup>3</sup>, Eva Harris<sup>2</sup>, Michael Busch<sup>1</sup>  
<sup>1</sup>Vitalant Research Institute, San Francisco, CA, United States, <sup>2</sup>School of Public Health, University of California Berkeley, Berkeley, CA, United States, <sup>3</sup>Creative Testing Solutions, Tempe, AZ, United States

5:30 p.m.

1953

**RAPID ACTIVE SEROPREVALENCE (RAS) SURVEYS PERFORMED IN RURAL GUATEMALA DEMONSTRATED A RAPIDLY CHANGING ZIKA DISEASE BURDEN IN 2015-16 AND PROVIDE A USEFUL TOOL TO MEASURE ARBOVIRUS DISEASE BURDEN IN RESOURCE-LIMITED SETTINGS**

Daniel Olson<sup>1</sup>, Molly Lamb<sup>2</sup>, Maria Alejandra Paniagua-Avila<sup>3</sup>, Alma Zacarias<sup>3</sup>, Neudy C. Rojop<sup>3</sup>, Andrea Chacon-Juarez<sup>3</sup>, Shekema Hodge<sup>4</sup>, Matthew Bonaparte<sup>4</sup>, Maria Renee Lopez<sup>5</sup>, Celia Cordon-Rosales<sup>5</sup>, Edwin J. Asturias<sup>1</sup>  
<sup>1</sup>University of Colorado School of Medicine, Aurora, CO, United States, <sup>2</sup>Colorado School of Public Health, Aurora, CO, United States, <sup>3</sup>Fundacion para la Salud Integral de los Guatemaltecos, Los Encuentros, Guatemala, <sup>4</sup>Sanofi Pasteur, Swiftwater, PA, United States, <sup>5</sup>Universidad del Valle de Guatemala, Ciudad de Guatemala, Guatemala

**Symposium 152**

**Artificial Intelligence and Tropical Medicine: New Approaches to Understand and Combat Emerging Tropical Diseases**

Potomac B (Ballroom Level)

Saturday, November 23, 4 p.m. - 5:45 p.m.

There have been recent advances in artificial intelligence (AI) technologies, with applications increasingly relevant to tropical medicine. AI is now actively changing medicine and biomedical research, yet for many researchers and clinicians it remains a poorly understood field. The overarching aim of this symposium is to link AI developers with the typical broad audience of ASTMH, including clinical and public health stakeholders. This symposium will present a road-map of AI methods, discuss recent AI applications relevant to tropical public health, and offer a grounding in AI methods for a diverse audience who are interested in knowing more about this field. The first speaker will present an overview of recent AI approaches to the surveillance and prediction of mosquito-borne pathogens, including dengue, Zika and malaria. This overview will serve as an introductory road-map of AI methods for those seeking to better understand this field. The next presenter will extend the theme of machine learning with her recent work on AI-based modeling frameworks to predict the host range of pathogens such as Zika virus and *filoviridae* and therefore guide empirical vector competence studies and zoonosis surveillance programs. A discussion will follow about the co-development of host-pathogen 'big data' compendiums, such as the Global Mammal Parasite Database, which can be leveraged for other ecological predictions. The next speaker will present a crowd-sourced approach to the development of machine learning models which can predict artemisinin drug-resistance levels using transcriptomic, demographic, clinical and geo-spatial data. This speaker will also explore machine learning approaches to predicting drug pharmacokinetics from human genomic variation. The next

presenter will describe clinical applications of AI in the Sub-Saharan African setting, including subset scanning for detecting anomalous patterns of care in electronic health records and application of machine learning algorithms to study vulnerability in maternal, newborn and child health. This speaker will also explore recent applications of machine learning for evaluating malaria interventions in the tropics. The final speaker will then demonstrate how AI has been used to improve the accuracy of cancer diagnosis by augmenting conventional microscopy. These experiences will be extended to perspectives on low-middle income countries, and discussion will follow about a collaboration with the Gates Foundation which is seeking to deploy such AI tools in more austere settings where access to trained pathologists, microbiologists and pathobiology assays may be limited. These applications will include cancer diagnostics in the tropics and also applications to pathogen microscopy for a range of infectious diseases.

**CHAIR**

Simon Pollett  
Walter Reed Army Institute of Research Viral Diseases Branch, Silver Spring, MD, United States

David Blazes  
Bill & Melinda Gates Foundation, Seattle, WA, United States

4 p.m.

**A ROADMAP OF ARTIFICIAL INTELLIGENCE METHODS AND OVERVIEW OF APPLICATIONS TO MOSQUITO-BORNE DISEASES**

Alex Perkins  
University of Notre Dame, Notre Dame, IN, United States

4:10 p.m.

**MACHINE LEARNING AND BIG DATA APPROACHES TO UNDERSTANDING VECTOR-BORNE AND ZOOONOTIC DISEASE ECOLOGY**

Barbara A. Han  
Cary Institute of Ecosystem Studies, Millbrook, NY, United States

4:30 p.m.

**ACCELERATING GLOBAL HEALTH SOLUTIONS THROUGH ARTIFICIAL INTELLIGENCE AND COLLECTIVE INTELLIGENCE ACROSS THE GLOBE**

Geoffrey Siwo  
University of Notre Dame, Notre Dame, IN, United States

4:50 p.m.

**MACHINE LEARNING TO EVALUATE VULNERABILITY IN MATERNAL, NEWBORN AND CHILD HEALTH AND ANOMALOUS PATTERNS OF PATIENT CARE**

William Ogallo  
IBM Research Africa, Nairobi, Kenya

5:10 p.m.

**AI-BASED MICROSCOPY OF COMMUNICABLE AND NON-COMMUNICABLE DISEASES: OPPORTUNITIES FOR TROPICAL AND LOWER-RESOURCE REGIONS**

Sudha Rao  
PathAI, Boston, United States

5:30 p.m.

**DISCUSSION**

Saturday  
November 23

## Symposium 153

### Changing the Immune Landscape: How One Infection Impacts Another

*Potomac C (Ballroom Level)*

Saturday, November 23, 4 p.m. - 5:45 p.m.

Up to 15% of children die during the first six months after hospital discharge in resource-limited settings, often exceeding in-hospital mortality. Verbal autopsy studies have shown that deaths are often preceded by new symptoms of cough, fever or diarrhea, suggesting that “second hit” infections may be major contributors. However, the etiology and mechanisms behind post-discharge deaths remain unclear. Similarly, the MORDOR trial has demonstrated mortality benefit with the use of azithromycin in some settings, yet there is no clear understanding of the mechanism behind such a benefit. Understanding of these mechanisms will offer insights into improving the management of children at highest risk of death and to identify and target pathways likely to have the greatest impact. This symposium has assembled a group of speakers with experience in “second hit” infections. The program will open with a speaker who is involved in the CHAIN, Toto Bora, and ABCD studies of post-discharge death, who will provide clinical insights gathered from emerging epidemiological studies. Three speakers will then highlight cutting-edge research on the immunological mechanisms underlying “second hit” infections. They will report on the effect of malaria and gastrointestinal infections as “first hit” infections on the ability of various components of the immune system to respond against both bacterial and viral secondary infections. A panel discussion with audience participation will follow these talks.

#### CHAIR

Daniel T. Leung  
*University of Utah, Salt Lake City, UT, United States*

Mohammad J. Chisti  
*International Centre for Diarrhoeal Disease Research, Bangladesh (icddr), Dhaka, Bangladesh*

4 p.m.

### TB PREVALENCE IN CHILDREN WITH ACUTE ILLNESS AND DURING THEIR POST-DISCHARGE FOLLOW-UPS IN CHAIN COHORT AND THEIR POST-DISCHARGE MORTALITY

Mohammad J. Chisti  
*International Centre for Diarrhoeal Disease Research, Bangladesh (icddr), Dhaka, Bangladesh*

4:10 p.m.

### CLINICAL IMPLICATIONS OF SECOND HIT INFECTIONS: EPIDEMIOLOGY OF POST-DISCHARGE DEATHS IN AFRICA

Judd Walson  
*University of Washington, Seattle, WA, United States*

4:30 p.m.

### POST-PLASMODIUM SUSCEPTIBILITY TO STREPTOCOCCAL INFECTION

Tracey Lamb  
*University of Utah, Salt Lake City, UT, United States*

4:50 p.m.

### PLASMODIUM-INDUCED MODULATION OF ANTI-BACTERIAL INNATE IMMUNITY

Nathan Schmidt  
*Indiana University School of Medicine, Indianapolis, IN, United States*

5:10 p.m.

### IMMUNITY TO BACTERIAL PNEUMONIA AFTER INTESTINAL INFECTION

Daniel T. Leung  
*University of Utah, Salt Lake City, UT, United States*

5:30 p.m.

### DISCUSSION

## Symposium 154

### Food Hygiene for Public Health: The State of the Evidence on Intervention Design, Implementation and Evaluation

*Potomac D (Ballroom Level)*

Saturday, November 23, 4 p.m. - 5:45 p.m.

The WHO Foodborne Disease Burden Epidemiology Reference Group (FERG) conservatively estimated a loss of 33 million disability-adjusted life years (DALYs) due to FBD in 2010 (FERG, 2015). The majority of this burden is attributable to gastro-enteric infections associated with diarrhea, which is concentrated among young children in low- and middle-income countries (LMIC). This suggests that food contamination may be a critical source of enteric pathogen exposure for vulnerable groups such as infants of weaning age. Not only are complementary foods often contaminated, but this age group's less developed immunogenicity makes them receptive to infection. Changing food hygiene practices at the household level is an emerging area of interest for public health programs. The World Health Organization has outlined five key practices to reduce microbiological contamination in the household environment – handwashing with soap, separating raw and cooked foods, cooking food thoroughly, storing food at safe temperatures, and using safe water and raw materials. However, evidence on intervention effectiveness, barriers to improved practices, and health impact is limited. This symposium is intended to serve as a catalyst for food hygiene research and practice in LMICs. The session will begin with an overview of the current evidence base for the links between food hygiene and health, followed by a series of case studies on the design, implementation and evaluation of food hygiene interventions.

#### CHAIR

Robert Dreifelbis  
*London School of Hygiene & Tropical Medicine, London, United Kingdom*

4 p.m.

### FOOD HYGIENE AND HEALTH: A GLOBAL OVERVIEW

Robert Dreifelbis  
*London School of Hygiene & Tropical Medicine, London, United Kingdom*

4:20 p.m.

### COMMUNITY BASED INTERVENTION STUDY TO IMPROVE FOOD HYGIENE BEHAVIORS IN RURAL HOUSEHOLDS OF MALAWI

Kondwani R. Chidziwisano  
*Malawi Epidemiology and Intervention Trials Unit/University of Malawi, Lilongwe, Malawi*

4:40 p.m.

### IMPLEMENTING A FOOD HYGIENE INTERVENTION IN LOW INCOME SETTLEMENTS: LESSONS FROM KISUMU, KENYA

Sheillah N. Simiyu  
*Great Lakes University of Kisumu, Kisumu, Kenya*

5 p.m.

## **DEVELOPING AND EVALUATING A FOOD HYGIENE INTERVENTION IN BANGLADESH**

Tarique Mohammad Huda  
*International Centre for Diarrhoeal Disease Research, Bangladesh, Dhaka, Bangladesh*

5:20 p.m.

## **DISCUSSION**

### **Symposium 155**

## **Serosurveys and Multiplex Assay Technology Transfer to Augment Epidemiological Surveillance for Co-endemic Diseases in Low and Middle Income Countries (LMICs)**

*National Harbor 2 (National Harbor Level)*  
Saturday, November 23, 4 p.m. - 5:45 p.m.

Detection of antibodies against pathogens causing infectious diseases (IDs) typically provides an indication of an individual's past exposure to those pathogens, but can also serve as markers of active infection. Additionally, antibody titers against vaccine preventable disease (VPD) antigens can be estimated to indicate an individual's protective status against that VPD. Serological data allow for a broader view into the population-level exposure and surveillance of IDs that would be missed by transient positive results in diagnostic tests. Recently, multiplex bead assays (MBAs) have allowed public health scientists to assay a single biological specimen for antibodies against multiple ID or VPD antigens. MBAs perform well with many types of samples, and most importantly from the perspective of serosurveillance, fingerprick blood dried on filter paper. Dried blood spots are relatively easy to collect in the field, inexpensive and do not require stringent cold-chain storage. Integrated serosurveys can be designed with the proactive explicit intent of capturing antibody data on multiple infectious diseases. Within the past several years, MBA technology has been deployed in many countries with the technical assistance of the Centers for Disease Control and Prevention (CDC). With technology transfer to allow serological data collection in-country, partners decide on the best strategy for population-based sampling to allow informative data on many infectious diseases for the benefit of national public health programs. The speakers will detail their experiences in technology transfer to their country or region, development of integrated disease surveys, and to outline how serological data are benefiting their control and/or elimination programs.

### **CHAIR**

Eric Rogier  
*Centers for Disease Control and Prevention, Atlanta, GA, United States*  
Daouda Ndiaye  
*Cheikh Anta Diop University, Dakar, Senegal, Dakar, Senegal*

4 p.m.

## **INTEGRATED SEROLOGIC SURVEILLANCE: A TOOL FOR IMPROVING PUBLIC HEALTH ACTIONS IN THE REGION OF THE AMERICAS**

Martha Saboyá  
*Pan American Health Organization, Washington, DC, United States*

4:15 p.m.

## **PILOTING MULTI-PATHOGEN SENTINEL SEROLOGICAL SURVEILLANCE AMONG FEBRILE PATIENTS IN SENEGAL**

Julie Thwing  
*Centers for Disease Control and Prevention, Atlanta, GA, United States*

4:30 p.m.

## **INTEGRATED CROSS-SECTIONAL MULTIPLEX SEROSURVEILLANCE OF IGG ANTIBODY RESPONSES TO PARASITIC DISEASES AND VACCINES IN COASTAL KENYA**

Sammy Njenga  
*Kenya Medical Research Institute, Nairobi, Kenya*

4:45 p.m.

## **HOUSEHOLD SEROSURVEY TO ASSESS IMMUNITY TO VACCINE-PREVENTABLE DISEASES AND EXPOSURE TO MALARIA AND OTHER PARASITIC DISEASES AMONG FORCIBLY-DISPLACED MYANMAR NATIONALS, COX'S BAZAR, BANGLADESH, 2018**

Sarah Bennett  
*Centers for Disease Control and Prevention, Atlanta, GA, United States*

5 p.m.

## **DISCUSSION**

### **Scientific Session 156**

## **Mosquitoes: Insecticide Resistance and Control II**

*National Harbor 3 (National Harbor Level)*  
Saturday, November 23, 4 p.m. - 5:45 p.m.

### **CHAIR**

James M. Mutunga  
*U.S. Army Medical Research Directorate - Africa, Kisumu, Kenya*  
Amy R. Lynd  
*Liverpool School of Tropical Medicine, Liverpool, United Kingdom*

4 p.m.

**1954**

## **DUPLICATIONS, SELECTION AND INTROGRESSION DRIVE THE SPREAD OF RESISTANCE TO ORGANOPHOSPHATES IN WEST AFRICAN ANOPHELES GAMBIAE**

Xavier Grau-Bové, Edi Constant, Eric Lucas, Dimita Pipini, Arjen van T' Hof, Martin J. Donnelly, **David Weetman**  
*Liverpool School of Tropical Medicine, Liverpool, United Kingdom*

4:15 p.m.

**1955**

## **LLIN EVALUATION IN UGANDA PROJECT (LLINEUP): DATA FROM TWO YEARS OF CROSS-SECTIONAL ENTOMOLOGICAL SURVEILLANCE CARRIED OUT IN 104 HEALTH SUB-DISTRICTS IN UGANDA**

**Amy R. Lynd**<sup>1</sup>, Samuel Gonahasa<sup>2</sup>, Sarah G. Staedke<sup>3</sup>, Ambrose Oruni<sup>1</sup>, Catherine Maiteki-Sebuguzi<sup>2</sup>, Grant Dorsey<sup>4</sup>, Jimmy Opigo<sup>5</sup>, Adoke Yeka<sup>2</sup>, Agaba Katureebe<sup>2</sup>, Mary Kyohere<sup>2</sup>, Janet Hemingway<sup>1</sup>, Moses R. Kamya<sup>6</sup>, Martin J. Donnelly<sup>1</sup>  
<sup>1</sup>Liverpool School of Tropical Medicine, Liverpool, United Kingdom, <sup>2</sup>Infectious Diseases Research Collaboration, Kampala, Uganda, <sup>3</sup>London School of Hygiene & Tropical Medicine, London, United Kingdom, <sup>4</sup>University of California, San Francisco, CA, United States, <sup>5</sup>Uganda Ministry of Health, Kampala, Uganda, <sup>6</sup>Makerere University College of Health Sciences, Kampala, Uganda

4:30 p.m.

1956

**METOFLUTHRIN TREATED DEVICES FOR THE PREVENTION OF BITES IN URBAN ENVIRONMENTS: RESULTS OF A FIELD TRIAL IN THE YUCATAN, MEXICO**

Wilbert Bibiano Marin<sup>1</sup>, Mike Dunbar<sup>2</sup>, Pablo Manrique Saide<sup>1</sup>, Norma Pavia Ruz<sup>1</sup>, Josue Villegas<sup>1</sup>, Scott Ritchie<sup>3</sup>, Tom Churcher<sup>4</sup>, Oselyne Ong<sup>5</sup>, Gonzalo Vazquez Prokopec<sup>2</sup>, **Gregor Devine**<sup>5</sup>

<sup>1</sup>Universidad Autonoma de Yucatan, Merida, Mexico, <sup>2</sup>Emory University, Atlanta, GA, United States, <sup>3</sup>James Cook University, Cairns, Australia, <sup>4</sup>Imperial College, London, United Kingdom, <sup>5</sup>QIMR Berghofer Medical Research Institute, Brisbane, Australia

4:45 p.m.

1957

**OPTIMIZING TRANSLUTHRIN TREATED DEVICES FOR DETERRENCE OF MOSQUITOES FROM APPROACHING AND ENTERING PERMETHRIN TREATED TENT**

**David Oullo**<sup>1</sup>, James Mutunga<sup>1</sup>, Sheila Ogoma<sup>2</sup>, Thomas Gilbreath<sup>3</sup>, Wes P. McCardle<sup>1</sup>

<sup>1</sup>U.S. Army Medical Research Directorate - Africa, Kisumu, Kenya, <sup>2</sup>Clinton Health Access Initiative, Nairobi, Kenya, <sup>3</sup>U.S. Army Medical Research Institute of Infectious Diseases, Maryland, WA, United States

5 p.m.

1958

**CHARACTERIZING THE IMMUNE PROFILE OF MOSQUITO LARVAE AFTER EXPOSURE TO A NOVEL ESSENTIAL OIL BASED LARVICIDE**

**Patrick H. Kelly**<sup>1</sup>, Ju-Lin Weng<sup>1</sup>, Michael J. Workman<sup>2</sup>, Ivy Hurwitz<sup>2</sup>, Marcelo Ramalho-Ortigao<sup>1</sup>

<sup>1</sup>Uniformed Services University of the Health Sciences, Bethesda, MD, United States, <sup>2</sup>University of New Mexico, Albuquerque, NM, United States

5:15 p.m.

1959

**SEMI-FIELD TRIALS OF A LOW-COST, DRIED ATTRACTIVE BAIT STATION FOR ADULT Aedes Aegypti CONTROL**

**Rachel Sippy**<sup>1</sup>, Valeria Sanchez<sup>2</sup>, Froilan Heras<sup>1</sup>, Efrain Ayala<sup>3</sup>, Anna M. Stewart-Ibarra<sup>4</sup>, Marco V. Neira<sup>5</sup>, David A. Larsen<sup>6</sup>

<sup>1</sup>SUNY Upstate Medical University and University of Florida, Machala, Ecuador, <sup>2</sup>SUNY Upstate Medical University, Machala, Ecuador, <sup>3</sup>Universidad Técnica de Machala, Machala, Ecuador, <sup>4</sup>SUNY Upstate Medical University and University of Florida, Syracuse, NY, United States, <sup>5</sup>Pontificia Universidad Católica del Ecuador, Quito, Ecuador, <sup>6</sup>Syracuse University, Syracuse, NY, United States

5:30 p.m.

1960

**THE IMPACT OF YEAST-ENCAPSULATED ORANGE OIL IN Aedes Aegypti OVIPOSITION PREFERENCE**

**Fabiane das Graças Caldeira Brant**<sup>1</sup>, Bruno Gomes<sup>1</sup>, Camila P. Jesus<sup>1</sup>, Michael J. Workman<sup>2</sup>, Ivy Hurwitz<sup>2</sup>, Mariana David<sup>1</sup>, Fernando A. Genta<sup>1</sup>

<sup>1</sup>Fiocruz - Oswaldo Cruz Institute, Rio de Janeiro, Brazil, <sup>2</sup>University of New Mexico, Albuquerque, NM, United States

**Scientific Session 157**

**Pneumonia, Respiratory Infections and Tuberculosis**

National Harbor 4/5 (National Harbor Level)

Saturday, November 23, 4 p.m. - 5:45 p.m.

**CHAIR**

Keith Klugman

Bill & Melinda Gates Foundation, Seattle, WA, United States

Nancy Ortiz

University of California Berkeley, Berkeley, CA, United States

4 p.m.

1961

**GEOGRAPHIC INEQUALITY IN CHILDHOOD MORTALITY AND MORBIDITY DUE TO LOWER RESPIRATORY INFECTIONS IN LOW-INCOME AND MIDDLE-INCOME COUNTRIES, 2000-2017**

**Catherine A. Welgan**, Mathew M. Baumann, QuynhAnh P. Nguyen, Brigitte F. Blacker, Robert C. Reiner Jr.

Institute for Health Metrics and Evaluation, University of Washington, Seattle, WA, United States

4:15 p.m.

1962

**BACTERIAL BIOMARKER IDENTIFICATION FOR PEDIATRIC PNEUMONIA IN A WELL-CHARACTERIZED COHORT FROM MOZAMBIQUE**

**Christopher Uschnig**<sup>1</sup>, Michael F. Gillette<sup>2</sup>, D. R. Mani<sup>3</sup>, Karell G. Pellé<sup>4</sup>, Stephen Schaffner<sup>5</sup>, Clarissa Valim<sup>6</sup>, Miguel Lanaspá<sup>6</sup>, Sozinho Acácio<sup>7</sup>, Lola Madrid<sup>6</sup>, Pedro L. Alonso<sup>6</sup>, Steven A. Carr<sup>8</sup>, Bronwyn MacLinnis<sup>1</sup>, Quique Bassat<sup>6</sup>, Danny A. Milner Jr<sup>8</sup>, Dyann F. Wirth<sup>1</sup>

<sup>1</sup>BROAD Institute of Massachusetts Institute of Technology and Harvard, Harvard T.H. Chan School of Public Health, Cambridge, MA, United States, <sup>2</sup>Broad Institute of Massachusetts Institute of Technology and Harvard, Massachusetts General Hospital, Cambridge, MA, United States, <sup>3</sup>Broad Institute of Massachusetts Institute of Technology and Harvard, Cambridge, MA, United States, <sup>4</sup>FIND - Because Diagnosis Matters, Geneva, Switzerland, <sup>5</sup>Boston University School of Public Health, Boston, MA, United States, <sup>6</sup>ISGlobal, Hospital Clínic - Universitat de Barcelona, Centro de Investigación em Saúde de Manhica (CISM), Barcelona, Spain, <sup>7</sup>Centro de Investigación em Saúde de Manhica (CISM), Maputo, Mozambique, <sup>8</sup>ASCP - American Society for Clinical Pathology, Chicago, IL, United States

4:30 p.m.

1963

**WHAT IS A BREATH? WORKING TOWARDS AN IMPROVED REFERENCE STANDARD FOR COUNTING RESPIRATORY RATE TO VALIDATE NEW AUTOMATED PNEUMONIA DIAGNOSTIC AIDS FOR CHILDREN UNDER FIVE**

**Charlotte Alice Ward**, Alice Maurel, Ann-Sophie Stratil, Monica Anna de Cola, Tedila Habte, Kevin Baker

Malaria Consortium, London, United Kingdom

4:45 p.m.

1964

**INCIDENCE OF INFLUENZA AND INFLUENZA-LIKE ILLNESS IN HOUSEHOLDS OF PREGNANT WOMEN, POSTPARTUM WOMEN AND INFANTS UNDER SIX MONTHS OF AGE IN BAMAKO, MALI**

**Nancy Ortiz**<sup>1</sup>, Adama M. Keita<sup>2</sup>, Boubou Tamboura<sup>2</sup>, Flanon Coulibaly<sup>2</sup>, Uma Onwuchekwa<sup>2</sup>, Samba O. Sow<sup>2</sup>, Arthur L. Reingold<sup>1</sup>, Myron M. Levine<sup>3</sup>, Milagritos D. Tapia<sup>3</sup>

<sup>1</sup>University of California Berkeley, Berkeley, CA, United States, <sup>2</sup>Centre pour le Développement des Vaccins-Mali, Bamako, Mali, <sup>3</sup>Center for Vaccine Development, University of Maryland School of Medicine, Baltimore, MD, United States

5 p.m.

1965

**VIRAL ETIOLOGY OF PNEUMONIA AMONG SEVERELY MALNOURISHED UNDER-FIVE CHILDREN, A PROSPECTIVE CASE-CONTROL STUDY IN AN URBAN HOSPITAL, BANGLADESH**

**Fahmida Chowdhury**, ASM Sayeem Bin Shahid, Probir Kumar Ghosh, Mustafizur Rahman, Zakiul Hasan, Zubair Akhtar, S Mah-E Muneer, Lubaba Shahrin, Mohammad Jobayer Chisti

International Centre for Diarrhoeal Disease Research, Bangladesh, Dhaka, Bangladesh



5:15 p.m.

1966

### **OBESITY IMPACT AND THE ROLE OF THE MICROBIOTA IN THE SUSCEPTIBILITY TO TUBERCULOSIS INFECTION**

**Sandra P. Palma Albornoz**, Rômulo S. De Oliveira, Tamara S. Rodrigues, Ana Flávia Gembre, Leandra Z. Ramalho, Daniela Carlos, Vânia L. Bonato  
*Universidade São Paulo, São Paulo, Brazil*

5:30 p.m.

1967

### **SEVEN-YEAR OUTCOME ANALYSIS OF THE TUBERCULOSIS PROGRAM AT THE CENTRE HOSPITALIER RÉGIONAL SPÉCIALISÉ (CHRS) IN MACENTA, FOREST REGION, GUINEA-CONAKRY**

**Cornelia J. Staehelin**<sup>1</sup>, Valérie Schoenbaechler<sup>2</sup>, Jean Hébélamou<sup>3</sup>, Yakpazouo Guilavogui<sup>3</sup>, Sosso Onivogui<sup>3</sup>, Catrina Mugglin<sup>2</sup>, Hansjakob Furrer<sup>2</sup>, Esther Bavogui<sup>3</sup>, Cécé Kolié<sup>3</sup>, Pévé Zoumanigui<sup>3</sup>, Ismaël Béavogui<sup>3</sup>, David Leuenberger<sup>3</sup>  
<sup>1</sup>*Bern University Hospital, Bern, Switzerland*, <sup>2</sup>*Department of Infectious Diseases, Bern University Hospital, University of Bern, Bern, Switzerland*, <sup>3</sup>*Centre Hospitalier Régional Spécialisé, Macenta, Guinée*

## **Symposium 158**

### **Scrub Typhus: A Global But Neglected Disease**

*National Harbor 10 (National Harbor Level)*

Saturday, November 23, 4 p.m. - 5:45 p.m.

The *rickettsiaceae* represent a global family of zoonotic, vector-borne neglected pathogens. Consisting of typhus group, scrub typhus group and spotted fever group rickettsias (as well as a currently debated fourth 'transitional' group), these organisms represent a relatively little-known perfect storm of potential global health significance. Not only are rickettsias already recognized as the most common treatable cause of febrile illness in rural Southeast Asia, but the recent identification of *Orientia tsutsugamushi* in South America and *O. chuto* in the Middle East and Africa highlights what little is known about the distribution and potential impact of these pathogens. In addition, the majority of rickettsias are zoonotic and are transmitted by arthropod vectors including ticks, fleas and lice. Both hosts and vectors are seeing a dynamic change in their distributions due to natural and anthropogenic factors, and are therefore increasing the possibility of contact with humans, leading to transmission and potential infection. Scrub typhus, *O. tsutsugamushi*, transmitted through the bite of the trombiculid mite, is of particular interest. As with other rickettsial organisms, clinical symptoms of scrub typhus infections range across a continuous spectrum, from a general febrile illness (headache, myalgia, fever, nausea and vomiting) to more serious and fatal outcomes including multi-organ dysfunction, neurologic deficits and death. An eschar at the site of the mite bite is often, but not always, identified. With these non-specific symptoms, and especially with the absence of an eschar, the differential diagnosis encompasses many common infections including viral, bacterial and parasitic organisms, and so often results in mis-diagnosis and clouds the true epidemiology of scrub typhus and rickettsias in general, in many regions. Although both serological and nucleic acid-based diagnostic tests are available, these are often non-specific and technologically or economically unsuitable for low-resource settings, which commonly coincide with key regions where rickettsial pathogens are prevalent, further impacting the difficulty in diagnosing and treating disease.

This symposium brings together researchers from around the globe, and at different stages of their careers, to discuss the current status of scrub typhus in South America, Africa and Asia, and showcases recent advancements in the field, as well as identifying areas needing further research.

#### **CHAIR**

Matthew Robinson  
*Lao-Oxford-Mahosot Hospital-Wellcome Trust Research Unit, Vientiane, Lao People's Democratic Republic*

Nicholas P. Day  
*Mahidol University, Faculty of Tropical Medicine, Bangkok, Thailand*

4 p.m.

#### **SCRUB TYPHUS IN SOUTH AMERICA: AN UPDATE**

Thomas Weitzel  
*Clínica Alemana, Universidad del Desarrollo, Santiago, Chile*

4:15 p.m.

#### **SCRUB TYPHUS IN AFRICA – A NEW CHALLENGE**

Daniel Paris  
*Swiss Tropical and Public Health Institute, Basel, Switzerland*

4:30 p.m.

#### **SCRUB TYPHUS IN INDONESIA**

Kartika Saraswati  
*Eijkman Oxford Clinical Research Unit, Jakarta, Indonesia*

4:45 p.m.

#### **ADVANCES IN DIAGNOSIS AND TREATMENT OF SCRUB TYPHUS**

George M. Varghese  
*Christian Medical College, Vellore, India*

5 p.m.

#### **ANTIBIOTIC RESISTANT SCRUB TYPHUS - FACT OR FICTION**

Weerawat Phuklia  
*Lao-Oxford Mahosot Hospital-Wellcome Research Unit (LOMWRU), Mahosot Hospital, Vientiane, Lao People's Democratic Republic*

5:15 p.m.

#### **DISCUSSION**

## Symposium 159

### Finding and Meeting the Challenges of Schistosomiasis Control: The SCORE Project

*National Harbor 11 (National Harbor Level)*

Saturday, November 23, 4 p.m. - 5:45 p.m.

This symposium will discuss how the results of projects funded by SCORE, the Schistosomiasis Consortium for Operational Research and Evaluation, are being used to define practical next steps in regional and national schistosomiasis control. It will address the lessons learned in developing and implementing SCORE's parallel multi-country trials performed in endemic areas of Africa, and will provide a meta-analysis of the results of large-scale operational research on the use of targeted MDA for control of schistosome infection and its related morbidity. In addition, new feasibility findings will be presented on the role of adjunctive surveillance strategies in treated areas that remain as persistent hot spots, or conversely, that have been reduced to very low infection prevalence via MDA. The session will discuss the implications of SCORE data for mid-course program modifications, and how the operational research findings are contributing to the design and establishment of new schistosomiasis control policy. Finally, the symposium will relate what additional research should be built upon the experience of the SCORE program.

#### CHAIR

Charles H. King  
*Case Western Reserve University, Cleveland, OH, United States*

Daniel G. Colley  
*University of Georgia, Athens, GA, United States*

4 p.m.

#### **DEVELOPMENT, IMPLEMENTATION AND ASSESSMENT OF A MULTIFACETED OPERATIONAL RESEARCH AGENDA FOR SCHISTOSOMIASIS CONTROL AND ELIMINATION**

Sue Binder  
*Schistosomiasis Consortium for Operational Research and Evaluation, Athens, GA, United States*

4:25 p.m.

#### **HOW META-ANALYSIS OF THE COMBINED SCORE RESULTS CAN INFORM THE NEW WHO GUIDELINES FOR SCHISTOSOMIASIS CONTROL**

Charles H. King  
*Case Western Reserve University, Cleveland, OH, United States*

4:50 p.m.

#### **FEASIBILITY OF SUPPLEMENTAL SURVEILLANCE APPROACHES FOR AUGMENTING MDA AS PROGRAMS MATURE**

Nupur Kittur  
*Schistosomiasis Consortium for Operational Research and Evaluation, Athens, GA, United States*

5:15 p.m.

#### **USING SCORE'S OPERATIONAL RESEARCH EXPERIENCE TO MEET THE FUTURE CHALLENGES FOR SCHISTOSOMIASIS CONTROL**

Daniel G. Colley  
*University of Georgia, Athens, GA, United States*

## Special Session 160

### Moving back Home: Strategies for Returning Back to LMICs after Training Abroad

*National Harbor 8 (National Harbor Level)*

Saturday, November 23, 4 p.m. - 6 p.m.

This is a networking and strategy meeting tailored towards students and early career professionals working in medicine, research and other scientific endeavors. This session will discuss the particular needs of those from low- and middle-income countries who have trained abroad in technologically-advanced countries and want to plan for a move back to their home countries. Ideally suited to participants from sub-Saharan and North Africa, Latin America and relevant Asian countries. Effective strategies for planning a return trip home will be discussed. Participants are expected to help move the discussion along as this is an opportunity to share and learn from one another. The session will feature a speaker and discussion facilitator and participants will have the opportunity to discuss ideas in small groups led by scientists who have successfully repatriated to LMIC countries.

#### CHAIR

Ayman Ahmed  
*Institute of Endemic Diseases, University of Khartoum, Khartoum, Sudan*

Johanna P. Daily  
*Albert Einstein College of Medicine, Bronx, NY, United States*

Abiola Fasina  
*Consultant Emergency Physician, Emergency Healthcare Consultants, Lagos, Nigeria*

Linnie Golightly  
*Weill Cornell School of Medicine, New York, NY, United States*

#### DISCUSSION FACILITATORS

Robert C. Bollinger  
*Director, Center for Clinical Global Education and Professor of Medicine, Johns Hopkins School of Medicine, Baltimore, MD, United States*

LMIC Repatriated Scientist Discussion Leaders

## Plenary Session 161

### Plenary Session IV: President's Address

Maryland C (Ballroom Level)

Saturday, November 23, 6:15 p.m. - 7 p.m.

6:15 p.m.

#### INTRODUCTION

Patricia F. Walker

University of Minnesota, St. Paul, MN, United States

6:30 p.m.

#### PRESIDENT'S ADDRESS: SOMETHING SMALL THAT MATTERS



#### Chandy C. John, MD, MS, FASTMH

Ryan White Professor of Pediatrics  
Director, Ryan White Center for Pediatric  
Infectious Disease and Global Health  
Indiana University School of Medicine

Chandy C. John, MD, MS, FASTMH, holds the Ryan White Endowed Chair in Pediatric

Infectious Diseases and is director of the Ryan White Center for Pediatric Infectious Disease and Global Health at Indiana University. Dr. John's research focuses on malaria pathogenesis, immunology and epidemiology. Key discoveries of his collaborative research team include: 1) the first prospective studies to establish that severe malaria is associated with long-term cognitive impairment in children; 2) identification of immunologic factors that increase risk of severe malaria and cognitive impairment after severe malaria; 3) determination of geographic and immunologic factors that affect risk of malaria in areas of unstable malaria transmission; and 4) the first studies to show that hydroxyurea treatment is safe and effective for children with sickle cell anemia in malaria endemic areas.

Dr. John is an active clinician, specializing in pediatric infectious diseases, tropical medicine and travel medicine. He conducts research and training programs in Kenya in collaboration with colleagues at the Kenya Medical Research Institute and Moi University, and in Uganda in collaboration with colleagues at Makerere University. He is the author of more than 170 peer-reviewed publications and 30 book chapters. Dr. John serves on the Thrasher Research Fund Scientific Advisory Committee, and has served on or chaired numerous NIH and national and international study sections and review boards. Dr. John's awards include the Pediatric Infectious Diseases Society Young Investigator Award (2004), and the Bailey K. Ashford Medal from the ASTMH for contributions to tropical medicine research (2011).

As an educator, Dr. John was director of global health residency tracks in pediatrics at Case Western Reserve University in Cleveland and the University of Minnesota, and co-director of the Morris Green Physician-Scientist Training Program at Indiana University. Dr. John has been an ASTMH member since 1996, was elected a Fellow of the ASTMH in 2015, and is the current President of ASTMH.

## Special Session 162

### Film Screening: Under the Mask, Premiere in USA

National Harbor 2 (National Harbor Level)

Saturday, November 23, 7:15 p.m. - 9 p.m.

"Under the Mask" is a 2019 dramatic film based on the real testimony of tuberculosis (TB) patients. The story follows the lives of the characters as they journey from diagnosis to treatment and help from the Shoklo Malaria Research Unit (SMRU) TB team, and explores how each discovers their capacity to overcome the deadly disease and to share their knowledge and experience with others. "Under the Mask" is a powerful look at TB on the Thai-Myanmar border. Made in the local language and with the local community, it provides an engaging and inspiring tool for raising TB awareness amongst the community. Produced by the FilmAid Foundation (Mae Sot, Thailand) in collaboration with SMRU and MORU, and funded by Wellcome, "Under the Mask" uses non-professional actors from the border community to allow TB patients to tell their story of life with TB. The FilmAid Foundation uses a participatory approach to filmmaking, using cast and crew drawn from grassroots and vulnerable communities. "Under the Mask" is currently on tour in villages along the Thai-Myanmar border. The film premiered in Shwe Koko, Kayin State, Myanmar on World TB Day this year, and in Bangkok on June 17, 2019. This 74-minute film is presented in Burmese with English subtitles. Refreshments will be provided.

#### CHAIR

Phaik Yeong Cheah, Executive Producer, "Under the Mask"  
Mahidol-Oxford Tropical Medicine Research Unit (MORU), Bangkok, Thailand

7:15 p.m.

#### WELCOME AND INTRODUCTION

Phaik Yeong Cheah

Mahidol-Oxford Tropical Medicine Research Unit (MORU), Bangkok, Thailand

7:30 p.m.

#### FILM SCREENING: "UNDER THE MASK"

8:45 p.m.

#### QUESTIONS AND ANSWERS

Moderator: Nicholas P. Day

Director, Mahidol-Oxford Tropical Medicine Research Unit (MORU), Bangkok, Thailand

# Sunday, November 24

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## Registration

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*Potomac Ballroom Lobby (Ballroom Level)*  
Sunday, November 24, 7 a.m. - 10:30 a.m.

## Speaker Ready Room

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*Chesapeake A (Ballroom Level)*  
Sunday, November 24, 7 a.m. - 10:30 a.m.

## Meeting Sign-Up Room

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*Chesapeake 6 (Ballroom Level)*  
Sunday, November 24, 7 a.m. - 1 p.m.

## ASTMH Board of Directors Meeting

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*Maryland 1/2 (Ballroom Level)*  
Sunday, November 24, 7:30 a.m. - 9:30 a.m.

## Symposium 163

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### We've Got a Dragon by the Tail: Achievements, Challenges and Lessons Learned on the Road to Guinea Worm Eradication

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*Maryland A (Ballroom Level)*  
Sunday, November 24, 8 a.m. - 9:45 a.m.

Drawing from the successful campaign to eradicate smallpox, the Centers for Disease Control and Prevention (CDC) began a Guinea worm eradication initiative in 1980, and in 1986 the World Health Assembly officially called for the elimination of dracunculiasis. The Carter Center then began assisting ministries of health in countries with endemic dracunculiasis to establish community-based surveillance and interventions. In 1986, 3.5 million cases were estimated to have occurred in 20 countries in Africa and Asia. The number of reported human cases in 2018 was reduced to 28 (>99% reduction) and confined to just three countries: Chad, South Sudan and Angola. Progress towards eradication continues, but several challenges remain, including the recent discovery of *Dracunculus medinensis* (the causative agent of Guinea worm) in domestic dogs and cats and ongoing transmission in conflict and post-conflict settings. The Guinea Worm Eradication Program (GWEP) surveillance system represents an extensive network of village volunteers and field staff and is, to the authors' knowledge, the world's largest active village-based surveillance system that identifies disease in both humans and animals. This symposium will first discuss strategies to utilize surveillance data to inform, plan and implement interventions targeting Guinea worm infections in people and in dogs. To complement knowledge gained from surveillance efforts, the campaign has also collaborated with academic researchers to investigate (among other objectives) the genetic relatedness of *D. medinensis* populations at the epicenter of transmission in Chad. Results from the first large-scale Guinea worm genealogical and population genetic analyses will be presented, and the implications for how these findings might complement surveillance data will be discussed. One cross-cutting challenge to the eradication campaign and public health community is the establishment and maintenance of disease surveillance

systems in insecure settings. As such, a review of surveillance in South Sudan's conflict and post-conflict environment will be explored. Finally, in light of new challenges facing Guinea worm eradication, the process and criteria for certification of eradication will be discussed, and the roadmap to certification for the remaining eight countries will be presented.

## CHAIR

Adam J. Weiss  
*The Carter Center, Atlanta, GA, United States*

Dieudonne Sankara  
*World Health Organization, Geneva, Switzerland*

8 a.m.

### MANAGING AND MINING GUINEA WORM SURVEILLANCE DATA FOR ACTION

Sarah Anne Guagliardo  
*Centers for Disease Control and Prevention, Atlanta, GA, United States*

8:20 a.m.

### THE ART OF MULTIDISCIPLINARY ACTION: INTERRUPTING TRANSMISSION AMONG HIGHLY MOBILE POPULATIONS IN CONFLICT AND POST-CONFLICT AREAS

Makoy Samuel Yibi  
*Ministry of Health-South Sudan, Juba, South Sudan*

8:40 a.m.

### COVERING ALL THE BASES: USING POPULATION GENETICS TO ELUCIDATE *DRACUNCULUS MEDINENSIS* TRANSMISSION DYNAMICS AND POPULATION HISTORY

Elizabeth A. Thiele  
*Vassar College, Poughkeepsie, NY, United States*

9 a.m.

### THE SERPENTINE ROAD TO CERTIFICATION: STRATEGIES TO ACHIEVE CERTIFICATION

Dieudonne Sankara  
*World Health Organization, Geneva, Switzerland*

9:20 a.m.

### DISCUSSION

## Symposium 164

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### What is Needed to Eliminate Viral Hepatitis within Existing Health Systems

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*Maryland B (Ballroom Level)*  
Sunday, November 24, 8 a.m. - 9:45 a.m.

In 2016, the World Health Organization set goals to eliminate Hepatitis B virus (HBV) and hepatitis C virus (HCV), defined as a 90% reduction in new infections and a 65% reduction in deaths. HBV and HCV are large public health problems projected to be the cause of more deaths by 2040 than HIV, malaria and TB combined. In 2013, HBV and HCV were responsible for 1.28 million deaths and the cause of more than three quarters of liver cancer deaths. Low and middle-income countries in Africa and Asia have large disease burdens. Reaching elimination targets by 2030 will prevent at least 1.5 million HBV and HCV-related deaths. Elimination of HBV and HCV is feasible because of characteristics of the viruses, reliable diagnostic tools and available cost-effective or cost-saving interventions. Broad implementation of infant immunization against HBV, blood safety and infection-control programs have



greatly reduced the burden of HBV and HCV infections. To achieve elimination, priorities include implementation of HBV vaccine-based strategies to prevent perinatal transmission, safe injection practices and testing and treatment for HBV- and HCV-infected persons. Globally, the great challenge to the elimination of chronic HBV infection is vaccination of newborns. A birth dose of hepatitis B vaccine, preferably within 24 hours of birth, followed by two doses of infant immunizations, decreases risk of perinatal HBV transmission by 90%. In 2015, only 39% of newborns received the HBV vaccine globally. Sub-Saharan Africa has the lowest coverage. HBV and HCV testing to identify infected persons with linkages to recommended care and treatment for HBV and cure of HCV dramatically reduce the risk of liver cancer and mortality. However, HBV and HCV infections are underdiagnosed and undertreated. There are cost-effective strategies to increase hepatitis B vaccination and HBV and HCV testing and linkage to care and treatment. By sharing lessons learned and other efforts to build capacity for implementation, the goals for HBV and HCV can be achieved.

#### CHAIR

Duncan Steele

*Bill & Melinda Gates Foundation, Seattle, WA, United States*

John Ward

*Coalition for Global Hepatitis Elimination, Task Force for Global Health, Decatur, GA, United States*

8 a.m.

#### OVERVIEW OF GLOBAL HBV AND HCV EPIDEMIOLOGY, ELIMINATION TARGETS AND PREVENTION EFFECTIVENESS

John W. Ward

*Task Force for Global Health, Decatur, GA, United States*

8:15 a.m.

#### THE ESSENTIAL COMPONENTS OF HCV ELIMINATION PROGRAMS

Imam Waked

*National Liver Institute (NLI) in Egypt, Cairo, Egypt*

8:30 a.m.

#### HEPATITIS B VACCINATION AND MOVE TOWARD HCV ELIMINATION THAILAND

Yong Poovorawan

*Chulalongkorn University, Bangkok, Thailand*

8:45 a.m.

#### SUCCESSES IN INFANT HEPB VACCINATION, AND CHALLENGES FOR HBV TESTING AND TREATMENT IN AFRICA

Maud Lemoine

*St Mary's Hospital, Imperial College London, United Kingdom and Medical Research Council (MRC), The Gambia*

9 a.m.

#### DISCUSSION

## Scientific Session 165

### Malaria: Opportunities and Challenges for Providers and Policy-Makers in Malaria Control

*Maryland C (Ballroom Level)*

Sunday, November 24, 8 a.m. - 9:45 a.m.

#### CHAIR

Kent Kester

*Sanofi Pasteur, Swiftwater, PA, United States*

Moumouni Bonkoungou

*Jhpiego, Ouagadougou, Burkina Faso*

8 a.m.

1968

#### CLINICAL MANAGEMENT OF CHILDREN WITH MALARIA ACROSS 8 AFRICAN COUNTRIES: A CROSS-SECTIONAL ASSESSMENT OF NATIONALLY REPRESENTATIVE DIRECT OBSERVATION DATA

Jessica Cohen<sup>1</sup>, Hannah Leslie<sup>1</sup>, Indrani Saran<sup>2</sup>, Guenther Fink<sup>3</sup>

*<sup>1</sup>Harvard School of Public Health, Boston, MA, United States, <sup>2</sup>Boston College School of Social Work, Boston, MA, United States, <sup>3</sup>Swiss Tropical and Public Health Institute and University of Basel, Basel, Switzerland*

8:15 a.m.

1969

#### AVIAN MALARIA: TROPICAL DEFORESTATION AND HOST SPECIFICITY

Ravinder N. Sehgal

*San Francisco State University, San Francisco, CA, United States*

8:30 a.m.

1970

#### LABORATORY QUALITY CONTROL SYSTEM FOR LARGE-SCALE MALARIA SEROSURVEYS: HAITI 2017

Lotus L. van den Hoogen<sup>1</sup>, Jacquelin Pr sum <sup>2</sup>, Ithamare Romilus<sup>2</sup>, Gina Mond lus<sup>2</sup>, Tamara Elism <sup>2</sup>, Nuno Sep lveda<sup>1</sup>, Gillian Stresman<sup>1</sup>, Thomas Druetz<sup>3</sup>, Ruth A. Ashton<sup>4</sup>, Vena Joseph<sup>4</sup>, Thomas P. Eisele<sup>4</sup>, Karen E. Hamre<sup>5</sup>, Michelle A. Chang<sup>5</sup>, Jean F. Lemoine<sup>6</sup>, Kevin K. Tetteh<sup>1</sup>, Jacques Boncy<sup>2</sup>, Alexandre Existe<sup>2</sup>, Chris Drakeley<sup>1</sup>, Eric Rogier<sup>5</sup>

*<sup>1</sup>London School of Hygiene & Tropical Medicine, London, United*

*Kingdom, <sup>2</sup>Laboratoire National de Sant  Publique, Port au Prince, Haiti, <sup>3</sup>University*

*of Montreal School of Public Health, Montreal, QC, Canada, <sup>4</sup>Tulane University*

*School of Public Health and Tropical Medicine, New Orleans, LA, United*

*States, <sup>5</sup>Centers for Disease Control and Prevention, Atlanta, GA, United*

*States, <sup>6</sup>Minist re de la Sant  Publique et de la Population, Port au Prince, Haiti*

8:45 a.m.

1971

#### RISK OF ADVERSE PREGNANCY OUTCOMES IN WOMEN TREATED FOR MALARIA WITH DIHYDROARTEMISININ-PIPERAQUINE OR QUININE IN THE FIRST TRIMESTER OF PREGNANCY IN INDONESIA: A RETROSPECTIVE DATA ANALYSIS

Rukhsana Ahmed<sup>1</sup>, Kerry A. Moore<sup>2</sup>, Theda Lukito<sup>3</sup>, Andre-Marie Tchouatieu<sup>4</sup>, Maud M. Lugand<sup>4</sup>, Stephanie Dellicour<sup>1</sup>, Feiko O. Ter Kuile<sup>1</sup>, Richard N. Price<sup>5</sup>, Julie A. Simpson<sup>2</sup>, Jeanne R. Poespoprodjo<sup>6</sup>

*<sup>1</sup>Liverpool School of Tropical Medicine, Liverpool, United Kingdom, <sup>2</sup>Center for*

*Epidemiology and Biostatistics, Melbourne School of Population and Global*

*Health, University of Melbourne, Melbourne, Australia, <sup>3</sup>Clinesia, Jakarta,*

*Indonesia, <sup>4</sup>Medicines for Malaria Venture, Geneva, Switzerland, <sup>5</sup>Global and Tropical*

*Health Division, Menzies School of Health Research and Charles Darwin University,*

*Darwin, Australia, <sup>6</sup>Timika Research Facility and Department of Child Health, Faculty*

*of Medicine, Universitas, Gadjah Mada, Yogyakarta, Indonesia*

9 a.m.

1972

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### WHAT HAPPENS WHEN THE SUPPORT ENDS? A COMPARISON OF PRIVATE SECTOR ANTIMALARIAL MARKET SITUATIONS IN MYANMAR

Si Thu Thein<sup>1</sup>, Ye Kyaw Aung<sup>1</sup>, Phone Si Hein<sup>1</sup>, Aung Thi<sup>2</sup>

<sup>1</sup>Population Services International Myanmar, Yangon, Myanmar, <sup>2</sup>National Malaria Control Program, Ministry of Health and Sports, Nay Pyi Taw, Myanmar

9:15 a.m.

1973

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### JOINT EFFORTS TO IMPROVE MALARIA CONTROL IN THREE REFUGEE CAMPS IN KIGOMA, TANZANIA: SUCCESSES, CHALLENGES AND LESSONS LEARNED

Shabani Kililwa Muller<sup>1</sup>, Juma Ng'akola<sup>1</sup>, Zephania Nyakihia<sup>2</sup>, Godfrey Smart<sup>3</sup>, Goodluck Tesha<sup>1</sup>, Jasmine Chadewa<sup>2</sup>, Agnes Kosia<sup>2</sup>, Zahra Mkomwa<sup>1</sup>, Dunstan Bishanga<sup>4</sup>, Rita Noronha<sup>2</sup>, Lusekelo Njoge<sup>4</sup>, Gaudiosa Tibajiuka<sup>4</sup>, Chonge Kitojo<sup>5</sup>, Erik Reaves<sup>5</sup>

<sup>1</sup>Path Tanzania, Kigoma, United Republic of Tanzania, <sup>2</sup>United States Agency for International Development Boresha Afya Project –Jhpiego Tanzania, Kigoma, United Republic of Tanzania, <sup>3</sup>Regional Health Management Team-Kigoma, Tanzania, Kigoma, United Republic of Tanzania, <sup>4</sup>United States Agency for International Development Boresha Afya Project –Jhpiego Tanzania, Kigoma, United Republic of Tanzania, <sup>5</sup>President's Malaria Initiative/United States Agency for International Development, Kigoma, United Republic of Tanzania

9:30 a.m.

1974

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### MMENTORING, A NEW APPROACH TO IMPROVE MALARIA CARE IN BURKINA FASO

Moumouni Bonkougou<sup>1</sup>, Ousmane Badolo<sup>1</sup>, Youssouf Sawadogo<sup>1</sup>, Stanislas Nebie<sup>1</sup>, Thierry Ouedraogo<sup>1</sup>, Yacouba Savadogo<sup>2</sup>, William Brieger<sup>3</sup>, Gladys Tetteh<sup>4</sup>, Blami Dao<sup>4</sup>

<sup>1</sup>PMI Improving Malaria Care Project, Ouagadougou, Burkina Faso, <sup>2</sup>Ministry of Health, National Malaria Control Program, Ouagadougou, Burkina Faso, <sup>3</sup>Johns Hopkins University, Baltimore, MD, United States, <sup>4</sup>Jhpiego Baltimore, Baltimore, MD, United States

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## Symposium 166

### Safety Is No Accident: Harm Reduction and Mass Drug Administration

*Potomac A (Ballroom Level)*

Sunday, November 24, 8 a.m. - 9:45 a.m.

Each year, more than one billion people are safely treated for neglected tropical diseases (NTDs) via mass drug administration (MDA). This massive intervention, across multiple platforms, cultures and communities represents a major public health success, delivering huge health benefits. This symposium will analyze the reasons for that success, as well as discuss steps taken by the NTD community to anticipate, prevent and respond to unintended MDA-associated harm. The symposium will begin with a presentation on ethical principles that undergird large-scale public health interventions. These principles will then be applied to three recent situations related to MDA safety from the perspectives of a global drug donation program and two national NTD programs. Since it was launched 20 years ago, the International Trachoma Initiative (ITI) has provided Zithromax<sup>®</sup> for MDA in the form of power for oral suspension (POS) for children 6-60 months of age and tablets for older persons. POS is an age-appropriate formulation intended to reduce risk of choking in young children. To further enhance safety, ITI recently revised dosing guidelines, recommending POS for all children 6-83 months of age or less than 120 cm in height, and for any person, regardless of age, who may have trouble swallowing

tablets. Implementing this safety-conscious decision has had practical implications for every tier of the MDA process: from the coordination of the international drug donation to the planning of national programs and implementing partners to individual community drug distributors tasked with administering the drug to the beneficiaries using a new “dosing pole.” The second speaker will discuss the challenges, costs and lessons learned from this programmatic shift. A third panelist, from the Federal Ministry of Health (FMOH) of Ethiopia, will share the FMOH experience of an MDA safety analysis of MDA platforms throughout the country. This analysis includes key informant interviews and focus group discussions with national and community-level agents, as well as implementing partners involved in the MDA. The focus of these initiatives was to empower both those who administer the drug and beneficiaries receiving the drug with improved safety messaging. In addition to prevention, the analysis also considers mechanisms for prompt reporting and management of Serious Adverse Events (SAEs). Lastly, an official from the Uganda MOH will discuss multiple occurrences of adverse events in a community following MDA with praziquantel. The panelist will discuss how this occurrence unfolded and how the national program implemented a post-adverse event strategic plan within the community to both improve future safety and ensure community buy-in to subsequent rounds of MDA.

#### CHAIR

Scott McPherson  
*RTI International, Durham, NC, United States*

Upendo Mwingira  
*RTI International, Durham, NC, United States*

8 a.m.

### MAXIMIZING BENEFITS WHILE MINIMIZING HARM: ETHICAL PRINCIPLES FOR MASS DRUG ADMINISTRATION

David Addis  
*Task Force for Global Health, Atlanta, GA, United States*

8:20 a.m.

### POLE POSITION: THE EFFORT TO IMPLEMENT NEW ZITHROMAX<sup>®</sup> DOSING GUIDANCE THROUGHOUT THE WORLD

P.J. Hooper  
*International Trachoma Initiative, Atlanta, GA, United States*

8:40 a.m.

### AN OBSERVATIONAL MDA SAFETY ASSESSMENT ACROSS THREE REGIONS IN ETHIOPIA

Nebiyu Negussu  
*Federal Ministry of Health, Addis Ababa, Ethiopia*

9 a.m.

### THE UGANDA EXPERIENCE FOR ADDRESSING THE OCCURRENCE OF MULTIPLE ADVERSE EVENTS AFTER SCHISTOSOMIASIS MDA

Gilbert Bayeenda  
*Uganda Ministry of Health, Kampala, Uganda*

9:20 a.m.

### DISCUSSION

## Symposium 167

### Venezuelan Complex Humanitarian Emergency: A Perfect Storm

*Potomac B (Ballroom Level)*

Sunday, November 24, 8 a.m. - 9:45 a.m.

Venezuela is suffering from a man-made complex humanitarian emergency. Over the past decade, the country has faced a severe economic crisis, precipitated by political instability and the declining oil revenue. Public health provisions have been affected by basic services, medicines and food becoming increasingly inaccessible in a hyperinflation context. The economic deterioration of Venezuela has been cataloged by the International Monetary Fund as one of the 20 world economic disasters. Venezuela's health system is coping with several challenges. Neonatal-infant-child and maternal mortality rates have been increasing in the past 5-10 years. The child mortality rate in 2016 already rivaled Syria's; a Grade 3 emergency according to the World Health Organization. Furthermore, moderate and/or severe malnutrition have been reported as a high public health concern and 90% of households have a poor diet; extreme poverty is increasing (Caritas, ENCOVI). Public health concerns persist throughout the Americas region. Venezuela has a continuous scarcity of essential medicines with an estimate of an 85-90% shortage nationwide. Infectious disease outbreaks in Venezuela pose a significant threat to the vulnerable populations in the region. By January 2019, there were >6.3K measles cases confirmed and 76 deaths in Venezuela. In addition, more than 2.5K confirmed cases of diphtheria, including over 270 associated deaths that have been also reported. The malaria incidence has been rising since 2000 (increasing by 359% by 2015), and by 2017 Venezuela harbors 53% of the malaria cases and more than 80% of the estimated deaths in the continent. Other vector-borne diseases are also increasing in recent years such as: Chagas, leishmaniasis and Zika. Many people living with HIV have migrated to neighboring countries because stock-outs of antiretroviral drugs are not uncommon. Several violations of human rights have increased, especially for organizations working with people affected by diseases (i.e. HIV, chronic, organ transplant, etc.). The consequences of Venezuela's crisis have even spilled beyond its borders. More than 3.4 million people have left the country since 2015. The Venezuelan government has repeatedly rejected offers of humanitarian assistance. Economic, political and social conditions inside Venezuela are projected to worsen in the coming months. This symposium will present an update of the current situation, challenges and how partners can contribute to alleviate the suffering of the Venezuelan people. The speakers come from a wide range of academic disciplines including law, clinical medicine and public policies. All speakers are involved in the response to this complex humanitarian emergency, most of them being Venezuelan citizens themselves.

#### CHAIR

Leopoldo Villegas

*Global Development One, Silver Spring, MD, United States*

Mary Ann Torres

*International Council of AIDS Service Organizations, Toronto, ON, Canada*

8 a.m.

### VENEZUELA'S HUMANITARIAN EMERGENCY TASK FORCE - UPDATE

Julio Castro

*Universidad Central de Venezuela, Caracas, Bolivarian Republic of Venezuela*

8:15 a.m.

### EVOLUTION AND EXPANSION OF MALARIA AND OTHER VECTOR-BORNE DISEASES: A REGIONAL THREAT

Leopoldo Villegas

*Asociacion Civil Impacto Social (ASOCIS), Tumeremo, Bolivarian Republic of Venezuela*

8:30 a.m.

### VENEZUELA'S HUNGER: SOLUTIONS FOR OVERCOMING THE CRISIS

Marianella Herrera

*Observatorio Venezolano de la Salud, Caracas, Bolivarian Republic of Venezuela*

8:45 a.m.

### A U.S. PERSPECTIVE ON THE HUMANITARIAN AND HEALTHCARE CRISIS IN VENEZUELA

Olga Cabello

*Department of State and U.S. Congress Representative, Washington, DC, United States*

9 a.m.

### DISCUSSION

## Symposium 168

### Measuring Environmental Enteric Dysfunction (EED): Insights from Interventional Trials and Observational Studies in Bangladesh, Kenya and Mali

*Potomac C (Ballroom Level)*

Sunday, November 24, 8 a.m. - 9:45 a.m.

Environmental enteric dysfunction (EED) is the manifestation of structural gut damage and impaired intestinal function that may result from the combination of malnutrition and persistent presence of pathogens in the gut in early childhood. It is virtually ubiquitous in impoverished communities, especially in areas with limited access to clean water, sanitation, and hygiene where children are constantly exposed to an array of enteric pathogens in their environment. EED in infants and young children has been linked to stunting, delayed cognitive development, increased susceptibility to infectious diseases and poor oral vaccine immunogenicity. There is an increasing recognition of the role of the intestine as the critical site where the human host encounters pathogens, initiates the immune response, protects from pathogen invasion, controls nutrient and calorie absorption and modulates metabolism. However, despite the highly prevalent nature of EED and the mounting evidence of associated morbidity and mortality risk, there are major gaps in our understanding of EED across the entire research, development and delivery spectrum. These gaps present challenges for the development of products and interventions for assessment, prevention and management of EED and its sequelae. This symposium will bring together EED researchers to share and discuss results and insights from the latest pediatric studies examining potential intervention approaches for and/or epidemiology of EED in low-resource settings: 1) 'Afya Tumboni'

birth cohort study of EED, small intestinal bacterial overgrowth and intestinal microbiota among infants in rural coastal Kenya; 2) the Bangladesh Environmental Enteric Dysfunction (BEED) study, which was designed to correlate and validate non-invasive biomarkers of EED with small intestinal biopsy, better understand disease pathogenesis and identify potential therapeutic targets for interventions designed to control EED and stunting; 3) use of the Micronutrient and Environmental Enteric Dysfunction Assessment Tool (MEEDAT) to evaluate biomarker risk factors for growth faltering and vaccine failure in Malian infants, 4) PTM202 for the treatment of EED - a randomized trial that tested the effect of a bovine colostrum-based nutritional supplement on EED, small intestine bacterial overgrowth and microbiome composition in Bangladeshi infants, and 5) a novel histopathology EED scoring system.

#### CHAIR

Mike Arndt  
*PATH, Seattle, WA, United States*

8 a.m.

#### **EED, SMALL INTESTINAL BACTERIAL OVERGROWTH AND INTESTINAL MICROBIOTA AMONG INFANTS IN COASTAL KENYA: A COHORT STUDY**

Rosie Crane  
*University of Oxford/KEMRI Wellcome Trust Research Program, London, United Kingdom*

8:15 a.m.

#### **IMPACT OF INTERVENTIONS ON GROWTH OF CHILDREN WITH STUNTING AND EED**

Tahmeed Ahmed  
*International Centre for Diarrhoeal Disease Research, Bangladesh, Dhaka, Bangladesh*

8:30 a.m.

#### **USING THE MICRONUTRIENT AND EED ASSESSMENT TOOL TO EVALUATE BIOMARKER RISK FACTORS FOR GROWTH FALTERING AND VACCINE FAILURE IN MALIAN INFANTS**

Mike Arndt  
*PATH, Seattle, WA, United States*

8:45 a.m.

#### **THE EFFECT OF A BOVINE COLOSTRUM BASED NUTRITIONAL SUPPLEMENT ON EED IN BANGLADESHI INFANTS**

Jeff Donowitz  
*Virginia Commonwealth University, Richmond, VA, United States*

9 a.m.

#### **A NOVEL HISTOPATHOLOGY SYSTEM FOR SCORING EED**

Christopher Moskaluk  
*University of Virginia Health System, Charlottesville, VA, United States*

9:15 a.m.

#### **DISCUSSION**

## **Symposium 169**

### **Healthy Homes and Cities: The Impact of Built Environment and Urbanization on Health**

*Potomac D (Ballroom Level)*

**Sunday, November 24, 8 a.m. - 9:45 a.m.**

There is a growing body of evidence on the impact of the built environment on several determinants of physical and mental health such as air quality, climate, traffic, waste management, water and sanitation, overcrowding, infrastructure and access to health facilities, and indirectly on diet, physical activity, social cohesion, sexual and gender-based violence and crime. Recent research has found that house design and quality can impact transmission of infectious disease. Urbanization is also a key contributor to health. Currently more than half of the world's population live in urban areas and this is expected to rise to 70% by 2050. In both high and low-and-middle-income countries, rapid urbanization has been found to be associated with an increase in non-communicable disease, impaired mental health, exposure to air pollution, communicable diseases and road traffic accidents, injury and violence. Sustainable cities and communities (Sustainable Development Goal 11) plays an important role in supporting the 2030 agenda for sustainable development. Given the interconnected nature of the SDGs and the cross-sectoral nature of built environment and urbanization research, a diverse range of stakeholders will need to work together to effectively explore and improve the impact of built environment on achieving SDG3 – good health and well-being for all. This symposium is jointly organized by the UK Collaborative on Development Research (UKCDR), the UK Government Department of Health and Social Care (DHSC) and the Royal Society of Tropical Medicine and Hygiene (RSTMH). It brings together a variety of professionals such as medical researchers, social scientists, clinicians and architects to discuss the importance of cross-disciplinary research in understanding the pathways by which built environment and urbanization impact health. Presenters include professionals from the global North and South, to ensure diverse and global perspectives on the topic.

#### CHAIR

Marta Tufet  
*UK Collaborative on Development Research, London, United Kingdom*

Christopher Whitty  
*UK Government Department of Health and Social Care, London, United Kingdom*

8 a.m.

#### **BUILDING OUT VECTOR-BORNE DISEASES**

Steve W. Lindsay  
*Durham University, Durham City, United Kingdom*

8:20 a.m.

#### **INVESTIGATING CO-BENEFIT OPPORTUNITIES OF INTERVENTIONS TO THE BUILT ENVIRONMENT FOR IMPROVED HEALTH OUTCOMES WORLDWIDE**

Sarah Ruel-Bergeron  
*Archive Global, New York, NY, United States*



8:40 a.m.

**ACHIEVING EQUITABLE HEALTH CARE ACCESS IN URBAN AFRICA: RESEARCH, CONTEXTUALIZED POLICY AND ACTIONS NEXUS IN URBAN INFORMAL SETTLEMENTS**

Caroline Kabaria

*African Population and Health Research Center, Nairobi, Kenya*

9 a.m.

**THE RIGHT TO HEALTH AND WELL-BEING IN INFORMAL URBAN SETTLEMENTS: EQUITY AND ACCOUNTABILITY ANALYSES**

Rachel Tolhurst

*Liverpool School of Tropical Medicine, Liverpool, United Kingdom*

9:20 a.m.

**DISCUSSION**

**Scientific Session 170**

**Water, Sanitation, Hygiene and Environmental Health (WaSH-E): Water Access, Quality and Treatment**

*National Harbor 2 (National Harbor Level)*

Sunday, November 24, 8 a.m. - 9:45 a.m.

**CHAIR**

Alicia N. Kraay

*University of Michigan, Ann Arbor, MI, United States*

Amy Pickering

*Tufts University, Medford, MA, United States*

8 a.m.

**1975**

**IMPACT OF ROTAVIRUS VACCINATION VARIES WITH DIFFERENTIAL ACCESS TO PIPED WATER: AN ANALYSIS OF CHILDHOOD CLINIC VISITS FOR DIARRHEA IN PERU, 2005-2015**

Miranda J. Delahoy<sup>1</sup>, Cesar Carcamo<sup>2</sup>, Luis Ordoñez<sup>3</sup>, Vanessa Vasquez<sup>2</sup>, Benjamin Lopman<sup>1</sup>, Thomas F. Clasen<sup>1</sup>, Gustavo F. Gonzales<sup>2</sup>, Kyle Steenland<sup>1</sup>, Karen Levy<sup>1</sup>

*<sup>1</sup>Emory University, Atlanta, GA, United States, <sup>2</sup>Universidad Peruana Cayetano*

*Heredia, Lima, Peru, <sup>3</sup>Ministerio de Salud del Perú (Ministry of Health, Peru), Lima,*

*Peru*

8:15 a.m.

**1976**

**SEROPREVALENCE OF ANTIBODIES AGAINST CHLAMYDIA TRACHOMATIS AND ENTEROPATHOGENS AND DISTANCE TO THE NEAREST WATER SOURCE AMONG YOUNG CHILDREN IN THE AMHARA REGION OF ETHIOPIA**

Kristen Aiemjoy<sup>1</sup>, Solomon Aragie<sup>2</sup>, Dionna M. Fry<sup>3</sup>, Zerihun Tadesse<sup>2</sup>, E. Kelly Callahan<sup>4</sup>, Sara Gwyn<sup>5</sup>, Diana Martin<sup>5</sup>, Jeremy D. Keenan<sup>3</sup>, Benjamin F. Arnold<sup>6</sup>

*<sup>1</sup>Stanford University, Stanford, CA, United States, <sup>2</sup>The Carter Center, Addis*

*Ababa, Ethiopia, <sup>3</sup>University of California San Francisco, San Francisco, CA, United*

*States, <sup>4</sup>The Carter Center, Atlanta, GA, United States, <sup>5</sup>Centers for Disease Control*

*and Prevention, Atlanta, GA, United States, <sup>6</sup>University of California Berkeley,*

*Berkeley, CA, United States*

8:30 a.m.

**1977**

**UNDERSTANDING THE IMPACT OF RAINFALL ON DIARRHEA: TESTING THE CONCENTRATION-DILUTION HYPOTHESIS USING A SYSTEMATIC REVIEW AND META-ANALYSIS**

Alicia N. Kraay<sup>1</sup>, Olivia Man<sup>1</sup>, Morgan C. Levy<sup>2</sup>, Karen Levy<sup>3</sup>, Joseph N. Eisenberg<sup>1</sup>

*<sup>1</sup>University of Michigan-Ann Arbor, Ann Arbor, MI, United States, <sup>2</sup>University of*

*California-San Diego, San Diego, CA, United States, <sup>3</sup>Emory University, Atlanta, GA,*

*United States*

8:45 a.m.

**1978**

**EVALUATIONS OF THREE DRINKING WATER CHLORINATION INTERVENTIONS IN COX'S BAZAR REFUGEE CAMPS**

Mustafa Sikder, Gabrielle String, Danielle Lantagne

*Tufts University, Medford, MA, United States*

9 a.m.

**1979**

**IMPACT OF LOW-COST POINT-OF-USE WATER TREATMENT TECHNOLOGIES ON ENTERIC INFECTIONS AND LINEAR GROWTH AMONG CHILDREN IN LIMPOPO, SOUTH AFRICA**

Courtney L. Hill<sup>1</sup>, Emanuel Nyathi<sup>2</sup>, Kelly McCain<sup>3</sup>, Joshua N. Edokpayi<sup>2</sup>, David M.

Kahler<sup>4</sup>, Darwin J. Operario<sup>1</sup>, James A. Smith<sup>1</sup>, Richard L. Guerrant<sup>1</sup>, Amidou Samie<sup>2</sup>,

Rebecca A. Dillingham<sup>1</sup>, Pascal O. Bessong<sup>2</sup>, Elizabeth T. Rogawski McQuade<sup>1</sup>

*<sup>1</sup>University of Virginia, Charlottesville, VA, United States, <sup>2</sup>University of*

*Venda, Thohoyandou, South Africa, <sup>3</sup>Emory University, Atlanta, GA, United*

*States, <sup>4</sup>Duquesne University, Pittsburgh, PA, United States*

9:15 a.m.

**1980**

**EFFICACY OF LOCALLY AVAILABLE CLEANING AGENTS AND METHODS TO REDUCE BIOFILMS ON WATER STORAGE CONTAINERS AND TAPS**

Gabrielle String, Marta Domini, Patrick Mirindi, Hanaa Badr, Anthonia Oguidupe,

Nabila Khandaker, Marlene Wolfe, Daniele Lantagne

*Tufts University, Medford, MA, United States*

9:30 a.m.

**1981**

**HOUSEHOLD WATER STORAGE MANAGEMENT AND ASSOCIATED DRINKING WATER QUALITY IN RURAL INDIA**

Sarah L. McGuinness<sup>1</sup>, Joanne O'Toole<sup>1</sup>, Andrew B. Forbes<sup>1</sup>, Kavita Patil<sup>2</sup>, Asha

Giriyan<sup>2</sup>, Chetan A. Gaonkar<sup>2</sup>, Fraddy D'Souza<sup>2</sup>, S. Fiona Barker<sup>1</sup>, Thomas B.

Boving<sup>3</sup>, Allen C. Cheng<sup>1</sup>, Karin Leder<sup>1</sup>

*<sup>1</sup>Monash University, Melbourne, Australia, <sup>2</sup>The Energy and Resources Institute,*

*Western Regional Centre, Goa, India, <sup>3</sup>University of Rhode Island, Kingston, RI,*

*United States*

**Symposium 171**

**“Mosquito Love, Naturally”: Sexual and Natural Selection in Mosquitoes and Its Implications for Transmission**

*National Harbor 3 (National Harbor Level)*

Sunday, November 24, 8 a.m. - 9:45 a.m.

Mosquito mating remains an important target for population reduction and disease control. Over the last decade the understanding of mosquito mating biology has increased dramatically. Advances in the fields of behavior, physiology and genetics have revealed a complex world. This new reality includes acrobatic mid-air courtship, decisive female rejection and male ejaculates which alter female physiology. This session will be structured around four talks covering new discoveries that reveal relationships between sexually selected traits and the relationship sexual and natural selection. The primary aim will be to explore how approaching mating in this eco-evolutionary framework can lead to better control. Often, females discriminate among mates based on traits that reliably indicate quality, including immune performance. New findings will be presented on the relationship between a mosquito courtship signal and offspring immune performance. Molecules transferred to females during mating can have important effects on female behavior, physiology and fitness. New data will

be presented demonstrating that male accessory gland (MAG) extracts alter pre-copulatory male-female acoustic interactions with important implications for female fitness and vectorial capacity. Antagonistic pleiotropy occurs when a single gene controls multiple traits with differential effects on fitness. Work will be presented on the relationship between Thioester-containing protein 1 (TEP1), a highly polymorphic gene which plays a key role in Anopheline immune responses to *Plasmodium falciparum*, and male fertility. The availability of genome sequences from 16 *Anopheles* species provides unprecedented opportunities to study the evolution of reproductive traits relevant for malaria transmission. Data will be discussed revealing coevolutionary dynamics of reproductive traits between the sexes likely to have shaped the ability of anophelines to transmit malaria.

#### CHAIR

Lauren J. Cator  
*Imperial College London, London, United Kingdom*

Laura C. Harrington  
*Cornell University, Ithaca, NY, United States*

8 a.m.

#### SIGNALLING IMMUNE PERFORMANCE IN THE DENGUE VECTOR

Courtney Murdock  
*University of Georgia, Athens, GA, United States*

8:15 a.m.

#### MALE ACCESSORY GLAND MOLECULES INHIBIT COURTSHIP DUETS IN THE MOSQUITO *Aedes Aegypti*

Garrett P. League  
*Cornell University, Ithaca, NY, United States*

8:30 a.m.

#### PLEIOTROPIC FUNCTION IN IMMUNITY AND REPRODUCTION MAINTAINS MALARIA SUSCEPTIBILITY

Elena A. Levashina  
*Max Planck Institute for Infection Biology, Berlin, Germany*

8:45 a.m.

#### EVOLUTION OF SEXUAL TRAITS INFLUENCING VECTORIAL CAPACITY IN ANOPHELINE MOSQUITOES

Flaminia Catteruccia  
*Harvard School of Public Health, Boston, MA, United States*

9 a.m.

#### DISCUSSION

## Scientific Session 172

### Bacteriology: Trachoma, Other Bacterial Infections, Diagnostics

*National Harbor 4/5 (National Harbor Level)*

Sunday, November 24, 8 a.m. - 9:45 a.m.

#### CHAIR

David J. Blok  
*Erasmus MC, Rotterdam, Netherlands*

Tigist Astale  
*The Carter Center, Addis Ababa, Ethiopia*

8 a.m.

1982

#### UNDERSTANDING THE REALITY OF MDA FOR TRACHOMA AMONG A MAASAI COMMUNITY IN TANZANIA: APPLICATION OF AN ANTHROPOLOGICAL FRAMEWORK FOR NTD INTERVENTION EFFECTIVENESS

Tara B. Mtuy<sup>1</sup>, Matthew J. Burton<sup>1</sup>, Kevin Bardosh<sup>2</sup>, Janet Seeley<sup>1</sup>, Upendo Mwingira<sup>3</sup>, Jeremiah Ngondi<sup>4</sup>, Sarah Craciunoiu<sup>5</sup>, Shelley Lees<sup>1</sup>  
<sup>1</sup>London School of Hygiene & Tropical Medicine, London, United Kingdom, <sup>2</sup>University of Washington, Seattle, WA, United States, <sup>3</sup>NTD Control Program, National Institute for Medical Research, Dar es Salaam, United Republic of Tanzania, <sup>4</sup>RTI International, Dar es Salaam, United Republic of Tanzania, <sup>5</sup>IMA World Health, Washington, DC, United States

8:15 a.m.

1983

#### TRACHOMA REMAINS HYPERENDEMIC AFTER 10 OR MORE YEARS OF THE SAFE STRATEGY: RESULTS FROM 7 DISTRICT-LEVEL POPULATION-BASED SURVEYS IN AMHARA, ETHIOPIA

Tigist Astale<sup>1</sup>, Eshetu Sata<sup>1</sup>, Mulat Zerihun<sup>1</sup>, Andrew W. Nute<sup>2</sup>, Aisha E.P. Stewart<sup>2</sup>, Melsew Chanyalew<sup>3</sup>, Berhanu Melak<sup>1</sup>, Zebene Ayele<sup>1</sup>, Demelash Gessese<sup>1</sup>, Gedefaw Ayenew<sup>1</sup>, Bizuayehu Gashaw<sup>3</sup>, Zerihun Tadesse<sup>1</sup>, E. Kelly Callahan<sup>2</sup>, Scott D. Nash<sup>2</sup>  
<sup>1</sup>The Carter Center, Addis Ababa, Ethiopia, <sup>2</sup>The Carter Center, Atlanta, GA, United States, <sup>3</sup>Amhara National Regional Health Bureau, Bahir Dar, Ethiopia

8:30 a.m.

1984

#### TRACHOMA ELIMINATION ENDGAME IN UGANDA: PROGRESS, MILESTONES AND TIMELINES

Gilbert Baayenda<sup>1</sup>, Benjamin Binagwa<sup>2</sup>, Wangeci Thuo<sup>3</sup>, Francis Mugume<sup>1</sup>, Edridah Muheki<sup>1</sup>, Jeremiah M. Ngondi<sup>4</sup>  
<sup>1</sup>Ministry of Health, Kampala, Uganda, <sup>2</sup>RTI International, Kampala, Uganda, <sup>3</sup>RTI International, Washington, DC, United States, <sup>4</sup>RTI International, Dar Es Salaam, United Republic of Tanzania

8:45 a.m.

1985

#### PHOTOGRAPHING OPERATED TRACHOMATOUS TRICHIASIS (TT) CASES DURING OUTREACH CAMPAIGNS: RESULTS OF A PILOT

Whitney Goldman<sup>1</sup>, Assumpta Lucienne Bella<sup>2</sup>, Clarisse Bougouma<sup>3</sup>, Emilienne Epée<sup>4</sup>, Martin Kabore<sup>3</sup>, Issouf Bamba<sup>5</sup>, Jean-Paul Djiatsa<sup>5</sup>, Albert Kiemde<sup>5</sup>, Phylippe Bayala<sup>5</sup>, Marc Sepama<sup>5</sup>, Julie Akame<sup>4</sup>, Jules Patrick Evenga<sup>4</sup>, Michel Hendji<sup>4</sup>, Yannick Nkoumou<sup>4</sup>, Carine Fokam Tagne<sup>4</sup>, Lauren Johnson<sup>1</sup>, Geri Kemper-Seeley<sup>1</sup>, Katherine Nerses<sup>1</sup>, Stephanie Parker<sup>1</sup>, Emily Gower<sup>6</sup>  
<sup>1</sup>Helen Keller International, Washington, DC, United States, <sup>2</sup>Ministry of Health, Cameroon, Yaounde, Cameroon, <sup>3</sup>Ministry of Health, Burkina Faso, Ouagadougou, Burkina Faso, <sup>4</sup>Helen Keller International, Cameroon, Yaounde, Cameroon, <sup>5</sup>Helen Keller International, Burkina Faso, Ouagadougou, Burkina Faso, <sup>6</sup>University of North Carolina at Chapel Hill, Chapel Hill, NC, United States

9 a.m.

1986

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### THE GLOBAL BURDEN OF LEPROSY FROM 1980-2017

Harrison Chase Gottlich, Anum Najeem Khan, Taren Gorman, Steph Zimsen, Martina Vargas, Amanda Deen, Elizabeth Cromwell  
Institute for Health Metrics and Evaluation, Seattle, WA, United States

9:15 a.m.

1987

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### LEPROSY POST-EXPOSURE PROPHYLAXIS: AN OPTION TO ACCELERATE LEPROSY ELIMINATION

David J. Blok<sup>1</sup>, Arielle Cavaliero<sup>2</sup>, Peter Steinmann<sup>3</sup>, Jan Hendrik Richardus<sup>1</sup>  
<sup>1</sup>Department of Public Health, Erasmus MC, University Medical Center, Rotterdam, Netherlands, <sup>2</sup>Novartis Foundation, Basel, Switzerland, <sup>3</sup>Swiss Tropical and Public Health Institute, Basel, Switzerland

9:30 a.m.

1988

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### OPTIMIZED GENEXPERT POOLING STRATEGY FOR CHLAMYDIA TRACHOMATIS AND NEISSERIA GONORRHOEAE REDUCES COST OF MOLECULAR STI SCREENING IN TWO LIMITED-RESOURCE CLINICS IN ZAMBIA

Sarah Connolly<sup>1</sup>, William Kilembe<sup>2</sup>, Mubiana Inambao<sup>2</sup>, Ana-Maria Visoiu<sup>2</sup>, Tyrnza Sharkey<sup>2</sup>, Rachel Parker<sup>1</sup>, Eric Hunter<sup>1</sup>, Susan Allen<sup>1</sup>

<sup>1</sup>Emory University, Atlanta, GA, United States, <sup>2</sup>Zambia-Emory HIV Research Project, Lusaka/Ndola, Zambia

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## Symposium 173

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### The Rise of Human Babesiosis and the Urgent Need for Improved Detection and a Vaccine

National Harbor 10 (National Harbor Level)

Sunday, November 24, 8 a.m. - 9:45 a.m.

Babesiosis is a worldwide emerging tick-borne disease. Over the last 50 years the number of cases and the range of the infection have increased markedly and it now imposes a significant health burden. In the USA, disease is mainly caused by *B. microti*, transmitted via the tick, *Ixodes scapularis*, which feeds primarily on white-footed mice. In Europe, most cases have been attributed to *B. divergens*, transmitted by a sheep tick. Sporadic cases have also been reported in Africa, Australia and South America. Disease severity depends on the immune status of the patient and the infecting species. Many infected individuals spontaneously recover after mild symptoms; however, immunocompromised individuals, neonates and the elderly are at an increased risk of severe disease. Treatment with atovaquone and azithromycin or clindamycin and quinine is generally effective but death occurs in up to a fifth of high risk patients. Diagnosis requires identification of infected red cells on thin blood smear or DNA in whole blood using PCR. Transfusion-transmitted babesiosis (TTB) is the leading cause of infectious mortality in transfusion recipients in the USA. Two FDA-licensed testing methods recently became available to reduce TTB (an automated IFA and first-generation PCR). Serologic and molecular screening for *B. microti* is associated with a decreased risk of TTB. The associated risk from untested blood is 16-fold higher in highly endemic regions of the USA (Connecticut and Massachusetts). However, further research is required to determine the optimal screening strategies and to allow individuals to re-enter the donor pool. Nucleic acid tests in development detect a wider range of species and have increased analytic sensitivity. The first such test

was licensed in early 2019. There is an urgent need to develop an effective vaccine to reduce the risk of babesiosis-associated mortality and morbidity in those living in endemic areas, especially in highly vulnerable populations. Two approaches are under development: a subunit antigen approach and a 'whole parasite' (WP) approach. A genome-wide immuno-screening approach was used to identify novel *Babesia microti* antigens for a subunit vaccine and a WP liposome construct with ligands to target the vaccine to lymph nodes and antigen presenting cells have been tested, with both approaches inducing significant protective immunity in rodent models. These results might pave the way for a universal vaccine that could be effective against all human *Babesia* species that are transmitted globally. They are being progressed to clinical trials. This is an exciting time for babesiosis research with different approaches under development offering real hope of improving public health and safety.

#### CHAIR

Michael F. Good  
Griffith University, Gold Coast, Australia

Sanjai Kumar  
Food and Drug Administration, Silver Spring, MD, United States

8 a.m.

### THE EMERGENCE OF HUMAN BABESIOSIS

Peter J. Krause  
Yale University, New Haven, CT, United States

8:25 a.m.

### A NEWLY EMERGING THREAT TO BLOOD SAFETY

Susan L. Stramer  
American Red Cross, Gaithersburg, MD, United States

8:50 a.m.

### GENOME-WIDE SEARCHING TO IDENTIFY NOVEL ANTIGENS FOR A BABESIA VACCINE

Sanjai Kumar  
Food and Drug Administration, Silver Spring, MD, United States

9:15 a.m.

### INDUCTION OF HETEROLOGOUS PROTECTION USING A NOVEL WHOLE PARASITE LIPOSOMAL BABESIA VACCINE

Danielle I. Stanistic  
Griffith University, Gold Coast, Australia

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## Symposium 174

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### New Tools to Accelerate Elimination of Onchocerciasis

National Harbor 11 (National Harbor Level)

Sunday, November 24, 8 a.m. - 9:45 a.m.

Human onchocerciasis is a major cause of infectious blindness, skin disease and chronic disability, infecting many millions worldwide (99% in Sub-Saharan Africa) and resulting in widespread vision impairment and blindness. Caused by the filarial nematode *Onchocerca volvulus*, attempts to eliminate this neglected tropical disease via annual mass drug administration (MDA) with donated ivermectin (IVM) have proven to be successful in some foci, but largely ineffective in many other areas; The 2013 Global Burden of Disease Study has shown the incidence of onchocerciasis in Africa was 17 million and that it was decreased only by 31% since 1990.

The 2017 Global Burden of Disease Study estimated that there were still 20.9 million prevalent *O. volvulus* infections worldwide: 14.6 million of the infected people had skin disease and 1.15 million had vision loss; so not much has changed. Optimists call for an additional 1.15 billion treatments to achieve elimination by 2045. Mathematical modelling and expert opinions are more pessimistic, indicating that onchocerciasis in Africa cannot be eliminated solely through MDA once a year with IVM. Supporting their viewpoint is that IVM cannot be administered safely in Central Africa where the disease is co-endemic with *Loa loa* infections, and early evidence points to suboptimal responses to IVM and the possible emergence of IVM drug resistance. The session will review the progress on the elimination of onchocerciasis in Africa and describe the steps that are needed and could be incorporated into the present national programs, and their linkage with the newly formed Expanded Special Program for Neglected Diseases (ESPEN) will be also discussed. Specifically, the symposium will focus on new tools such as a preventive vaccine, and effective macrofilaricidal drugs that will kill the adult worms. Both tools are critically needed and when used in conjunction with the present MDA programs, will support the prevention of new infections, microfilariae transmission, and thus shorten the time to eliminate this disease. Moreover, to support present and future elimination programs, new, more specific and sensitive diagnostics for post-treatment and post-elimination surveillance are also urgently needed. The available resources at the NIAID that support translational research and facilitate development of new tools for neglected tropical diseases will be also presented.

#### CHAIR

Sara Lustigman  
*New York Blood Center, New York, NY, United States*

Annie Mo  
*National Institute of Allergy and Infectious Diseases, National Institutes of Health, Rockville, MD, United States*

#### 8 a.m. **ACCELERATING ELIMINATION OF NTDS IN AFRICA: ONCHOCERCIASIS**

Maria Rebollo Polo  
*World Health Organization - Regional Office for Africa, Expanded Special Project for Elimination of NTDS, Brazzaville, Republic of the Congo*

#### 8:20 a.m. **MACROFILARICIDAL DRUG DEVELOPMENT – ONWARDS AND UPWARDS**

Sabine Specht  
*Drugs for Neglected Diseases initiative, Geneva, Swaziland*

#### 8:40 a.m. **PROPHYLACTIC VACCINE AND VACCINE LINKED- CHEMOTHERAPY TO PROTECT AGAINST NEW INFECTIONS**

Sara Lustigman  
*New York Blood Center, New York, NY, United States*

#### 9 a.m. **BIOMARKERS FOR INFECTIONS AND SUCCESS OF ELIMINATION**

Thomas Nutman  
*National Institutes of Health, Bethesda, MD, United States*

#### 9:20 a.m. **OVERVIEW OF RESOURCES AVAILABLE FOR TRANSNATIONAL RESEARCH**

Annie Mo  
*National Institute of Allergy and Infectious Diseases, National Institutes of Health, Rockville, MD, United States*

#### **Coffee Break**

*Potomac Ballroom Lobby (Ballroom Level)*  
Sunday, November 24, 9:45 a.m. - 10:15 a.m.

#### **Plenary Session 175**

#### **Plenary Session V**

*Maryland D (Ballroom Level)*  
Sunday, November 24, 10:15 a.m. - 11 a.m.

#### CHAIR

Chandy C. John  
*Indiana University School of Medicine, Indianapolis, IN, United States*

#### 10:15 a.m. **PEACE CORPS: AN INVESTMENT WORTH MAKING**



**Josephine K. Olsen, PhD, MSW**  
*Director, Peace Corps*

On Friday, March 30, 2018, Dr. Josephine (Jody) K. Olsen was sworn in as the 20th Director of the Peace Corps. She brings a wealth of Peace Corps experience to her role, having served for over 16 years in various senior capacities at the agency. Most recently, Dr. Olsen spent eight years as a visiting professor at the University of Maryland-Baltimore School of Social Work and director of the university's Center for Global Education Initiatives. In this capacity she developed and directed inter-professional global health projects for students in dentistry, law, medicine, nursing, pharmacy and social work. The programs, primarily in Malawi, included maternal mortality, healthcare for orphans and vulnerable children, and healthcare for children at risk for malaria. She also published articles in the field of inter-professional global health education and gave presentations at the Consortium for Universities in Global Health (CUGH). Courses that she taught included health behavior theory, global health issues of women and children and comparative international social policy. In her previous roles at the Peace Corps, she served as acting director in 2009; deputy director, 2002-2009; chief of staff, 1989-1992; regional director, North Africa Near East, Asia, Pacific, 1981-1984; and country director in Togo, 1979-1981. Dr. Olsen also served as a Peace Corps Volunteer in Tunisia, 1966-1968 both teaching English and supporting women in a large maternal health clinic. In addition, Dr. Olsen served as senior vice president of the Academy for Educational Development, 1997-2002, and executive director of the Council for International Exchange of Scholars, (the Fulbright Faculty program) 1997-2002. Dr. Olsen has served on numerous boards over the years including most recently board chair of Health Volunteers Overseas and board member on Intermedia, Kalamazoo College, and NAFSA: International Educators. Dr. Olsen received a bachelor's degree from the University of Utah, a Master's degree in social work and a PhD in



human development from the University of Maryland and an honorary doctorate from Michigan Tech University. A native of Utah, Dr. Olsen currently lives in Maryland.

## Break

Sunday, November 24, 11 a.m. - 11:15 a.m.

## Symposium 176

### Engaging High-Risk Communities to Accelerate Malaria Elimination

Maryland A (Ballroom Level)

Sunday, November 24, 11:15 a.m. - 1 p.m.

The threat of artemisinin resistance in the Greater Mekong Sub-region (GMS) has prompted countries there to implement a malaria strategy with the goal of eliminating *Plasmodium falciparum* by 2025 and *Plasmodium vivax* by 2030. As the number of malaria cases in the region continues to decline, they are becoming concentrated in smaller geographic *foci* and increasingly in high-risk communities of forest-goers and ethnic minorities. These groups often access a wide variety of health service delivery points that fall outside of the public and formal private sector, distrust authority, are less impacted by social behavior change messaging, and have additional barriers that exclude them and thus hinder malaria elimination efforts. Community engagement with a goal of more effective interventions to reach high-risk populations has been an important component of the strategy in many countries that have eliminated malaria, as well as in other disease-specific programs such as smallpox, guinea worm and onchocerciasis. Populations Services International (PSI), the University of California San Francisco's Malaria Elimination Initiative (UCSF-MEI), Malaria Consortium (MC) and the Institute of Tropical Medicine, Antwerp (ITM) have been working in higher-burden areas of Vietnam, Cambodia and Laos to work with communities to inform and co-design interventions to accelerate malaria elimination efforts. PSI will discuss a human-centered design approach they developed called Empathy-Insights-Prototyping (EIP) to co-design interventions with forest-goers in Cambodia, which resulted in a new model called Community-led Initiatives in Malaria Elimination (CLIME) to more effectively find cases. UCSF-MEI will present qualitative results from their work in Champasak, Laos to use peer-navigators to more effectively test and treat forest-goers there. ITM will describe their mixed-methods research in Binh Phuoc Vietnam, largely with ethnic minorities, to improve upon malaria elimination interventions. Finally, Malaria Consortium will discuss their efforts working with communities in Cambodia to improve case detection.

#### CHAIR

Lorina McAdam  
*Population Services International, Yangon, Myanmar*

Koen Peeters  
*Institute of Tropical Medicine, Antwerp, Belgium*

11:15 a.m.

### THE INTERPLAY OF TERRITORIALITY, INTER-ETHNIC RELATIONS AND MALARIA PERSISTENCE IN VIETNAM

Tuan Thi Nguyen  
*Institute of Tropical Medicine, Antwerp, Belgium*

11:35 a.m.

### ENGAGING WITH HIGH-RISK COMMUNITIES IN CAMBODIA USING A HUMAN-CENTERED DESIGN APPROACH

Sokhan Ngoun  
*Population Services International, Phnom Penh, Cambodia*

11:55 a.m.

### TARGETING MALARIA IN FOREST WORKERS THROUGH COMMUNITY-BASED PEER NAVIGATORS: RESULTS FROM THE ACME TRIAL IN SOUTHERN LAO PDR

Adam Bennett  
*University of California San Francisco, San Francisco, CA, United States*

12:15 p.m.

### THE EVIDENCE BASE AND COMMUNITY KNOWLEDGE, A POWERFUL COMBINATION

James Tibenderana  
*Malaria Consortium Africa, Kampala, Uganda*

12:35 p.m.

### DISCUSSION

## Symposium 177

### Exploring the Range of Clinical Efforts to Identify Repurposed Drugs for Neglected Infectious Diseases

Maryland B (Ballroom Level)

Sunday, November 24, 11:15 a.m. - 1 p.m.

The goal of this symposium is to explore the wide range of approaches that are being taken to identify and study repurposed drugs that could potentially be safe and effective treatments for neglected infectious diseases. The program will explore efforts to capture case reports directly from physicians; to fund small clinical trials of repurposed drugs; to conduct large clinical trials of new combinations and doses of existing drugs; and to conduct meta-analyses of individual patient level data from past clinical trials. The program will explore how systematic capture of this clinical experience could inform more formal drug development and simultaneously provide important information to clinicians lacking standard treatment options. Out of necessity, clinicians around the world are trying new things for diseases lacking adequate treatments, but the clinical experience may be underreported in peer reviewed journals. The issue will be explored from a variety of perspectives, including clinical, drug development, policy and regulatory.

#### CHAIR

Heather Stone  
*Food and Drug Administration, Silver Spring, MD, United States*

Parvesh Paul  
*NCATS/National Institutes of Health, Rockville, MD, United States*

11:15 a.m.

### CURE ID: A MOBILE APP FOR CAPTURING CASE REPORTS DIRECTLY FROM CLINICIANS GLOBALLY OF REPURPOSED DRUGS FOR INFECTIOUS DISEASES

Parvesh Paul  
*NCATS/National Institutes of Health, Rockville, MD, United States*

11:35 a.m.

### **CURES WITHIN REACH - SMALL SCALE CLINICAL TRIALS OF REPURPOSED DRUGS IN DEVELOPING COUNTRIES**

Clare Thibodeaux

*Cures Within Reach, Chicago, IL, United States*

11:55 a.m.

### **DNDI: CLINICAL TRIALS OF REPURPOSED DRUGS IN NOVEL COMBINATIONS, DOSES AND ROUTES, AND IDENTIFICATION OF NEW COMPOUNDS**

Nathalie Strub Wourgaft

*DNDI, Geneva, Switzerland*

12:15 p.m.

### **META-ANALYSES OF INDIVIDUAL PATIENT DATA FROM CLINICAL TRIALS**

Philippe J. Guerin

*University of Oxford, Oxford, United Kingdom*

12:35 p.m.

### **DISCUSSION**

## **Symposium 178**

### **Recent Advances in Understanding of Pathogenesis and Control of Chagas Disease**

*Maryland C (Ballroom Level)*

Sunday, November 24, 11:15 a.m. - 1 p.m.

Chagas disease history has been associated with Latin America for over 9,000 years, where it is still endemic and a serious health issue in most countries. However, there are currently an estimated 300,000 chronically infected individuals living in the United States, and over 60,000 in Europe. It is estimated that approximately six million people are infected by *T. cruzi*, with another 70 million at risk worldwide. As Chagas disease spreads, it becomes not only a problem of the endemic countries, but also for the international community. While the majority of *T. cruzi*-chronically infected individuals remain in an asymptomatic clinical form, about 30% of the patients develop a severe cardiomyopathy that leads to over 10,000 deaths/year. Currently, there is no vaccine to prevent ChD, nor interventions that can prevent the progression of cardiomyopathy. This symposium will present and discuss novel findings related to our current understanding of pathogenesis and potential strategies for control of Chagas disease.

#### **CHAIR**

Nisha J. Garg

*University of Texas Medical Branch, Galveston, TX, United States*

11:15 a.m.

### **NEW INSIGHTS INTO VACCINE EFFICACY AGAINST EXPERIMENTAL *TRYPANOSOMA CRUZI* INFECTIONS PROVIDED BY HIGHLY SENSITIVE BIOLUMINESCENCE IMAGING**

John Kelly

*London School of Hygiene & Tropical Medicine, London, United Kingdom*

11:40 a.m.

### **LIPID INDUCED METABOLIC DISORDERS IN CHAGAS DISEASE**

Jyothi Nagajyothi

*Rutgers New Jersey School of Medicine, Newark, NJ, United States*

12:05 p.m.

### **CD4-CD8- T CELLS AS POTENTIAL TARGETS FOR A THERAPEUTIC INTERVENTION OF CHD**

Walderez O. Dutra

*UFMG, Belo Horizonte, MG, Brazil*

12:30 p.m.

### **EXTRACELLULAR VESICLES, CHRONIC INFLAMMATION AND ALTERNATIVE THERAPIES**

Nisha Garg

*University of Texas Medical Branch, Galveston, TX, United States*

## **Symposium 179**

### **Antimalarial Efficacy Monitoring in the Americas: The Way Forward as We Move Towards Elimination**

*Potomac A (Ballroom Level)*

Sunday, November 24, 11:15 a.m. - 1 p.m.

After intensification of control efforts in the 1960s, much of the Amazon basin had seen decreases in malaria morbidity. However, in late 1980s, malaria cases, especially *Plasmodium falciparum* cases, increased; currently about 112 million people are at risk for malaria in the Americas. *P. vivax* is responsible for more than 70% of reported malaria cases in the region, but *P. falciparum* comprises around 50% of cases in Guyana and gold-mining areas of French Guiana, and 100% of cases in the Dominican Republic and Haiti. Over the last 10 years, countries in the region have experienced great progress in malaria control. Out of the 19 countries currently endemic for malaria in the Americas, seven have set target goals for malaria elimination by 2020. Appropriate case management is of great importance in malaria elimination settings. Early detection and treatment of malaria cases are among the most cost-effective strategies for transmission interruption in these low-transmission settings. According to the World Health Organization (WHO), antimalarial treatment efficacy should be evaluated every three years in low-endemic countries. Countries in the Americas face many challenges to conduct standard therapeutic efficacy studies (TESs), including insufficient number of patients presenting at health facilities to reach adequate sample size. Artemisinin-based combination therapy (ACT) is the recommended treatment for *P. falciparum* malaria in South America. Emergence and spread of ACT resistance, already detected in the Greater Mekong Sub-region (GMS) in Southeast Asia, in South America would represent a major setback. The Guiana Shield (a sub-region formed by Guyana, Suriname, French Guiana and parts of Brazil, Colombia and Venezuela) share characteristics with GMS that increase the chances of selection and spread of resistance. Those include high levels of *P. falciparum* transmission, availability and widespread use of poor-quality antimalarials, mobile populations and difficult access to adequate malaria case management. The spread of artemisinin-resistance in the Guiana Shield could jeopardize malaria control and elimination efforts. Therefore, early detection of antimalarial resistance is one of the highest priorities in the Americas. With technical assistance from global and regional partners, countries have made advances in monitoring antimalarial efficacy and resistance. These include adaptations to standard TESs, use of molecular markers and *in vitro* methods to monitor and understand antimalarial resistance. This symposium will review recent evidence

on antimalarial treatment efficacy collected in the Americas and summarize the strategies already adopted or proposed by countries in the region to monitor antimalarial resistance.

#### **CHAIR**

Alexandre Macedo de Oliveira  
*Centers for Disease Control and Prevention, Atlanta, GA, United States*

Lise Musset  
*Intitut Pasteur de la Guyane, Cayenne cedex, French Guiana*

11:15 a.m.

#### **ANTIMALARIAL EFFICACY AND RESISTANCE MONITORING IN THE AMERICAS: THE REGIONAL OVERVIEW**

Maria Paz Ade  
*Pan American Health Organization, Washington, DC, United States*

11:35 a.m.

#### **BRAZIL EXPERIENCE IN MONITORING ANTIMALARIAL TREATMENT EFFICACY IN CRUZEIRO DO SUL, ACRE**

Cassio Roberto L. Peterka  
*Brazil Health Surveillance Secretariat, Brasilia, Brazil*

11:55 a.m.

#### **MONITORING OF ANTIMALARIAL EFFICACY FOR P. FALCIPARUM TREATMENT IN GUYANA**

Horace Cox  
*Guyana Ministry of Health, Georgetown, Guyana*

12:15 p.m.

#### **A PAHO/WHO COLLABORATING CENTER PERSPECTIVE: EFFORTS AND PARTNERSHIPS TO COLLECT AND INTERPRET LABORATORY-BASED DRUG RESISTANCE INFORMATION TO SUPPORT MALARIA ELIMINATION**

Lise Musset  
*Intitut Pasteur de la Guyane, Cayenne cedex, French Guiana*

12:35 p.m.  
**DISCUSSION**

### **Symposium 180**

#### **Key Findings and Recommendations of the WHO Strategic Advisory Group on Malaria Eradication**

*Potomac B (Ballroom Level)*

Sunday, November 24, 11:15 a.m. - 1 p.m.

Eradicating malaria has been an important public health goal for over 70 years. After the Global Malaria Eradication Program ended in 1969, the possibility of eradication was not raised again until 2007 when Melinda Gates boldly suggested that malaria eradication was an imperative to reduce its terrible toll. The malaria community, energized by the call for eradication and the global reductions in malaria transmission between 2000 and 2015, set a world free of malaria as the vision for the Global Technical Strategy for Malaria 2016-2030. In August 2016, WHO's Global Malaria Program inaugurated the Strategic Advisory Group for malaria eradication (SAGme) to advise the Organization on the relevance, potential strategies and costs of malaria eradication over the next decades through a process of analysis and discussion. Thirteen eminent experts representing a range of disciplines and geographies were selected as members, supported by representatives from WHO collaborating centers, WHO staff and other key stakeholders. The SAGme, WHO and partners developed

seven work streams covering a range of important questions from community engagement to robust health systems and economics to understand the prerequisites for the launch of a successful malaria eradication campaign. The SAGme has met four times to review findings and further refine the objectives and methods of the work packages. The SAGme concluded its work in May 2019 and reported on the key findings from the analyses and their implications for malaria eradication. This symposium will present four of the work packages prepared as part of the SAGme, and conclude with a panel discussion of WHO and SAGme members on setting the right conditions for the launch of a successful malaria eradication campaign.

#### **CHAIR**

Kim Lindblade  
*World Health Organization, Geneva, Switzerland*

Marcel Tanner  
*Swiss Tropical Institute, Basel, Switzerland*

11:15 a.m.

#### **GLOBAL TRENDS AND IMPACT ON FUTURE SCENARIOS FOR MALARIA ERADICATION**

Peter Gething  
*University of Oxford, Oxford, United Kingdom*

11:35 a.m.

#### **GLOBAL ECONOMIC BENEFITS ON THE PATH TO MALARIA ERADICATION**

Edith Patouillard  
*World Health Organization, Geneva, Switzerland*

11:55 a.m.

#### **ESSENTIAL HEALTH SYSTEM COMPONENTS FOR MALARIA ERADICATION**

Abdisalan M. Noor  
*Global Malaria Programme, World Health Organization, Geneva, Switzerland*

12:15 p.m.

#### **MALARIA ERADICATION IN THE BROADER CONTEXT OF GLOBAL HEALTH GOVERNANCE**

Julian Eckl  
*University of St. Gallen, St. Gallen, Switzerland*

12:30 p.m.

#### **PANEL DISCUSSION: CONCLUSIONS AND RECOMMENDATIONS OF THE SAGME**

Pedro Alonso  
*World Health Organization Global Malaria Program, Geneva, Switzerland*

Lindiwe Makubalo  
*Health Expert, Permanent Mission of South Africa to the United Nations Office and Other International Organizations, South Africa, South Africa*

Mirta Roses  
*Senior Independent Advisor, Global Public Health, Buenos Aires, Argentina*

Philip Welkhoff  
*Bill & Melinda Gates Foundation, Seattle, WA, United States*

## Scientific Session 181

### Global Health: Health Systems Strengthening

Potomac C (Ballroom Level)

Sunday, November 24, 11:15 a.m. - 1 p.m.

#### CHAIR

Mary H. Hayden

University of Colorado, Colorado Springs, CO, United States

Olusola B. Oresanya

Malaria Consortium, Abuja, Nigeria

11:15 a.m.

1989

#### MISSED OPPORTUNITIES FOR VACCINATION EQUITY: TARGETING CHILDREN IN HEALTHCARE FACILITIES

Nicholas Albaugh<sup>1</sup>, Joseph Mathew<sup>2</sup>, S. Sitaraman<sup>3</sup>, Choudhary Richa<sup>3</sup>, Tomar Anjali<sup>3</sup>, Ishumeet Bajwa<sup>4</sup>, **Anita Shet**<sup>1</sup>

<sup>1</sup>Johns Hopkins Bloomberg School of Public Health, Baltimore, MD, United States, <sup>2</sup>Post Graduate Institute of Medical Education Research, Chandigarh, India, <sup>3</sup>Sawai Man Singh Medical College, Jaipur, India, <sup>4</sup>Post Graduate Institute of Medical Education and Research, Chandigarh, India

11:30 a.m.

1990

#### COMPARATIVE EFFECTIVENESS OF STRATEGIES TO IMPROVE PRACTICES OF LAY HEALTH WORKERS IN LOW- AND MIDDLE-INCOME COUNTRIES: A SYSTEMATIC REVIEW AND BAYESIAN NETWORK META-ANALYSIS

**Samantha Rowe**<sup>1</sup>, Huseyin Naci<sup>2</sup>, David Peters<sup>3</sup>, Kathleen Holloway<sup>4</sup>, Dennis Ross-Degnan<sup>5</sup>, Alexander Rowe<sup>1</sup>

<sup>1</sup>US Centers for Disease Control and Prevention, Atlanta, GA, United States, <sup>2</sup>London School of Economics, London, United Kingdom, <sup>3</sup>Johns Hopkins Bloomberg School of Public Health, Baltimore, MD, United States, <sup>4</sup>Institute of Development Studies, University of Sussex, Brighton, United Kingdom, <sup>5</sup>Harvard Medical School, Boston, MA, United States

11:45 a.m.

1991

#### EXAMINING THE FEASIBILITY OF COMMUNITY HEALTH WORKER DELIVERY OF SEVERE ACUTE MALNUTRITION TREATMENT USING AN INNOVATIVE SIMPLIFIED LOW-LITERACY PROTOCOL: RESULTS FROM NIGERIA

**Olusola B. Oresanya**<sup>1</sup>, Olatunde Adesoro<sup>1</sup>, Prudence Hamade<sup>2</sup>, Helen Counihan<sup>2</sup>, Patrick Gimba<sup>3</sup>, Amina Isah<sup>4</sup>, Kolawole Maxwell<sup>1</sup>, Naoko Kozuki<sup>5</sup>, Bethany Marron<sup>5</sup>

<sup>1</sup>Malaria Consortium, Abuja, Nigeria, <sup>2</sup>Malaria Consortium, London, United Kingdom, <sup>3</sup>Niger State Ministry of Health, Minna, Nigeria, <sup>4</sup>State Primary Health Care Development Agency, Minna, Nigeria, <sup>5</sup>International Rescue Committee, New York, NY, United States

Noon

1992

#### THEMATIC ANALYSIS OF COMMUNICATION BETWEEN PEDIATRIC HEALTHCARE PROVIDERS AND THE SOMALI COMMUNITY

**Kristin Maletsky**<sup>1</sup>, Jibril Mohamed<sup>2</sup>, Stephanie Lauden<sup>1</sup>

<sup>1</sup>Nationwide Children's Hospital, Columbus, OH, United States, <sup>2</sup>The Ohio State University, Columbus, OH, United States

12:15 p.m.

1993

#### PILOTING EXPANSION OF A PUBLIC SECTOR REPORTING TOOL INTO COMMUNITY-LEVEL PRIVATE SECTOR FACILITIES IN UGANDA

**Dorcas Kemigisha**<sup>1</sup>, Emily A. Briskin<sup>1</sup>, Luke Baertlein<sup>1</sup>, Alex Ogwal<sup>1</sup>, Carol Kyoziira<sup>2</sup>, Deepa Pindolia<sup>1</sup>, Jimmy Opigo<sup>2</sup>

<sup>1</sup>Clinton Health Access Initiative, Kampala, Uganda, <sup>2</sup>Ministry of Health, Kampala, Uganda

12:30 p.m.

1994

#### EXPLORING COLLABORATIONS BETWEEN A CHILD MORTALITY SURVEILLANCE PROGRAM AND THE INFORMAL HEALTH CARE SYSTEM OF TRADITIONAL BIRTH ATTENDANTS TO IMPROVE DEATH NOTIFICATION

**Saquina Cossa**<sup>1</sup>, Maria Maixenchs<sup>2</sup>, Felismina Tamele<sup>1</sup>, Zubaida Manhenge<sup>1</sup>, John Blevins<sup>3</sup>, Inacio Mandomando<sup>1</sup>, Quique Bassat<sup>2</sup>, Khatia Munguambe<sup>1</sup>

<sup>1</sup>Centro de Investigação em Saúde de Manhiça, Maputo, Mozambique, <sup>2</sup>ISGlobal, Hospital Clinic, Universitat de Barcelona, Barcelona, Spain, <sup>3</sup>Emory Global Health Institute, CHAMPS Program Office, Emory University, Atlanta, GA, United States

12:45 p.m.

1995

#### IMPACT OF TRAINING AND SUPPORTIVE INTERVENTIONS ON CASE MANAGEMENT AND REPORTING IN PRIVATE DRUG SHOPS IN TANZANIA

**Emily A. Briskin**<sup>1</sup>, Abdallah Lusasi<sup>2</sup>, Felix Lam<sup>3</sup>, Richard Silumbe<sup>4</sup>, Mathew Mganga<sup>5</sup>, Rose Rutizibwa<sup>4</sup>, Happy Ndomba<sup>4</sup>, Deepa Pindolia<sup>6</sup>, Elia Martin<sup>2</sup>

<sup>1</sup>Clinton Health Access Initiative, Kampala, Uganda, <sup>2</sup>National Malaria Control Program, Dar es Salaam, United Republic of Tanzania, <sup>3</sup>Clinton Health Access Initiative, Boston, MA, United States, <sup>4</sup>Clinton Health Access Initiative, Dar es Salaam, United Republic of Tanzania, <sup>5</sup>President's Office Regional Administration and Local Government, Dodoma, United Republic of Tanzania, <sup>6</sup>Clinton Health Access Initiative, Nairobi, Kenya

## Symposium 182

### Innovation in Primary Healthcare – It's Not Too Late to Improve Pneumonia Case Management in Children Under Five

Potomac D (Ballroom Level)

Sunday, November 24, 11:15 a.m. - 1 p.m.

Pneumonia remains the leading infectious killer of children under five years in the world and therefore improving case management of pneumonia is a key component in achieving Sustainable Development Goal (SDG) 3.2, which requires all countries to reduce their Child Mortality Rates to, "at least 25 deaths per 1,000 live births" by 2030. Successes in achieving Universal Health Coverage for children will also depend on whether countries provide quality services and care for children with pneumonia. While improved vaccine coverage, timely case management with oral antibiotics for mild pneumonia, and oxygen therapy for severe pneumonia could save many lives, there is often an apparent lack of these, in addition to accurate, usable and affordable diagnostics for effective management of pneumonia in resource poor settings. Every Breath Counts (EBC), the world's first public-private partnership to support national governments to end preventable child pneumonia deaths by 2030, recognizes the need for innovation to improve pneumonia case management in children under five in primary health care settings. In this symposium, the EBC research group will present primary research from four partners highlighting recent innovations supporting better pneumonia case management in primary



health care settings. New research from each of the key areas of pneumonia prevention, diagnosis and treatment will be presented in the symposium, addressing the challenges of increasing vaccine coverage in Nigeria, improving correct diagnosis in Tanzania, testing new frontline diagnostic tools in Ethiopia and Nepal, and introducing a novel oxygen treatment technology in Uganda. The session will conclude with a moderated discussion which will tie together the presentations and facilitate a structured interaction between the presenters and the audience.

#### **CHAIR**

Kevin Nicholas Baker  
*Malaria Consortium, London, United Kingdom*

Adamu Isah  
*Save the Children, Abuja, Nigeria*

11:15 a.m.

#### **RESULTS FROM A RANDOMIZED CONTROLLED TRIAL (RCT) AND IMPACT EVALUATION TO DETERMINE INTERVENTION EFFECTIVENESS ON VACCINE COVERAGE IN NIGERIA**

Ebubechi Nwaononiwu  
*Alma Sana, Abuja, Nigeria*

11:40 a.m.

#### **RESULTS FROM A STUDY MEASURING PEDIATRIC PNEUMONIA DIAGNOSIS RATES IN TANZANIA**

Cammie Lee  
*Results for Development, Washington, DC, United States*

12:05 p.m.

#### **RESULTS FROM THREE ARIDA ACCEPTABILITY STUDIES IN ETHIOPIA AND NEPAL**

Kevin Nicholas Baker  
*Malaria Consortium, London, United Kingdom*

12:30 p.m.

#### **RESULTS FROM A NUMBER OF CLINICAL TRIALS OF A LOW COST OXYGEN SOLUTION IN UGANDA**

Bagayana Sheillah Mutetire  
*FRIO2, Kampala, Uganda*

### **Symposium 183**

#### **Host-Based Biomarkers for Detection and Management of Emerging Infectious Diseases: Precision Medicine Heads South**

*National Harbor 2 (National Harbor Level)*

Sunday, November 24, 11:15 a.m. - 1 p.m.

The 2014-15 West African Ebola virus disease epidemic demonstrated the globe's collective vulnerability to emerging infectious disease threats among increasingly interconnected societies. This vulnerability is particularly heightened in the context of fragile social and economic infrastructure in lesser developed regions in the Global South, where the day-to-day demand of infectious diseases on health systems and communities presents a profound burden. Our ability to mitigate emerging infectious disease or pandemic threats hinges upon accurate and real-time visibility into the epidemiology of infectious diseases in at-risk populations, which ultimately depends upon our ability to diagnose causative pathogens in a timely manner. Unfortunately, clinical microbiology capabilities are extremely limited in the developing

world, and the vast majority of health care facilities have no ability to accurately diagnose infections beyond a handful of specific pathogens. While the introduction of molecular diagnostic platforms has improved diagnostic capabilities for certain pathogens such as *M. tuberculosis*, the repertoire of pathogen assays and availability of such technologies beyond larger hospitals are likely to remain limited in the foreseeable future. In the current model, thorough clinical microbiology diagnostic capability is a resource-intensive endeavor. Broadly creating such capacity in the developing world would require infrastructure and personnel investments that far exceed current funding levels. Recently, increasing attention is being directed at Precision Medicine, or what Leroy Hood has described as "P4 Medicine", which is predictive, preventive, personalized and participatory. Central to this concept is the idea of host-derived information that directs more accurate diagnosis and individualized management. The use of host-based and tumor biomarkers is already projected to spark a revolution in the management of cancers and holds similar promise for infectious disease. Recent discoveries highlight how host-based biomarkers can be used to identify severe infection, predict disease course and even diagnose specific infectious agents. If adapted to moderate cost platforms, host-based biomarker approaches lend themselves to broad diagnostic ability and tailored management strategies that could afford dramatic improvement in the efficiency and effectiveness of health care delivery in resource-constrained environments. At the same time, these capabilities would transform situational awareness regarding public health trends, enabling improved prioritization of resources for improving population health.

#### **CHAIR**

James Lawler  
*University of Nebraska Medical Center, Omaha, NE, United States*

Danielle Clark  
*Austere Environment Consortium for Enhanced Sepsis Outcomes (ACESO), Bethesda, MD, United States*

11:15 a.m.

#### **HARNESSING THE HOST RESPONSE FOR REAL TIME CLINICAL DECISION MAKING IN TROPICAL INFECTIOUS DISEASES**

Gayani Tillekeratne  
*Duke University School of Medicine, Durham, NC, United States*

11:25 a.m.

#### **HARNESSING THE HOST RESPONSE FOR REAL TIME CLINICAL DECISION MAKING IN TROPICAL INFECTIOUS DISEASES**

Chris Woods  
*Duke University, Durham, NC, United States*

11:35 a.m.

#### **PATIENT STRATIFICATION FOR PREDICTING MORTALITY RISK AND MONITORING THE RESPONSE TO TREATMENT**

George Oduro  
*Komfo Anokye Teaching Hospital, Kumasi, Ghana*

11:45 a.m.

### **PATIENT STRATIFICATION FOR PREDICTING MORTALITY RISK AND MONITORING THE RESPONSE TO TREATMENT**

Danielle Clark

*Austere Environments Consortium for Enhanced Sepsis Outcomes/Henry M. Jackson Foundation, Bethesda, MD, United States*

12:05 p.m.

### **DIAGNOSTIC AND PROGNOSTIC SIGNATURES IN THE HUMAN TRANSCRIPTIONAL RESPONSE TO SYSTEMIC INFECTION**

Stephen Popper

*Stanford University, Palo Alto, CA, United States*

12:25 p.m.

### **UNDERSTANDING AND MODULATING HOST IMMUNITY THROUGH THE EPIGENOME AND THE PERIPHERAL NERVOUS SYSTEM**

Eric van Gieson

*Defense Advanced Research Projects Agency, Arlington, VA, United States*

12:45 p.m.

### **DISCUSSION**

## **Symposium 184**

### **Accelerating Access to Innovative Malaria Products: Exploring Challenges and Best Practices in the Use of Market and Economic Data**

*National Harbor 3 (National Harbor Level)*

Sunday, November 24, 11:15 a.m. - 1 p.m.

While impressive gains against malaria have been achieved since the early 2000s, progress is now stagnating. Innovative new tools will be needed to move countries towards elimination and to address key biological threats such as drug and insecticide resistance. Malaria R&D pipelines contain promising new tools, however new products face an uphill battle in entering malaria markets which are highly price sensitive and where universal coverage of core tools is a key objective. Within this context, countries and donors are often steered towards achieving the highest coverage rates with the lowest-cost tools, even when more efficacious and cost-effective alternatives are becoming available. This is compounded by the fact that new products often cost more than existing options, and during the first years post-launch, evidence is often lacking on optimal deployment and cost-effectiveness to maximize impact and value-for-money. Countries and donors therefore face significant barriers to incorporating these products into fixed budget envelopes, and as a result the market for these new products remains in a nascent state characterized by high prices and low volumes. It is clear, therefore, that market economics is a key driver of new product introduction and maintaining critical markets for mature products alongside epidemiological impact. This symposium will explore these issues by discussing how market and economic data can be used to address the access barriers that have been faced by malaria products. Case studies will be presented to underline the importance of analyzing each market individually, identifying the underlying barriers to scale-up, and designing interventions that are tailor-made and underpinned by sound evidence.

## **CHAIR**

Susan Nazzaro

*Bill & Melinda Gates Foundation, Seattle, WA, United States*

Alexandra Meagan Cameron

*UNITAID, Geneva, Switzerland*

11:15 a.m.

### **THE USE OF COST DATA TO INFORM TARGET PRICING: DEVELOPING A TARGET PRODUCT PROFILE FOR GLUCOSE-6-PHOSPHATE DEHYDROGENASE DIAGNOSTIC TESTS**

Nick Luter

*PATH, Seattle, WA, United States*

11:35 a.m.

### **FORECASTING AND OTHER MARKET DATA TO ADDRESS BARRIERS IN THE UPSTREAM STARTING MATERIALS/ ACTIVE INGREDIENTS MARKETS: A NOVEL APPROACH FOR ARTEMISININ**

Lin Li

*The Global Fund to Fight AIDS, TB and Malaria, Geneva, Switzerland*

11:55 a.m.

### **THE ROLE OF MARKET DATA IN GUIDING INNOVATIVE PROCUREMENT APPROACHES: THE CASE OF MALARIA RAPID DIAGNOSTIC TESTS**

Lisa Hare

*United States Agency for International Development, President's Malaria Initiative, Washington, DC, United States*

12:05 p.m.

### **THE ROLE OF COST-EFFECTIVENESS DATA IN INTRODUCING THIRD-GENERATION INSECTICIDES FOR INDOOR RESIDUAL SPRAYING**

Andrew Saibu

*IVCC, Liverpool, United Kingdom*

12:25 p.m.

### **DISCUSSION**

## **Symposium 185**

### **Schistosomiasis Remapping, Refocusing and Refining: How to Assess Endemicity After Multiple Rounds of Preventive Chemotherapy**

*National Harbor 4/5 (National Harbor Level)*

Sunday, November 24, 11:15 a.m. - 1 p.m.

The current strategy for mapping and assessing the distribution of schistosomiasis is fundamentally broad in its methodology, often resulting in gross over- or under-treatment. Yet, schistosomiasis is a focal disease with transmission confined to bodies of fresh water where intermediate host snails are in indirect contact with infected humans or animals. The current strategies for mapping and assessing impact of interventions face several programmatic challenges. First, they rely on an ambiguous concept called the "homogeneous ecological zone" (HEZ) that assumes similar infection risk throughout a defined area. While this may be appropriate for some neglected tropical diseases, it is less so for a focal disease like schistosomiasis where transmission might be confined to a single, small body of fresh water within a sub-district or involve a large lake or river that can encompass as many as 20

districts. Second, the strategy uses purposeful sampling of five-to-ten schools or communities within the HEZ regardless of population size or geographic area and uses the mean prevalence of disease in 9- to 14-year-old children. Depending on the size of the HEZ, this can result in significant over or under treating, as the mean prevalence can mask communities with high or no infection, while selective sampling risks missing communities with infection. Third, the assessment of programs uses a wide range of diagnostic tools, including point-of-care circulating cathodic antigen, microscopic examination of stool or urine samples, reagent strip testing of urine for microhematuria, questionnaires or risk profiling, many of which have poor sensitivity and provide very different results. Finally, the protocols for assessing and mapping schistosomiasis are the same for all species of schistosome despite very different transmission dynamics, snail, human, and animal hosts and susceptibility to treatment and vector management. Despite these challenges, preventive chemotherapy with praziquantel has steadily increased over the last decade, particularly in Africa where >95% of infection occurs. As a result, infections have declined in the region overall and many national programs are now at a point where they are looking to re-assess and refine their treatment strategies. To do this, new strategies and tools for focal mapping and identification of high transmission hot-spots are required to more efficiently and effectively target preventive chemotherapy. This session will present work being conducted by the World Health Organization (WHO), national programs and partners to develop new strategies for assessing endemicity of schistosomiasis in areas of ongoing preventive chemotherapy.

#### CHAIR

Darin Evans  
*U.S. Agency for International Development, Washington, DC, United States*

Fiona Fleming  
*Imperial College London, London, United Kingdom*

11:15 a.m.

#### COUNTRY EXPERIENCE: TANZANIA

Upendo Mwingira  
*Ministry of Health and Social Welfare, Dar Es Salaam, United Republic of Tanzania*

11:35 a.m.

#### COUNTRY EXPERIENCE: TOGO

Monique Doreknou  
*University of Lome, Lome, Togo*

11:55 a.m.

#### COMPARISON OF STRATEGIES FOR MAPPING AND IMPACT

Penelope Vounatsou  
*Swiss Tropical and Public Health Institute, Basel, Switzerland*

12:15 p.m.

#### THE WHO PERSPECTIVE: POST-2020 AND BEYOND

Amadou Garba Djirmay  
*World Health Organization, Geneva, Switzerland*

12:35 p.m.

#### DISCUSSION

## Scientific Session 186

### Intestinal and Tissue Nematodes: Soil-Transmitted Helminths - Epidemiology and Control

*National Harbor 10 (National Harbor Level)*

Sunday, November 24, 11:15 a.m. - 1 p.m.

#### CHAIR

Sanjaya Dhakal  
*The Task Force for Global Health, Atlanta, GA, United States*

Julia C. Dunn  
*Imperial College London, London, United Kingdom*

11:15 a.m.

1996

#### A DEEP SEQUENCING APPROACH TO DEFINE BENZIMIDAZOLE RESISTANCE GENE FREQUENCIES IN HUMAN HOOKWORM EGG SAMPLES FROM KPANDAI DISTRICT, GHANA

Santosh George<sup>1</sup>, Peter Suwondo<sup>1</sup>, Joseph Otchere<sup>2</sup>, Lisa M. Harrison<sup>1</sup>, Kaya Bilguvar<sup>3</sup>, James Knight<sup>3</sup>, Adalgisa Caccone<sup>4</sup>, Debbie Humphries<sup>5</sup>, Michael D. Wilson<sup>2</sup>, Michael Cappello<sup>1</sup>

<sup>1</sup>*Yale Partnerships for Global Health, Yale School of Medicine, New Haven, CT, United States*, <sup>2</sup>*Noguchi Memorial Institute for Medical Research, University of Ghana, Legon, Ghana*, <sup>3</sup>*Yale Center for Genome Analysis, Yale School of Medicine, New Haven, CT, United States*, <sup>4</sup>*Department of Ecology and Evolutionary Biology, Yale University, New Haven, CT, United States*, <sup>5</sup>*Department of Epidemiology of Microbial Diseases, Yale School of Public Health, Yale University, New Haven, CT, United States*

11:30 a.m.

1997

#### COMPARISON OF WORLD HEALTH ORGANIZATION AND DEMOGRAPHIC AND HEALTH SURVEY DATA TO ESTIMATE SUB-NATIONAL DEWORMING COVERAGE IN PRE-SCHOOL CHILDREN

Nathan C. Lo<sup>1</sup>, Ribhav Gupta<sup>2</sup>, David G. Addiss<sup>3</sup>, Eran Bendavid<sup>4</sup>, Sam Heft-Neal<sup>5</sup>, Alexei Mikhailov<sup>5</sup>, Antonio Montresor<sup>6</sup>, Pamela Sabina Mbabazi<sup>5</sup>

<sup>1</sup>*Stanford University School of Medicine; University of California San Francisco, Stanford; San Francisco, CA, United States*, <sup>2</sup>*Stanford University, Stanford, CA, United States*, <sup>3</sup>*Task Force for Global Health, Decatur, GA, United States*, <sup>4</sup>*Stanford University School of Medicine, Stanford, CA, United States*, <sup>5</sup>*World Health Organization, Geneva, Switzerland*

11:45 a.m.

1998

#### PREDISPOSITION AND HOUSEHOLD CLUSTERING OF SOIL-TRANSMITTED HELMINTH INFECTION EVIDENT IN MYANMAR COMMUNITIES THAT HAVE RECEIVED EXTENSIVE MASS DRUG ADMINISTRATION

Julia C. Dunn<sup>1</sup>, Martin Walker<sup>1</sup>, Alison A. Bettis<sup>1</sup>, James E. Wright<sup>1</sup>, Nay Yee Wyine<sup>2</sup>, Aye Moe Moe Lwin<sup>3</sup>, Nay Soe Maung<sup>3</sup>, Roy M. Anderson<sup>1</sup>

<sup>1</sup>*Imperial College London, London, United Kingdom*, <sup>2</sup>*London Centre for Neglected Tropical Disease Research, London, United Kingdom*, <sup>3</sup>*University of Public Health, Yangon, Myanmar*

Noon

1999

#### EPIDEMIOLOGY OF SOIL-TRANSMITTED-HELMINTHIASIS FOLLOWING TWENTY-ONE ROUNDS OF MASS DRUG ADMINISTRATION IN SEVEN DISTRICTS, BANGLADESH

Sanjaya Dhakal<sup>1</sup>, Abdullah A. Kawsar<sup>2</sup>, Mohammad J. Karim<sup>2</sup>, Michael R. Diaz<sup>1</sup>, Alexander J. Jones<sup>1</sup>, Rubina Imtiaz<sup>1</sup>

<sup>1</sup>*The Task Force for Global Health, Atlanta, GA, United States*, <sup>2</sup>*Department of Disease Control, Dhaka, Bangladesh*

12:15 p.m.

## 2000

### FACTORS ASSOCIATED WITH SOIL-TRANSMITTED HELMINTHS (STH) PREVALENCE AND INTENSITY OF INFECTION IN COMÉ, BENIN, WEST AFRICA: FINDINGS FROM A BASELINE PREVALENCE SURVEY OF DEWORM3 STH-ELIMINATION TRIAL

**Euripide F. G. A Avokpaho**<sup>1</sup>, Parfait Houngbegnon<sup>1</sup>, Manfred Accrombessi<sup>1</sup>, Gilles Cottrell<sup>2</sup>, Eloïc Atindegla<sup>1</sup>, Fadel Tanimomon<sup>1</sup>, Félicien Chabi<sup>1</sup>, Innocent Togbevi<sup>1</sup>, Firmine Viwami<sup>1</sup>, Aurax Fernando<sup>1</sup>, Wilfrid Batcho<sup>3</sup>, Dorothee A. Kindé-Gazard<sup>4</sup>, Achille Massougbodji<sup>1</sup>, Andre Garcia<sup>2</sup>, Sean Galagan<sup>5</sup>, Arianna Means<sup>6</sup>, Tim Littlewood<sup>7</sup>, Kristjana H. Ásbjörnsdóttir<sup>8</sup>, Adrian J. Luty<sup>6</sup>, Moudachirou Ibikounle<sup>9</sup>, Judd Walson<sup>6</sup>

<sup>1</sup>Institut de Recherche Clinique du Bénin, Cotonou, Benin, <sup>2</sup>MERIT UMR 216, Institut de Recherche pour le Développement, Paris, France, <sup>3</sup>Programme National de Lutte contre les Maladies Transmissibles (PNLMT), Ministry of Health, Cotonou, Benin, <sup>4</sup>Centre de Lutte Intégrée contre le Paludisme (CLIP), Calavi, Benin, <sup>5</sup>International Clinical Research Center (ICRC), University of Washington, Seattle, WA, United States, <sup>6</sup>Department of Global Health, University of Washington, Seattle, WA, United States, <sup>7</sup>The DeWorm3 Project, The Natural History Museum of London, London, United Kingdom, <sup>8</sup>MERIT UMR 216, IRD, Université Paris 5, Paris, France, <sup>9</sup>Département de Zoologie, Faculté des Sciences et Techniques, Université d'Abomey-Calavi 01BP526, Cotonou, Benin

12:30 p.m.

## 2001

### IMPACT OF ONCE VERSUS TWICE PER YEAR MASS DRUG ADMINISTRATION WITH DIETHYLCARBAMAZINE PLUS ALBENDAZOLE FOR LYMPHATIC FILARIASIS ON HOOKWORM PREVALENCE AND HEMOGLOBIN LEVELS IN PAPUA NEW GUINEA (PNG)

**Brooke Mancuso**<sup>1</sup>, Nelly Sanuku<sup>2</sup>, Samson Satofan<sup>2</sup>, Delma Beaso<sup>2</sup>, Yao-Chieh Cheng<sup>3</sup>, Tobias Muare<sup>2</sup>, William Pomat<sup>2</sup>, Andrew Majewski<sup>4</sup>, James Kazura<sup>5</sup>, Gary J. Weil<sup>4</sup>, Peter U. Fischer<sup>4</sup>, Christopher L. King<sup>5</sup>

<sup>1</sup>Tulane University School of Public Health, New Orleans, LA, United States, <sup>2</sup>Papua New Guinea Institute for Medical Research, Goroka, Papua New Guinea, <sup>3</sup>Temple University School of Medicine, Philadelphia, PA, United States, <sup>4</sup>Washington University St. Louis School of Medicine, St. Louis, MO, United States, <sup>5</sup>Center for Global Health and Disease, Case Western Reserve University School of Medicine, Cleveland, OH, United States

12:45 p.m.

## 2002

### RELEVANT SPATIAL SCALE FOR EVALUATION UNITS FOR ELIMINATION PROGRAMS FOR SOIL-TRANSMITTED HELMINTHS GIVEN GEOGRAPHY OF SETTLEMENTS AND HUMAN MOVEMENT

**Carolyn Vegvari**, Robert Hardwick, James Truscott, Roy Anderson  
Imperial College London, London, United Kingdom

## Symposium 187

### New Insights into the Vascular Dysfunction of Severe Viral Infections: Bridging the Gap from Bench to Bedside

National Harbor 11 (National Harbor Level)

Sunday, November 24, 11:15 a.m. - 1 p.m.

Infection with certain viruses, including dengue (DENV) and Lassa (LASV) viruses, can cause severe clinical manifestations resulting in capillary leakage, hemorrhage and organ impairment that can lead to hypovolemia, shock and death. DENV is a flavivirus that has emerged in the last several decades as the most significant arboviral infection globally, with up to 96 million symptomatic cases annually. LASV is an arenavirus that is endemic to West Africa, where transmission occurs through contact with infected rodent urine, and results in an estimated 300,000 cases annually.

Although there have been major advances in the last few years in our understanding of the pathogenesis of dengue-associated capillary leak, including the discovery that vascular leak can be directly triggered by DENV non-structural protein 1 (NS1), very little is known about vascular disruption in Lassa fever. The mechanisms underlying vasculopathy associated with DENV and LASV infections may share some common pathogenic pathways involving microvascular dysfunction and endothelial glycocalyx disruption. The overriding aim of this symposium is to bring together the latest discoveries on vascular leak associated with severe cases of dengue and Lassa fever, from basic science and novel *in vitro* models to clinical studies currently ongoing in Vietnam, Singapore and Sierra Leone. First, an overview will be presented of recent mechanistic studies of endothelial cell dysfunction associated with DENV and other flavivirus infections, focusing on the role of NS1 in inducing endothelial hyperpermeability, vascular leak and virus dissemination. In particular, work will be presented on viral and host determinants of NS1-triggered disruption of the endothelial glycocalyx layer (EGL), which consists of a negatively charged network of glycoproteins, proteoglycans and glycosaminoglycans (GAGs) lining the luminal surface of microvessels and provides vital barrier functions to capillaries. This work will be followed by results from clinical studies on glycocalyx degradation products measured in Singaporean patients with dengue, as well as measurement of microvascular function in severe dengue in an intensive care unit in Vietnam. The final speaker will present the pathways associated with vascular dysfunction in Lassa fever patients from an ongoing study in Sierra Leone. This will be followed by a discussion of the results of these studies taken together and how to link laboratory and clinical investigations. Potential unifying mechanisms for the pathophysiology of vascular dysfunction associated with these viral infections will be discussed, concluding with a discussion of potential therapeutic targets based on the proposed pathways and suggestions for future work.

## CHAIR

Sophie Yacoub  
Oxford University Clinical Research Unit, Ho Chi Minh City, Vietnam

Eva Harris  
University of California Berkeley, Berkeley, CA, United States

11:15 a.m.

### MECHANISMS OF FLAVIVIRUS NS1-INDUCED ENDOTHELIAL DYSFUNCTION LEADING TO VASCULAR LEAK AND VIRUS DISSEMINATION

Eva Harris  
University of California Berkeley, Berkeley, CA, United States

11:30 a.m.

### VIRAL AND HOST DETERMINANTS OF DENGUE VIRUS NS1-TRIGGERED ENDOTHELIAL HYPERPERMEABILITY

Scott Biering  
University of California Berkeley, Berkeley, CA, United States

11:45 a.m.

### ENDOTHELIAL GLYCOCALYX BREAKDOWN IN DENGUE PATIENTS IN SINGAPORE

Tsin Wen Yeo  
Lee Kong Chian School of Medicine, Singapore, Singapore



Noon

**VASCULAR FUNCTION IN SEVERE DENGUE PATIENTS IN VIETNAM**

Angela McBride

*Oxford University Clinical Research Unit, Ho Chi Minh City, Vietnam*

12:15 p.m.

**VASCULAR FUNCTION IN LASSA FEVER PATIENTS IN SIERRA LEONE**

Alex Salam

*University of Oxford, Oxford, United Kingdom*

12:30 p.m.

**DISCUSSION**

**Sunday, November 24, 1 p.m.**

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**ASTMH 68TH ANNUAL MEETING ADJOURNS**

See you next year at the Metro Toronto Convention Centre in Toronto, Ontario, Canada!

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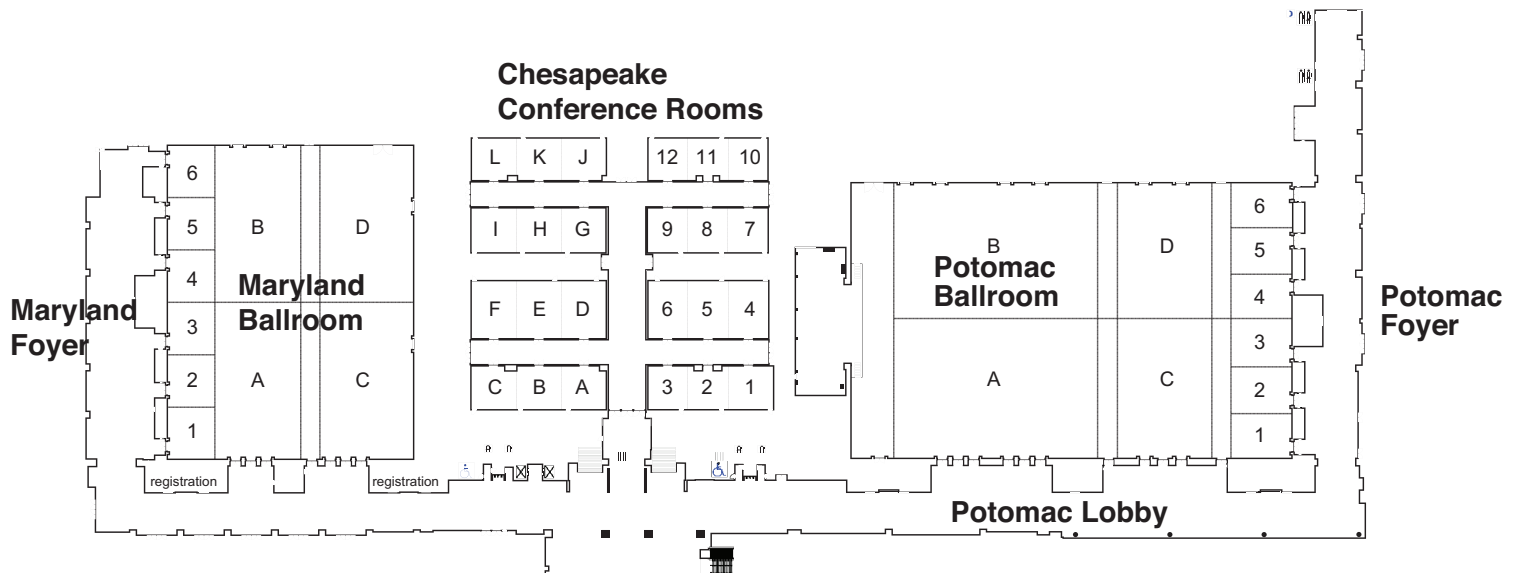
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## Ballroom Level



## Ballroom Level Meeting Rooms

Chesapeake A (Speaker Ready Room)	Chesapeake 6 (Meeting Sign-Up Room)	Maryland 5/6
Chesapeake B	Chesapeake 7	Potomac Ballroom Lobby (Registration)
Chesapeake C	Chesapeake 8	Potomac A
Chesapeake D	Chesapeake 9 (Meeting Sign-Up Room)	Potomac B
Chesapeake E	Magnolia 3	Potomac C
Chesapeake F	Maryland A	Potomac D
Chesapeake G	Maryland B	Potomac 1-6 Foyer
Chesapeake H	Maryland C	Potomac 1
Chesapeake I	Maryland D	Potomac 2
Chesapeake L	Maryland 1-6 Foyer (TropStop Student Lounge)	Potomac 3
Chesapeake 1	Maryland 1	Potomac 4
Chesapeake 2 (Press Room)	Maryland 2	Potomac 5
Chesapeake 4	Maryland 3	Potomac 6
Chesapeake 5	Maryland 4	

## Lobby Level Meeting Rooms

- Mezzanine 1
- Mezzanine 2
- Mezzanine 3
- Mezzanine 4



**National Harbor Level**



**National Harbor Conference Rooms**

**National Harbor Level Meeting Rooms**

National Harbor 1  
National Harbor 2  
National Harbor 3  
National Harbor 4/5  
National Harbor 6

National Harbor 7  
National Harbor 8  
National Harbor 9  
National Harbor 10  
National Harbor 11

National Harbor 12  
National Harbor 13  
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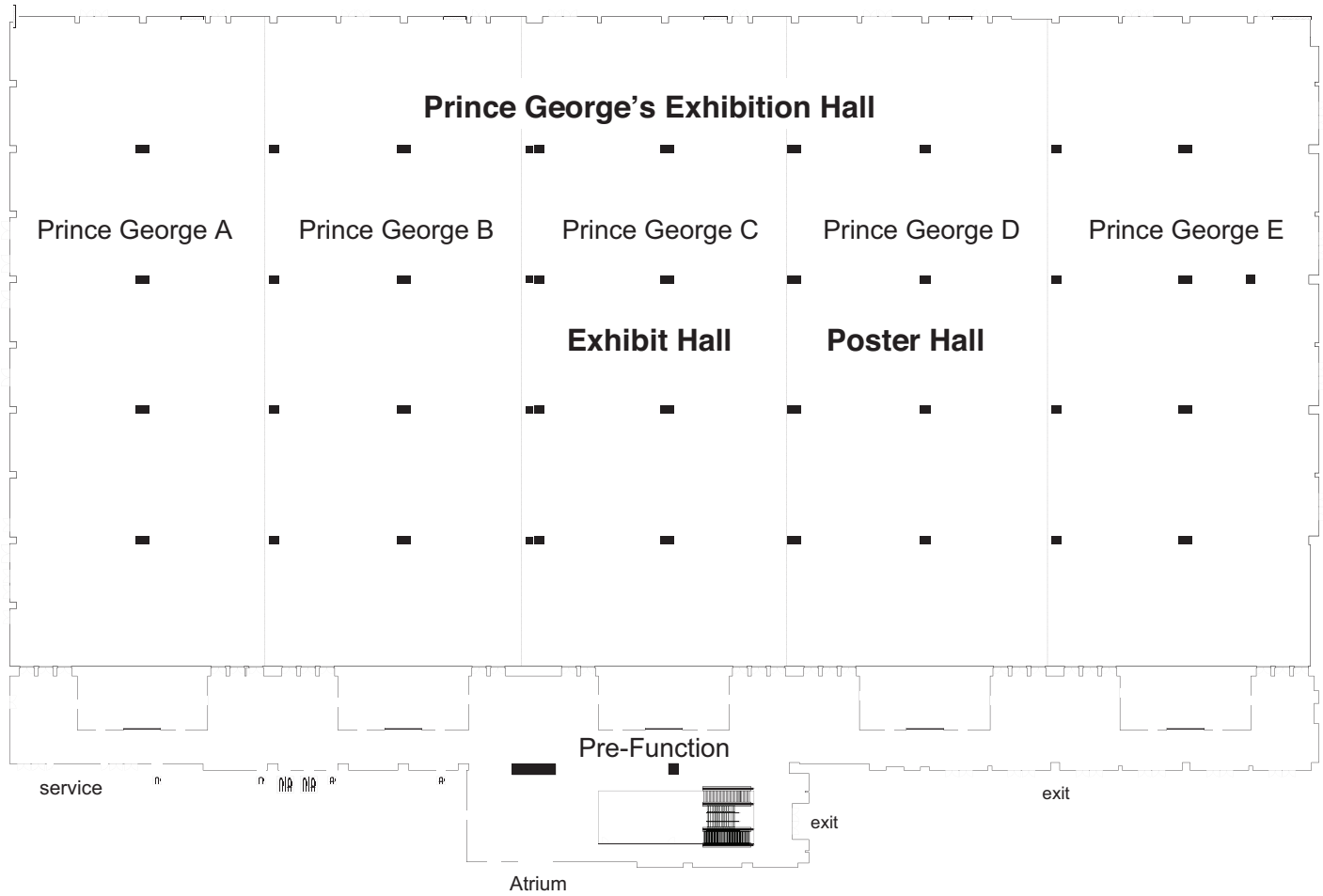
**Riverview Ballroom**



**Riverview Ballroom Meeting Rooms**

- Riverview A
- Riverview B
- Riverview 1
- Riverview 2
- Riverview 3
- Riverview 4
- Riverview 5

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**Lower Atrium Level Meeting Rooms**

- Prince George's Exhibit Hall C (Exhibit Hall)
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## 70th Annual Meeting

**November 17-21, 2021**

*Gaylord National Resort and Convention Center  
National Harbor, Maryland USA (adjacent to Washington, DC)*

## 71st Annual Meeting

**October 29-November 3, 2022 (Sunday through Thursday)**

*Washington State Convention Center  
Seattle, Washington USA*

## 72nd Annual Meeting

**October 18-22, 2023 (Wednesday through Sunday)**

*Hyatt Regency Chicago  
Chicago, Illinois USA*

## 73rd Annual Meeting

**October 23-27, 2024 (Wednesday through Sunday)**

*New Orleans Ernest N. Morial Convention Center  
New Orleans, Louisiana USA*



[www.astmh.org](http://www.astmh.org)

