Parasitology Pre-meeting Course:

Single Cell Biology for Parasitologists

November 5, 2017; 7 a.m. – 4 p.m.

The Baltimore Convention Center, Baltimore, MD USA

From transmission to pathology and treatment, parasitic diseases are the complex result of the actions of individual cells, of groups of cells or organs, and of whole organisms. Technological limitations have largely confined most research to examining bulk populations of host, parasite or vector cells. This has obscured much important biology happening at the single cell level. There have been remarkable advances in the ability to identify, capture and analyze individual cells from their environment that are enabling research at a finer scale than previously feasible. This course will introduce the emerging tools that are being used to dissect the biology of single cells. We will focus on four main areas: I) identification, marking and capture of single cells; II) 'omics approaches for single cell biology; III) data analysis for single cell biology, and; IV) the scale and cost of single cell analysis. The course will draw from aspects of host, vector and parasite biology.

Course Organizers:

Stephen M. Beverley, PhD, FASTMH, Professor and Head of Molecular Microbiology, Washington University School of Medicine, St. Louis, Missouri, United States

Ian Cheeseman, PhD, Milton S. & Geraldine M. Goldstein Young Scientist, Assistant Scientist, Department of Genetics, Texas Biomedical Research Institute, San Antonio, Texas, United States

AGENDA

7 a.m.	Light Continental Breakfast
7:45 a.m.	**Opening Remarks** *Stephen M. Beverley, PhD, FASTMH, Professor and Head of Molecular Microbiology, Washington University School of Medicine, St. Louis, Missouri, United States*
8 a.m.	**How Can Parasitology Benefit from Single Cell Research?** *Ian Cheeseman, PhD, Milton S. & Geraldine M. Goldstein Young Scientist, Assistant Scientist, Department of Genetics, Texas Biomedical Research Institute, San Antonio, Texas, United States*
8:45 a.m.	**Dissecting Liver Stage Malaria Progression with Single Cell Imaging** *Kirsten Hanson, PhD, Assistant Professor, Department of Biology, University of Texas at San Antonio, San Antonio, Texas, United States*

9:30 a.m. **Dissection of Sexual Commitment in Malaria Parasites Using Highly Parallel Single Cell Transcriptomics**
Björn Kafsack, PhD, Assistant Professor of Microbiology and Immunology, Weill Cornell Medicine, New York, New York, United States

10:15 a.m. *Coffee Break*

10:30 a.m. **Measuring Anueploidy in Single *Leishmania* Parasites**
Malgorzata Domagalska, PhD, Post-Doctoral Researcher, Molecular Parasitology Unit, Department of Biomedical Sciences, Institute of Tropical Medicine, Antwerp, Belgium

11:15 a.m. **Single Cell Transcriptomics of *Plasmodium vivax hypnozoites***
Richárd Bártfai, PhD, Assistant Professor, Department of Molecular Biology Faculty of Science, Radboud Institute of Molecular Life Sciences, Nijmegen, The Netherlands

Noon Lunch (On your own)

1:15 p.m. **Single Cell Dissection of Schistosoma Stem Cells**
Bo Wang, PhD, Assistant Professor of Bioengineering, Stanford University, Stanford, California, United States

2 p.m. **Bioinformatic Approaches to Single Cell Parasitology**
Jessica Kissinger, PhD, Distinguished Research Professor, Director, Institute of Bioinformatics, Department of Genetics, University of Georgia, Athens, Georgia, United States

2:45 p.m. *Break*

3 p.m. **Tracing Cell Lineages**
Patrick Cahan, PhD, Assistant Professor, Department of Biomedical Engineering, Johns Hopkins School of Medicine, Baltimore, Maryland, United States

3:45 p.m. **Closing Remarks**
Stephen M. Beverley, PhD, FASTMH, Professor and Head of Molecular Microbiology, Washington University School of Medicine, St. Louis, Missouri, United States

Ian Cheeseman, PhD, Milton S. & Geraldine M. Goldstein Young Scientist, Assistant Scientist, Department of Genetics, Texas Biomedical Research Institute, San Antonio, Texas, United States

4 p.m. Course Adjourns