



## Robert Ellis Shope

Izabela Mauricio de Rezende<sup>1\*</sup>, Amy Krytosik<sup>2</sup>, Rachel Lange<sup>3</sup>, Robert Tesh<sup>4</sup>, David Morens<sup>5</sup>, ACAV Student Trainee Leadership Group<sup>6</sup>

<sup>1</sup> Department of Pediatrics, Division of Infectious Disease, Stanford University School of Medicine, Stanford, CA, USA

<sup>2</sup> Chan Zuckerberg Initiative, Redwood City, CA, USA

<sup>3</sup> University at Albany School of Public Health, Albany NY, USA

<sup>4</sup> George Dock Distinguished Professor, Departments of Pathology and Microbiology & Immunology, University of Texas Medical Branch, Galveston, TX, USA

<sup>5</sup> National Institute of Allergy and Infectious Diseases, National Institutes of Health, Bethesda, MD, USA

<sup>6</sup> Group Members: Jean Paul Carrera, Katherine M Laycock, Livia Sacchetto, Megan Vogt

\*Corresponding author: [izabelamauriciorezende@gmail.com](mailto:izabelamauriciorezende@gmail.com); [irezende@stanford.edu](mailto:irezende@stanford.edu)

Although originally trained as a physician, he once famously said, "*medical schools should be part of schools of public health, not the other way around as is the custom of most schools of public health in the United States*".

Robert (Bob) Ellis Shope was born on February 2, 1929, in Princeton, New Jersey, USA, where he was raised and received his early schooling. He was the son of Richard E. Shope, an internationally renowned veterinary virologist who first identified the influenza A virus in pigs in 1931. This virus was later shown to be the causative agent of the great influenza pandemic of 1918. His father worked for the Rockefeller Foundation, and Albert Einstein was a next-door

neighbor in Princeton when young Bob was growing up. With this heritage, curiosity and an interest in science must have been in his blood.

Bob Shope earned his bachelor's (zoology) and MD degrees from Cornell University followed by an internship in internal medicine at Grace-New Haven Hospital, Yale University School of Medicine in 1954. Like most young physicians at the time, he entered the U.S. Army Medical Corps and was assigned for three years to Camp Detrick (now USAMRIID) in Frederick, Maryland. Subsequently, he was assigned for two years to a U.S. Army Medical Research Unit in Kuala Lumpur, Malaysia investigating fevers of unknown origin among British Army and local civilian personnel.

Following his Army tour, Bob Shope returned to Yale to complete a residency in internal medicine. He then took a position at the Rockefeller Foundation's Virus Laboratory in New York City where he worked for one year in the laboratory of the Nobel laureate Max Theiler, one of the researchers responsible for the development of the yellow fever 17D vaccine (YFY-17D). Still a member of the Rockefeller Foundation staff, Shope was sent to work in Belem, Brazil at the Belem Virus Laboratory (now renamed the Evandro Chagas Institute), located at the mouth of the Amazon River.

Shope thrived in Belem, became fluent in Portuguese, and eventually became director of the Rockefeller Foundation's International Virus Program in Brazil. During his six years in Belem, he and his Brazilian counterparts characterized over 50 new arboviruses. This period has been described as the "golden age" of arbovirology since almost every new virus that they isolated from arthropods, forest animals or sick people was novel. After six years in Belem, Shope returned briefly to the Rockefeller Foundation Virus Laboratory in New York.

In 1964, the Rockefeller Foundation completed an agreement with Yale University to move their arbovirology group, equipment and their entire collection of viruses and reagents to new facilities in the Laboratory of Epidemiology and Public Health of the Yale University School of Medicine in New Haven. Henceforth, it was known as the Yale Arbovirus Research Unit (YARU). YARU and some of the senior Rockefeller investigators were initially supported in part by an endowment from the Foundation with the understanding that eventually the Unit would become self-supporting by obtaining grants and contracts.

Wilbur Downs was appointed director of the new YARU, which initially included Bob Shope as well as Thomas Aitken, Charles Anderson, Sonya Buckley, Jordi Casals, Delphine Clarke, Max Theiler, Loring Whitman and Jack Woodall. At the time, YARU was the World Reference Center for Arboviruses as investigators from all over the world sent their unknown virus isolates there to be identified or confirmed. There were few restrictions on sending or receiving virus samples in that period. Most of the samples YARU received were added to the original Rockefeller Foundation collection. Bob Shope later began to catalog and inventory this extensive collection of viruses. When Downs retired, Shope was appointed director of YARU, a position he held for 24 years.

YARU was a dynamic place during Shope's tenure as director. Many of today's prominent arbovirologists and vector biologists were trained or spent time working at YARU. Because of his time in Belem, many were from Brazil or other South American countries. Still, there were also visitors and trainees from Africa, the Middle East, Europe, Australia, Southeast

Asia and China. At the same time, Bob Shope collaborated with many scientists in the U.S. and abroad to characterize and describe new virus serogroups, species, genera and families. He even co-authored the first description of Lyme disease in the United States.

In 1995, Bob Shope left Yale, along with colleague Robert Tesh, and moved to the University of Texas Medical Branch (UTMB) in Galveston, Texas, taking most of the YARU virus and reagent collection with them. The principal reason for this movement was that UTMB had a high-security laboratory facility, where they could do laboratory and experimental animal work with BSL-3 and BSL-4 agents. In 1995, the U.S. Government began passing a series of laws restricting the possession, use and transfer of highly infectious agents (later known as the PATRIOT Act). In 1995, UTMB had such a high-security facility and Yale did not. Afterward, the UTMB's BSL-4 laboratory was kindly named UTMB's Shope lab.

After moving to Galveston, Shope expanded his interests from arboviruses to include other emerging infectious diseases, global warming and biodefense. It is difficult to succinctly describe his many contributions to infectious diseases, public health and biomedical research because they were so numerous and varied. To cite some examples, he described Oropuche virus, Sabia virus, Guanarito virus, Thottapalayam virus (the first Hantavirus described), bluetongue related viruses, among so many others. These all have been recorded in other publications. Bob Shope had an encyclopedic-like knowledge of arboviruses, rodent-borne viruses and many other viruses, and he enthusiastically shared what he knew with anyone who inquired. He was a frequent consultant to many national and international organizations, such as WHO Peer Advisory Committee on dengue vaccine development in Thailand, Flavivirus Steering Committee of the WHO Programme for the Vaccine Development in Geneva, advisor of the U.S. Government on public health issues as emerging infectious diseases, bioterrorism and the consequences of climate change, and he received many honors, prizes, and awards. Again, too many to list here.

Shope was also an outstanding, devoted and beloved teacher. He cared deeply about education and training; infectious diseases, epidemiology and public health were his expertise. Although originally trained as a physician, he once famously said, "Medical schools should be part of schools of public health, not the other way around as is the custom of most schools of public health in the United States." Shope treated everyone with respect and saw good in most people. He was never arrogant or spoke condescendingly or maliciously of colleagues or other people. He was an amazingly positive and supportive person. People who knew him and worked or collaborated with him were very fortunate. Wherever he traveled in the world (a village in Nigeria or the White House in Washington), he was at home, and most people recognized his sincerity and accepted him as a friend.

During the last few years of life in Galveston, his activities and travel were very limited, as he suffered from idiopathic pulmonary fibrosis, a debilitating and progressive disease of unknown etiology. Robert Shope died in Galveston on January 19, 2004, following an unsuccessful lung transplant. He was survived by his wife, three children and six grandchildren.

## References

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