

Tracking disease outbreaks in Brazil: an interview with Dr. Gúbio Soares



Gúbio Soares is a virologist and professor of microbiology at the Federal University of Bahia. He also serves as the coordinator of the Laboratory of Virology at the university's Institute of Health Sciences. His area of expertise is microbiology, with an emphasis on virology, focused on rotavirus, caprine arthritis encephalitis virus (CAEV), norovirus, dengue, HPV, chikungunya, and dengue fever. He identified the first known occurrence of the Zika virus in Brazil in April 2015.

Dr. Gúbio Soares Virologist Federal University of Bahia

In Brazil's tropical climate, mosquitos are a year-round problem. Their constant presence means the continual threat of arboviral outbreaks such as dengue, chikungunya, and yellow fever. In conditions like this, it's essential to be prepared to identify outbreaks before they spread. This is where Dr. Gúbio Soares comes in. As a virologist at the Federal University of Bahia in northeastern Brazil, Dr. Soares has been on the frontlines of Brazil's response to multiple outbreaks, including SARS-CoV-2. But perhaps his most significant contribution was in 2015, when he identified and sequenced a rare virus that would soon become world famous: Zika virus.

We spoke to Dr. Soares about his journey to bring virology to Brazil, and his outlook on the future of infectious disease research.

Becoming a virologist

Dr. Soares initially studied pharmacy at the Federal University of Bahia, but a grant from the Pan American Health Organization gave him the opportunity to study *Leptospira* bacteria, introducing him to the world of infectious disease research. "I always liked microbiology, and the government opened this door. I applied, won a scholarship, and went to do my doctorate in Argentina," he said. His research centered on producing monoclonal antibodies for hand, foot, and mouth disease, and he also spent time working at the National Institute of Infectious Diseases in Buenos Aires, identifying plasmids in *E. coli* bacteria.

Eventually, Dr. Soares returned to Brazil, along with his wife and fellow virologist Dr. Silvia Sardi, to pursue virology research in his home country. There, they started the long process of building a lab from the ground up. "Virology in our country at that time suffered a lot," he said. "The difficulty was finding a place to implement a new virology lab, which was nonexistent at the time."

He and Dr. Sardi presented a proposal to the state government in Bahia to focus on viruses related to animals and agriculture, as this was the only way they could get resources. When their proposal was approved, they were able to purchase their first instrument, an Applied Biosystems™ Prism 377 DNA Sequencer—the first sequencer in the entire state of Bahia. They used the sequencer to study viruses in humans, including dengue, chikungunya, norovirus, and others.

Then came 2014. “We began to notice the appearance of a new virus,” Dr. Soares recalled. Patients were coming to hospitals with fevers, joint pain, and rashes, and doctors were unable to determine the cause. Dr. Soares and Dr. Sardi tested blood samples and eventually identified it as the Zika virus, connecting it to the increasing cases of microcephaly found in infants during this time.

“It was the first time this virus was detected in Brazil,” he said. “Until then, in the world, the relationship between the increase in cases of children with microcephaly and the Zika virus was not known.” And although he and Dr. Sardi published several papers in national and international journals, he emphasized the importance of making the science accessible to the rest of the population. “We had the opportunity to talk to important [outlets], such as the *The New York Times* and *The Sun*... communicating impactful information to the world in easy-to-understand language.” This allowed him to spread awareness of the virus, and its connection to microcephaly, beyond the scientific community and into the general population who were most at risk. “Very few people have that opportunity, and I had that chance,” he said. “I was able to contribute to the betterment of humanity. It definitely marked my life.”

Unanswered questions remain

The main question that follows him throughout his research is understanding more about where these diseases come from, and how they pass into humans. “I want to unravel the mysteries,” he said, “and find marks on genomes or other characteristics that can give us answers.”

Dr. Soares and his lab team continue to work on identifying viruses of concern in Brazil and Latin America and remain focused on mosquito-born illnesses, including West Nile virus, St. Louis encephalitis, and yellow fever.

“Mosquitos are always present in our state...so our goals are focused on arboviruses, from the most common to the rarest,” he said. “Our lab is ready to detect them.”

The role of Applied Biosystems™ technologies

With the increase in funding that came with the identification of the Zika virus, Dr. Soares invested in modernizing his laboratory. This included purchasing both an Applied Biosystems™ QuantStudio™ 5 Real-Time PCR System and a QuantStudio™ 6 Flex Real-Time PCR System, which they utilized heavily during the SARS-CoV-2 virus crisis.

“The reliability of the products, not only of the equipment but also the consumables, is very high,” he said. “If the reagents aren’t good, they hurt the research. And in the case of Applied Biosystems™ solutions, all are of excellent quality, and we rely on the results.”



Dr. Gúbio Soares and Dr. Silvia Sardi

Inspired to help humanity

Dr. Soares stressed the need for equity in global health, and hopes that in the future, access to medical care such as the SARS-CoV-2 vaccine would be equally available to all, no matter their country or region. “We are all human beings,” he said. “If part of the population is not vaccinated, or not receiving the benefits of science, the people there continue to suffer. The diseases that are there can continue to spread to others, who will also end up suffering.”

“What inspires me is to do research that serves humanity,” he continued. “My contribution is to make people live better, with diagnosis, with research, with information, contributing to humanity continuing to live on our planet in the best possible way. Today I’m old enough to retire, but I’m not going to stop now.”

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