Ohio State lures Zika researcher to campus

By Emily Tate

A small container is kept frozen in a research lab at Ohio State University. Inside are several strains of the Zika virus, which has infected more than 500,000 people this year and continues to spread.

That's where you often can find Dr. Shan-Lu Liu, a virologist the university lured from the University of Missouri to join Ohio State’s Center for Retrovirus Research, as part of its Discovery Themes initiative to look at societal needs in fresh, creative ways.

Although his research on Zika is really just beginning — the outbreak was only declared a health crisis in February — Liu already is considered one of the most promising Zika experts.

In fact, he was one of 50 scientists invited to a conference in Washington, D.C., this summer to discuss the biggest questions concerning the Zika virus.

Liu, 49, who studies emerging and re-emerging infectious diseases such as HIV, Ebola and Zika, turned down several other offers to join Ohio State’s team.

“There are very good people around that are interacting, collaborating and want to do science together,” said the virologist.

Liu has done extensive research on HIV that “has changed how we think about” the virus, said Eric Freed, director of the HIV Dynamics and Replication Program at the National Cancer Institute and National Institutes of Health. Liu and Freed have co-authored several studies about HIV.
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“His work has really been at the forefront of the virology field,” Freed said. “In my view, he is an exceedingly rigorous scientist and effective mentor in his lab.”

The Zika virus was first discovered in Uganda in 1947 — Ohio State has a sample of that strain, the MR766, in its labs — but the first major outbreak didn’t occur until 2007, prior to the present, pervasive outbreak affecting the Americas today.

Early cases of the virus originated in Brazil last year. And in the months that followed, health officials connected the Zika virus to microcephaly, a condition in which a baby is born with a small head because its brain failed to develop properly. The condition can lead into a number of debilitating health problems, including seizures, developmental disabilities and death.

Zika is primarily transmitted through mosquito bites, but scientists have learned that it can also be passed through direct sexual contact, from mother to fetus and perhaps even through blood transfusions.

In February, several international health organizations declared Zika a public health emergency. The Centers for Disease Control and Prevention had confirmed 2,722 cases in the United States as of Aug. 31, most of which resulted from international travel. Thirty-three of those have been found in Ohio. U.S. territories account for an additional 14,000 Zika cases.

The case count continues to climb, the World Health Organization said on Friday, and with such little understanding of the virus and its transmission, Zika will likely continue to spread.

Liu said this spread is likely why President Obama has sought $1.9 billion in funding for Zika.

“Zika is real; it’s relevant,” he said. “Years ago, we never would have thought, ‘Oh, Zika will be a huge issue,’ and now it’s here.”

Congress has not granted Obama’s request for funding, and CDC officials said this week that they had nearly spent the $222 million allotted to fight the virus.

That limits research opportunities, said Liu, who has had to use funds left from an Ebola grant he received from the National Institutes of Health to conduct Zika research. Some scientists are less fortunate.

Michael Oglesbee, chairman of Ohio State’s Department of Veterinary Biosciences, said federal funding must be released.

“Today, it’s Zika, but next year or two years from now it’ll be a new virus,” said Oglesbee, who helped recruit Liu and leads the Discovery Themes initiative for infectious diseases. “The threat of emerging and re-emerging diseases is something we’ll always face.

"The challenge is maintaining a constant base of funding.”

Such diseases are unpredictable, Liu said, which is why it’s important to learn as much as we can during outbreaks.

As for what lies ahead, Liu said he is interested in virus-host interactions, such as how the Zika virus enters a cell and the host’s innate and adaptive immune response to the virus.

Liu also is working toward therapeutic approaches to Zika, including vaccine developments and antiviral therapy.

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