Tallahassee Democrat.
PART OF THE USA TODAY NETWORK

FSU researcher: Unlike other viruses, Zika can spread through the body

Byron Dobson, Tallahassee Democrat Published 11:34 a.m. ET July 5, 2018 | Updated 3:11 p.m. ET July 5, 2018

(Photo: FSU Photography Services)

While there are no current cases of Florida residents contracting the Zika virus, a Florida State University professor remains at work investigating its harmful effects on humans.

Hengli Tang, a professor of biological science at FSU and one of the country's leading researchers on the Zika virus, has co-authored a report with postdoctoral researcher Jianshe Lang that published Thursday in the journal, Stem Cell Reports.

In the report, Tang and Lang explore how the Zika virus is able to penetrate the body unlike the Dengue virus, which can be detected and stopped by macrophages, or white blood cells that ingest foreign materials in the body.

Dengue is a mosquito-borne viral infection causing a severe flu-like illness and, sometimes causing a potentially lethal complication called severe dengue, according to the World Health Organization.

Zika fever is caused by a mosquito-borne virus similar to those blamed for dengue and West Nile virus. Common symptoms include fever, rash and muscle pain.

Zika has also been linked to serious birth defects, including microcephaly, when contracted by expectant mothers during pregnancy, the Florida Department of Health reports.

Tang and researchers at Johns Hopkins University were the first to officially link Zika to microcephaly, a brain abnormality that occurs in developing fetuses.

Unlike other viruses, Zika can spread through the body

The latest report indicates humans can get infected with both Dengue and Zika viruses by mosquitoes, but the Zika virus is able to get around the protection of macrophages and create havoc on infected fetuses.

"We were really looking at one specific aspect," Tang said in a release. "Does Zika virus get to more sites because of the ability to disseminate through the body better than Dengue?"

In their research, Tang and Lang discovered Zika can spread through the body while

Dengue and other viruses are stopped by the macrophages that protect the immune system, according to FSU.

Usually, the cells are able to detect foreign viruses and attack it in the bloodstream. That is the case with Dengue. But the Zika virus is able to bypass the body's protection system, Tang and Lang found.

Using Tang's lab at FSU, the researchers grew macrophages from stem cells. They injected the cells with the Zika virus or the Dengue virus. The macrophages were then tested to determine if the viruses were able to mobilize.

In the Dengue experiment, the macrophages were essentially immobilized as they stayed in one spot to fight the infection. The ones infected with Zika virus, however, maintained their ability to migrate on glass slides.

This could lead to a breakthrough in determining why the Zika virus can remain a threat to humans with its ability to continue through the bloodstream.

The team's research is provided by the National Institutes of Health.

Contributing were researchers from the FSU College of Medicine, FSU's Center for Genomics and Personalized Medicine and Harvard University.

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"Now the question is, with the increased ability to spread throughout the body, does Zika virus also use these infected macrophages to cross the placenta barrier, the blood-brain barrier and the testicular barrier?" Tang said. "If you understand how they cross these barriers, then you can develop more effective countermeasures to protect people."

Zika first was reported in the Americas in Brazil in 2014 and later spread to the United States.

Florida reported its first case of the Zika virus in February 2016.

That year, there were 300 cases of Zika being contracted in Florida and 1,122 where victims caught it outside the state.

Currently, there are no cases of Zika reported in Florida, and 49 reports of victims in Florida catching it elsewhere.

But that doesn't mean there's no threat.

"While there is currently no active, ongoing transmission of Zika in Florida, residents and travelers should always take precautions to protect against mosquito bites," said Devin Galetta, interim communications director for the Florida Department of Health.

Preventive steps include: draining water from any containers, covering your skin with clothing and mosquito repellent and covering doors and windows with screen to keep mosquitoes out of your home or business.

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