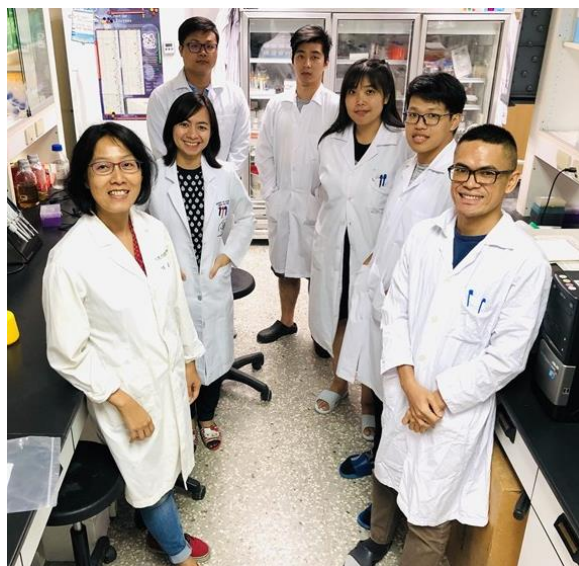


Dengue fever, Japanese encephalitis may shield against Zika: Research



National Chung-Hsing University professor Chao Day-yu (left) and her research team pose for a photo in their laboratory.
Photo courtesy of Chao Day-yu Jan. 24, 2024

A Taiwanese research team detailed a potential defense mechanism against the Zika virus in [a study published in "Communication Biology"](#) Wednesday, suggesting individuals with prior exposure to dengue fever and Japanese encephalitis may have acquired immunity against the virus.

Currently, the Zika virus has been reported in 89 countries or regions around the world, according to the World Health Organization, with more than 800,000 infections in Latin America and the Caribbean from 2015-2022 based on figures provided by global data and business intelligence platform Statista.

Moreover, although the Zika virus often causes no symptoms in those infected but it has been linked to severe birth defects, such as microcephaly, according to the research team headed by Chao Day-yu (趙黛瑜), a Professor with National Chung-Hsing University's Graduate Institute of Microbiology and Public Health.

"Contrary to the local Zika virus transmission in neighboring Asian countries, Taiwan detects only imported Zika virus cases without any local transmission," said Chao, whose study suggests the possibility that regions with common Japanese encephalitis vaccination and dengue infections may exhibit immunity against Zika virus.

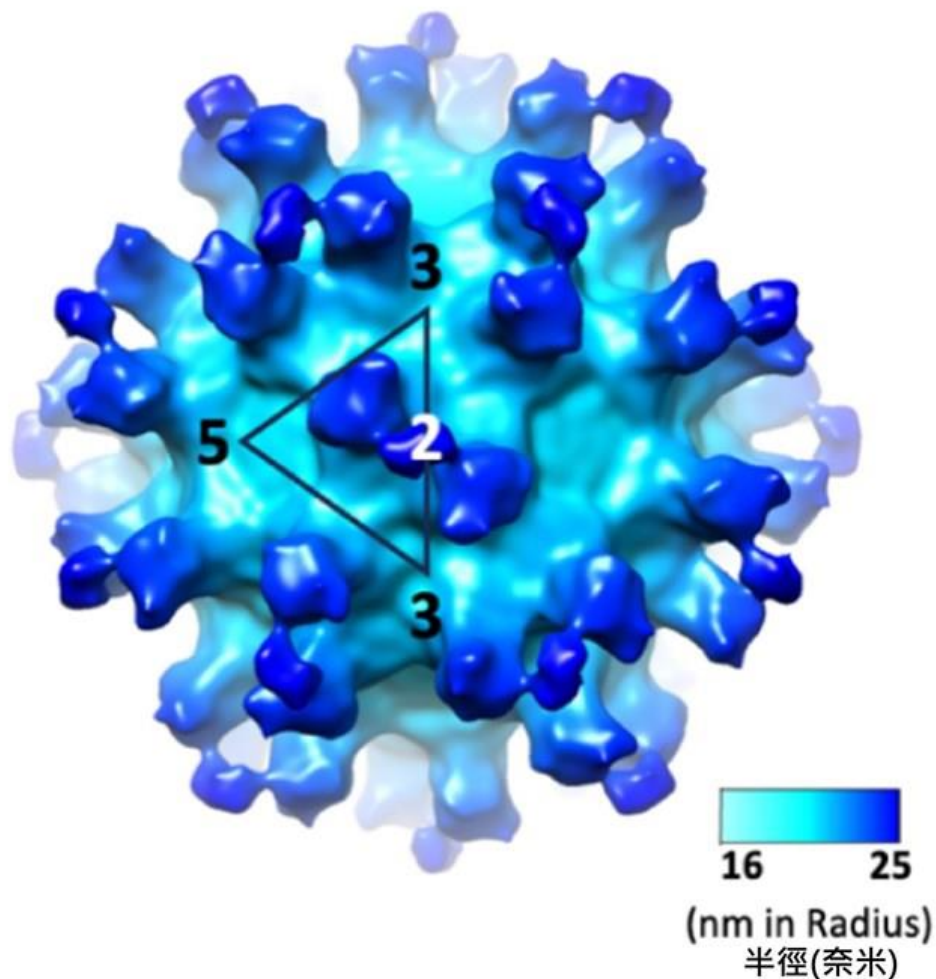
Implementing Japanese encephalitis vaccination programme for children

Taiwan started fully implementing Japanese encephalitis vaccination program for children in 1968, and periodic dengue fever epidemics have occurred in southern Taiwan since 1980.

In this study, Chao and her team noted that in Taiwanese patients who previously recovered from dengue fever and were exposed to Japanese encephalitis, a unique antibody, K8b, attaches to the Zika virus in a unique way and potentially neutralizes the virus's harmful effects.

The antibody can inhibit at least six flaviviruses, including Zika virus, and experiments with mice immunized against Japanese encephalitis also show a quick response to dengue virus, reinforcing the cross-protection hypothesis and providing insights for vaccine strategies in regions prone to various flaviviruses.

"The study provided scientific evidence for the first time that the low Zika virus incidence and its associated microcephaly in Southeast Asia could be partly explained by the high endemicity of the dengue virus and the high Japanese encephalitis vaccination in the region," Chao said.



Dengue fever binding sites and the antibody seen through an electron microscope. Graphic courtesy of Chao Day-yu Jan. 24, 2024

This discovery not only sheds light on the immune system's response but also proposes that existing Japanese encephalitis vaccines may offer protection against Zika virus in dengue-prone regions, which is crucial for pregnant women and travelers to areas where the Zika virus is prevalent.

While the findings are promising, the researchers emphasize the need for further clinical research to validate the efficacy of such cross-protection and explore potential vaccine combinations.

Vector Mosquitoes are Difficult to Guard Against

Get Vaccinated to Prevent Japanese Encephalitis



Japanese encephalitis season runs from May to October every year.



Encephalitis could develop in infected infants and children.




Sequelae include the inability to speak and cognitive impairment.




Vaccination boosts the immune system.






About dengue fever




Aedes aegypti



- **What is dengue fever?**
Dengue fever is transmitted to people by the bite of an infected mosquito. There are four types of dengue viruses. Having a different type of dengue virus infection after becoming infected with another one previously will lead to dengue hemorrhagic fever, which will result in more severe symptoms.
- **The symptoms are?**
Fever (up to 38 degrees), Headache, Bone, joint or muscle pain, Pain behind the eyes, Skin rash after 3-4 days of fever.
- **Where the mosquitoes come from?**
The mosquitoes, which carry dengue virus, are *Aedes aegypti* or *Aedes albopictus*. The *Aedes aegypti* distributes in southern Taiwan and primarily rests indoors. The *Aedes albopictus* distributes throughout the entire island of Taiwan and primarily rests outdoors.
- The mosquito is characterized with black trunk and white markings on legs. The larvae breed in water-filled containers and the adults rest in dark and humid areas.

What is the prognosis?

Prevent dengue fever, we can!



衛生福利部疾病管制署
TAIWAN CDC

疫情通報及關懷專線 1922

<http://www.cdc.gov.tw>

Advertising

A door god is a decoration placed on each side of an entry to a temple, home, etc., which is believed to keep evil spirits from entering.

Graphic: Taiwan Centers for Disease Control

--CNA/focustaiwan.tw/sci-tech, January 24, 2024