

# Dengue-infected mozzies bite more, raise transmission risks: Study

**John Elijah Gan**

A dengue-infected mosquito bites more times to successfully draw blood, which triples the opportunity for the virus to be transmitted, a study has found.

The study's researchers, including those in Singapore, noted that a mosquito infected with the dengue virus is less able to locate a blood vessel to feed from with the first insertion of its probe, and has to bite more to draw blood.

As such, it releases more virus-carrying saliva into the skin.

Dengue is spread through the bite of the *Aedes* mosquito, which becomes infected when it feeds on the blood from a dengue-infected person.

The findings were published in

the journal *Proceedings Of The National Academy Of Sciences* on Jan 13.

Dr Julien Pompon, the senior author of the study and group leader at the French National Research Institute for Sustainable Development (IRD), said: "If we better understand how the mosquito transmits the virus, we can design new ways to protect against dengue outbreaks."

The study was undertaken by IRD, Duke-NUS Medical School, the University of Montpellier in France and other collaborators.

The research team used high-resolution video along with computer software analysis to precisely observe the behaviour of mosquitoes.

They noted that the dengue virus also leads to mosquitoes becoming more attracted to humans.

Dengue-infected mosquitoes

will fly faster to the host and more mosquitoes will land on the skin.

This increases the chances for dengue-infected mosquitoes to bite, said Associate Professor Ashley St John, from Duke-NUS' Emerging Infectious Diseases programme.

With the dengue virus affecting more than 400 million people each year, killing around 40,000 of them, scientists have been working towards more effective disease control strategies.

Dr Pompon, a molecular entomologist, said: "If we better understand how the virus is transmitted, we can improve predictions about outbreaks."

"If we can improve outbreak predictions, we can deploy existing vector control technologies earlier and faster, and be more efficient at stopping disease transmission," he

added, referring to methods to limit or eradicate mosquitoes.

Dengue is a disease endemic to Singapore, with the yearly number of cases reaching a record high of 35,315 with 32 deaths in 2020.

There were 5,258 reported cases last year.

According to the National Environment Agency (NEA), Singapore saw 435 cases of dengue recorded from Jan 2 to Jan 22 this year, with cases rising each week.

The NEA warned on Tuesday that cases could surge in the coming months if the current high population of dengue-carrying mosquitoes remains unchecked.

The research team aims to further understand how the dengue virus changes mosquito behaviour, and design chemicals to alter the gene or protein responsible for these changes.



The research team found that the dengue virus also leads to mosquitoes becoming more attracted to humans.

ST PHOTO:  
LIM YAOHUI

Dr Pompon and his team will pursue this research in France, where he is based.

He said: "The mid-term goal of this project is to identify the molecular mechanisms responsible for

these behaviour changes.

"Then we can develop chemicals to target them to block transmission (of the virus)."

[elijahjg@sph.com.sg](mailto:elijahjg@sph.com.sg)