# Researchers discover simple, affordable diagnostic kit for chikungunya

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A novel and affordable diagnostic test for chikungunya will soon be available thanks to the work of researchers at the University of Texas Medical Branch at Galveston in partnership with a commercial lab.

Chikungunya, a mosquito-borne illness that while not often deadly causes severe, incapacitating and often chronic joint pain, is spreading throughout the Americas. It can be difficult to diagnose and most tests available now are expensive and challenging to develop.

UTMB researchers were able to use another mosquito-borne virus that

had remained largely unknown and unstudied in UTMB's World Reference Center for Arboviruses, led by UTMB Professor Robert Tesh, to create the new test that could help doctors and researchers diagnose and track the spread of chikungunya.

The formerly unknown virus, now named Eilat virus, is related to chikungunya and other mosquito-borne viruses and was collected in Israel's Negev Desert about three decades ago, said Scott Weaver, director of the Institute for Human Infections and Immunity at UTMB.

There are about 6,000 virus strains in UTMB's arboviruses reference center, the largest collection of its kind, and the majority have been identified, he said. Once researchers, including former UTMB graduate student Farooq Nasar, started looking at the Eilat virus they found something interesting.

The virus will only replicate in mosquitoes, which makes it harmless to humans and other vertebrates, Weaver said.

"We started thinking that maybe there is something practical we can do with this unusual virus," Weaver said.

What researchers found is that they could replace the structural proteins of the Eilat virus with those of chikungunya and create a virus that looks like chikungunya to the immune system but will not replicate in humans, said Jesse Erasmus, a graduate student at UTMB who helped to develop the new test.

Most diagnostics available today use chikungunya virus that has been inactivated. That requires work in higher-level containment labs so these tests are more expensive to make and their sensitivity can be compromised by the inactivation, Erasmus said.

Working with the private commercial lab InBios International, UTMB scientists used the Eilat virus-based chimera to create a safe and simple-to-use diagnostic test. Health care professionals are able to take the serum of those suspected of being infected with chikungunya and, using the diagnostic test kit created in conjunction with InBios, have a result in less than two hours, Weaver said.

Researchers described their discovery in a paper published in the journal *PLOS Neglected Tropical Diseases*.

The development of a diagnostic kit for chikungunya virus is a classic example of a University-Industry partnership resulting in products which will improve the quality of life for at-risk patients.

"Our office is committed in developing relationships with commercial partners to support development of products that will benefit patients," said Carolee King, general counsel and senior vice president, Office of Technology Transfer at UTMB.

"We are very pleased to now offer these innovative CE marked chikungunya antibody detection kits," said Wendy Bagnato, an account manager with InBios International. "End users have provided positive feedback on the high quality of the kits and consistency of results."

Weaver said he believed the diagnostic kit could be of great help as chikungunya continues to spread.

"If you have a kit that is simple to use and is more affordable, then more local hospitals and clinics can start using it rather than guessing whether someone has chikungunya," Weaver said.

**More information:** Jesse H. Erasmus et al. Utilization of an Eilat Virus-Based Chimera for Serological Detection of Chikungunya

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