

Game over for Zika? Researchers develop promising vaccine

December 20 2018



Transmission electron micrograph (TEM) of Zika virus. Credit: Cynthia Goldsmith/Centers for Disease Control and Prevention

Scientists at the KU Leuven Rega Institute in Belgium have developed a new vaccine against the Zika virus. This vaccine should prevent the virus from causing microcephaly and other serious conditions in unborn

babies.

In 2015 and 2016, the world was shocked by the sudden and massive outbreak of the Zika [virus](#) in Latin America. "The Zika virus is transmitted by the tiger mosquito and, in most cases, the patient experiences no or only mild symptoms," says Professor Johan Neyts.

"But when a [pregnant woman](#) contracts the virus, this can affect the brain development of the foetus. It can lead to microcephaly—whereby the infant has a smaller-than-average head—but also mental and other severe health issues"

The outbreak of the virus in Latin America is currently under control. However, the virus remains present—in Latin America as well as in other areas with tiger mosquitoes—and there can be a new outbreak at any time. Therefore, scientists across the world are looking for an effective [vaccine](#).

Based on the yellow fever vaccine

It now appears that Professor Neyts, Dr. Kai Dallmeier and their team have developed such a vaccine. "To do so, we made use of the yellow fever vaccine. The yellow fever virus is closely related to the Zika virus and is transmitted by the same mosquito. The vaccine is very safe and offers lifelong protection," says Dr. Dallmeier. "We replaced a piece of the genetic information of the [yellow fever vaccine](#) with the corresponding code of the Zika virus. To engineer the vaccine, we used a new technology that we'd developed earlier in our lab and that makes it possible to produce the vaccine in fermenters instead of in fertilised chicken eggs. Another important advantage is that the vaccine remains stable, even at high temperatures. This makes a world of difference for a vaccine that is also intended for use in the most remote corners of tropical and subtropical areas.

"Together with the University of Liège, we then explored whether the vaccine was effective in pregnant mice. The vaccine was administered to female mice and, when these mice were a few days pregnant, the Zika virus was injected into their placenta. The pups of vaccinated mothers developed normally and the virus also couldn't be found in their brains or other organs."

This complete protection is remarkable, says Kai Dallmeier. "We now intend to further develop the vaccine, which could then be used to quickly and effectively vaccinate the population in case of a new outbreak of the Zika virus. This should prevent a lot of suffering."

More information: Dieudonné B. Kum et al, A yellow fever–Zika chimeric virus vaccine candidate protects against Zika infection and congenital malformations in mice, *npj Vaccines* (2018). [DOI: 10.1038/s41541-018-0092-2](https://doi.org/10.1038/s41541-018-0092-2)

Provided by KU Leuven

Citation: Game over for Zika? Researchers develop promising vaccine (2018, December 20) retrieved 18 April 2024 from <https://medicalxpress.com/news/2018-12-game-zika-vaccine.html>

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.