Potential Zika vaccine protects against pregnancy transmission and testicular damage

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Credit: University of Texas Medical Branch at Galveston

For the first time, a collaborative team led by The University of Texas Medical Branch at Galveston has shown that a potential Zika vaccine quickly can protect fetuses against infection as well as protect males against testicular infection and injury. It also prevents a lowered sperm count after one vaccination. The findings are currently available in

Nature Communications.

Although Zika infection typically results in mild or symptom-free infections in healthy individuals, infected pregnant women without symptoms may still give birth to a baby with birth defects like microcephaly. Similarly, infected men without noticeable signs of illness may still incur testicular injury and lowered sperm count. The Zika virus could infect the male reproductive system for several months, posing risk for sexual transmission.

"This study showed, for the first time, that a single-dose vaccine candidate could prevent Zika infection in non-human primates, block mother-to-fetus transmission, and stop male testis infection in mice," said UTMB's Pei-Yong Shi, senior author and the I.H. Kempner professor at the department of biochemistry and molecular biology. "Besides quickly mounting a protective immune response, this live-attenuated vaccine exhibited an excellent safety profile in both mouse and non-human primate models. Taken together, the results suggest that this vaccine merits further development in humans."

"Having a Zika vaccine that can protect male reproductive systems, pregnant women and their unborn babies would improve public health efforts to avoid birth defects and other effects of the disease in regions where Zika is circulating," said Pedro Vasconcelos, director of Evandro Chagas Institute in Brazil and co-developer of this vaccine. "It's important to note that a single-dose vaccine is practically important; vaccines that require booster shots are impractically challenging for people living in developing regions where access to medical facilities may be limited."

More information: Chao Shan et al. A single-dose live-attenuated vaccine prevents Zika virus pregnancy transmission and testis damage, *Nature Communications* (2017). DOI: 10.1038/s41467-017-00737-8