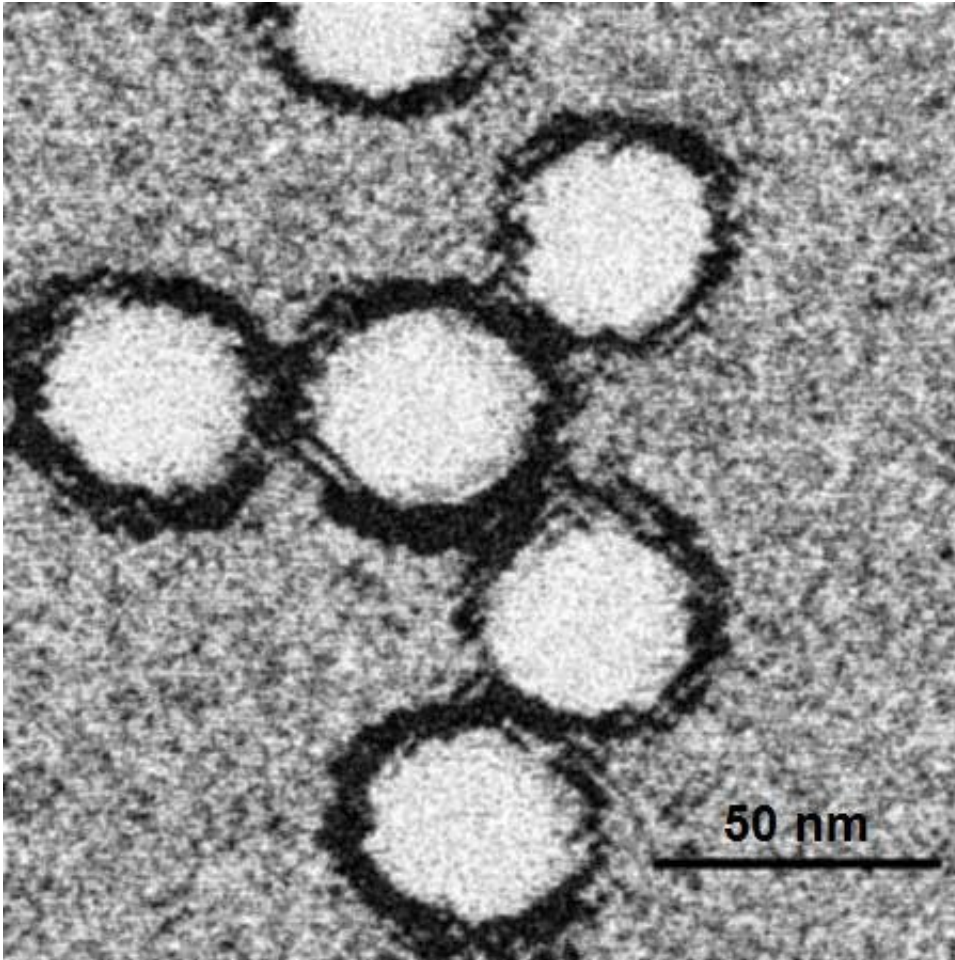


Discovery could neutralize West Nile virus

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Electron microscopy of West Nile virus. Credit: PhD Dre, Wikipedia/CC BY-SA 3.0

Researchers at Vanderbilt University Medical Center and colleagues have isolated a human monoclonal antibody that can "neutralize" the

West Nile virus and potentially prevent a leading cause of viral encephalitis (brain inflammation) in the United States.

Their findings, reported this week in the journal *Nature Microbiology*, could lead to the first effective treatment for this mosquito-transmitted infection, which sickens 2,500 and kills more than 100 people throughout the country each year, according to the U.S. Centers for Disease Control and Protection (CDC).

"West Nile virus is still an important cause of brain infections in the U.S., and there is very little we can do to help these patients," said James Crowe Jr., MD, co-corresponding author of the paper and director of the Vanderbilt Vaccine Center.

"It was exciting for us to use our antibody discovery technologies to find naturally occurring human antibodies that can prevent or treat the infection," he said.

Crowe holds the Ann Scott Carell Chair in the Departments of Pediatrics and Pathology, Microbiology & Immunology at Vanderbilt University School of Medicine. He and his colleagues have isolated [human monoclonal antibodies](#) for many pathogenic viruses, including Zika, HIV, dengue, influenza, Ebola, norovirus, [respiratory syncytial virus](#) (RSV) and rotavirus.

In the current study, the researchers obtained serum and blood cell samples from 13 adults who were infected by the virus during the 2012 outbreak of West Nile encephalitis in Dallas, Texas.

Antibody-producing [white blood cells](#) from the subjects were fused to myeloma (cancer) cells to produce fast-growing "factories" of specific, [monoclonal antibodies](#).

One of these antibodies, WNV-86, completely inhibited the virus in laboratory studies. A single dose of WNV-86 completely protected mice from an otherwise lethal West Nile infection.

Further studies are needed before human testing can begin. But these findings are raising hopes for development of the first effective way to counter this potentially dangerous [infection](#).

More information: A protective human monoclonal antibody targeting the West Nile virus E protein preferentially recognizes mature virions, *Nature Microbiology* (2018). [DOI: 10.1038/s41564-018-0283-7](https://doi.org/10.1038/s41564-018-0283-7) , www.nature.com/articles/s41564-018-0283-7

Provided by Vanderbilt University Medical Center

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