

# Scientists identify protective role for antibodies in Ebola vaccine study

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Researchers at the National Institutes of Health (NIH) and Oregon Health & Science University (OHSU) have found that an experimental vaccine elicits antibodies that can protect nonhuman primates from Ebola virus infection.

Ebola virus causes severe hemorrhagic fever in humans and [nonhuman primates](#), meaning that infection may lead to shock, bleeding and multi-organ failure. According to the World Health Organization, Ebola hemorrhagic fever has a fatality rate of up to 90 percent. There is no licensed treatment or vaccine for Ebola virus infection.

Several research groups have developed [experimental vaccine](#) approaches that protect nonhuman primates from Ebola virus and the closely related Marburg virus. These approaches include vaccines based on DNA, recombinant adenovirus, virus-like particles, and human parainfluenza virus 3. But how these vaccine candidates confer protection is an area that is still being explored: Do they activate immune cells to kill the invading virus? Or do they elicit antibodies that block infection?

In this study, scientists at NIH's National Institute of Allergy and Infectious Diseases and OHSU's Vaccine & Gene Therapy Institute built on earlier work with an experimental vaccine composed of an attenuated vesicular stomatitis virus carrying a gene that codes for an Ebola virus protein. They observed how cynomolgus macaques responded to a challenge of Ebola virus before and during treatment with the vaccine

and in conjunction with depleted levels of immune cells. Their results showed that important immune cells—CD4+ T cells and CD8+ T cells—had a minimal role in providing protection, while antibodies induced by the vaccine appeared to be critical to protecting the animals.

The scientists say this finding will help improve future Ebola virus [vaccine](#) development. They plan to focus their studies on what level of antibody production is needed to establish protection from Ebola [virus](#) infection in humans.

**More information:** A Marzi *et al.* Antibodies are necessary for rVSV/ZEBOV-GP mediated protection against lethal Ebola virus challenge in nonhuman primates. *Proceedings of the National Academy of Sciences*. [DOI: 10.1073/pnas.1209591110](https://doi.org/10.1073/pnas.1209591110) (2013).

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