

Zika virus persists in the central nervous system and lymph nodes of rhesus monkeys

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Transmission electron microscope image of negative-stained, Fortaleza-strain Zika virus (red), isolated from a microcephaly case in Brazil. The virus is associated with cellular membranes in the center. Credit: NIAID

Zika virus can persist in cerebrospinal fluid (CSF), lymph nodes and colorectal tissue of infected rhesus monkeys for weeks after the virus has been cleared from blood, urine and mucosal secretions, according to a study published online in *Cell*. The research was led by Dan H. Barouch, M.D., Ph.D., and colleagues at Beth Israel Deaconess Medical Center and Harvard Medical School and was funded in part by the National Institute of Allergy and Infectious Diseases (NIAID), part of the National Institutes of Health (NIH).

Investigators infected 20 rhesus monkeys with Zika virus and noted that although virus was cleared from peripheral blood within 7-10 days, it was detected in CSF for up to 42 days and in [lymph nodes](#) and colorectal tissue for up to 72 days. Immunologic data showed that the emergence of Zika virus-specific neutralizing antibodies correlated with the rapid control of the virus in plasma. However, Zika-specific antibodies were not detected in CSF, which could be why the virus remained there longer. The authors also found that viral persistence in CSF correlated with the activation of the mechanistic target of rapamycin (mTOR) pathway, which has been shown to be related to the development of brain tissue and brain malformations.

The findings suggest that persistent virus in the central nervous system may contribute to the neurological issues associated with Zika virus infection in people, the authors note. Although Zika virus usually causes mild or no symptoms in people, it has been associated with neurological disorders in children and adults and can cause severe fetal defects, such as microcephaly, if an infected pregnant woman passes the virus to her fetus. The authors note that if the [virus](#) can persist in the central nervous system and other tissues in humans with Zika infection, more extensive neurologic and lymphoid disease than currently appreciated may be occurring.

More information: Malika Aid et al, Zika Virus Persistence in the

Central Nervous System and Lymph Nodes of Rhesus Monkeys, *Cell* (2017). [DOI: 10.1016/j.cell.2017.04.008](https://doi.org/10.1016/j.cell.2017.04.008)

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