

Dengue virus infection may cause severe outcomes following Zika virus infection during pregnancy

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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

Women who have previously been infected with dengue virus may be at risk for increased damage to their fetuses and placentas if they should later become infected with the Zika virus, researchers from the Department of Microbiology at the Icahn School of Medicine at Mount Sinai report.

This study is the first to report a possible mechanism for the enhancement of Zika [virus](#) progression during pregnancy in an animal model.

Results of the study, "Dengue virus immunity increases Zika virus-induced damage during pregnancy," were published in the February issue of *Immunity*, a journal published by Cell Press.

Zika virus outbreaks were first found to be associated with [birth defects](#) including microcephaly, in which the baby is born with an abnormally small head and brain, in 2015 in Brazil, where dengue virus, a virus closely related to Zika virus, is endemic. The research team led by Jean Lim, Ph.D., Associate Professor of Microbiology and Co-Director of Microbiology Multidisciplinary Training in the Graduate School of Biomedical Sciences at the Icahn School of Medicine at Mount Sinai, transferred dengue virus-specific antibodies into mice prior to infection with Zika virus during pregnancy. The presence of these antibodies in the mice significantly increased placental damage, fetal growth, and fetal resorption. Zika-infected human placental tissues also showed increased replication in the presence of dengue antibodies.

"Our data demonstrate that antibodies generated from a previous [dengue virus](#) infection can enhance the severity of Zika virus infection during pregnancy," said Dr. Lim. "Our research may explain the high rate of microcephaly and birth defects observed in the recent Zika virus outbreak in South America."

More information: Julia A. Brown et al, Dengue Virus Immunity Increases Zika Virus-Induced Damage during Pregnancy, *Immunity* (2019). [DOI: 10.1016/j.immuni.2019.01.005](https://doi.org/10.1016/j.immuni.2019.01.005)

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