

The Zika Virus Potentially Constitutes A Global Health Threat. Scientific Report

A Single Mutation in the prM Protein of Zika Virus Contributes to Fetal Microcephaly

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The following text is the abstract of a Chinese scientific report pertaining to the Zika Virus

Zika virus (ZIKV) has evolved into a global health threat due to its unexpected causal link to microcephaly. Phylogenetic analysis reveals that contemporary epidemic strains have accumulated multiple substitutions from their Asian ancestor.

Here, we show that a single serine to asparagine substitution (S139N) in the viral polyprotein substantially increased ZIKV infectivity in both human and mouse neural progenitor cells (NPCs), led to more significant microcephaly in the mouse fetus, and higher mortality in neonatal mice. Evolutionary analysis indicates that the S139N substitution arose before the 2013 outbreak in French Polynesia and has been stably maintained during subsequent spread to the Americas.

This functional adaption makes ZIKV more virulent to human NPCs, thus contributing to the increased incidence of microcephaly in recent ZIKV epidemics.

Note: According to the Center for Disease Control (US) "Microcephaly is a birth defect where a baby's head is smaller than expected when compared to babies of the same sex and age".

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The following scientists contributed to this report

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