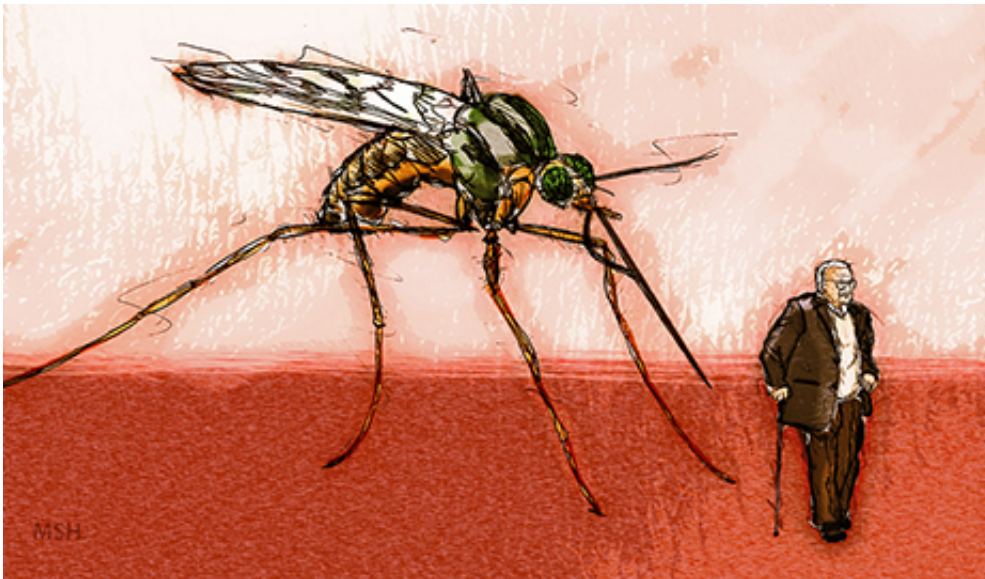


Understanding who is most susceptible to West Nile virus

November 4 2013, by Helen Dodson



Credit: Michael Helfenbein

(Medical Xpress)—A Yale study has uncovered a key genetic mechanism that may determine a person's susceptibility to the ravages of West Nile virus. The study appears in the Advance Online Publication of *Nature Immunology*.

West Nile [virus](#) is transmitted primarily by mosquitos. The elderly and people with suppressed immune systems are most susceptible to its effects, which include fever, headache, muscle pains, and various neurological diseases such as meningitis.

The Yale researchers focused on the protein ELF4, which is a transcription factor that controls the cellular signaling and flow of genetic information. Working with mice, they discovered that ELF4, when activated by viral infection, directly impacts the production of interferon. This induction of interferon is the key event that launches a cascade of responses in the innate immune system to fight viruses and other pathogens.

The Yale team also discovered that ELF4 deficiency does the opposite—it leads to reduced [interferon](#) production, which results in greater susceptibility to West Nile virus encephalitis.

Therefore, the authors write, ELF4 is critical to antiviral immunity. First author Fuping You, associate research scientist in infectious diseases at Yale School of Medicine, explained the significance of the finding: "By discovering the role of ELF4, we now understand why some people exposed to West Nile virus experience no symptoms at all, and others experience devastating illness."

Further research will be done using samples from humans infected with West Nile virus.

Senior author on the study was Dr. Erol Fikrig, professor of [infectious diseases](#), microbial pathogenesis, epidemiology, and public health at Yale School of Medicine and a Howard Hughes Medical Institute investigator. Other authors are Akiko Iwasaki, professor of immunobiology at Yale School of Medicine and a Howard Hughes Medical Institute investigator; Penghua Wang, Long Yang, Guang Yang, Yang Zhao, Feng Qian, Wendy Walker, Richard Sutton, and Ruth Montgomery of Yale School of Medicine; and Rongtuan Lin of McGill University.

More information: [DOI: 10.1038/ni.2756](https://doi.org/10.1038/ni.2756)

Provided by Yale University

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