

*Review*

## West Nile Virus: Immunity and Pathogenesis

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**Abstract:** West Nile virus (WNV) is a neurotropic, arthropod-borne flavivirus that is maintained in an enzootic cycle between mosquitoes and birds, but can also infect and cause disease in horses and humans. WNV is endemic in parts of Africa, Europe, the Middle East, and Asia, and since 1999 has spread to North America, Mexico, South America, and the Caribbean. WNV infects the central nervous system (CNS) and can cause severe disease in a small minority of infected humans, mostly immunocompromised or the elderly. This review discusses some of the mechanisms by which the immune system can limit dissemination of WNV infection and elaborates on the mechanisms involved in pathogenesis. Reasons for susceptibility to WNV-associated neuroinvasive disease in less than 1% of cases remain unexplained, but one favored hypothesis is that the involvement of the CNS is associated with a weak immune response allowing robust WNV replication in the periphery and spread of the virus to the CNS.

**Keywords:** West Nile virus; pathogenesis; central nervous system; neuroinvasion

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