

1109-39-214

Guihong Fan* (fan_guihong@columbusstate.edu) and **Huaiping Zhu**. *Oscillation and driving mechanism in a model of West Nile virus with time delay*. Preliminary report.

West Nile virus is a typical vector-borne disease which is transmitted to humans or other animals by Culex mosquitoes. For the virus, avian birds serve as amplification hosts, yet vector mosquitoes play a critical role in the transmission and spread of the virus. To investigate the role of vector mosquitoes and the transmission dynamics of West Nile virus, we formulate a system of delay differential equations. Dynamical analysis shows that the population of vector mosquitoes can force the system to oscillate. However the model analysis suggests that the incidental interaction between mosquitoes and birds would not cause oscillations in the system. This result indicates that the population of vector mosquitoes is the fundamental driving factor for the oscillation in disease transmission when considering the impact of temperature. (Received February 01, 2015)