1125-37-2205 **Hongying Shu*** (hshu@tongji.edu.cn), Shanghai, 200092, Peoples Rep of China, and **Yuming Chen** and **Lin Wang**. *Joint impacts of the cell-free and cell-to-cell infection modes on viral dynamics.*

Virus can disseminate between uninfected target cells via two modes, namely, the diffusion-limited cell-free viral spread and the direct cell-to-cell transfer using virological synapses. To examine how these two viral infection modes impact the viral dynamics, in this talk, we propose and analyze a general viral infection model that incorporates these two viral infection modes. Under some reasonable assumptions, we show that the numbers of secondly infected cells through the cell-free infection mode and the cell-to-cell infection mode both contribute to the basic reproduction number, which determines a global threshold dynamics. When the underlying assumptions are not satisfied, oscillations via global Hopf bifurcation can be observed. Two-parameter bifurcation analyses are carried out to explore the joint impacts on viral dynamics for the interplay between nonlinear target-cell dynamics and intracellular delays and between the two infection modes. (Received September 19, 2016)