

Departmental Colloquium

**Dr. Feng-Bin Wang,
Chang Gung University, Taiwan**

**Monday, August 13, 2018
2:00pm, HH-3017**

Global Dynamics of an Unstirred Chemostat System Modeling the Intraguild Predation and Internal Storage

ABSTRACT:

In this talk, I shall present a reaction-diffusion system modeling interactions of the intraguild predator and prey in an unstirred chemostat, in which the predator can also compete with its prey for one single nutrient resource that can be stored within individuals. Under suitable conditions, we first show that there are at least three steady-state solutions for the full system, a trivial steady-state solution with neither species present, and two semi-trivial steady-state solutions with just one of the species. Then we establish that coexistence of the intraguild predator and prey can occur if both of the semi-trivial steady-state solutions are invulnerable by the missing species. Comparing with the system without predation, our numerical simulations show that the introduction of predation in an ecosystem can enhance the coexistence of species. This talk is based on a joint work with Drs. Sze-Bi Hsu and Hua Nie.