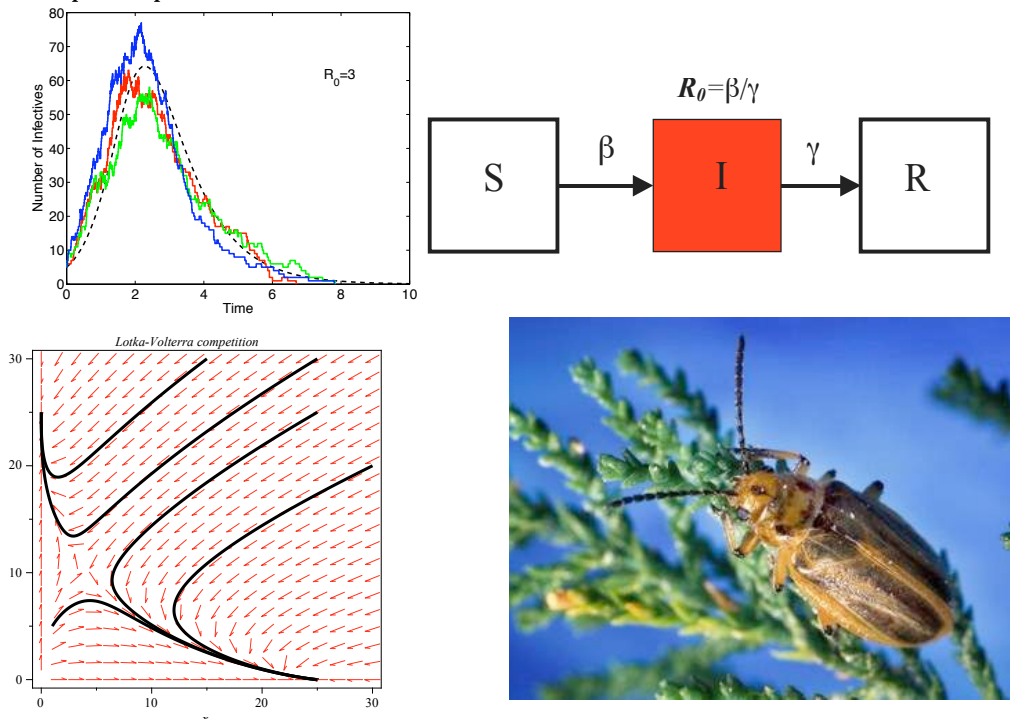




**Organizers and Speakers:** Sophia Jang, Linda Allen, Lih-Ing Roeger,  
Edward Allen, and Richard Strauss

Mathematical models in population biology and epidemiology are becoming increasingly important and useful in addressing current problems in population biology and epidemiology, such as species invasions, emerging diseases, or drug resistance. In this MAA PREP workshop, we will introduce some mathematical models and techniques useful in the study of these current problems. Some mathematical and computational techniques for difference equations, differential equations, and stochastic models will be introduced and applied to biological problems. For example, beginning from the susceptible-infective-recovered (SIR) model for disease spread, we will formulate a model for development of drug resistance based on treatment strategies, and explore the impact drug resistance has on subsequent intervention programs. In addition, models for competition and predation will be formulated to investigate whether an introduced species is able to invade an established community and methods for control of an invasive species. We will discuss how to formulate stochastic models of competition, predation, and epidemics that include variability in the birth, death, and transmission processes and explore the models' dynamics through computer simulations. Participants will have hands-on experience with computer technology, Maple, MatLab, and XPPAUT. Some preparatory exercises will be available for registered participants.



For more information about this workshop please visit the website:  
[www.math.ttu.edu/current/MAAPREP/MathematicalModeling/](http://www.math.ttu.edu/current/MAAPREP/MathematicalModeling/)  
To register for this workshop please visit the website: [www.maa.org/PREP](http://www.maa.org/PREP)