



# *Epidemiology of Microbial Diseases*

## **EMD Seminar Series**

**Paul E. Turner, PhD**

**Chair of Ecology and Evolutionary Biology**

**Yale University**

### **“Environmental complexity and virus evolution”**

Viruses are often challenged to evolve in novel environments. These challenges occur at various biological levels, including altered attachment proteins on the cell surface, replication within novel arthropod vectors and mammalian host species, and survival under ecosystem change. This presentation concerns experimental evolution studies with viruses, which test the limits of RNA virus adaptability in changing environments, and that show 'evolution-thinking' improves DNA virus applications for treating human disease. Results demonstrate that RNA arboviruses experience adaptive constraints if environmental temperatures change stochastically, consistent with predictions of some climate change models. Also, data show that bacteria-specific viruses (bacteriophages) can exert selection for pathogenic bacteria to evolve increased antibiotic sensitivity, which illustrates that evolutionary medicine approaches can improve classic phage therapy applications.

12:00 p.m. Thursday, December 10, 2015

LEPH 115, 60 College Street

Host: V. Pitzer and D. Weinberger