Department Colloquium

Speaker: Todd Parsons, Université Pierre et Marie Curie
Time: 3:30 p.m.
Place: Jeffery 234
Title: The stochastic evolution of pathogen virulence

Abstract: Life history theory provides a powerful framework to understand the evolution of pathogens in both epidemic and endemic situations. This framework, however, relies on the assumption that pathogen populations are very large and that one can neglect the effects of demographic stochasticity. I will explore the effects of finite population size on the evolution of pathogen virulence and transmission. I will show that demographic stochasticity introduces additional evolutionary forces that can qualitatively affect the dynamics and the evolutionary outcome, and discuss the importance of the shape of pathogen fitness landscape and host heterogeneity on the balance between mutation, selection and genetic drift. In particular, I will discuss scenarios where finite population size can either select for lower or higher virulence.

This is joint work with Troy Day, Sylvain Gandon and Amaury Lambert.