UCLA

BIOMATH

Department of Biomathematics Seminar Series:
Frontiers in Systems and Integrative Biology

The biofluiddynamics of fungal spore and genome dispersal

Marcus Roper, Ph.D.
Professor
Department of Mathematics
UCLA

Thursday, October 20, 2011
4:00 PM
23-105 Center for the Health Sciences (CHS)

ABSTRACT:
Fungi are the most diverse of all eukaryotic organisms and enjoy extraordinary ecological success as decomposers, pathogens and mutualists. I will discuss how solving hard physical problems of dispersing (i) spores and (ii) genomes may be a central part of their success in so many niches:

#1. The forcibly launched spores of ascomycete fungi must eject through a boundary layer of nearly still air in order to reach dispersive air flows. Because of their microscopic size singly ejected spores are almost immediately brought to rest by fluid drag. However, by coordinating the ejection of thousands or hundreds of thousands of spores, fungi such as the devastating plant pathogen Sclerotinia sclerotiorum, are able to create a flow of air that carries spores across the boundary layer and around any intervening obstacles.

#2. A growing filamentous fungi may harbor a diverse population of nuclei. Increasing evidence shows that this internal genetic flexibility is a motor for diversification, virulence, and the ability of fungi to utilize nutritionally complex substrates like plant cell walls. I'll show that to maintain stable populations of different nuclei near the growing tips, ascomycete fungi must create internal flows over the entire of the colony.

Host: Van Savage, Ph.D.

To receive e-mail seminar notices, contact David Tomita (dtomita@biomath.ucla.edu)