

Distinguished Scientist Seminar Series

10:30-12:00 p.m.

Friday, February 6, 2009

Building 66 Auditorium

Microbial diversity in the wild: genomes, populations, and species

Martin Polz

Massachusetts Institute of Technology

Abstract

Microbes in the ocean dominate biogeochemical processes and are far more diverse than anticipated. Thus in order to understand the ocean system, we need to delineate microbial populations with predictable ecological functions. Recent observations suggest that ocean communities comprise diverse groups of bacteria organized into genotypic clusters of closely related organisms. Using coastal vibrios as a model, we have shown that such clusters frequently correlate to ecologically differentiated populations. Although such patterns are similar to metazoan communities, the underlying mechanisms for microbial population differentiation may differ substantially. We will consider how microbial populations may evolve in spite of potential for horizontal gene transfer by both homologous and illegitimate genetic recombination across widely divergent genomes.



Biographical Sketch

Martin F. Polz is an Associate Professor at the Massachusetts Institute of Technology in the Department of Civil and Environmental Engineering. He is an environmental microbiologist and received his Masters and Ph.D. from Harvard University where he also conducted his postdoctoral research. His research group at MIT studies the dynamics that govern microbes' interactions and evolution to understand the role of individual populations within the community, the range of genomic similarity that defines a functional unit, and what mechanisms govern diversification of microbial populations in the environment. His research group addresses these questions using a combination of quantitative molecular approaches, genomics, physiology and modeling. He is an editor of *Microbiology and Molecular Biology Reviews* and among his many honors and awards are the Anna Vaughn Foundation Fellowship, the Gilbert Winslow Career Development Chair and the Doherty Professorship in Ocean Utilization.

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For inquiries, please contact Yingying Kooyman at 510-486-6455 or at NTKooyman@lbl.gov, or Eoin Brodie at ELBrodie@lbl.gov or at x6584 for those interested in meeting with the speaker.