BRIGHAM AND WOMEN'S HOSPITAL

HARVARD MEDICAL SCHOOL

181 Longwood Avenue
Boston, Massachusetts 02115-5804

Department of Medicine
Channing Division of Network Medicine

Channing Microbiome Seminar

March 15 (Friday), 2019, 11am @ 5th-floor conference room

Gabriel E Leventhal, PhD

Department of Civil and Environmental Engineering
Massachusetts Institute of Technology

Uncovering co-evolution in natural microbial consortia using genomics: from wastewater granules to pink berries

Microbial communities contain diverse individual microorganisms that coexist in the same physical location at roughly the same time. Natural communities typically display an enormous diversity in composition, both at the level of species within communities as well as strains within species. To what degree strain-level diversity is important for overall community function is still poorly understood. I will present results from two studies of naturally occurring microbial consortia that occur as millimeter-scale granular biofilms. This millimeter length scale allows us to perform comparative strain-level genomic analysis of a large number of replicate microbial communities. First, using granules from experimental activated sludge reactors, I show that strain-level differences in the dominant community member matter for overall community composition. Second, using 'Pink Berries' of the Sippewissett salt marsh, I show that mutualistically linked dominant members display different evolutionary histories. Taken together, these results suggest that evolutionary processes that shape strain-level genotype differences of community members are important to properly understand microbial community structure and function.

Hosted by Yang-Yu Liu