



# Center for Theoretical Biological Physics

## SEMINAR

### "Genetic Variation and the Dynamics of Genome Sequence Evolution in Microbial Populations"

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Organismic and Evolutionary Biology  
Harvard University



**Tuesday, September 24, 2013**

12:30 - 1:30 PM

BRC, 10<sup>th</sup> Floor, Rm 1060 A/B

The dynamics of adaptation determines which mutations fix in a population, and hence how reproducible evolution will be. I will describe whole-genome whole-population sequencing to examine the dynamics of genome sequence evolution at high temporal resolution in many replicate laboratory microbial evolution experiments. These dynamics are dominated by pervasive genetic hitchhiking: multiple mutations arise and move synchronously through the population as mutational "cohorts." Multiple clonal cohorts are often present simultaneously, competing and interfering with each other in the same population. This makes sequence evolution a balance between these chance effects of hitchhiking and interference, which increase stochastic variation in evolutionary outcomes, and the deterministic action of selection on individual mutations, which favors parallel evolutionary solutions in replicate populations. If time allows, I will conclude by describing recent theoretical progress to build a mathematical framework for describing these effects.