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Channing Microbiome Seminar

October 21st (Friday), 2022, 9AM-10AM (ET)

Zoom: <https://us02web.zoom.us/j/81070959105?pwd=RFJNd3dSZmR6dXJZNjJiYVVzQ3NEQT09>

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Emergent phases of ecological diversity and dynamics mapped in microcosms

Abstract: From tropical forests to gut microbiomes, ecological communities host striking numbers of coexisting species. Beyond high biodiversity, communities exhibit a range of complex dynamics that are difficult to explain under a unified framework. Using bacterial microcosms, we perform the first direct test of theory predicting that simple coarse-grained features dictate emergent behaviors of communities. As either the number of species or the strength of interactions increases, we show that microbial ecosystems transition between three distinct dynamical phases, from a stable equilibrium where all species coexist, to partial coexistence, to emergence of persistent fluctuations in species abundances, in the order predicted by theory. Under fixed conditions, high biodiversity and fluctuations reinforce each other. Our results demonstrate predictable emergent patterns of diversity and dynamics in ecological communities.

Bio: *Jiliang Hu is a postdoctoral fellow in the lab of Jeff Gore at MIT, where he is studying emergent behaviors of complex microbial communities by bridging theory and experiment. He is broadly interested in unveiling coarse-grained features that can dictate complex spatial temporal patterns in multicellular systems. Jiliang received his BS in Mechanics from Tsinghua University in 2017.*

Hosted by Shanlin Ke & Yang-Yu Liu

