NUS National University of Singapore | Department of Biological Sciences, Faculty of Science

ON-SITE BIOLOGY COLLOQUIUM

Friday, 4 Apr 2025 | 4 pm | LT32

Hosted by Assist. Prof Ying Chang

Map to Block S1A

Ridge to reef transects of Hawaiian microbiomes, and their impact on food webs

By **Anthony Amend**

Pacific Biosciences Research Institute, University of Hawai'i, Manoa

The transfer of energy in food webs from lower tiers like detritivores to top tier predators is governed by the physical laws of thermodynamics, and trends towards entropy. This inefficiency, where, approximately 90% of available energy is lost between any two adjacent levels, results in the characteristic pyramid-shaped distribution of food chain members, with the greatest diversity and biomass at the base of the hierarchy. We now know that microbiomes govern energy processing rates across environments and organisms, so food web efficiency and microbiome function are inherently linked. If macro-organisms "are what they eat" within food webs, their associated microorganisms are, by extension, what their hosts eat as well. Here, I'll present work in which we leverage a model Hawaiian watershed to model how host trophic level shapes microbiome compositions. Second, I'll present ongoing work in which experimental microcosms, based on invertebrate communities found in simple tank bromeliad pools, inform mechanisms underpinning these complex relationships.

About the Speaker

Dr. Amend is a microbial ecologist who studies the factors that determine why microbial compositions differ across space, time and environmental context, and how those differences matter for host and environmental function. His work leverages the living laboratory of the Hawaiian archipelago, and its environmental and evolutionary diversity, to understand how microbial symbiosis can inform conservation and ecosystem engineering. Dr. Amend also serves as the principal investigator of the Integrated Center of Environmental Microbiomes and Human Health, a United States National Institutes of Health Center of Excellence which seeks to understand the factors that shape the symbiotic microbes that influence health and disease across diverse human populations.