

**University of California, Irvine
Distinguished Speaker
Statistics Seminar**

Bayesian Models for Microbiome Data with Variable Selection

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**4 p.m., Thursday, November 18, 2021
Join via Zoom: <https://tinyurl.com/4azdp5zh>**

I will describe Bayesian models developed for understanding how the microbiome varies within a population of interest. I will focus on integrative analyses, where the goal is to combine microbiome data with other available information (e.g. dietary patterns) to identify significant associations between taxa and a set of predictors. For this, I will describe a general class of hierarchical Dirichlet-Multinomial (DM) regression models which use spike-and-slab priors for the selection of the significant associations. I will also describe a joint model that efficiently embeds DM regression models and compositional regression frameworks, in order to investigate how the microbiome may affect the relation between dietary factors and phenotypic responses, such as body mass index. I will discuss advantages and limitations of the proposed methods with respect to current standard approaches used in the microbiome community, and will present results on the analysis of real datasets. If time allows, I will also briefly present extensions of the model to mediation analysis.