***Chemical dissection and translation of microbiota mechanisms***

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My laboratory is broadly interested in the molecular mechanisms by which chemical signals modulate host-microbe interactions in infection and immunity. These chemical signals (metabolites) may be derived from host metabolism (endogenous metabolites) or the environment (diet, microbiota, therapeutics) and have been challenging to mechanistically elucidate. To dissect the mechanisms that govern host-microbe interactions, my laboratory has 1) developed chemical methods to characterize metabolite-protein interactions and 2) employed key animal models to discover new protective factors from specific microbiota species and elucidated their mechanisms of action. These studies have revealed unpredicted metabolite-protein functions in host immunity and microbial pathogenesis as well as novel microbiota protective factors, which have afforded new therapeutic leads and biomarkers for infection, inflammation and immunotherapy.