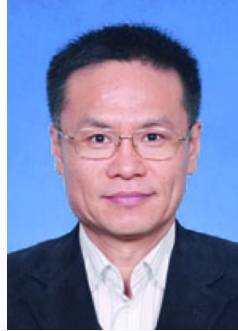


Hunter College of the City University of New York
Department of Biological Sciences
Spring 2024 Inga Richter Seminar Series

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Guild-Based Analysis for Understanding Gut Microbiome in Human Health and Diseases

To demonstrate the causative role of gut microbiome in human health and diseases, we first need to identify, via next-generation sequencing, potentially important functional members associated with specific health outcomes and disease phenotypes. However, due to the strain-level genetic complexity of the gut microbiota, microbiome datasets are highly dimensional and highly sparse in nature, making it challenging to identify putative causative agents of a particular disease phenotype. Members of an ecosystem seldomly live independently from each other. Instead, they develop local interactions and form inter-member organizations to influence the ecosystem's higher-level patterns and functions. In the ecological study of macro-organisms, members are defined as belonging to the same "guild" if they exploit the same class of resources in a similar way or work together as a coherent functional group. Translating the concept of "guild" to the study of gut microbiota, we redefine guild as a group of bacteria that show consistent co-abundant behavior and likely to work together to contribute to the same ecological function. I will discuss how to use guilds as the aggregation unit to reduce dimensionality and sparsity in microbiome-wide association studies for identifying candidate gut bacteria that may causatively contribute to human health and diseases.

Monday, February 5, 2024
12:30pm
Hunter College 926HN
Host: Weigang Qiu