



Channing Microbiome Seminar

March 24 (Friday), 2017, 11am @ 5th floor conference room



Fangqiong Ling, Ph.D.

Center of Microbiome Informatics and Therapeutics
MIT

Estimating human population from sewage samples

Abstract: Urban sewage presents a resource of invaluable human health data, but in order to tap this data source, we require the ability to accurately interpret the variation of biological and chemical signals in sewage, which is confounded by the variation of the target loading itself and the fluctuation in the population that contribute to the sample. As a source of public health data, sewage surveillance is most uniquely well-suited when passive sample collection, longitudinal sampling, and the incorporation of urban geographic information are needed, such as the tracking of infectious diseases, illicit drug usage, and community health indicators. The population size needs to be estimated in near real time, where traditional population estimation methods like population census would not apply. We are developing a model based on the composition of human gut microbial communities to estimate the population size in a mixed sample. This model, when coupled with an appropriate sewage sampling scheme that captures sewage before human microbial biomass can degrade, can be used for near real-time population estimation. The model also sheds light on population estimation for other aggregate samples from the built environment microbiome.

Bio: I am a postdoc fellow at the Center of Microbiome Informatics and Therapeutics at MIT, working with Dr. Eric Alm. I am interested in understanding forces shaping the diversity of microbial communities in built environments and exploring microbiomes as an anchor for the narrative of the history of a place and the people living there in the present. Prior to my postdoctoral training, I studied in Tsinghua University and University of Illinois, Urbana-Champaign. I am supported by the Microbiology of Built Environment Fellowship by Alfred Sloan Foundation.

Hosted by Yang-Yu Liu