

Systems Biology Research Symposium

Oral Presentation Session

Grand Ballroom
Tuesday, June 5th
7:00-8:30pm

The Human Metabiome: Correlating the Human Microbiome with Disease

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The human digestive tract is the interface between the human body and the environment, and represents an important portal that regulates the level of exposure to environmental factors. The microbiome and the gut epithelial barrier are hypothesized to be essential for regulating and maintaining normal mucosal and systemic immune function that plays a key role in the state of health or disease. The underlying paradigm is that the gut microbiome actively interacts with the human host (the homobiome) through quorum sensing and immune mechanisms. These interactions are in homeostatic equilibrium in the healthy state. We define the interactions of this global non-linear dynamic as the Metabiome.

In this context, we are using LH-PCR fingerprinting as a rapid method to inexpensively characterize a large number of samples. We then characterize the gut microbiome using a novel Multitag Pyrosequencing (MTPS). We are also interrogating the small molecules using classic Liquid Chromatography Mass Spectroscopy (LC-MS). We will then take a Systems Biology approach to correlate these data sets to characterize the Metabiome and the interactions between the gut epithelial barrier and microbiome that are hypothesized to be essential for homeostasis. We will present the characterization of the Metabiome from Healthy Controls and several disease states including Crohn's Disease, Ulcerative Colitis, and Alcoholic Liver Disease.

Key words: microbiome, metabiome, metabolome, multitag pyrosequencing