The Mind Gut Microbiome Connection — From Evolutionary Insights to Ecological Models
Wednesday, February 17, 2016 • 8:30 – 9:30 AM
Ronald Reagan UCLA Medical Center (B-Level, Room 130)

with
EMERAN A. MAYER, MD
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There is a growing awareness of the bidirectional relationship between our gut, its microbes and the brain, and there is a long evolutionary history which can explain the recent observations in humans. This ancient relationship between our gut microbes and the nervous system will have important implications for a better understanding of disorders of the brain and the brain gut axis. Characterizing this relationship is beginning to lead to a paradigm shift towards an ecological viewpoint of health and disease in general.

The Gut-Brain Connection in Neurodevelopment Disorders
Wednesday, February 24, 2016 • 8:30 – 9:30 AM
Ronald Reagan UCLA Medical Center (B-Level, Room 130)

with
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Division of Biology & Biological Engineering, California Institute of Technology

Neurodevelopmental disorders, including autism spectrum disorder (ASD), are defined by core behavioral impairments; however, subsets of individuals display a spectrum of gastrointestinal (GI) abnormalities. We demonstrate GI barrier defects and microbiota alterations in the maternal immune activation (MIA) mouse model that is known to display features of ASD. Oral treatment of MIA offspring with the human commensal Bacteroides fragilis corrects gut permeability, alters microbial composition, and ameliorates defects in communicative, stereotypic, anxiety-like and sensorimotor behaviors. MIA offspring display an altered serum metabolomic profile, and B. fragilis modulates levels of several metabolites. Treating naïve mice with a metabolite that is increased by MIA and restored by B. fragilis causes certain behavioral abnormalities, suggesting that gut bacterial effects on the host metabolome impact behavior. Taken together, these findings support a gut-microbiome-brain connection in a mouse model of ASD and identify a potential probiotic therapy for GI and particular behavioral symptoms in human neurodevelopmental disorders.

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