BRIGHAM AND WOMEN'S HOSPITAL

HARVARD MEDICAL SCHOOL

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Department of Medicine
Channing Division of Network Medicine

Channing Microbiome Seminar
Sep 23, 2016, 11am @ 5th floor conference room

Speaker: **Nissan Yissachar**, Ph.D.
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Thinking outside the mouse: Dissecting host-microbiome communications ex-vivo

Investigation of host-environment interactions in the gut would benefit greatly from a culture system that preserved cellular architecture yet allowed tight experimental control. We have devised a microfabricated organ culture system that viably preserves the multicellular architecture of the mouse intestine, with luminal flow to control environmental parameters and permit experimental perturbation with microbes, drugs or nutrients. Using this system, we analyzed the early response of intestinal tissue to a panel of commensal bacteria, that triggers the development of either pro-inflammatory Th17 or anti-inflammatory T regulatory (Treg) cells in vivo. Remarkably, Th17 and Treg inducers showed diametrically opposite regulation of a neuronal-specific gene set, notably nociceptive neuropeptides. Electrophysiology and calcium imaging showed direct activation of sensory neurons by the Treg-inducing microbes. Thus, differential involvement of the enteric nervous system may partake in bifurcating pro- or anti-inflammatory responses to the gut microbiota.

BIO: Nissan Yissachar is a postdoctoral research fellow in the lab of Profs. Christophe Benoist and Diane Mathis at Harvard Medical School. He received a PhD in molecular and cellular biology from Bar-Ilan University in Israel, and completed a post-doctoral fellowship at the Immunology department of the Weizmann Institute of Science, Israel. His research focuses on the interactions between the intestinal immune and nervous systems to the gut microbiota, as a model for understanding immunological decision-making and inflammatory diseases.

Hosted by Yang-Yu Liu