Center for the Study of Inflammatory Bowel Disease (CSIBD) and the Center for Computational and Integrative Biology (CCIB)
Co-host: Center for Microbiome Informatics and Therapeutics at MIT
28th Annual Workshop
Molecules, Machines, and Medicines
November 9 – 10, 2018

November 9, 2018

7:30 – 8:00
Registration and Continental Breakfast
Opening Remarks
Ramnik J. Xavier, M.D., Director, CSIBD

Session I: Moderators: Kate Jeffrey, Ph.D. and Hans-Christian Reinecker, M.D.

8:00 – 8:25
Mechanotherapeutics: Targeting Mechanical Signaling Pathways in Fibrosis
David Lagares, Ph.D., Massachusetts General Hospital, Boston, MA

8:25 – 8:50
Long noncoding RNAs regulating liver fibrosis
Alan Mullen, M.D., Ph.D., Massachusetts General Hospital, Boston, MA

8:50 – 9:15
Antigen Discovery and Specification of Immunodominance Hierarchies for MHCII-Restricted Epitopes
Daniel Graham, Ph.D., Broad Institute of MIT and Harvard, Cambridge, MA

9:15 – 9:40
De novo peptide design for targeted therapeutic applications
Gaurav Bhardwaj, Ph.D., University of Washington, Seattle, WA

9:40 – 9:55
BREAK

Session II: Moderators: Cox Terhorst, Ph.D. and Ursula Weiss, Ph.D.

9:55 – 10:20
Inflammatory tuning of epithelial stem cells
Shruti Naik, Ph.D., New York University, New York, NY

10:20 – 10:45
De-Orphanizing Olfactory Receptors
Hiroaki Matsunami, Ph.D., Duke University School of Medicine, Durham, NC

10:45 – 11:10
Protection of immunological memory during nutritional stress
Yasmine Belkaid, Ph.D., NIH: National Institute of Allergy and Infectious Diseases, Bethesda, MD

11:10 – 11:35
Development of CRISPR-Cas Systems for Genome Editing
Feng Zhang, Ph.D., Broad Institute of MIT and Harvard, Cambridge, MA
11:35 – 12:35  LUNCH

Session III: Moderators: Thaddeus Stappenbeck, M.D., Ph.D. and Andrew Chan, M.D.

12:35 – 1:00  3D intact-tissue sequencing of single-cell transcriptional states
Xiao Wang, Ph.D., Stanford University, Stanford, CA

1:00 – 1:25  Machine Learning on Molecules: Predicting Mass Spectra and Perceptual Qualities of Small Organic Molecules
Alex Wiltschko, Ph.D., Google Brain, Cambridge, MA

1:25 – 1:50  Understanding the histology and genetic of complex disease with random composite experiments
Brian Cleary, Broad Institute of MIT and Harvard, Cambridge, MA

1:50 – 2:15  Interpretable deep learning to decipher the dynamic gene regulation
Anshul Kundaje, Ph.D., Stanford University, Stanford, CA

2:15 – 2:40  Development and functions of resident macrophages
Frederic Geissmann, M.D., Ph.D., Memorial Sloan Kettering Cancer Center, New York, NY

2:40 – 2:55  BREAK

Session IV: Moderators: Atul Bhan, M.D. and Gail Hecht, M.D.

2:55 – 3:20  Phenotypic screening for small molecules in the gut microbiome
Jon Clardy, Ph.D., Harvard Medical School, Boston, MA

3:20 – 3:45  Disentangling host and microbiome contributions to drug metabolism
Andrew Goodman, Ph.D., Yale University, New Haven, CT

3:45 – 4:10  Using cell atlases as maps for human disease
Aviv Regev, Ph.D., Broad Institute of MIT and Harvard, Cambridge, MA

4:10 – 4:35  Role of serum amyloid A proteins in Th17-mediated inflammation
Dan Littman, M.D., Ph.D., New York University, New York, NY

4:35 – 5:00  Plant chemistry in the molecular diet
Elizabeth Sattely, Ph.D., Stanford University, Stanford, CA
**November 10, 2018**

7:30 – 8:00 Registration and Continental Breakfast

**Session V:**

Moderators: Theresa Pizarro, Ph.D. and Charles Elson, M.D.

8:00 – 8:25 *ST2* tissue Tregs regulate innate immune responses at mucosal barriers
Andrew Luster, M.D., Ph.D., Massachusetts General Hospital, Boston, MA

8:25 – 8:50 **Myeloid Cells in Cancer**
Mikael Pittet, Ph.D., Massachusetts General Hospital, Boston, MA

8:50 – 9:15 **Tuft cells in type 2 immunity**
Richard Locksley, M.D., University of California San Francisco, San Francisco, CA

9:15 – 9:40 **Microglial impact in neurodegeneration**
Marco Colonna, M.D., Washington University School of Medicine in St. Louis, St. Louis, MO

9:40 – 9:55 **BREAK**

**Session VI:**

Moderators: Shiv Pillai, M.D., Ph.D., and Balfour Sartor, M.D.

9:55 – 10:20 **Role of microbial signals in myeloproliferative disease**
Bana Jabri, M.D., Ph.D., The University of Chicago, Chicago, IL

10:20 – 10:45 **De novo mutations in microbiomes**
Tami Lieberman, Ph.D., MIT, Cambridge, MA

10:45 – 11:10 **Bacterial modifications of bile acids alter host physiology**
Sloan Devlin, Ph.D., Harvard Medical School, Boston, MA

11:10 – 11:35 **Rules that govern the gut microbiome in health and disease**
Eric Alm, Ph.D., MIT, Cambridge, MA

11:35 – 12:05 **Discussion**

12:05 – 1:05 **LUNCH**

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*Simches Research Building at Charles River Plaza*
*185 Cambridge Street, 3rd floor*

*The Workshop is open to the research community at no charge*
*To register, please e-mail CSIBDworkshop@partners.org*