

# Agenda I

Monday, December 19

**8:15 – 9:00 AM**

**Registration and Poster Session Set-Up**

**9:00 – 9:15 AM**

**Welcome** | Todd Golub

**9:15 – 9:45 AM**

**Keynote** | Aviv Regev  
*Towards a human cell atlas*

**9:45 – 10:45 AM**

**Plenary Session I**  
Chair: Nir Hacohen

9:45 | Isha Jain  
*Hypoxia as a therapy for mitochondrial disease*

10:00 | Alexis Komor  
*A new approach to genome editing*

10:15 | Sulagna Dia Ghosh  
*Human embryonic stem cells spontaneously acquire p53 mutations—implications for stem cell therapy*

10:30 | Daniel MacArthur  
*A unified resource of genetic variation spanning over 140,000 humans*

**10:45 – 11:15 AM**

**Break**

**11:15 AM – 12:30 PM**

**Plenary Session II**  
Chair: Cigall Kadoch

11:15 | Catherine Wu  
*Personalized targeting of cancer neoantigens*

11:30 | Vasanthi Viswanathan  
*GPX4 and therapy-resistant cancer cell states*

11:45 | Yonatan Grad  
*Decreasing antibiotic resistance in Staphylococcus aureus*

12:00 | Samantha Wellington  
*Identification of a specific allosteric small-molecule inhibitor of Mycobacterium tuberculosis tryptophan synthase*

12:15 | Eric Minikel and Sonia Vallabh  
*From human genetics to therapeutic strategy in prion disease*

**12:30 – 2:30 PM**

**Lunch**

**12:45 – 2:15 PM**

**Breakout Sessions**

**Unmet challenges in technology (“If I only had a...”)**  
Room 309 | Leader: Rob Nicol

We are familiar with the success stories that emerge from Broad research and innovation. But frequently, the next big advance is waiting on a new technology. This panel discussion will focus on desired future technological advances that would greatly impact research.

**Mindfulness: How awareness supports and informs well-being and performance**

*Sponsored by BroadLife*  
Room 310 | Leader: Tara Healey, Program Director for Mindfulness-Based Learning at Harvard Pilgrim Health Care

This program introduces the basic principles and practices of mindfulness, a concentrated state of awareness that helps people see and respond to situations with clarity. Individuals who employ the techniques of mindfulness in their work are able to monitor moment-to-moment effectiveness, respond promptly and appropriately to difficulties as they arise, and remain open to new ideas and perspectives. Participants will be introduced to meditation practices that will teach them how to be more focused, creative, and resilient in all aspects of their lives.

**How a compound becomes a drug**

Room 311 | Leader: Bridget Wagner

Discovering a bioactive small molecule is only the first early step in the drug development process. Join us in this session to learn about the steps necessary in making a drug, and about early efforts at the Broad to have an impact on human therapeutics.

## **Industry collaborations and the Broad: Opportunities and challenges**

Room 312 | Leaders: Stephanie Loranger,  
Juliana Leung, and Anthony Philippakis

Corporate partners and industry collaborations are not new to the Broad, but have you ever walked down the hall and heard a conversation about Bayer and wondered “why are we working with Bayer?” Come hear from Broadies involved in different aspects of several industry collaborations and learn more about them! We will discuss the good (how these collaborations help move our science forward), the bad (how culture clash can sometimes happen), and everything in between.

### **2:30 – 4:00 PM**

#### **Plenary Session III**

Chair: John Doench

2:30 | Omar Abudayyeh

*Finding novel genome editing tools in the CRISPR diversity:  
From Cas9 to Cpf1 and beyond*

2:45 | Christopher Mader

*PRISM: Multiplexed high-throughput cell line  
profiling for anti-cancer compound discovery*

3:00 | Bronwyn MacInnis

*Outbreak response genomics at the Broad:  
Zika and beyond*

3:15 | Fang-Yuan Chang

*Mining the human microbiome*

3:30 | Clary Clish

*Metabolic predictors of coronary heart disease  
in women*

3:45 | Sam Myers

*Genomic locus proteomics: The unbiased identification  
of proteins associated with a particular genomic locus*

### **4:00 – 4:30 PM**

#### **Excellence Awards**

### **4:30 – 6:30 PM**

#### **Reception and Poster Session**

Rooms 302 | 304 | 306

**4:30 – 5:30 PM** Poster presentations ODDS

**5:30 – 6:30 PM** Poster presentations EVENS

### **6:30 – 8:30 PM**

#### **After-Party**

3rd Floor Foyer at Hynes Convention Center  
*Sponsored by Broad’s Office of People Development  
and Operations*

The buffet and bar will stay open as the poster reception transitions into an after-party, complete with live music by Gretchen and the Pickpockets.

### **8:30 PM**

#### **Late Night After-Party**

For those who would like to keep their conversations going later into the evening, Broadies can head to McGreevy’s, directly across from the Hynes. A limited number of complimentary drinks will be available until 9:00 pm.

# Agenda II

Tuesday, December 20

**8:15 – 9:00 AM**

## Registration

**9:00 – 9:05 AM**

**Welcome** | Bridget Wagner

**9:05 – 9:35 AM**

**Keynote** | Ramnik Xavier

*A gut check on immunity*

**9:35 – 10:05 AM**

## Plenary Session IV-a

Chair: Bill Hahn

9:35 | Elinor Karlsson

*Investigating psychiatric disease through citizen science dog genetics*

9:50 | Ahmed H. Badran

*Phage-Assisted Continuous Evolution (PACE): Application to overcoming bioinsecticide resistance*

**10:05 – 10:25 AM**

## Break

**10:25 – 11:25 AM**

## Plenary Session IV-b

Chair: Bill Hahn

10:25 | Atray Dixit

*Screening for transcriptional phenotypes with Perturb-Seq*

10:40 | Raymond Walters

*Common variant risk loci identified in attention deficit hyperactivity disorder*

10:55 | Giorgia Quadrato

*Identification of cellular diversity and neuronal network dynamics in long-term cultures of human brain organoids*

11:10 | Amit Khera

*Genetic risk, adherence to a healthy lifestyle, and risk for coronary artery disease*

**11:25 – 11:50 AM**

## Poster Previews

Moderator: Paul Clemons

**11:50 AM – 2:45 PM**

## Lunch

**12:00 – 1:00 PM**

## Poster Session

Room 302 | 304 | 306

**12:00 – 12:30 PM** Poster presentations ODDS

**12:30 – 1:00 PM** Poster presentations EVENS

**1:00 – 2:30 PM**

## Breakout Sessions

### Why is the Broad so complicated?

Room 309 | Leaders: Alex Burgin, Steve Carr, Chad Nusbaum, and Orit Rozenblatt-Rosen

The Broad was founded on the simple organizational concept of Programs and Platforms, but over the years we have created a variety of Centers, Initiatives, and even an Observatory. Why has the Broad become so complicated? Does the concept of Programs and Platforms still make sense today? Come join the discussion on how we are organized to make collaborations easier, create and disseminate new technologies, and make capabilities accessible to everyone.

### Patients as partners: Lessons learned from direct-to-patient engagement pilots

Room 310 | Leaders: Tania Simoncelli, Heidi Rehm, Anthony Philippakis, Hayley Brooks, Nikhil Wagle, and Eli Van Allen

Many pressing questions about underlying mechanisms of disease can only be addressed by learning directly from the experiences of patients. Efforts to integrate clinical, genomic, and patient-reported data have been frustrated, however, by a general lack of alignment of research and clinical practice as well as outdated data retention policies and practices. The research community has begun to respond to these challenges by developing novel approaches to recruiting and engaging patients directly in research through partnerships with advocacy groups and the use of social media and other online mechanisms. Direct engagement of patients has the potential to facilitate the development of rich clinical data sets, democratize research by allowing patients to participate, regardless of where they live or are treated, and enhance trust on the part of research participants. This session will consider lessons learned from the Broad community's experiences in piloting direct-to-patient engagement research projects, with the goal of identifying a core set of criteria that could help guide researchers interested in pursuing similar approaches.

### **Visual approaches to exploring and explaining scientific data**

Room 311 | Leaders: Bang Wong, Noam Shores, and Claudine Cohick

Effective visualizations can help us explore patterns in data as the scientific story is still unfolding and explain results

in presentations and publications. Come join us for a discussion focused on finding solutions to common visualization challenges. We will talk about fundamental principles of communicating with images and work in groups on several hands-on exercises.

### **Uncovering the secrets of successful collaborations — Data-driven approaches to studying teams**

Room 312 | Leaders: Andy Porter, Shuba Gopal, and Jeff Polzer

At the Broad, our deeply collaborative spirit means we live and breathe science done in teams. Yet we've all experienced collaborations that just "flow" and others that never quite mesh, regardless of the merits of the underlying science. What if something else is at play? The focus of this breakout session will be to discuss data-driven approaches to studying the unique context of teamwork at Broad. Does having a "Broad identity" influence outcomes? Is there a special "collaborative" intelligence that can predict scientific success? We'll explore these ideas and what we've learned from experiments conducted by Google, the NCI and others in the new field of "people analytics."

### **Meditation and the brain**

*Sponsored by BroadLife*

Room 313 | Leader: Sara Lazar, Associate Researcher in Psychiatry, Massachusetts General Hospital

Over the past few decades scientific studies have begun to demonstrate that meditation practice can decrease stress, improve memory and attention, and reduce symptoms associated with numerous medical conditions including depression, anxiety, insomnia, and chronic pain. Our lab studies the neural mechanisms underlying these beneficial effects.

### **2:45 – 4:15 PM**

#### **Plenary Session V**

Chair: Dan Neafsey

2:45 | Eric Banks  
*Ad Nubem*

3:00 | Cotton Seed  
*An open-source framework for scaling analyses to a million genomes*

3:15 | Hilary Finucane  
*Identifying disease-relevant cell types from GWAS data*

3:30 | Moshe Biton  
*A single-cell atlas of the small intestinal epithelium reveals a novel stem-T cell crosstalk*

3:45 | Victor Rusu  
*Type 2 diabetes-associated variants disrupt SLC16A11 through two distinct mechanisms*

4:00 | David Sykes  
*Curing by maturing: Differentiation therapy for acute myeloid leukemia*

### **4:15 – 4:30 PM**

#### **Closing remarks**

Eric Lander