Sunday, November 1

3:00 pm	Check-in
6:00 pm	Reception *(Lobby)*
7:00 pm	Dinner
8:00 pm	**Welcome and opening remarks (Alipasha Vaziri)**
8:10 pm	**Keynote Lecture: Larry Abbott,** Columbia University *tbd*
9:10 pm	Refreshments available at Bob's Pub

NOTE:
Meals are in the **Dining Room**
Talks are in the **Seminar Room**
Posters are in the **Lobby**

Monday, November 2

7:30 am Breakfast *(service ends at 8:45am)*

9:00 am **Session 1: Tools for large-scale interrogation of neuronal network activity I**
Chair: Kristin Branson

9:00 am **Shy Shoham**, Technion – Israel Institute of Technology
Neurophotonic interfacing with large scale networks in retinas, optonets and brains

9:25 am **Dan Oron**, Weizmann Institute of Science
Temporally focused two-photon optogenetics and new optical markers for action potential sensing

9:50 am **Valentina Emiliani**, University Paris Descartes
Three-dimensional simultaneous photoconversion of neuronal ensembles with single-cell resolution

10:15 am **Short talk: Michal Lipson**, Columbia University
Nanophotonics for neuroscience

10:30 am Break

11:00 am **Session 2: Tools for large-scale interrogation of neuronal network activity II**
Chair: Alexandre Pouget

11:00 am **Peter So**, Massachusetts Insitute of Technology
High throughput, high content neurobiological imaging

11:25 am **Philipp J. Keller**, Janelia Research Campus/HHMI
Whole-animal functional imaging with isotropic spatial resolution

11:50 pm **Alipasha Vaziri**, Rockefeller University and Research Institute of Molecular Pathology (IMP)
Towards interrogation and analysis of whole-brain dynamics of neuronal circuits at single cell level

12:15 pm Lunch *(service ends at 1pm)*

2:00 pm **Session 3: Tools for large-scale interrogation of neuronal network activity III**
Chair: Philipp Keller

2:00 pm **Spencer L. Smith**, University of North Carolina School of Medicine
Imaging brain activity in large volumes with single neuron resolution

2:25 pm **Short talk: Darcy S. Peterka,** Columbia University
Simultaneous multiplane in vivo imaging

2:40 pm Short Break

3:00 pm **Session 4: Tools for big data neuronal analysis I**
Chair: Wolfgang Maas

3:00 pm **Timothy E. Holy**, Washington University School of Medicine
Cell segmentation from volumetric calcium imaging by tiled factorization

3:25 pm **Jeremy Freeman**, Janelia Research Campus/HHMI
Architectures and interfaces for large-scale imaging data

3:50 pm **Eftychios Pnevmatikakis**, Simons Foundation
Demixing and deconvolution of calcium imaging data

4:15 pm **Short talk: Hang Lu**, Georgia Institute of Technology
Microfluidics and automated processing of imaging data

4:30 pm Break

5:00 pm **Session 5: Tools for big data neuronal analysis II**
Chair: Alipasha Vaziri

5:00 pm **Hari Shroff**, National Institute of Biomedical Imaging and Bioengineering, NIH
A neurodevelopmental atlas in C. elegans

5:25 pm **Kristin M. Branson**, Janelia Research Campus/HHMI
Mapping behavior to neural anatomy using machine vision and thermogenetics

5:50 pm **Joshua T. Vogelstein**, Johns Hopkins University
Big time (series data in neuroscience)

6:15 pm Poster reception

7:30 pm Dinner

8:30 pm Refreshments available at Bob's Pub

Tuesday, November 3

7:30 am Breakfast *(service ends at 8:45am)*

9:00 am **Session 6: Making sense of big-data I**
Chair: Valentina Emiliani

9:00 am **Shaul Druckmann**, Janelia Research Campus/HHMI
Dissecting developmental dynamics in the zebrafish spinal cord: analysis of developmental time scale functional imaging data

9:25 am **Subutai Ahmad**, Numenta
Understanding cortical principles deeply

9:50 am **Matthias Kaschube**, Frankfurt Institute for Advanced Studies and Goethe University
Spontaneous and sensory-driven neural activity across space and time

10:15 am **Short talk: Mark Reimers**, Michigan State University
Predictive statistical models for high-frequency cortical activity data show sparse and transient functional connectivities in mouse cortex

10:30 am Break

11:00 am **Session 7: Making sense of big-data II**
Chair: Jeremy Freeman

11:00 am **Konrad Körding**, Northwestern University
The physics and information theory of massive recording

11:25 am **Wolfgang Maass**, Graz University of Technology
Relating data from large-scale recordings to computational models

11:50 am **Alexandre Pouget**, University of Geneva
How computation shapes signal and noise in population codes

12:15 pm Lunch *(service ends at 1pm)*

1:00 pm Tour *(optional - meet at reception)*

2:00 pm **Session 8: Making sense of big-data III**
Chair: Misha Ahrens

2:00 pm **Elad Schneidman**, Weizmann Institute of Science
Mapping the code of large neural populations using accurate models of small neural populations

2:25 pm **Frank Wood**, University of Oxford
Simulators as priors; probabilistic programming and neuroscience application

2:50 pm **Short talk: Christoph Kirst**, The Rockefeller University
Self-organized information routing in neuronal networks

3:05 pm Break

3:35 pm **Session 9: Big-data neuroscience and biological questions I**
Chair: Shy Shoham

3:35 pm **Misha B. Ahrens**, Janelia Research Campus/HHMI
tbd

4:00 pm **Peyman Golshani**, University of California, Los Angeles
New tools for recording large-scale cortical activation patterns during decision-making

4:25 pm **Short talk: Andrew M. Leifer**, Princeton University
Whole-brain neural dynamics and behavior in freely moving nematodes

4:40 pm **Short talk: Saul Kato**, Research Institute of Molecular Pathology
Global brain dynamics generate the motor command sequence in C. elegans

4:55 pm **Short talk: Vivek Venkatachalam**, Harvard University
Pan-neuronal imaging in roaming animals

5:10 pm Short Break

5:25 pm **Group Discussion: Future directions and open challenges**
Moderator: Rafa Yuste

6:45 pm Dinner

8:00 pm Poster Reception

9:30 pm Refreshments available at Bob's Pub

Wednesday, November 4

7:30 am	Breakfast *(service ends at 8:45am)*
9:00 am	**Session 10: Big-data neuroscience and biological questions II** **Chair: Peter So**
9:00 am	**Rafael Yuste**, Columbia University *The brain activity map of hydra*
9:25 am	**Michael B. Orger**, Champalimaud Centre for the Unknown *Imaging whole-brain neural activity dynamics in behaving zebrafish*
9:50 am	**Short talk: Kanaka Rajan**, Princeton University *Sequence generation and timing signals from calcium imaging data in cortical circuits*
10:05 am	**Short talk: Adam Packer**, University College London *All-optical interrogation of neural circuits*
10:20 am	Break
10:50 am	**Session 11: Big-data neuroscience and biological questions III** **Chair: Hari Shroff**
10:50 am	**Karl Deisseroth**, HHMI/Stanford University *Integrated brainwide structural and functional analysis*
11:15 am	**Short talk: Jerry Chen, University of Zurich** *Simultaneous calcium imaging of identified feedforward and feedback cortico-cortical neurons during behavior*
11:30 am	**Short talk: Simon P. Peron**, Janelia Research Campus/HHMI *Functional connectivity in cortical circuits mapped with comprehensive imaging and single-cell photoablation*
11:45 am	**Short talk: Gordon B. Smith**, Max Planck Florida Institute *Wide-field calcium imaging of cortical activity in the developing ferret*
12:00 pm	Closing Remarks
12:15 pm	Lunch and Departure
12:45 pm	First shuttle to Dulles
1:45 pm	Second shuttle to Dulles
2:45 pm	Last shuttle to Dulles