

**Sunday, November 4<sup>th</sup>**

- 3:00 pm      Check-in
- 6:00 pm      Reception (*Lobby*)
- 7:00 pm      Dinner
- 8:00 pm      Welcome and Opening Remarks: Loren Looger**
- 8:10 pm      Plenary Talk: Jin Zhang, Johns Hopkins University**  
*Probing spatiotemporal regulation of signal transduction in living cells*
- 8:40 pm      Plenary Talk: Ryohei Yasuda, Max Planck Florida Institute**  
*Imaging signal transduction in single dendritic spines*
- 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 5<sup>th</sup>**

- 7:30 am Breakfast (*service ends at 8:45am*)
- 9:00 am Session 1: Engineering Fluorescent Proteins I**  
**Chair: Samuel Wang**
- 9:00 am **Atsushi Miyawaki**, RIKEN Brain Science Institute  
*Fluorescent proteins and biological sensors*
- 9:20 am **Michael Z. Lin**, Stanford University  
*The quest for the "red GFP": multidimensional improvement of red fluorescent proteins by structure-guided mutagenesis*
- 9:40 am **Vladislav Verkhusha**, Albert Einstein College of Medicine  
*Engineering of fluorescent proteins for multiparameter imaging*
- 10:00 am **Samie Jaffrey**, Cornell University, Weill Medical College  
*Fluorescence imaging of intracellular metabolites with RNA*
- 10:20 am Break
- 10:50 am Session 2: Engineering Fluorescent Proteins II**  
**Chair: Ryohei Yasuda**
- 10:50 am **Amy E. Palmer**, University of Colorado at Boulder  
*High throughput characterization and optimization of FRET sensors and fluorescent proteins*
- 11:10 am **Jinny Kim**, Korea Institute of Science and Technology, Seoul  
*mGRASP enables mapping mammalian synaptic connectivity with light microscopy*
- 11:30 am **Robert E. Campbell**, University of Alberta  
*Fluorescent proteins remixed: New combinations of colours and tools*
- 11:50 am General Discussion
- 12:30 pm Lunch
- 2:00 pm Session 3: Calcium Indicators**  
**Chair: Thomas Hughes**
- 2:00 pm **Samuel S.-H. Wang**, Princeton University  
*Overcoming dynamic and kinetic limits of genetically encodable calcium indicators*

- 2:20 pm **Oliver Griesbeck**, Max Planck Institute of Neurobiology  
*Engineering of minimal domain FRET calcium indicators*
- 2:40 pm **Masamichi Ohkura**, Saitama University Brain Science Institute  
*Development and application of improved G-CaMP-type genetically encoded Ca<sup>2+</sup> indicators*
- 3:00 pm **Jenny Yang**, Georgia State University  
*Design and application of a novel class of sensors to monitor Ca<sup>2+</sup> dynamics in high Ca<sup>2+</sup> environments*
- 3:20 pm **Doug Kim**, Janelia Farm Research Campus/HHMI  
*Engineering and deployment of advanced calcium indicators*
- 3:40 pm Break
- 4:10 pm Session 4: Poster Highlights (5 min talk + 2 min Q&A)**  
**Chair: Jason Kerr**  
Kimberly Beatty  
Anselm Geiger  
Ralph Jimenez  
George McNamara  
Hideaki Mizuno  
Andreas Neef  
Mathew Tantama  
Yongxin Zhao
- 5:10 pm Poster Reception
- 6:45 pm Dinner
- 8:00 pm Session 5: Biosensors I**  
**Chair: Amy Palmer**
- 8:00 pm **Thomas E. Hughes**, Montana State University  
*New genetically encoded, fluorescent biosensors for diacylglycerol*
- 8:20 pm **Takeharu Nagai**, Osaka University  
*Revolutionary bioimaging with super-duper luminescent proteins*
- 8:40 pm **Gary Yellen**, Harvard Medical School  
*Design and use of ratio-sensing fluorescent metabolite sensors*
- 9:00 pm Refreshments available at Bob's Pub

**Tuesday, November 6<sup>th</sup>**

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

**9:00 am Session 6: Biosensors II**  
**Chair: Gary Yellen**

9:00 am **Carsten Schultz**, European Molecular Biology Laboratory (EMBL)  
*Genetically encoded fluorescent sensors to unravel signaling networks*

9:20 am **Baljit S. Khakh**, University of California, Los Angeles  
*Imaging astrocyte dynamics and functions in neuronal circuits*

9:40 am **Jonathan Marvin**, Janelia Farm Research Campus/HHMI  
*Making and using a genetically encoded glutamate sensor*

10:00 am Break

**10:30 am Session 7: Applications I**  
**Chair: Baljit Khakh**

10:30 am **David Yue**, Johns Hopkins University School of Medicine  
*Novel fluorescence-protein-based strategy to probe stoichiometry in large signaling complexes*

10:50 am **Fritjof Helmchen**, Brain Research Institute, University of Zurich  
*Imaging neuronal population activity with genetically-encoded calcium indicators*

11:10 am **Jason N. D. Kerr**, Max Planck Institute for Biological Cybernetics  
*Imaging active cortical circuits in the freely moving animal during decision making*

11:30 am General Discussion

12:15 pm Lunch

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

**2:00 pm Session 8: Applications II**  
**Chair: Jin Zhang**

2:00 pm **Hongkui Zeng**, Allen Institute for Brain Science  
*Transgenic platforms for cell type specific expression of genetic probes and tools*

2:20 pm **Lin Tian**, University of California, Davis  
*Multiplex imaging of neuron-astrocyte communication defects in hiPSC-based model of Down Syndrome*

- 2:40 pm Break
- 3:10 pm Session 9: Imaging Technologies**  
**Chair: Adam Cohen**
- 3:10 pm **Eric Betzig**, Janelia Farm Research Campus/HHMI  
*Development and applications of widefield and bessel plane structured illumination microscopy*
- 3:30 pm **David W. Piston**, Vanderbilt University  
*Improving the sensitivity and efficiency of multicolor fluorescence and FRET measurements using spectral detection*
- 3:50 pm **Hari Shroff**, National Institutes of Health  
*Sharper and faster: New technologies for imaging cells and embryos*
- 4:10 pm Break
- 5:30 pm Poster Reception
- 7:00 pm Dinner
- 8:00 pm Plenary Talk: Douglas Prasher**, University of California, San Diego  
*That esoteric green protein from aequorea and how it affected my life*
- 8:45 pm Refreshments available at Bob's Pub

**Wednesday, November 7<sup>th</sup>**

- 7:30 am Breakfast (*service ends at 8:45am*)
- 9:00 am Session 10: Voltage Sensing I**  
**Chair: David Yue**
- 9:00 am **Thomas Knopfel**, RIKEN Brain Science Institute  
*Optogenetic electrophysiological recordings using voltage-sensitive fluorescent proteins*
- 9:25 am **Vincent A. Pieribone**, The John B. Pierce Laboratory / Yale University  
*Fluorescent protein-based voltage probes*
- 9:50 am **Michael N. Nitabach**, Yale School of Medicine  
*In vivo imaging of membrane activity using a genetically encoded fluorescent voltage sensor*
- 10:15 am **Adam Cohen**, Harvard University  
*Imaging voltage with microbial rhodopsins*
- 10:40 am Break
- 11:10 am Session 11: Voltage Sensing II**  
**Chair: Loren Looger**
- 11:10 am **Joel Kralj**, Harvard University  
*Expanding the palette of voltage indicating proteins*
- 11:25 am **Srdjan Antic**, University of Connecticut Health Center  
*Voltage spikes in thin dendrites of pyramidal neurons*
- 11:50 am **Ralph Jimenez**, JILA, University of Colorado  
*Towards a microfluidics-based selection approach for developing improved voltage sensors*
- 12:05 pm **Loren Looger**, Janelia Farm Research Campus/HHMI  
*Discussion of what we did /didn't do this year, and what might happen next*
- 12:30 pm Lunch and Departure (*To-go boxes available from serverly for those on first shuttle*)
- 1:00 pm First shuttle to Dulles  
2:00 pm Second shuttle to Dulles  
3:00 pm Last shuttle to Dulles