

# BARRELS XXII

October 15-16, 2009

Norris University Center, Northwestern University

Sponsored by NINDS

## Thursday, October 15

- 9:00 - 9:05 **Welcome** Joshua C. Brumberg, Queens College, CUNY  
Introduction to local area Mitra Hartmann, Northwestern University
- 9:05 – 11:30** **Molecular development and developmental plasticity in (barrel) cortex**
- 9:05 - 9:15 Introduction/Overview **Patricia Gaspar**, INSERM
- 9:15 - 9:45 **Tomomi Shimogori** Unit Leader, RIKEN BSI  
Input from the thalamus to shape the barrel cortex
- 9:45 - 10:15 **Cathy Leamey** The University of Sydney  
Novel molecular regulators of sensory pathway development
- 10:15 - 10:45 **Reha Erzurumlu** University of Maryland Medical School, Baltimore  
Glutamatergic and serotonergic modulation of the developing barrel circuitry
- 10:45 – 11:15 Discussion
- 11:15 – 11:45 Coffee break
- 11:45 –12:30** **SHORT PLATFORM TALKS 1**
- Moderator: **Daniel Simons**, University of Pittsburgh
- 11:45–12:00 \*Qian-Quan Sun  
*University of Wyoming*  
Experience-dependent intrinsic plasticity in inhibitory networks of barrel cortex layer IV.
- 12:00 –12:15 \*Ayan Ghoshal, Ford Ebner  
*Vanderbilt University*  
Rearing conditions alter cross-sensory responsiveness in barrel cortex
- 12:15 –12:30 \*Chia-Chien Chen<sup>1</sup>, Adesh A. Bajnath<sup>2</sup>, Sara Marie Clark<sup>3</sup>, Fiona Inglis<sup>3</sup>, Joshua C. Brumberg<sup>1,4</sup>  
<sup>1</sup>*Neuropsychology Ph.D. Subprogram, The Graduate Center, CUNY*  
<sup>2</sup>*Neuroscience Program, Queens College, CUNY* <sup>3</sup>*Cell & Molecular Biology, Tulane University* <sup>4</sup>*Department of Psychology, Queens College, CUNY.*  
Morphological development of dendritic spines is influenced by sensory activity.
- 12:30 –12:45 Chia-Shan Wu, Shan Wang, Shen-Ju Chou, Dennis O'Leary, Giovanni Marsicano, Andrea Conrad, Beat Lutz, Ken Mackie, \*Hui-Chen Lu  
*Department of Pediatrics, Baylor College of Medicine, Salk Institute, Department of Physiological Chemistry, Johannes Gutenberg University, AVENIR INSERM, Gill Center and Department of Psychological and Brain Sciences, Indiana University.*  
The Role of endocannabinoid system in the thalamocortical pathway
- 12:45-1:00 Discussion
- 1:00 – 3:00 Lunch Break
- 2:45 - 3:00 Annual Business Meeting (Joshua C. Brumberg, Queens College, CUNY)

<b>3:00-3:30</b>	<b>Data Blitz #1</b> Moderator: <b>Mary Ann Wilson</b> , Johns Hopkins University
<b>3:30 – 5:00</b>	<b>SHORT PLATFORM TALKS 2</b> Moderator: <b>Daniel Shulz</b> , CNRS
3:30 - 3:45	*B. M. Hooks <sup>1,2</sup> , S. Andrew Hires <sup>1</sup> , Leopoldo Petreanu <sup>1</sup> , Karel Svoboda <sup>1</sup> , Gordon M. G. Shepherd <sup>1,2</sup> <sup>1</sup> <i>Janelia Farm Research Campus, Howard Hughes Medical Institute,</i> <sup>2</sup> <i>Department of Physiology, Feinberg School of Medicine, Northwestern University.</i>
3:45– 4:00	Excitatory local circuits in vibrissal motor and sensory cortical areas Qizong Yang <sup>1</sup> , Raddy L. Ramos <sup>2</sup> , Chia-Chien Chen <sup>3</sup> , *Joshua C. Brumberg <sup>1,3</sup> <sup>1</sup> Department of Psychology, Queens College, CUNY, <sup>2</sup> Department of Neuroscience and Histology, NYCOM, <sup>3</sup> Neuropsychology Subprogram, The Graduate Center, CUNY.
4:00 – 4:15	Intrinsic Properties and Synaptic Inputs onto Identified Corticothalamic Neurons * J. T. Ritt <sup>1</sup> , J. H. Siegle <sup>1</sup> , J. A. Cardin <sup>1</sup> , M. Carlen <sup>2</sup> , K. Meletis <sup>2</sup> , K. Deisseroth <sup>3</sup> , L.-H. Tsai <sup>2</sup> , C. I. Moore <sup>1</sup> <sup>1</sup> <i>McGovern Institute for Brain Research, Massachusetts Institute of Technology,</i> <sup>2</sup> <i>Picower Institute for Learning and Memory, Massachusetts Institute of Technology,</i> <sup>3</sup> <i>Bioengineering Department, Stanford University</i>
4:15 - 4:30	Discussion
4:30 – 5:00	Break
<b>5:00</b>	<b>Poster Session</b>
6:30	Dinner

### **Friday October 16**

<b>8:35 – 10:35</b>	<b><u>Optical analysis of barrel cortex function</u></b>
8:35 – 8:45	Introduction/Overview <b>Randy Bruno</b> , Columbia University
8:45 – 9:15	<b>Carlos Portera-Cailliau</b> University of California Los Angeles <i>2-photon imaging of barrel cortex structure and function in neonatal mice</i>
9:15 – 9:45	<b>Karel Svoboda</b> Janelia Farms Optical mapping of thalamocortical and cortico-cortical circuits
9:45 -10:15	<b>Fritjof Helmchen</b> University of Zurich Imaging single-cell and population responses to whisker stimulation in barrel cortex
10:15 – 10:45	Discussion
10:45 – 11:15	Coffee Break
<b>11:15 – 12:00</b>	<b>SHORT PLATFORM TALKS 3</b> Moderator: <b>Adrienne Fairhall</b> , University of Washington

11:15-11:30	*Tony Prescott <sup>1</sup> , Ben Mitchinson <sup>1</sup> , Sean Anderson <sup>1</sup> , Mat Evans <sup>1</sup> , Stuart Wilson <sup>1</sup> , Martin Pearson <sup>2</sup> , Tony Pipe <sup>2</sup> <sup>1</sup> <i>Active Touch Laboratory at Sheffield (ATL@S), University of Sheffield,</i> <sup>2</sup> <i>Bristol Robotics Laboratory, Universities of Bristol and of the West of England.</i> Whisking with robots: from rat vibrissae to biomimetic technology for active touch	
11:30 - 11:45	Shashank Tandon, Hisham Mohammed, Niranjana Kambi and *Neeraj Jain <i>National Brain Research Centre, Manesar, India</i> Organization of the motor cortex and its plasticity following dorsal funiculus lesions in adult rats.	
11:45 - 12:00	Discussion	
<b>12:00 - 1:30</b>	<b>Lunch</b>	
<b>1:30 – 2:00</b>	<b>Data Blitz #2</b> Moderator: <b>Daniel Feldman</b> , UC Berkley	
2:00 – 2:30	Coffee Break	
<b>2:30 – 4:40</b>	<b><u>Coding of touch</u></b>	
2:30 --2:40	Introduction/Overview	<b>Mitra Hartmann</b> , Northwestern University
2:40 – 3:10	<b>Fan Wang</b> Molecular genetic dissection of the barrelette circuit	Duke University
3:10 – 3:40	<b>David Kleinfeld</b> The transformation from body-centered to trajectory-based coordinates	University of California San Diego
3:40 – 4:10	<b>Ilan Lampl</b> Shifts in the balance between excitation and inhibition during adaptation: short term synaptic depression and its counterbalancing mechanisms	Weizmann Institute
4:10 - 4:40	<b>Carl Olson</b> How the brain represents object-centered space	Carnegie Mellon University
4:40 - 5:00	Discussion	
5:00	Adjourn	