BARRELS XVII

**October 21-22, 2004**

**Carlsbad, California**

**Thursday, October 21, 2004**

**SYNAPTIC CHANGE AND STABILIZATION**

Carl Petersen - Laboratory of Sensory Processing, Brain and Mind Institute,

Lausanne - *Moderator*

2:00 - 2:30 Karel Svoboda – Cold Spring Harbor Laboratories – *What we Need*

*to Know and What are the Prospects for Measuring it.*

2:35 - 3:05 Dan Feldman – University of California San Diego – *Spike Timing*

*and LTD in Barrel Cortex Plasticity.*

3:10 - 3:40Yang Dan – University of California Berkley - *Lessons for Plasticity*

*from Studies in the Visual Cortex*.

3:45 - 4:00 Open Discussion

4:00 - 4:15 Coffee Break

**Plasticity Short Talks (**Carl Petersen – Moderator)

4:15 - 4:25 Role of NMDARs in branching and patterning of whisker afferents and

barrelette cell dendrites. Li-Jen Lee & Reha Erzurumlu - *LSU*

4:25-4:35 Regulation of thalamocortical patterning and synaptic responses by the

transcription factor NeuroD2. Gulayse Ince1, Benjamin Hall1,4, Shu-Ching

Hu2, James M. Olson3, Stephen J. Tapscott3 and Anirvan Ghosh1,4 -*1* *Johns*

*Hopkins University School of Medicine, 2 Washington University, 3 Fred*

*Hutchinson Cancer Research Center, 4 University of California, San Diego.*

4:35-4:45 LTP in thalamocortical networks *in vivo.* Manuel A. Castro-Alamancos –

*Drexel University College of Medicine*

4:45-4:55 Long-term depression of horizontal connections at representational borders

in adult rat somatosensory cortex (S1). Sally A. Burns & Peter W. Hickmott

-*University of California Riverside*

4:55-5:05 Vibrissa stimulation in the rabbit supports trace eyeblink conditioning and

increases the size of cortical barrel representations. Roberto Galvez, Craig

Weiss, John Disterhoft - *Northwestern University Feinberg School o*

*Medicine*

5:05-5:15 Approaches Make a Difference. Ed White - *Ben Gurion University*

5:15 - 5:30 General Discussion/Questions

**5:45 Busses Depart for UCSD**

**6:00-10:00 Reception, Diner, and Posters at the UCSD Faculty Club**

**Cohosted by the Center for Theoretical Biological Physics (CTBP).**

**Friday, October 22, 2004**

7:30- 8:00 AM Breakfast

**SENSORIMOTOR CONTROL**

Mitra Hartmann – Northwestern University - Moderator

8:00 – 8:30 David Kleinfeld - University of California San Diego- *Conundrums*

*in Sensory Coding and Sensorimotor Control by the Vibrissa System*

8:35 - 9:05 Simona Temereanca – Massachusetts General Hospital - *Cortical*

*modulation of thalamic spatial response tuning in the somatosensory*

*whisker/barrel system*

9:10 – 9:40 Martin Deschenes – Laval University –*Vibrissal receptive fields in*

*subcortical stations*

9:45 - 10:15 Quoc Tang Nguyen - University of California San Diego –

S*ensorimotor integration in the rat vibrissa trigeminal loop*

10:20 -10:35 Open Discussion

10:35-10:50 Coffee Break

**Sensorimotor Short Talks** (Mitra Hartmann – Moderator)

10:50 - 11:00 Vibrissa Signals Consortium. Jason Ritt - *MIT*

11:00 - 11:10 Whisker and pad activity are synchronous during “exploratory” whisking.

R.Bermejo, W. Friedman, J. Swartz and H. P. Zeigler - *Biopsychology Program Hunter College, CUNY*

11:10 - 11:20 Electromyography and kinematics of whisking: A preliminary analysis.

Hill, D., Bermejo, R. Zeigler, H. P. and Kleinfeld, D. - *University of*

*California, San Diego & Hunter College, CUNY*

11:20 - 11:30 Reducing the Uncertainty: The gating of peripheral inputs by Zona Incerta.

Jason C. Trageser and Asaf Keller - *University of Maryland School of Medicine*

11:30 - 11:40 Synaptic integration of whisker responses in rat ventrobasal thalamus *in*

*vivo*. Michael J. Higley & Diego Contreras - *University of Pennsylvania*

11:40 - 11:50 Angularly-nonspecific adaptation in thalamic barreloids and cortical

barrels. [Vivek Khatri](https://mailbox.qc.edu/horde/imp/cleaned%20view_member('Vivek',%20'Khatri');) & Daniel Simons - *University of Pittsburgh*

11:50 - 12:00 Transient adaptation properties are affected by the initial direction of

vibrissa deflection. Roxanna M. Webber and Garrett B. Stanley – *Harvard*

*University*

12:00 - 12:15 General Discussion/Questions

**12:15 - 1:15 Lunch, Business Meeting** (Joshua Brumberg, Queens College, CUNY)

**Cortical Dynamics Short Talks** (Christopher I. Moore - *MIT* – Moderator)

1:15 - 1:25 Paired recordings *in vivo* reveal directional subnetworks. Randy M. Bruno

and Bert Sakmann - *Max-Planck-Institute for Medical Research*

1:25 - 1:35 Layer 2/3 interneurons in the cortical column. Moritz Helmstaedter and Bert

Sakmann - *Max-Planck-Institute for Medical Research*

1:35 – 1:45 Interhemispheric processing modulates subcortical sensory pathway activity

bilaterally. Lu Li & Ford Ebner - *Vanderbilt University*

1:45 - 1:55 Voltage-sensitive dye imaging of cortical spatiotemporal dynamics in freely

moving mice. Isabelle Ferezou, Sonia Bolea and Carl Petersen – *Laboratory*

*of Sensory Processing, Brain and Mind Institute, Lausanne*

1:55 - 2:10 General Discussion/Questions

2:10 – 2:25 Coffee Break

**DISEASE MODELS**

Mary-Anne Wilson, Kennedy Krieger Institute, Johns Hopkins University –

Moderator

2:25 – 2:55 Tom Woolsey – Washington University School of Medicine – *Overview of*

*the barrel as a clinical model*

3:00 - 3:30 Ford Ebner - Vanderbilt University. *Intellectual disabilities: Physiological*

*assays quantify prenatal toxin induced defects in barrel function.*

3:35 - 4:05 Kimberlie M. Jacobs - Virginia Commonwealth University. *Epilepsy:*

*Cortical malformations modeled by neonatal disruption of*

*the barrel field*.

4:10 - 4:40 Ling Wei - Medical University of South Carolina. *Stroke: “Mini-Strokes”*

*in BarrelCortex Lead to Neuronal Cell Death, Angiogenesis and Functional Reorganization.*

4:45 - 5:00 Open Discussion

5:00 – 5:15 Coffee Break

**Disease Short Talks** (Mary-Anne Wilson – Moderator**)**

5:15-5:25 Specific functions of Kv3 channels in synaptic transmission at the

neocortical fast-spiking cell synapse. Ethan M. Goldberg and Bernardo Rudy – *New York University School of Medicine*

5:25-5:35 Barrel cortex as a model for coupling between neuronal activity and

hemodynamic signals. A.Devor; I.Ulbert; A.K.Dunn; S.N.Narayanan;

M.L.Andermann; D.A.Boas; A.M.Dale- *MGH-NMR (Martinos) Ctr, Mass*

*Gen Hosp, Harvard Medical School*

# 5:35-5:45 Collateral blood flow after occlusion of individual surface and subsurface

# microvessels. N. Nishimura, C.B. Schaffer, B. Friedman, P.S. Tsai, P.D.

# Lyden and D. Kleinfeld, -*University of California, San Diego.*

5:45 - 6:00 General Discussion/Questions

**6:00 Adjourn**