

## Sloan-Swartz Centers 2012 Annual Meeting

June 27-29, 2012  
San Diego Supercomputer Center Auditorium  
UC San Diego, La Jolla, CA

### Wednesday, June 27

- 1:30 pm**      **Invited Speaker 1 – Introduction: Terry Sejnowski**  
Charles Schroeder, Nathan S. Kline Institute, Orangeburg, NY  
*Neuronal ensemble dynamics underlying attentional selection*
- 2:15 pm**      **Howard Poizner** (30 min)  
*Oscillation-based neural maps for space in humans*
- 2:45 pm**      **Session 1 – Yale – Chair: Dinu Albeanu**
- Thierry Emonet (30 min)  
*Olfactory receptor neurons encode odor-specific dynamics independently of intensity*
- Steve Zucker (15 min)  
*Modeling surface inferences in visual cortex*
- Alberto Bernacchia (15 min)  
*Decision-making with extreme time constants*
- 3:45 pm**      **Break**
- 4:00 pm**      **Session 2 – NYU – Chair: Richard Andersen**
- Robert Shapley (30 min)  
*The laminar distribution of gamma-band and spike activity in V1 cortex: theoretical implications*
- I-Chun Lin (15 min)  
*Integrate-and-fire vs Poisson models of LGN input to V1 Cortex: noisier inputs reduce orientation selectivity*
- Adi Rangan (30 min)  
*Emergent dynamics in a network model of the visual cortex*
- Gemma Huguet (15 min)  
*A model for dynamical switching in tristable perception for visual plaids*
- 5:30 pm**      Rishidev Chaudhuri (30 min)  
*The timescales of large-scale brain circuit dynamics*
- 6:00 pm**      **Dinner Buffet**
- 6:30 pm**      **Poster Session and Reception – SDSC Foyer and Synthesis Center**

8:30 pm End of Wednesday's program

**Thursday, June 28**

8:00 am **Breakfast**

8:30 am **Invited Speaker 2 – Introduction: Ken Miller**

Astrid Prinz, Emory University, Atlanta, GA  
*Homeostasis in a pattern-generating circuit*

9:15 am **Session 3 – Caltech – Chair: Ken Miller**

EunJung Hwang (30 min)  
*Learning mechanisms underlying volitional control of neural activity in BMIs*

James Bonaiuto (15 min)  
*Modeling the BOLD correlates of competitive neural dynamics*

Arnulf Graf (15 min)  
*Inferring eye position and eye movement from populations of LIP neurons*

10:15 am **Break**

10:45 am **Session 4 – Princeton – Chair: Haim Sompolinsky**

Bill Bialek (30 min)  
*Optimization principles, revisited*

Kanaka Rajan (15 min)  
*Maximally informative stimulus energies in the analysis of neural responses to natural signals*

Charles Kopec (15 min)  
*A unifying framework for choice behavior in temporal processing tasks*

11:45 am **Bernstein**

Garrett Thomas Greene (15 min)  
*Retinal contributions to invariance learning*

12:00 pm **Lunch**

**Directors Meeting in High Tech Conference Room**

1:30 pm **Invited Speaker 3 – Introduction: Xiao Jing Wang**

Carl Peterson, Ecole Polytechnique Federale de Lausanne, Switzerland  
*Synaptic mechanisms of sensory perception*

## **Thursday, June 28**

### **2:15 pm      Session 5 – Brandeis – Chair: Xiao Jing Wang**

Paul Miller (30 min)  
*Structural and functional plasticity combine to enhance performance in initially random networks trained to solve cognitive tasks*

Don Katz (30 min)  
*Nonlinear transitions in taste responses reflect the sudden appearance of behavior-related coding*

Ralf Haefner (15 min)  
*Decision making and attention in a sampling-based neural representation*

Timothy O'Leary (15 min)  
*Neuronal homeostasis: inside the black box*

### **3:45 pm      Break**

### **4:15 pm      Session 6 – Columbia – Chair: Paul Miller**

Stefano Fusi (30 min)  
*The importance of mixed selectivity in complex cognitive tasks*

Ken Miller (30 min)  
*The stabilized supralinear network: A simple circuit motif that explains multi-input integration in sensory cortex*

Yashar Ahmadian (15 min)  
*Interplay of random and structured connectivity in the dynamics of neural networks*

Pablo Jercog (15 min)  
*Increase in efficiency and accuracy of the hippocampal spatial representation over time*

### **6:30 pm      Banquet at Birch Aquarium**

### **8:30 pm      After dinner talk – E.J. Chichilnisky**

**9:30 pm      End of Thursday's program**

## **Friday, June 29**

**8:00 am**      **Breakfast**

**8:30 am**      **Invited Speaker 4 – Introduction: Terry Sejnowski**

John Doyle, Caltech, Pasadena, CA  
*Universal laws and architectures*

**9:15 am**      **Session 7 – CSHL – Chair: Terry Sejnowski**

Dinu Albeanu (30 min)  
*Gain control in the olfactory bulb: dual roles of the short axon (SA) cells*

Balazs Hangya (15 min)  
*Behavioral correlates of identified nucleus basalis neurons in a sustained attention task*

Yi Wei (15 min)  
*Long-term memory stabilized by noise*

**10:15 am**      **Break**

**10:30 am**      **Session 8 – Harvard – Chair: Bill Bialek**

Florian Engert (30 min)  
*Motor learning in larval zebrafish*

Cengiz Pehlevan (15 min)  
*Selective neuronal responses in random balanced networks*

Baktash Babadi (15 min)  
*Sparse expansive representations in sensory systems*

Julijana Gjorgjieva (15 min)  
*Parallel pathways for information processing in the retina*

SueYeon Chung (15 min)  
*Quadratic networks for invariant perceptual discrimination*

**12:00 pm**      **Lunch**

**1:30 pm**      **Invited Speaker 5 – Introduction: Bob Shapley**

Sascha du Lac, Salk Institute, La Jolla, CA  
*Computational neuroscience meets cell biological reality in oculomotor circuits*

**Friday, June 29**

**2:15 pm      Session 9 – UCSF – Chair: Bob Shapley**

Philip Sabes (30 min)

*A learning-based approach to artificial sensory feedback*

Michael Stryker (20 min)

*Active vision modulates responses and plasticity in mouse visual cortex*

Jonathan Charlesworth (20 min)

*Principles of trial-and-error learning in adult birdsong*

Kris Chaisanguanthum (20 min)

*On the origins of motor noise*

**3:45 pm      Break**

**4:15 pm      Session 10 – UCSD/Salk – Chair: Terry Sejnowski**

Scott Makeig (30 min)

*Towards human functional electrophysiological brain imaging*

Zeynep Akalin Acar (15 min)

*Forward and inverse problem solutions for EEG and ECoG data*

Jude Mitchell (15 min)

*A spiking network model of attention-dependent reductions of noise correlation in macaque V4*

**5:15 pm      Bernstein**

Christoph Kirst (15 min)

*Self-organized information routing in oscillatory networks of networks*

Ulrich Froerip (15 min)

*Shifts of theta and gamma oscillations in the epileptic hippocampus*

**5:45 pm      Farewell – Terry Sejnowski**

6:00 pm      End of program