

Neural Circuits: From Structure to Computation

December 16-17, 2015

Mishkenot Sha'ananim, Jerusalem

Organizing Committee: Yonatan Loewenstein, Sebastian Seung

Wednesday, December 16th, 2015

9:00-9:20 – **Eilon Vaadia** – *Director of the Edmond and Lily Safra Center for Brain Sciences at The Hebrew University of Jerusalem*

Nir Shaviv – *Chairman of the Racah Institute of Physics at The Hebrew University of Jerusalem*

Opening Remarks

Chair: Oren Shriki – *Ben-Gurion University of the Negev*

9:20-10:00 – **David Kleinfeld** – *University of California, San Diego*

Circuits That Integrate Orofacial Motor Actions into Behaviors

10:00-10:40 – **Larry Abbott** – *Columbia University*

From Rates to Spikes and Back Again

10:40-11:10 – Coffee Break

11:10-11:50 – **Florian Engert** – *Harvard University*

Binocular Motion Processing in the Larval Zebrafish

11:50-12:30 – **Catherine Dulac** – *Harvard University*

Plasticity of Social Representation in the Mouse Medial Amygdala

12:30-13:40 – Light Lunch

Chair: Joshua Goldberg – *The Hebrew University of Jerusalem*

13:40-14:20 – **Robert Shapley** – *New York University*

Large-Scale Computational Models of Cerebral Cortex and Cortical Dynamics

14:20-15:00 – **Ila Fiete** – *University of Texas*

Exponentially Many Robust Attractors in Hopfield Networks with Linearly Many Neurons

15:00-15:30 - Coffee Break

15:30-16:10 – **Thomas Mrsic-Flogel** – *University of Basel*

Principles of Local and Long Range Connectivity in Mouse Visual Cortex

16:10-16:50 – **Yonatan Loewenstein** – *The Hebrew University of Jerusalem*

The Computational Implications of Synaptic Volatility in the Cortex

18:30 – Dinner – Olive & Fish restaurant (for invited guests only)

Thursday, December 17th, 2015

Chair: Ariel Furstenberg – *The Hebrew University of Jerusalem*

9:00-10:00 – Keynote lecture by **Haim Sompolinsky** – *The Hebrew University of Jerusalem*

Brain Manifolds: The Geometry of Neural Representations

10:00-10:40 – **Daniel Lee** – *University of Pennsylvania*

Bandits With Attitude

10:40-11:10 – Coffee Break

11:10-11:50 – **Yoram Burak** – *The Hebrew University of Jerusalem*

Shaping Neural Circuits by High Order Synaptic Interactions

11:50-12:30 – **Surya Ganguli** – *Stanford University*

The Functional Contribution of Synaptic Complexity to Learning and Memory

12:30-13:40 – Light Lunch

Chair: David Golomb – *Ben-Gurion University of the Negev*

13:40-14:20 – **Idan Segev** – *The Hebrew University of Jerusalem*

Electrically-Coupled Cortical Interneurons: From Biophysics to Function

14:20-15:00 – **Jackie Schiller** – *Technion, Israel Institute of Technology*

Nonlinear Dendritic Amplification Mechanisms in Neocortical Neurons

15:00-15:30 - Coffee Break

15:30-16:10 – **Winrich Freiwald** – *The Rockefeller University*

On the Neural Circuits of Face Recognition

16:10-16:50 – **Sebastian Seung** – *Princeton University*

Unbiased anatomical classification of retinal ganglion cells via serial electron microscopy