Brain Stimulation Based Neural Circuit Modeling: Linking levels of analysis
Friday, October 16, 2015
Morning Session

8:00 Registration

8:30 **Introductions, Goals and Vision of the Meeting**  
Thomas Insel MD, Aleksandra Vicentic PhD, and Andrew Rossi PhD

8:45 **Theme 1: Non-invasive Brain Stimulation (NIBS) for Clinical Use**  
Moderators: Flavio Frohlich PhD and Danielle Basset PhD

*Holly Lisanby, MD* (Duke Institute for Brain Sciences)  
TBA

*Flavio Frohlich, PhD* (University of North Carolina at Chapel Hill)  
Mechanistic understanding of how non-invasive brain stimulation methods modulate large scale cortical network activity

*Josef Parvizi, MD, PhD* (Stanford School of Medicine)  
Exploring the spatiotemporal dynamics of functional networks in the human brain using a multimodal approach

*Lucas Parra, PhD* (The City College of New York)  
Cellular and network effects of transcranial electrical stimulation with weak currents

9:45 Questions & Round Table Discussions

10:15 Coffee Break

10:30 **Theme 2: Non-invasive Brain Stimulation; Pre-Clinical Use**  
Moderators: Steven Schiff MD PhD, Robert Kass PhD, and Aleksandra Vicentic PhD

*Earl Miller, PhD* (Massachusetts Institute of Technology)  
Cognition is Rhythmic: Implications for brain stimulation

*Theodore Zanto, PhD* (University of California San Francisco)  
Individual differences in TMS effects: From functional connectivity to functional recruitment

*Joel Voss, PhD* (Northwestern University Feinberg School of Medicine)  
Nonsurgical stimulation targeting hippocampal networks and memory in humans

*György Buzsáki, MD, PhD* (New York University)  
Synchrony, asynchrony and metachrony: implications for open- and closed-loop interventions

11:30AM Questions & Round Table Discussion

12:00AM Lunch on your own
Afternoon Session

1:15  
**Theme 3: Computational Modeling of Non-invasive Brain Stimulation**  
Moderators: Holly Lisanby MD and Andrew Rossi PhD

**Stephanie Jones, PhD** (Brown University)  
Bridging the gap between MEG/EEG measured rhythms and their underlying cellular and network level generators with biophysically principled computational neural models

**Stephen Schiff, MD, PhD** (Pennsylvania State University)  
Unification of Neuronal Spikes, Seizures, and Spreading Depression

**Danielle Bassett, PhD** (University of Pennsylvania)  
Network Controllability as a Fundamental Mechanism of Executive Function

**Xiao-Jing Wang, PhD** (New York University)  
Frequency-dependent inter-areal interaction in a large-scale circuit model of the primate cortex

2:15PM  
*Questions & Round Table Discussion*

2:45PM  
*Coffee Break*

3:00PM  
**Theme 4: Novel Empirical and Theoretical Approaches to Non-invasive Brain Stimulation**  
Moderators: Robert Kass PhD and Joseph Parvizi MD PhD

**Vikaas Sohal, MD, PhD** (University of California San Francisco)  
Inhibitory neuron-generated gamma oscillations regulate cognitive flexibility in mice

**Read Montague, PhD** (Virginia Tech Carilion Research Institute)  
A melange of errors: sub-second dopamine fluctuations in human striatum encode superposed error signals about actual and counterfactual reward.

**Alik Widge, MD, PhD** (Massachusetts General Hospital)  
Network-Level Changes from Subcortical Brain Stimulation: Lessons Learned and Implications for Non-Invasive Technologies

3:45PM  
*Questions & Round Table Discussion*

Gap Areas and Opportunities

Setting the Agenda for Future Research

5:00PM  
Meeting Adjourns

*Presentations are limited to 12 minutes, followed by 3 minutes for Q&A*