Monday, May 13th

3:00 pm Check-in

6:00 pm Reception *(Lobby)*

7:00 pm Dinner

8:00 pm **Welcome and Opening Remarks** (Organizers)

8:05 pm **Plenary Talk: Michale S. Fee**, Massachusetts Institute of Technology
A model of basal ganglia function, inspired by the songbird

9:05 pm Refreshments available at Bob's Pub

NOTE:
Meals are in the **Dining Room**
Talks are in the **Seminar Room**
Posters are in the **Lobby**

Tuesday, May 14th

All talks are 15 minutes + 5 for Q&A

7:30 am Breakfast *(service ends at 8:45am)*

9:00 am **Session 1**
Chair: Michael Mauk

9:00 am **Stefano Fusi**, Columbia University
High dimensional neural representations in pre-frontal cortex

9:20 am **Surya Ganguli**, Stanford University
A general theory of learning and memory with complex synapses

9:40 am **Christian Machens**, Champalimaud Centre for the Unknown
On the optimality and robustness of neural tuning

10:00 am **Sophie Denève**, Ecole Normale Supérieure
Learning optimal spike-based representations using predictive coding

10:20 am Break

10:50 am **Session 2**
Chair: Alla Karpova

11:10 am **Stijn Cassenaer**, California Institute of Technology
Understanding interactions between synaptic plasticity and neural representations

11:30 am **Misha B. Ahrens**, Janelia Farm Research Campus/HHMI
Neuronal dynamics in the entire brain of the larval zebrafish during motor learning

11:50 am **Rainer W. Friedrich**, Friedrich Miescher Institute for Biomedical Research
Dynamic neuronal computations in the olfactory system

12:10 pm Discussion

12:30 pm Lunch

2:00 pm **Session 3**
Chair: Rui Costa

2:00 pm **Jochen Triesch**, Frankfurt Institute for Advanced Studies
Self-organization and unsupervised learning in recurrent neural networks

2:20 pm **Alex Koulakov**, Cold Spring Harbor Laboratory
Long-term memory stabilized by noise-induced rehearsal

2:40 pm **Xiao-Jing Wang**, Yale University
Is there a hierarchy of time constants in the brain?

3:00 pm Break

3:45 pm **Session 4**
Chair: Timothy Gardner

3:45 pm **Mark M. Churchland**, Columbia University
The neural dynamics of movement generation

4:05 pm **Valerio Mante**, Stanford University
Selective integration of sensory evidence by recurrent dynamics in prefrontal cortex

4:25 pm **David Sussillo**, Stanford University
A recurrent neural network that produces EMG from rhythmic dynamics

4:45 pm Discussion

5:05 pm Short Break

5:20 pm Poster Blitz! *(3 slides / 5 minutes)*

Brian DePasquale, Columbia University
Ferran Diego Andilla, Heidelberg Collaboratory for Image Processing
Florent Haiss, RWTH University Aachen
Justin Kiggins, University of California, San Diego
Wen-Ke Li, University of Texas at Austin
Shih-Chieh Lin, National Institute on Aging
Jeffrey Markowitz, Boston University
Jeffrey Seely, Columbia University

6:00 pm Poster Reception

7:30 pm Dinner

8:30 pm Refreshments available at Bob's Pub

Wednesday, May 15th

7:30 am Breakfast *(service ends at 8:45am)*

9:00 am **Session 5**
Chair: Sophie Denève

9:00 am **Timothy Gardner**, Boston University
Temporal sequences and neural ensembles in songbirds

9:20 am **Michael A. Long**, NYU Langone Medical Center
State-dependent toggling between sensory coding and motor patterning in a forebrain circuit

9:40 am **Bence Ölveczky**, Harvard University
Distinct neural circuits for learning timing and motor implementation of a motor skill

10:00 am Break

10:30 am **Session 6**
Chair: Joseph Paton

10:30 am **Mitya Chklovskii**, Janelia Farm Research Campus/HHMI
Understanding neural computation: insights from adaptive signal processing and online learning

10:50 am **Dean Buonomano**, University of California, Los Angeles
Robust timing and motor patterns by taming chaos in recurrent neural networks

11:10 am **Wolfgang Maass**, Technische Universität Graz
Emergence of stereotypical trajectories of network states through synaptic plasticity in stochastic networks of spiking neurons

11:30 am Discussion

12:00 pm Lunch

1:00 pm Tour *(optional – meet at reception)*

2:00 pm **Parallel breakout Sessions**

1. **Sharing experimental data or model/analysis code** (Axon/Dendrite Room)
2. **Building a users guide for collaboration between theorists and experimentalists** (Electron Room)
3. **Issues in mapping models to biological mechanism: is there a "proper" level of abstraction?** (Synapse Room)

3:30 pm Break

4:00 pm Breakout Session Summaries *(reconvene in Seminar Room)*

5:00 pm Poster Reception

6:30 pm Dinner

7:30 pm **Session 7**
Chair: Josh Dudman

7:30 pm **Zachary Mainen**, Champalimaud Neuroscience Programme
Neural circuits for spontaneous action timing in the frontal cortex

7:50 pm **Rui M. Costa**, Champalimaud Center for the Unknown
Learning novel actions and shifting to automatic

8:10 pm **Eugene Lubenov**, California Institute of Technology
Hippocampal theta oscillations are traveling waves

8:30 pm **Matt Smear**, Janelia Farm Research Campus/HHMI
Timing in the sense of smell

8:50 pm Discussion

9:15 pm Refreshments available at Bob's Pub

Thursday, May 16th

7:30 am	Breakfast *(service ends at 8:45am)*
9:00 am	**Session 8** **Chair: Mark Churchland**
9:00 am	**Joshua Dudman**, Janelia Farm Research Campus/HHMI *Mice infer probabilistic models for timing*
9:20 am	**Michael Mauk**, University of Texas at Austin *Timing and temporal coding in the cerebellum*
9:40 am	**Eva Pastalkova**, Janelia Farm Research Campus/HHMI *Theta sequences as a substrate of episodic memory*
10:00 am	**Joseph J. Paton**, Champalimaud Neuroscience Programme *Networks don't play chess*
10:20 am	Break
10:50 am	**Session 9** **Chair: Zachary Mainen**
10:50 am	**Robert Legenstein**, Graz University of Technology *Emergence of complex computational structures in recurrent neural networks through reward-modulated Hebbian learning*
11:10 am	**Kanaka Rajan**, Princeton University *Generation of choice-specific sequences by reconfigurable learning in neural circuits*
11:30 am	Discussion
12:00 pm	Lunch / Departure
12:30 pm	First shuttle to Dulles
1:30 pm	Second shuttle to Dulles
2:30 pm	Last shuttle to Dulles