

Sunday, September 18

Arrival and check-in

6:00 pm Reception (*Lobby*)

7:00 pm Dinner

8:00 pm **Opening talk / Setting the scene**
Angus Silver, University College London
How can we improve the scientific value of models of neural systems?

9:00 pm Refreshments available at Bob's Pub

**Talks are 25 minutes +
5 minutes for Q&A**

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

Monday, September 19

- 7:30 am Breakfast (*service ends at 8:45am*)
- 9:00 am Session 1: Resources and initiatives for collaborative modeling, part I**
Chair: Sharon Crook
- 9:00 am **Giorgio A. Ascoli**, George Mason University
Sharing data on (neuroscience) data sharing: Challenges & successes from the first decade of NeuroMorpho.Org
- 9:30 am **Robert A. McDougal & Ted Carnevale**, Yale School of Medicine
The ModelDB repository as a tool for model development
- 10:00 am **Padraig Gleeson**, University College London
Collaborative modelling with Open Source Brain
- 10:30 am Break
- 11:00 am **Andrew P. Davison**, Centre National de la Recherche Scientifique
Community-based development of open-source tools for collaborative modeling in neuroscience
- 11:30 am Session 2: Synaptic plasticity and learning**
Chair: Hanchuan Peng
- 11:30 am **Jeanette Hellgren Kotaleski**, Karolinska Institutet
Reward learning: Insights and challenges using models of receptor induced cascades
- 12:00 pm Lunch (*service ends at 1pm*)
- 2:00 pm **Claudia Clopath**, Imperial College London
Emergence of functional connections in neural networks with synaptic plasticity
- 2:30 pm **Avrama Blackwell**, George Mason University
Calcium dynamics in striatal spiny projection neurons predicts direction of synaptic plasticity and interactions among asynchronous synaptic inputs
- 3:00 pm **Misha Tsodyks**, Weizmann Institute of Science
Synaptic origins of working memory capacity
- 3:30 pm Break

- 4:00 pm** **Session 3: Modeling cerebellar function**
Chair: Pádraig Gleeson
- 4:00 pm **Ruben Portugues**, Max Planck Institute of Neurobiology
Physiology and modeling of the cerebellum of the larval zebrafish
- 4:30 pm **Erik De Schutter**, Okinawa Institute of Science and Technology
Multi-scale modeling of the cerebellum
- 5:00 pm **Dieter Jaeger**, Emory University
Robust transmission of rate coding in the inhibitory purkinje cell to cerebellar nuclei pathway in awake mice
- 5:30 pm Poster Reception
- 7:00 pm Dinner
- 8:00 pm** **Discussion session 1: What is limiting the success of data driven models of the brain?**
Moderator:
- 9:00 pm Refreshments available at Bob's Pub

Tuesday, September 20

- 7:30 am Breakfast (*service ends at 8:45am*)
- 9:00 am Session 4: Exploring network dynamics through experiments and modeling**
Chair: Angus Silver
- 9:00 am **Fritjof Helmchen**, University of Zurich
Neuronal network dynamics at the interface of local and long-range circuitry
- 9:30 am **Shaul Druckmann**, Janelia Research Campus/HHMI
Relating circuit dynamics to computation: Robustness and dimension-specific computation in cortical dynamics
- 10:00 am **Dean Buonomano**, University of California, Los Angeles
Data-driven models of the network mechanisms of timing and temporal processing
- 10:30 am Break
- 11:00 am Session 5: Resources and initiatives for collaborative modeling, part II**
Chair: Andrew Davison
- 11:00 am **Anton Arkhipov**, Allen Institute for Brain Science
Modeling the cortex based on a systematic experimental platform: Data, tools, and knowledge
- 11:30 am **Sharon M. Crook**, Arizona State University
Testing the data-driven model
- 12:00 pm **Eilif B. Muller**, École Polytechnique Fédérale de Lausanne
Addressing fragmentation in computational neuroscience: The bridging role of data-driven models
- 12:30 pm Lunch (*service ends at 1pm*)
- 1:15 pm Tour (*optional – meet at reception*)
- 2:15 pm **Hanchuan Peng**, Allen Institute for Brain Science
BigNeuron
- 2:45 pm **Upinder S. Bhalla**, National Centre for Biological Sciences
Multiscale memory model composition using data from many sources and formats

- 3:15 pm** **Session 6: Modeling hippocampal function**
Chair: Giorgio Ascoli
- 3:15 pm **Ivan Soltesz**, Stanford University
Data-driven full-scale and rationally derived simpler models of the hippocampal formation: Applications to network oscillations
- 3:45 pm Break
- 4:15 pm **Aaron D. Milstein**, Janelia Research Campus/HHMI
Role of inhibition and synaptic amplification in shaping CA1 place field spatial selectivity
- 4:45 pm **Szabolcs Kali**, Hungarian Academy of Sciences &
Armando Romani, Blue Brain Project, EPFL
Towards an open framework for collaborative, data-driven, and reproducible computational neuroscience
- 5:15 pm Poster Reception
- 7:00 pm Dinner
- 8:00 pm** **Discussion session 2: What are the barriers to more widespread adoption of open, collaborative modeling?**
Moderator:
- 9:00 pm Refreshments available at Bob's Pub

Wednesday, September 21

- 7:30 am Breakfast (*service ends at 8:45am*)
- 9:00 am Session 7: Linking neuronal and network structure to function**
Chair: Avrama Blackwell
- 9:00 am **David Kleinfeld**, University of California, San Diego
An adaptive digital atlas of the murine brainstem
- 9:30 am **Kevin L. Briggman**, National Institute of Neurological Disorders and Stroke/NIH
Anatomically constrained models of species-specific wiring for direction selectivity in the mammalian retina
- 10:00 am Break
- 10:00 am **Jeremy Freeman**, Janelia Research Campus/HHMI
Strategies for large-scale characterization of neuronal function
- 11:00 am **Nicholas Cain**, Allen Institute for Brain Science
Exploring firing rate dynamics with DiPDE
- 12:00 pm Closing Remarks
- 12:10 pm Lunch and Departure
- 12:45 pm First shuttle to Dulles
1:45 pm Second shuttle to Dulles
2:45 pm Last shuttle to Dulles