BARRELS XXXIII Program

October 21st - October 23rd 2020

The 33rd Annual Barrels Society Meeting

Note that all times are Eastern Standard Time (US)

Wednesday, October 21

11:30 – 12:00 *Check-in (Please login closer to 11:30 as you must be admitted to the meeting)*

12:00 – 12:10 Welcome: **Randy Bruno**
Zuckerman Institute, Columbia University

12:10 – 1:00 ***Keynote 1: Silvia Arber,*** *Introduced by* ***Daniel Huber***
FMI and University of Basel
Disentangling brainstem motor circuits

1:00 – 1:20 Discussion / *Break (randomized break-out rooms)*

Session 1: Mouse forelimb as a model system

1:20 – 1:30 **Moderator introduction:** ***Gordon Shepherd***
Northwestern University

1:30 – 2:00 ***Daniel Huber***
University of Geneva
Do mice 'hear' with their limbs?

2:00 – 2:30 ***Alice Mosberger***
Zuckerman Institute, Columbia University
Discovery and refinement of forelimb actions in mice

2:30 – 3:00 ***Abigail Person***
University of Colorado
Beyond learning: the cerebellum and predictive control

3:00 – 3:20 **Discussion**

3:20 – 3:40 *Coffee Break (randomized break-out rooms)*

Short Platform Talks 1 (10 min including questions)

Moderated by Mitra Hartmann, Northwestern University

3:40 – 3:50 ***Nicholas E. Bush***

Seattle Children's Research Institute
Continuous, multidimensional coding of 3D complex tactile stimuli by primary sensory neurons of the vibrissal system

3:50 – 4:00 ***Krithiga Aruljothi***
UC Riverside
Functional Localization of an Attenuating Filter within Cortex for a Selective Detection Task in Mice

4:00 – 4:10 ***Christian Waiblinger***
Georgia Institute of Technology
The comeback of S1 – A journey from sensory representation to behavioral flexibility

Moderated by Christopher Moore, Brown University

4:10 – 4:20 ***Yaroslav Sych***
Brain Research Institute, University of Zurich
Mesoscale brain dynamics reorganizes and stabilizes during learning

4:20 – 4:30 ***Valerie Ego-Stengel***
NeuroPSI, CNRS
Cortical closed-loop brain-machine interface requires biomimetic sensory feedback

4:30 – 4:40 ***Scott Pluta***
Purdue University
Sensorimotor integration in the superior colliculus during whisker-guided orienting behavior

4:40 – 6:00 **Virtual Poster Session**

<u>Thursday, October 22</u>

11:30 – 12:00 *Check-in (Please login closer to 11:30 as you must be admitted to the meeting)*

Session 2: Active sensation

12:00 – 12:10 Moderator introduction: ***Solange Brown***
Johns Hopkins University

12:10 – 12:40 ***David Kleinfeld***
University of California, San Diego
VPM input to L4 wS1 during active whisking and touch

12:40 – 1:10 ***Soohyun Lee***
National Institute of Mental Health
Neuronal networks of movement-encoding neurons in sensory cortex

1:10 – 1:40 ***Daniel O'Connor***
Johns Hopkins University
Active tongue sensing

1:40 – 2:10 ***Carl Peterson***
EPFL, Switzerland
Cholinergic modulation of wS1 during whisking

2:10 – 2:30 **Discussion**

2:30 – 2:50 *Coffee Break (randomized break-out rooms)*

Short Platform Talks 2 (10 min including questions)

Moderated by Joshua Brumberg (CUNY)

2:50 – 3:00 ***Jung M Park***
Zuckerman Institute, Columbia University
Deep and superficial layers of the primary somatosensory cortex are indispensable for whisker-based texture discrimination in mice

3:00 – 3:10 ***Lara Rogerson-Wood***
The University of Sydney
Enhanced targeted microglial-mediated-phagocytosis underlies environmental enrichments capacity to facilitate the corrective remodeling of a murine subcortical axonal-guidance defect

3:10 – 3:20 ***Ben Efron***
Weizmann Institute of Science
Auditory response to sounds originating from whisking against objects

Moderated by Cornelius Schwarz (Univ Tuebingen)

3:20 – 3:30 ***Silvana Valtcheva***
New York University School of Medicine
Hypothalamic oxytocin neurons respond to infant vocalizations via noncanonical auditory pathway

3:30 – 3:40 ***Tamura Keita***
Brain Mind Institute, EPFL
Cortical signal flow during sensorimotor transformation in a whisker detection and delayed lick task

3:40 – 3:50 ***Ewoud Schmidt***
Zuckerman Institute, Columbia University
A human-specific modifier of cortical circuit connectivity and function improves sensory discrimination in mice

Moderated by Garrett Stanley (Georgia Tech)

3:50 – 4:00 ***Yasir Gallero-Salas***
Brain Research Institute, University of Zurich
Sensory and behavioral components of neocortical signal flow in tactile and auditory discrimination tasks with short-term memory

4:00 – 4:10 ***Cameron Condylis***
Boston University
Multiplexed functional and transcriptional readout of mouse primary somatosensory cortex during behavior

4:10 – 4:20 ***Christian L. Ebbesen***
New York University
Automatic tracking of mouse social posture dynamics by 3D videography, deep learning and GPU-accelerated robust optimization

4:20 – 4:30 ***Jim McBurney-Lin***
University of California, Riverside
Bidirectional pharmacological perturbations of the noradrenergic system differentially affect tactile detection

4:30 – 6:00 **Virtual Poster Session**

Friday, October 23

11:30 – 12:00 *Check-in (Please login closer to 11:30 as you must be admitted to the meeting*

12:00 – 12:50 ***Keynote 2: Nadine Gogolla,*** *Introduced by* ***Robert Sachdev***
Max Planck Institute, Martinsried
Facial expressions and their neuronal correlates in mice

12:50 – 1:00 Discussion / *Break (randomized break-out rooms)*

Session 3: Reorganization of neuronal representations

1:00 – 1:10 Moderator introduction: ***Dan Feldman***
University of California, Berkeley

1:10 – 1:40 ***Andrew Hires***
University of Southern California
Behavioral and neuronal bases of tactile shape discrimination learning in head-fixed mice

1:40 – 2:10 ***Simon Peron***

New York University
Barrel cortex dynamics during optical microstimulation task training

2:10 – 2:40 ***Carsen Stringer***
Janelia Research Campus
A neural atlas of multi-dimensional behavioral representations

2:40 – 3:00 **Discussion**

3:00 – 3:20 *Coffee Break*

Short Platform Talks 3 (10 min including questions)

Moderated by Robert Sachdev (Humboldt University)

3:20 – 3:30 ***Nathaniel C. Wright***
Georgia Institute of Technology
Rapid sensory adaptation in the mouse thalamocortical circuit during wakefulness, and the relative contribution of thalamic state

3:30 – 3:40 ***Jan Jabłonka***
University of Warsaw
Interhemispheric interactions participate in the cortical plasticity

3:40 – 3:50 ***Marcel Oberlaender***
Max Planck Society
Thalamus gates top-down modulation of cortical output

Moderated by Kate Hong (Carnegie Mellon University)

3:50 – 4:00 ***Mikkel Vestergaard***
Max-Delbrück Center for Molecular Medicine in the Helmholtz Association (MDC)
The cellular coding of temperature in the mammalian cortex

4:00 – 4:10 ***Alan Urban***
Neuro-Electronics Research Flanders
A platform for brain-wide functional ultrasound imaging and analysis of circuit dynamics in behaving

4:10 – 4:20 ***Yuri Vlasov***
University of Illinois at Urbana-Champaign
High-frequency whisker vibrations above 1KHz - are they relevant to perception?

4:20 – 4:30 **Wrap-up discussion & Poll**

4:30 – 6:00 **Virtual Poster Session**

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