

Sensation and Action

Lake Conference

Thun, May 7 - May 11, 2023

Sunday May 7

Arrival / Registration

Buffet Dinner Starting at 18:30

Monday May 8

- 09:00-09:35 **Tom Mrsic-Flogel** (UCL), Brain-wide transformation of sensory evidence into action
- 09:35-10:10 **Karel Svoboda** (Allen Institute), Goal-directed motor cortex activity during exploratory behavior
- 10:10-10:45 **Jonathan Whitlock** (NTNU, Trondheim), Neural coding of 3D pose and action across the dorsal cortex in rats

Coffee

- 11:15-11:50 **Edward Chang** (UCSF), Cortical dynamics of speaking
- 11:50-12:25 **Michale Fee** (MIT), Neural clock underlying temporal structure of an auditory memory
- 12:30-14:45 **Lunch Break**
- 14:45-15:20 **Nadine Gogolla** (MPI Munich), Inferring emotion: from sensation to action - and back
- 15:20-15:55 **Sonja Hofer** (UCL), A control circuit for switching between exploratory, exploitative and disengaged behavioural states
- 15:55-16:10 Tatiana Korotkova (University of Cologne), Neuronal dynamics in the lateral hypothalamus determine the hierarchy of competing needs

Coffee

- 16:45-17:20 **James Surmeier** (Northwestern), Network determinants of motor disability in Parkinson's disease
- 17:20-17:55 **Aryn Gittis** (Carnegie Mellon), Circuit-inspired strategies to improve treatments for Parkinson's Disease
- 17:55-18:10 Hannah Goldbach (NIH), Circuits underlying dopamine signaling during visual learning
- 18:30-20:30 **Dinner Break**
- 20:45-21:20 **Daniel Wolpert** (Columbia), Computational principles underlying the learning of sensorimotor repertoires

Poster Session I (A-K)

Tuesday May 9

- 09:00-09:35 **Andrew Pruszynski** (University of Western Ontario), Somatosensory processing during primate reaching
- 09:35-10:10 **Silvia Arber** (Biozentrum), Generating forelimb actions with brainstem circuits
- 10:10-10:25 Xiaochun Cai (Salk), Dissecting the thalamostriatal circuit for controlling action sequences

Coffee

- 11:00-11:35 **Rui Costa** (Allen Institute), Diverse basal ganglia output circuits mediate different behaviors
- 11:35-12:10 **Nicolas Tritsch** (NYU), Intrinsic dopamine and acetylcholine dynamics in the striatum of mice
- 12:10-12:25 Brenna Fearey (Boston University), Context-dependent modulation of balanced population activity in distinct striatal neuronal subtypes during visually guided locomotion in a virtual environment

Lunch Break

- 14:45-15:20 **David Kleinfeld** (UCSD), Signals and circuits that code and control active sensing
- 15:20-15:35 Daniel Huber (University of Geneva), Transformation of neural coding for vibrotactile stimuli along the ascending somatosensory pathway
- 15:35-15:50 Julien Bouvier (Paris), Breathing while running: temporal dynamics and central circuits
- 15:50-16:05 Nicole Mercer Lindsay (Stanford), Joint motor cortical modulation of movement and nociception through medullary motor circuits

Coffee

- 16:45-17:20 **Mackenzie Mathis** (EPFL), Towards understanding adaptive sensorimotor control with deep learning
- 17:20-17:35 Kyle Severson (MIT), Encoding of body posture and movement in mouse somatosensory cortices
- 17:35-18:10 **Chris Harvey** (Harvard), Cortical circuits for spatial navigation

Dinner Break

- 20:45-21:20 **Edvard Moser** (NTNU, Trondheim), Neural networks for navigation

Poster Session II (L-Z)

Wednesday May 10

- 09:00-09:35 **Samuel Sober** (Emory), Spiking codes for skilled motor control
09:35-10:10 **Mark Churchland** (Columbia), From spikes to factors: understanding large-scale neural computations
10:10-10:25 Daniel O'Shea (Stanford), Direct neural perturbations reveal a dynamical mechanism for robust computation

Coffee

- 11:00-11:35 **Ole Kiehn** (Copenhagen), Brainstem circuits controlling arrest of movement
11:35-12:10 **Megan Carey** (Champlimaud), Creating coordination in the cerebellum
12:10-12:25 Auke Ijspeert (EPFL), Exploring the interaction of feedforward and feedback control in the spinal cord using biorobots and neuromechanical simulations

12:30-14:45 Lunch Break

- 14:45-15:20 **Georg Keller** (FMI), Cortical circuits for predictive processing
15:20-15:35 Shuting Han (Hifo Zurich), Behavior-relevant top-down cross-modal predictions in mouse neocortex
15:35-15:50 Andreas Keller (IOB), Experience-dependent regulation of cortical function

Coffee

- 16:45-17:20 **Ed Lein** (Allen Institute), How to build a human and mammalian brain cell atlas
17:20-17:55 **Gwyneth Card** (Columbia), Linking sensation to action -- a journey through the fly connectome
17:55-18:10 Pavan Ramdya (EPFL), Reverse-engineering Drosophila motor control
18:10-18:25 Nuno Miguel Macarico Amorim da Costa (Allen Institute), The cellular and synaptic organization of a cortical column in mouse visual cortex

18:30-20:30 Dinner Break

Posters (All)

Thursday May 11

08:30-09:05 **Michael Long** (NYU), Local and long-range inputs to sequence generation in the zebra finch

Coffee

09:30-10:05 **Bernardo Sabatini** (Harvard), Basal ganglia circuits for action selection and evaluation

10:05-10:40 **Karunesh Ganguly** (UCSF), Role of neural replay in stabilizing ensemble dynamics during motor learning

11:30 **Lunch**

Departure