

## Sensation and Action

### Lake Conference

Thun, May 4 - May 8, 2025

#### Sunday May 4

Arrival / Registration

Buffet Dinner Starting at 18:30

#### Monday May 5

- 09:00-09:05 Welcome & Opening remarks
- 09:05-09:40 **Auke Ijspeert** (EPFL), Investigating the neuromechanics of animal locomotion using robots and simulations
- 09:40-10:15 **John Tuthill** (U Washington), A central pattern generator circuit for fly walking
- 10:15-10:50 **Abdel El Manira** (Karolinska), Circuit modules for locomotor flexibility and collective behavior

#### Coffee

- 11:20-11:55 **Bence Ölveczky** (Harvard), Basal ganglia shape learned but not innate movements
- 11:55-12:10 **Vivek Athalye** (Allen Institute), The striatum encodes ongoing, specific forelimb actions irrespective of learning
- 12:10-12:25 **Mark Howe** (Boston University), Cell-type specific striatum activity supporting learned sensori-motor transformations
- 12:30-14:45 **Lunch**
- 14:45-15:20 **Cori Bargmann** (Rockefeller), Organizing behavior across timescales
- 15:20-15:55 **Massimo Scanziani** (UCSF), Simulations during REM sleep

#### Coffee

- 16:30-17:05 **Evan Feinberg** (UCSF), A hindbrain hub for behavioral diversification
- 17:05-17:40 **Marco Tripodi** (LMB), Molecular dissection of collicular circuits for sensorimotor integration
- 17:40-17:55 **Mélanie Palacio Manzano** (Fribourg), Limb Proprioception in the Mouse Cortex: Examining Spatial Selectivity and Its Robustness
- 17:55-18:10 **Jordan Shaker** (University of Washington), Abstract contextual processing in the midbrain reticular formation during flexible decision-making
- 18:30-20:30 **Dinner**
- 20:45-21:20 **Philip Starr** (UCSF), Motor cortex sensing for adaptive deep brain stimulation in Parkinson's disease
- 21:20** **Poster Session I (A-K)**

## **Tuesday May 6**

- 09:00-09:35 **Silvia Arber** (Biozentrum/FMI), Constructing movements in the brainstem  
09:35-10:10 **Rui Costa** (Allen), Circuits for specific movements in the basal ganglia  
10:10-10:45 **Mati Joshua** (Hebrew University), What is special about basal ganglia activity?

### **Coffee**

- 11:15-11:50 **Gwyneth Card** (Columbia), From Connectome to behavior: What can we predict?  
11:50-12:25 **Nate Sawtell** (Columbia), Synaptic connectivity structure underlying internal model learning in a cerebellum-like circuit

### **Lunch**

- 14:45-15:20 **Edvard Moser** (Trondheim), Network computation in entorhinal cortex: space and time  
15:20-15:55 **Michael Yartsev** (Berkeley), Hippocampal ensemble dynamics in freely flying bats

### **Coffee**

- 16:30-17:05 **Nima Mesgarani** (Columbia), Brain-guided solutions for hearing in complex environments  
17:05-17:40 **Hillel Adesnik** (Berkeley), Optical interrogation of the neural codes of elementary visual perception  
17:40-17:55 **Fiona Müllner** (IOB), A short tale of thalamic interneurons – and what they see  
17:55-18:10 **Anna Vasilevskaya** (FMI), Elucidating computational role of L5-L2/3 interactions in cortex

### **Dinner**

**20:30** **Poster Session II (L-Z)**

## **Wednesday May 7**

- 09:00-09:35 **Vanessa Stempel** (MPI Frankfurt), Brainstem circuits for instinctive behaviour production
- 09:35-10:10 **Ole Kiehn** (Copenhagen), Motor circuits prioritizing safety-seeking
- 10:10-10:25 **Sara Mederos** (UCL), Brain Circuits for Courage: A thalamic gate for balancing risk and safety
- 10:25-10:40 **Ethan Richman** (Caltech), From sensation to emotion in mice and humans

### **Coffee**

- 11:10-11:45 **Andreas Tolias (Baylor)**, Foundation models and digital twins of the brain
- 11:45-12:00 **Alexander Mathis** (EPFL), Sensing and moving muscles like a monkey
- 12:00-12:15 **Rafi Haddad** (Bar-Ilan University), Neural Mechanisms Underlying Context-Dependent Coding of Event Statistics in Sensory Cortex
- 12:15-12:30 **Jeremiah Cohen** (Allen Institute), Structure and function of locus coeruleus norepinephrine neurons
- 12:30-14:45 **Lunch**
- 14:45-15:20 **Ishmail Abdous-Saboor** (Columbia), Neurobiology of social touch, from mice to mole rats
- 15:20-15:55 **Fan Wang** (MIT), Cortical Substrate for body schema representation and action awareness
- 15:55-16:10 **Anthony Renard** (EPFL), Fast pathway-specific reorganization of barrel cortex underlying rapid goal-directed sensorimotor learning

### **Coffee**

- 16:50-17:25 **Tom Mrsic-Flogel** (UCL), Frontal control of learned sensorimotor transformations during decision-making
- 17:25-18:00 **Karunesh Ganguly** (UCSF), A prefrontal template predicts expert performance
- 18:00-18:15 **Adrian Bondy** (Princeton): Coordinated, cross-brain evolution of a single perceptual decision
- 18:15-18:30 **Tudor Dragoi** (Boston University), Rapid timescale engagement and disengagement of the motor cortex in the control of movement
- 18:30-20:30 **Dinner**
- 20:30 **Posters (All)**

## **Thursday May 8**

- 09:00-09:35 **Edward Chang** (UCSF), Neuronal mechanisms connecting speech perception and production
- 09:35-10:10 **Jesse Goldberg** (Cornell), Mixed neural signals for learned song and dance in a parrot
- 10:10-10:25 **Stephanie Haro** (Brown University), Neural Dynamics Underlying Phoneme Encoding in Individuals with Severe Speech and Motor Impairment

### **Coffee**

- 11:00-11:35 **Mackenzie Mathis (EPFL)**, Neural dynamics during motor learning
- 11:35-12:10 **Alexandra Nelson** (UCSF), Striatal microcircuits in action selection
- 12:10-12:25 **Jun Ding** (Stanford), Activity-Dependent Remodeling of Corticostriatal Axonal Boutons During Motor Learning

12:25-12:30 Closing remarks

12:30 **Lunch**

### **Departure**