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

<table>
<thead>
<tr>
<th>Time</th>
<th>Speaker</th>
<th>Topic</th>
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<tbody>
<tr>
<td>09:00-09:35</td>
<td>Andrew Pruszynski (University of Western Ontario), Silvia Arber (Biozentrum)</td>
<td>Somatosensory processing during primate reaching, Generating forelimb actions with brainstem circuits</td>
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<td>09:35-10:10</td>
<td>Xiaochun Cai (Salk)</td>
<td>Dissecting the thalamostriatal circuit for controlling action sequences</td>
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<td>10:10-10:25</td>
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<td>11:00-11:35</td>
<td>Rui Costa (Allen Institute)</td>
<td>Diverse basal ganglia output circuits mediate different behaviors</td>
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<td>11:35-12:10</td>
<td>Nicolas Tritsch (NYU)</td>
<td>Intrinsic dopamine and acetylcholine dynamics in the striatum of mice</td>
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<td>12:10-12:25</td>
<td>Brenna Fearey (Boston University)</td>
<td>Context-dependent modulation of balanced population activity in distinct striatal neuronal subtypes during visually guided locomotion in a virtual environment</td>
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<td>12:30-14:45</td>
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<td>14:45-15:20</td>
<td>David Kleinfeld (UCSD)</td>
<td>Signals and circuits that code and control active sensing</td>
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<td>15:20-15:35</td>
<td>Daniel Huber (University of Geneva)</td>
<td>Transformation of neural coding for vibrotactile stimuli along the ascending somatosensory pathway</td>
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<td>15:35-15:50</td>
<td>Julien Bouvier (Paris)</td>
<td>Breathing while running: temporal dynamics and central circuits</td>
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<td>15:50-16:05</td>
<td>Nicole Mercer Lindsay (Stanford)</td>
<td>Joint motor cortical modulation of movement and nociception through medullary motor circuits</td>
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<td>16:45-17:20</td>
<td>Mackenzie Mathis (EPFL)</td>
<td>Towards understanding adaptive sensorimotor control with deep learning</td>
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<td>17:20-17:35</td>
<td>Kyle Severson (MIT)</td>
<td>Encoding of body posture and movement in mouse somatosensory cortices</td>
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<td>17:35-18:10</td>
<td>Chris Harvey (Harvard)</td>
<td>Cortical circuits for spatial navigation</td>
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<tr>
<td>20:45-21:20</td>
<td>Edvard Moser (NTNU, Trondheim)</td>
<td>Neural networks for navigation</td>
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**Coffee**

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**Poster Session II (L-Z)**
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<tr>
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<tbody>
<tr>
<td>09:00-09:35</td>
<td>Samuel Sober (Emory)</td>
<td>Spiking codes for skilled motor control</td>
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<td>09:35-10:10</td>
<td>Mark Churchland (Columbia)</td>
<td>From spikes to factors: understanding large-scale neural computations</td>
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<td>10:10-10:25</td>
<td>Daniel O’Shea (Stanford)</td>
<td>Direct neural perturbations reveal a dynamical mechanism for robust computation</td>
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<td><strong>Coffee</strong></td>
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<td>11:00-11:35</td>
<td>Ole Kiehn (Copenhagen)</td>
<td>Brainstem circuits controlling arrest of movement</td>
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<td>11:35-12:10</td>
<td>Megan Carey (Champalimaud)</td>
<td>Creating coordination in the cerebellum</td>
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<td>12:10-12:25</td>
<td>Auke Ijspeert (EPFL)</td>
<td>Exploring the interaction of feedforward and feedback control in the spinal cord using biorobots and neuromechanical simulations</td>
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<td>12:30-14:45</td>
<td><strong>Lunch Break</strong></td>
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<td>14:45-15:20</td>
<td>Georg Keller (FMI)</td>
<td>Cortical circuits for predictive processing</td>
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<td>15:20-15:35</td>
<td>Shuting Han (Hifo Zurich)</td>
<td>Behavior-relevant top-down cross-modal predictions in mouse neocortex</td>
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<td>15:35-15:50</td>
<td>Andreas Keller (IOB)</td>
<td>Experience-dependent regulation of cortical function</td>
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<td>16:45-17:20</td>
<td>Ed Lein (Allen Institute)</td>
<td>How to build a human and mammalian brain cell atlas</td>
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<td>17:20-17:55</td>
<td>Gwyneth Card (Columbia)</td>
<td>Linking sensation to action -- a journey through the fly connectome</td>
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<td>17:55-18:10</td>
<td>Pavan Ramdya (EPFL)</td>
<td>Reverse-engineering Drosophila motor control</td>
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<td><strong>Dinner Break</strong></td>
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**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