



## NCM 2019: Annual Meeting Detailed Daily Schedule

*All sessions will be held at the Toyama International Conference Center*

### DAY 1 Tuesday April 23, 2019

**19:30 – 21:30**      **Opening Reception**  
Off Site

### DAY 2 Wednesday April 24, 2019

**08:00 - 10:00**      **Session 1, Panel I**  
**Motor sequence preparation and control: From population dynamics to whole brain representations.**  
Katja Kornysheva<sup>1</sup>, Mark Churchland<sup>2</sup>, Bence Olveczky<sup>3</sup>, Atsushi Yokoi<sup>4</sup>  
<sup>1</sup>Bangor University, <sup>2</sup>Columbia University, <sup>3</sup>Harvard University, <sup>4</sup>National Institute of Information and Communications Technology  
Discussant: Jörn Diedrichsen, *Western University*

**10:00 – 10:30**      **Break**

**10:30 – 11:-00**      **Early Career Award Presentation**  
**Sensorimotor adaptation studies to advance neurorehabilitation after stroke**  
Gelsy Torres-Oviedo  
*University of Pittsburgh*

**11:00 - 13:00**      **Session 2, Panel II**  
**Action in Motion: Decisions and actions as we move through our world**  
W. Pieter Medendorp<sup>1</sup>, Andrea Green<sup>2</sup>, Fiedl de Groote<sup>3</sup>, Alexander Gail<sup>4</sup>  
<sup>1</sup>Radboud Univ Nijmegen, <sup>2</sup>University of Montreal, <sup>3</sup>KU Leuven, <sup>4</sup>German Primate Center  
Discussant: Kathleen Cullen, *Johns Hopkins University*

**13:00 – 15:30**      **Session 3, Poster 1a and Lunch**

**15:30 – 17:30**      **Session 4, Individual I**  
**Generation of Compound Movements by Motor Cortex**  
Presenting Author: Andrew Zimnik  
Authors: Andrew Zimnik<sup>1</sup>, Mark Churchland<sup>1</sup>  
<sup>1</sup>Columbia University

**Transient grasp force signals in motor cortex during extended object interaction**  
Presenting Author: Brian Dekleva  
Authors: Brian Dekleva<sup>1</sup>, Jennifer Collinger<sup>1</sup>  
<sup>1</sup>University of Pittsburgh



**Contrasting roles of PMd and A5 to feedback responses to mechanical disturbances of the limb in non-human primates**

Presenting Author: Tomohiko Takei

Authors: Tomohiko Takei<sup>1</sup>, Stephen Lomber<sup>2</sup>, Douglas Cook<sup>3</sup>, Stephen Scott<sup>3</sup>  
*<sup>1</sup>Kyoto University, <sup>2</sup>Western University, <sup>3</sup>Queen's University*

**Dynamical Influence of Premotor and Primary Motor Cortex During Movement**

Presenting Author: Raina D'Aleo

Authors: Raina D'Aleo<sup>1</sup>, Adam Rouse<sup>2</sup>, Marc Schieber<sup>2</sup>, Sridevi Sarma<sup>1</sup>  
*<sup>1</sup>Johns Hopkins, <sup>2</sup>University of Rochester*

**Feedforward and feedback control share an internal model of the arm's dynamics.**

Presenting Author: Rodrigo Maeda

Authors: Rodrigo Maeda<sup>1</sup>, Tyler Cluff<sup>2</sup>, Paul Gribble<sup>1</sup>, J. Andrew Pruszynski<sup>1</sup>  
*<sup>1</sup>Western University, <sup>2</sup>University of Calgary*

**Intracortical microstimulation parameters affect tactile perception**

Presenting Author: Christopher Hughes

Authors: Christopher Hughes<sup>1</sup>, Sharlene Flesher<sup>2</sup>, Jeffrey Weiss<sup>1</sup>, Sliman Bensmaia<sup>3</sup>, Robert Gaunt<sup>1</sup>  
*<sup>1</sup>University Of Pittsburgh, <sup>2</sup>Stanford University, <sup>3</sup>University Of Chicago*

**DAY 3 Thursday April 25, 2019**

**08:00 - 10:00**

**Session 5, Panel III**

**Cerebellar computation 50 years after Marr-Albus: where are we now?**

Terence Sanger<sup>1</sup>, Mitsuo Kawato<sup>2</sup>, Mackenzie Mathis<sup>3</sup>, Huu Hoang<sup>2</sup>, Kazuo Kitamura<sup>4</sup>

*<sup>1</sup>University of Southern California, <sup>2</sup>ATR Computational Neuroscience Laboratories, <sup>3</sup>Harvard University, <sup>4</sup>University of Yamanashi*

Discussant: Mitsuo Kawata, *ATR Computational Neuroscience Laboratories*

**10:00 – 10:30**

**Break**

**10:30 - 12:30**

**Session 6, Panel IV**

**New perspectives on the role of the superior colliculus in visually-guided motor behavior**

Mayu Takahashi<sup>1</sup>, John van Opstal<sup>2</sup>, Neeraj Gandhi<sup>3</sup>, Ziad Hafed<sup>4</sup>

*<sup>1</sup>Tokyo Medical and Dental University, <sup>2</sup>Radboud University Nijmegen, <sup>3</sup>University of Pittsburgh, <sup>4</sup>Tübingen University*

Discussant:

**12:30 – 15:00**

**Session 7, Poster 1b and Lunch**



15:00 - 17:00

**Session 8, Panel V**

**Applications of deep learning in motor neuroscience**

Chethan Pandarinath<sup>1</sup>, Kanaka Rajan<sup>2</sup>, Alexander Mathis<sup>3</sup>, Nidhi Seethapathi<sup>4</sup>

<sup>1</sup>Emory University and Georgia Institute of Technology, <sup>2</sup>Icahn School of Medicine at Mount Sinai, <sup>3</sup>Harvard University, <sup>4</sup>University of Pennsylvania

Discussant:

17:00 – 17:30

**NCM Members Meeting**

All members of the Society for the Neural Control of Movement are invited to attend

**DAY 4 Friday April 26, 2019**

8:00 – 10:00

**Session 9, Individual II**

**Precise spike-timing codes for vocal motor control.**

Presenting Author: Andrea Pack

Authors: Andrea Pack<sup>1</sup>, Bryce Chung<sup>1</sup>, Muneeb Zia<sup>2</sup>, Coen Elemans<sup>3</sup>, Muhannad Bakir<sup>2</sup>, Samuel Sober<sup>1</sup>

<sup>1</sup>Emory University, <sup>2</sup>Georgia Institute of Technology, <sup>3</sup>University of Southern Denmark

**Motor variability predicts motor learning in complex real-world task**

Presenting Author: Shlomi Haar

Authors: Shlomi Haar<sup>1</sup>, Aldo Faisal<sup>1</sup>

<sup>1</sup>Imperial College London

**Motor expertise promotes transfer of visuo-motor compensations acquired during prism exposure**

Presenting Author: Lisa Fleury

Authors: Lisa Fleury<sup>1</sup>, Damien Pastor<sup>1</sup>, Patrice Revol<sup>1</sup>, Ludovic Delporte<sup>1</sup>, Yves Rossetti<sup>1</sup>

<sup>1</sup>Centre of Research in Neurosciences of Lyon

**Global disinhibition as a key mechanism for the recovery of hand functions after spinal cord injury**

Presenting Author: Tadashi Isa

Authors: Tadashi Isa<sup>1</sup>, Reona Yamaguchi<sup>1</sup>, Toshinari Kawasaki<sup>1</sup>, Satoko Ueno<sup>1</sup>, Masahiro Mitsuhashi<sup>1</sup>, Zenas Chao<sup>1</sup>

<sup>1</sup>Kyoto University

**Dynamic sonomyographic imaging of the residual musculature provides proportional control for upper-extremity amputees**

Presenting Author: Wilsaan Joiner

Authors: Wilsaan Joiner<sup>1</sup>, Ananya Dhawan<sup>1</sup>, Biswarup Mukherjee<sup>1</sup>, Shriniwas Patwardhan<sup>1</sup>, Nima Akhlaghi<sup>1</sup>, Gyorgy Levay<sup>2</sup>, Michelle Harris-Love<sup>1</sup>, Siddhartha Sikdar<sup>1</sup>

<sup>1</sup>George Mason University, <sup>2</sup>Infinite Biomedical Technologies



**Neural basis of location-specific pupil luminance modulation**

Presenting Author: Doug Munoz

Authors: Doug Munoz<sup>1</sup>, Chin-An Wang<sup>1,2</sup>

<sup>1</sup>Queen's University, <sup>2</sup>Department of Anesthesiology, Shuang Ho Hospital, Taipei Medical University

**10:00 – 10:30**

**Break**

**10:30 - 12:30**

**Session 10, Panel VI**

**Multi-dimensional Dexterous Hand Function and Recovery**

Jing Xu<sup>1</sup>, Marco Santello<sup>2</sup>, Jing Xu<sup>3</sup>, Firas Mawase<sup>3</sup>, Shinichi Furuya<sup>4</sup>

<sup>1</sup>Johns Hopkins University, <sup>2</sup>Arizona State University, <sup>3</sup>Technion - Israel Institute of Technology, <sup>4</sup>Sony Computer Science Laboratories Inc., Sophia University

Discussant: Marc Schieber, University of Rochester

**12:30 – 15:00**

**Session 11, Poster 2a and Lunch**

**Free time and Ticketed Excursions**

**DAY 5 Saturday April 27, 2019**

**08:00 - 10:00**

**Session 12, Panel VII**

**Beyond Motor Errors: New Perspectives on the Role of the Cerebellum in Learning**

Richard Ivry<sup>1</sup>, Court Hull<sup>2</sup>, Mark Wagner<sup>3</sup>, Amanda Therrien<sup>4</sup>, Samuel McDougle<sup>5</sup>

<sup>1</sup>University of California, <sup>2</sup>Duke University Medical School, <sup>3</sup>Stanford, <sup>4</sup>The Johns Hopkins School of Medicine, <sup>5</sup>University of California, Berkeley

Discussants: Richard Ivry, University of California & Jörn Diedrichsen, Western University

**10:00 – 10:30**

**Break**

**10:30 – 12:30**

**Session 13, Individual III**

**Encoding and control of motor prediction and feedback in the cerebellar cortex**

Presenting Author: Martha Streng

Authors: Martha Streng<sup>1</sup>, Laurentiu Popa<sup>1</sup>, Timothy Ebner<sup>1</sup>

<sup>1</sup>University of Minnesota

**Spatial and temporal locomotor learning in the mouse cerebellum**

Presenting Author: Dana Darmohray

Authors: Dana Darmohray<sup>1</sup>, Jovin Jacobs<sup>1</sup>, Hugo Marques<sup>1</sup>, Megan Carey<sup>1</sup>

<sup>1</sup>Champalimaud Neuroscience Programme



**Implicit adaptation is driven by inverse model learning, not forward model learning**

Presenting Author: Alkis Hadjiosif

Authors: Alkis Hadjiosif<sup>1</sup>, John Krakauer<sup>1</sup>, Adrian Haith<sup>1</sup>

<sup>1</sup>*Johns Hopkins University*

**Somatosensory cortex participates in the consolidation of human motor memory**

Presenting Author: David Ostry

Authors: Neeraj Kumar<sup>1</sup>, Timothy Manning<sup>2</sup>, David Ostry<sup>3</sup>

<sup>1</sup>*McGill University and Indian Institute of Technology Gandhinagar*, <sup>2</sup>*McGill University*, <sup>3</sup>*McGill University and Haskins Laboratories*

**Underlying mechanisms of reward-based motor learning**

Presenting Author: Peter Holland

Authors: Peter Holland<sup>1</sup>, Olivier Codol<sup>1</sup>, Joseph Galea<sup>1</sup>

<sup>1</sup>*University of Birmingham*

**Sleep's benefit on multiple forms of locomotor learning**

Presenting Author: Julia Choi

Authors: Julia Choi<sup>1</sup>, Rebecca Spencer<sup>1</sup>, Gabriela Borin<sup>1</sup>

<sup>1</sup>*University of Massachusetts Amherst*

**12:30 – 15:00**

**Session 14, Poster 2b and Lunch**

**15:00 - 17:00**

**Session 15, Panel VIII**

**Complex material properties of muscle: artifacts or features?**

Madhusudhan Venkadesan<sup>1</sup>, Neville Hogan<sup>2</sup>, Kiisa Nishikawa<sup>3</sup>, Lena Ting<sup>4</sup>

<sup>1</sup>*Yale University*, <sup>2</sup>*Massachusetts Institute of Technology*, <sup>3</sup>*Northern Arizona University*, <sup>4</sup>*Emory University*

Discussant:

**17:00 – 18:00**

**Session 16, Keynote Address**

**Evolving perspectives on the cortical control of reaching movements**

*Random observations and recollections from a reasonably OK career*

John Francis Kalaska

*Université de Montréal*

**18:00 – 19:00**

**Closing Drinks Reception**