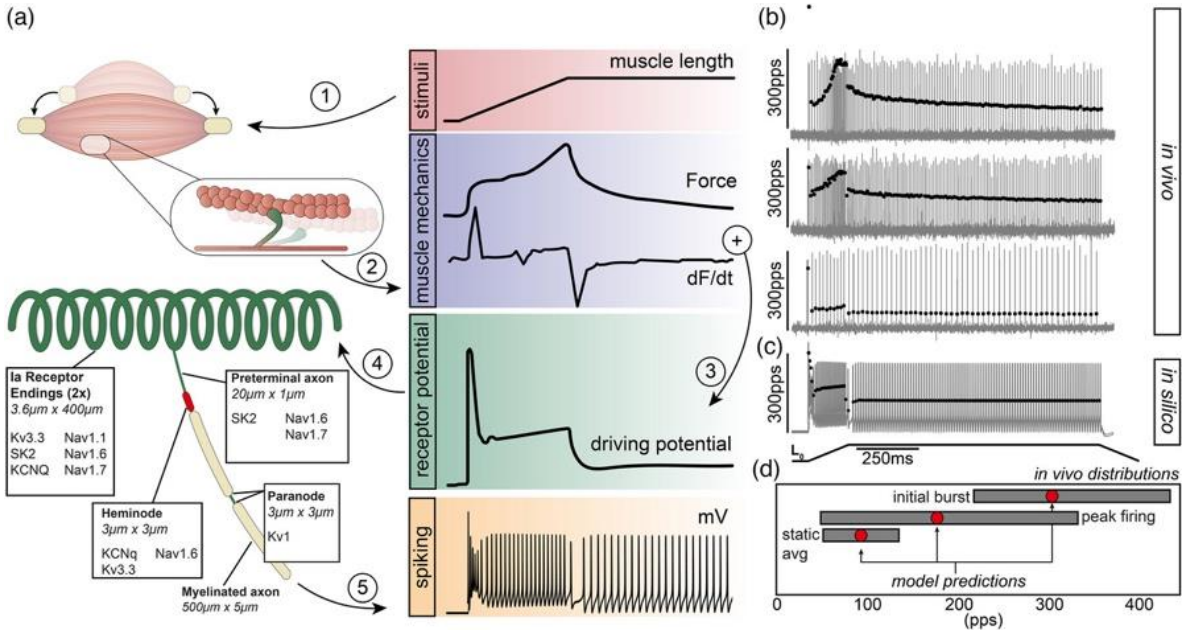
Final Programme 240626

The 3rd Mechanotransduction, Muscle Spindles and Proprioception conference

Monash Prato Campus
Via Pugliesi 26, 59100 Prato, Italy
June 29–July 1, 2026

Experimental Physiology



Housley SN, Powers RK, Nardelli P, Lee S, Blum K, Bewick GS, Banks RW, Cope TC. Biophysical model of muscle spindle encoding. Exp Physiol. 2024 109: 55-65

Image: Vaughan Macefield

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Monday AM, June 29

8:30-9:00
Bridgette Watkins & Vaughan Macefield
Registration and Welcome to the 3rd Conference

Session 1: Chair – Vaughan Macefield

9:00-10:00
Robert Banks
University of Durham, United Kingdom
Shedding light on the enigma of equatorial nuclei

10:00-10:30
Stephan Kröger
Biomedical Center, Ludwig Maximilians University, Germany
3D electron microscopic reconstruction of the central region of a murine muscle spindle – a progress report

10:30-11:00
Coffee break

11:00-11:30
Anja Horn
Institute of Anatomy, Ludwig Maximilians University, Germany
Palisade endings in human extraocular muscles show unique features compared to non-human primates

11:30-12:00
Arzu Petersen
Center of Anatomy and Cell Biology, Medical University Vienna, Austria
Molecular properties of muscle spindles in extraocular muscles of humans

12:00-12:30
Yalda Moayedi
Department of Molecular Pathobiology, New York University College of Dentistry, USA
Neuronal and molecular mechanisms of laryngeal proprioception

12:30-2:00
Lunch

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Monday PM, June 29

Session 2: Chair – Bridgette Watkins

2:00-2:30
Slav Bagriantsev
Department of Cellular and Molecular Physiology, Yale University, USA
Early origin of tactile acuity in the somatosensory system of vertebrates

2:30-3:00
Benoit Delhaye
Department of Biomedical Engineering, Université Catholique du Louvain, Brussels, Belgium
How the fingertips detect impending slip during object manipulation

3:00-3:30
Chih-Cheng Chen
Institute of Biomedical Sciences, Academia Sinica,Taiwan
Acupuncture de-qi via tether-mode mechanotransduction

3:30-4:00
Coffee break

4:00-4:30
Maria Roxana
Institute of Medical Sciences, University of Aberdeen, UK
Mitochondrial abundance in muscle spindle control

4:30-5:00
Guy Bewick
Institute of Medical Sciences, University of Aberdeen, UK
Further investigations into the role of Piezo2 in stretch-evoked responsiveness in mammalian muscle spindle afferents: a progress report

5:00-7:00
Welcome Reception

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Tuesday AM, June 30

Session 3: Chair – Véronique Marchand-Pauvert

8:30-9:30
Daniel Zytnicki
Université Paris Cité, CNRS, Saints-Pères Paris Institute for the Neurosciences, France
Defective signalling from Ia spindle afferents to spinal motoneurons plays a key role in Amyotrophic Lateral Sclerosis

9:30-10:00
Katherine Wilkinson
School of Biological Sciences, San Jose State University, USA
Impaired muscle proprioceptor function in mouse models of two diseases that alter Piezo2 function – Angelman Syndrome and Distal Arthrogryposis subtype 5

10:00-10:30
Coffee break

10:30-11:00
Bridgette Watkins
Biomedical Center, Ludwig Maximilians University, Germany
Muscle spindle dysfunction in neuromuscular disease: a comparative analysis of Pompe Disease and Friedreich's Ataxia

11:00-11:30
Alex Barboi
Department of Neurology, University of Indiana, USA
The neurologist's toolbox: assessing inherited and acquired neurological disorders involving disturbed proprioception

11:30-12:00
Lena Ting
Division of Physical Therapy, Emory University, USA
The muscle spindle system as a tunable feedback controller during locomotion

12:00-12:30
Nikky Chang
Institute of Biomedical Sciences, Academia Sinica,Taiwan
Proprioception mediates a reliable hippocampal solution for path integration in unreliable sensory environments

12:30-2:00
Lunch

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Tuesday PM, June 30

Session 4: Chair – Bob Banks

2:00-2:30
Turgay Akay
Brain Repair Center, Department of Neuroscience, Dalhousie University, Canada
Proprioceptive feedback: a key driver of homolateral leg coordination during locomotion

2:30-3:00
Kazuhiko Seki
National Institute of Neuroscience, Japan
Optogenetic manipulation of large-diameter primary afferent feedback during voluntary movement in nonhuman primates

3:00-3:30
Piotr Krutki
Department of Neurobiology, Poznan University of Physical Education, Poland
Exercise-induced plasticity of Ia proprioceptive input to spinal motoneurons

3:30-4:00
Coffee break

4:00-4:30
Alessandro Santuz
Max Delbrück Center, Germany
Proprioception drives the emergence of skipping in hypogravity through reuse of conserved locomotor modules

4:30-5:00
Vaughan Macefield
Department of Neuroscience, Monash University, Australia
Microelectrode recordings from muscle and cutaneous afferents in the human foot during walking: a step-by-step update

6:00-9:00
Conference Dinner

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Wednesday AM, July 1

Session 5: Chair – Guy Bewick

8:30-9:30
Véronique Marchand-Pauvert
Laboratoire d'Imagerie Biomédicale, Sorbonne Université, INSERM, CNRS, France
Afferent dysfunction and its contribution to network disorganization in Amyotrophic Lateral Sclerosis

9:30-10:00
Bavat Bornstein
Weizmann Institute of Science, Israel
Activity-dependent maintenance of proprioceptor morphology

10:00-10:30
Coffee break

10:30-11:00
Joriene De Nooij
Division of Translational Neurobiology, Columbia University, USA
Activity-dependent regulation of group Ia muscle spindle-afferent subtype identity

11:00-11:30
Mica Menks
Department of Human Movement Sciences, Vrije University Amsterdam, The Netherlands
Changes in muscle spindle morphology in response to joint immobilization

11:30-12:00
Jente Wiliart
Department of Human Movement Sciences, KU Leuven, Belgium
Altered muscle spindle responses in immobilised rats: investigating the interaction between muscle mechanics and spindle sensitivity

12:00-12:30
Qingyuan Guo
Weizmann Institute of Science, Israel
Aging-associated functional, morphological and molecular changes in the muscle spindle

12:30-2:00
Lunch

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Wednesday PM, July 1

Session 6: Chair – Stephan Kröger

2:00-2:30
Gregorio Valdez
Department of Molecular Biology, Cell Biology & Biochemistry, Brown University, USA
Terminal Schwann Cells in skeletal muscle mechanoreceptors: Ajap1 as a specific marker and key regulator

2:30-3:00
Anat Abramov
Weizmann Institute of Science, Israel
Muscle spindle regeneration following glycerol-induced Injury

3:00-3:30
Jacob Stephens
Department of Biomedical Engineering, Georgia Institute of Technology, USA
Decoding muscle state from proprioceptive population feedback

Session 7: Chair – Vaughan Macefield

3:30-3:45
Announcement of Prize Winners

3:45-4:00
The *4th Mechanotransduction, Muscle Spindles and Proprioception* conference

4:00
End of Conference