SUNDAY, JANUARY 14
Arrival and Registration

MONDAY, JANUARY 15
Welcome and Keynote Address (Q1)
*Jeffrey F. Horowitz, University of Michigan, USA
 E. Dale Abel, David Geffen School of Medicine and UCLA Health, USA
Mitochondria as Signaling Hubs

Welcome and Keynote Address (Q2)
*Diana Bautista, University of California, Berkeley, USA
*Rebecca P. Seal, University of Pittsburgh, USA
*Ishmail John Abdus-Saboor, Columbia University, USA
David D. Ginty, HHMI/Harvard Medical School, USA
Touch Sensory Neurons and their Central Circuits

Improving the Health of the Next Generation: Epigenetic Effects of Maternal and Paternal Exercise on Offspring (Q1)
*E. Dale Abel, David Geffen School of Medicine and UCLA Health, USA
Laurie J. Goodyear, Joslin Diabetes Center, Harvard Medical School, USA
Epigenetic Mechanisms Mediating the Beneficial Effects of Maternal Exercise on Offspring Metabolic Health
Romain Barrès, CBMR & CNRS, Denmark
Epigenetic Rewiring of Skeletal Muscle after Exercise Training
Kristin I. Stanford, Ohio State University, USA
Effects of Paternal Exercise on Offspring
William Todd Cade, Duke University, USA
Short Talk: Acute Effects of Aerobic and Resistance Exercise on Glucose Metabolism, Vascular Function and Plasma Metabolomics/Extracellular Vesicles During Pregnancy in Women with Obesity

Somatosensory Molecules and Cells I (Q2)
*Yalda Moayedi, NYU, USA
Theodore Price, University of Texas at Dallas, USA
Molecular Signatures of Human Nociceptors
Theanne N. Griffith, University of California, Davis, USA
Cellular and Molecular Mechanisms of Mammalian Proprioception
Ellen A. Lumpkin, University of California, Berkeley, USA
Short Talk: Epithelial-Neural Crosstalk in Touch Reception
Alexander Chesler, NCCIH, National Institutes of Health, USA
Short Talk: The Role of PIEZO2 in Health and Disease

Career Roundtable (Joint)
Wolfgang Liedtke, Regeneron Pharmaceuticals, USA
Theanne N. Griffith, University of California, Davis, USA
Romain Barrès, CBMR & CNRS, Denmark
Karen K. David, NINDS, National Institutes of Health, USA

Workshop 1 (Q1)
*Laurie J. Goodyear, Joslin Diabetes Center, Harvard Medical School, USA
Curtis Hughley, University of Minnesota, USA
Exercise Training Adaptations in Liver Glycogen and Glycerolipids Require Hepatic AMP-activated Protein Kinase in Mice
Sebastian F. Salathe, University of Kansas Medical Center, USA
Exercise Plus Time Restricted Feeding and Hepatic Ketogenesis Deficiency Upregulate Synaptogenesis Pathways in the Hippocampus of Mice
Lisa Baer, Oregon State University, USA
Chronic Exercise Negates Concurrent High-Fat Diet to Improve Hepatic Metabolism and Regulates Medium Chain Acylcarnitine Handling
Ruqi Yang, University of Pittsburgh, USA
Exercise Training Prevents Exosome-mediated Pre-metastatic Niche Formation in the Liver
Cheehoon Ahn, University of Michigan, USA
Years of Endurance Exercise Training Favorably Remodels Abdominal Subcutaneous Adipose Tissue in Adults with Overweight/obesity
Pasquale Nigro, Joslin Diabetes Center, USA
Exercise Training Regulates Long Noncoding RNAs Expression in Subcutaneous WAT of Obese Subjects

Workshop: Select Talks from Trainees (Q2)
*Diana Bautista, University of California, Berkeley, USA
*Rebecca P. Seal, University of Pittsburgh, USA
*Ishmail John Abdus-Saboor, Columbia University, USA
Jessica Maia Jones, University of Washington, USA
Neural Substrates of Abdominal Nociceptive Processing in Adult Drosophila Melanogaster
Marito Hayashi, Harvard Medical School, USA
Intestinal Sensory Cells that Differentially Regulate Feeding and Gut Motility
Laura Seeholzer, UCSF, USA
Functional Role of Neuroendocrine Cells Across the Airway
Rasheen Gartrell DeMille Powell II, Boston Children’s Hospital, USA
Disruption of Sodium-Channel Membrane Scaffolding Attenuates Neuropathic Pain-like Behaviors in Mice
Jagat Narayan Prajapati, Indian Institute of Science, Bengaluru, India
An Intra-Brainstem Circuitry for Pain Inhibition of Itch
Olivia C. Davis, University of Texas at Dallas, USA
Mapping Sensory Circuits in the Human Spinal Cord Using Immunohistochemistry

* Session Chair † Invited but not yet accepted Program current as of January 14, 2024. Meal formats are based on meeting venue.
For the most up-to-date details, visit https://www.keystonesymposia.org.
KEYSTONE SYMPOSIA

Exercise Biology: Signaling, Mechanisms and Benefits (Q1)

Scientific Organizers: Jeffrey F. Horowitz, Laurie J. Goodyear and Karyn A. Esser

Supported by the Directors’ Fund

Mammalian Somatosensation: Mechanisms of Itch, Touch, Pain and Interoception in Health and Disease (Q2)

Scientific Organizers: Diana Bautista, Rebecca P. Seal and Ishmail John Abdus-Saboor

January 14-17, 2024 • Eldorado Hotel & Spa • Santa Fe, NM, USA

Supported by the Directors’ Fund

Scholarship Deadline: October 24, 2023 / Abstract Deadline: October 24, 2023 / Discounted Registration Deadline: November 14, 2023

Scientific Organizers: Jeffrey F. Horowitz, Laurie J. Goodyear and Karyn A. Esser

January 14, 2024

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Somatosensory Circuits (Q2)

*Lauren Orefice*, Massachusetts General Hospital / Harvard Medical School, USA
*Rebecca P. Seal*, University of Pittsburgh, USA
Spinal Circuits as Targets for MA Therapies
*Sarah Ross*, University of Pittsburgh, USA
Inhibitory Circuits in Itch and Pain
*Victoria Abraira*, Rutgers University, USA
Molecules and Pathways of the Spinal Cord Affective Touch Circuit

David I. Hughes, University of Glasgow, UK
Short Talk: Calretinin-expressing Islet Cells are a Source of Pre- and Post-synaptic Inhibition of Non-peptidergic Nociceptor Input to the Mouse Spinal Cord

Allan-Hermann Pool, University of Texas Southwestern Medical Center, USA
Short Talk: Cell-type Map of Pain and Non-pain Somatosensory States in the Spinal Cord

Andreas R. Pfennig, Carnegie Mellon University, USA
Short Talk: Genomics and Machine Learning Implicate Spinal Cord Neuronal Subtypes in Chronic Pain Disorders

Poster Session 2

**WEDNESDAY, JANUARY 17**

Exercise and Modulation of Inflammatory Response (Q1)

*Mark A. Febbraio*, Monash Institute of Pharmaceutical Sciences, Australia
"Adrenergic Regulation of the Pro-resolving Effects of Exercise and its Impact on Cardiometabolic Disease Prevention"

*Jason L. Hellmann*, University of Louisville, USA
"Effects of Inflammatory Cytokines on Blood Flow Regulation during Exercise in Type 2 Diabetes"

*Kim Huffman*, Duke University, USA
"Beneficial Effects of Exercise in Rheumatoid Arthritis"

*Audrey J. Stone*, University of Texas at Austin, USA
"Signaling, Mechanisms and Benefits (Q1)"

*Jeffrey F. Horowitz*, National Institutes of Health, USA
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"Peng Li, University of Michigan, USA
"Pro-Resolution or Pro-Inflammatory? Microglia in Chronic Pain"

*Veena Viswanath*, Escent Pharmaceuticals, USA
"Mrgrps in Immune Cells and Neurons Mediate Itch and Pain"

*Wolfgang Liedtke*, Regeneron Pharmaceuticals, USA
"Role of TRPV4 in Pain and Itch – Is There a Connection to Th2-Immunopathies?"

*Francis Mcglone*, Neuro, UK
"Short Talk: A Healthy Brain Needs ‘Vitamin-T’"

*Venetia Zachariou*, Boston University School of Medicine, USA
"Short Talk: A Female-specific Signal Transduction Pathway in the Mouse Periaqueductal Gray Modulates Sensory Hypersensitivity in Models of Chronic Pain"

*Sakeen Kashem*, University of California - San Francisco, USA
"Short Talk: Regulatory T Cell Derived Enkephalin Imparts Pregnancy Induced Analgesia"

*Daniel McGehee*, University of Chicago, USA
"Short Talk: Acetylcholine: An Important Modulator of Descending Pain Control Pathways"

*Miaomiao Jin*, MIT, USA
"Short Talk: Identifying Neural Circuit Correlates of Pain Anticipation and Nocebo Hyperalgesia Using a Novel Behavioral Paradigm in Mouse"

Panel Discussion on NIH Resources for Somatosensory Research (Q2)

*Karen K. David*, NINDS, National Institutes of Health, USA
"Effects of Exercise Training Alters Lipidomic Profiles of Plasma and Eight Tissues in Rats"

*James Gnadt*, NINDS, National Institutes of Health, USA
"The MoTrPAC Data Hub: An Interactive Data Portal for Dissemination of MoTrPAC Data"

*Alexander H. Tuttle*, National Center for Complementary and Integrative Health, USA
"The Mitochondrial Multi-omic Response to Exercise Training Across Rat Tissues"

*Ellen A. Lumpkin*, University of California, Berkeley, USA
"A Female-specific Signal Transduction Pathway in the Mouse Periaqueductal Gray Modulates Sensory Hypersensitivity in Models of Chronic Pain"

Workshop 2 (Q1)

*Karyn A. Esser*, University of Florida, USA
"Sexual Dimorphism in the Multicomponent Response to Endurance Exercise Training in Rat Subcutaneous White Adipose Tissue"
Lara Bideyan, UT Southwestern, USA
Dissecting the Transcriptional Diversity of the Ventromedial Hypothalamus in Response to Exercise Training

Theresia M. Schnurr, Stanford University, USA
Harnessing Skeletal Muscle-specific Genetic Variation to Dissect Putative Causal Pathways Between Handgrip Strength and Cardiometabolic Phenotypes

Mind Games: The Powerful Impact of Exercise on the Brain (Q1)
*Rebecca EK MacPherson, Brock University, Canada
J. Carson Smith, University of Maryland, USA
Neuroimaging Evidence for Exercise-Induced Neuroplasticity in Humans

Constanza J. Cortes Rodriguez, University of Southern California, USA
Neuroprotection on the Treadmill: New Insights into The Muscle-to-Brain Axis

Cindy Barha, University of Calgary, Canada
Sex Differences in the Beneficial Effects of Exercise on Brain Function

Autumn Ivy, UC Irvine, USA
Short Talk: Neural Epigenetic Mechanisms of Early Life Adversity and Exercise Intervention

Pain Mechanisms II (Q2)
*Aaron Mickle, University of Florida, USA
India Morrison, Linköping University, Sweden
Brain-Hormone Comodulation during Human Social Touch

Margarita Calvo, Universidad Católica de Chile, Chile
Neuropathic Pain from the Skin, How and Why?

Allan I. Basbaum, University of California, San Francisco, USA
Long-term Imaging of Cortical and Spinal Cord Neuronal Activity in the Awake, Behaving Animal

Meeting Wrap-Up: Outcomes and Future Directions (Organizers) (Q1)
Meeting Wrap-Up: Outcomes and Future Directions (Organizers) (Q2)

THURSDAY, JANUARY 18
Departure