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[Authors]. [Abstract Title]. Program No. XXX.XX. 2019 Neuroscience Meeting Planner. Chicago, IL: Society for Neuroscience, 2019. Online.

**Symposium**

**002. Epigenetic Mechanisms: Shared Pathology Across Brain Disorders**

Theme G – Motivation and Emotion

**Location:** Room S100A

**Time:** Saturday, October 19, 2019, 1:30 PM - 4:00 PM

The pathogenesis of many brain disorders converges on epigenetic changes, leading to lasting transcriptional dysregulation and synaptic dysfunction. This symposium will discuss recent findings on the key role of epigenetic mechanisms in stress-induced depression, autism-like social deficits, drug addiction, and age-related memory loss. It will also discuss the therapeutic potential of targeting epigenetic enzymes, such as chromatin remodelers and histone modifiers, for complex brain disorders.

**Time:** Saturday, October 19, 2019, 1:30 PM - 4:00 PM

002. Chair

**E. J. Nestler**;
Icahn School of Medicine at Mount Sinai, New York, NY.

**Time:** Saturday, October 19, 2019, 1:30 PM - 4:00 PM

002. Co Chair

**Z. Yan**;
Dept Physiol, The State University of New York, University at Buffalo, Buffalo, NY.

**Time:** Saturday, October 19, 2019, 1:30 PM - 1:35 PM

002.01. Introduction

**Time:** Saturday, October 19, 2019, 1:35 PM - 2:10 PM

002.02. Epigenetic Mechanisms of Depression

**E. J. Nestler**;
Icahn Sch Med At Mount Sinai, New York, NY.

**Time:** Saturday, October 19, 2019, 2:10 PM - 2:45 PM

002.03. Epigenetic Rescue of Social Deficits in Autism Models

**Z. Yan**;
Dept Physiol, University at Buffalo - The State University of New York, Buffalo, NY.

**Time:** Saturday, October 19, 2019, 2:45 PM - 3:20 PM

002.04. Epigenetic mechanisms underlying cell-type specific neuronal plasticity in addiction

**A. E. West**;
Neurobiology, Duke University, Durham, NC.

**Time:** Saturday, October 19, 2019, 3:20 PM - 3:55 PM

002.05. Epigenetic Mechanisms Underlying Age-Related Memory and Synaptic Plasticity Impairments

**M. A. Wood**;
Neurobiol, University of California Irvine, Irvine, CA.

**Time:** Saturday, October 19, 2019, 3:55 PM - 4:00 PM

002.06. Closing Remarks

**Minisymposium**

**003. New Insights in Understanding Fragile X Syndrome (FXS): Focus on Neural Development in Human Models and Non-Neuron Glial Cells**

Theme A – Development

**Location:** Room S100BC

**Time:** Saturday, October 19, 2019, 1:30 PM - 4:00 PM

Recent development to establish stem cell or iPSC-derived human models of FXS has begun to provide new insight about the molecular and synaptic alterations in human neurons. This minisymposium will describe recent progress on utilizing human cell models to not only understand the roles of FMRP in human neuron development, but also test reactivation of the fmr1 gene as a potential therapeutic strategy. In addition, new knowledge about how non-neuronal glial cells are involved in the pathogenic process of FXS will be presented.

**Time:** Saturday, October 19, 2019, 1:30 PM - 4:00 PM

003. Chair

**Y. Yang**;
Neuroscience, Tufts University School of Medicine, Boston, MA.

**Time:** Saturday, October 19, 2019, 1:30 PM - 4:00 PM

003. Co Chair

**G. J. Bassell**;
Cell Biology, Emory University, Atlanta, GA.

**Time:** Saturday, October 19, 2019, 1:30 PM - 1:35 PM

003.01. Introduction

**Time:** Saturday, October 19, 2019, 1:35 PM - 1:55 PM

003.02. Cell type specific profiling of molecular defects in a human iPSC model of FXS

**N. Raj**;
Cell Biology, Emory University, Atlanta, GA.

**Time:** Saturday, October 19, 2019, 1:55 PM - 2:15 PM

003.03. Interrogating the role of FMRP in human neurodevelopment

**X. Zhao**;
Dept Neurosci, University of Wisconsin-Madison, Madison, WI.

**Time:** Saturday, October 19, 2019, 2:15 PM - 2:35 PM

003.04. Multidisciplinary human stem cell-based system for fragile X research and preclinical studies

**D. Ben-Yosef**;
Cell and Developmental Biology, Tel-Aviv Medical Center, Tel-Aviv, ISRAEL.

**Time:** Saturday, October 19, 2019, 2:35 PM - 2:55 PM

003.05. Retinoic acid signaling, homeostatic synaptic plasticity and FXS

**L. Chen**;
Stanford Institute of Neuro Innovation and Translational Neurosci, Stanford University, Stanford, CA.

**Time:** Saturday, October 19, 2019, 2:55 PM - 3:15 PM

003.06. Astroglial miRNA and protein translational dysregulation in FXS models

**Y. Yang**;
Neuroscience, Tufts University School of Medicine, Boston, MA.

**Time:** Saturday, October 19, 2019, 3:15 PM - 3:35 PM

003.07. Epigenetic regulation in development and disease

**R. Jaenisch**;
Biology, Massachusetts Institute of Technology, Cambridge, MA.

**Time:** Saturday, October 19, 2019, 3:35 PM - 4:00 PM

003.08. Closing Remarks

**Minisymposium**

## 004. Gain Control in the Sensorimotor System: From Neural Circuit Organization to Behavioral Function

Theme E – Motor Systems

**Location:** Room S406B

**Time:** Saturday, October 19, 2019, 1:30 PM - 4:00 PM

Coordinated movement depends on communication between neural circuits that produce motor output and those that report sensory consequences. Fundamental to this interaction are mechanisms for controlling the influence that feedback signals have on motor pathways—for example, reducing feedback gains when disruptive and increasing gains when advantageous. This minisymposium will discuss the organization and function of diverse forms of sensory gain control across species at multiple levels of the nervous system.

**Time:** Saturday, October 19, 2019, 1:30 PM - 4:00 PM

004. Chair

**K. Seki**;
National Institute of Neuroscience, Tokyo, JAPAN.

**Time:** Saturday, October 19, 2019, 1:30 PM - 4:00 PM

004. Co Chair

**E. Azim**;
Molecular Neurobiology Laboratory, Salk Institute for Biological Studies, La Jolla, CA.

**Time:** Saturday, October 19, 2019, 1:30 PM - 1:35 PM

004.01. Introduction

**Time:** Saturday, October 19, 2019, 1:35 PM - 1:55 PM

004.02. Local spinal circuits for sensory-selective modulation during movement in mice

**S. Koch**;
Dept. Neuroscience, Physiology & Pharmacology, University College London, London, UNITED KINGDOM.

**Time:** Saturday, October 19, 2019, 1:55 PM - 2:15 PM

004.03. Modulation of sensory feedback gains during forelimb movement in mice

**E. Azim**;
Molecular Neurobiology Laboratory, Salk Institute for Biological Studies, La Jolla, CA.

**Time:** Saturday, October 19, 2019, 2:15 PM - 2:35 PM

004.04. Top-down sensory modulation during active whisking in rats

**S. Chakrabarti**;
Werner Reichardt Centre for Integrative Neuroscience, University of Tübingen, Tübingen, GERMANY.

**Time:** Saturday, October 19, 2019, 2:35 PM - 2:55 PM

004.05. Nerve-Specific Input modulation to spinal and cortical Neurons during voluntary movement in monkeys

**K. Seki**;
Natl.inst.Neurosci., Tokyo, JAPAN.

**Time:** Saturday, October 19, 2019, 2:55 PM - 3:15 PM

004.06. Spinal and cortical regulation of somatosensory inputs for reaching and grasping in human subjects

**A. Pruszynski**;
Brain and Mind Institute, Western University, London, ON, CANADA.

**Time:** Saturday, October 19, 2019, 3:15 PM - 3:35 PM

004.07. Motor cortical contributions to hearing during movement in mice

**J. Sundararajan**;
Duke University, Durham, NC.

**Time:** Saturday, October 19, 2019, 3:35 PM - 4:00 PM

004.08. Closing Remarks

**Minisymposium**

**005. Sex Differences in Drug Craving and Addiction-Like Behaviors in Rodent Models**

Theme F – Integrative Physiology and Behavior

**Location:** Room S102

**Time:** Saturday, October 19, 2019, 1:30 PM - 4:00 PM

Women tend to have greater vulnerability than men to developing symptoms that define Substance Use Disorder, including escalation of drug taking and withdrawal symptoms. Moreover, the limited treatment options for addiction are less effective in women compared to men. This minisymposium highlights recent advances in rodent models of addiction that dissect

the molecular, hormonal, and neuronal circuits underlying sex differences in addiction-like behaviors and craving and relapse vulnerability.

**Time:** Saturday, October 19, 2019, 1:30 PM - 4:00 PM

005. Chair

**M. E. Wimmer**;
Psychology, Temple University, Philadelphia, PA.

**Time:** Saturday, October 19, 2019, 1:30 PM - 4:00 PM

005. Co Chair

**J. A. Loweth**;
Cell Biology, Rowan University School of Osteopathic Medicine, Stratford, NJ.

**Time:** Saturday, October 19, 2019, 1:30 PM - 1:35 PM

005.01. Introduction

**Time:** Saturday, October 19, 2019, 1:35 PM - 1:55 PM

005.02. The effects of metformin on cocaine craving: targeting AMP-activated protein kinase (AMPK) pathway and beyond

**S. M. Spencer**;
Neuroscience, University of Minnesota, Minneapolis, MN.

**Time:** Saturday, October 19, 2019, 1:55 PM - 2:15 PM

005.03. Role of orbitofrontal cortex in incubation of oxycodone seeking in both male and female rats

**X. Li**;
Psychology, University of Maryland, College Park, MD.

**Time:** Saturday, October 19, 2019, 2:15 PM - 2:35 PM

005.04. Transcriptomics of opioid craving in the nucleus accumbens of male and female rats

**M. E. Wimmer**;
Psychology, Temple University, Philadelphia, PA.

**Time:** Saturday, October 19, 2019, 2:35 PM - 2:55 PM

005.05. Incubation of cocaine craving after intermittent access cocaine self-administration: sex differences and estrous cycle

**C. Nicolas**;
Behavioral Branch, National Institute On Drug Abuse-Irp, Baltimore.

**Time:** Saturday, October 19, 2019, 2:55 PM - 3:15 PM

005.06. Sex differences in stress- and cue-induced cocaine seeking in the incubation model

**J. A. Loweth**;
Cell Biology, Rowan University School of Osteopathic Medicine, Stratford, NJ.

**Time:** Saturday, October 19, 2019, 3:15 PM - 3:35 PM

005.07. Effects of ovarian hormones on cue-triggered motivation and excitability in the nucleus accumbens.

**C. Ferrario**;
Pharmacology, Michigan University, Ann Arbor, MI.

**Time:** Saturday, October 19, 2019, 3:35 PM - 4:00 PM

005.08. Closing Remarks

**Minisymposium**

**006. Brain Mechanisms of Concept Learning**

Theme H – Cognition

**Location:** Room S105

**Time:** Saturday, October 19, 2019, 1:30 PM - 4:00 PM

Concept learning, the ability to extract commonalities and highlight distinctions across related experiences to build organized knowledge, is uniquely supported by interacting neural systems related to memory, attention, and executive control. This minisymposium will highlight research that directly assesses the multiple neural mechanisms of concept learning with innovative approaches that bridge computational modeling and neural measures.

**Time:** Saturday, October 19, 2019, 1:30 PM - 4:00 PM

006. Chair

**D. Zeithamova**;
University of Oregon, Eugene, OR.

**Time:** Saturday, October 19, 2019, 1:30 PM - 4:00 PM

006. Co Chair

**M. L. Mack**;
Psychology, University of Toronto, Toronto, ON, CANADA.

**Time:** Saturday, October 19, 2019, 1:30 PM - 1:35 PM

006.01. Introduction

**Time:** Saturday, October 19, 2019, 1:35 PM - 1:55 PM

006.02. The hippocampal-cortical circuits underlying new concept formation

**M. L. Mack**;
Psychology, University of Toronto, Toronto, ON, CANADA.

**Time:** Saturday, October 19, 2019, 1:55 PM - 2:35 PM

006.03. Specific and generalized representations supporting categorization

**D. Zeithamova**;
Psychology, University of Oregon, Eugene, OR.

**Time:** Saturday, October 19, 2019, 2:15 PM - 2:15 PM

006.04. Concept learning through inference: How congruency and reactivation aid memory integration

**M. Van Kesteren**;
Educational Neuroscience, Vrije Universiteit Amsterdam, Amsterdam, NETHERLANDS.

**Time:** Saturday, October 19, 2019, 2:35 PM - 2:55 PM

006.05. Combining representations and rewards in categorical decision making

**C. A. Seger**;
Psychology, Colorado State University, Fort Collins, CO.

**Time:** Saturday, October 19, 2019, 2:55 PM - 3:15 PM

006.06. The role of the rostrolateral prefrontal cortex in generalizing category rules.

**T. Davis**;
Psychology, Texas Tech University, Lubbock, TX.

**Time:** Saturday, October 19, 2019, 3:15 PM - 3:35 PM

006.07. Different prefrontal cortex dynamics for learning at different levels of abstraction

**A. Wutz**;
Psychology, University of Salzburg, Salzburg, AUSTRIA.

**Time:** Saturday, October 19, 2019, 3:35 PM - 4:00 PM

006.08. Closing Remarks

**Minisymposium**

**007. BRAIN Initiative: Cutting-Edge Tools and Resources for the Community**

Theme I – Techniques

**Location:** Room S406A

**Time:** Saturday, October 19, 2019, 1:30 PM - 4:00 PM

A core principle of the BRAIN Initiative is to develop and share novel technologies, tools, methods, and resources to advance understanding of healthy and disease brain states. This minisymposium features BRAIN-funded investigators who are driving forward toward this goal; it will inform and educate the community about opportunities and applications of their advances and encourage broader understanding of the methodological and technological advances developed as a part of the BRAIN Initiative.

**Time:** Saturday, October 19, 2019, 1:30 PM - 4:00 PM

007. Chair

**W. J. Koroshetz**;
Department of Health and Human Services, National Institute of Health, Bethesda, MD.

**Time:** Saturday, October 19, 2019, 1:30 PM - 1:35 PM

007.01. Introduction

**Time:** Saturday, October 19, 2019, 1:35 PM - 1:55 PM

007.02. The facility to generate connectomic information

**J. W. Lichtman**;
Department of Molecular and Cellular Biology, Harvard University, Cambridge, MA.

**Time:** Saturday, October 19, 2019, 1:55 PM - 2:15 PM

007.03. High-throughput, quantitative connectomics using fluorescence microscopy

**A. L. Barth**;
Department of Biological Sciences, Carnegie Mellon University, Pittsburgh, PA.

**Time:** Saturday, October 19, 2019, 2:15 PM - 2:35 PM

007.04. New tools for understanding distributed patterns of brain activity

**L. M. Frank**;
Department of Physiology, Kavli Institute for Fundamental Neuroscience, HHMI and UC San Francisco, San Francisco, CA.

**Time:** Saturday, October 19, 2019, 2:35 PM - 2:55 PM

007.05. Enhanced resolution for 3DEM analysis of synapses

**K. Harris**;
Department of Neuroscience, University of Texas at Austin, Austin, TX.

**Time:** Saturday, October 19, 2019, 2:55 PM - 3:15 PM

007.06. Introducing an unsupervised classification tool for separating individuals based on within- or between-network functional brain connectivity

**K. Gates**;
Department of Psychology and Neuroscience, University of North Carolina Chapel Hill, Chapel HIll, NC.

**Time:** Saturday, October 19, 2019, 3:15 PM - 3:35 PM

007.07. Renewable recombinant immunolabels developed and validated for BRAIN research

**J. Trimmer**;
Department of Neurobiology, Physiology and Behavior, University of California, Davis, Davis, CA.

**Time:** Saturday, October 19, 2019, 3:35 PM - 4:00 PM

007.08. Closing Remarks

**Symposium**

**094. Opening the Black Box of the Hippocampus: Visualizing Memories in Distinct Cell Types, Microcircuits, and Cellular Compartments**

Theme H – Cognition

**Location:** Room S100BC

**Time:** Sunday, October 20, 2019, 8:30 AM - 11:00 AM

The hippocampus is comprised of many cell types and circuits that differentially contribute to aspects of memory encoding. Recent technological advances have led to a reassessment of the hippocampus, its information processing capacity, and how it controls behavior. This symposium will describe how electrophysiology, imaging, and computational tools can be combined to decode the function of hippocampal cell types, microcircuits, and subcellular compartments in the control of behavior.

**Time:** Sunday, October 20, 2019, 8:30 AM - 11:00 AM

094. Chair

**M. Kheirbek**;
University of California, San Francisco, San Francisco, CA.

**Time:** Sunday, October 20, 2019, 8:30 AM - 8:35 AM

094.01. Introduction

**Time:** Sunday, October 20, 2019, 8:35 AM - 9:10 AM

094.02. Experience-dependent Changes in Subcellular and Microcircuit Dynamics in the Hippocampus

**A. Losonczy**;
Neuroscience, Columbia University, New York.

**Time:** Sunday, October 20, 2019, 9:10 AM - 9:45 AM

094.03. Hub Cells in the Hippocampus in Vivo

**R. Cossart**;
INSERM, Institut de Neurobiologie de la Méditerranée, Marseille, FRANCE.

**Time:** Sunday, October 20, 2019, 9:45 AM - 10:20 AM

094.04. Memory Codes in the Dentate Gyrus

**M. Kheirbek**;
Psychiatry, University of California, San Francisco, San Francisco.

**Time:** Sunday, October 20, 2019, 10:20 AM - 10:55 AM

094.05. Dendritic Contributions to Hippocampal Processing: Insights from Computational Models

**P. Poirazi**;
Foundation for Research and Technology, IMBB-FORTH, Heraklion, Crete, GREECE.

**Time:** Sunday, October 20, 2019, 10:55 AM - 11:00 AM

094.06. Closing Remarks

**Minisymposium**

**095. Functional Maturation of Cerebello-Cerebral Interactions**

Theme A – Development

**Location:** Room S406A

**Time:** Sunday, October 20, 2019, 8:30 AM - 11:00 AM

The developmental processes that connect the cerebellum to the cerebrum constitute critical morphogenetic events that span embryogenesis through postnatal life. It is argued that disrupting these mechanisms results in neurodevelopmental disorders such as autism, movement diseases such as cerebral palsy, and language defects such as dyslexia. This minisymposium brings together recent experimental and clinical advances to better define the cerebellum's role in cerebral maturation.

**Time:** Sunday, October 20, 2019, 8:30 AM - 11:00 AM

095. Chair

**F. E. Hoebeek**;
University Medical Center Utrecht, Utrecht, NETHERLANDS.

**Time:** Sunday, October 20, 2019, 8:30 AM - 11:00 AM

095. Co Chair

**R. V. Sillitoe**;
Pathology and Immunology, Baylor College of Medicine, Houston, TX.

**Time:** Sunday, October 20, 2019, 8:30 AM - 8:35 AM

095.01. Introduction

**Time:** Sunday, October 20, 2019, 8:35 AM - 8:55 AM

095.02. Fetal origins of developmental cerebellar cognitive affective disorders: Insights from *in vivo* human fetal MRI

**C. Limperopoulos**;
Diagnostic Imaging and Radiology, Children’s National Medical Center, Washington, DC.

**Time:** Sunday, October 20, 2019, 8:55 AM - 9:15 AM

095.03. Neonatal brain injury and cerebellar function

**V. Gallo**;
Ctr for Neurosci Resesarch, CRI, Children's National Med Ct, Washington, DC.

**Time:** Sunday, October 20, 2019, 9:15 AM - 9:35 AM

095.04. Developmental and acute effects of cerebellar perturbation in mice on autism-like behaviors

**A. M. Badura**;
Neuroscience, Erasmus MC, Rotterdam, NETHERLANDS.

**Time:** Sunday, October 20, 2019, 9:35 AM - 9:55 AM

095.05. Sleep-dependent activation of the developing cerebellar system

**M. S. Blumberg**;
Dept Psychol, University of Iowa, Iowa City, IA.

**Time:** Sunday, October 20, 2019, 9:55 AM - 10:15 AM

095.06. Cerebello-cerebral circuits in language processing and development

**A. M. D'Mello**;
Massachusetts Institute of Technology, Cambridge, MA.

**Time:** Sunday, October 20, 2019, 10:15 AM - 10:35 AM

095.07. Multiple facets of the cerebello-cerebral coupling in motor systems

**D. Popa**;
Neurophysiology of Brain Circuits, Institut de Biologie de l'Ecole Normale Supérieure, Paris, FRANCE.

**Time:** Sunday, October 20, 2019, 10:35 AM - 11:00 AM

095.08. Closing Remarks

**Minisymposium**

**096. Novel Mechanistic Roles for Sodium Channels in Neurodevelopmental Disorders**

Theme B – Neural Excitability/ Synapses/ and Glia

**Location:** Room S105

**Time:** Sunday, October 20, 2019, 8:30 AM - 11:00 AM

Disease-related alterations in ion channel function, termed channelopathies, contribute to a range of neurodevelopmental disorders. This minisymposium will highlight advances in our understanding of how pathogenic variation in sodium channels contributes to a range of neurodevelopmental disorders, including new insight into well-established sodium channelopathies leading to epilepsy and new associations between sodium channels and other developmental disorders, including autism and schizophrenia.

**Time:** Sunday, October 20, 2019, 8:30 AM - 11:00 AM

096. Chair

**K. J. Bender**;
Department of Neurology, University of California, San Francisco, San Francisco, CA.

**Time:** Sunday, October 20, 2019, 8:30 AM - 11:00 AM

096. Co Chair

**E. M. Goldberg**;
Neurology, The Children's Hospital of Philadelphia, Philadelphia, PA.

**Time:** Sunday, October 20, 2019, 8:30 AM - 8:35 AM

096.01. Introduction

**Time:** Sunday, October 20, 2019, 8:35 AM - 8:55 AM

096.02. Mechanisms of cortico-thalamic network synchrony and cognitive impairment by loss of function mutations in SCN8A

**C. D. Makinson**;
Stanford University, Palo Alto, CA.

**Time:** Sunday, October 20, 2019, 8:55 AM - 9:15 AM

096.03. SCN3A encephalopathy: Mechanisms of an emerging syndrome of epilepsy and abnormal cortical development

**E. M. Goldberg**;
Neurology, The Children's Hospital of Philadelphia, Philadelphia, PA.

**Time:** Sunday, October 20, 2019, 9:15 AM - 9:35 AM

096.04. Use of human iPS cells to discover mechanisms of developmental and epileptic encephalopathy

**L. L. Isom**;
Pharmacology, University of Michigan, Ann Arbor, MI.

**Time:** Sunday, October 20, 2019, 9:35 AM - 9:55 AM

096.05. Dysfunction in SCN2A in autism spectrum disorder

**K. J. Bender**;
Department of Neurology, UCSF, San Francisco, CA.

**Time:** Sunday, October 20, 2019, 9:55 AM - 10:15 AM

096.06. Sodium Channelopathies and Genetic Modifiers of Neurodevelopmental Disorders

**J. A. Kearney**;
Pharmacology, Northwestern University Feinberg School of Medicine, Chicago, IL.

**Time:** Sunday, October 20, 2019, 10:15 AM - 10:35 AM

096.07. Dravet Syndrome: tracing the progress of associated comorbidities and inhibitory neuron function

**M. Rubinstein**;
Human Molecular Genetics and Biochemistry, Goldschleger Eye Research Institute, Tel Aviv, ISRAEL.

**Time:** Sunday, October 20, 2019, 10:35 AM - 11:00 AM

096.08. Closing Remarks

**Minisymposium**

**097. Myelin Degeneration and Remyelination in Health and Disease**

Theme C – Neurodegenerative Disorders and Injury

**Location:** Room S100A

**Time:** Sunday, October 20, 2019, 8:30 AM - 11:00 AM

Myelin speeds the transmission of the nerve impulse and insulates and protects the neuron. Defects in myelin formation and demyelination result in developmental disabilities and neurological deficits. A better understanding of myelin dynamics is the key to developing effective therapies for demyelinating diseases. Current studies on myelinating cell biology (specifically oligodendrocyte and Schwann cells) during development and pathology will provide the basis for innovative drug discovery.

**Time:** Sunday, October 20, 2019, 8:30 AM - 11:00 AM

097. Chair

**C. E. Pedraza**;
Neuroimmunology Research, Sanofi, Wilmington, MA.

**Time:** Sunday, October 20, 2019, 8:30 AM - 11:00 AM

097. Co Chair

**T. Samad**;
Rare and Neurological Disease, Sanofi, Framingham, MA.

**Time:** Sunday, October 20, 2019, 8:30 AM - 8:35 AM

097.01. Introduction

**Time:** Sunday, October 20, 2019, 8:35 AM - 8:55 AM

097.02. Pharmacological enhancement of Remyelination in MS. Current drug discovery and development landscape.

**C. E. Pedraza**;
Neuroimmunology Research, Sanofi, Framingham, MA.

**Time:** Sunday, October 20, 2019, 8:55 AM - 9:15 AM

097.03. Unwrapping the cell biological mechanism of CNS myelination

**B. Zuchero**;
Neurosurgery, Stanford, Stanford, CA.

**Time:** Sunday, October 20, 2019, 9:15 AM - 9:35 AM

097.04. Oligodendrogenesis following cortical demyelination generates a novel myelination pattern

**J. L. Orthmann-Murphy**;
Neurology, Perelman School of Medicine, University of Pennsyl, Philadelphia, PA.

**Time:** Sunday, October 20, 2019, 9:35 AM - 9:55 AM

097.05. Longitudinal *in vivo* imaging of the dynamics of myelin and oligodendrocytes in the adult brain

**E. G. Hughes**;
Department of Cell and Developmental Biology, University of Colorado School of Medicine, Aurora, CO.

**Time:** Sunday, October 20, 2019, 9:55 AM - 10:15 AM

097.06. Is dynamic neuronal signaling necessary for developmental CNS myelination?

**S. R. Mayoral**;
Neurology, University of California San Francisco Department of Neurology, San Francisco, CA.

**Time:** Sunday, October 20, 2019, 10:15 AM - 10:35 AM

097.07. Intraarterial delivery of glial progenitors - the hope for improved remyelination of the brain.

**A. Jablonska**;
Department of Radiology and Radiological Science, The Russell H. Morgan Department of Radiology and Radiological Science, Division of MR Research Institute for Cell Engineering, Johns Hopkins University School of Medicine, Baltimore, MD.

**Time:** Sunday, October 20, 2019, 10:35 AM - 11:00 AM

097.08. Closing Remarks

**Minisymposium**

**098. Parabrachial Complex: A Hub for Pain and Aversion**

Theme D – Sensory Systems

**Location:** Room S406B

**Time:** Sunday, October 20, 2019, 8:30 AM - 11:00 AM

The parabrachial nucleus complex (PBN) has long been recognized as a sensory relay for taste, nociception, and interoception, but how this information is integrated and used to inform different behavioral outputs is only now being elucidated. This minisymposium will provide a context for interrogation of PBN circuits involved in aversion and avoidance and consider how information is integrated within PBN and transmitted to distinct targets to signal alarm and engage appropriate behavioral responses.

**Time:** Sunday, October 20, 2019, 8:30 AM - 11:00 AM

098. Chair

**M. M. Heinricher**;
Dept Neurol Surgery, Oregon Health & Science University, Portland, OR.

**Time:** Sunday, October 20, 2019, 8:30 AM - 8:35 AM

098.01. Introduction

**Time:** Sunday, October 20, 2019, 8:35 AM - 8:55 AM

098.02. Neurobehavioral analysis of bad taste

**L. Schier**;
Department of Biological Sciences, University of Southern California, Los Angeles, CA.

**Time:** Sunday, October 20, 2019, 8:55 AM - 9:15 AM

098.03. Role of PBN CGRP-expressing neurons in transmitting a general alarm signal to forebrain neurons.

**A. Bowen**;
Graduate Program in Neuroscience, University of Washington, Seattle, WA.

**Time:** Sunday, October 20, 2019, 9:15 AM - 9:35 AM

098.04. Organization of the lateral PBN and implications for distinct functional outputs.

**M. Chiang**;
Department of Neurobiology, University of Pittsburgh, Pittsbrugh, PA.

**Time:** Sunday, October 20, 2019, 9:35 AM - 9:55 AM

098.05. The parabrachial complex and the amygdala: Working together to modulate pain and aversion

**O. Uddin**;
Department of Anatomy and Neurobiology, University of Maryland School of Medicine, Baltimore, MD.

**Time:** Sunday, October 20, 2019, 9:55 AM - 10:15 AM

098.06. Plasticity in the PBN and the link to pain-modulating circuits.

**M. M. Heinricher**;
Dept Neurol Surgery, Oregon Health & Science University, Portland, OR.

**Time:** Sunday, October 20, 2019, 10:15 AM - 10:35 AM

098.07. Parabrachial complex as a safety switch for survival in thermoregulatory challenge

**D. Tupone**;
Biomedical and Neuromotor Sciences, University of Bologna, Bologna, ITALY.

**Time:** Sunday, October 20, 2019, 10:35 AM - 11:00 AM

098.08. Closing Remarks

**Minisymposium**

**099. The Neural Basis of Manual Dexterity**

Theme E – Motor Systems

**Location:** Room S102

**Time:** Sunday, October 20, 2019, 8:30 AM - 11:00 AM

Human hands are remarkably versatile and constitute the principal means by which we physically interact with the environment. This minisymposium will investigate the neural mechanisms that mediate manual dexterity by examining both motor control of the hands and the sensory input necessary for manual precision. Manual dexterity from evolutionary and comparative perspectives and recent efforts to confer anthropomorphic dexterity to brain-controlled bionic hands will also be considered.

**Time:** Sunday, October 20, 2019, 8:30 AM - 11:00 AM

099. Chair

**S. J. Bensmaia**;
Organismal Biology and Anatomy, University of Chicago, Chicago, IL.

**Time:** Sunday, October 20, 2019, 8:30 AM - 8:35 AM

099.01. Introduction

**Time:** Sunday, October 20, 2019, 8:35 AM - 8:55 AM

099.02. Evolution of the neural substrate for dexterity

**P. L. Strick**;
Systems Neuroscience Institute, Univ Pittsburgh Sch Med, Pittsburgh, PA.

**Time:** Sunday, October 20, 2019, 8:55 AM - 9:15 AM

099.03. For dexterous manipulation, the arm is part of the hand

**M. H. Schieber**;
Neurology and Neuroscience, University of Rochester, Rochester, NY.

**Time:** Sunday, October 20, 2019, 9:15 AM - 9:35 AM

099.04. Sensory representations of the hand in somatosensory cortex

**S. J. Bensmaia**;
Department of Organismal Biology and Anatomy, University of Chicago, Chicago, IL.

**Time:** Sunday, October 20, 2019, 9:35 AM - 9:55 AM

099.05. The neural basis of visuo-motor transformations that mediate grasp

**H. Scherberger**;
Neurobiology, German Primate Center, Goettingen, GERMANY.

**Time:** Sunday, October 20, 2019, 9:55 AM - 10:15 AM

099.06. The evolution of the hand and brain areas associated with manual dexterity in mammals

**L. A. Krubitzer**;
Psychology, UC Davis, Davis, CA.

**Time:** Sunday, October 20, 2019, 10:15 AM - 10:35 AM

099.07. Toward a dexterous brain-controlled bionic hand

**J. L. Collinger**;
Physical Medicine and Rehabilitation, University of Pittsburgh, Pittsburgh, PA.

**Time:** Sunday, October 20, 2019, 10:35 AM - 11:00 AM

099.08. Closing Remarks

**Symposium**

**177. The Molecular and Spatial Complexity of Tau: What Forms and Loci to Target?**

Theme C – Neurodegenerative Disorders and Injury

**Location:** Room S100A

**Time:** Sunday, October 20, 2019, 1:30 PM - 4:00 PM

Aggregation of tau is a common feature of a range of neurodegenerative disorders referred to as tauopathies. However, the forms of tau which mediate toxicity remain ill-defined, making it difficult to design optimal anti-tau therapeutics. This symposium will address the molecular and structural heterogeneity of tau, the effects of tau on excitatory neurons, and factors which contribute to the specific spatiotemporal patterns of neurodegeneration which characterize particular tauopathies.

**Time:** Sunday, October 20, 2019, 1:30 PM - 4:00 PM

177. Chair

**D. M. Walsh**;
Biogen Inc, Brigham and Women's Hospital, Boston, MA.

**Time:** Sunday, October 20, 2019, 1:30 PM - 1:35 PM

177.01. Introduction

**Time:** Sunday, October 20, 2019, 1:35 PM - 2:10 PM

177.02. The molecular and spatial complexity of tau – what forms and loci to target

**K. Hoglund**;
Institute of Neuroscience and Physiology, The Sahlgrenska Academy at University of Gothenbur, Gothenburg, SWEDEN.

**Time:** Sunday, October 20, 2019, 2:10 PM - 2:45 PM

177.03. The mechanisms and forms of tau which modulate brain rhythms

**L. Mucke**;
Neurology, Gladstone Institute of Neurological Disease, San Francisco, CA.

**Time:** Sunday, October 20, 2019, 2:45 PM - 3:20 PM

177.04. Tau homeostasis contributes to the selective regional vulnerability of excitatory neurons in Alzheimer’s disease

**K. Duff**;
Taub Institute for Research on Alzheimer's Disease and the Aging Brain, Columbia University Medical Center, New York, NY.

**Time:** Sunday, October 20, 2019, 3:20 PM - 3:55 PM

177.05. Tau strains determine disease-specific cell type vulnerability

**V. M. Lee**;
Dept Pathol, Univ Pennsylvania Sch Med, Philadelphia, PA.

**Time:** Sunday, October 20, 2019, 3:55 PM - 4:00 PM

177.06. Closing Remarks

**Minisymposium**

**178. The Gut-Brain Axis in Health and Brain Disease**

Theme B – Neural Excitability/ Synapses/ and Glia

**Location:** Room S406A

**Time:** Sunday, October 20, 2019, 1:30 PM - 4:00 PM

The gut microbiome is a critical player in neurodevelopment and aging as well as in brain diseases including stroke, Alzheimer's disease, and Parkinson's disease. Intestinal bacteria act along the gut-brain axis in part by modifying the immune response. Bacteria also produce neuroactive mediators and can modulate neuronal function, plasticity and behavior. This minisymposium will highlight recent insights on the bi-directional communication along the brain-gut-microbiome-immune axis.

**Time:** Sunday, October 20, 2019, 1:30 PM - 4:00 PM

178. Chair

**A. Liesz**;
Institute for Stroke and Dementia Research, University Medical Center Munich, Munich, GERMANY.

**Time:** Sunday, October 20, 2019, 1:30 PM - 4:00 PM

178. Co Chair

**J. A. Foster**;
Psychiatry, McMaster University, Hamilton, ON, CANADA.

**Time:** Sunday, October 20, 2019, 1:30 PM - 1:35 PM

178.01. Introduction

**Time:** Sunday, October 20, 2019, 1:35 PM - 1:55 PM

178.02. Maternal bacteria and neurodevelopmental disorders

**J. Huh**;
Dept. of Microbiology and Immunobiology, Harvard Medical School, Boston.

**Time:** Sunday, October 20, 2019, 1:55 PM - 2:15 PM

178.03. Gut metabolites as immunomodulators of stroke outcome

**C. Benakis**;
Institute for Stroke and Dementia Research, Ludwig Maximilian University, Munich, GERMANY.

**Time:** Sunday, October 20, 2019, 2:15 PM - 2:35 PM

178.04. The role of bidirectional communication between gut bacteria and T cells in neurodevelopment

**J. A. Foster**;
Psychiatry, McMaster University, Hamilton, CANADA.

**Time:** Sunday, October 20, 2019, 2:35 PM - 2:55 PM

178.05. Mechanism underlying gut-brain-interactions in the neurodevelopmental

**M. Costa-Mattioli**;
Department of Neuroscience, Baylor College of Medicine, Houston.

**Time:** Sunday, October 20, 2019, 2:55 PM - 3:15 PM

178.06. Post-stroke gut microbiota manipulations to improve recovery

**V. R. Venna**;
Department of Neuroscience, Department of Neurology, McGovern Medical School, UTHealth, Houston, TX.

**Time:** Sunday, October 20, 2019, 3:15 PM - 3:35 PM

178.07. Host response to stroke: a focus on the effect of inflammaging on the gut

**C. H. Y. Wong**;
Department of Medicine, Monash University, Clayton, AUSTRALIA.

**Time:** Sunday, October 20, 2019, 3:35 PM - 4:00 PM

178.08. Closing Remarks

**Minisymposium**

**179. Cannabis and the Developing Brain: Insights Into Its Long-Lasting Effects**

Theme G – Motivation and Emotion

**Location:** Room S100BC

**Time:** Sunday, October 20, 2019, 1:30 PM - 4:00 PM

Increasing evidence suggests that cannabis exposure during neurodevelopment (perinatal and adolescent stages) results in persistent alterations in brain circuits underlying neuropsychiatric disorders and leads to an increased risk for certain psychiatric conditions later in life. This minisymposium will explore gene x environment interactions that appear to play a significant role in such sensitivity and will provide translational insights about molecular, epigenetic, neurophysiological, and *in vivo* neuroimaging disturbances in the human brain and animal models.

**Time:** Sunday, October 20, 2019, 1:30 PM - 4:00 PM

179. Chair

**Y. Hurd**;
Departments of Psychiatry and Neuroscience, Icahn School of Medicine at Mount Sinai, New York City, NY.

**Time:** Sunday, October 20, 2019, 1:30 PM - 4:00 PM

179. Co Chair

**M. Melis**;
Dept. Biomedical Sciences, University of Cagliari, Cagliari, ITALY.

**Time:** Sunday, October 20, 2019, 1:30 PM - 1:35 PM

179.01. Introduction

**Time:** Sunday, October 20, 2019, 1:35 PM - 1:55 PM

179.02. Cell type-specific mechanisms of genetic vulnerability to adverse cognitive effects of adolescent cannabis exposure

**M. Pletnikov**;
Department of Psychiatry and Behavioral Sciences, Johns Hopkins School of Medicine, Baltimore, MD.

**Time:** Sunday, October 20, 2019, 1:55 PM - 2:15 PM

179.03. FAAH genetic variation enhances vulnerability to THC-seeking behavior in female adolescent mice

**F. Lee**;
Department of Psychiatry, Weill Cornell Medical College, New York City, NY.

**Time:** Sunday, October 20, 2019, 2:15 PM - 2:35 PM

179.04. Prenatal THC exposure biases dopamine neuron function and behavior

**M. Melis**;
Department of Biomedical Sciences, University of Cagliari, Monserrato, ITALY.

**Time:** Sunday, October 20, 2019, 2:35 PM - 2:55 PM

179.05. Maternal cannabis exposure during gestation or lactation disrupts the developmental trajectory and cognitive and synaptic functions in adulthood.

**O. Manzoni**;
INMED, Aix Marseille University, INSERM, Marseille, FRANCE.

**Time:** Sunday, October 20, 2019, 2:55 PM - 3:15 PM

179.06. A translational window into the neurodevelopmental impact of cannabis on the epigenetic landscape and psychiatric vulnerability

**Y. L. Hurd**;
Depts Psychiatry, Ichan Sch Med At Mount Sinai, New York City, NY.

**Time:** Sunday, October 20, 2019, 3:15 PM - 3:35 PM

179.07. Effects of adolescent onset regular cannabis use on brain function and chemistry

**S. Bhattacharyya**;
Department of Psychosis Studies, King's College of London, London, UNITED KINGDOM.

**Time:** Sunday, October 20, 2019, 3:35 PM - 4:00 PM

179.08. Closing Remarks

**Minisymposium**

**180. Cognitive Cerebellum: Role in Motivation, Emotion, Executive, Social, and Sensory Processing**

Theme H – Cognition

**Location:** Room S102

**Time:** Sunday, October 20, 2019, 1:30 PM - 4:00 PM

The cerebellum has been predominantly studied as a sensory-motor integrator, but anatomic studies reveal its extensive reciprocal connections with non-motor cortical regions. It is now

increasingly implicated in higher-order cognition, such as complex planning as well as emotional, social, linguistic, and reward processing. This minisymposium will review how these recent advances in beyond-motor cerebellar research will reshape our view of brain function and dysfunction, including autism and cognitive affective syndrome.

**Time:** Sunday, October 20, 2019, 1:30 PM - 4:00 PM

180. Chair

**I. A. Savtchouk**;
Department of Biomedical Sciences, Marquette University, Milwaukee, WI.

**Time:** Sunday, October 20, 2019, 1:30 PM - 4:00 PM

180. Co Chair

**J. Liu**;
Cell Biology and Anatomy, Louisiana State University Health Sciences Center, New Orleans, LA.

**Time:** Sunday, October 20, 2019, 1:30 PM - 1:35 PM

180.01. Introduction

**Time:** Sunday, October 20, 2019, 1:35 PM - 1:55 PM

180.02. The cerebellar cognitive affective syndrome. Neurobiology, diagnosis, and implications for ataxiology, behavioral neurology, and neuropsychiatry

**J. D. Schmahmann**;
Department of Neurology, Massachusetts General Hospital and Harvard Medical School, Boston, MA.

**Time:** Sunday, October 20, 2019, 1:55 PM - 2:15 PM

180.03. Cerebellar Contribution to Motivated & Social Behaviors

**K. Khodakhah**;
Dept Neuroscience, Albert Einstein College Med, Bronx, NY.

**Time:** Sunday, October 20, 2019, 2:15 PM - 2:35 PM

180.04. Cerebellar circuitry and the consolidation of associative fear memory

**J. Liu**;
Cell Biology and Anatomy, LSU Health Sciences Center, New Orleans, LA.

**Time:** Sunday, October 20, 2019, 2:35 PM - 2:55 PM

180.05. Cerebellar learning rules for motor planning

**C. I. de Zeeuw**;
Netherlands Institute for Neuroscience, Erasmus MC, Rotterdam, NETHERLANDS.

**Time:** Sunday, October 20, 2019, 2:55 PM - 3:15 PM

180.06. Cerebellum, spatial coding and navigation behavior

**L. Rondi-Reig**;
CNRS, Sorbonne Université, Paris, FRANCE.

**Time:** Sunday, October 20, 2019, 3:15 PM - 3:35 PM

180.07. Brainwide mapping of cerebellar influences over flexible behavior

**S. S. Wang**;
Princeton Neuroscience Institute, Princeton University, Princeton, NJ.

**Time:** Sunday, October 20, 2019, 3:35 PM - 4:00 PM

180.08. Closing Remarks

**Minisymposium**

**181. Optical Recording of Neural Transmission: From Tool Development to Applications**

Theme I – Techniques

**Location:** Room S105

**Time:** Sunday, October 20, 2019, 1:30 PM - 4:00 PM

Imaging of genetically encoded calcium indicators have revolutionized systems neuroscience. However, crucial complementary information, such as when and where neurotransmission takes place, are required for revealing the full picture of brain function. This minisymposium aims to highlight the most recent development of the fluorescent indicators for imaging key neurotransmitters and their downstream events, and the exciting applications of these indicators for dissecting neuronal function.

**Time:** Sunday, October 20, 2019, 1:30 PM - 4:00 PM

181. Chair

**H. Zhong**;
L474, Vollum Institute, OHSU, Portland, OR.

**Time:** Sunday, October 20, 2019, 1:30 PM - 4:00 PM

181. Co Chair

**L. L. Looger**;
Janelia Research Campus, Howard Hughes Medical Institute, Ashburn, VA.

**Time:** Sunday, October 20, 2019, 1:30 PM - 1:35 PM

181.01. Introduction

**Time:** Sunday, October 20, 2019, 1:35 PM - 1:55 PM

181.02. Visualizing the rapid metabolic consequences of neuronal stimulation with fluorescent biosensors

**G. Yellen**;
Neurobiology, Harvard Medical School, Boston, MA.

**Time:** Sunday, October 20, 2019, 1:55 PM - 2:15 PM

181.03. Expanding the repertoire of technologies for imaging neurotransmitters & neuromodulators

**L. Looger**;
Janelia Research Campus, Howard Hughes Medical Institute, Ashburn, VA.

**Time:** Sunday, October 20, 2019, 2:15 PM - 2:35 PM

181.04. Cellular Biochemical Activity Architecture for Signal Sensing and Processing

**J. Zhang**;
Pharmacology, UCSD, San Diego, CA.

**Time:** Sunday, October 20, 2019, 2:35 PM - 2:55 PM

181.05. Using optical sensors to examine real-time dopamine dynamics for learning and motivation

**A. Mohebi**;
Neurology, UCSF, San Francisco, CA.

**Time:** Sunday, October 20, 2019, 2:55 PM - 3:15 PM

181.06. Deep brain monitoring of striatal cyclic AMP and PKA signaling during striatum dependent behaviors

**S. M. Augustin**;
NIAAA, National Institutes of Health - NIAAA, Bethesda, MD.

**Time:** Sunday, October 20, 2019, 3:15 PM - 3:35 PM

181.07. Imaging the intracellular signaling events downstream of neuromodulation

**H. Zhong**;
Vollum Institute, L474, Oregon Health & Science University, Portland, OR.

**Time:** Sunday, October 20, 2019, 3:35 PM - 4:00 PM

181.08. Closing Remarks

**Symposium**

**256. Circuit Variability and Plasticity in the Central Nervous System of *Drosophila***

Theme A – Development

**Location:** Room S100A

**Time:** Monday, October 21, 2019, 8:30 AM - 11:00 AM

Which level of variability in the connections within a circuit can support behavioral variation among individuals or trigger the modified response of an animal that has learned a given task? Unprecedented views into neuronal morphology and circuit organization allow for asking such questions in flies with great precision. This symposium will explore how variability emerges during nervous system development and its behavioral correlates and discuss the signals that promote plasticity in the adult nervous system.

**Time:** Monday, October 21, 2019, 8:30 AM - 11:00 AM

256. Chair

**G. Tavosanis**;
DZNE, Bonn, GERMANY.

**Time:** Monday, October 21, 2019, 8:30 AM - 11:00 AM

256. Co Chair

**B. A. Hassan**;
Institut du Cerveau et de la Moelle épinière (ICM), INSERM, CNRS, Sorbonne University, Paris, FRANCE.

**Time:** Monday, October 21, 2019, 8:30 AM - 8:35 AM

256.01. Introduction

**Time:** Monday, October 21, 2019, 8:35 AM - 9:10 AM

256.02. Circuit rewiring accompanies memory consolidation

**G. Tavosanis**;
Dynamics of neuronal circuits, DZNE, Bonn, GERMANY.

**Time:** Monday, October 21, 2019, 9:10 AM - 9:45 AM

256.03. Through the I of the fly

**B. A. Hassan**;
Institut du Cerveau et de la Moelle épinière (ICM), Inserm, CNRS, Sorbonne Université and Hôpital de la Pitié-Salpêtrière, Paris, FRANCE.

**Time:** Monday, October 21, 2019, 9:45 AM - 10:20 AM

256.04. Toll receptors regulate structural brain plasticity and neurodegeneration

**A. Hidalgo**;
School of Biosciences, University of Birmingham, Birmingham, UNITED KINGDOM.

**Time:** Monday, October 21, 2019, 10:20 AM - 10:55 AM

256.05. Activity-dependent regulations of cholinergic receptor signaling contribute to the maturation of developing dendrites

**Q. Yuan**;
Dendrite Morphogenesis and Plasticity Unit, National Institute of Neurological Disorders and Stroke, National Institutes of Health, Bethesda, MD.

**Time:** Monday, October 21, 2019, 10:55 AM - 11:00 AM

256.06. Closing Remarks

**Symposium**

## 257. Dissecting Cerebellar Function: A Prototypical Circuit Critical for Motor Learning and Cognition

Theme B – Neural Excitability/ Synapses/ and Glia

**Location:** Room S100BC

**Time:** Monday, October 21, 2019, 8:30 AM - 11:00 AM

At the end of 2018, the world lost Prof Masao Ito. Few have shaped our understanding of the cerebellum more — from the identification of inhibitory actions of Purkinje cells, to the postulate and discovery of synaptic long-term depression and a role beyond motor control. This tribute to his visionary work and how it continues to influence research around the world features state-of-the-art studies of cerebellar development, plasticity, and consequences for cognition and its disorders.

**Time:** Monday, October 21, 2019, 8:30 AM - 11:00 AM

257. Chair

**M. Yuzaki**;
Keio University School of Medicine, Tokyo, JAPAN.

**Time:** Monday, October 21, 2019, 8:30 AM - 8:35 AM

257.01. Introduction

**Time:** Monday, October 21, 2019, 8:35 AM - 9:10 AM

257.02. Synapse remodeling in developing Purkinje cells

**M. Kano**;
IRCN / Neurophysiology, Grad Sch Med, Univ Tokyo, Tokyo, JAPAN.

**Time:** Monday, October 21, 2019, 9:10 AM - 9:45 AM

257.03. Cerebellar circuits for locomotor learning

**M. R. Carey**;
Neuroscience, Champalimaud Center For the Unknown, Lisboa, PORTUGAL.

**Time:** Monday, October 21, 2019, 9:45 AM - 10:20 AM

257.04. Causal link between LTD and motor learning

**M. Yuzaki**;
Physiology, Keio University School of Medicine, Tokyo, JAPAN.

**Time:** Monday, October 21, 2019, 10:20 AM - 10:55 AM

257.05. Cerebellar connectivity in cognition and its disorders

**C. J. Stoodley**;
Psychology, American University, Washington, DC.

**Time:** Monday, October 21, 2019, 10:55 AM - 11:00 AM

257.06. Closing Remarks

**Minisymposium**

## 258. Phenotype Suppression in Neurodegeneration

Theme C – Neurodegenerative Disorders and Injury

**Location:** Room S105

**Time:** Monday, October 21, 2019, 8:30 AM - 11:00 AM

The underlying causes of neurodegeneration remain elusive in many diseases, including ALS and FTD. This minisymposium will focus on the hallmark phenotypes of these diseases and the

molecular and cellular pathways that suppress them. Rather than uniting around a specific genetic mutation or model organism, this minisymposium will highlight models with clinically relevant symptoms that enable mechanistic studies based on genetic or pharmacological suppressors.

**Time:** Monday, October 21, 2019, 8:30 AM - 11:00 AM

258. Chair

**K. Wharton**;
MCB, Carney Institute for Brain Science, Brown University, Providence, RI.

**Time:** Monday, October 21, 2019, 8:30 AM - 8:35 AM

258.01. Introduction

**Time:** Monday, October 21, 2019, 8:35 AM - 8:55 AM

258.02. Cellular mechanisms promoting and preventing neurodegeneration in C. elegans models of ALS and FTLD-TDP

**N. F. Liachko**;
GRECC, VA Puget Sound Health Care System, Seattle, WA.

**Time:** Monday, October 21, 2019, 8:55 AM - 9:15 AM

258.03. Disruption of RNA metabolism in neurodegenerative diseases and emerging therapeutic strategies

**C. Lagier-Tourenne**;
Neurology, Massachusetts General Hospital, Boston, MA.

**Time:** Monday, October 21, 2019, 9:15 AM - 9:35 AM

258.04. Protein translation defects in ALS and FTD

**S. Da Cruz**;
Ludwig Institute for Cancer Research, University of California San Diego, La Jolla, CA.

**Time:** Monday, October 21, 2019, 9:35 AM - 9:55 AM

258.05. Targeting interactions within RNA granules to mitigate persistent protein aggregation

**S. Markmiller**;
Yeo Lab, University of California San Diego, La Jolla, CA.

**Time:** Monday, October 21, 2019, 9:55 AM - 10:15 AM

258.06. Targeting stress response pathways in neurodegenerative disorders

**D. Bosco**;
Neurology, University of Massachusetts, Worcester, MA.

**Time:** Monday, October 21, 2019, 10:15 AM - 10:35 AM

258.07. Genetic suppressors of multiple ALS models highlight dysregulated pathways

**M. Bartoletti**;
Molecular Biology, Cell Biology and Biochemistry, Brown University, Providence, RI.

**Time:** Monday, October 21, 2019, 10:35 AM - 11:00 AM

258.08. Closing Remarks

**Minisymposium**

## 259. Insights Into Neural Coding and Behavior From Large-Scale Population Recordings Across Cortical Areas

Theme F – Integrative Physiology and Behavior

**Location:** Room S406B

**Time:** Monday, October 21, 2019, 8:30 AM - 11:00 AM

Cognitive functions involve information processing within and across the neocortical areas. This minisymposium aims to unravel how local and global cortical dynamics contribute to sensory processing, attention, working memory, and decision making. Novel optical and electrophysiological methods for simultaneous recordings across multiple areas, their application across mammalian species, and computational approaches for analyzing large-scale population activity will be discussed.

**Time:** Monday, October 21, 2019, 8:30 AM - 11:00 AM

259. Chair

**J. L. Chen**;
Boston University, Boston, MA.

**Time:** Monday, October 21, 2019, 8:30 AM - 8:35 AM

259.01. Introduction

**Time:** Monday, October 21, 2019, 8:35 AM - 8:55 AM

259.02. Population codes in sensory and association cortex: Excitatory and inhibitory dynamics

**C. A. Runyan**;
Neuroscience, University of Pittsburgh, Pittsburgh, PA.

**Time:** Monday, October 21, 2019, 8:55 AM - 9:15 AM

259.03. Imaging Long-Range Cortical Networks for Context Dependent Sensory Processing

**J. L. Chen**;
Biology, Boston University, Boston, MA.

**Time:** Monday, October 21, 2019, 9:15 AM - 9:35 AM

259.04. Frontal cortical activity with long-range input activity for motor execution

**M. Matsuzaki**;
Physiology, Graduate School of Medicine, University of Tokyo, Tokyo, JAPAN.

**Time:** Monday, October 21, 2019, 9:35 AM - 9:55 AM

259.05. Distributed networks for choice, action,
and engagement across the mouse brain

**N. A. Steinmetz**;
Biological Structure, University of Washington, Seattle, WA.

**Time:** Monday, October 21, 2019, 9:55 AM - 10:15 AM

259.06. Movement-related activity dominates cortical processing

**S. Musall**;
Neuroscience, Cold Spring Harbor Laboratory, Cold Spring Harbor, NY.

**Time:** Monday, October 21, 2019, 10:15 AM - 10:35 AM

259.07. Multi-area mechanisms of flexible behavior

**M. R. Cohen**;
Neuroscience, University of Pittsburgh, Pittsburgh, PA.

**Time:** Monday, October 21, 2019, 10:35 AM - 11:00 AM

259.08. Closing Remarks

**Minisymposium**

**260. Ventral Tegmental Area (VTA) Cell Heterogeneity in Health and Disease**

Theme G – Motivation and Emotion

**Location:** Room S102

**Time:** Monday, October 21, 2019, 8:30 AM - 11:00 AM

Historically, most research on the ventral tegmental area (VTA) has tested dopamine function as it relates to reward processing. Recent progress indicates 1) non-dopamine VTA neurons significantly impact behavior, 2) VTA inputs and outputs have multiple, sometimes opposing, behavioral effects, and 3) the VTA subserves various functions impacted by mental health disorders. This minisymposium will describe newly elucidated roles of specific VTA cell populations in addiction, reward, aversion, fear and sleep.

**Time:** Monday, October 21, 2019, 8:30 AM - 11:00 AM

260. Chair

**N. W. Gilpin**;
Louisiana State University Health Sciences Center, New Orleans, LA.

**Time:** Monday, October 21, 2019, 8:30 AM - 11:00 AM

260. Co Chair

**E. B. Margolis**;
Neurology, University of California, San Francisco, San Francisco, CA.

**Time:** Monday, October 21, 2019, 8:30 AM - 8:35 AM

260.01. Introduction

**Time:** Monday, October 21, 2019, 8:35 AM - 8:55 AM

260.02. Stress switches kappa opioid receptor function in the ventral tegmental area from inhibitory to excitatory

**E. B. Margolis**;
Neurology, UCSF, San Francisco, CA.

**Time:** Monday, October 21, 2019, 8:55 AM - 9:15 AM

260.03. A neural circuit mechanism for encoding aversive stimuli in the mesolimbic dopamine system

**J. W. De Jong**;
Molecular and Cell Biology, UC Berkeley, Berkeley, CA.

**Time:** Monday, October 21, 2019, 9:15 AM - 9:35 AM

260.04. Neuropeptidergic systems isolate operationally distinct dopamine pathways

**L. Zweifel**;
Pharmacology, University of Washington, Seattle, WA.

**Time:** Monday, October 21, 2019, 9:35 AM - 9:55 AM

260.05. Targets of VTA combinatorial glutamate-GABA neurons

**M. Morales**;
Integrative Neuroscience Research Branch, NIH/NIDA IRP, Baltimore, MD.

**Time:** Monday, October 21, 2019, 9:55 AM - 10:15 AM

260.06. Alcohol dependence activates ventral tegmental area projections to central amygdala

**E. M. Avegno**;
Physiology, Louisiana State University Health Sciences Center, New Orleans, LA.

**Time:** Monday, October 21, 2019, 10:15 AM - 10:35 AM

260.07. GABA and glutamate neurons in the VTA regulate sleep and wakefulness

**W. Wisden**;
Life Sciences, Imperial College, London, UNITED KINGDOM.

**Time:** Monday, October 21, 2019, 10:35 AM - 11:00 AM

260.08. Closing Remarks

**Minisymposium**

**261. Artificial Intelligence and Neuroscience: From Neural Dynamics to Artificial Agents**

Theme I – Techniques

**Location:** Room S406A

**Time:** Monday, October 21, 2019, 8:30 AM - 11:00 AM

Machine learning research is advancing at a fast pace, with substantial impacts on neuroscience. Data-analytic approaches have helped to uncover and characterize dynamical structure in neural population activity, while artificial networks have provided insights into representations and computations in the brain. This minisymposium will explore topics at the intersection of machine learning and neuroscience, demonstrating recent advances and how both fields can benefit from a close interaction.

**Time:** Monday, October 21, 2019, 8:30 AM - 11:00 AM

261. Chair

**M. Sahani**;
Gatsby Computational Neuroscience Unit, University College London, London, UNITED KINGDOM.

**Time:** Monday, October 21, 2019, 8:30 AM - 8:35 AM

261.01. Introduction

**Time:** Monday, October 21, 2019, 8:35 AM - 8:55 AM

261.02. Understanding neural dynamics under flexible visuomotor tasks with neural decoding and manifold learning

**O. Costilla Reyes**;
Massachusetts Institute of Technology, Boston, MA.

**Time:** Monday, October 21, 2019, 8:55 AM - 9:15 AM

261.03. Inferring temporal and computational variability from population spike trains

**L. Duncker**;
Gatsby Computational Neuroscience Unit, University College London, London, UNITED KINGDOM.

**Time:** Monday, October 21, 2019, 9:15 AM - 9:35 AM

261.04. State space models for multiple interacting neural populations

**J. Glaser**;
Center for Theoretical Neuroscience, Columbia University in the City of New York, New York, NY.

**Time:** Monday, October 21, 2019, 9:35 AM - 9:55 AM

261.05. Network structure and dynamics of a mesoscopic mouse whole-brain connectome

**H. Choi**;
Department of Applied Mathematics, University of Washington, Seattle, WA.

**Time:** Monday, October 21, 2019, 9:55 AM - 10:15 AM

261.06. Task-Driven Convolutional Recurrent Neural Network Models of Dynamics in Higher Visual Cortex

**A. Nayebi**;
School of Medicine, Stanford University, Stanford, CA.

**Time:** Monday, October 21, 2019, 10:15 AM - 10:35 AM

261.07. Vector-based navigation using grid-like representations in artificial agents

**A. Banino**;
Neuroscience Unit, Deepmind, London, UNITED KINGDOM.

**Time:** Monday, October 21, 2019, 10:35 AM - 11:00 AM

261.08. Closing Remarks

**Symposium**

**344. From Single-Cell Profiling to Human Brain Organoids: Capturing Neural Development and Disease**

Theme A – Development

**Location:** Room S100A

**Time:** Monday, October 21, 2019, 1:30 PM - 4:00 PM

A critical challenge in understanding human brain development and disease has been the lack of direct access to functioning human neural tissue for detailed molecular investigation. This symposium will introduce recent advances in generating stem cell-derived neurons and glial cells in preparations known as brain organoids and assembloids. Moreover, it will illustrate how single-cell genomic & transcriptomic methods as well as studies of RNA and DNA modifications are advancing our understanding of neural development and disease.

**Time:** Monday, October 21, 2019, 1:30 PM - 4:00 PM

344. Chair

**S. P. Pasca**;
Psychiatry & Behavioral Sciences, Stanford University, Stanford, CA.

**Time:** Monday, October 21, 2019, 1:30 PM - 4:00 PM

344. Co Chair

**H. Song**;
Neuroscience, Perelman School of Medicine, Philadelphia, PA.

**Time:** Monday, October 21, 2019, 1:30 PM - 1:35 PM

344.01. Introduction

**Time:** Monday, October 21, 2019, 1:35 PM - 2:10 PM

344.02. Dissecting brain organoids with single-cell genomics

**B. Treutlein**;
Department for Genetics, Max Planck Institute for Evolutionary Anthropology, Leipzig, GERMANY.

**Time:** Monday, October 21, 2019, 2:10 PM - 2:45 PM

344.03. Dynamic post-transcriptional mechanisms governing cortical development and disease

**D. L. Silver**;
Molecular Genetics and Microbiology, Duke University Medical Center, Durham, NC.

**Time:** Monday, October 21, 2019, 2:45 PM - 3:20 PM

344.04. Assembling tridimensional human brain models to study development and disease

**S. P. Pasca**;
Psychiatry & Behavioral Sciences, Stanford University, Palo Alto, CA.

**Time:** Monday, October 21, 2019, 3:20 PM - 3:55 PM

344.05. Epitranscriptomic regulation of neurogenesis, plasticity and regeneration

**H. Song**;
Neuroscience, Perelman School of Medicine, Philadelphia, PA.

**Time:** Monday, October 21, 2019, 3:55 PM - 4:00 PM

344.06. Closing Remarks

**Symposium**

**345. Cortical Disinhibitory Circuits: Cell Types, Connectivity, and Function**

Theme F – Integrative Physiology and Behavior

**Location:** Room S100BC

**Time:** Monday, October 21, 2019, 1:30 PM - 4:00 PM

The concept of cortical disinhibition has recently arisen as an important mechanism for information flow during complex behavioral tasks. Identifying the neuron types involved in cortical disinhibition, their connectivity patterns, and their functional role is therefore critical to understanding the structure and function of disinhibitory circuits. This symposium brings together leading scientists from around the world to present the latest discoveries on the dynamic organization of cortical microcircuits with focus on disinhibition and its role in cognition and behavior.

**Time:** Monday, October 21, 2019, 1:30 PM - 4:00 PM

345. Chair

**L. Topolnik**;
Laval University, Quebec City, CANADA.

**Time:** Monday, October 21, 2019, 1:30 PM - 4:00 PM

345. Co Chair

**K. Kullander**;
Neuroscience, Uppsala University, Uppsala, SWEDEN.

**Time:** Monday, October 21, 2019, 1:30 PM - 1:35 PM

345.01. Introduction

**Time:** Monday, October 21, 2019, 1:35 PM - 2:10 PM

345.02. OLMa2 cells in bidirectional modulation of CA1 microcircuits and behavior

**K. Kullander**;
Neuroscience, Uppsala University, Uppsala, SWEDEN.

**Time:** Monday, October 21, 2019, 2:10 PM - 2:45 PM

345.03. Hippocampal disinhibitory circuits: cell types, connectivity and network state-dependent recruitment in awake mice

**L. Topolnik**;
Neuroscience Axis, CRCHUQ-CHUL, Laval University, Quebec City, CANADA.

**Time:** Monday, October 21, 2019, 2:45 PM - 3:20 PM

345.04. Layer-specific organization of cortical disinhibitory circuits

**X. Jiang**;
Neuroscience, Baylor College of Medicine, Duncan Neurological Research Institute at Texas Children's Hospital, Houston, TX.

**Time:** Monday, October 21, 2019, 3:20 PM - 3:55 PM

345.05. Top-down control of cortical processing during behavior

**J. Letzkus**;
Max Planck Institute for Brain Research, Max Planck Institute for Brain Research, Frankfurt, GERMANY.

**Time:** Monday, October 21, 2019, 3:55 PM - 4:00 PM

345.06. Closing Remarks

**Minisymposium**

**346. Necroptosis and Other Non-Apoptotic Processes in Microglial Pathophysiology and Neurologic Diseases**

Theme C – Neurodegenerative Disorders and Injury

**Location:** Room S105

**Time:** Monday, October 21, 2019, 1:30 PM - 4:00 PM

An emerging view is that inflammation and altered innate immunity drive the pathophysiology of neurodegenerative diseases. The identification of a RIPK1-mediated necroptotic pathway that sits at the intersection of cell death and inflammation presents a new opportunity to explore the role of inflammation in degenerative diseases. This minisymposium will explore the immune response in the context of cellular stress in neurodegenerative diseases.

**Time:** Monday, October 21, 2019, 1:30 PM - 4:00 PM

346. Chair

**D. Ofengeim**;
Rare and Neurologic Disease Research TA, Sanofi, Framingham.

**Time:** Monday, October 21, 2019, 1:30 PM - 1:35 PM

346.01. Introduction

**Time:** Monday, October 21, 2019, 1:35 PM - 1:55 PM

346.02. Tuning Apoptosis and Neuroinflammation: TBK1 Suppresses RIPK1 during Development and in Aging

**D. Xu**;
Harvard Med School, Boston, MA.

**Time:** Monday, October 21, 2019, 1:55 PM - 2:15 PM

346.03. Activation of necroptosis signalling in multiple sclerosis grey matter

**R. Reynolds**;
Medicine, Imperial College London, London, UNITED KINGDOM.

**Time:** Monday, October 21, 2019, 2:15 PM - 2:35 PM

346.04. Mitophagy Mitigates STING-Mediated Inflammation

**D. Sliter**;
Biochemistry Section, NINDS, Bethesda, MD.

**Time:** Monday, October 21, 2019, 2:35 PM - 2:55 PM

346.05. Shifting Microglial function in disease

**M. Kerschensteiner**;
Clinical Neuroimmunology, Ludwig-Maximilians University of Munich, Munich, GERMANY.

**Time:** Monday, October 21, 2019, 2:55 PM - 3:15 PM

346.06. Understanding microglial phenotypes in disease

**O. Butovsky**;
Neurology/ARCND, Brigham and Women's Hospital, Boston, MA.

**Time:** Monday, October 21, 2019, 3:15 PM - 3:35 PM

346.07. Microglial turnover as a dynamic node of regulation in neurodegenerative disease

**D. Ofengeim**;
Rare and Neurologic Disease Research TA, Sanofi, Framingham, MA.

**Time:** Monday, October 21, 2019, 3:35 PM - 4:00 PM

346.08. Closing Remarks

**Minisymposium**

**347. What Do Neurons Want?**

Theme D – Sensory Systems

**Location:** Room S102

**Time:** Monday, October 21, 2019, 1:30 PM - 4:00 PM

Sixty years after Hubel and Wiesel, there remain important questions about the shapes that visually responsive neurons learn to abstract from the natural world. Recent advances in computational neuroscience have paved the way to rethinking neural coding for visual shapes. This minisymposium will discuss recent findings and theories about neuronal representations in the visual cortex, as revealed through experiments, simulations and the novel use of machine learning tools including generative neural networks.

**Time:** Monday, October 21, 2019, 1:30 PM - 4:00 PM

347. Chair

**G. Kreiman**;
Harvard Medical School, Boston, MA.

**Time:** Monday, October 21, 2019, 1:30 PM - 4:00 PM

347. Co Chair

**C. R. Ponce**;
Neuroscience, Washington University at St. Louis, Saint Louis, MO.

**Time:** Monday, October 21, 2019, 1:30 PM - 1:35 PM

347.01. Introduction

**Time:** Monday, October 21, 2019, 1:35 PM - 1:55 PM

347.02. Cortical computations in the ventral visual pathway from areas V1 to V4

**T. O. Sharpee**;
CNL-T, Salk Institute, La Jolla.

**Time:** Monday, October 21, 2019, 1:55 PM - 2:15 PM

347.03. The central-peripheral dichotomy in the top-down Feedback in visual recognition

**L. Zhaoping**;
Sensory and Sensorimotor Systems, Max Planck Institute For Biological Cybernetics and University of Tuebingen, Tuebingen, GERMANY.

**Time:** Monday, October 21, 2019, 2:15 PM - 2:35 PM

347.04. Why and how do deep convolutional network models work?

**T. A. Poggio**;
Dept Brain And Cog Sci MIT, MIT, Cambridge.

**Time:** Monday, October 21, 2019, 2:35 PM - 2:55 PM

347.05. Shape encoding in the ventral visual pathway

**C. E. Connor**;
Krieger Mind/Brain Inst, Johns Hopkins Univ, Baltimore, MD.

**Time:** Monday, October 21, 2019, 2:55 PM - 3:15 PM

347.06. Understanding and Visualizing Artificial Neural Networks

**A. Nguyen**;
Computer Science and Software Engineering, Auburn University, Auburn, AL.

**Time:** Monday, October 21, 2019, 3:15 PM - 3:35 PM

347.07. Evolving super stimuli for real neurons using a deep generative network

**M. S. Livingstone**;
Neurobiology, Harvard Medical School, Boston, MA.

**Time:** Monday, October 21, 2019, 3:35 PM - 4:00 PM

347.08. Closing Remarks

**Minisymposium**

**348. Awakening the Engram: The Etiological Role of Engram Cells for Memory Formation, Storage, and Retrieval in Health and Disease**

Theme H – Cognition

**Location:** Room S406A

**Time:** Monday, October 21, 2019, 1:30 PM - 4:00 PM

Converging evidence over the past several years suggests that memories are stored at least in part as specific populations of ?engram? cells. In this symposium, leading experts in engram biology share their continuously refined insights on how engram cells contribute to information encoding and storage, across diverse brain regions and behavioral modalities. Particular emphasis is placed on their emerging translational value for memory dysfunctions in age and stress-related disorders.

**Time:** Monday, October 21, 2019, 1:30 PM - 4:00 PM

348. Chair

**J. Gräff**;
School of Life Sciences, EPFL, Lausanne, SWITZERLAND.

**Time:** Monday, October 21, 2019, 1:30 PM - 4:00 PM

348. Co Chair

**T. J. Ryan**;
School of Biochemistry and Immunology, Trinity College Dublin, Dublin, IRELAND.

**Time:** Monday, October 21, 2019, 1:30 PM - 1:35 PM

348.01. Introduction

**Time:** Monday, October 21, 2019, 1:35 PM - 1:55 PM

348.02. Imaging memory traces over half a life-time in the medial temporal lobe

**M. Sauvage**;
Functional Architecture of Memory, Leibniz Institute for Neurobiology, Magdeburg, GERMANY.

**Time:** Monday, October 21, 2019, 1:55 PM - 2:15 PM

348.03. Mechanisms of information storage in engram cells

**T. Ryan**;
School of Biochemistry and Immunology, Trinity College Dublin, Dublin, IRELAND.

**Time:** Monday, October 21, 2019, 2:15 PM - 2:35 PM

348.04. Finding the Engram: Activation of Dentate Gyrus Memory Traces Rescues Age-Related Cognitive Decline

**C. A. Denny**;
Department of Psychiatry, Columbia University, New York.

**Time:** Monday, October 21, 2019, 2:35 PM - 2:55 PM

348.05. Understanding how hippocampal microcircuits support engram dependent indexing in adulthood and aging

**N. Guo**;
Harvard University, Cambridge, MA.

**Time:** Monday, October 21, 2019, 2:55 PM - 3:15 PM

348.06. Socially-induced reinstatement of a contextual fear engram

**S. Ramirez**;
Boston University, Boston, MA.

**Time:** Monday, October 21, 2019, 3:15 PM - 3:35 PM

348.07. Rewrite or overwrite - Identifying the neuromolecular circuits of remote fear memory attenuation

**J. Gräff**;
Brain Mind Institute, EPFL, Lausanne, SWITZERLAND.

**Time:** Monday, October 21, 2019, 3:35 PM - 4:00 PM

348.08. Closing Remarks

**Symposium**

**435. The Paraventricular Thalamus (PVT): Salience and Timing Orchestrator for Learning and Deciding**

Theme G – Motivation and Emotion

**Location:** Room S100BC

**Time:** Tuesday, October 22, 2019, 8:30 AM - 11:00 AM

The goal of this symposium is to present novel perspectives on the established and emerging roles of the PVT in complex behaviors. There has been an explosion of interest in the PVT due to its recently described roles in orchestrating decisions and behaviors involving emotional salience. Evidence suggests that the PVT shapes behaviors by integrating information about the

memory and salience of negative and positive experiences, functions highly germane to addiction and psychopathology.

**Time:** Tuesday, October 22, 2019, 8:30 AM - 11:00 AM

435. Chair

**S. Bhatnagar**;
Dept Anesthesiology, University of Pennsylvania, Children's Hospital Philadelphia, Philadelphia, PA.

**Time:** Tuesday, October 22, 2019, 8:30 AM - 11:00 AM

435. Co Chair

**T. Z. Baram**;
Neurological Sciences, Pediatrics, Anatomy and Neurobiology, Neurology, University of California Irvine, Irvine, CA.

**Time:** Tuesday, October 22, 2019, 8:30 AM - 8:35 AM

435.01. Introduction

**Time:** Tuesday, October 22, 2019, 8:35 AM - 9:10 AM

435.02. Salience processing in the PVT

**X. Chen**;
Biology, Stanford University, Palo ALto, CA.

**Time:** Tuesday, October 22, 2019, 9:10 AM - 9:45 AM

435.03. Functionally distinct domains across the antero-posterior axis of the PVT

**M. Penzo**;
Unit on the Neurobiology of Affective Memory, NIH, Bethesda, MD.

**Time:** Tuesday, October 22, 2019, 9:45 AM - 10:20 AM

435.04. PVT- a sensor of emotionally salient early-life experiences.

**T. Z. Baram**;
Pediatrics, University of California-Irvine, Irvine, CA.

**Time:** Tuesday, October 22, 2019, 10:20 AM - 10:55 AM

435.05. Synaptic plasticity in the PVT underlies salience for stress experiences

**S. Bhatnagar**;
Dept Anesthesiology, Univ Pennsylvania, Children's Hosp Philadelphia, Philadelphia, PA.

**Time:** Tuesday, October 22, 2019, 10:55 AM - 11:00 AM

435.06. Closing Remarks

**Symposium**

**436. Brain Somatic Mosaicism: Implications for Development and Disorders**

Theme I – Techniques

**Location:** Room S100A

**Time:** Tuesday, October 22, 2019, 8:30 AM - 11:00 AM

Cells of the human brain can contain differences in their individual genome sequences, manifesting as single-nucleotide variants (SNVs), mobile element insertions (MEIs), and large copy number variants (CNVs). This symposium will discuss the analysis of somatic mosaicism using advanced genome sequencing approaches, as well as how mosaic variants arise and spread across the brain and their frequencies, mechanisms, and relevance for development and disease.

**Time:** Tuesday, October 22, 2019, 8:30 AM - 11:00 AM

436. Chair

**F. M. Vaccarino**;
Child Study Ctr, Yale University, New Haven, CT.

**Time:** Tuesday, October 22, 2019, 8:30 AM - 11:00 AM

436. Co Chair

**A. E. Urban**;
Psychiatry, Genetics, Stanford University, Palo Alto, CA.

**Time:** Tuesday, October 22, 2019, 8:30 AM - 8:35 AM

436.01. Introduction

**Time:** Tuesday, October 22, 2019, 8:35 AM - 9:10 AM

436.02. Genomewide spectra of mutations in neurons revealed by cloning

**K. Baldwin**;
Neuroscience, Scripps Research Institute, La Jolla, CA.

**Time:** Tuesday, October 22, 2019, 9:10 AM - 9:45 AM

436.03. Regulation and Function of Mobile Elements in the Brain

**F. H. Gage**;
LOG-G, Salk Institute, La Jolla, CA.

**Time:** Tuesday, October 22, 2019, 9:45 AM - 10:20 AM

436.04. Somatic mutations in early human development

**F. M. Vaccarino**;
Child Study Ctr, Yale Univ, New Haven, CT.

**Time:** Tuesday, October 22, 2019, 10:20 AM - 10:55 AM

436.05. Somatic mutation and genomic diversity in the human cerebral cortex

**C. A. Walsh**;
Genetics and Genomics, Boston Children's Hospital, Boston, MA.

**Time:** Tuesday, October 22, 2019, 10:55 AM - 11:00 AM

436.06. Closing Remarks

**Minisymposium**

**437. Novel Mechanisms of Neuronal Alternative Splicing and Strategies to Correct Aberrant-Splicing**

Theme A – Development

**Location:** Room S102

**Time:** Tuesday, October 22, 2019, 8:30 AM - 11:00 AM

Dynamic changes in alternative splicing support virtually every neuronal process, ranging from development and plasticity to complex behaviors and cognition, and is implicated in disease pathology. This minisymposium will focus on novel cell-specific mechanisms that regulate alternative splicing in neurons and how these findings inform promising new therapies to correct and control splicing defects.

**Time:** Tuesday, October 22, 2019, 8:30 AM - 11:00 AM

437. Chair

**E. J. Lopez Soto**;
Department of Neuroscience, Brown University, Providence, RI.

**Time:** Tuesday, October 22, 2019, 8:30 AM - 8:35 AM

437.01. Introduction

**Time:** Tuesday, October 22, 2019, 8:35 AM - 8:55 AM

437.02. Alternative splicing control of neuronal differentiation.

**S. Zheng**;
School of Medicine, University of California Riverside, Riverside, CA.

**Time:** Tuesday, October 22, 2019, 8:55 AM - 9:15 AM

437.03. Pervasive neuronal isoform-level dysregulation in Autism Spectrum Disorder, schizophrenia, and bipolar disorder

**M. Gandal**;
Brain Research Institute, UCLA, Los Angeles, CA.

**Time:** Tuesday, October 22, 2019, 9:15 AM - 9:35 AM

437.04. Cell-specific epigenetic modification of the CACNA1B gene in nociceptors controls calcium channel function in normal and neuropathic pain

**E. J. Lopez Soto**;
Department of Neuroscience, Brown University, Providence, RI.

**Time:** Tuesday, October 22, 2019, 9:35 AM - 9:55 AM

437.05. Chromatin-mediated alternative splicing in reward pathophysiology.

**E. A. Heller**;
Department of Systems Pharmacology and Translational Therapeutics, University of Pennsylvania, Philadelphia, PA.

**Time:** Tuesday, October 22, 2019, 9:55 AM - 10:15 AM

437.06. Activity-dependent neuronal microexons in EIF4G specialize the translational machinery to control higher-order cognitive functions.

**T. Gonatopoulos-Pournatzis**;
Donnelly Centre., University of Toronto., Toronto, CANADA.

**Time:** Tuesday, October 22, 2019, 10:15 AM - 10:35 AM

437.07. Novel insights from splicing regulation of spinal muscular atrophy gene.

**D. Luo**;
College of Veterinary Medicine, Iowa State University., Ames, IA.

**Time:** Tuesday, October 22, 2019, 10:35 AM - 11:00 AM

437.08. Closing Remarks

**Minisymposium**

**438. Sensory Circuits for Vision and Smell: Integrating Molecular, Anatomical, and Functional Maps**

Theme D – Sensory Systems

**Location:** Room S105

**Time:** Tuesday, October 22, 2019, 8:30 AM - 11:00 AM

The past decade has witnessed major advances in the development of molecular, anatomical, and functional techniques for large scale brain mapping. However, integrating these complementary techniques has remained challenging. This minisymposium will demonstrate how novel approaches can be combined to bridge these gaps and systematically generate insight into the molecular and functional topology of sensory neural circuits.

**Time:** Tuesday, October 22, 2019, 8:30 AM - 11:00 AM

438. Chair

**A. Fleischmann**;
Neuroscience, Brown University, Providence, RI.

**Time:** Tuesday, October 22, 2019, 8:30 AM - 11:00 AM

438. Co Chair

**A. T. Schaefer**;
Behavioural Neurophysiology Laboratory, Francis Crick Institute, London, UNITED KINGDOM.

**Time:** Tuesday, October 22, 2019, 8:30 AM - 8:35 AM

438.01. Introduction

**Time:** Tuesday, October 22, 2019, 8:35 AM - 8:55 AM

438.02. Functional, three-dimensional spatial transcriptomics in the mammalian olfactory bulb

**A. T. Schaefer**;
Behavioural Neurophysiology Laboratory, Francis Crick Institute, London, UNITED KINGDOM.

**Time:** Tuesday, October 22, 2019, 8:55 AM - 9:15 AM

438.03. Functional organisation of neuronal circuits underlying visual processing

**F. Iacaruso**;
Neuronal Circuits and Behaviour Laboratory, Francis Crick Institute, London, UNITED KINGDOM.

**Time:** Tuesday, October 22, 2019, 9:15 AM - 9:35 AM

438.04. Understanding functional feedforward-feedback long range loops in mammalian olfaction

**D. Albeanu**;
Neuroscience, Cold Spring Harbor Laboratory, Cold Spring Harbor, NY.

**Time:** Tuesday, October 22, 2019, 9:35 AM - 9:55 AM

438.05. Spatial maps of molecularly defined subtypes of neurons using pciSeq

**M. Nilsson**;
Department of Biochemistry and Biophysics, Stockholm University, Stockholm, SWEDEN.

**Time:** Tuesday, October 22, 2019, 9:55 AM - 10:15 AM

438.06. Mapping cell-type specific connectivity in the mouse olfactory bulb with correlative electron microscopy

**K. A. Fulton**;
Neuroscience, National Institutes of Health, Bethesda, MD.

**Time:** Tuesday, October 22, 2019, 10:15 AM - 10:35 AM

438.07. What the lizard's brain tells the mammalian visual cortex

**R. Beltramo**;
UCSF School of Medicine, Howard Hughes Medical Institute, San Francisco, CA.

**Time:** Tuesday, October 22, 2019, 10:35 AM - 11:00 AM

438.08. Closing Remarks

**Minisymposium**

## 439. Beta Oscillations in Sensorimotor Function, Executive Action Control, and Working Memory

Theme E – Motor Systems

**Location:** Room S406A

**Time:** Tuesday, October 22, 2019, 8:30 AM - 11:00 AM

Beta oscillations in cortical and basal ganglia networks remain mysterious, yet they are closely linked to network function and dysfunction. While beta is classically seen as representing an akinetic state, this minisymposium will highlight new insight into beta in the sensorimotor system and in cognitive control. Results across three species as well as from computational

modelling, deep brain stimulation and electrophysiology that explain the mechanisms and function of beta and closed-loop methods in patients will be presented.

**Time:** Tuesday, October 22, 2019, 8:30 AM - 11:00 AM

439. Chair

**R. Schmidt**;
Department of Psychology, University of Sheffield, Sheffield, UNITED KINGDOM.

**Time:** Tuesday, October 22, 2019, 8:30 AM - 11:00 AM

439. Co Chair

**A. R. Aron**;
Psychology, University of California, San Diego, La Jolla, CA.

**Time:** Tuesday, October 22, 2019, 8:30 AM - 8:35 AM

439.01. Introduction

**Time:** Tuesday, October 22, 2019, 8:35 AM - 8:55 AM

439.02. An inhibitory role of cortical beta in working memory control and clear out

**M. Lundqvist**;
MIT Picower Institute for Learning and Memory, Massachussetts Institute of Technology, Cambridge, MA.

**Time:** Tuesday, October 22, 2019, 8:55 AM - 9:15 AM

439.03. Prefrontal beta as a signature of the stopping of action and thoughts

**A. R. Aron**;
Psychology, University of California San Diego, La Jolla, CA.

**Time:** Tuesday, October 22, 2019, 9:15 AM - 9:35 AM

439.04. The multiple beta bands of sensorimotor cortex

**B. E. Kilavik**;
Institut de Neurosciences de la Timone (INT), CNRS - Aix-Marseille University, Marseille, FRANCE.

**Time:** Tuesday, October 22, 2019, 9:35 AM - 9:55 AM

439.05. The role of sensorimotor beta oscillations in driving behavioral variability during motor learning

**M. H. Ruiz**;
Psychology, Goldsmiths University of London, London, UNITED KINGDOM.

**Time:** Tuesday, October 22, 2019, 9:55 AM - 10:15 AM

439.06. Beta oscillations in the basal ganglia during sensorimotor processing

**R. Schmidt**;
Department of Psychology, University of Sheffield, Sheffield, UNITED KINGDOM.

**Time:** Tuesday, October 22, 2019, 10:15 AM - 10:35 AM

439.07. Beta oscillations in the real world: chronic multisite invasive brain recording using wireless implanted devices in movement disorders

**P. A. Starr**;
Neurosurgery, University of California San Francisco Department of Neurological Surgery, San Francisco, CA.

**Time:** Tuesday, October 22, 2019, 10:35 AM - 11:00 AM

439.08. Closing Remarks

**Minisymposium**

## 440. Naturalistic Paradigms in Awake Monkeys: Bridging fMRI and Extra-Cellular Activities

Theme H – Cognition

**Location:** Room S406B

**Time:** Tuesday, October 22, 2019, 8:30 AM - 11:00 AM

Naturalistic viewing paradigms have become increasingly popular, as they translate to the real world conditions that shaped brain evolution. Recent advances in non-human primate research allow for the monitoring of large numbers of neurons, and the collection of richer behavioral and neural data than ever before. This minisymposium will present evidence that naturalistic paradigms reveal neural specializations and interaction patterns in the brain that would be dormant otherwise.

**Time:** Tuesday, October 22, 2019, 8:30 AM - 11:00 AM

440. Chair

**S. C. Kwok**;
East China Normal University, Shanghai, CHINA.

**Time:** Tuesday, October 22, 2019, 8:30 AM - 11:00 AM

440. Co Chair

**B. E. Russ**;
Center for Biomedical Imaging and Neuromodulation, Nathan S. Kline Institute for Psychiatric Research, Orangeburg, NY.

**Time:** Tuesday, October 22, 2019, 8:30 AM - 8:35 AM

440.01. Introduction

**Time:** Tuesday, October 22, 2019, 8:35 AM - 8:55 AM

440.02. Fallacious reconstruction of cinematic material reveals episodic retrospection and mnemonic rigidity in rhesus monkeys

**S. C. Kwok**;
School of Psychology and Cognitive Science, East China Normal University, Shanghai, CHINA.

**Time:** Tuesday, October 22, 2019, 8:55 AM - 9:15 AM

440.03. Neural dynamics associated with the free viewing of naturalistic visual scenes

**B. E. Russ**;
Center for Biomedical Imaging and Neuromodulation, Nathan S. Kline Institute For Psychiatric Research, Orangeburg, NY.

**Time:** Tuesday, October 22, 2019, 9:15 AM - 9:35 AM

440.04. Neural Correlates of Social Engagement Elicited in Rhesus Monkey by Videos with Social Content

**K. M. Gothard**;
Physiology, Univ Arizona, Col Med, Tucson, AZ.

**Time:** Tuesday, October 22, 2019, 9:35 AM - 9:55 AM

440.05. Comparing human and monkey neural circuits for processing naturalistic social scenes.

**J. Sliwa**;
Neurophysiology, Institut du Cerveau et de la Moelle epiniere, Paris, FRANCE.

**Time:** Tuesday, October 22, 2019, 9:55 AM - 10:15 AM

440.06. Comparing functional networks elicited by natural scene viewing with networks artificially induced by optogenetic stimulation of visual cortex

**M. Ortiz-Rios**;
Institute of Neuroscience, Newcastle University, Newcastle Upon Tyne, UNITED KINGDOM.

**Time:** Tuesday, October 22, 2019, 10:15 AM - 10:35 AM

440.07. fMRI mapping of neural responses to naturalistic videos reveals enmeshed functional networks within primate face patches

**S. Park**;
Section on Cognitive Neurophysiology and Imaging, National Institute of Mental Health, Bethesda, MD.

**Time:** Tuesday, October 22, 2019, 10:35 AM - 11:00 AM

440.08. Closing Remarks

**Symposium**

**527. Comparing Dopamine Metabolism in Mouse and Human Neurons: Relevance for Parkinson's Disease**

Theme C – Neurodegenerative Disorders and Injury

**Location:** Room S406A

**Time:** Tuesday, October 22, 2019, 1:30 PM - 4:00 PM

Parkinson’s disease involves the degeneration of dopaminergic neurons in the substantia nigra. However, unlike human patients, most Parkinson’s disease mouse models do not exhibit dopaminergic degeneration, suggesting fundamental species differences. This symposium will highlight recent work demonstrating that dopamine metabolism is differentially regulated across mouse and human midbrain neurons, contributing to differences in neuromelanin production and their susceptibility to degeneration.

**Time:** Tuesday, October 22, 2019, 1:30 PM - 4:00 PM

527. Chair

**D. Krainc**;
Northwestern University Feinberg School of Medicine, Chicago, IL.

**Time:** Tuesday, October 22, 2019, 1:30 PM - 1:35 PM

527.01. Introduction

**Time:** Tuesday, October 22, 2019, 1:35 PM - 2:10 PM

527.02. Dopamine metabolism in mouse versus human neurons

**D. Krainc**;
Department of Neurology, Northwestern University Feinberg School of Medicine, Chicago, IL.

**Time:** Tuesday, October 22, 2019, 2:10 PM - 2:45 PM

527.03. Dopamine oxidation and selective toxicity in neurons

**T. G. Hastings**;
Department of Neurology, University of Pittsburgh, Pittsburgh, PA.

**Time:** Tuesday, October 22, 2019, 2:45 PM - 3:20 PM

527.04. Neuromelanin imaging as a Parkinson's biomarker

**L. Zecca**;
Institute of Biomedical Technologies, Italian National Research Council, Milan, ITALY.

**Time:** Tuesday, October 22, 2019, 3:20 PM - 3:55 PM

527.05. Parkinson's disease and dopamine neurotransmission

**D. Sulzer**;
Departments of Neurology and Psychiatry, Columbia University, New York, NY.

**Time:** Tuesday, October 22, 2019, 3:55 PM - 4:00 PM

527.06. Closing Remarks

**Symposium**

**528. Neural Circuit and Plasticity Mechanisms of Cognitive Control of Feeding Behavior**

Theme F – Integrative Physiology and Behavior

**Location:** Room S100A

**Time:** Tuesday, October 22, 2019, 1:30 PM - 4:00 PM

Persistent food cravings drive overeating and binge-eating disorder. Palatable food cues stimulate excessive food seeking and consumption through cognitive and hedonic processes. This symposium will highlight new neural circuitry and plasticity mechanisms underlying cognitive control of feeding, including learning and memory processes that integrate sensory and reward components of food and related cues. Sex differences and translational implications of these findings will be also discussed.

**Time:** Tuesday, October 22, 2019, 1:30 PM - 4:00 PM

528. Chair

**G. D. Petrovich**;
Psychology, Boston College, Chestnut Hill, MA.

**Time:** Tuesday, October 22, 2019, 1:30 PM - 1:35 PM

528.01. Introduction

**Time:** Tuesday, October 22, 2019, 1:35 PM - 2:10 PM

528.02. Medial prefrontal cortex circuitry and cognitive motivation to eat

**G. D. Petrovich**;
Psychology, Boston College, Chestnut Hill, MA.

**Time:** Tuesday, October 22, 2019, 2:10 PM - 2:45 PM

528.03. A network of medial prefrontal, orbitofrontal, and insular cortical sites subserves opioid-driven eating and food impulsivity

**B. A. Baldo**;
Department of Psychiatry, University of Wisconsin-Madison, Madison, WI.

**Time:** Tuesday, October 22, 2019, 2:45 PM - 3:20 PM

528.04. Hypothalamus-hippocampus circuitry regulates food impulsivity via melanin-concentrating hormone

**S. E. Kanoski**;
Department of Biological Sciences, University of Southern California, Los Angeles, CA.

**Time:** Tuesday, October 22, 2019, 3:20 PM - 3:55 PM

528.05. Gut-brain signal regulation of food reinforcement in the modern food environment

**D. M. Small**;
Department of Psychiatry, Yale University School of Medicine, New Haven, CT.

**Time:** Tuesday, October 22, 2019, 3:55 PM - 4:00 PM

528.06. Closing Remarks

**Minisymposium**

## 529. Adult Hippocampal Neurogenesis in Humans and Rodents: New Evidence and New Perspectives

Theme A – Development

**Location:** Room S100BC

**Time:** Tuesday, October 22, 2019, 1:30 PM - 4:00 PM

Adult neurogenesis in mammals including humans affords remarkable structural and functional plasticity and regenerative capacity to mature circuits. This minisymposium will cover the most recent topics in adult hippocampal neurogenesis, including new evidence for human adult hippocampal neurogenesis, visualization of neural stem cells in living mice, regulation of adult neurogenesis by niche cells and neural circuits, and adult neurogenesis in the contexts of behavior and diseases.

**Time:** Tuesday, October 22, 2019, 1:30 PM - 4:00 PM

529. Chair

**J. Song**;
University of North Carolina, Chapel Hill, Chapel Hill, NC.

**Time:** Tuesday, October 22, 2019, 1:30 PM - 4:00 PM

529. Co Chair

**S. Ge**;
Neurobiology and Behavior, State University of New York at Stony Brook, Stony Brook, NY.

**Time:** Tuesday, October 22, 2019, 1:30 PM - 1:35 PM

529.01. Introduction

**Time:** Tuesday, October 22, 2019, 1:35 PM - 1:55 PM

529.02. Adult Hippocampal neurogenesis in humans

**M. Boldrini**;
Psychiatry, Columbia University, New York, NY.

**Time:** Tuesday, October 22, 2019, 1:55 PM - 2:15 PM

529.03. Visualization of hippocampal neurogenesis in vivo

**S. Jessberger**;
Brain Research Institute, University of Zurich, Zurich, SWITZERLAND.

**Time:** Tuesday, October 22, 2019, 2:15 PM - 2:35 PM

529.04. Dissecting neural circuits in regulating adult hippocampal neurogenesis

**J. Song**;
University of North Carolina, Chapel Hill, Chapel Hill, NC.

**Time:** Tuesday, October 22, 2019, 2:35 PM - 2:55 PM

529.05. Neuro-glio-vascular network regulation of hippocampal neurogenesis

**S. Ge**;
Neurobiology and Behavior, State University of New York At Stony Brook, Stony Brook.

**Time:** Tuesday, October 22, 2019, 2:55 PM - 3:15 PM

529.06. Contribution of new neurons to hippocampal functions

**A. Sahay**;
MGH Psychiatry, HMS, HSCI, Center For Regenerative Medicine, Boston, MA.

**Time:** Tuesday, October 22, 2019, 3:15 PM - 3:35 PM

529.07. Pathological role of hippocampal neurogenesis in epileptogenesis

**J. Hsieh**;
Biology, University of Texas at San Antonio, San Antonio.

**Time:** Tuesday, October 22, 2019, 3:35 PM - 4:00 PM

529.08. Closing Remarks

**Minisymposium**

## 530. The Synaptic Vesicle Cycle Revisited: New Insights Into the Modes and Mechanisms

Theme B – Neural Excitability/ Synapses/ and Glia

**Location:** Room S105

**Time:** Tuesday, October 22, 2019, 1:30 PM - 4:00 PM

Neurotransmission relies critically upon the ability of nerve terminals to locally recycle synaptic vesicles with precise efficiency. Recently, the field has witnessed many exciting discoveries on synaptic vesicle recycling. Novel pathways have been identified; multiple modes of vesicle exo-/endocytosis have been reported, distinguished by speed; and new points of molecular regulation are now known. This minisymposium will present these findings and discuss how they impact the classical view of the vesicle cycle.

**Time:** Tuesday, October 22, 2019, 1:30 PM - 4:00 PM

530. Chair

**J. R. Morgan**;
Eugene Bell Center for Regenerative Biology and Tissue Engineering, Marine Biological Laboratory, Woods Hole, MA.

**Time:** Tuesday, October 22, 2019, 1:30 PM - 4:00 PM

530. Co Chair

**S. Watanabe**;
Department of Cell Biology, Johns Hopkins University, Baltimore, MD.

**Time:** Tuesday, October 22, 2019, 1:30 PM - 1:35 PM

530.01. Introduction

**Time:** Tuesday, October 22, 2019, 1:35 PM - 1:55 PM

530.02. Molecular Mechanisms Underlying Exo-Endocytosis of Single Synaptic Vesicles

**N. L. Chanaday**;
Department of Pharmacology, Vanderbilt University School of Medicine, Nashville, TN.

**Time:** Tuesday, October 22, 2019, 1:55 PM - 2:15 PM

530.03. Biophysical and Molecular Mechanisms of Ultrafast Endocytosis

**S. Watanabe**;
Department of Cell Biology, Johns Hopkins University, Baltimore, MD.

**Time:** Tuesday, October 22, 2019, 2:15 PM - 2:35 PM

530.04. Activity-Dependent Bulk Endocytosis: Role of New Molecules

**M. A. Cousin**;
Department of Neuronal Cell Biology, University of Edinburgh, Edinburgh, UNITED KINGDOM.

**Time:** Tuesday, October 22, 2019, 2:35 PM - 2:55 PM

530.05. Phase Separation of Synaptic Vesicles at the Nerve Terminal

**D. Milovanovic**;
Department of Neuroscience, Yale School of Medicine, New Haven, CT.

**Time:** Tuesday, October 22, 2019, 2:55 PM - 3:15 PM

530.06. Coordination Between Vesicle Acidification and Trafficking at the Neuronal Synapse

**I. Milosevic**;
European Neuroscience Institute, European Neuroscience Institute, Gottingen, GERMANY.

**Time:** Tuesday, October 22, 2019, 3:15 PM - 3:35 PM

530.07. Parkinson’s Disease Mechanisms: Impacts on Synaptic Vesicle Trafficking

**J. R. Morgan**;
Eugene Bell Center for Regenerative Biology and Tissue Engineering, Marine Biological Laboratory, Woods Hole, MA.

**Time:** Tuesday, October 22, 2019, 3:35 PM - 4:00 PM

530.08. Closing Remarks

**Minisymposium**

## 531. Expecting the Unexpected: Cortical Circuits for Novelty Detection

Theme D – Sensory Systems

**Location:** Room S406B

**Time:** Tuesday, October 22, 2019, 1:30 PM - 4:00 PM

Efficient sensory processing involves building predictions based on context and detecting when events betray these predictions. Recent findings indicate that whether a stimulus is context-typical vs context-deviant/novel may be encoded by separate circuit mechanisms or even neural subpopulations (e.g. deviance detecting cells) distributed across sensory, associative, and prefrontal cortices. This minisymposium will highlight this discovery with converging results and insights from mice, ferrets, and humans.

**Time:** Tuesday, October 22, 2019, 1:30 PM - 4:00 PM

531. Chair

**J. P. Hamm**;
Neuroscience Institute, Georgia State University, Atlanta, GA.

**Time:** Tuesday, October 22, 2019, 1:30 PM - 1:35 PM

531.01. Introduction

**Time:** Tuesday, October 22, 2019, 1:35 PM - 1:55 PM

531.02. Cell and circuit mechanisms of deviance detection in visual cortex

**J. P. Hamm**;
Neuroscience, Georgia State University, Atlanta, GA.

**Time:** Tuesday, October 22, 2019, 1:55 PM - 2:15 PM

531.03. Stimulus-Specific Context Differentiation in Posterior Parietal Cortex of the Ferret

**F. Frohlich**;
Psychiatry, University of North Carolina, Chapel Hill, NC.

**Time:** Tuesday, October 22, 2019, 2:15 PM - 2:35 PM

531.04. The coding of novel vs. familiar stimuli in the mouse visual cortex

**J. Homann**;
Neuroscience, Princeton, Princeton, NJ.

**Time:** Tuesday, October 22, 2019, 2:35 PM - 2:55 PM

531.05. Circuit mechanisms for adaptation in auditory cortex

**M. N. Geffen**;
Neuroscience, University of Pennsylvania, Philadelphia, PA.

**Time:** Tuesday, October 22, 2019, 2:55 PM - 3:15 PM

531.06. How context modulates deviance responses - functional brain imaging and eye tracking investigations in humans

**M. Chait**;
Ear Institute, University College London, London, UNITED KINGDOM.

**Time:** Tuesday, October 22, 2019, 3:15 PM - 3:35 PM

531.07. Can you see a thought? Holographic manipulation of neuronal ensembles and behavioral choices

**R. Yuste**;
Biological Sciences, Columbia University, New York, NY.

**Time:** Tuesday, October 22, 2019, 3:35 PM - 4:00 PM

531.08. Closing Remarks

**Minisymposium**

**532. Redefining Neuromodulation of Behavior: Impact of a Modular Locus Coeruleus Architecture**

Theme F – Integrative Physiology and Behavior

**Location:** Room S102

**Time:** Tuesday, October 22, 2019, 1:30 PM - 4:00 PM

The locus coeruleus (LC) is a brainstem nucleus critical for survival (wakefulness, autonomic responses, and analgesia) as well as cognition. LC neurons project throughout the central nervous system and could transmit a homogenous noradrenergic signal that uniformly regulates these diverse functions. This minisymposium will present work reconceptualizing LC as a differentiated system for targeted neuromodulation on the basis of developmental, molecular, anatomical, and neurophysiological diversity.

**Time:** Tuesday, October 22, 2019, 1:30 PM - 4:00 PM

532. Chair

**N. K. Totah**;
Max Planck Institute for Biological Cybernetics, Tuebingen, GERMANY.

**Time:** Tuesday, October 22, 2019, 1:30 PM - 1:35 PM

532.01. Introduction

**Time:** Tuesday, October 22, 2019, 1:35 PM - 1:55 PM

532.02. The locus coeruleus is a complex and differentiated neuromodulatory system

**N. K. Totah**;
Physiology of Cognitive Processes, Helsinki Institute of Life Science, Helsinki, FINLAND.

**Time:** Tuesday, October 22, 2019, 1:55 PM - 2:15 PM

532.03. Making inferences from nociception: lessons from the double edged sword of the locus coeruleus

**A. E. Pickering**;
Physiology, Pharmacology & Neuroscience, University of Bristol, Bristol, UNITED KINGDOM.

**Time:** Tuesday, October 22, 2019, 2:15 PM - 2:35 PM

532.04. Unique roles of coeruleoamygdalar and coeruleocortical projection pathways in mediating anxiety-like behavior

**D. J. Chandler**;
Cell Biology and Neuroscience, Rowan University School of Osteopathic Medicine, Stratford, NJ.

**Time:** Tuesday, October 22, 2019, 2:35 PM - 2:55 PM

532.05. Distinct afferent and efferent locus coeruleus circuits modulate negative affect

**J. G. McCall**;
Anesthesiology, Washington University in St. Louis, St. Louis, MO.

**Time:** Tuesday, October 22, 2019, 2:55 PM - 3:15 PM

532.06. Defining a role for a locus coeruleus sub-circuit in behavioral flexibility

**L. A. Schwarz**;
Developmental Neurobiology, St. Jude Children's Research Hospital, Memphis, TN.

**Time:** Tuesday, October 22, 2019, 3:15 PM - 3:35 PM

532.07. Genetic strategies for uncovering the molecular basis of LC-NE neuron diversity

**P. Jensen**;
Neurobiology, NIEHS/NIH, Research Triangle Park, NC.

**Time:** Tuesday, October 22, 2019, 3:35 PM - 4:00 PM

532.08. Closing Remarks

**Symposium**

**618. New Approaches to Vision Restoration**

Theme D – Sensory Systems

**Location:** Room S100A

**Time:** Wednesday, October 23, 2019, 8:30 AM - 11:00 AM

A variety of translational strategies are being developed to restore vision to those who have blinding diseases. This symposium features premier investigators who will highlight four different approaches by discussing cutting-edge research in gene therapy, cell therapy, retinal prostheses, and optogenetic therapy. It will inform the community about the current state of the science using these approaches and highlight their potential to treat debilitating diseases of the visual system.

**Time:** Wednesday, October 23, 2019, 8:30 AM - 11:00 AM

618. Chair

**J. R. Sanes**;
Center for Brain Science, Harvard University, Cambridge, MA.

**Time:** Wednesday, October 23, 2019, 8:30 AM - 11:00 AM

618. Co Chair

**S. Becker**;
National Eye institute, National Institutes of Health, Bethesda, MD.

**Time:** Wednesday, October 23, 2019, 8:30 AM - 8:35 AM

618.01. Introduction

**Time:** Wednesday, October 23, 2019, 8:35 AM - 9:10 AM

618.02. Adult RPESCs and the potential of endogenous progenitor cells to repair human retina

**S. Temple**;
Director, Neural Stem Cell Institute, Rensselaer, NY.

**Time:** Wednesday, October 23, 2019, 9:10 AM - 9:45 AM

618.03. Photovoltaic Restoration of Sight in Retinal Degeneration

**D. Palanker**;
Ophthalmology & Hansen Experimental Physics, Stanford University, Stanford, CA.

**Time:** Wednesday, October 23, 2019, 9:45 AM - 10:20 AM

618.04. Sight Restoration by Optogenetics: the translational steps

**J. A. Sahel**;
Institut de la Vision, Sorbonne Université, Paris, FRANCE.

**Time:** Wednesday, October 23, 2019, 10:20 AM - 10:55 AM

618.05. From DNA through FDA and EMA: Development of the first approved gene therapy for an inherited blinding disease

**J. Bennett**;
Center for Advanced Retinal and Ocular Therapeutics, University of Pennsylvania Perelman School of Medicine, Philadelphia, PA.

**Time:** Wednesday, October 23, 2019, 10:55 AM - 11:00 AM

618.06. Closing Remarks

**Minisymposium**

## 619. Pleiotropic Mitochondria: The Influence of Mitochondria on Neuronal Development and Disease

Theme B – Neural Excitability/ Synapses/ and Glia

**Location:** Room S102

**Time:** Wednesday, October 23, 2019, 8:30 AM - 11:00 AM

Mitochondria are a central organelle in the regulation of neuronal metabolism and synaptic transmission. This minisymposium aims to present exciting novel developments regarding mitochondria biology and its role in neuronal development in a physiological and pathological context.

**Time:** Wednesday, October 23, 2019, 8:30 AM - 11:00 AM

619. Chair

**J. Courchet**;
INSERM, Lyon, FRANCE.

**Time:** Wednesday, October 23, 2019, 8:30 AM - 11:00 AM

619. Co Chair

**S. Kwon**;
Center for Functional Connectomics, Korea Institute of Science and Technology (KIST), Seoul, KOREA, REPUBLIC OF.

**Time:** Wednesday, October 23, 2019, 8:30 AM - 8:35 AM

619.01. Introduction

**Time:** Wednesday, October 23, 2019, 8:35 AM - 8:55 AM

619.02. Powering the brain: dissecting the energy supplies of presynaptic and postsynaptic function

**V. Rangaraju**;
Schuman Department, Max Planck Institute for Brain research, Frankfurt, GERMANY.

**Time:** Wednesday, October 23, 2019, 8:55 AM - 9:15 AM

619.03. Compartmentalized regulation of mitochondrial fission controls axonal development

**T. L. Lewis, Jr**;
Aging & Metabolism Program, Oklahoma Medical Research Foundation, Oklahoma City, OK.

**Time:** Wednesday, October 23, 2019, 9:15 AM - 9:35 AM

619.04. Roles of ER-mitochondria contact in neurons

**Y. Hirabayashi**;
School of Engineering, The University of Tokyo, Tokyo, JAPAN.

**Time:** Wednesday, October 23, 2019, 9:35 AM - 9:55 AM

619.05. Role of mitochondrial dynamics in adult hippocampal neurogenic circuits

**M. Bergami**;
CECAD Research Center, University Hospital Cologne, Cologne, GERMANY.

**Time:** Wednesday, October 23, 2019, 9:55 AM - 10:15 AM

619.06. Elucidating metabolic adaptation to mitochondrial dysfunction in neurodegeneration

**E. Motori**;
Biology of Ageing, Max Planck Institute, Cologne, GERMANY.

**Time:** Wednesday, October 23, 2019, 10:15 AM - 10:35 AM

619.07. Mitochondrial positioning: key mechanism for optic nerve physiology and repair

**R. Cartoni**;
Department of Pharmacology and Cancer Biology, Department of Ophthalmology, Duke Eye Center, Duke University, Durham, NC.

**Time:** Wednesday, October 23, 2019, 10:35 AM - 11:00 AM

619.08. Closing Remarks

**Minisymposium**

**620. Regulation and Dysregulation of Activity Homeostasis in Central Neural Circuits**

Theme F – Integrative Physiology and Behavior

**Location:** Room S406B

**Time:** Wednesday, October 23, 2019, 8:30 AM - 11:00 AM

A fundamental challenge in the field of neuroscience is to understand how neurons and neural networks maintain stable firing rates in the face of continuous synaptic, metabolic and molecular turnover. This minisymposium will explore how neural homeostasis is implemented at different spatial scales and across diverse brain regions. Importantly, how current findings can be reconciled with other plasticity mechanisms and the disease implications of homeostasis failures will also be discussed.

**Time:** Wednesday, October 23, 2019, 8:30 AM - 11:00 AM

620. Chair

**I. Slutsky**;
Physiology and Pharmacology, Tel Aviv University, Tel Aviv, ISRAEL.

**Time:** Wednesday, October 23, 2019, 8:30 AM - 11:00 AM

620. Co Chair

**S. Barnes**;
Medicine, Imperial College of London, London, UNITED KINGDOM.

**Time:** Wednesday, October 23, 2019, 8:30 AM - 8:35 AM

620.01. Introduction

**Time:** Wednesday, October 23, 2019, 8:35 AM - 8:55 AM

620.02. Functional signatures of subcellular homeostatic plasticity in vivo

**S. Barnes**;
Medicine, Imperial College of London, London, UNITED KINGDOM.

**Time:** Wednesday, October 23, 2019, 8:55 AM - 9:15 AM

620.03. Long-term stability and plasticity of cell assemblies in the mouse auditory cortex

**S. Rumpel**;
Physiology, University Medical Center Johannes Gutenberg University Mainz, Mainz, GERMANY.

**Time:** Wednesday, October 23, 2019, 9:15 AM - 9:35 AM

620.04. Functional stability in a dynamic network

**Y. Loewenstein**;
Neurobiology, Hebrew Univeristy of Jerusalem, Jerusalem, ISRAEL.

**Time:** Wednesday, October 23, 2019, 9:35 AM - 9:55 AM

620.04. Sleep/wake control of synaptic homeostasis

**C. Cirelli**;
Psychiatry, University of Wisconsin-Madison, Madison, WI.

**Time:** Wednesday, October 23, 2019, 9:55 AM - 10:15 AM

620.05. Regulation of population activity set-point and its dysregulation in brain disorders

**I. Slutsky**;
Physiology and Pharmacology, Tel Aviv University, Tel Aviv, ISRAEL.

**Time:** Wednesday, October 23, 2019, 10:15 AM - 10:35 AM

620.06. Homeostatic plasticity and network dynamics: long term computational stability in the brain

**K. Hengen**;
Biology, WASHINGTON UNIVERSITY, ST. LOUIS.

**Time:** Wednesday, October 23, 2019, 10:35 AM - 11:00 AM

620.08. Closing Remarks

**Minisymposium**

**621. Brain Circuits for the Selection and Scaling of Defensive Behavior**

Theme G – Motivation and Emotion

**Location:** Room S105

**Time:** Wednesday, October 23, 2019, 8:30 AM - 11:00 AM

Threatening stimuli evoke a range of behavioral responses that are selected and scaled according to the proximity of the danger. This minisymposium will examine the neural circuits that

underlie defensive behaviors under threat. Sex, context, threat proximity, and safety signals regulating defensive responses in both rodents and humans will be considered.

**Time:** Wednesday, October 23, 2019, 8:30 AM - 11:00 AM

621. Chair

**S. Maren**;
Psychological and Brain Sciences, Texas A&M University, College Station, TX.

**Time:** Wednesday, October 23, 2019, 8:30 AM - 8:35 AM

621.01. Introduction

**Time:** Wednesday, October 23, 2019, 8:35 AM - 8:55 AM

621.02. Corticolimbic circuits in the flexible switching between reward seeking and fear behaviors in response to safety cues

**S. Sangha**;
Department of Psychological Sciences, Purdue University, Lafayette, IN.

**Time:** Wednesday, October 23, 2019, 8:55 AM - 9:15 AM

621.03. Competitive inhibitory circuits for selection of active and passive fear responses

**J. P. Fadok**;
Psychology and Tulane Brain Institute, Tulane University, New Orleans, LA.

**Time:** Wednesday, October 23, 2019, 9:15 AM - 9:35 AM

621.04. Threat-related behavioral diversity within and across the sexes

**R. Shansky**;
Behavioral Neuroscience, Northeastern University, Boston, MA.

**Time:** Wednesday, October 23, 2019, 9:35 AM - 9:55 AM

621.05. Safety and flight decisions in humans

**D. Mobbs**;
Psychology, California Institute of Technology, Pasadena, TX.

**Time:** Wednesday, October 23, 2019, 9:55 AM - 10:15 AM

621.06. Prefrontal circuits that drive active avoidance

**M. M. Diehl**;
Psychiatry and Neurobiology, Kansas State University, Manhattan, KS.

**Time:** Wednesday, October 23, 2019, 10:15 AM - 10:35 AM

621.07. Neural circuits controlling context-dependent defensive behavior

**S. Maren**;
Psychological and Brain Sciences, Texas A&M University, College Station, TX.

**Time:** Wednesday, October 23, 2019, 10:35 AM - 11:00 AM

621.08. Closing Remarks

**Minisymposium**

**622. Grid-Like Hexadirectional Modulation of Neural Activity in Humans**

Theme H – Cognition

**Location:** Room S100BC

**Time:** Wednesday, October 23, 2019, 8:30 AM - 11:00 AM

Neurons have been shown to increase in firing rate with a hexagonal grid pattern as an animal navigates an environment. Recently, studies show that population signals of neural activity (i.e., LFP and fMRI) exhibit similar hexadirectional modulation in humans. These findings from human grid-like oscillatory and fMRI signals will be discussed as well as how they relate to each other and rodent studies. This minisymposium will also focus on how findings relate to spatial navigation and memory in humans.

**Time:** Wednesday, October 23, 2019, 8:30 AM - 11:00 AM

622. Chair

**N. Suthana**;
Neurosurgery / Psychiatry / Psychology, University of California, Los Angeles, Los Angeles, CA.

**Time:** Wednesday, October 23, 2019, 8:30 AM - 8:35 AM

622.01. Introduction

**Time:** Wednesday, October 23, 2019, 8:35 AM - 8:55 AM

622.02. Hexadirectional modulation of human high frequency electrophysiological activity during navigation

**T. Staudigl**;
Department of Psychology, Ludwig-Maximilians-University Munich, Munich, GERMANY.

**Time:** Wednesday, October 23, 2019, 8:55 AM - 9:15 AM

622.03. Grid-like representations of visual space in human entorhinal cortex

**J. B. Julian**;
Kavli Institute for Systems Neuroscience, NTNU, Trondheim, NORWAY.

**Time:** Wednesday, October 23, 2019, 9:15 AM - 9:35 AM

622.04. Grid cells and transition structures

**N. Burgess**;
Psychology, UCL, London, UNITED KINGDOM.

**Time:** Wednesday, October 23, 2019, 9:35 AM - 9:55 AM

622.05. Human low and high theta oscillations related to navigation, memory, and entorhinal grid cells

**J. Jacobs**;
Department of Biomedical Engineering, Columbia University, New York, NY.

**Time:** Wednesday, October 23, 2019, 9:55 AM - 10:15 AM

622.06. Entorhinal theta oscillations show grid-like representation during human spatial navigation

**L. Wang**;
Psychology, Institute of Psychology, Chinese Academy of Sciences, Beijing, CHINA.

**Time:** Wednesday, October 23, 2019, 10:15 AM - 10:35 AM

622.07. Grid-like hexadirectional modulation of theta oscillations during freely moving spatial navigation in humans

**Z. M. Aghajan**;
Neurosurgery / Psychiatry / Psychology, UCLA, Los Angeles, CA.

**Time:** Wednesday, October 23, 2019, 10:35 AM - 11:00 AM

622.08. Closing Remarks

**Minisymposium**

## 623. Timing is Everything: Temporally Irregular Stimulation Patterns for Brain Mapping and Clinical Therapeutics

Theme I – Techniques

**Location:** Room S406A

**Time:** Wednesday, October 23, 2019, 8:30 AM - 11:00 AM

Brain stimulation therapies have revolutionized movement disorder treatment, hold promise in mental disorders, and are powerful tools for studying the brain. Clinical stimulation is delivered without consideration of how it interacts with ongoing brain activity. This minisymposium explores the growing evidence that when we stimulate is as important as where. New, precisely timed stimulation sequences, each of which has useful physiologic effects, will be described.

**Time:** Wednesday, October 23, 2019, 8:30 AM - 11:00 AM

623. Chair

**A. S. Widge**;
Psychiatry, University of Minnesota, Minneapolis, MN.

**Time:** Wednesday, October 23, 2019, 8:30 AM - 8:35 AM

623.01. Introduction

**Time:** Wednesday, October 23, 2019, 8:35 AM - 8:55 AM

623.02. Stimulating at the right time: phase specific deep brain stimulation for essential tremor

**H. Cagnan**;
MRC Brain Network Dynamics Unit, University of Oxford, Oxford, UNITED KINGDOM.

**Time:** Wednesday, October 23, 2019, 8:55 AM - 9:15 AM

623.03. Optimizing phasic stimulation for treatment of Parkinson's Disease

**T. Netoff**;
Biomedical Engineering, University of Minnesota, Minneapolis, MN.

**Time:** Wednesday, October 23, 2019, 9:15 AM - 9:35 AM

623.04. Temporal patterns to understand and advance therapeutic brain stimulation

**W. M. Grill**;
Biomedical Engineering, Duke University, Durham, NC.

**Time:** Wednesday, October 23, 2019, 9:35 AM - 9:55 AM

623.05. Coordinated reset stimulation for modulating long-term plasticity in pathological neural networks

**P. A. Tass**;
Neurosurgery, Stanford University, Palo Alto, CA.

**Time:** Wednesday, October 23, 2019, 9:55 AM - 10:15 AM

623.06. Mood decoding and control by identifying input-output brain network dynamics with binary-noise modulated stimulation

**M. M. Shanechi**;
Electrical Engineering, University of Southern California, Los Angeles, CA.

**Time:** Wednesday, October 23, 2019, 10:15 AM - 10:35 AM

623.07. High-precision phase-locked neurostimulation creates and disrupts coherent brain networks

**A. S. Widge**;
Psychiatry, University of Minnesota, Minneapolis, MN.

**Time:** Wednesday, October 23, 2019, 10:35 AM - 11:00 AM

623.08. Closing Remarks

**Symposium**

**710. CNS Scarring, Inflammation, and Repair**

Theme C – Neurodegenerative Disorders and Injury

**Location:** Room S100A

**Time:** Wednesday, October 23, 2019, 1:30 PM - 4:00 PM

This symposium will focus on the cellular components mediating scarring and repair following lesions to the Central Nervous System (CNS). Recent advances in understanding the function of glial, stromal, and immune cell components emphasizing heterogeneity within individual cell populations regarding injury induced changes, axonal regeneration and functional recovery after CNS injury will be presented. Based on these advances, this symposium will discuss potential therapeutic repair strategies of the injured nervous system.

**Time:** Wednesday, October 23, 2019, 1:30 PM - 4:00 PM

710. Chair

**C. Goritz**;
Department of Cell and Molecular Biology, Karolinska Institutet, Stockholm, SWEDEN.

**Time:** Wednesday, October 23, 2019, 1:30 PM - 4:00 PM

710. Co Chair

**M. V. Sofroniew**;
Department of Neurobiology, University of California, Los Angeles School of Medicine, Los Angeles, CA.

**Time:** Wednesday, October 23, 2019, 1:30 PM - 1:35 PM

710.01. Introduction

**Time:** Wednesday, October 23, 2019, 1:35 PM - 2:10 PM

710.02. Astrocytes and axon regeneration.

**M. V. Sofroniew**;
Department of Neurobiology, UCLA Schl Med, Los Angeles, CA.

**Time:** Wednesday, October 23, 2019, 2:10 PM - 2:45 PM

710.03. Mechanisms of glial bridging during spinal cord regeneration.

**M. H. Mokalled**;
Department of Developmental Biology, Washington University School of Medicine, St. Louis, MO.

**Time:** Wednesday, October 23, 2019, 2:45 PM - 3:20 PM

710.04. Fibrotic scarring and axon regeneration.

**C. Goeritz**;
Department of Cell and Molecular Biology, Karolinska Institutet, Stockholm, SWEDEN.

**Time:** Wednesday, October 23, 2019, 3:20 PM - 3:55 PM

710.05. Understanding Microglia Heterogeneity and State Changes following CNS Injury and Disease

**B. Stevens**;
Harvard Medical School Neurobiology, Boston Children's Hospital, Harvard Medical School, BOSTON, MA.

**Time:** Wednesday, October 23, 2019, 3:55 PM - 4:00 PM

710.06. Closing Remarks

**Minisymposium**

**711. Mechanisms of Basal Ganglia Maturation: Insights Into Health and Disease**

Theme A – Development

**Location:** Room S100BC

**Time:** Wednesday, October 23, 2019, 1:30 PM - 4:00 PM

The basal ganglia are critical for action selection and motivated behaviors, and growing evidence points to striatal dysfunction in numerous neurodevelopmental disorders. This minisymposium will highlight recent advances in our understanding of the molecular and activity dependent mechanisms regulating the maturation of basal ganglia circuits, how these contribute to unique

behaviors in adolescence, and how they might be implicated in the pathophysiology of human neurodevelopmental disorders.

**Time:** Wednesday, October 23, 2019, 1:30 PM - 4:00 PM

711. Chair

**R. Peixoto**;
Psychiatry, University of Pittsburgh, Pittsburgh, PA.

**Time:** Wednesday, October 23, 2019, 1:30 PM - 4:00 PM

711. Co Chair

**O. Lieberman**;
Psychiatry, Columbia University, New York, NY.

**Time:** Wednesday, October 23, 2019, 1:30 PM - 1:35 PM

711.01. Introduction

**Time:** Wednesday, October 23, 2019, 1:35 PM - 1:55 PM

711.02. Action encoding in adolescents

**B. Moghaddam**;
Behavioral Neuroscience, OHSU, Portland, OR.

**Time:** Wednesday, October 23, 2019, 1:55 PM - 2:15 PM

711.03. Developmental rules of corticostriatal synapse maturation and plasticity

**R. Peixoto**;
Psychiatry, University of Pittsburgh, Pittsburgh, PA.

**Time:** Wednesday, October 23, 2019, 2:15 PM - 2:35 PM

711.04. Synaptic wiring of corticostriatal circuits in basal ganglia.

**F. Liu**;
Neuroscience, Inst Neurosci, National Yang-Ming Univ, Taipei, TAIWAN.

**Time:** Wednesday, October 23, 2019, 2:35 PM - 2:55 PM

711.05. Cell-type transcriptional programs regulating striatal projection neuron development

**G. Konopka**;
Neuroscience, UT Southwestern Medical Center, Dallas, TX.

**Time:** Wednesday, October 23, 2019, 2:55 PM - 3:15 PM

711.06. Role of mTORC1-dependent signaling in the maturing striatum.

**E. Santini**;
Neuroscience, Karolinska Institute, Stockholm, SWEDEN.

**Time:** Wednesday, October 23, 2019, 3:15 PM - 3:35 PM

711.07. Autophagic protein degradation in striatal development

**O. Lieberman**;
Psychiatry, Columbia University, New York, NY.

**Time:** Wednesday, October 23, 2019, 3:35 PM - 4:00 PM

711.08. Closing Remarks

**Minisymposium**

**712. Cell-Type Specificity, Strength, and Dynamics of Long-Range Synaptic Input**

Theme B – Neural Excitability/ Synapses/ and Glia

**Location:** Room S406A

**Time:** Wednesday, October 23, 2019, 1:30 PM - 4:00 PM

The specificity and functional properties of long-range synaptic input is less understood than that of local input. New optogenetic, viral tracing, and imaging techniques enable a deeper understanding of the interactions between cell types in discrete brain areas. New data from these approaches indicate that the specificity of local and long-range input can be comparable and raise the possibility that long-range input specificity may play a larger role than previously appreciated.

**Time:** Wednesday, October 23, 2019, 1:30 PM - 4:00 PM

712. Chair

**G. J. Murphy**;
Allen Institute for Brain Science, Seattle, WA.

**Time:** Wednesday, October 23, 2019, 1:30 PM - 4:00 PM

712. Co Chair

**L. T. Petreanu**;
Champalimaud Research, Champalimaud Foundation, Lisbon, PORTUGAL.

**Time:** Wednesday, October 23, 2019, 1:30 PM - 1:35 PM

712.01. Introduction

**Time:** Wednesday, October 23, 2019, 1:35 PM - 1:55 PM

712.02. Layer-specific cortico-cortical loops in the mouse visual cortex

**L. T. Petreanu**;
Champalimaud Research, Champalimaud Foundation, Lisbon, PORTUGAL.

**Time:** Wednesday, October 23, 2019, 1:55 PM - 2:15 PM

712.03. Long-range inputs and functional properties of retrosplenial cortical neurons for self-motion processing

**S. Keshavarzi**;
N/A, Sainsbury Wellcome Centre for Neural Circuits and Behaviour, University College London, London, UNITED KINGDOM.

**Time:** Wednesday, October 23, 2019, 2:15 PM - 2:35 PM

712.04. Long-range interactions between prefrontal cortex and multiple thalamic nuclei

**A. G. Carter**;
Center for Neural Science, New York University, New York, NY.

**Time:** Wednesday, October 23, 2019, 2:35 PM - 2:55 PM

712.05. Circuit properties of the cortico-thalamo-striatal loop and its modification

**T. Mao**;
N/A, Vollum Institute/Oregon Health, Portland, OR.

**Time:** Wednesday, October 23, 2019, 2:55 PM - 3:15 PM

712.06. Functionally Distinct Inputs and Projections of Striatal Matrix versus Striosome Neurons

**A. B. Nelson**;
Neurology, UCSF, San Francisco, CA.

**Time:** Wednesday, October 23, 2019, 3:15 PM - 3:35 PM

712.07. High-throughput characterization of synaptic input to transcriptomically-defined cell types

**G. J. Murphy**;
Electrophysiology, Allen Institute For Brain Science, Seattle, WA.

**Time:** Wednesday, October 23, 2019, 3:35 PM - 4:00 PM

712.08. Closing Remarks

**Minisymposium**

**713. Progress in Pain and Itch Research**

Theme D – Sensory Systems

**Location:** Room S102

**Time:** Wednesday, October 23, 2019, 1:30 PM - 4:00 PM

Although acute pain and itch are two of the most fundamental protective somatosensory processes, chronic pathological pain and itch inflict significant clinical challenges and economic burdens. The coding and processing of pain and itch in the peripheral and central nervous systems are highly complicated processes. This minisymposium will highlight the recent research advances in the cross-system regulations of pain and itch, and maladaptive processes that lead to chronic pain and itch.

**Time:** Wednesday, October 23, 2019, 1:30 PM - 4:00 PM

713. Chair

**Q. Liu**;
Anesthesiology, The Washington University School of Medicine, St. Louis, MO.

**Time:** Wednesday, October 23, 2019, 1:30 PM - 4:00 PM

713. Co Chair

**H. Hu**;
Anesthesiology, Washington University in St. Louis, St. Louis, MO.

**Time:** Wednesday, October 23, 2019, 1:30 PM - 1:35 PM

713.01. Introduction

**Time:** Wednesday, October 23, 2019, 1:35 PM - 1:55 PM

713.02. Local sympathetic innervation drives macrophage polarization and chemotherapy-induced neuropathic pain

**T. Berta**;
Anesthesiology, University of Cincinnati, Cincinnati, OH.

**Time:** Wednesday, October 23, 2019, 1:55 PM - 2:15 PM

713.03. Decoding the representation of sensory stimuli in the periphery

**A. T. Chesler**;
Sensory Cells and Circuits Section, NIH/NCCIH, Bethesda, MD.

**Time:** Wednesday, October 23, 2019, 2:15 PM - 2:35 PM

713.04. Neurotransmitters used by MrgprA3+ itch-sensing afferents

**W. Luo**;
Neuroscience, University of Pennsylvania, Philadelphia, PA.

**Time:** Wednesday, October 23, 2019, 2:35 PM - 2:55 PM

713.05. Choreography of neural ensembles encoding pain perception

**G. F. Corder**;
Department of Psychiatry, University of Pennsylvania, Philadelphia, PA.

**Time:** Wednesday, October 23, 2019, 2:55 PM - 3:15 PM

713.06. Mechanisms of itch regulation

**H. Hu**;
Anesthesiology, Washington University in St. Louis, St. Louis, MO.

**Time:** Wednesday, October 23, 2019, 3:15 PM - 3:35 PM

713.07. The peripheral neural mechanisms of ocular pain and itch

**Q. Liu**;
Anesthesiology, The Washington University School of Medicine, St. Louis, MO.

**Time:** Wednesday, October 23, 2019, 3:35 PM - 4:00 PM

713.08. Closing Remarks

**Minisymposium**

**714. Adaptive Control of Movements and Emotional States by the Cerebellum**

Theme E – Motor Systems

**Location:** Room S406B

**Time:** Wednesday, October 23, 2019, 1:30 PM - 4:00 PM

An unexpected sensory event can be emotionally charged or neutral and can occur during movements or stillness. In every case, the cerebellum learns to eliminate the sensory prediction error. When this learning fails, results are motor as well as anxiety disorders. This minisymposium will present recent discoveries regarding the neural basis of this learning process, demonstrating the role of prediction errors in sculpting activity of Purkinje cells and leading to better control of brain structures outside of the cerebellum.

**Time:** Wednesday, October 23, 2019, 1:30 PM - 4:00 PM

714. Chair

**R. Shadmehr**;
Dept Biomedical Eng, Johns Hopkins University Department of Biomedical Engineering, Baltimore, MD.

**Time:** Wednesday, October 23, 2019, 1:30 PM - 1:35 PM

714.01. Introduction

**Time:** Wednesday, October 23, 2019, 1:35 PM - 1:55 PM

714.02. Signals for Motor Control and Action Prediction in Purkinje Cells

**J. F. Medina**;
Department of Neuroscience, Baylor College of Medicine, Houston.

**Time:** Wednesday, October 23, 2019, 1:55 PM - 2:15 PM

714.03. Instructive Signal that Drives Saccade Adaptation

**Y. Kojima**;
Physiology, University of Washington, Seattle, WA.

**Time:** Wednesday, October 23, 2019, 2:15 PM - 2:35 PM

714.04. Population Coding in the Cerebellum

**R. Shadmehr**;
Dept Biomedical Eng, Johns Hopkins University Department of Biomedical Engineering, Baltimore, MD.

**Time:** Wednesday, October 23, 2019, 2:35 PM - 2:55 PM

714.05. Multiple components and sites of cerebellar motor learning?

**S. G. Lisberger**;
Department of Neurobiology, Duke University, Durham.

**Time:** Wednesday, October 23, 2019, 2:55 PM - 3:15 PM

714.06. The Role of Cerebellar Output in Realtime Control of Reaching

**A. L. Person**;
Physiology and Biophysics, University of Colorado School of Medicine, Denver.

**Time:** Wednesday, October 23, 2019, 3:15 PM - 3:35 PM

714.07. The cerebellum and processing of predictions and prediction errors in fear conditioning

**D. Timmann**;
Neurology, Univ. of Duisburg-Essen, Essen, GERMANY.

**Time:** Wednesday, October 23, 2019, 3:35 PM - 4:00 PM

714.08. Closing Remarks

**Minisymposium**

**715. Advanced Circuit and Cellular Imaging Methods in Non-Human Primates**

Theme I – Techniques

**Location:** Room S105

**Time:** Wednesday, October 23, 2019, 1:30 PM - 4:00 PM

Optogenetic and microscopic imaging techniques have proven successful in manipulating neuronal populations with high spatial and temporal fidelity in species ranging from insects to rodents. However, significant obstacles remain in their application to non-human primates (NHPs). Robust optogenetics-activated behavior and long-term monitoring of target neurons have been especially challenging in NHPs. This minisymposium will present recent advances that overcome many such obstacles.

**Time:** Wednesday, October 23, 2019, 1:30 PM - 4:00 PM

715. Chair

**S. L. Macknik**;
Dept. of Ophthalmology., SUNY Downstate Medical Center College of Medicine, Brooklyn, NY.

**Time:** Wednesday, October 23, 2019, 1:30 PM - 1:35 PM

715.01. Introduction

**Time:** Wednesday, October 23, 2019, 1:35 PM - 1:55 PM

715.02. OBServe: A Prosthetic Optogenetic Brain System

**S. L. Macknik**;
Dept. of Ophthalmology., SUNY Downstate Medical Center College of Medicine, Brooklyn, NY.

**Time:** Wednesday, October 23, 2019, 1:55 PM - 2:15 PM

715.03. A Novel Pressure-Regulating Brain Implant for Ultra-Large Field-of-View for Mesoscopic Imaging in Primates

**O. S. Caballero**;
Ophthalmology, SUNY Downstate Medical Center, Brooklyn, NY.

**Time:** Wednesday, October 23, 2019, 2:15 PM - 2:35 PM

715.04. Clustering of 3D and 2D shape processing in area V4

**K. J. Nielsen**;
Neuroscience, Johns Hopkins University, Baltimore, MD.

**Time:** Wednesday, October 23, 2019, 2:35 PM - 2:55 PM

715.05. Encoding and reconstruction of surfaces and contours from V1 of behaving monkeys

**H. Slovin**;
Gonda Multidisciplinary Brain Research Center, Bar-Ilan University, Ramat Gan, ISRAEL.

**Time:** Wednesday, October 23, 2019, 2:55 PM - 3:15 PM

715.06. Zooming in on neural circuits in macaque visual cortex

**S. Tang**;
School of Life Sciences, Peking University, Beijing, CHINA.

**Time:** Wednesday, October 23, 2019, 3:15 PM - 3:35 PM

715.07. An Optogenetic Toolkit for Non-Human Primates

**E. Seidemann**;
Center for Perceptual Systems, University of Texas at Austin, Austin, TX.

**Time:** Wednesday, October 23, 2019, 3:35 PM - 4:00 PM

715.08. Closing Remarks