

When citing an abstract from the 2023 annual meeting, please use the format below.

[Authors]. [Abstract Title]. Program No. XXX.XX. 2023 Neuroscience Meeting Planner.
Washington, D.C.: Society for Neuroscience, 2023. Online.

2023 Copyright by the Society for Neuroscience all rights reserved. Permission to republish any abstract or part of any abstract in any form must be obtained in writing by SfN office prior to publication.

Lecture

LEC02: Special Lecture: The Neuroscience of Dynamic Social Behavior: Uncovering Circuit Mechanisms In *Drosophila* — Mala Murthy

Location: WCC Hall D

Time: Saturday, November 11, 2023, 1:00 PM - 2:00 PM

Speakers: *M. MURTHY;
Neurosci. Inst., Princeton Univ., Princeton, NJ

Disclosures: M. MURTHY: None.

Moderator: *M. CHIAPPE;
Champalimaud Fndn. PT507131827, Lisboa, Portugal

Abstract: Social interactions are important for survival, quality of life, and reproduction. Attendees will learn how the 130,000 neurons of the fly brain enable complex and flexible social interactions. Development of a whole-brain connectome, along with advances in quantifying behavior and measuring neural activity, have made it possible to uncover these neural mechanisms. This lecture will highlight these discoveries and place them in the broader context of research on social behavior across systems.

Grant Support: NIH BRAIN U24 NS126935
NIH NINDS R35 Research Program Award
NIH Targeted BRAIN Circuits Projects R01 NS110060
NIH Targeted BRAIN Circuits Projects R01 NS104899
Simons Collaboration on the Global Brain Pilot Award
NIH BRAIN Initiative RF1 MH117815
HHMI Faculty Scholar

Lecture

LEC03: SfNova Lecture: Ishmail Abdus-Saboore; Kanaka Rajan

Location: WCC Hall D

Time: Saturday, November 11, 2023, 3:00 PM - 4:00 PM

Speakers: *I. ABDUS-SABOOR;
Columbia Univ., New York, NY

Disclosures: I. ABDUS-SABOOR: None.

Speakers: *K. RAJAN;
Dept. of Neurobio., Harvard Med. School; Kempner Institute, Harvard Univ., Cambridge, MA

Disclosures: K. Rajan: None.

Moderator: *H. BITO;
The Univ. of Tokyo, Tokyo, Japan

Abstract: *Skin-Brain Neuronal Pathway for Rewarding Social Touch*
Ishmail Abdus Saboor, PhD
Columbia University
Theme D – Sensory Systems

The Abdus-Saboor Laboratory is interested in the skin-brain axis for tactile sensations. The lab aims to understand how the brain generates the perception of pain and pleasure based on sensory stimuli applied to the skin. This lecture will present work identifying sensory neurons in the skin that are critical for socially rewarding touch and for promoting resilience to stressful scenarios. This work offers new insights on brain-body connections.

Connecting the Dots: What Artificial Neural Networks Tell Us About the Brain and Ourselves
Kanaka Rajan, PhD
Harvard Medical School
Harvard University
Theme H – Cognition

This lecture will describe a circuitous path to neuroscience — via engineering and physics — before finding a new niche: bridging the fields of neuroscience and artificial intelligence. Discussion will cover the development of artificial systems, based on experimental and clinical data, that exhibit behaviors similar to those seen in animals and people. How computational models can reveal novel brain mechanisms and experimental directions will be interwoven with personal stories.

Grant Support: Alfred P. Sloan Research Fellowship (2019)
McKnight Endowment Fund for Neuroscience Scholar Awards (2022)
National Science Foundation (NSF) Early Career Development (CAREER) (2021)
Dyal Foundation Research Scholars Award (2020)
R01, Theories, Models, and Methods pathway, National Institutes of Biomedical Engineering and Bioimaging, National Institutes of Health (NIBIB/NIH) (2019)
FOUNDATIONS Award, NSF (2019)
Friedman Research Scholars Award from the DiSabato Family (2019)

Lecture

LEC04: Presidential Special Lecture: New Genetic Therapies for Huntington’s Disease and Other Neurodegenerative Diseases — Sarah J. Tabrizi

Location: WCC Hall D

Time: Saturday, November 11, 2023, 5:15 PM - 6:30 PM

Speaker: *S. J. TABRIZI;

Univ. Col. London Queen Square Inst. of Neurology; UK Dementia Res. Inst. at UCL, London, United Kingdom

Disclosures: S.J. Tabrizi: B. Contracted Research/Research Grant (principal investigator for a drug study, collaborator or consultant and pending and current grants). If you are a PI for a drug study, report that research relationship even if those funds come to an institution.; University College Hospitals London NHS Trust, received funding from F. Hoffmann-La Roche, Novartis Pharma, PTC Therapeutics, and UniQure Biopharma to run clinical trials on which I was named PI. F. Consulting Fees (e.g., advisory boards); In the last 12 months, through the offices of UCL Consultants Ltd, I have undertaken consultancy services for Alnylam Pharmaceuticals, Annexon, Ascidian Therapeutics, Atalanta Therapeutics..., ...Design Therapeutics, F. Hoffmann-La Roche, HCD Economics, IQVIA, Iris Medicine, Latus Bio, LifeEdit, Novartis Pharma, Pfizer, Prilenia Neurotherapeutics, PTC Therapeutics, Rgenta Therapeutics..., ...UniQure Biopharma, Vertex Pharmaceuticals. All honoraria for these consultancies were paid to UCL Consultants Ltd..

Moderator: *H. BITO;
The Univ. of Tokyo, Tokyo, Japan

Speakers: *O. STEWARD;
Univ. of California Irvine, Irvine CA, CA

Disclosures: O. STEWARD: None

Speakers: *H. KOBER;
Psychiatry, Yale Univ. - Dept. of Psychiatry, New Haven, CT

Disclosures: H. KOBER: None

Speakers: *M. F. BEAR;
Picower Inst. of Learning and Memory, MIT, Cambridge, MA

Disclosures: M. F. BEAR: None

Speakers: *R. DINGLELINE;
Emory Univ. Sch. Med., Atlanta, GA

Disclosures: R. DINGLELINE: None

Speakers: *M. TSODYKS;
Weizmann Inst. of Sci. / Inst. for Advanced Study, Princeton, NJ

Disclosures: M. TSODYKS: None

Speakers: *E. J. NESTLER;
Neurosci., Icahn Sch. of Med. At Mount Sinai, New York, NY

Disclosures: E. J. NESTLER: None

Speakers: *C. LUSCHER;
Univ. of Geneva, Geneva, Switzerland

Disclosures: C. LUSCHER: None

Abstract: This lecture will offer an overview of new genetic therapies in development for Huntington's disease and similar neurodegenerative diseases. It will cover the preclinical to clinical translation pathway, the challenges and opportunities, critical learnings from success and failures, and the new phase of development of these genetic therapies.

Grant Support: Cure Huntington's Disease Initiative Foundation research grants (A-17627, A-17480, A-17625), UK National Institute of Health & Care Research research grants, UK Dementia Research Institute that receives its funding from DRI Ltd., funded by the UK Medical Research Council, Alzheimer's Society, and Alzheimer's Research UK, UK Medical Research Council Nucleic Acid Therapy Accelerator Award, Wellcome Trust Collaborative Awards (200181/Z/15/Z & 223082/Z/21/Z)

Lecture

LEC05: Special Lecture: The Operational Principles of Neuron-Microglia Circuits — Anne Schaefer

Location: WCC Hall D

Time: Sunday, November 12, 2023, 9:00 AM - 10:00 AM

Speakers: *A. SCHAEFER;

Neurosci., Mount Sinai Sch. of Medicine; Max Planck Inst. for Biol. of Ageing, Cologne, Germany and New York, NY

Disclosures: A. Schaefer: E. Ownership Interest (stock, stock options, royalty, receipt of intellectual property rights/patent holder, excluding diversified mutual funds); US 2011/0071049 A1, PCT/US2014/062664, PCT/US2020/031321.

Moderator: *A. MAJEWSKA;

Univ. of Rochester, Rochester, NY

Abstract: The ability of the brain to perform diverse and complex functions relies on the activity of highly specialized and phenotypically diverse types of neurons and inter-neuronal variability within a given neuron type. Recent studies suggest that the function of phenotypically diverse neurons and the fitness of neuronal networks depends on the phenotypic plasticity of microglia, the innate immune cell of the brain. This lecture will discuss the mechanisms of microglia plasticity and its role in neuronal function and longevity.

Grant Support: AG072489
AG068558
NS106721
MH118329
DA047233

Lecture

LEC06: Special Lecture: Seeing Is Believing: Visualizing Cell Type-Specific Synaptic Connectivity — Jinhyun "Jinny" Kim

Location: WCC Hall D

Time: Sunday, November 12, 2023, 10:30 AM - 11:30 AM

Speakers: *J. KIM;
Korea Inst. of Sci. and Technol., Seoul, Korea, Republic of

Disclosures: J. Kim: None.

Moderator: *Y. LI;
Peking Univ., Beijing, China

Abstract: Deciphering the complex neural circuits is critical for advancing our knowledge of the brain, identifying malfunctions in neurological disorders, and developing effective treatments. This lecture will discuss advanced technologies and their applications in revealing the synaptic connections between different cell types within a neural network. How these technologies enable the visualization and reconstruction of neural circuits with unprecedented detail, providing new insights into the brain's functioning, will be discussed.

Grant Support: KIST Grant 2E32210
Korea NRF 2017M3C7A1047392
Samsung Foundation SSTF-BA1502-11
Korea NRF 2019M3E5D2A01063794
HFSP RGP0024/2016

Lecture

LEC07: Special Lecture: The Neurobiology of Social Interaction — Camilla Bellone

Location: WCC Hall D

Time: Sunday, November 12, 2023, 12:00 PM - 1:00 PM

Speakers: *C. BELLONE;
Univ. of Geneva, Geneva, Switzerland

Disclosures: C. Bellone: None.

Moderator: *H. BITO;
The Univ. of Tokyo, Tokyo, Japan

Abstract: Social interactions are critical for the survival of the species, and impairments in prosocial behaviors occur in a broad range of neuropsychiatric disorders including schizophrenia and autism spectrum disorder. This lecture will focus on the circuit mechanisms that regulate the motivation to interact with conspecifics in rodent model systems. It will provide insights into the

mechanisms governing the rewarding nature of social behavior, and how deficits in the "reward" circuit may lead to social impairments in individuals with psychiatric disorders.

Grant Support: SNSF Grant 31003A_182326
SNSF Grant 51NF40-185897
SNSF Grant 310030_212219
SNSF Grant 31NE30_204258
ERC 864552

Lecture

LEC08: Special Lecture: Reframing Neuronal Coordination: What We Think, We Become — Andre Fenton

Location: WCC Hall D

Time: Sunday, November 12, 2023, 1:30 PM - 2:30 PM

Speakers: *A. FENTON;
New York Univ., New York, NY

Disclosures: A. Fenton: E. Ownership Interest (stock, stock options, royalty, receipt of intellectual property rights/patent holder, excluding diversified mutual funds); I am a co-founder of Bio-Signal Group Corp (a medtech startup), I am a co-founder of Med2.0 (a medical information technology startup). F. Consulting Fees (e.g., advisory boards); I am on the scientific advisory board of Gilgamesh Pharmaceuticals Ltd. (a startup in the psychedelic space).

Moderator: *E. LIKHTIK;
Hunter College, CUNY, New York, NY

Abstract: How do humans learn and know? Previously, it was assumed that neurons respond to external stimuli to represent them, but an equally plausible model asserts that neuronal activity is fundamentally internally-organized and instead fit to external features of the world. Studies of spatially-tuned cells in various cortices that investigate how experience changes neuronal information processing (in addition to storing memory), and how encoding and recollecting experience is coordinated, will be reviewed.

Grant Support: None

Lecture

LEC09: Peter and Patricia Gruber Lecture: The Emotional Brain: Embracing the Complexity — Huda Akil

Location: WCC Hall D

Time: Sunday, November 12, 2023, 3:00 PM - 4:30 PM

Session Sponsor: The Gruber Foundation

Speakers: *H. AKIL;
Michigan Neurosci. Institute; Univ. of Michigan, Ann Arbor, MI

Disclosures: H. AKIL: None

Moderator: *P. GRUBER;
New Haven, CT

Moderator: *O. STEWARD;
Univ. of California Irvine, Irvine CA, CA

Moderator: *A. HREHA;
The Gruber Fndn., New Haven, CT

Moderator: *F. E. JENSEN;
Dept Neurol, Univ. of Pennsylvania, Philadelphia, PA

Moderator: *E. J. NESTLER;
Neurosci., Icahn Sch. of Med. At Mount Sinai, New York, NY

Speakers: *E. FAVUZZI;
Dept. of Developmental Neurobio., Yale Univ., New Haven, CT

Disclosures: E. FAVUZZI: None

Speakers: *T. GEILLER;
Columbia Univ., New York, NY

Disclosures: T. GEILLER: None

Speakers: *A. JOSHI;
Physiol., Univ. of California San Francisco, San Francisco, CA

Disclosures: A. JOSHI: None

Abstract: This lecture will describe a quest to understand the brain biology of emotions and uncover the role of distinct temperaments in shaping vulnerability to mood and addictive disorders. Genetic, molecular, circuit, and behavioral studies in animals and humans reveal profound individual differences in the encoding of emotionality. They also point to counter-regulatory mechanisms that enhance stress coping and impart resilience to negative emotions. Translational implications will be discussed.

Grant Support: None

Lecture

LEC10: Presidential Special Lecture: Cell Biology at the Synapse: Local Protein Synthesis and Degradation — Erin M. Schuman

Location: WCC Hall D

Time: Sunday, November 12, 2023, 5:15 PM - 6:30 PM

Speakers: *E. M. SCHUMAN;
Max Planck Inst. for Brain Res., Frankfurt, Germany

Disclosures: E.M. Schuman: None.

Moderator: *A. SINGER;
Georgia Inst. of Technol., Atlanta, GA

Speakers: *O. STEWARD;
Univ. of California Irvine, Irvine CA, CA

Disclosures: O. STEWARD: None

Speakers: *M. P. STRYKER;
Ctr. for Integrative Neurosci, Dept Physiol, Univ. of California San Francisco, San Francisco, CA

Disclosures: M. P. STRYKER: None

Abstract: Neurons are morphologically complex cells which house thousands of synapses, but contain just a single nucleus (as a source for mRNA) in the cell body. The proteins present at synapses are the drivers of synaptic transmission and plasticity. Much of the local sourcing and remodeling of synaptic proteomes arises from the localized translation of mRNAs by ribosomes and protein degradation by proteasomes. This lecture will discuss previous and current studies aimed at understanding the diversity of synapse types and functional states by local cell biological mechanisms.

Grant Support: European Research Council, DiverseSynapse
Neuronex, NSF Award 2014862
DFG, SCHU 2418/3-1

Lecture

LEC11: History of Neuroscience Lecture: Making Herstory: One Black Woman's Unconventional Journey From Bench Scientist to College President — Joanne E. Berger-Sweeney

Location: WCC Hall D

Time: Monday, November 13, 2023, 9:00 AM - 10:00 AM

Speakers: *J. E. BERGER-SWEENEY;
Trinity Col., HARTFORD, CT

Disclosures: J.E. Berger-Sweeney: None.

Moderator: *E. BUFFALO;
Univ. of Washington, Seattle, WA

Speakers: *O. STEWARD;
Univ. of California Irvine, Irvine, CA

Disclosures: O. STEWARD: None

Abstract: Dr. Berger-Sweeney's choice of a neuroscience career at undergraduate liberal arts colleges is unconventional. This lecture will describe: 1) The unique liberal arts college environment that shaped how research was conducted on mouse models of disease and how students were empowered through education and mentoring; 2) A desire for a broader impact that led to stepping away from the bench and toward administration; 3) How the influence of the first female and person of color to lead Trinity College, a 200-year-old liberal arts institution, extends into educational, housing, and health policy.

Grant Support: NIMH (T32) Training Grant to SfN
NINDS 2R44NS34591-02
International Rett Syndrome Association - 2001
NIMH 2-R01MH51290-09A2
NIH ARRA-c06RR030411
Synaptec Inc. Grant

Lecture

LEC12: Clinical Neuroscience Lecture: Translational OCD Research: Mechanisms and Modulation of Compulsive Behavior — Carolyn Rodriguez

Location: WCC Hall D

Time: Monday, November 13, 2023, 10:30 AM - 11:30 AM

Speakers: *C. RODRIGUEZ;
Psychiatry and Behavioral Sci., Stanford Univ., Palo Alto, CA

Disclosures: C. Rodriguez: B. Contracted Research/Research Grant (principal investigator for a drug study, collaborator or consultant and pending and current grants). If you are a PI for a drug study, report that research relationship even if those funds come to an institution.; Biohaven Pharmaceuticals. F. Consulting Fees (e.g., advisory boards); Biohaven Pharmaceuticals, Biogen, Osmind. Other; Stipend from APA Publishing for role as Deputy Editor of American Journal of Psychiatry.

Moderator: *S. BORGLAND;
Univ. of Calgary, Calgary, AB, Canada

Abstract: Compulsive behaviors impair functioning in individuals with obsessive-compulsive disorder (OCD) and related disorders. These maladaptive behaviors have been linked to abnormal activity in the orbitofrontal cortex, as well as more general dysfunction in frontostriatal circuits. To translate resulting findings to viable new treatments in patients, the gap between animal and human studies must be bridged. This lecture will review research and potential treatment advances in OCD including experimental medication, neuromodulation, and basic research.

Grant Support: R01MH105461-01A1
K23 MH092434

Lecture

LEC13: Special Lecture: How Hearing Happens: The Active Transduction Process of Hair Cells — A. James Hudspeth

Location: WCC Hall D

Time: Monday, November 13, 2023, 12:00 PM - 1:00 PM

Speakers: *A. J. HUDSPETH;
Lab. of Sensory Neurosci., Rockefeller University; HHMI, New York, NY

Disclosures: A.J. Hudspeth: None.

Moderator: *E. LUMPKIN;
UC Berkeley, Berkeley, CA

Abstract: As the gateway to human communication, the sense of hearing is of enormous importance in daily life. Uniquely among human sensory receptors, the ear's hair cells are not passive, but use an active process to enhance their inputs. The active process amplifies mechanical stimuli a thousandfold, tunes responses to a narrow frequency range, renders hearing sensitive to sounds over a millionfold range of amplitudes, and even causes ears to emit sounds! The active process emerges from the operation of hair cells at a dynamic instability that fosters amplification, tuning, and compression.

Grant Support: Howard Hughes Medical Institute

Lecture

LEC14: Albert and Ellen Grass Lecture: Inner Workings of Channelrhodopsins and Nervous Systems — Karl Deisseroth

Location: WCC Hall D

Time: Monday, November 13, 2023, 3:00 PM - 4:30 PM

Session Sponsor: The Grass Foundation

Speakers: *K. DEISSEROTH;
Stanford Univ., Stanford, CA

Disclosures: K. Deisseroth: None.

Moderator: *C. LUSCHER;
Univ. of Geneva, Geneva, Switzerland

Speakers: *O. STEWARD;
Univ. of California Irvine, Irvine CA, CA

Disclosures: O. STEWARD: None

Speakers: *G. GINOSAR;
Weizmann Inst. of Sci., Rehovot, Israel

Disclosures: G. GINOSAR: None

Speakers: *P. A. LACHANCE;
Dartmouth Col., Hanover, NH

Disclosures: P. A. LACHANCE: None

Speakers: *M. CAPOGROSSO;
Neurolog. Surgery, Univ. of Pittsburgh, Pittsburgh, PA

Disclosures: M. CAPOGROSSO: None

Speakers: *I. ABDUS-SABOOR;
Biol., Univ. of Pennsylvania, NEW YORK, NY

Disclosures: I. ABDUS-SABOOR: None

Abstract: This lecture will explore: 1) The initial high-resolution structures of each of the three major classes of a remarkable family of light-activated membrane proteins (the cation-conducting, anion-conducting, and pump-like channelrhodopsins); 2) The principles underlying their key properties (including kinetics, spectrum, and ion selectivity) – leading to creation of new tools for neuroscience. Outcomes of this work include a deeper understanding of the fundamental survival drives of animals – such as thirst and hunger – at single-cell resolution, as well as the highest integrative functions of the brain.

Grant Support: None

Lecture

LEC15: Presidential Special Lecture: Regenerating Axons and Re-Establishing Connections for Neural Repair — Zhigang He

Location: WCC Hall D

Time: Monday, November 13, 2023, 5:15 PM - 6:30 PM

Speakers: *Z. HE;

Boston Children's Hosp., BOSTON, MA

Disclosures: Z. He: E. Ownership Interest (stock, stock options, royalty, receipt of intellectual property rights/patent holder, excluding diversified mutual funds); Rugen, Myro, and Axonis. F. Consulting Fees (e.g., advisory boards); SpineX.

Moderator: *B. ZHENG;

Univ. of California San Diego, La Jolla, CA

Speakers: *O. STEWARD;

Univ. of California Irvine, Irvine CA, CA

Disclosures: O. STEWARD: None

Speakers: *Y. HIRABAYASHI;

Sch. of Engin., The Univ. of Tokyo, Tokyo, Japan

Disclosures: Y. HIRABAYASHI: None

Speakers: *B. CASEY;

Neurosci. and Behavior, Barnard Col., New York, NY

Disclosures: B. CASEY: None

Speakers: *K. LAMBERT;

Univ. of Richmond, Richmond, VA

Disclosures: K. LAMBERT: None

Speakers: *C. BRAVO-RIVERA;

Psychiatry and Anat. & Neurobio., Univ. of Puerto Rico Departments of Psychiatry and Anat. & Neurobio., San Juan, PR

Disclosures: C. BRAVO-RIVERA: None

Abstract: Spinal cord injury and other central nervous system (CNS) traumas damage passing axons and disrupt neuronal connections, leading to unrecoverable functional deficits. This lecture will discuss the reasons underlying the failure of axon regeneration in adult CNS and progress in developing pro-regenerative strategies in experimental injury models. Further discussion will

highlight the challenges and promises of advancing these findings towards effective neural repair treatments.

Grant Support: NIH Grant NS110850
NIH Grant AT010779
NIH Grant EY030204
NIH Grant NS109947
The Gilbert Family Foundation
Dr. Miriam and Sheldon G. Adelson Medical Research Foundation
Department of Public Health of Massachusetts

Lecture

LEC16: Special Lecture: Circuits, Behavior, and Evolution — Gilles Laurent

Location: WCC Hall D

Time: Tuesday, November 14, 2023, 9:00 AM - 10:00 AM

Speakers: *G. LAURENT;
Max Planck Inst. For Brain Res., Frankfurt/Main, Germany

Disclosures: G. Laurent: None.

Moderator: *M. CAREY;
Champalimaud Ctr. For the Unknown, Lisboa, Portugal

Abstract: The brain may be a computing machine but it is also a product of evolution. This lecture will present three facets of an effort to understand the brain in part from an evolutionary perspective. First, if all brains obey similar rules, what types of descriptions should we use so that appropriate comparisons can be made? Second, what challenges does one find when studying a complex and ubiquitous phenomenon such as sleep from an evolutionary perspective? Third, can neuroscientists exploit behavioral convergence between cephalopods and vertebrates to understand the mechanisms of texture perception?

Grant Support: Max Planck Society
European Research Council

Lecture

LEC17: David Kopf Neuroethics Lecture: Leveraging Cross-Cultural Perspectives for Environmental Neuroethics and Global Neuroscience — Judy Illes

Location: WCC Hall D

Time: Tuesday, November 14, 2023, 10:30 AM - 11:30 AM

Session Sponsor: David Kopf Instruments

Speakers: *J. ILLES;
Neuroethics Canada, and Div. of Neurology, Dept. of Med., Univ. of British Columbia,
Vancouver, BC, Canada

Disclosures: J. Illes: None.

Moderator: *E. LUMPKIN;
UC Berkeley, Berkeley, CA

Speakers: *O. STEWARD;
Univ. of California Irvine, Irvine CA, CA

Disclosures: O. STEWARD: None

Abstract: The world today is challenged by environmental change that is applying unprecedented pressure on individual and collective well-being. Eco-anxiety is pervasive. What are the responsibilities of neuroscientists to respond? How can research span geographic and cultural boundaries? This lecture will explore ways that biomedical explanations and traditional beliefs about brain and mental health can co-exist to bring answers to these questions at the intersection of environment, ethics, and global neuroscience.

Grant Support: North Family Foundation
University of British Columbia Distinguished Scholars Program

Lecture

LEC18: Special Lecture: How Do Astrocytes Sculpt Synaptic Circuits? — Cagla Eroglu

Location: WCC Hall D

Time: Tuesday, November 14, 2023, 2:00 PM - 3:00 PM

Speakers: *C. EROGLU;
Duke University; Duke Univ. Med. Ctr., Durham, NC

Disclosures: C. Eroglu: None.

Moderator: *L.-Y. WANG;
Sickkids Res. Inst&Univ Toronto, Toronto, ON, Canada

Abstract: Astrocytes are the most abundant glial cells in the brain and control the formation, function, and plasticity of synaptic circuits. This lecture will share past and ongoing research on the molecular mechanisms that underlie how astrocytes instruct the development and remodeling of synaptic circuits in health, and how these mechanisms are impacted in neurodevelopmental and neurodegenerative disorders such as autism and Parkinson's disease.

Grant Support: NIH Grant R01NS102237
NIH Grant RF1AG059409
Adelson Medical Research Foundation #04-7023433
SVCF (Chan Zuckerberg Initiative) #2021-2325027
SVCF (Chan Zuckerberg Initiative) #2021-237435

NIH Grant R01DA047258
NIH Grant U19NS123719

Lecture

LEC19: Special Lecture: I Understand and Share Your Feeling: Neurobiology of Affective Empathy — Hee-Sup Shin

Location: WCC Hall D

Time: Tuesday, November 14, 2023, 3:30 PM - 4:30 PM

Speakers: ***H.-S. SHIN;**

Ctr. for Cognition and Sociality, Inst. For Basic Sci., Daejeon, Korea, Republic of

Disclosures: **H. Shin:** None.

Moderator: ***K. KUCHIBHOTLA;**

Johns Hopkins Univ., Baltimore, MD

Abstract: Empathy, the ability to understand and share emotions, forms the foundation of social behaviors like emotional contagion, prosocial behavior, theory of mind, and perspective-taking. Observational fear, a form of emotional contagion, has been described in animals including humans. Studying affective empathy using the observational fear assay in mice offers insights into the neural mechanisms and circuitry underlying empathy. This lecture will overview the current research on the neurobiology of empathy, focusing on neural circuitry.

Grant Support: Institute for Basic Science Grant (IBS-R001-D1 & D2)

Lecture

LEC20: Presidential Special Lecture: Receptors, Synapses, and Memories — Richard L. Huganir

Location: WCC Hall D

Time: Tuesday, November 14, 2023, 5:15 PM - 6:30 PM

Speakers: ***R. L. HUGANIR;**

The Johns Hopkins Sch. of Med., Baltimore, MD

Disclosures: **R.L. Huganir:** None.

Moderator: ***E. DIAZ;**

Univ. Of California Davis, Davis, CA

Speakers: ***O. STEWARD;**

Univ. of California Irvine, Irvine CA, CA

Disclosures: **O. STEWARD:** None

Speakers: *E. PURVIS;
Univ. of Pennsylvania, Philadelphia, PA

Disclosures: E. PURVIS: None

Speakers: *B. A. REIN;
Stanford Univ., Sunnyvale, CA

Disclosures: B. A. REIN: None

Speakers: *A. KAUR;
UNC Asheville, Asheville, NC

Disclosures: A. KAUR: None

Abstract: Neurotransmitter receptors mediate signal transduction at synapses in the brain. The Haganir Laboratory has elucidated mechanisms regulating AMPA and NMDA receptors, major excitatory neurotransmitter receptors in the central nervous system. They have focused on the role of post-translational modification and receptor-interacting proteins in synaptic plasticity and learning and memory. These studies show that receptor regulation is a major determinant of animal behavior in health and disease.

Grant Support: NIH Grant RO1 MH112808
NIH Grant RO1 MH123212
NIH Grant R37 NS036715
NIH Grant RF1 MH126707
NIH Grant U01 DA056556

Lecture

LEC21: Special Lecture: The How and Why of Sleep — Yang Dan

Location: WCC Hall D

Time: Wednesday, November 15, 2023, 9:00 AM - 10:00 AM

Speakers: *Y. DAN;
Helen Wills Neurosci Insti, Univ. of California Berkeley; HHMI, Berkeley, CA

Disclosures: Y. Dan: None.

Moderator: *S.-H. LEE;
Korea Advanced Inst. in Sci. and Technol., Daejeon, Korea, Republic of

Abstract: Sleep is a fundamental process, and its disruption profoundly impacts human health. To identify neurons involved in sleep generation, whole-brain screening using optogenetics, electrophysiology, imaging, and gene profiling was performed. Results suggest that sleep is controlled by a highly distributed network spanning the forebrain, midbrain, and hindbrain, and the sleep neurons are part of the central somatic and autonomic motor circuits. To address the “why” question, this lecture will explore how sleep interacts with the cardiovascular, immune, and neuroendocrine systems.

Grant Support: HHMI
ASAP

Lecture

LEC22: Special Lecture: Molecular Programs Orchestrating the Wiring of Cortical Circuitries — Beatriz Rico

Location: WCC Hall D

Time: Wednesday, November 15, 2023, 10:30 AM - 11:30 AM

Speakers: ***B. RICO**;
King's Col. London, London, United Kingdom

Disclosures: **B. Rico:** None.

Moderator: ***S. HIPPENMEYER**;
IST Austria, Klosterneuburg, Austria

Abstract: The extraordinary diversity of animal behaviors relies on the precise assembly and fine-tuning of different neurons in the brain across distinct brain areas. This connectivity reaches the highest complexity in the mammalian cerebral cortex, where the interaction between pyramidal cells and interneurons is fundamental for the function of these circuitries. This lecture will review recent efforts toward unveiling some of the molecular mechanisms by which these synapses reached a high level of specificity, from subcellular and cellular targeting to synapse-specific control of local translation.

Grant Support: 2013-2018ERC Starting Grant. SYNAPDOMAIN. PI: B. Rico.
2018-2023European Commission, AIMS-Trials 2, PI: Declan Murphy (Coordinator). B. Rico leads one of thirty-nine teams
2019-2024MRC Programme grant. PIs: B. Rico, O. Marín.
2020-2022SFARI. Co-PI B Rico, O. Marin
2017-2023 Wellcome Trust Investigator Award. PI: B. Rico
2021-2025ERC Advanced Grant. Experiential. PI: B. Rico

Lecture

LEC23: Special Lecture: Understanding Population-Level Computations — Mark M. Churchland

Location: WCC Hall D

Time: Wednesday, November 15, 2023, 12:30 PM - 1:30 PM

Speakers: ***M. M. CHURCHLAND**;
Columbia Univ., New York, NY

Disclosures: **M.M. Churchland:** Other; Licensed a patent for BCI decoding to Blackrock Neurotech.

Moderator: *A. PRUSZYNSKI;
Western Univ., London, ON, Canada

Abstract: Neuroscientists seek to understand how neural populations perform computations. In many brain areas, one must understand computation first at the population level, then determine why single-neuron properties make sense. The last twenty years have seen this approach become common, with the study of motor cortex providing canonical examples. This lecture will discuss this progress, and how it has been aided by synergy between computational and experimental neuroscience.

Grant Support: NIH CRCNS R01NS100066
NIH 1U19NS104649
Grossman Charitable Trust
Simons Foundation
DP2 NS083037
Kavli Foundation
McKnight Foundation

Lecture

LEC24: Special Lecture: Uncovering the Mystery of Itch — Xinzhong Dong

Location: WCC Hall D

Time: Wednesday, November 15, 2023, 2:00 PM - 3:00 PM

Speakers: *X. DONG;
Neurosci., Johns Hopkins Univ. Sch. of Med., Baltimore, MD

Disclosures: X. Dong: B. Contracted Research/Research Grant (principal investigator for a drug study, collaborator or consultant and pending and current grants). If you are a PI for a drug study, report that research relationship even if those funds come to an institution.; GlaxoSmithKline (GSK). E. Ownership Interest (stock, stock options, royalty, receipt of intellectual property rights/patent holder, excluding diversified mutual funds); Escient Pharmaceuticals. F. Consulting Fees (e.g., advisory boards); Escient Pharmaceuticals.

Moderator: *B. MORRISON;
Johns Hopkins Univ., Baltimore, MD

Abstract: Itch is a sensation in the skin that provokes the desire to scratch. Under normal circumstances itch provides a protective role but can become a clinical challenge in skin diseases and certain systemic diseases. Until recently, the mechanisms of itch were poorly understood, but in the last decade significant advancements have been made in our understanding of this sensation. This lecture will review these advances uncovering the mystery of itch and discuss itch mediators/receptors, neural pathways, coding of itch versus pain, and the development of new anti-itch therapies.

Grant Support: NIH Grant R37NS054791