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Lecture

LEC01: Dialogues Between Neuroscience and Society — Susan Magsamen

Location: MCP Hall B

Time: Saturday, October 5, 2024, 10:00 AM - 12:00 PM

Session Sponsor: The Dana Foundation

Moderator: *M. PICCIOTTO;
Yale Univ., Guilford, CT

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

Moderator: *L. COLGIN;
The Univ. of Texas At Austin, Austin, TX

Moderator: *D. SCHILLER;
Icahn Sch. of Med. at Mount Sinai, New York, NY

Featured Lecturer: *S. MAGSAMEN;
Intl. Arts + Mind Lab, Ctr. for Applied Neuroaesthetics, Johns Hopkins Sch. of
Medicine/NeuroArts Blueprint/Your Brain on Art: How the Arts Transform Us (2023),
Baltimore, MD

Disclosures: S. Magsamen: None.

Abstract: Susan Magsamen's work lies at the interdisciplinary intersection of science, art, and aesthetic experiences. Her presentation will explore the science of neuroaesthetics, the study of how the arts and aesthetic experiences measurably change the brain and body, and how to translate this knowledge into practices that advance health, well-being, learning, flourishing, and community development. The science of the arts is no longer a far-fetched idea but a tangible reality with groundbreaking research and practical applications emerging at an unprecedented pace.

Lecture

LEC02: Special Lecture: Exploring Sex-Specific Neural Architecture in Animal Social Behavior — Tali Kimchi

Location: MCP Hall B

Time: Saturday, October 5, 2024, 1:00 PM - 2:00 PM

Moderator: *Y. YAZAKI-SUGIYAMA;
Okinawa Inst. of Sci. and Technol. (OIST) Grad. Univ., Okinawa, Japan

Lecturer: *T. KIMCHI;
Weizmann Inst. of Sci., Rehovot, Israel

Disclosures: T. Kimchi: None.

Abstract: The lecture will explore the distinct differences in social behaviors between males and females, focusing on mating, nursing, and aggression. A complex interplay of genetic, neural, and environmental factors shapes these behaviors. This lecture will delve into the journey of uncovering the specific neural circuits and molecular mechanisms underpinning these sex-typical social behaviors in both sexes. Additionally, the speaker will discuss the emerging use of naturalistic settings, highlighting their potential to deepen understanding of social behavior and sex differences.

Lecture

LEC03: SfNova Lecture: Corey C. Harwell; Lucia L. Prieto Godino

Location: MCP Hall B

Time: Saturday, October 5, 2024, 3:00 PM - 4:00 PM

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

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

Intro/Close: *L. COLGIN;
The Univ. of Texas At Austin, Austin, TX

Lecturer: *L. L. PRIETO GODINO;
The Francis Crick Inst., London, United Kingdom

Disclosures: L.L. Prieto Godino: None.

Abstract:

Evolution of Neural Circuits: Lessons From the Fly

Lucia L. Prieto Godino, PhD

The Francis Crick Institute

Theme F: Integrative Physiology and Behavior

The wide variety of animal behaviors we observe today arose through the evolution of their underlying neural circuits. Advances in understanding the mechanisms through which neural circuits change over evolutionary timescales lag behind our knowledge of circuit function and development. However, recent research — including the speaker's — is starting to shed light on this fascinating topic. This lecture will highlight key questions in the evolution of neural circuits, how researchers are working to address them, and what they learned so far.

Grant Support: ERC starter Grant 802531
Human Frontiers Science Grant (GY0052/ 2022)
Allen Institute Distinguished Investigator Award
Valle Scholarship Award
Cancer Research UK (FC001594)

UK Medical Research Council (FC001594)
Wellcome Trust (FC001594)

Lecturer: *C. C. HARWELL;
Neurol., Univ. of California, San Francisco, San Francisco, CA

Disclosures: C.C. Harwell: None.

Abstract:

How Origin and Environment Shape Neural Development and Career Trajectories

Corey C. Harwell, PhD

University of California, San Francisco

Theme A: Development

Diversity in the form and function of cell types in the nervous system is essential for the complex circuit computations that govern cognition and behavior. The Harwell lab aims to understand the mechanisms governing the emergence and generation of cell-type diversity in the mammalian brain. This lecture will discuss how the complex interplay between intrinsic and extrinsic factors shapes neural cell type specialization and influences research direction and career choices.

Grant Support: NIH Grant K01NS089720
NIH Grant R01NS102228
NIH Grant R01MH119156
NIH Grant R01NS118933
NIH Grant R01DA059388
Chan Zuckerberg Biohub, San Francisco
HHMI Gilliam Fellowship

Lecture

LEC04: Presidential Special Lecture: What Does a Large Language Model Know? — L. A. Paul

Location: MCP Hall B

Time: Saturday, October 5, 2024, 5:15 PM - 6:30 PM

Moderator: *K. KUCHIBHOTLA;
Johns Hopkins Univ., Baltimore, MD

Intro/Close: *M. PICCIOTTO;
Yale Univ., Guilford, CT

Featured Lecturer: *L. A. PAUL;
Yale Univ., New Haven, CT

Disclosures: L.A. Paul: None.

Abstract: Recent developments in machine intelligence suggest the prospect of minds that can be artificially constructed. This raises a question: could an agent with such an artificial mind be intelligent, and if so, could it know things? This lecture will raise this question with respect to

large language models (LLMs) and suggest that an LLM can be thought of as realizing a certain type of mind, along with a certain type of knowledge. This lecture will then explore the way that people can infer the existence of such knowledge and how it is related to the more ordinary sort of knowledge exhibited by human beings.

Lecture

LEC05: Special Lecture: Organelle Quality Control in Neuronal Homeostasis and Neurodegeneration — Erika L. F. Holzbaur

Location: MCP Hall B

Time: Sunday, October 6, 2024, 9:00 AM - 10:00 AM

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

Lecturer: *E. L. HOLZBAUR;
Univ. of Pennsylvania Perelman Sch. of Med., Philadelphia, PA

Disclosures: E.L. Holzbaur: None.

Abstract: Neuronal homeostasis relies on organelle quality control pathways. Chronic or acute damage to intracellular organelles activates response mechanisms that lead to their targeted degradation by autophagy. Genetic and pathological evidence links autophagic dysfunction to diseases including Parkinson's and ALS. This lecture will discuss scientists' progress in understanding the mechanisms regulating mitochondrial and lysosomal quality control and the links between defective autophagy and neurodegeneration.

Grant Support: NIH R01 NS060698
NIH R35 GM126950
ASAP-000350

Lecture

LEC06: Clinical Neuroscience Lecture: Implanted Systems to Regulate Autonomic and Motor Functions — Jocelyne Bloch

Location: MCP Hall B

Time: Sunday, October 6, 2024, 10:30 AM - 11:30 AM

Moderator: *B. ZHENG;
Univ. of California San Diego, La Jolla, CA

Lecturer: *J. BLOCH;
Lausanne Univ. Hosp. (CHUV), Lausanne, Switzerland

Disclosures: J. Bloch: A. Employment/Salary (full or part-time); CHUV. E. Ownership Interest (stock, stock options, royalty, receipt of intellectual property rights/patent holder, excluding

diversified mutual funds); Onward medical. F. Consulting Fees (e.g., advisory boards); onward medical.

Abstract: Identification of the mechanisms through which electrical stimulation applied over the spinal cord or into the brain regulates specific neuronal subpopulations steers the development of implantable systems and precise neuromodulation therapies that harness this understanding to regulate impaired neurological functions. These mechanism-driven systems improved motor functions and reestablished hemodynamic instability in people with spinal cord injury or neurodegenerative diseases such as PD.

Lecture

LEC07: Special Lecture: Towards a Unified View of Hippocampal Function — Elizabeth A. Buffalo

Location: MCP Hall B

Time: Sunday, October 6, 2024, 12:00 PM - 1:00 PM

Moderator: *L. COLGIN;
The Univ. of Texas At Austin, Austin, TX

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

Disclosures: **E.A. Buffalo:** E. Ownership Interest (stock, stock options, royalty, receipt of intellectual property rights/patent holder, excluding diversified mutual funds); Neurotrack Technologies.

Abstract: Humanity's understanding of the hippocampus is framed by two landmark discoveries: the discovery by Scoville and Milner that hippocampal damage causes profound amnesia and the discovery of hippocampal place cells by O'Keefe and Dostrovsky. This lecture will review recent progress in the field toward reconciling the spatial and mnemonic views of the hippocampus, with a focus on new insights from large-scale recordings in the non-human primate.

Grant Support: NIH Grant OD010425
NIH Grant NS107609
NIH Grant NS126485
NIH Grant MH132171
Simons Foundation

Lecture

LEC08: Special Lecture: Disease-Modifying Therapies of Alzheimer's Disease — Takeshi Iwatsubo

Location: MCP Hall B

Time: Sunday, October 6, 2024, 1:30 PM - 2:30 PM

Moderator: *T. HANAKAWA;
Kyoto Univ. Grad. Sch. of Med., Kyoto-Shi, Japan

Lecturer: *T. IWATSUBO;
Univ. of Tokyo, Tokyo, Japan

Disclosures: T. Iwatsubo: F. Consulting Fees (e.g., advisory boards); Eisai, Eli Lilly.

Abstract: The recent emergence of disease-modifying therapies (DMT) targeting amyloid β ($A\beta$) in early Alzheimer's disease (AD), e.g. lecanemab and donanemab, opened up a new era for AD therapies. AD Neuroimaging Initiative (ADNI) studies in North America and Japan have delineated the early natural course of AD and facilitated the development of biomarkers. Secondary prevention trials in amyloid-positive asymptomatic elderly individuals are currently underway. These clinical activities will pave the way toward the development of AD therapies targeting its very early stages.

Grant Support: Japanese Agency for Medical Research and Development (AMED), JP23dk0207048h005

Lecture

LEC09: Peter and Patricia Gruber Lecture: Uncovering Principles of Nervous System Design and Function in Simple Animals — Cornelia I. Bargmann, Gerald M. Rubin

Location: MCP Hall B

Time: Sunday, October 6, 2024, 3:00 PM - 4:30 PM

Session Sponsor: The Gruber Foundation

Moderator: *E. MARDER;
Brandeis Univ., WALTHAM, MA

Moderator: *J. H. MAUNSELL;
Dept. of Neurobio., Univ. of Chicago, Chicago, IL

Intro/Close: *A. HREHA;
Yale Univ., Office of Develop., The Gruber Fndn., New Haven, CT

Intro/Close: *P. GRUBER;
Yale Univ., Office of Develop., The Gruber Fndn., New Haven, CT

Intro/Close: *M. PICCIOTTO;
Yale Univ., Guilford, CT

Featured Lecturer: *C. I. BARGMANN;
The Rockefeller Univ., New York, NY

Disclosures: C. I. BARGMANN: None

Abstract: *How Fixed Circuits Give Rise to Flexible Behaviors*

Cornelia I. Bargmann, PhD

The Rockefeller University

Theme F: Integrative Physiology and Behavior

How do genes and the environment interact to generate a variety of behaviors? How do context and experience modify behavioral decisions? Neuropeptides and neuromodulators that regulate internal states have central roles in generating flexible behaviors. In the nematode *C. elegans*, one can ask how these regulatory molecules alter information flow through defined neural circuits to transiently rewire a simple nervous system.

Featured Lecturer: *G. M. RUBIN;
Janelia Res. Campus, Howard Hughes Med. Inst., Ashburn, VA

Disclosures: G. M. RUBIN: None

Abstract: *Illustrating and Enhancing the Power of Connectomics*

Gerald M. Rubin, PhD

Janelia Research Campus, Howard Hughes Medical Institute

Theme I: Techniques

Animals use visual information in a context-dependent manner. The speaker will describe how they used connectomics and cell-type-specific genetic tools, together with behavioral and physiological analyses, to identify multiple distinct circuit mechanisms that alter the flow of visual information when female *Drosophila* enter an aggressive state. This lecture will also give a progress report on our ongoing efforts to add information on gap junctions and neuropeptide signaling currently missing in the connectome.

Lecture

LEC10: Presidential Special Lecture: Mapping the Brain: From Cells and Circuits to Function — Rui M. Costa

Location: MCP Hall B

Time: Sunday, October 6, 2024, 5:15 PM - 6:30 PM

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

Intro/Close: *M. PICCIOTTO;
Yale Univ., Guilford, CT

Featured Lecturer: *R. M. COSTA;
Allen Inst., Seattle, WA

Disclosures: R.M. Costa: E. Ownership Interest (stock, stock options, royalty, receipt of intellectual property rights/patent holder, excluding diversified mutual funds); Have Stock of Yema Inc and Kinetikos Health Inc.. F. Consulting Fees (e.g., advisory boards); Am on the Board of FMI, Stanley Center, Sloan Foundation, Champalimaud Foundation, Yema..

Abstract: The lecture will discuss the Allen Institute's foundational efforts to map diverse cell types and circuits in the mammalian brain using approaches such as single-cell and spatial transcriptomics, morphological and physiological analyses, and advanced light and electron microscopy. These efforts span development stages, species, and health states and investigate the dynamics of neuronal activity across brain regions and cell types during sensing, decision-making, and movement. The data, tools, and knowledge are shared openly to accelerate discovery by all neuroscientists.

Grant Support: NIH Grant DP1AT011979
ASAP-020551

Lecture

LEC11: Special Lecture: Identifying Neural Mechanisms for Natural Behavior Through Computational Ethology — Sandeep Robert Datta

Location: MCP Hall B

Time: Monday, October 7, 2024, 9:00 AM - 10:00 AM

Moderator: *S. CHEN;
Univ. of Ottawa, Ottawa, ON, Canada

Lecturer: *S. R. DATTA;
Harvard Med. Sch., Boston, MA

Disclosures: S.R. Datta: F. Consulting Fees (e.g., advisory boards); SRD sits on the advisory boards of NICO Therapeutics and Axiom Labs.

Abstract: The brain allows animals to successfully interact with the world through behavior. But how does the brain compose natural behaviors — the kinds of behaviors expressed by animals when they are unrestrained and free to act based on their own motivations? And how do sex, age, internal state, and individual identity coalesce into a context-appropriate pattern of behavior at any given moment? This lecture will describe recent developments in computational ethology and highlight how these emerging approaches can shed new light on how the brain endows natural behavior with meaning.

Grant Support: U19NS113201
R01NS114020
RF1AG073625
U24NS109520
Simons Collaboration on the Global Brain
Simons Collaboration for Plasticity and the Aging Brain
SFARI

Lecture

LEC12: Special Lecture: Neural Circuit Adaptation Underlying Behavioral Learning — Fritjof Helmchen

Location: MCP Hall B

Time: Monday, October 7, 2024, 10:30 AM - 11:30 AM

Moderator: *J. CHEN;
Boston Univ., Boston, MA

Lecturer: *F. HELMCHEN;
Brain Res. Inst., Univ. of Zurich, Zurich, Switzerland

Disclosures: F. Helmchen: None.

Abstract: How do neural circuits reorganize to adapt behavior to a new task? What are the principles and mechanisms of learning algorithms in the brain? With modern tools for tracking neural activity chronically during learning—from local to brainwide scale—and for manipulating specific circuit components, these fundamental questions can be illuminated anew. This lecture will discuss experimental results and theoretical concepts of how predictions are formed and how prediction errors are used to adjust behavior, aiming at a deeper understanding of learning-related brain dynamics.

Grant Support: SNSF Grants 310030_127091, 310030B_170269, 310030_192617
SNSF Grants 310030E_147485, CRSII5_180316
ERC Advanced Grant 670757
NIH U01NS115585
University of Zurich URPP AdaBD

Lecture

LEC13: Special Lecture: Liftoff: Neuropsychiatry With Functional MRI Comes of Age — Damien A. Fair

Location: MCP Hall B

Time: Monday, October 7, 2024, 12:00 PM - 1:00 PM

Moderator: *L. ANDREAE;
King's Col. London, London, United Kingdom

Lecturer: *D. A. FAIR;
Masonic Inst. for the Developing Brain, Univ. of Minnesota, Minneapolis, MN

Disclosures: D.A. Fair: Other; Touring Medical-Co Founder.

Abstract: Functional MRI has long promised deep insights into the inner workings of the human brain. The ‘Era of Big Data,’ and decades of fMRI research have ignited a series of transformative breakthroughs that have reshaped the fundamental understanding of the brain’s

functional neuroanatomy — unveiling intricate cortical systems previously unknown. This lecture will highlight how these revelations revolutionize the characterization of many developmental processes and mental health disorders and how they provide personalized therapeutic targets for several neuromodulation strategies.

Grant Support: TBD

Lecture

LEC14: Albert and Ellen Grass Lecture: Oxygen and the Pressure to Sleep — Gero Miesenböck

Location: MCP Hall B

Time: Monday, October 7, 2024, 3:00 PM - 4:30 PM

Session Sponsor: The Grass Foundation

Moderator: *K. FRANKS;
Duke Univ., Durham, NC

Intro/Close: *M. PICCIOTTO;
Yale Univ., Guilford, CT

Featured Lecturer: *G. MIESENBÖCK;
Ctr. for Neural Circuits and Behaviour, Univ. of Oxford, Oxford, United Kingdom

Disclosures: G. Miesenböck: None.

Abstract: Oxygen is a double-edged molecule. The large energy gains of aerobic metabolism were the fuse that lit the Cambrian explosion of multicellular life, during which nervous systems first appeared. However, oxygen's high reactivity invites missteps in mitochondrial electron transfers. The lecture will ask whether sleep helps to tame the dangers of aerobic metabolism, as suggested by the discovery of machinery that gears the activity of sleep-control neurons to the fate of electrons in the respiratory chain.

Grant Support: ERC Advanced Grant (832467)
UK Medical Research Council (MR/V013238/1)
Wellcome (209235/Z/17/Z and 106988/Z/15/Z)

Lecture

LEC15: Presidential Special Lecture: Unveiling the Nexus of Innate Immunity and Alzheimer's Disease: Insights Into Pathogenesis and Therapeutic Prospects — Nancy Y. IP

Location: MCP Hall B

Time: Monday, October 7, 2024, 5:15 PM - 6:30 PM

Moderator: *L.-J. WU;
Mayo Clin., Rochester, MN

Intro/Close: *M. PICCIOTTO;
Yale Univ., Guilford, CT

Featured Lecturer: *N. Y. IP;
Div. of Life Sci., The Hong Kong Univ. of Sci. and Technol., Kowloon, Hong Kong

Disclosures: N.Y. Ip: None.

Abstract: Innate immunity plays a pivotal role in the pathogenesis of Alzheimer's disease (AD). By delineating the intricate interplay between genetic predisposition, environmental influences such as aging, and immune function, this lecture aims to unravel the underpinnings of neurodegeneration and AD pathogenesis. It will delve into addressing the multifaceted impact of immunity to effectively combat the disease, presenting a roadmap for therapeutic advancements in neuroscience.

Grant Support: UGC Grant AoE/M-604/16
RGC Grant T13-605/18W
ITC Grant ITCPD/17-9

Lecture

LEC16: Special Lecture: The Mind-Body Connection: A Neuroimmune Perspective — Asya Rolls

Location: MCP Hall B

Time: Tuesday, October 8, 2024, 9:00 AM - 10:00 AM

Moderator: *D. SCHAFER;
Univ. of Massachusetts Chan Med. Sch. Grad. Program in Neurosci., Upton, MA

Lecturer: *A. ROLLS;
Technion, Israel Inst. of Technol., Haifa, Israel

Disclosures: A. Rolls: None.

Abstract: The mind-body connection, highlighted in stress-induced disorders and the placebo effect, is not fully understood. This lecture's research aims to uncover the neural pathways that mediate this connection. Through genetic and functional manipulations, we explore how the brain represents and regulates our main defense mechanism, the immune system. Unraveling this essential aspect of physiology can transform our understanding and treatment of psychosomatic disorders and harness the brain's therapeutic potential.

Grant Support: ERC-COG 101088955
HHMI-Wellcome Trust
Dr. Miriam and Sheldon G. Adelson Medical Research Foundation
ERC-STG 758952 NEIMO
ISF Israel Science foundation

Lecture

LEC17: David Kopf Lecture on Neuroethics: Mixing Brains and Computers — Gabriel Lázaro-Muñoz

Location: MCP Hall B

Time: Tuesday, October 8, 2024, 10:30 AM - 11:30 AM

Session Sponsor: David Kopf Instruments

Moderator: *M. ARRUDA-CARVALHO;
Univ. of Toronto Scarborough, Toronto, ON, Canada

Intro/Close: *M. PICCIOTTO;
Yale Univ., Guilford, CT

Featured Lecturer: *G. LÁZARO-MUÑOZ;
Harvard Med. Sch., Boston, MA

Disclosures: G. Lázaro-Muñoz: None.

Abstract: Brain-computer interfaces (BCIs) caught the public imagination and investment interest. BCIs such as deep brain stimulation (DBS) devices can effectively manage otherwise treatment-resistant movement, seizure, and psychiatric disorders. The hope is that BCIs will help manage an increasing number of brain-based conditions. Many are also looking to expand the use of BCIs to everyday tasks such as interacting with smartphones, computers, and other devices. This lecture will highlight the pressing challenges and opportunities of the nascent BCI era.

Grant Support: R01MH133657
R01MH128676
R01HG011711

Lecture

LEC18: Special Lecture: Adolescent Neurocognitive Specialization: Shaping Adult Trajectories — Beatriz Luna

Location: MCP Hall B

Time: Tuesday, October 8, 2024, 2:00 PM - 3:00 PM

Moderator: *T. DESROCHERS;
Brown Univ., Providence, RI

Lecturer: *B. LUNA;
Dept. of Psychiatry, Univ. of Pittsburgh, Pittsburgh, PA

Disclosures: B. Luna: None.

Abstract: During adolescence, the foundation of adult neurocognitive trajectories is established. The scientists behind this lecture investigated the shape of cognitive development and reward

processing and applied multimodal neuroimaging to measure concomitant developmental changes in neural activity (EEG/MEG), myelination (MRI R1), neurotransmitter (MRSI) evidence of E/I balance in prefrontal cortex, dopaminergic function (striatal tissue iron) in limbic systems and their connectivity informing a model of developmental specialization.

Grant Support: NIH Grant R37 MH080243
NIH Grant R01 MH067924
Staunton Farm Foundation

Lecture

LEC19: History of Neuroscience Lecture: The Short and the Long of Inhibition — Hannah Monyer

Location: MCP Hall B

Time: Tuesday, October 8, 2024, 3:30 PM - 4:30 PM

Moderator: *K. IGARASHI;
UC Irvine, Irvine, CA

Intro/Close: *M. PICCIOTTO;
Yale Univ., Guilford, CT

Featured Lecturer: *H. MONYER;
Clin. Neurobio. A230, Univ. of Heidelberg and German Cancer Res. Ctr. (DKFZ), Heidelberg, Germany

Disclosures: H. Monyer: None.

Abstract: GABAergic interneurons control the activity within neuronal ensembles, thus enabling complex behaviors such as perception, motor activity, and cognition. In the hippocampal formation, GABAergic interneurons support spatial coding and memory. This lecture will highlight a subclass of GABAergic cells that are “projection neurons.” Their wiring pattern constitutes a novel “leitmotiv” in the hippocampus and beyond and supports information flow and coordinated activity across distantly located brain areas.

Grant Support: Lautenschläger Foundation
German Research Foundation

Lecture

LEC20: Presidential Special Lecture: Imaging Brain Chemistry in Brain Health and Disease: From Neurotransmitters to Neuropeptides — Markita del Carpio Landry

Location: MCP Hall B

Time: Tuesday, October 8, 2024, 5:15 PM - 6:30 PM

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

Intro/Close: *M. PICCIOTTO;
Yale Univ., Guilford, CT

Featured Lecturer: *M. D. C. LANDRY;
Chem. and Biomolecular Engin., Univ. of California, Berkeley, Berkeley, CA

Disclosures: M.D.C. Landry: None.

Abstract: Neurons communicate through chemical neurotransmitter signals to modulate the activity of larger neuronal networks. Owing to the central role of brain chemistry over a range of behaviors and psychiatric disorders, real-time imaging of the brain's chemical signal spatial propagation constitutes a valuable contribution to the understanding of brain health and disease. Here, this lecture will discuss advances in — and the importance of — imaging brain chemistry at the spatial and temporal scales used by neurons to establish neurochemical communication in the brain.

Grant Support: Burroughs Wellcome Fund Career Award at the Scientific Interface (CASI)
NIH R35 MIRA award R35GM128922
NSF CAREER award 2046159
McKnight Foundation award
Sloan Foundation award
Schmidt Foundation award

Lecture

LEC21: Special Lecture: Tentonins (TMEM150), Mechanosensory Channels With Unique Property and Functions — Uhtaek Oh

Location: MCP Hall B

Time: Wednesday, October 9, 2024, 9:00 AM - 10:00 AM

Moderator: *B.-K. KAANG;
Inst. for Basic Sci., Daejeon.

Lecturer: *U. OH;
Brain Sci. Inst., Korea Inst. of Sci. and Technol., Seoul, Korea, Republic of

Disclosures: U. Oh: None.

Abstract: Mechanically-activated (MA) channels mediate fundamental cellular and physiological functions. Tentonin 3 (TTN3/TMEM150C) is an MA channel with slow inactivation kinetics. TTN3 is known to mediate the baroreceptor reflex, proprioception, and insulin release from the pancreas. TTN3 is a pore-forming subunit with a unique structure. In the lecture, the biophysical and pharmacological differences between TTNs and Piezo1, as well as their involvement in other sensory transductions, will be introduced.

Grant Support: NRF of Korea RS-2023-00254795

Lecture

LEC22: Special Lecture: The Predictive Coding of Voluntary Self-Motion: Circuits for Action and Perception — Kathleen E. Cullen

Location: MCP Hall B

Time: Wednesday, October 9, 2024, 10:30 AM - 11:30 AM

Moderator: *M. CAREY;
Champalimaud Fndn., Lisboa, Portugal

Lecturer: *K. E. CULLEN;
Dept. of Biomed. Engin., Johns Hopkins Univ., Baltimore, MD

Disclosures: K.E. Cullen: None.

Abstract: Integrating sensory with motor signals during voluntary behavior is essential for distinguishing stimuli that are a consequence of intended actions from those that are externally generated. This ability enables the brain to flexibly fine-tune motor actions based on sensory feedback, a computation necessary for subjective awareness of the effects of movements. The lecture will explore the neural circuits that perform this computation, highlighting the cerebellum's role in building predictive models of self-generated movement as individuals explore the world.

Grant Support: NIH Grant DC002390
NIH Grant DC018061
NIH Grant DC018304
Johns Hopkins University Discovery Grant
Johns Hopkins University Kavli Institute Grants

Lecture

LEC23: Special Lecture: The Heart and Mind of Anxiety and Anhedonia: A Frontal Lobe Perspective — Angela C. Roberts

Location: MCP Hall B

Time: Wednesday, October 9, 2024, 12:30 PM - 1:30 PM

Moderator: *S. CHANG;
Yale Univ., New Haven, CT

Lecturer: *A. C. ROBERTS;
Physiology, Develop. and Neurosci., Univ. of Cambridge, Cambridge, United Kingdom

Disclosures: A.C. Roberts: None.

Abstract: Anxiety and anhedonia (loss of pleasure) are major symptoms of psychiatric and neurological disorders with highly variable treatment outcomes. This lecture will highlight their multiple aetiologies within prefrontal and anterior cingulate circuits; as revealed by

chemogenetic, neuroimaging, and cardiovascular studies of reward and threat-related behaviors in a non-human primate. The differential sensitivity of these circuits to antidepressants provides translational insights into treatment variability.

Grant Support: Medical Research Council MR/V033492/1
Wellcome Trust WT224432/Z/21/Z
Medical Research Council MR/M023990/1
Wellcome Trust WT108089MA
Medical Research Council G0901884

Lecture

LEC24: Special Lecture: The Functional Logic of a Cognitive Brain System — Gaby Maimon

Location: MCP Hall B

Time: Wednesday, October 9, 2024, 2:00 PM - 3:00 PM

Moderator: *A. HANTMAN;
Univ. of North Carolina Chapel Hill, Chapel Hill, NC

Lecturer: *G. MAIMON;
Lab. of Integrative Brain Function, The Rockefeller Univ., New York, NY

Disclosures: G. Maimon: None.

Abstract: Over the past decade, notable progress was made in delineating the functional logic of the insect central complex. This lecture will discuss how this central brain region operates as a microcomputer that calculates the values of angles and two-dimensional vectors important for navigational behavior. This work provides an atypically explicit framework for understanding how spatial memories are built, stored, and guide behavior. How these insights were made in *Drosophila* suggests a roadmap for reaching a similar level of understanding in mammalian cognition down the road.

Grant Support: Howard Hughes Medical Institute
NIH Grant R35NS132252
NIH Grant R01NS104934
NIH Grant DP2DA035148
New York Stem Cell Foundation Grant NYSCF-R-NI13
McKnight Scholar Award
Searle Scholars Award