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Lecture

001. Dialogues Between Neuroscience and Society

Location: Hall B

Time: Saturday, October 19, 2019, 11:00 AM - 1:00 PM

Sponsor: Elsevier

Speakers: ***F.-F. LI**

Stanford Human -Centered AI Inst., Stanford, CA

Abstract: Fei-Fei Li is professor of computer science and co-director of the Stanford University Human-Centered AI Institute (HAI). A pioneering expert in AI, inventor of ImageNet, and thought leader, Dr. Li challenges us to be the stewards of technology to serve humanity at its broadest and most diverse extent. Dr. Li has also been recognized as a 2016 Global Thinker by Foreign Policy and formerly served as the vice president of AI and machine learning at Google Cloud. In this session, Dr. Li will discuss the transformative potential that AI and machine learning pose for society from her unique perspective as a scientist and an ethical leader who advocates for future technologies to incorporate an understanding of how to augment, not replace, elements of the human experience.

Disclosures: **F.-F. LI:** None.

Lecture

008. Special Lecture- Neuronal Activity-Dependent Myelination: A Mechanism for Learning and Repair?

Location: Hall B

Time: Saturday, October 19, 2019, 2:00 PM - 3:10 PM

Speakers: ***R. T. KARADOTTIR**

Univ. of Cambridge, Cambridge, United Kingdom

Abstract: Myelin is essential for normal brain function, and alterations in myelin are increasingly implicated as a mechanism for learning. The importance of myelin is evident in diseases where damage to myelin leads to physical and cognitive disabilities. Uniquely within the central nervous system, myelin can regenerate; but this often fails, causing sustained clinical deficits. This lecture will cover the progress made in understanding myelination, with a focus on activity-dependent myelination, and explore how the underlying mechanisms of myelin plasticity may underpin myelin regeneration.

Grant Support: the European Research Council (ERC) Consolidator grant No 771411

Wellcome Trust 091543/Z/10/Z

The UK MS Society Centre Grant 50

the Lister Institute, a Research Prize

Disclosures: R.T. Karadottir: None.

Lecture

009. Presidential Special Lecture- From Base Pairs to Bedside: Antisense Modulators of RNA Splicing to Treat Neurological Diseases

Location: Hall B

Time: Saturday, October 19, 2019, 5:15 PM - 6:30 PM

Speakers: *A. R. KRAINER

Cold Spring Harbor Lab., Cold Spring Harbor, NY

Abstract: We have developed antisense approaches for targeted splicing modulation, exploiting the natural mechanisms of alternative-splicing regulation. Nusinersen (Spinraza), the first approved drug for spinal muscular atrophy (SMA), exemplifies a successful path from basic studies of pre-mRNA splicing to an effective treatment for a devastating disease. Nusinersen is a splice-switching antisense oligonucleotide (ASO) that efficiently promotes *SMN2* exon 7 inclusion and increases the level of SMN protein, which is limiting in SMA-patient motor neurons. Clinical trials of intrathecally-administered nusinersen in SMA patients, sponsored by Ionis Pharmaceuticals and Biogen, began at the end of 2011. Based on the striking results of two phase-3 trials in infants with the most severe form of SMA, and in children with an intermediate form of SMA, respectively, Spinraza was approved by the FDA in December 2016, for all SMA types. I will describe the development of nusinersen and its clinical impact. We are exploring prenatal ASO treatment in SMA mouse models, considering that early intervention maximizes the clinical benefit. Using a similar approach as for nusinersen, we also developed an ASO that corrects defective splicing of *IKBKAP* pre-mRNA, resulting from a 5' splice site mutation that causes familial dysautonomia.

Grant Support: NIGMS grant

NINDS grant

MDA grant

SMA Foundation grant

FD Foundation grant

Cold Spring Harbor Laboratory support

Ionis Pharmaceuticals support

Disclosures: **A.R. Krainer:** E. Ownership Interest (stock, stock options, royalty, receipt of intellectual property rights/patent holder, excluding diversified mutual funds); Ionis Pharmaceuticals, Stoke Therapeutics, Envisagenics, Skyhawk Therapeutics, Autoimmunity Biologic Solutions. F. Consulting Fees (e.g., advisory boards); Stoke Therapeutics, Skyhawk Therapeutics, Autoimmunity Biologic Solutions.

Lecture

093. Special Lecture- Theoretical Neuroscience: Decision Making and Its Discontents

Location: Hall B

Time: Sunday, October 20, 2019, 9:00 AM - 10:10 AM

Speakers: ***P. DAYAN**

Max Planck Inst. for Biol. Cybernetics, Tuebingen, Germany

Abstract: Theoretical neuroscience comes in three intertwined strands: data analysis, which is of ever greater importance in the present age of burgeoning big neural data; mathematical neuroscience, offering quantitative accounts spanning levels of description; and computational neuroscience, predicated on the fact that brains solve complex information processing problems. This lecture will review elements of each of these, focusing on the ever richer understanding of normal and dysfunctional affectively-charged decision-making.

Grant Support: Max Planck Society

Simons Foundation

Disclosures: **P. Dayan:** None.

Lecture

100. CLINICAL NEUROSCIENCE LECTURE- From Pecking Order to Ketamine: Neural Mechanisms of Social and Emotional Behaviors

Location: Hall B

Time: Sunday, October 20, 2019, 10:30 AM - 11:40 AM

Speakers: ***H. HU**

Zhejiang Univ. Sch. of Med., Hangzhou, China

Abstract: Emotions and social interactions color our lives and shape our behaviors. Using animal models and engineered manipulations, we aim to understand how social and emotional behaviors are encoded, focusing on the neural circuits underlying dominance hierarchy and depression. This lecture will highlight recent discoveries on the interplay between winning history and prefrontal circuit activities; the impact of social status loss on depression; and how ketamine tames depression by blocking bursts in the brain's anti-reward center, involving a surprising role of glia.

Grant Support: NSF China Grant 31830032

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Disclosures: H. Hu: None.

Lecture

101. Special Lecture- The Brain From Inside Out

Location: Hall B

Time: Sunday, October 20, 2019, 12:00 PM - 1:10 PM

Speakers: *G. BUZSAKI

Ctr. for Molec & Behav Neurosci, New York Univ., New York, NY

Abstract: Is there a right way to study the brain? The current outside-in approach examines neural reactions to external stimuli. It has fueled a generation of extraordinary brain research but now it must confront its limits and hidden assumptions. The brain is a foretelling device that interacts with its environment through action and the examination of action's consequence. It is not an information-absorbing coding device but a venture-seeking explorer constantly controlling the body to test its hypotheses. Our brain does not process information: it creates it.

Grant Support: MH107396

NS074015

U19NS104590

Disclosures: G. Buzsaki: None.

Lecture

176. Special Lecture- Comparative Neurobiology of Vocal Communication

Location: Hall B

Time: Sunday, October 20, 2019, 1:30 PM - 2:40 PM

Speakers: *M. A. LONG

New York Univ. Sch. of Med., New York, NY

Abstract: Vocal communication is central to our everyday lives, facilitating social exchange. Despite significant recent discoveries, the neural mechanisms underlying coordinated vocal exchanges remain poorly understood. This lecture will examine the brain processes involved in interactive vocal behaviors, focusing on forebrain circuitry in the songbird and the rodent, and will relate these to emerging human studies that employ a range of methods to manipulate and monitor cortical areas relevant for speech.

Grant Support: Simons Collaboration on the Global Brain

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Disclosures: M.A. Long: None.

Lecture

183. PETER AND PATRICIA GRUBER LECTURE: Molecular Basis of the Circadian Clock in Mammals and Its Fundamental Role in Aging and Longevity

Location: Hall B

Time: Sunday, October 20, 2019, 3:00 PM - 4:10 PM

Sponsor: The Gruber Foundation

Speakers: *J. S. TAKAHASHI

Chair, Dept. of Neuroscience, Univ. of Texas Southwestern Med. Center, Howard Hughes Med. Inst., Dallas, TX

Disclosures: J. S. Takahashi: None

Speakers: *J. SLIWA

The Rockefeller Univ., New York, NY

Disclosures: J. Sliwa: None

Speakers: *A. FERNÁNDEZ RUIZ

Neurosci. Inst., New York Univ. Med. Ctr., New York, NY

Disclosures: A. Fernández Ruiz: None

Abstract: The molecular basis of circadian clocks involves a 24-hour autoregulatory transcriptional network that is cell-autonomous and widely expressed. The suprachiasmatic nucleus acts as master pacemaker, but peripheral oscillators can respond to proximal signals. In addition to behavior and physiology, the clock gene network interacts directly with many other pathways in the cell. With respect to metabolism, the timing of nutrient consumption is critical, and restricting the timing of feeding has many health benefits that impact aging, health span, and longevity.

Lecture

184. Presidential Special Lecture- Understanding Cortical Development and Disease: From Embryos to Brain Organoids

Location: Hall B

Time: Sunday, October 20, 2019, 5:15 PM - 6:30 PM

Sponsor: Tianqiao and Chrissy Chen Institute

Speakers: *P. ARLOTTA

Stem Cell and Regenerative Biol., Harvard Univ., Boston, MA

Abstract: Much remains unknown regarding the mechanisms governing mammalian brain development. Focusing on the cerebral cortex, I will present data on the mechanistic principles that control the developmental generation of cellular diversity in vivo, and consider to what extent processes of cortical development can be replicated outside the embryo, within brain organoids. I will discuss the challenges of modeling human corticogenesis in the dish, and the promise that organoids hold to investigate complex neurodevelopmental disease.

Disclosures: P. Arlotta: None

Lecture

255. Special Lecture- Neural Mechanisms of Short-Term Memory and Motor Planning

Location: Hall B

Time: Monday, October 21, 2019, 10:30 AM - 11:40 AM

Speakers: *K. SVOBODA

Howard Hughes Med. Institute, Janelia Res. Campus, ASHBURN, VA

Abstract: Motor planning plays key roles in motor control. Motor planning is also a prospective form of short-term memory that links past events and future movements. More than forty years ago, Tanji and Evarts recorded neural correlates of motor planning in the motor cortex of behaving non-human primates. Individual neurons show persistent activity predicting specific movements, often long before movement onset, in the absence of sensory input. This ‘preparatory activity’ has subsequently been recorded in multiple brain regions, including thalamus and midbrain structures. More recently, the focus has shifted from analysis of single neurons to describing the evolution of neural population activity and its relationship to movement. I will review recent parallel studies in behaving mice that have begun to address long-standing mechanistic questions about motor planning and short-term memory at the level of defined neural circuits. These studies rely on large-scale neurophysiological measurements, together with calibrated optogenetic perturbations and modeling. Multiple connected brain regions are critical for maintaining preparatory activity. Inactivation experiments have shown that cortex by itself is unable to maintain persistent preparatory activity; instead reverberations in a cortico-thalamocortical loop are required, implemented by specific cortical cell types. Perturbation experiments have linked specific features of the neural population activity to motor behavior and have also provided constraints on possible models underlying memory-related activity. Preparatory activity obeys attractor dynamics, with each movement corresponding to one discrete attractor. Preparatory activity distributed across multi-regional circuits ensures that short-term memory and behavior are robust to perturbations.

Grant Support: HHMI

Disclosures: K. Svoboda: None.

Lecture

263. History of Neuroscience Lecture- Exocytosis of Synaptic Vesicles: From Quantal Release to Molecular Machines

Location: Hall B

Time: Monday, October 21, 2019, 9:00 AM - 10:10 AM

Speakers: *R. JAHN

Dept. of Neurobio., Max Planck Inst. for Biophysical Chem., D-37077 Gottingen, Germany

Abstract: At chemical synapses, depolarization induced calcium influx triggers neurotransmitter release, a key step in synaptic signaling. In the 1950s, Katz found that transmitter release is quantal, and synaptic vesicles were discovered. In the following decades recycling routes for synaptic vesicle and for neurotransmitters were worked out, but only since the mid 1980s the molecular mechanisms governing the steps in synaptic vesicle cycling are becoming known. The history of the field will be briefly reviewed, focusing on exocytosis and membrane fusion.

Grant Support: ERC Advanced Grant "SVNeuroTrans"

NIH Grant 5P01GM072694 (Project 1)

DFG Grant SFB 802 TP6

Disclosures: R. Jahn: None.

Lecture

264. Special Lecture- Active Touch, Pain, and Anesthesia

Location: Hall B

Time: Monday, October 21, 2019, 12:00 PM - 1:10 PM

Speakers: *F. WANG

Duke Univ. Med. Ctr., Durham, NC

Abstract: This lecture will discuss studies aimed at understanding the neural basis of somatosensory perception. Specifically, three areas of research will be presented including: peripheral and brainstem sensory and motor circuits underlying exploratory touch behaviors; neural circuits processing the sensory-discriminative and the affective aspects of orofacial pain; and neural circuits mediating the analgesic (pain-suppression) functions of general anesthesia, especially the identification of an anesthesia-activated circuit in the amygdala that potently suppresses pain.

Grant Support: NIH Grant DP1 MH103908

NIH Grant NS107466

NIH Grant NS109947

NIH Grant MH116989

NIH Grant NS077986

Disclosures: F. Wang: None.

Lecture

350. Albert and Ellen Grass Lecture- Neural Learning Rules in the Cerebellum

Location: Hall B

Time: Monday, October 21, 2019, 3:15 PM - 4:25 PM

Sponsor: The Grass Foundation

Speakers: *J. L. RAYMOND

Dept Neurobio., Stanford Univ. Sch. of Med., Stanford, CA

Disclosures: J.L. Raymond: None.

Abstract: The cerebellum is known for its role in motor learning, and is increasingly implicated in cognitive functions such as navigation, reward prediction, emotion, and social behavior. Its simple, repeated circuit architecture facilitates study of the functional links between events occurring at the molecular, cellular, circuit and behavioral levels as the cerebellum computes. By leveraging this analytical advantage, recent work has yielded new insight in the principles governing how neural circuits tune their performance through experience.

Grant Support: NIH R01 DC004154

NIH R01 NS072406

Simons Collaboration on the Global Brain 543031

Lecture

351. Presidential Special Lecture- The Cell Biology of the Synapse and Behavior

Location: Hall B

Time: Monday, October 21, 2019, 5:15 PM - 6:30 PM

Speakers: *D. A. COLÓN-RAMOS

Cell. Neuroscience, Neurodegeneration and Repair (CNNR) program, Yale Univ. Sch. of Med., New Haven, CT

Abstract: When, where and how synapses form underpin the architecture of the nervous system, and behaviors. Synapses are both precisely assembled during development, and flexible during learning and memory. How can synapses be both precise and malleable to facilitate both assembly and function of the brain? In this lecture we will discuss new findings that link the fundamental cell biological properties of single synapses to how they underpin the emergent property of the nervous system: behavior

Grant Support: NIH R01 NS076558

NIH R24 OD016474

NIH DP1NS111778

HHMI Faculty Scholar

Disclosures: D.A. Colón-Ramos: None.

Lecture

434. Special Lecture- Flies and Alcohol: An Interplay of Nature and Nurture

Location: Hall B

Time: Tuesday, October 22, 2019, 9:00 AM - 10:10 AM

Speakers: *U. HEBERLEIN

Howard Hughes Med. Institute, Janelia Res. Campus, Ashburn, VA

Abstract: Alcoholism is a major problem in medicine and society, yet few effective therapies are available for its treatment. This lecture will discuss the development and use of the fruit fly *Drosophila melanogaster* as a model system to identify genes, molecular pathways, and neural circuits that mediate the highly conserved behavioral responses to alcohol.

Grant Support: NIH grants from NIAAA

Institutional grants from the Sandler family Foundation at UCSF

HHMI

Disclosures: U. Heberlein: None.

Lecture

442. Special Lecture- Molecular Mechanisms Underlying Activity-Dependent Neural Circuit Development and Plasticity

Location: Hall B

Time: Tuesday, October 22, 2019, 10:30 AM - 11:40 AM

Speakers: *X. YU

Inst. of Neuroscience, Chinese Acad. of Sci., Shanghai, China

Abstract: The mammalian brain is highly plastic. Experience, both positive and negative, affects how neural circuits are wired, with long lasting effects on the well-being of the individual. This lecture will discuss the molecular mechanisms through which sensory experience and environmental factors affect neural circuit development and plasticity, focusing on plasticity mechanisms that may be unique to early development. The relevance of these mechanisms to developmental neurological disorders, especially autism spectrum disorders, will also be highlighted.

Grant Support: National Natural Science Foundation of China Grant 31530030

National Key R&D Program of China Grant 2016YFA0501000

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Shanghai Municipal Science and Technology Major Project Grant 2018SHZDZX05

Disclosures: X. Yu: None.

Lecture

443. Special Lecture- Leveraging Brain Rhythms as a Therapeutic Intervention for Neurodegenerative Diseases

Location: Hall B

Time: Tuesday, October 22, 2019, 12:00 PM - 1:10 PM

Speakers: *L.-H. TSAI

Picower Inst. Learning and Memory, MIT, CAMBRIDGE, MA

Abstract: Rhythmic neural activity in the gamma range (30-80 Hz) is modulated during various aspects of cognitive function and has been shown to be disrupted in several neurological conditions, including Alzheimer's disease (AD). Impaired gamma oscillations have also been reported in several AD mouse models, even before the onset of A β accumulation and major cognitive impairment. It is well established that local network oscillations at specific frequencies can be induced in cortical areas using sensory stimuli. Recently, we applied this approach, which we term Gamma ENtrainment Using Sensory stimuli (GENUS), using a light programmed to flicker at 40 Hz to induce gamma oscillations in the visual cortex of AD model mice. We found a profound reduction in amyloid load in visual cortex of pre-symptomatic 5XFAD model mice after 1 hr of visual GENUS that appears to involve the concerted actions of many different cell types, including neurons and microglia to reduce the production and enhance clearance of A β , respectively. Furthermore, 40 Hz auditory stimulation entrains neurons in the auditory cortex and hippocampus. Chronic exposure to auditory GENUS reduced amyloid plaque and phosphorylated Tau pathology in 5XFAD and P301S models, respectively, and improved

learning and memory. We also combined visual and auditory gamma stimulation and demonstrated that this led to reduction of amyloid pathology in multiple brain regions and elicited a profound microglial response. Therefore, GENUS represents a novel and powerful non-invasive approach to combat AD related pathology and symptoms. We are currently testing if GENUS can be mediated by other sensory modalities and investigating the mechanisms by which GENUS recruit microglia and other glial cell types.

Grant Support: NIH grant RF1-AG047661

Robert and Renee Belfer Family Foundation

Halis Family Foundation

JPB Foundation

MIT Aging Brain Initiative

Disclosures: **L. Tsai:** A. Employment/Salary (full or part-time);; Massachusetts Institute of Technology. E. Ownership Interest (stock, stock options, royalty, receipt of intellectual property rights/patent holder, excluding diversified mutual funds); Scientific co-Founder of Cognito Therapeutics. F. Consulting Fees (e.g., advisory boards); Scientific Advisory Board Member of Cognito Therapeutics.

Lecture

526. Special Lecture- Evolution and Dissolution of Memories Over Time

Location: Hall B

Time: Tuesday, October 22, 2019, 1:30 PM - 2:40 PM

Speakers: *E. A. MAGUIRE

Wellcome Trust, Univ. Col. London, London, United Kingdom

Abstract: Autobiographical memories are the ghosts of our past. Through them we visit places long departed, see faces once familiar, and hear voices now silent. These often decades-old personal experiences can be recalled on a whim or come unbidden into our everyday consciousness. This lecture will focus on examining not only how autobiographical memories evolve in the brain over time, but also how our understanding of this process has developed through the 50 years of the Society for Neuroscience.

Grant Support: Wellcome Trust Grant 210567/Z/18/Z

Wellcome Trust Grant 203147/Z/16/Z

Disclosures: E.A. Maguire: None.

Lecture

533. David Kopf Lecture On Neuroethics- The Neuroethics Frontier

Location: Hall B

Time: Tuesday, October 22, 2019, 3:00 PM - 4:10 PM

Sponsor: David Kopf Instruments

Speakers: N. FARAHANY

Law & Philosophy, Genome Sci. & Policy, Duke Univ., Durham, NC

Abstract: How should we think about our emerging capabilities of accessing and altering human brains, particularly in light of advances in genome-editing technologies? This lecture will focus on the ethical, legal, and social issues arising from accessing and altering human brains. It will discuss consumer neuro-technologies, corporate interests in accessing and changing brains, and government attempts to do the same. It will also consider the current and future potential directions of these neuroethical issues, particularly in light of recent controversies about human genome-editing.

Grant Support: Bass Connections Brain & Society Theme, Duke University

Disclosures: N. Farahany: F. Consulting Fees (e.g., advisory boards); Illumina, Inc., Helix, Inc.

Lecture

534. Presidential Special Lecture- Wavefront Engineering: Illuminating the Neural Landscape

Location: Hall B

Time: Tuesday, October 22, 2019, 5:15 PM - 6:30 PM

Speakers: *V. EMILIANI

Vision Inst. (CNRS, INSERM, Sorbonne University), Paris, France

Abstract: The revolution of optogenetics has opened perspectives in both fundamental and medical neuroscience unimaginable 10 years ago. Joint progress in the design of microbial opsins and in the shaping of wave fronts to precisely guide light through tissues is now bringing the field into a new phase that we can call circuit optogenetics, where neural circuits distributed across several brain areas can be optically interrogated and controlled with millisecond precision and single-cell resolution.

Disclosures: V. Emiliani: None

Lecture

625. Special Lecture- Aberrant Phase Separation in Neurodegenerative Disease

Location: Hall B

Time: Wednesday, October 23, 2019, 10:30 AM - 11:40 AM

Speakers: *A. A. HYMAN

Max Planck Inst. of Cell Biol. & Genet., Dresden, Germany

Abstract: Cells organize many of their biochemical reactions by formation and dissolution of non-membrane-bound compartments. Recent experiments show that a common mechanism for such biochemical organization is phase separation of unstructured proteins to form liquid-like compartments. These liquid-like compartments can be described by principles elucidated from condensed-matter physics and are therefore termed biomolecular condensates. I will discuss the relationship between the formation of liquid like compartments, quality control mechanisms that preserve the liquid-like state, and the onset of aggregated-protein pathology that is commonly observed in neurodegenerative diseases.

Grant Support: Max Planck Society

Welcome Trust

Disclosures: A.A. Hyman: E. Ownership Interest (stock, stock options, royalty, receipt of intellectual property rights/patent holder, excluding diversified mutual funds); Founder of Rheostat therapeutics and Dewpoint therapeutics.

Lecture

708. Special Lecture- Extracting Function From Structure: Lessons from the Fly Connectome

Location: Hall B

Time: Wednesday, October 23, 2019, 12:00 PM - 1:10 PM

Speakers: G. M. RUBIN

Janelia Farm Res. Campus, Howard Hughes Med. Institute, Janelia Res. Campus, Ashburn, VA

Abstract: A connectome of the *Drosophila* central nervous system will soon be available, providing the first glimpse of synaptic-level connectivity of the brain of an animal with sophisticated behavior. The challenge now is to use this information—together with genetically targeted physiology and perturbation during behavior—to understand the neural basis of perception, sleep, associative learning, navigation, and more.

Grant Support: Howard Hughes Medical Institute

Wellcome Trust Collaborative Award

Disclosures: G.M. Rubin: None.

Lecture

709. Special Lecture- Neural Codes for Natural Behaviors in Flying Bats

Location: Hall B

Time: Wednesday, October 23, 2019, 1:30 PM - 2:40 PM

Speakers: *N. ULANOVSKY

Weizmann Inst. of Sci., Rehovot, Israel

Abstract: Natural Neuroscience aims to decipher the neural mechanisms of natural behaviors in freely-moving animals. This lecture will focus on studies of neural codes for space, time, and social behaviors in flying bats using wireless neurophysiology methods. It will highlight new neuronal representations discovered in animals navigating through complex, 3D, or large-scale environments, or engaged in social interactions. The lecture will posit that neuroscience experiments in bats, rodents, or humans should be conducted under evermore naturalistic settings.

Grant Support: ERC Consolidator Grant NATURAL_BAT_NAV

ERC Starting Grant NEUROBAT

Israel Science Foundation Grant 1920/18

Israel Science Foundation Grant 1019/13

HFSP Grant RGP0062/2009

Minerva Foundation

Disclosures: N. Ulanovsky: None.

Lecture

716. Special Lecture- The Neurobiology of Long-Term Memory: Key Molecules, Diverse Cell Types, Temporal Dynamics, and Critical Periods

Location: Hall B

Time: Wednesday, October 23, 2019, 3:00 PM - 4:10 PM

Speakers: *C. M. ALBERINI

Ctr. for Neural Sci., New York Univ., New York, NY

Abstract: Long-term memory formation and storage are complex and dynamic processes. What types of molecular and cellular mechanisms underlie this complexity? This lecture will describe key biological mechanisms regulated in response to learning, their expression in diverse cell types, their temporal dynamics, and their roles in long-term memory formation, storage, as well as changes induced by memory recall. It will also discuss how the biological mechanisms engaged in long-term memory formation and storage change over development.

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NARSAD

Disclosures: C.M. Alberini: None.