Featured Lectures

All featured lectures will be held at McCormick Place, Hall B1.

PRESIDENTIAL SPECIAL LECTURE

Themes and Variations in Circuits and Behavior CME

Cori Bargmann, PhD
Howard Hughes Medical Institute
The Rockefeller University
Support contributed by: Amgen

Saturday, Oct. 17, 5:15–6:25 p.m.

Behavior is variable, both within and between individuals. The nematode worm *C. elegans* allows scientists to explore how genes, neurons, circuits, and the environment interact to give rise to flexible behaviors. Studies of *C. elegans* foraging behaviors have provided insights into three levels of behavioral variability: the gating of information flow by circuit state over seconds, the extrasynaptic regulation of circuits by neuropeptides and neuromodulators over minutes, and natural genetic variation.

PRESIDENTIAL SPECIAL LECTURE

The Molecular Logic of Neural Circuits: Implications for Autism and Schizophrenia CME

Thomas C. Südhof, MD
Howard Hughes Medical Institute
Stanford University School of Medicine
Support contributed by: Janssen

Sunday, Oct. 18, 5:15–6:25 p.m.

Neural circuits process information by transmitting and computing signals at synapses. The hypothesis is that interactions between trans-synaptic cell-surface molecules, such as neurexins, determine the molecular logic of neural circuits, and that some autism and schizophrenia syndromes are produced by impairments in this molecular logic, as evidenced by neurexin mutations in autism and schizophrenia. With these hypotheses, Südhol will provide a conceptual framework for understanding neural circuits in health and disease.

DAVID KOPF LECTURE ON NEUROETHICS

Giving Voice to Consciousness: Neuroethics, Human Rights, and the Indispensability of Neuroscience

Joseph J. Fins, MD
Weill Medical College, Cornell University
Support contributed by: David Kopf Instruments

Monday, Oct. 19, 10–11:10 a.m.

The ability of neuroprosthetics to restore functional communication in patients with disorders of consciousness has the potential to reintegrate patients into the nexus of family and community. As a worthy scientific pursuit, Fins will argue that this effort is a moral imperative that links respect for persons with the reemergence of voice out of covert consciousness. As such, it is a human rights issue for a population too long marginalized. For rights to come to mind, patients will need greater access to medical care and research and the skilled engagement of the neuroscience community.

ALBERT AND ELLEN GRASS LECTURE CME

Receptors, Neurons, and Circuits: The Biology of Mammalian Taste

Charles Zuker, PhD
Columbia University, Howard Hughes Medical Institute
Support contributed by: The Grass Foundation

Monday, Oct. 19, 3:15–4:25 p.m.

The taste system is one of our fundamental senses, responsible for detecting and responding to sweet, bitter, umami, salty, and sour stimuli. Zuker's laboratory studies the logic of taste coding as a platform to understand how our brain creates an internal representation of the outside world and transforms sensory signals at the periphery into percepts, actions, and behaviors.

PETER AND PATRICIA GRUBER LECTURE: NATURE AND NUTURE IN SYNAPSE DEVELOPMENT, MATURATION, AND DISEASE

Support contributed by: The Gruber Foundation

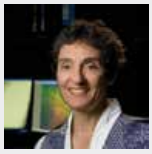
Sunday, Oct. 18, 2:30–3:40 p.m.

Signaling Networks That Regulate Synapse Development and Cognitive Function

Michael E. Greenberg, PhD
Harvard Medical School

This lecture will discuss how sensory experience controls gene expression to regulate critical steps in synapse and neural circuit development. It will also describe how mutations in components of the signaling networks that mediate sensory experience-dependent gene transcription can lead to neurological disorders such as Rett syndrome.

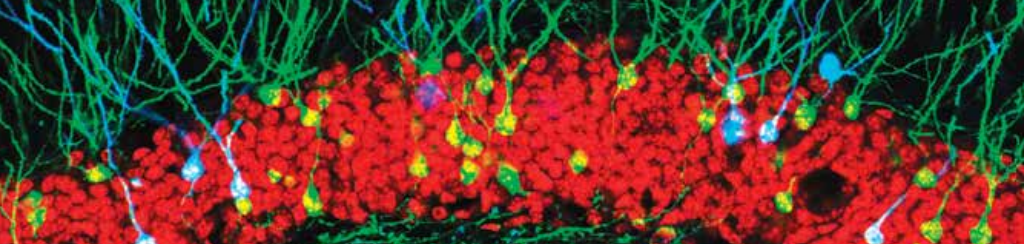
Saving the Synapse: From Developmental Critical Periods to Alzheimer's Disease



Carla J. Shatz, PhD
Stanford University

Neural activity is needed to fine tune brain circuits. MHC Class I molecules and the PirB receptor, thought to function only in immunity, act at neuronal synapses to regulate synapse pruning and plasticity. Changes in expression could contribute to autism and schizophrenia, and possibly to synapse loss in Alzheimer's disease.

CME This activity has been approved for *AMA PRA Category 1 Credit*™. For details, see page 70 and visit SfN.org/cme.



PRESIDENTIAL SPECIAL LECTURE

Immune Mechanisms of Synapse Loss in Health and Disease CME

Beth Stevens, PhD
Boston Children's Hospital
Harvard Medical School
Support contributed by: MedImmune

Monday, Oct. 19, 5:15–6:25 p.m.

How synapses are eliminated in the developing and diseased brain remains a mystery. During development, synaptic pruning is required for precise wiring and emerging evidence implicates immune-related molecules and immune cells called microglia. This talk will review research on how these pathways regulate the formation, refinement, and elimination of specific axons and synapses during development. The discoveries suggest ways of protecting synapses in neurodegenerative and psychiatric disorders involving synapse loss.

FRED KAVLI HISTORY OF NEUROSCIENCE LECTURE

100 Years of Stress and the HPA Axis

Mary F. Dallman, PhD
University of California, San Francisco
Support contributed by: The Kavli Foundation

Tuesday, Oct. 20, 2:30–3:40 p.m.

In 1915, Walter B. Cannon described responses to a variety of stressors and concluded that stress causes changes in the brain and body that are preparatory for behaviors such as fight or flight. From subcellular to psychological levels, enormous conceptual and methodological advances have occurred in understanding stress and responses of the brain-HPA and sympathetic nervous system axes in the last century. These advances tend to be isolated within, but not across, disciplines. Our current knowledge provides far greater detail of understanding and it does not change the conclusions drawn by Cannon.

SPECIAL PRESENTATION

Embracing An Era of Unprecedented Advances in Neuroscience

Francis Collins, MD, PhD
National Institutes of Health

Tuesday, Oct. 20, 4–5 p.m.

Despite many challenges, the last decade has seen tremendous progress in neuroscience. To support continued progress, the National Institutes of Health (NIH) has taken a lead role in implementing the President's Brain Research through Advancing Innovative Neurotechnologies (BRAIN) Initiative. The NIH Director will discuss how his agency, working with the neuroscience community, is catalyzing development of technologies to provide dynamic pictures of the brain, both in disease and in health. He will also examine challenges that cut across biomedical disciplines, and reflect upon opportunities for neuroscientists to face such challenges and generate tomorrow's advances.

Download the meeting mobile app for up-to-date session information

DIALOGUES BETWEEN NEUROSCIENCE AND SOCIETY

Neuroscience and the Law: Strange Bedfellows

Honorable Jed S. Rakoff, JD
U.S. District Court, Southern District of New York
Support contributed by: Elsevier
Saturday, Oct. 17, 11 a.m.–1 p.m.

Neuroscience is a hot topic with lawyers and judges, as recent advances in our understanding of the brain have raised important and unexpected implications for the development and application of legal principles. These implications, however, can be overstated, which presents a potential for abuse and warrants caution. Hear Senior U.S. District Judge Jed S. Rakoff, a founding member of the MacArthur Foundation Project on Law and Neuroscience, explore the legal and ethical questions raised as neuroscience enters the courtroom and affects the judicial system.

PRESIDENTIAL SPECIAL LECTURE

Grid Cells and Cortical Maps for Space CME

May-Britt Moser, PhD
Neuroscience and Centre for Neural Computation
Norwegian University of Science and Technology
Support contributed by: Takeda

Tuesday, Oct. 20, 5:15–6:25 p.m.

The medial entorhinal cortex (MEC) is part of the brain's circuit for dynamic representation of self-location. The metric of this representation is provided by grid cells — cells with spatial firing fields that tile environments in a periodic hexagonal pattern. This lecture will discuss the morphological identity of cells that express this pattern, how they are organized, how they interact with the environment, and how grid cells and place cells contribute to a wider circuit for goal-directed navigation.