

Featured Lectures

All lectures will take place in Ballroom 20 of the San Diego Convention Center. Overflow seating will be available in Hall A.



DIALOGUES BETWEEN NEUROSCIENCE AND SOCIETY / *Support contributed by: Elsevier*

Music and the Brain

Pat Metheny / Musician & Composer

Saturday, Nov. 3, 11 a.m.–1 p.m.

Music is a universal language and a powerful force in the world. It can have incredible impact on our brain and easily make us cry or make us joyful. Just a few notes of a song can cause us to remember memories long past. Pat Metheny is a legendary jazz guitarist who understands the power of music. He has received three gold albums and 20 Grammy Awards. In this dialogue, Mr. Metheny will discuss, with a panel of SfN members, the impact of music on the brain and on our emotions and memory, as well as the process of creativity in music, art, and science and the role of music in healing.





PRESIDENTIAL SPECIAL LECTURE

The dArc Matter of Synaptic Communication CME

Vivian Budnik, PhD / University of Massachusetts Medical School
Saturday, Nov. 3, 5:15–6:30 p.m.

Recent advances in cell biology have uncovered new mechanisms by which synaptic partners in the nervous system communicate. These include the release and uptake of extracellular vesicles, such as exosomes and microvesicles, which carry proteins and RNAs. They also involve the use of mechanisms resembling those used by viruses during infection. The discovery of these mechanisms is offering new perspectives for our understanding of synapse development and plasticity.



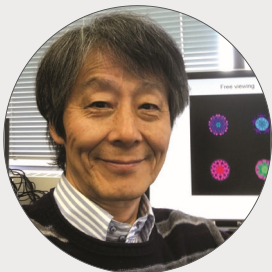
PETER AND PATRICIA GRUBER LECTURE / DECISION, REWARD, AND THE BASAL GANGLIA

Support contributed by: The Gruber Foundation

The Striatum and Decision-Making Based on Value

Ann M. Graybiel, PhD / McGovern Institute for Brain Research at the Massachusetts Institute of Technology / Sunday, Nov. 4, 2:30–3:40 p.m.

The striatum was once thought to be a primitive part of the forebrain, despite evidence that basal ganglia dysfunction underlies major extrapyramidal disorders. Our work has contributed to the surprising realizations that the striatum actually has a sophisticated compartmental structure, that striatal circuits are implicated in decision-making and in neuropsychiatric as well as motor disorders, and that special modules in the striatum, called striosomes, are focal points in circuits linking mood-related neocortex with midbrain dopamine-containing neurons and other neuromodulatory regions. The striatum thus modulates a broad range of circuits affecting our behavioral state in health and disease.



Parallel Basal Ganglia Circuits for Cooperative and Competitive Decision-Making

Okihide Hikosaka, MD, PhD / National Eye Institute, NIH / Sunday, Nov. 4, 2:30–3:40 p.m.

The basal ganglia control active behavior by disinhibiting a goal-directed action while inhibiting irrelevant actions. This is based on short-term and long-term memories, which are selectively processed in parallel circuits in the basal ganglia including dopamine neurons. These parallel circuits, together or separately, are essential for engendering motivation, attention, and skill.



About Reward

Wolfram Schultz, MD / University of Cambridge / Sunday, Nov. 4, 2:30–3:40 p.m.

The talk will describe the properties of neurons in the brain's reward systems and how their action contributes to economic decision-making. Each of several reward systems, including those involving the dopamine neurons, striatum, amygdala, and orbitofrontal cortex, plays a unique role in this process. The details of this function are currently being investigated using designs based on behavioral theories, such as animal learning theory, machine learning, and economic utility theory.

All lectures will take place in Ballroom 20 of the San Diego Convention Center. Overflow seating will be available in Hall A.



PRESIDENTIAL SPECIAL LECTURE

Support contributed by: Tianqiao & Chrissy Chen Institute

Neurobiology of Social Behavior Circuits CME

Catherine Dulac, PhD / Harvard University, Howard Hughes Medical Institute
Sunday, Nov. 4, 5:15–6:30 p.m.



Social interactions are essential for animals to reproduce, defend their territory, and raise their young. This lecture will describe new data aimed at deciphering the identity and functioning principles of neural circuits underlying various social behaviors, with an emphasis on a particularly important form of social interaction: parental care. This lecture will discuss how these findings open new avenues to deconstruct the neural bases of maternal and paternal behaviors and may help to further understanding of variations in the neural control of parenting in different animal species.

DAVID KOPF LECTURE ON NEUROETHICS

Support contributed by: David Kopf Instruments

When Is an Adolescent an Adult?: Implications for Justice Policy

BJ Casey, PhD / Yale University / Monday, Nov. 5, 10–11:10 a.m.



Advances in brain imaging techniques are providing new insight as to why adolescents experience and respond to the world in unique ways. These developmental findings have influenced a series of Supreme Court decisions on the treatment of adolescents. Now, emerging evidence of developmental changes in the brains of young adults (ages 18 to 21) suggest that they, too, may be immature in ways that are relevant to justice policy.



ALBERT AND ELLEN GRASS LECTURE

Support contributed by: The Grass Foundation

Neural Sequences in Memory and Cognition CME

David W. Tank, PhD / Princeton University / Monday, Nov. 5, 3:15–4:25 p.m.

The BRAIN Initiative is transforming neuroscience through improved methods for large-scale neural recording at cellular resolution. The application of these methods during working memory, decision-making, and navigation tasks has repeatedly demonstrated sequences of activity across the recorded neural population that tile the behavior. New analysis and modeling efforts are providing clues as to the functional roles and mechanisms of this widely observed form of neural circuit dynamics.



PRESIDENTIAL SPECIAL LECTURE

Support contributed by: Janssen Research & Development LLC

From Nanoscale Dynamic Organization to Plasticity of Excitatory Synapses and Learning CME

Daniel Choquet, PhD / CNRS, University of Bordeaux / Monday, Nov. 5, 5:15–6:30 p.m.

Regulation of receptor trafficking has emerged as a key mechanism for activity-dependent plasticity of synaptic transmission, a process important for learning and memory. The advent of super-resolution microscopy and single-molecule tracking has helped to uncover the intimacy of synapse dynamic organization at the nanoscale. Using new tools for further understanding the link between receptor dynamics and synapse plasticity is unveiling some of the molecular mechanisms of learning in the healthy and diseased brain.



HISTORY OF NEUROSCIENCE LECTURE

Deciphering Neural Circuits: From the Neuron Doctrine to the Connectome

Marina Bentivoglio, MD / University of Verona / Tuesday, Nov. 6, 2:30–3:40 p.m.

Neurons need to communicate, and they do so in neural circuits on which brain function is built. Our evolving understanding of neuronal connectivity of unfathomable complexity is key to progress in neuroscience. The enunciation in 1891 of the Neuron Doctrine led to the explosion of neuroscience in the 20th century; since the beginning of the 21st century, connectomics has introduced novel concepts, igniting hopes to crack the code of the human brain. Traversing the itinerary of paradigm shifts in the understanding of neural circuits, this lecture will highlight current challenges and foci of research.



PRESIDENTIAL SPECIAL LECTURE

From Salvia Divinorum to LSD: Toward a Molecular Understanding of Psychoactive Drug Actions CME

Bryan L. Roth, MD, PhD / University of North Carolina at Chapel Hill / Tuesday, Nov. 6, 5:15–6:30 p.m.

How do psychoactive drugs as diverse as the potent hallucinogen LSD and the atypical antipsychotic drug clozapine exert their actions at the molecular level? This lecture will first show how research has illuminated the molecular targets responsible for the actions of psychoactive drugs. It will then illustrate how structural insight into psychoactive drug actions can be leveraged to create potentially safer and more effective medications for many neuropsychiatric disorders.