

## FEATURED LECTURES

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All lectures will take place in Hall D of the Walter E. Washington Convention Center.



PRESIDENTIAL SPECIAL LECTURE / Support contributed by: Tianqiao & Chrissy Chen Institute

### **Insights From Nonhuman Animals Into the Neurobiology of Language**

Erich D. Jarvis, PhD

The Rockefeller University and Howard Hughes Medical Institute / Saturday, Nov. 11, 5:15–6:30 p.m.

Understanding language can be considered a final frontier toward understanding brain mechanisms of complex behaviors. Language was once considered unique to humans. However, the past several decades have seen a surge in nonhuman animal studies that inform us about language. This lecture will present a modern synthesis of these studies, from molecular, circuit, and behavior levels. A key new concept is that components of language, such as vocal learning, are continuous among species and therefore can provide insight into the mechanisms and evolution of language. **CME**



PETER AND PATRICIA GRUBER LECTURE / Support contributed by: The Gruber Foundation

### **Assembling Neural Circuits: Cells and Synapses**

Joshua R. Sanes, PhD

Harvard University / Sunday, Nov. 12, 2:30–3:40 p.m.

The retina is emerging as a leading model system for elucidating mechanisms that govern neural circuit assembly and function. Visual information is passed from retinal photoreceptors to interneurons to retinal ganglion cells (RGCs) and finally to the rest of the brain. Each of the more than 40 types of RGCs responds to specific visual features, and the features to which each RGC type responds depend on which of the more than 70 types of interneurons synapse on it. This lecture will describe genetic, morphological, and physiological studies that have led to identification of some molecules and mechanisms that underlie assembly of these circuits. The lecture will then discuss new molecular methods that are enabling a comprehensive cataloging of neuronal cell types and the recognition molecules they use.



PRESIDENTIAL SPECIAL LECTURE / Support contributed by: Janssen Research & Development LLC

### **Illuminating Neurobiology at the Nanoscale and Systems Scale by Imaging**

Xiaowei Zhuang, PhD

Harvard University and Howard Hughes Medical Institute / Sunday, Nov. 12, 5:15–6:30 p.m.

Imaging has helped to advance many areas of neurobiology. This lecture will describe super-resolution imaging methods that allow fluorescence imaging of cells and tissues with nanometer-scale resolution, as well as discoveries of novel cellular structures in neurons enabled by this approach. The lecture will also highlight a single-cell transcriptome imaging approach that allows the expression of thousands of genes to be profiled *in situ* in a spatially resolved manner. The application of this method to neurobiology studies will also be discussed. **CME**



DAVID KOPF LECTURE ON NEUROETHICS / Support contributed by: David Kopf Instruments

### **The Fallacy of Fairness: Diversity in Academic Science**

Jo Handelsman, PhD

University of Wisconsin-Madison / Monday, Nov. 13, 10–11:10 a.m.

Most people carry unconscious biases about other people that shape their evaluations of them and their work. Evidence shows scientists are no exception and, despite our belief in objectivity, we apply substantial prejudice to many decisions. There are, however, proven methods and best practices that mitigate the impact of bias.



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

Siddhartha Mukherjee, MD, DPhil

Columbia University / Saturday, Nov. 11, 11 a.m.–1 p.m.

Mukherjee, a physician and researcher, wrote the Pulitzer Prize–winning book *The Emperor of All Maladies*:

*A Biography of Cancer*, which explores the disease that has plagued humans for thousands of years. His new book, *The Gene: An Intimate History*, examines the quest to decipher how human heredity combines with life experiences to control our lives. In this lecture, Dr. Mukherjee will engage in a conversation with SfN President Eric Nestler about the excitement and importance of communicating the promise of scientific inquiry to the public.



**ALBERT AND ELLEN GRASS LECTURE / Support contributed by: The Grass Foundation**

**On Balance: Fine-Tuning Protein Levels for Neurological Health**

Huda Y. Zoghbi, MD

Baylor College of Medicine and Howard Hughes Medical Institute / Monday, Nov. 13, 3:15–4:25 p.m.

When we think of the genetics of neurodevelopmental and neurodegenerative disorders, we tend to think about mutations that alter a protein's function. An emerging theme among both classes of disorders, however, is the vulnerability of neurons to modest increases or decreases in protein levels — even when those proteins are wild type. This sensitivity to protein levels provides a new avenue to understanding pathogenesis and suggests we should search for regulators of disease-driving proteins that could provide therapeutic entry points for various neuropsychiatric disorders. **CME**



**PRESIDENTIAL SPECIAL LECTURE**

**The Gut Microbiota and Childhood Undernutrition: Looking at Human Development From a Microbial Perspective**

Jeffrey I. Gordon, MD

Washington University School of Medicine / Monday, Nov. 13, 5:15–6:30 p.m.

Human postnatal development is typically viewed from the perspective of our human organs. As we come to appreciate how our microbial communities are assembled following birth, there is an opportunity to determine how this microbial facet of our developmental biology is related to healthy growth as well as to the risk for and manifestations of disorders that produce abnormal growth. This lecture will describe how this hypothesis is being examined in the context of childhood undernutrition. **CME**



**HISTORY OF NEUROSCIENCE LECTURE**

**Neuronal Migration and Brain Map Formation During Evolution, Development, and Disease**

Pasko Rakic, MD, PhD

Yale School of Medicine / Tuesday, Nov. 14, 2:30–3:40 p.m.

Neuronal position is fundamental to a neuron's identity, synaptic connections, and ultimately, function. For example, cortical neurons are not generated locally and acquire their areal, laminar, and columnar positions by migration from multiple distant sites of origin. Over the years, new experimental approaches have enabled identification of cellular mechanisms, genes, and molecular pathways that control neuronal production, fate, and migration to the proper position. These findings provide insight into brain evolution and development and the pathogenesis of its congenital disorders.



**PRESIDENTIAL SPECIAL LECTURE**

**Polymorphous Polygenicity: The Story of the Genome in Schizophrenia**

Pamela Sklar, MD, PhD

Icahn School of Medicine at Mount Sinai / Tuesday, Nov. 14, 5:15–6:30 p.m.

Advances in human genetics are reshaping the way we understand many mental illnesses, including schizophrenia. We know infinitely more about the DNA changes that are part of the risk of becoming ill, with a key finding being their overall number, type, and pleiotropy. This lecture will explore the genetic factors leading to schizophrenia, their biological follow-up, and implications for neuroscientists. **CME**