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## **Meet-the-Clinician-Expert Session**

### **MTCE01: Meet-the-Clinician-Expert: Sohal — Understanding Complex Systems: Leveraging a Background in Math to Tackle Problems in Psychiatry**

**Location:** MCP Room S104

**Time:** Saturday, October 5, 2024, 1:30 PM - 2:30 PM

**Description:** The idea that mental health conditions arise from the brain is widely accepted, but there is still a lack of understanding about how specific changes in brain function lead to these conditions. This session will describe the speaker's journey from studying math in college to performing some of the first experiments using optogenetics, training as a psychiatrist, and leading a neuroscience laboratory that tries to link patterns of brain activity to cognitive and emotional functions that are altered in mental health conditions.

#### **Session Sponsor:**

**Speakers: V. S. Sohal;**

Department of Psychiatry, University of California, San Francisco, San Francisco, CA.

**Disclosures: V.S. Sohal:** F. Consulting Fees (e.g., advisory boards); Maplight therapeutics.

**Grant Support:** NIH grant R01MH129835  
NIH grant R01NS116594  
NIH grant R01MH128364

## **Meet-the-Clinician-Expert Session**

### **MTCE02: Meet-the-Clinician-Expert: Mallucci — Mechanisms to Medicines in Neurodegeneration**

**Location:** MCP Room S104

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

**Description:** Untreatable neurodegenerative disorders are an ever-increasing problem as society ages. This talk will focus on how increasing neuronal resilience and functional rejuvenation can slow and prevent these diseases. The speaker will discuss their discoveries on dysregulated PERK-UPR signaling in mediating neurodegeneration and how small molecules and drugs targeting the pathway prevent it. The speaker will also show how they used the biology of hibernation to drive synapse regeneration for neuroprotection via the cold shock protein, RBM3, and how they are translating these approaches to treat dementia.

**Session Sponsor:** Thorlabs, Inc.

**Speakers: G. Mallucci;**  
Altos Labs, Cambridge, UNITED KINGDOM.

**Disclosures: G. Mallucci:** None.

## **Meet-the-Expert Session**

### **MTE01: Meet-the-Expert: Bu — Unlocking the Mystery of Alzheimer’s Disease: The APOE Connection**

**Location:** MCP Room S104

**Time:** Saturday, October 5, 2024, 3:30 PM - 4:30 PM

**Description:** The  $\epsilon 4$  allele of the apolipoprotein E (APOE) gene is the strongest genetic risk factor for Alzheimer’s disease. ApoE4 dominantly seeds early and more abundant amyloids and has several amyloid- $\beta$ -independent effects, including inferior functions in transporting lipids, responding to neuropathology, and supporting cerebrovasculature. In this session, the speaker will discuss their career journey from studying apoE receptor LRP1 to zooming in on complex apoE isoform-dependent effects using various model systems.

#### **Session Sponsor:**

#### **Speakers: G. Bu;**

The Hong Kong University of Science and Technology, Clear Water Bay, HONG KONG.

**Disclosures: G. Bu:** F. Consulting Fees (e.g., advisory boards); SciNeuro Pharmaceuticals, Kisbee Therapeutics.

**Grant Support:** NIH Grant U19AG069701  
NIH Grant R37AG027924  
NIH Grant RF1AG051504  
NIH Grant R01AG046205  
Cure Alzheimer's Fund

## **Meet-the-Clinician-Expert Session**

### **MTE02: Meet-the-Expert: Stevens — Bridging Genes and Biology: Exploring Neuroimmune Mechanisms Behind Synapse Loss and Dysfunction**

**Location:** MCP Room S104

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

**Description:** Emerging genetic studies implicate microglia in Alzheimer’s disease and other brain diseases, yet it's unclear how they contribute to cognitive dysfunction. Microglia eliminate synaptic connections using molecules from the innate immune system, shedding light on mechanisms of pathological synapse loss. This session will outline paths to define microglia-mediated disease mechanisms, highlighting new models and approaches that bridge gaps between genetics, cellular states, and function.

**Session Sponsor:** Thorlabs, Inc.

**Speakers: B. Stevens;**  
Boston Children's Hospital, Boston, MA.

**Disclosures: B. Stevens:** A. Employment/Salary (full or part-time); Full Time. E. Ownership Interest (stock, stock options, royalty, receipt of intellectual property rights/patent holder, excluding diversified mutual funds); Two patents have been granted: US8148330 and US9149444 “MODULATION OF SYNAPTIC MAINTENANCE” for the invention that the classical complement cascade mediates synapse loss in development and disease. Bo. F. Consulting Fees (e.g., advisory boards); Genentech, Buck Institute, Pershing Square Foundation.

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## **Meet-the-Clinician-Expert Session**

### **MTE03: Meet-the-Expert: Froemke — Love, Death, and Oxytocin**

**Location:** MCP Room S104

**Time:** Sunday, October 6, 2024, 11:00 AM - 12:00 PM

**Description:** Baby cries seem like simple sounds but evoke powerful responses, especially in parents. This session will discuss work on synaptic plasticity and mouse family life, with a focus on changes to the maternal brain and adult social behavior in response to infant cries. This session will also share a perspective on the challenges and opportunities in neuroscience today. It is a remarkable time to be a scientist in terms of what's possible for recording neural activity and observing animal behavior.

#### **Session Sponsor:**

**Speakers:** R. C. Froemke;

Otolaryngology, NYU Grossman School of Medicine, New York, NY.

**Disclosures:** R.C. Froemke: None.

**Grant Support:** NIH Grant DC012557  
NIH Grant HD088411  
NIH Grant NS107616

## **Meet-the-Clinician-Expert Session**

### **MTE04: Meet-the-Expert: Luan — Maximizing Flexibility: Ultra-Thin Polymer Electrodes for Large-Scale, Long-Lasting, Bi-Directional Neural Interface**

**Location:** MCP Room S104

**Time:** Sunday, October 6, 2024, 1:00 PM - 2:00 PM

**Description:** The central nervous system is incredibly complex. Developing neurotechnology to understand and restore its functions requires interfaces at minimal invasiveness, with high spatiotemporal resolution, bi-directionally, and over extended periods. This session will discuss the speaker's path toward a maximizing "flexibility" approach to engineer ultra-thin polymer electrodes that can potentially meet these demands.

#### **Session Sponsor:**

**Speakers: L. Luan;**  
Rice University, Houston, TX.

**Disclosures: L. Luan:** E. Ownership Interest (stock, stock options, royalty, receipt of intellectual property rights/patent holder, excluding diversified mutual funds); the presenter holds equity ownership in Neuralthread, Inc., an entity that is commercializing the electrode technology described herein..

**Grant Support:**       NIH Grant HL140153  
                              NIH Grant NS109361  
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## **Meet-the-Clinician-Expert Session**

### **MTE05: Meet-the-Expert: Sussillo — Transforming Early Adversity Into Insights at the Nexus of Neuroscience and AI**

**Location:** MCP Room S104

**Time:** Monday, October 7, 2024, 11:00 AM - 12:00 PM

**Description:** The speaker's work in neuroscience draws from his personal history, marked by a challenging childhood and his fascination with computing technology and gaming. Raised predominantly in orphanages, he found escape in the burgeoning world of personal computers. This early exposure to technology during the golden age of arcade and home computers sparked a passion that would later blossom into academic and industry careers at the intersection of neuroscience and artificial intelligence.

#### **Session Sponsor:**

**Speakers: D. Sussillo;**  
Stanford University, Stanford, CA.

**Disclosures: D. Sussillo:** None.



## **Meet-the-Clinician-Expert Session**

### **MTE06: Meet-the-Expert: Goda — Exploration of Local Synaptic Interactions Guided by Global Experiences**

**Location:** MCP Room S104

**Time:** Monday, October 7, 2024, 1:00 PM - 2:00 PM

**Description:** The diversity of synaptic connections is crucial for circuit operations underlying a wide range of brain functions. However, scientists have yet to elucidate how synapses are formed and maintained in a specific pattern and functionally tuned as required by the neural circuits they support remains to be elucidated, including the contribution of glial cells. This session will discuss a journey across three continents to define the cellular and molecular basis of synaptic strength regulation in rodent hippocampal circuits.

**Session Sponsor:** Thorlabs, Inc.

**Speakers: Y. Goda;**

Okinawa Institute of Science and Technology, Okinawa, JAPAN.

**Disclosures: Y. Goda:** None.

**Grant Support:** JSPS KAKENHI Grant Number 23H04177  
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## **Meet-the-Clinician-Expert Session**

### **MTE08: Meet-the-Expert: Ting — Finding Balance Outside the Box: Neuromechanics of Skilled and Impaired Movements**

**Location:** MCP Room S104

**Time:** Tuesday, October 8, 2024, 11:00 AM - 12:00 PM

**Description:** Just as the unique experiences of each individual shape the way they move, this session will recount how interdisciplinary training in biomechanics, neurophysiology, and engineering, coupled with diverse cultural and athletic experiences shape the speaker's research in sensorimotor control of balance and gait. Collaborating with people from diverse backgrounds, training, and perspectives is critical to forging an integrative, multi-scale neuromechanical understanding of how people move.

#### **Session Sponsor:**

**Speakers: L. H. Ting;**  
Biomedical Engineering, Emory University and Georgia Tech, Atlanta, GA.

**Disclosures: L.H. Ting:** None.

## **Meet-the-Clinician-Expert Session**

### **MTE09: Meet-the-Expert: Amara — A Different Take on Uptake: An Unexpected Journey in Flux**

**Location:** MCP Room S104

**Time:** Tuesday, October 8, 2024, 1:00 PM - 2:00 PM

**Description:** Advances in technology have always been the driving force for scientific progress. Since the first identification of neurotransmitter transport systems in the 1960s, new technologies have illuminated the unexpected functions of these carriers and the mechanisms of action for therapeutic drugs that target their activities. With an eye toward future studies using next-generation approaches, this lecture will provide a perspective on the evolution of the scientific understanding of neurotransmitter transporter structure, function, and multifaceted cellular regulation.

#### **Session Sponsor:**

**Speakers: S. G. Amara;**

National Institute of Mental Health, NIMH, Bethesda, MD.

**Disclosures: S.G. Amara:** None.

**Grant Support:** NIH Intramural Support ZIA MH002946-12