

NEURAL INTERFACES 2021: THE NANS-NIC JOINT MEETING WHERE SCIENCE MEETS INNOVATION

June 25-26, 2021 | Virtual



FRIDAY, JUNE 25

10:00-11:00 am CDT NIH/FDA PRE-SESSION

Moderators: Nick Langhals, PhD, Kip A. Ludwig, PhD

NIH Program Management Perspectives on Translating Medical Devices

Kari Ashmont, PhD

Best Practices for FDA Pre-Submission Meetings

Megan Moynahan

Blueprint MedTech Program Launch

Michael B. Wolfson, PhD

SPARC Phase 2 Launch

Gene Civillico, PhD

Q&A Discussion

Kari Ashmont, PhD, Megan Moynahan, and Michael B. Wolfson, PhD

10:00-11:00 am CDT INTRODUCTION FOR STUDENTS AND FELLOWS PRE-SESSION

Joan Greve, PhD, Cristin Welle, PhD, Ellis Meng, PhD, Ashley Dalrymple, PhD, and Karlo Malaga, PhD

11:00-11:10 am CDT IEEE Brain Session

Paul Sajda, PhD and Jack Gallant, PhD

11:15 am-12:30 pm CDT PLENARY SESSION I

ENGAGING THE TARGET POPULATION

Moderator: Jennifer French

Lessons Learned in Patient Engagement from the Pharmaceutical Industry

Susan Schaeffer

Patient Engagement & the Science of Patient Input

Anita Bajaj, MD MPH

End-User Perspective of BCI Controlled Neuromuscular Electrical Stimulation

Ian Burkhart

BCI: Why I Did It, Why I Stayed, and Where We Are Now

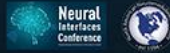
Robert Chmielewski

Panel Discussion

Susan Schaeffer, Anita Bajaj, MD MPH, Shilpa Venkatachalam, PhD MPH, Ian Burkhart, and Robert Chmielewski

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FRIDAY, JUNE 25

1:00-2:30 pm CDT PLENARY SESSION II

CLINICAL NEUROMODULATION: THE BARRIERS BEYOND ENGINEERING

Moderator: Ellen L. Air, MD PhD

Found in Translation: Computational Models for Neuromodulation Dose Selection

Warren M. Grill, PhD

Brains are Like Faces: Challenges of Optimal Targeting in STN DBS for Parkinson's Disease

Parag G. Patil, MD PhD

Recovery is Not Linear: Next-Gen Strategies to Optimize DBS for Depression

Helen S. Mayberg, MD

Challenges of Expanding Neuromodulation Technologies to Developing Economies

Paresh K. Doshi, MS MCh

Q&A Discussion

Warren M. Grill, PhD, Parag G. Patil, MD PhD, Helen S. Mayberg, MD, and Paresh K. Doshi, MS MCh

2:45-4:00 pm CDT PLENARY SESSION III

ADVANCED INTRACRANIAL ELECTROPHYSIOLOGY FOR STUDYING NEUROPSYCHIATRIC DISORDERS

Moderator: Alik S. Widge, MD PhD

DBS with Intracranial Stereo-EEG: Early Experience and Network Characterization

Kelly R. Bijanki, PhD

Closed Loop Approaches to Psychiatric DBS: From Diagnoses to Cognitive Domains

Alik S. Widge, MD PhD

Developing Next-Generation Neurotechnology for Closed-Loop Neuromodulation

Dejan Markovic, PhD

Q&A Discussion

Kelly R. Bijanki, PhD, Alik S. Widge, MD PhD, and Dejan Markovic, PhD

4:00-4:30 pm CDT Medtronic Session

Biopotential Sensing from the Spinal Cord: The Evoked Compound Action Potential (ECAP)

David Dinsmoor, MS

4:30-6:30 pm CDT ABSTRACT SESSION

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SATURDAY, JUNE 26

11:15 am-12:30 pm CDT PLENARY SESSION IV

GLIAL-MEDIATED EFFECTS OF NEUROMODULATION

Moderator: Valentina Benfenati, PhD

Glial Interface: Devices and Approaches to Achieve Neuromodulation of the “Other Brain”

Valentina Benfenati, PhD

Understanding the Role of Glial, Vascular, and Neuronal Subtype Activity in Neuromodulation

Takashi Y. Kozai, PhD

Steering the Brain Network Away from Seizure Using Closed-Loop Electrical Stimulation

Sridevi V. Sarma, PhD

Imaging Analyses and Modulation of Astroglial Actin Microdomains by Chemophysical Approaches

Wolfgang Losert, PhD

Q&A Discussion

Valentina Benfenati, PhD, Takashi Y. Kozai, PhD, Wolfgang Losert, PhD, and Daniel Ehrens, PhD Candidate

1:15-2:45 pm CDT CONCURRENT SESSIONS

NEURAL INTERFACE ELECTRODE TECHNOLOGIES

Moderator: Matt R. Angle, PhD

Robustness and Neuronal Yield of Carbon Fiber Electrodes

Cynthia A. Chestek, PhD

Extracting Behavioral Representations in Thousand Neuron Recordings

Carsen Stringer, PhD

Redesigning ECoG for Brain Machine Interface Applications

Vikash Gilja, PhD

Novel Material Approaches for Neural Electrodes

Flavia Vitale, PhD

Q&A Discussion

Cynthia A. Chestek, PhD, Carsen Stringer, PhD, Vikash Gilja, PhD, and Flavia Vitale, PhD

CLOSED-LOOP NEUROMODULATION: OPPORTUNITIES AND LIMITATIONS

Moderators: Lawrence Poree, MD PhD MPH; Juan G. Hincapie, PhD

Physiological Closed Loop Control in DBS

Michelle Case, PhD

Engineering Physiological Closed Loop Control in Cochlear Implants and SCS

John L. Parker, PhD

Physiological Closed Loop Control in Deep Brain and Spinal Cord Stimulation

Julie G. Pilitsis, MD PhD

ECAP Controlled Closed-Loop Spinal Cord Stimulation: The Dawn of a New Era

Lawrence Poree, MD PhD MPH

Q&A Discussion

Michelle Case, PhD, John L. Parker, PhD, Julie G. Pilitsis, MD PhD, and Lawrence Poree, MD PhD MPH

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SATURDAY, JUNE 26

3:00-4:30 pm CDT CONCURRENT SESSIONS

SENSORIMOTOR NEUROPROSTHETICS: ARE WE READY FOR WIDESPREAD CLINICAL APPLICATION?

Moderator: Hamid Charkhkar, PhD

Improving the Experience of Sensory Neuroprostheses Through Biomimetic Stimulation Encoders and At-Home Learning

Emily L. Graczyk, PhD

Making Implantable Neural Interfaces Work: Today and Tomorrow

Florian Solzbacher, PhD

Interference of Sensory Modalities in the Spinal Cord During Electrical Stimulation of the Sensory Afferents

Marco Capogrosso, PhD

Assessing the Effects of Sensory Restoration on Motor Performance with Sensorimotor Neuroprosthetics

Lee E. Fisher, PhD

Q&A Discussion

Emily L. Graczyk, PhD, Florian Solzbacher, PhD, Lee E. Fisher, PhD, and Josep-Maria Balaguer, MS

BIOELECTRONIC MEDICINE: NEW FRONTIERS IN VAGUS NERVE STIMULATION AND ULTRASOUND THERAPY

Moderators: Stavros Zanos, MD PhD; Chris Puleo, PhD

Chronic Vagus Nerve Stimulation Accelerates Learning Through Cholinergic-Mediated Reinforcement Learning

Cristin Welle, PhD

Engineering Design of Autonomic Nerve Stimulation Using Computational Models

Nicole A. Pelot, PhD

Targeting Reflex Circuits in Immunity

Sangeeta S. Chavan, PhD

Ultrasound Stimulation of the Spleen for Treating Inflammatory Disorders

Hubert H. Lim, PhD

Q&A Discussion

Cristin Welle, PhD, Nicole A. Pelot, PhD, Sangeeta S. Chavan, PhD, and Hubert H. Lim, PhD

4:45-6:45 pm CDT ABSTRACT SESSION

**Faculty and presentations subject to change.*