



**assfn**

American Society for Stereotactic  
and Functional Neurosurgery

## 2024 BIENNIAL MEETING

Nashville, TN • June 1-4, 2024



## SCIENTIFIC PROGRAM

Forging Connections and Collaborations  
in Functional Neurosurgery and Beyond



Congress of  
Neurological  
Surgeons

Jointly provided by the Congress of Neurological  
Surgeons and the American Society for Stereotactic  
and Functional Neurosurgery



# BOSTON SCIENTIFIC LUNCH SYMPOSIUM DURING THE 2024 ASSFN BIENNIAL MEETING

## BIOLOGICALLY INSPIRED PALLIDAL BURST STIMULATION FOR PARKINSON'S DISEASE

### Presented by:

Nader Pouratian, M.D., Ph.D.

UT Southwestern Medical Center  
Dallas, Texas

**Sunday, June 2, 2024**

**12:00 PM – 12:55 PM**

Summit Ballroom E, Level 4

### While at ASSFN join us at booth 201

Stay up to date with Boston Scientific  
at ASSFN by scanning the QR code.



Lunch is provided as a courtesy for persons attending this reception. While you are welcome to attend, due to restrictions imposed by Vermont law, we ask that healthcare professionals who are licensed in Vermont not partake in the food.

U.S. Federal Government Employees – U.S. Federal Government Employees may be required to obtain approval from their agency's or institution's ethics officer or ethics committee or from a supervisor to attend this program. For more details, please contact your ethics officer or supervisor.

Vermont-Licensed HCPs – Vermont law prohibits Boston Scientific from providing any food, meals or refreshments at no charge to health care professionals licensed by and regularly practicing in Vermont. Accordingly, health care professionals licensed by and regularly practicing in Vermont are requested not to partake in any of the food, meals or refreshments offered at this event.

All U.S. Physicians – The U.S. Physician Payment Sunshine Act requires all pharmaceutical, biologics and medical device companies to disclose annually to the U.S. government payments and transfers of value provided to U.S. physicians and teaching hospitals. This includes the value of meals and refreshments provided to U.S. physicians in connection with attending Boston Scientific educational programs.

Indication for Use: The Boston Scientific Vercise™ PC, Vercise Gevia™, Vercise Genus™ Deep Brain Stimulation Systems are indicated for use in:

- Bilateral stimulation of the subthalamic nucleus (STN) as an adjunctive therapy in reducing some of the symptoms of moderate to advanced levodopa-responsive Parkinson's disease (PD) that are not adequately controlled with medication.
- Bilateral stimulation of the internal globus pallidus (GP) as an adjunctive therapy in reducing some of the symptoms of advanced levodopa-responsive Parkinson's disease (PD) that are not adequately controlled with medication.
- Unilateral thalamic stimulation of the ventral intermediate nucleus (VIM) is indicated for the suppression of tremor in the upper extremity. The system is intended for use in patients who are diagnosed with essential tremor or parkinsonian tremor not adequately controlled by medications and where the tremor constitutes a significant functional disability.
- Bilateral stimulation of the ventral intermediate nucleus (VIM) of the thalamus for the suppression of disabling upper extremity tremor in adult essential tremor patients whose tremor is not adequately controlled by medications and where the tremor constitutes a significant functional disability.

The Boston Scientific Vercise Deep Brain Stimulation System is indicated for use in:

- Bilateral stimulation of the subthalamic nucleus (STN) as an adjunctive therapy in reducing some of the symptoms of moderate to advanced levodopa-responsive Parkinson's disease (PD) that are not adequately controlled with medication.

Contraindications, warnings, precautions, side effects: The Boston Scientific Deep Brain Stimulation (DBS) Systems or any of its components, are contraindicated for: Diathermy as either a treatment for a medical condition or as part of a surgical procedure, Electroconvulsive Therapy (ECT) and Transcranial Magnetic Stimulation (TMS) as the safety of these therapies in patients implanted with the Boston Scientific DBS System has not been established, patients who are unable to operate the system, patients who are poor surgical candidates or who experience unsuccessful test stimulation. Patients implanted with Boston Scientific DBS System without ImageReady™ MRI Technology should not be exposed to Magnetic Resonance Imaging (MRI). Patients implanted with Vercise Gevia or Vercise Genus or Vercise Genus Mixed System with M8 Adapter or Vercise DBS Lead-Only System (before Stimulator is implanted) with ImageReady MRI Technology are Full Body MR Conditional only when exposed to the MRI environment under the specific conditions defined in ImageReady MRI Guidelines for Boston Scientific DBS Systems. Assess patients for the risks of depression and suicide. This assessment should consider both the risk of depression and suicide as well as the potential clinical benefits of DBS therapy. Monitor patients for new or worsening symptoms of depression, suicidal thoughts or behaviors, or changes in mood or impulse control and manage appropriately. Refer to the Instructions for Use provided with the Boston Scientific DBS Systems or BostonScientific.com for potential adverse effects, warnings, and precautions prior to using this product. Caution: U.S. Federal law restricts this device to sale by or on the order of a physician.

IMPORTANT INFORMATION: These materials are intended to describe common clinical considerations and procedural steps for the use of referenced technologies but may not be appropriate for every patient or case. Decisions surrounding patient care depend on the physician's professional judgment in consideration of all available information for the individual case.

Boston Scientific (BSC) does not promote or encourage the use of its devices outside their approved labeling. Case studies are not necessarily representative of clinical outcomes in all cases as individual results may vary.

Collaboration and funding in part by Boston Scientific as applicable.

Physician compensated for their time in the creation or presentation of the Boston Scientific ASSFN Lunch Symposium.

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American Society for Stereotactic  
and Functional Neurosurgery

*The American Society for Stereotactic and Functional Neurosurgery (ASSFN) serves as an affiliate joint section of the CNS and AANS, and remains deeply involved in a variety of educational, organizational, and advocacy activities on behalf of North American functional neurosurgeons.*



**Congress of  
Neurological  
Surgeons**

*Jointly provided by the Congress of Neurological Surgeons and the American Society for Stereotactic and Functional Neurosurgery.*

# WELCOME

## WELCOME TO THE 2024 ASSFN BIENNIAL MEETING IN NASHVILLE!

We extend a warm welcome to all attendees of the 2024 American Society for Stereotactic and Functional Neurosurgery (ASSFN) Biennial Meeting in Nashville, Tennessee. Explore cutting-edge topics at the Daily Plenary Sessions, featuring experts on Innovation in Neurosurgery, Collaborations in Music, Sports, and Neurosurgery, Exploring the Conscious and Unconscious Brain, Advances in Neural Interfaces, and Unlocking the Brain. Tailor your experience with parallel sessions covering diverse topics, including Big Data and AI, Pediatric Surgical Advances, The Evolution of Epilepsy Surgery, The Evolution of Movement Disorder Surgery, The Evolution of Psychiatric Neuromodulation, The Evolution of Pain Surgery, and Connectomic Functional Neurosurgery and Bench to Bedside Advances.

We welcome you to visit the Exhibit Hall to engage with exhibitors, view state-of-the-art products, and enjoy a beverage as you discover the latest advancements in the field.

The 2024 ASSFN Biennial Meeting offers an unparalleled opportunity to stay at the forefront of stereotactic and functional neurosurgery, collaborate with colleagues, and connect with renowned faculty from around the world. We look forward to your presence at this enriching event, and we trust it will be both professionally rewarding and personally enjoyable.

Thank you again for joining us at the 2024 ASSFN Biennial Meeting! While in downtown Nashville, immerse yourself in the city's vibrant culture, enjoy local cuisine, and experience the unique charm of Music City.

Sincerely,



Joseph Neimat, MD, MS  
Meeting Chair, ASSFN



Dario J. Englot, MD, PhD  
Scientific Program Chair, ASSFN



Andre Machado, MD  
President, ASSFN

# MEETING DIRECTORS



**Andre Machado**  
ASSFN President  
Cleveland Clinic  
Cleveland, Ohio



**Joseph S. Neimat**  
Meeting Chair  
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Louisville, Kentucky



**Dario J. Englot**  
Scientific Program Chair  
Vanderbilt University  
Nashville, Tennessee



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Scientific Program Committee  
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# MEETING DIRECTORS



**Suneil K. Kalia**

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University of Toronto  
Toronto, Canada



**Cameron C. McIntyre**

Scientific Program Committee  
Duke University  
Durham, North Carolina



**Jonathan Miller**

Scientific Program Committee  
University Hospitals of Cleveland  
Case Medical Center  
Cleveland, Ohio



**Michael S. Okun**

Scientific Program Committee  
University of Florida  
Gainesville, Florida



**Julie G. Pilitsis**

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**Nathan C. Rowland**

Scientific Program Committee  
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**Nitin Tandon**

Scientific Program Committee  
University of Texas  
Houston, Texas



**Doris Wang**

Scientific Program Committee  
University of California, San Francisco  
San Francisco, California

## Ronald R. Tasker



Ronald R. (Ron) Tasker, 95, died peacefully on April 19, 2023, near his home of 50 years in Toronto, following a long and productive life. He was predeceased by his beloved wife Mary M. Tasker, née Craig, in 2003. Having a precocious

mind, Ron entered U of T at 16 on a classics scholarship, where he studied Honour Science (Lt. Governor's Medal, 1948). This led to the lab of Dr. Charles Best, the co-discoverer of insulin. Dr. Best and Ron's mother counselled him to study medicine, where he won the 1950 Saddington Medal in Pathology, and the 1952 Cody Silver Medal. Ron was a classically trained scientist in the analog methods of early modern medicine. He pioneered clinical neurophysiology by adopting digital technology and instrumentation in the operating room, and by melding his training in neurophysiology and stereotactic neurosurgery. Ron joined the Division of Neurosurgery at Toronto General Hospital (TGH) in 1961 and was distinguished as a Markle Scholar (1961-1966). He traveled the world training neurosurgeons in the field of Stereotactic and Functional Neurosurgery and later became Head of Neurosurgery at TGH from 1979 to 1988. Ron taught in the Faculty of Medicine at U of T for more than 40 years, becoming Full Professor in 1978, and honoured with the title of Professor Emeritus – Neurosurgery in 2005, along with Officer of the Order of Canada. Ron was the recipient of Spiegel & Wycis Medal, World Society Stereotactic and Functional Neurosurgery (WSSFN), 1993. The R.R. Tasker Chair in Functional Neurosurgery was endowed in the Department of Surgery at U of T in 1999 to mark his many contributions to this field of medicine. Ron established a world-renowned reputation in clinical research as a brilliant surgeon, teacher, mentor, and professional role model, highly regarded for his clarity of thinking and plain spoken voice. Ron was a man of indisputable professional honesty and integrity, highly regarded as a gentle, courteous and approachable teacher.

# HONORED GUESTS

## Jerome Engel, Jr.



Jerome Engel, Jr. is Director of the Seizure Disorder Center, The Jonathan Sinay Distinguished Professor of Neurology, Neurobiology, and Psychiatry and Biobehavioral Sciences, and a member of the Brain Research Institute at UCLA. He received his undergraduate degree from Cornell University, his advanced degrees from Stanford University, and completed his training in neurology at Albert Einstein College of Medicine. He has received numerous awards and honors, including a Fulbright Scholarship, a Guggenheim Fellowship, a Javits Award from the National Institutes of Health, and the Life-Time Achievement Award from the International League against Epilepsy.

## George Ojemann



George Ojemann received his undergraduate and doctorate degrees at the University of Iowa College of Medicine. After completing his neurological surgery residency at the University of Washington medical centers, he began a distinguished career as a neurosurgeon and researcher specializing in epilepsy, joining the University of Washington faculty in 1966. He retired from clinical practice in 2005 but has continued this research and teaching. For his research, he received the 1984 Grass Prize from the Society of Neurological Surgeons, a Javits award from the National Institute of Neurological Diseases and Stroke, and multiple other prestigious honors.



# FEATURED SPEAKERS



**Ed Boyden**

Neurotech Innovator, MIT Professor,  
Award-Winning Researcher



**György Buzsáki**

Neuroscience Pioneer, Brain Rhythm  
Researcher, Award Recipient



**Lee Thomas Miller**

Chart-Topping Songwriter with  
Three Grammy Nominations



**David Owens**

Innovation Expert, Acclaimed Speaker,  
Global Consultant



**The Warren Brothers**

Nine #1 Hits; Acclaimed Songwriters  
for Country's Finest



**Pete Weber**

Nashville Predators Voice for  
24 Seasons, Award-Winning  
Announcer



DEEP BRAIN STIMULATION



ACTUAL SIZE

# REDEFINING RECHARGEABLE LIBERTA RC™ DBS SYSTEM



**LOWEST RECHARGE  
FREQUENCY<sup>1\*</sup>**

with **10 recharges per year<sup>2</sup>**



**SMALLEST IMPLANT PROFILE**

of any DBS IPG on the market<sup>3\*\*</sup>



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featuring new real-time  
charging notifications

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\*Upon implant of the Liberta RC™ DBS System when programmed with nominal stimulation settings as described in device Instructions for Use (IFU). Recommended recharge frequency and duration for U.S. competitor product described in their respective IFU or clinical studies, which may involve different patient populations and other variables. Not a head-to-head comparison of stimulation settings or clinical outcomes.

\*\*Based off comparison to height times width of the following smallest IPG offerings from U.S. DBS manufacturers: Abbott Liberta RC™ DBS System: 18.6 cm<sup>2</sup>, Boston Scientific<sup>†</sup> Vercise Genus<sup>‡</sup> R16: 24.0 cm<sup>2</sup> and Medtronic<sup>‡</sup> Percept<sup>‡</sup> RC: 26.8 cm<sup>2</sup>.

1. Abbott. Liberta RC™ DBS System Recharging Comparison Claims Memo (MAT-2400043). 2024.
2. Abbott. Liberta RC™ Implantable Pulse Generator Clinician's Manual. Plano, TX. 2024.
3. Abbott. Liberta RC™ DBS System Size Comparison Claims Memo (MAT-2400042). 2024.

**Rx Only**

**Brief Summary:** Prior to using Abbott devices, please review the Clinician's Manual for a complete listing of indications, contraindications, warnings, precautions, potential adverse events, and directions for use. The system is intended to be used with leads and associated extensions that are compatible with the system.

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Tel: 1 972 526 8286  
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# INVITED SPEAKERS

**Taylor Abel**

University of Pittsburgh  
Medical Center  
Pittsburgh, PA

**Ellen Air**

Henry Ford Hospital  
Detroit, MI

**Rushna Ali**

Mayo Clinic  
Rochester, MN

**Elsa Arocho-Quinones**

Medical College of Wisconsin  
Milwaukee, WI

**Wael Asaad**

Brown University  
Westwood, MA

**Tyler Ball**

Vanderbilt University  
Nashville, TN

**Ausaf Bari**

UCLA  
Los Angeles, CA

**Kara Beasley**

Boulder Neurosurgical  
Associates  
Boulder, CO

**Sharona Ben-Haim**

University of California San  
Diego  
Cardiff-by-the-Sea, CA

**Nicole Bentley**

University of Alabama at  
Birmingham  
Birmingham, AL

**Sarah Bick**

Vanderbilt University  
Nashville, TN

**Kelly Bijanki**

Baylor College of Medicine  
Houston, TX

**Hal Blumenfeld**

Yale University  
New Haven, CT

**Jennifer Blumenthal-Barby**

Baylor College of Medicine  
Houston, TX

**Ed Boyden**

Massachusetts Institute of  
Technology  
Cambridge, MA

**David Burdette**

Spectrum Health  
Grand Rapids, MA

**György Buzsáki**

NYU Langone  
New York, NY

**Iahn Cajigas**

University of Pennsylvania  
Philadelphia, PA

**Lola Chambless**

Vanderbilt University  
Nashville, TN

**Edward Chang**

University of California, San  
Francisco  
San Francisco, CA

**Erin Conrad**

University of Pennsylvania  
Philadelphia, PA

**Christos Constantinidis**

Vanderbilt University  
Nashville, TN

**G. Rees Cosgrove**

Brigham and Women's  
Hospital, Harvard Medical  
School  
Boston, MA

**Arthur Cukiert**

Sao Paulo Epilepsy Clinic  
Sao Paulo, Brazil

**Ashley Dalrymple**

University of Utah  
Salt Lake City, UT

**Eyiyemisi Damisah**

Yale School of Medicine  
New Haven, CT

# INVITED SPEAKERS

**Shabbar Danish**

Rutgers Robert Wood Johnson  
Medical School  
Neptune, NJ

**David Darrow**

University of Minnesota  
Minneapolis, MN

**Kate Davis**

University of Pennsylvania  
Philadelphia, PA

**Benoit Dawant**

Vanderbilt University  
Nashville, TN

**Pierre D'Haese**

Vanderbilt University  
Nashville, TN

**Darin Dougherty**

Massachusetts General  
Hospital  
Charlestown, MA

**W. Jeffrey Elias**

University of Virginia  
Charlottesville, VA

**Jerome Engel, Jr.**

University of California, Los  
Angeles  
Los Angeles, CA

**Dario J. Englot**

Vanderbilt University  
Nashville, TN

**Kelly Foote**

University of Florida College of  
Medicine and McKnight Brain  
Institute  
Gainesville, FL

**Michael Fox**

Berenson-Allen Center for Non  
Invasive Brain Stimulation,  
Beth Israel Deaconess  
Medical Center, Harvard  
Medical School  
Boston, MA

**Jason Gerrard**

University of Tennessee  
Memphis, TN

**Shawn Gliner**

Pendant Biosciences, Inc.  
Nashville, TN

**Jorge González-Martínez**

University of Pittsburgh  
Pittsburgh, PA

**Robert Gross**

Rutgers  
New Brunswick, NJ

**Ayse Gunduz**

University of Florida  
Gainesville, FL

**Kunal Gupta**

Indiana University  
Indianapolis, IN

**Ryder Gwinn**

Eastside Neuroscience  
Institute  
Seattle, WA

**Mallory Hacker**

Vanderbilt University  
Nashville, TN

**Casey Halpern**

University of Pennsylvania  
Philadelphia, PA

**Clement Hamani**

University of Toronto  
Toronto, ON Canada

**Travis Hassell**

Vanderbilt University  
Nashville, TN

**Leigh Hochberg**

Massachusetts General  
Hospital  
Brookline, MA

**Kathryn Holloway**

VCU Health System  
Richmond, VA

**Kullervo Hynynen**

University of Toronto  
Toronto, ON Canada

**Kara Johnson**

University of Florida  
Gainesville, FL

# INVITED SPEAKERS

**Lora Kahn**

Ochsner Medical Center  
New Orleans, LA

**Lorraine Kalia**

University of Toronto  
Toronto, ON Canada

**Suneil Kalia**

University of Toronto  
Toronto, ON Canada

**Michael Kaplitt**

Weill Cornell Medicine  
New York, NY

**Patrick Karas**

University of Texas  
Houston, TX

**Zelma Kiss**

University of Calgary  
Calgary, AB Canada

**Andrew Ko**

University of Washington  
Seattle, WA

**Peter Konrad**

West Virginia University  
Morgantown, WV

**Vibhor Krishna**

The Ohio State University  
Columbus, OH

**Bornali Kundu**

University of Utah  
Salt Lake City, UT

**Nandan Lad**

Duke University Medical Center  
Durham, NC

**Paul Larson**

University of Arizona  
Tucson, AZ

**Brian Lee**

University of Southern  
California  
Los Angeles, CA

**Darrin Lee**

Keck School of Medicine of  
USC  
Los Angeles, CA

**Emily Levin**

University of Michigan  
Ann Arbor, MI

**Nir Lipsman**

University of Toronto  
Toronto, ON Canada

**Andres Lozano**

University of Toronto  
Toronto, ON Canada

**Timothy Lucas**

University of Pennsylvania  
Philadelphia, PA

**André Machado**

Cleveland Clinic Foundation  
Cleveland, OH

**Neena Marupudi**

University of Michigan  
Ann Arbor, MI

**Helen Mayberg**

Mount Sinai School of  
Medicine  
New York, NY

**Cameron McIntyre**

Duke University  
Durham, NC

**Guy McKhann**

Columbia University  
New York, NY

**Jonathan Miller**

SUNY  
Syracuse, NY

**Kai Miller**

Mayo Clinic, Minnesota  
Rochester, MN

**Lee Thomas Miller**

Nashville, TN

**Alon Mogilner**

NYU Grossman School of  
Medicine  
New York, NY

**Vicky Morgan**

Vanderbilt University  
Nashville, TN

# INVITED SPEAKERS

**Ian Mutchnick**

Norton Neuroscience Institute  
Louisville, KY

**Robert Naftel**

Vanderbilt University Medical  
Center  
Nashville, TN

**Joseph Neimat**

University of Louisville  
Louisville, KY

**Michael Okun**

University of Florida College  
of Medicine and McKnight  
Brain Institute  
Gainesville, FL

**David Owens**

Vanderbilt University  
Nashville, TN

**Fedor Panov**

Mount Sinai Health System  
New York, NY

**Parag Patil**

University of Michigan  
Ann Arbor, MI

**Sanjay Patra**

Spectrum Health  
East Grand Rapids, MI

**Danika Paulo**

Vanderbilt University  
Nashville, TN

**Erika Petersen**

University of Arkansas  
Little Rock, AR

**Richard Pierce**

Vanderbilt University  
Nashville, TN

**Julie Pilitsis**

University of Arizona  
Banner Health  
Tucson, AZ

**Nader Pouratian**

UT Southwestern Medical  
Center  
Dallas, TX

**Shervin Rahimpour**

University of Utah  
Salt Lake City, UT

**Richard Rammo**

Cleveland Clinic  
Cleveland, OH

**Abigail Rao**

Norton Neuroscience Institute  
Louisville, KY

**Ahmed Raslan**

Oregon Health and Science  
University  
Portland, OR

**Ali Rezai**

Rockefeller Neuroscience  
Institute  
Morgantown, WV

**R. Mark Richardson**

Massachusetts General  
Hospital  
Boston, MA

**Joshua Rosenow**

Northwestern University  
Chicago, IL

**Nathan Rowland**

Medical University of South  
Carolina  
Charleston, SC

**Uzma Samadani**

Hennepin Healthcare  
Research Institute  
Minneapolis, MN

**Sridevi Sarma**

Johns Hopkins University  
Baltimore, MD

**Demitre Serletis**

Cleveland Clinic  
Cleveland, OH

**Ashwini Sharan**

Thomas Jefferson University  
Hospital  
Philadelphia, PA

**Sameer Sheth**

Baylor College of Medicine  
Houston, TX

# INVITED SPEAKERS

**Konstantin Slavin**

University of Illinois at Chicago  
Chicago, IL

**Michael Staudt**

University Hospitals Cleveland  
Medical Center  
Cleveland, OH

**Jennifer Sweet**

University Hospitals Cleveland  
Medical Center  
Cleveland, OH

**Viviane Tabar**

Memorial Sloan Kettering  
Cancer Center  
New York, NY

**Nitin Tandon**

McGovern Medical School  
Houston, TX

**Nicole Toth**

Henry Ford Hospital  
Detroit, MI

**Elizabeth Tyler-Kabara**

University of Texas, Austin  
Austin, TX

**Meena Vessell**

Texas Children's Hospital  
Austin, TX

**Doris Wang**

University of California, San  
Francisco  
San Francisco, CA

**Brett Warren**

Nashville, TN

**Brad Warren**

Nashville, TN

**Peter Weber**

Nashville Predators  
Nashville, TN

**Ziv Williams**

Massachusetts General  
Hospital  
Boston, MA

**Jon Willie**

Washington University School  
of Medicine  
St Louis, MO

**Chengyuan Wu**

Thomas Jefferson University  
Hospital  
Philadelphia, PA

**Ajmal Zemmar**

University of Louisville  
Louisville, KY



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# PROGRAM SCHEDULE

**SATURDAY, JUNE 1, 2024**

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**8:00 am–4:00 pm**

**GRAND HALL FOYER**

## **Registration**

**8:30 am–12:00 pm**

**GRAND HALL A**

## **Special Course 1**

### **Epilepsy Surgery Fundamentals and Challenges**

*Course Directors:* Andrew Ko, Kai Miller

#### **Part 1: Video Sessions**

8:30–9:10 am

#### **sEEG-guided LITT**

Eyiyemisi Damisah, Robert Naftel, Demitre Serletis

9:10–9:50 am

#### **Patient with Extensive Heterotopia: Discussion of RNS at Heretopia vs. DBS/RNS Thalamus vs. VNS**

Arthur Cukiert, Fedor Panov, Sanjay Patra

9:50–10:30 am

#### **Patient with Drop Attacks with Thin CC: Open vs. LITT vs. Endoscopic Callosotomy**

Taylor Abel, Neena Maripudi, Jorge Gonzalez Martinez

10:30–10:45 am

#### **Beverage Break**

#### **Part 2: Hands On Session**

10:45–11:20 am

#### **Robotic vs. StarFix sEEG with Demonstration of RF via sEEG Electrodes**

Andrew Ko, Kai Miller, Ian Mutchnick, Jon Willie, Chengyuan Wu

11:20 am–12:00 pm

#### **Endoscope and LITT Demonstration of Callosotomy**

Taylor Abel, Neena Maripudi, Jorge Gonzalez Martinez

#### **Educational Grant provided by**

Brainlab, Monteris Medical and Zimmer Biomet

#### **In-Kind Equipment provided by**

Brainlab, FHC Inc., Monteris Medical and Zimmer Biomet

# PROGRAM SCHEDULE

8:30 am–12:00 pm

GRAND HALL B

## Special Course 2

### **Movement Disorder Surgery Fundamentals and Challenges**

*Course Directors:* Rushna Ali, Alon Mogilner

8:30–8:35 am

#### **Introduction**

Rushna Ali, Alon Mogilner

8:35–9:00 am

#### **Advanced Imaging and Connectomics for DBS Planning**

Mallory Hacker, Shervin Rahimpour

9:00–9:25 am

#### **Hands-on: Pitfalls and Principles of Planning**

All Faculty

9:25–9:50 am

#### **iMRI vs. iCT vs. Robotic vs. MER Overview**

Kathryn Holloway, Paul Larson, Richard Rammo

9:50–10:15 am

#### **Hands-on: iMRI vs. iCT vs. Robotic**

All Faculty

10:15–10:40 am

#### **Beverage Break**

10:40–11:05 am

#### **Focused Ultrasound vs DBS: When, Why, Who**

Rees Cosgrove, Peter Konrad

11:05–11:30 am

#### **Directional and Closed Loop DBS**

Nandan Lad, Joshua Rosenow

11:30 am–12:00 pm

#### **Challenging Cases Discussion**

Abigail Rao, Ashwini Sharan

#### **Educational Grant provided by**

Alpha Omega USA, Brainlab and Zimmer Biomet

#### **In-Kind Equipment provided by**

Alpha Omega USA, Brainlab, FHC Inc. and Zimmer Biomet

# PROGRAM SCHEDULE

1:00–4:00 pm

GRAND HALL A

## Special Course 3

**Business of Functional Neurosurgery and Choosing a Job for Residents** *(for Residents and Fellows)*

**Course Director:** Ellen Air

1:00–1:05 pm

### Overview

Ellen Air

1:05–1:25 pm

### Exploring the Academic to Practice-Based Spectrum

Jason Gerrard

1:25–1:45 pm

### Prioritization and Job Fit

Rushna Ali

1:45–2:05 pm

### Negotiating the Package

Kunal Gupta

2:05–2:25 pm

### Building and Growing an Interdisciplinary Team

Michael Staudt

2:25–2:40 pm

### Beverage Break

2:40–3:00 pm

### Infrastructure

Lora Kahn

3:00–3:20 pm

### Building an “Outside” Referral Base

Paul Larson

3:20–3:40 pm

### Who Bills and Where does the Money Go?

Ellen Air, Nicole Toth

3:40–4:00 pm

### Integrating Research Without Breaking the Bank

Wael Asaad

**Gold Sponsor:** Alpha Omega USA

# PROGRAM SCHEDULE

1:00–4:00 pm

GRAND HALL B

## Special Course 4

### Mentorship for Medical Students

**Course Director:** Nathan Rowland

1:00–1:05 pm

#### Overview

Nathan Rowland

1:05–1:30 pm

#### Evolution of the Neurosurgery Residency Match Process

Lola Chambless

1:30–1:55 pm

#### The Role of Research for the Neurosurgical Candidate

Patrick Karas

1:55–2:20 pm

#### Choosing the Ideal Sub-Internships

Nicole Bentley

2:20–2:45 pm

#### Successful Interviewing Strategies for the Neurosurgery Match

Emily Levin

2:45–3:10 pm

#### Beverage Break

3:10–3:35 pm

#### The Role of ASSFN in Supporting URM Neurosurgical Candidates: The AMPLify Model

Nathan Rowland

3:35–4:00 pm

#### Organized Neurosurgery and Neurosurgical Societies

Danika Paulo

1:00–4:00 pm

GRAND HALL C

## Special Course 5

### Entrepreneurship and Innovation

**Course Directors:** Shawn Glitner, Cameron McIntyre, Joseph Neimat, David Owens

4:00–5:00 pm

GRAND HALL FOYER

### WINS Networking Event

**Gold Sponsor:** Abbott    **Bronze Sponsor:** Alpha Omega USA

# PROGRAM SCHEDULE

**SUNDAY, JUNE 2, 2024**

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**6:30 am–6:00 pm**

**GRAND HALL FOYER**

**Registration**

**7:00–7:55 am**

**GRAND HALL FOYER**

**Continental Breakfast**

**7:00–7:55 am**

**SUMMIT D**

**Breakfast Session 1**

**Neurorehabilitation**

**Moderator:** David Darrow, Andre Machado

7:00–7:15 am

**VNS for Neurorehabilitation**

Darrin Lee

7:15–7:30 am

**Spinal Cord Stimulation for Spinal Cord Injury**

Uzma Samadani

7:30–7:45 am

**Spinal Cord Stimulation to Restore a Sense of Touch**

Ashley Dalrymple

7:45–7:55 am

**Panel Discussion**

All Faculty

**7:00–7:55 am**

**SUMMIT E**

**Breakfast Session 2**

**Personalized Neuromodulation Biomarkers**

**Moderator:** Shabbar Danish, Doris Wang

7:00–7:15 am

**Personalized DBS for Binge-Eating Disorder**

Casey Halpern

7:15–7:30 am

**Personalized DBS for Parkinson's Disease**

Kara Johnson

7:30–7:45 am

**Personalized Visualization for DBS Planning**

Cameron McIntyre

# PROGRAM SCHEDULE

7:45–7:55 am

## Panel Discussion

All Faculty

8:00–9:50 am

GRAND HALL D

## Plenary Session 1

### Innovation in Neurosurgery: Possibilities and Pitfalls

**Moderators:** Brian Lee, Jonathan Miller, Joseph Neimat

8:00–8:05 am

#### Introduction

Joseph Neimat

8:05–8:35 am

#### Keynote on Innovation

David Owens



8:35–8:50 am

#### Brain Stimulation for Stroke

André Machado

8:50–9:05 am

#### Intermittent DBS: From Animal Studies to Application

Christos Constantinidis

9:05–9:20 am

#### Recent Innovations in Neural Interfaces

Leigh Hochberg

9:20–9:50 am

#### Roundtable Discussion

Christos Constantinidis, Leigh Hochberg,  
André Machado, Joseph Neimat, David Owens

9:30 am–4:30 pm

GRAND HALL E

## Exhibit Hall Open

9:50–10:20 am

GRAND HALL E

## Beverage Break – Visit the Exhibits!



# PROGRAM SCHEDULE

10:20 am–12:00 pm

GRAND HALL D

## Parallel Session 1

### Big Data and AI

**Moderators:** Pierre D’Haese, Chengyuan Wu

10:20–10:35 am

#### **Understanding Complex Brain Networks with AI**

Kai Miller

10:35–11:05 am

#### **Big Data and AI in Movement Disorders**

Benoit Dawant, Pierre D’Haese, Peter Konrad

11:05–11:20 am

#### **AI Applications in Intracranial EEG for Epilepsy**

Erin Conrad

11:20 am–12:00 pm

#### **Open Papers**

11:20–11:25 am

#### **An Intracortical Brain Computer Interface to Restore Communication in a Person with ALS**

*Nicholas Card; Maitreyee Wairagkar; Carrina Iacobacci; Xianda Hou; Tyler Singer-Clark; Francis Willett; Erin Kunz; Chaofei Fan; Maryam Vahdati Nia; Darrel Deo; Eun Young Choi; Matthew Glasser; Leigh R. Hochberg; Jaimie M. Henderson; Kiarash Shahlaie; Sergey Stavisky; David M. Brandman*

11:26–11:31 am

#### **Unveiling Phonological Processing: sEEG Insights in Natural Speech Tasks**

*Aditya Singh; Nitin Tandon; Jinlong (Torres) Li*

11:32–11:37 am

#### **One-Shot Learning in the Human Brain**

*Megha Ghosh; Sophia Lowe-Hines; Adam Crandall; Andrew Lin Ko; Jeffrey Ojemann; Ben L. Grannan*

11:38–11:43 am

#### **Capturing Synchronized Neural and Experiential Data in the Wild with The Neuropace Responsive Neurostimulator**

*Cory Inman; Luis Garcia; Uros Topalovic; Mauricio Vallejo; Matthias Stangl; Tyler Davis; Martina Hollearn; Justin Michael Campbell; Lensky Augustin; Dawn Eliashiv; Vikram Rao; Itzhak Fried; Nicholas Hasulak; Sonja Hiller; Nanthia Suthana*

# PROGRAM SCHEDULE

11:44-11:49 am

## **Timing of Spiking Activity Suggests a Role in Reach Braking Control and Error Monitoring for the Ventral Intermediate Nucleus of the Thalamus in Essential Tremor Patients**

*Rex Tien; Jonathan Platt; Madelyn Mendlen; Drew Kern; Steven Ojemann; John Thompson; Daniel Kramer*

11:50-11:55 am

## **Recordings of Anterior Cingulate Cortex Dopamine Activity in Sub-second Time During Working Memory Tasks**

*Priya Ramaiah; Seth Batten; Thomas Twomey; Natalie Melville; Jason White; Alexis Torres; Xavier Celaya; Dan Bang; Yi Luo; Leonardo Barbosa; Gi-Yeul Bae; Samuel McClure; Gene Brewer; Terry Lohrenz; Read Montague; Robert Wagner Bina*

11:56 am-12:01 pm

## **An Implantable AI Enabled Device Can Predict Seizures with High Accuracy Up to 1 Hour Before Events**

*Raja N. Jani; Joseph Samir Neimat; Tommaso Melodia*

**10:20 am-12:00 pm**

**GRAND HALL ABC**

## **Parallel Session 2**

### **Pediatric Surgical Advances**

**Moderators:** Tyler Abel, Elizabeth Tyler-Kabara

10:20-10:35 am

#### **RNS in the Pediatric Population**

Meena Vessell

10:35-10:50 am

#### **Cerebellar Deep Nuclei DBS for Acquired Dystonias in Children**

Iahn Cajigas Gonzalez

10:50-11:05 am

#### **Laser Ablation for Pediatric Epilepsies**

Elsa Arrocho Quinones

11:05-11:20 am

#### **Multimodal Approaches to Pediatric Spasticity**

Robert Naftel

11:20 am-12:00 pm

#### **Open Papers**



# PROGRAM SCHEDULE

11:20–11:25 am

## **Modeling Aberrant Hemodynamic Autoregulation and Infralow Modulation of Neural Activity**

*Maren Loe; Michael Morrissey; Rebekah Landre; Stuart Tomko; Rejean Guerriero; ShiNung Ching*

11:26–11:31 am

## **Outcomes of Stereoelectroencephalography Following Failed Epilepsy Surgery in Children**

*Georgia Wong; Ashley McCray; Kara Hom; Saige Teti; Nathan Cohen; William Gaillard; Chima Oluigbo*

11:32–11:37 am

## **Revealing the Functional and Physiological Properties of Human Single Neurons in a Temporal Cortical Microcircuit Using Neuropixels**

*Shraddha Shah; Kalman Katlowitz; Joshua Adkinson; Raissa Mathura; Nicole Provenza; Nisha Giridharan; Garrett P. Banks; Lan Luan; Chong Xie; Alica Goldman; Atul Maheshwari; Sarah Heilbronner; Andrew Watrous; Benjamin Hayden; Sameer A. Sheth*

11:38–11:43 am

## **Neural Evidence Accumulation in the Dorsolateral Prefrontal Cortex Mediates Working Memory-based Decision-making**

*David P. Darrow; Seth Koenig; Xiyuan Yan; Alexander Herman*

11:44–11:49 am

## **Electric Field Stimulation Collaborates with mTOR to Direct Retinal Ganglion Cell Axon Regeneration and Partial Restoration of Vision After Optic Nerve Crush Injury**

*Kimberly K. Gokoffski; Connie Huang; Anahit Simonyan; Sasha Medvidovic; Timothy Silliman; Timothy Kim; Pooyan Pahlavan; Gengle Niu; Ege Iseri; Mahnaz Shahidi; Biju Thomas; Gianluca Lazzi; Darrin J. Lee*

11:50–11:55 am

## **Ultra-High-Frequency Deep Brain Stimulation of the Medial Septal Nucleus Demonstrates Unique Septohippocampal Circuit Cerebral Blood Volume Activation Compared to Standard High Frequency Stimulation**

*Kevin Wu; Jack Yu Tung Lo; Aafreen Qureshi; Rebecca Chow; Avinash Pandit; Kofi Agyerman; Wooseong Choi; Robert G. Briggs; Matthew Bergosh; Nancy Zepeda; Lindsey Crown; Charles Y. Liu; Vasileios Christopoulos; Darrin J. Lee*

# PROGRAM SCHEDULE

11:56 am–12:01 pm

## **Beta Wave Analysis on Two Public Data Sets with Open-source Frequency Range Explorer to Assist Epileptogenic Zone Localization (FREEZ) Module**

*Anne-Cecile Lesage; Sean O'Leary; Liliana Camarillo Rodriguez; Patrick J. Karas; Zhengjia Wang; John F. Magnotti; Michael S. Beauchamp; Sameer A. Sheth*

12:00–12:55 pm

SUMMIT D

### **Medtronic**

#### **Non-CME Sponsored Lunch Session**

##### **Insight-Driven Strategies: Tools and Innovations for Refractory Epilepsy**

Ausaf Bari, Jon T. Willie

12:00–12:55 pm

SUMMIT E

### **Boston Scientific**

#### **Non-CME Sponsored Lunch Session**

##### **Biologically Inspired Pallidal Burst Stimulation for Parkinson's Disease**

Nader Pouratian

1:00–3:00 pm

GRAND HALL D

### **Plenary Session 2**

#### **Collaboration in Music, Sports, and Neurosurgery**

**Moderators:** Dario J. Englot, Joseph Neimat

1:00–1:05 pm

##### **Introduction of Musicians**

Joseph Neimat

1:05–1:55 pm

##### **Collaboration in Music: Performance and Discussion**

Lee Thomas Miller, The Warren Brothers



1:55–2:00 pm

##### **Introduction of Pete Weber**

Dario J. Englot, Richard Pierce

# PROGRAM SCHEDULE

2:00–2:20 pm

## **Collaborations in Sports: A Conversation with a Sportscaster and Patient**

Dario J. Englot, Richard Pierce, Pete Weber



2:20–2:30 pm

## **Honoring Ronald R. Tasker**

Andres Lozano

2:30–2:35 pm

## **Introduction of ASSFN President**

Joseph Neimat

2:35–3:00 pm

## **Presidential Address**

André Machado



**3:00–3:30 pm**

**GRAND HALL E**

**Beverage Break – Visit the Exhibits!**

**3:30–6:00 pm**

**GRAND HALL D**

## **Parallel Session 3**

### **The Evolution of Epilepsy Surgery**

**Moderators:** Sharona Ben-Haim, Guy McKhann

3:30–3:45 pm

### **Standardization of the Epilepsy Surgical Evaluation**

Kate Davis

3:45–4:00 pm

### **Measuring Benefit Beyond Engel Outcome**

Dario J. Englot

4:00–4:15 pm

### **Evolving from Resection to Ablation**

Robert Gross

4:15–4:30 pm

### **Thalamic Neuromodulation for Primary Generalized Epilepsy**

David Burdette

4:30–4:45 pm

### **FUS as a Novel Tool for Epilepsy**

Vibhor Krishna

# PROGRAM SCHEDULE

4:45–5:05 pm

## **Panel Discussion**

All Faculty

5:05–6:00 pm

## **Open Papers**

5:05–5:10 pm

### **Focal Seizures Induce Spatiotemporally Organized Spiking Activity in the Human Cortex**

*Joshua M. Diamond; Julio Chapeton; Weizhen Xie; Samantha Jackson; Sara Inati; Kareem A. Zaghloul*

5:11–5:16 pm

### **Peri-Ictal Dynamics of The Interictal Suppression Hypothesis: An SEEG Study**

*Graham Walter Johnson; Derek Doss; Ghassan Makhoul; Leon Cai; Camden Bibro; Addison Cavender; Danika Lea Paulo; Baxter Rogers; Shilpa Reddy; Robert Partlow Naftel; Benoit Dawant; Catie Chang; Mark Wallace; Shawniqua Williams Roberson; Vicky Morgan; Sarah Bick; Dario J. Englot*

5:17–5:22 pm

### **Thalamo-Cortical Connectivity Deterioration in Focal Epilepsy**

*Camden Bibro; Derek Doss; Graham Walter Johnson; Ghassan Makhoul; Sarah Goodale; Lucas Sainburg; Dingjie Su; Danika Lea Paulo; Sarah Bick; Catie Chang; Vicky Morgan; Dario J. Englot*

5:23–5:28 pm

### **The Interictal Suppression Hypothesis is the Dominant Differentiator of Seizure Networks in Focal Epilepsy**

*Jared Shless; Derek Doss; Sarah Bick; Ghassan Makhoul; Aarushi Negi; Camden Bibro; Rohan Rashingkar; Abhijeet Gummadvelli; Catie Chang; Martin Gallagher; Robert Partlow Naftel; Shilpa Reddy; Shawniqua Williams Roberson; Vicky Morgan; Graham Walter Johnson; Dario J. Englot*

5:29–5:34 pm

### **Disrupting the Epileptogenic Network with Stereoelectroencephalography-guided Radiofrequency Thermocoagulation**

*Ana Suller; Hellen Kreinter; Poul Espino; Sonia Mejia; Jorge Burneo; Seyed Mirsattari; Michelle-Lee Jones; Giovanni Pellegrino; David Diosy; David A. Steven; Keith MacDougall; Jonathan C. Lau*

# PROGRAM SCHEDULE

5:35–5:40 pm

## **Convergent Hierarchical Dynamics Within the Language Network for Speech Listening and Silent Reading**

*Kathryn Snyder; Kiefer Forseth; Oscar Woolnough; Elliot Murphy; Nitin Tandon*

5:41–5:46 pm

## **Hippocampal Closed-loop Electrical Stimulation Augments Hippocampal-neocortical Memory Network Activity**

*Kathryn Snyder; Kiefer Forseth; Oscar Woolnough; Elliot Murphy; Nitin Tandon*

5:47–5:52 pm

## **Consistent Stimulation Response May Help Define Epileptic Networks: A Single Pulse Electrical Stimulation Study**

*Ghassan S. Makhoul; Bruno Hidalgo Monroy Lerma; Derek J. Doss; Graham W. Johnson; Addison C. Cavender; Camden Bibro; Danika E. Paulo; Catie Chang; Mark Wallace; Shawniqua Williams Roberson; Sarah Bick; Vicky Morgan; Dario J. Englot*

5:53–5:58 pm

## **A First-In-Human Study of Interneuron Transplantation for Drug-Resistant Focal Epilepsy**

*Derek Southwell; Harish Babu; Robert Beach; Sharona Ben-Haim; Kim J. Burchiel; Matthew Luedke; Rebecca O'Dwyer; Sepehr Sani; Jerry Shih; David Spencer; Gautam Banik; Marina Bershteyn; David Blum; Brianna Feld; Holly Finefrock; Luis Fuentealba; John Hixson; Ji-Hye Jung; Tia Kowal; Sonja Kriks; Rose Larios; Seonok Lee; Sheri Madrid; Yves Maury; Catherine Priest; Cory Nicholas*

**3:30–6:00 pm**

**GRAND HALL ABC**

### **Parallel Session 4**

#### **The Evolution of Movement Disorder Surgery**

**Moderators:** Nicole Bentley, Michael Okun

3:30–3:45 pm

#### **Bilateral FUS vs. DBS for Tremor**

*Kara Beasley*

3:45–4:00 pm

#### **Gene Therapy of Movement Disorders**

*Paul Larson*

4:00–4:15 pm

#### **Advanced Stimulation Paradigms**

# PROGRAM SCHEDULE

Travis Hassell

4:15–4:30 pm

## **Value of Closed Loop: Clinician's Perspective**

Kelly Foote

4:30–4:45 pm

## **Value of Closed Loop: Engineer's Perspective**

Ayse Gunduz

4:45–5:05 pm

## **Panel Discussion**

All Faculty

5:05–6:00 pm

## **Open Papers**

5:05–5:10 pm

### **Gait Phase Adaptive Deep Brain Stimulation Improves Gait Parameters in Parkinson's Disease Patients**

*Kenneth Louie; Jannine Balakid; Jessica Bath; Hamid Fekri Azgomi; Jacob Marks; Julia Choi; Philip A. Starr; Doris D. Wang*

5:11–5:16 pm

### **Connectomics of Chronic VIM vs Rescue VIM/VO Deep Brain Stimulation in Essential Tremor**

*Vyshak Chandra; Yusuf Mekri; Anna Fusco; Joshua Wong; Justin D. Hilliard; Kelly D. Foote*

5:17–5:22 pm

### **Long-term Clinical Outcomes for Patients with Parkinsons Disease Receiving a Unilateral Implantation to the Substantia Nigra of an Investigational Cell-based Therapy at the Time of DBS Surgery (DBS-plus)**

*George Quintero; John Slevin; Julie Gurwell; Greg Gerhardt; Craig van Horne*

5:23–5:28 pm

### **Automated Deep Brain Stimulation Parameter Selection via Meta-Active Learning of Evoked Potentials**

*Eric Cole; Mariah Schrum; Enrico Opri; Letian Chen; Arthur Wang; Paola Testini; Bahram Borgheai; Arthur Nascimento; Faical Isbaine; Robert E. Gross; Matthew Gombolay; Svjetlana Miocinovic*

# PROGRAM SCHEDULE

5:29–5:34 pm

## **Reduction of Alpha Synuclein Oligomers in Preclinical Models of Parkinsons Disease by Electrical Stimulation In Vitro and Deep Brain Stimulation In Vivo**

*Suneil K. Kalia; Eun Jung Lee; David Hernán Aguirre-Padilla; Anton Fomenko; Grishma Pawar; Minesh Kapadia; Andres M. Lozano; Clement Hamani; Lorraine Kalia*

5:35–5:40 pm

## **Optimal Focused Ultrasound Lesion Location in Essential Tremor**

*Melissa Ming Jie Chua; Alfredo Morales Pinzon; Clemens Neudorfer; Patrick Ray Ng; Sarah Blitz; Garance Meyer; Konstantin Butenko; Till Dembek; Fardad Behzadi; Nathan McDannold; John Rolston; Charles R.G. Guttmann; Michael Fox; Garth Cosgrove; Andreas Horn*

5:41–5:46 pm

## **fMRI-based Deep Brain Stimulation Programming: A Blinded, Crossover Clinical Trial**

*Brendan Santyr; Afis Ajala; Ibrahim Alhashyan; Jurgen Germann; Jianwei Qui; Alexandre Boutet; Alfonso Fasano; Andres M. Lozano*

5:47–5:52 pm

## **Focused Ultrasound Pallidothalamic Tractotomy for Cervical Dystonia**

*Shiro Horisawa; Takaomi Taira*

5:53 – 5:58 pm

## **A Network Imaging Biomarker to Predict Clinical Responses to Subthalamic Nucleus Deep Brain Stimulation Surgery for Parkinsons Disease**

*Prashin Unadkat; Vijay Dhawan; Yilong Ma; Chris Tang; Shichun Peng; Martin Niethammer; An Vo; Silvia Caminiti; Daniela Perani; David Eidelberg*

**6:00–8:00 pm**

**GRAND HALL TERRACE**

## **Opening Reception**



Kick off the ASSFN Biennial Meeting experience by connecting with colleagues over drinks and delicious hors d'oeuvres!

# PROGRAM SCHEDULE

## MONDAY, JUNE 3, 2024

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6:30 am–6:00 pm

GRAND HALL FOYER

### Registration

7:00–7:55 am

GRAND HALL FOYER

### Continental Breakfast

7:00–7:55 am

SUMMIT D

### Abbott

#### Non-CME Sponsored Breakfast Session

##### DBS for Depression: the TRANSCEND Pivotal Study

Robert Gross, Brian Kopell, Patricio Riva Posse

7:00–7:55 am

SUMMIT E

### Insightec

#### Non-CME Sponsored Breakfast Session

##### The Silent, Unmet Need in Movement Disorders; Advancements in Focused Ultrasound—Exablate® Prime

Stephen Harward II, Ahmed Raslan

8:30 am–5:30 pm

GRAND HALL E

### Exhibit Hall Open

8:00–9:30 am

GRAND HALL D

### Plenary Session 3

#### Exploring the Conscious and Unconscious Brain

**Moderators:** Julie Pilitsis, Konstantin Slavin

8:00–8:02 am

#### Introduction

Nitin Tandon

8:02–8:30 am

#### Unlocking the Neural Systems of the Brain

György Buzsáki

8:30–8:50 am

#### Theory of Mind and Social Cognition

Ziv Williams



# PROGRAM SCHEDULE

8:50–9:10 am

## **Neuromodulation for Restoration of Consciousness**

Hal Blumenfeld

9:10–9:30 am

## **Roundtable Discussion**

**9:30–10:00 am**

**GRAND HALL E**

## **Beverage Break with Exhibitors**

**10:00 am–12:00 pm**

**GRAND HALL D**

## **Parallel Session 5**

### **The Evolution of Psychiatric Neuromodulation**

**Moderators:** Sarah Bick, Nader Pouratian

10:00–10:20 am

#### **Physiological Biomarkers in Psychiatric Neurosurgery**

Kelly Bijanki, Sameer Sheth

10:20–10:40 am

#### **Clinical Trials in DBS for Depression: State of the Field**

Helen Mayberg

10:40–11:00 am

#### **Addiction as a Novel Indication for DBS**

Ali Rezai

11:00–11:20 am

#### **Interdisciplinary Engagement in Psychiatric Neurosurgery**

Darin Dougherty

11:20 am–12:00 pm

#### **Open Papers**

11:20–11:25 am

#### **Structural, Connectivity, and Metabolic Changes Following Magnetic Resonance Guided Focused Ultrasound Capsulotomy**

*Benjamin Andrew Davidson; Lyndon Boone; Karim Mithani; Clement Hamani; Peter Giacobbe; Sean Nestor; Ying Meng; Jennifer Rabin; Maged Goubran; Nir Lipsman*

# PROGRAM SCHEDULE

11:26–11:31 am

## **Acute Deep Brain Stimulation of the Fornix in Alzheimers Disease Disrupts Memory Recall**

*Anna Kimata; Matthew Chan; Bryan Zheng; Peter M. Lauro; Jennifer Davis; Umer Akbar; Wael Asaad*

11:32–11:37 am

## **Pathway Specific Stimulation of Prefrontal Cortical Pathways Recruits Unique Cortical Sources**

*Andreas Seas; M. Sohail Noor; Ki Sueng Choi; Ashan Veerakumar; Mosadoluwa Obatusin; Jacob Dahill-Fuchel; Vineet Tiruvadi; Elisa Xu; Patricio Riva Posse; Christopher Rozell; Helen S. Mayberg; Cameron C. McIntyre; Bryan Howell; Allison Waters*

11:38–11:43 am

## **Stereo-electroencephalography Guided Multi-Lead Deep Brain Stimulation for Treatment-Resistant Obsessive-Compulsive Disorder**

*Robert Seilheimer; Liming Qiu; Younghoon Nho; Gustavo Campos; Neda Kaboodvand; Taneeta Ganguly; Kristie Bauman; Mario Cristancho; William Wilent; Cammie Rolle; Michael A. Jensen; Kai Miller; Desmond Oathes; Lily Brown; A. Moses Lee; Nolan R. Williams; Katherine Scangos; Daniel Barbosa; Casey H. Halpern*

11:44–11:49 am

## **Brain Network Changes Characterized with Resting State Functional MRI are Associated with Anti-depressant Effects After Deep Brain Stimulation of the Medial Forebrain Bundle**

*Prashin Unadkat; Nha Nguyen; Jack Nhat Truong; Patrick Do; David Eidelberg; An Vo; Albert Fenoy*

11:50–11:55 am

## **Circuit-based Relevant Electrophysiology Modulation of Personalized Evocation is Associated with Amelioration in OCD-related Distress**

*Younghoon Nho; Liming Qiu; Gustavo Campos; Robert Seilheimer; Camarin Rolle; Katherine Scangos; Daniel Barbosa; Casey H. Halpern*

11:56 am–12:01 pm

## **Induced Emotional State and Aperiodic Activity of the Amygdala**

*Haeorum Park; Carl Hacker; Hohyun Cho; Peter Brunner; Jon Timothy Willie*

# PROGRAM SCHEDULE

10:00 am–12:00 pm

GRAND HALL ABC

## Parallel Session 6

### The Evolution of Pain Surgery

**Moderators:** Ahmed Raslan, Jennifer Sweet

10:00–10:20 am

#### Advances in Peripheral Nerve Stimulation

Sridevi Sarma

10:20–10:40 am

#### Choosing the Right Spinal Neuromodulation Technology

Erika Petersen

10:40–11:00 am

#### Advances in Intraoperative Monitoring for Spinal Cord Stimulation

Michael Staudt

11:00–11:20 am

#### New Directions in Intracranial Ablation for Pain

Jeff Elias

11:20 am–12:00 pm

#### Open Papers

11:20–11:25 am

#### Artificial Intelligence Based Imaging Analysis of Pain and Non-Pain States

*Timur Latypov; Matthew So; Peter Shih Ping Hung; Matthew R. Walker; Sarasa Tohyama; Frank Rudzicz; Mojgan Hodaie*

11:26–11:31 am

#### First In-Human Deep Brain Stimulation of Subgenual Cingulate Cortex for Chronic Low Back Pain: 9-Month Outcomes of a Randomized Trial

*Michael Ward; Evangelia Tsolaki; Wenxin Wei; Meskerem Tolossa; Nader Pouratian; Ausaf A. Bari*

11:32–11:37 am

#### Mesolimbic Beta and Gamma Power Modulate Motor Output

*Leah Mann; Helen Qian; Natasha Hughes; Zixiang Zhao; Balbir Singh; Zhengyang Wang; Jenna Fulton; Dario J. Englot; Christos Constantinidis; Shawniqua Williams Roberson; Daniel Claassen; Sarah Bick*

# PROGRAM SCHEDULE

11:38–11:43 am

## **Responsive Neurostimulation for Post-Traumatic Stress Disorder: Interval Update**

*Evan Einstein; Mauricio Vallejo; Ralph Koek; Julia Schneiders; Jay Gill; Sonja Hiller; Anthony Jang; Jonny Baham; Matthias Stangl; Uros Topalovic; Martin Seeber; Vikram Rao; Michael Fanselow; Michelle Craske; Scott Krahl; James Chen; Merit Vick; Nicholas Hasulak; Nanthia Suthana; Jean-Philippe Langevin*

11:44–11:49 am

## **A Clinical Trial to Investigate Neuromodulation of the Insula for Chronic Neuropathic Pain**

*W. Jeffrey Elias; Shayan Moosa; Chang-Chia Liu; Patrick Finan; Mark Quigg*

11:50–11:55 am

## **Human Cervical Epidural Spinal Electrogram Topographically Maps Distinct Volitional Movements**

*Poojan Shukla; John Frederick Burke; Nikhita Kunwar; Kara Presbrey; Jannine Balakid; Maria Yaroshinsky; Kenneth Louie; Line G. Jacques; Prasad Shirvalkar; Doris D. Wang*

11:56 am–12:01 pm

## **A Week in the Life of the Human Brain: Stable States Punctuated by Chaotic Transitions**

*Maxwell Wang; Max G. Sell; James Castellano; R. Mark Richardson; Avniel Ghuman*

**12:00–1:15 pm**

**SUMMIT D**

### **Honored Guest Lunch**

**Moderators:** Dario J. Englot, Joseph Neimat

**Honorees:** Jerome Engel Jr., George Ojemann

**1:15–3:00 pm**

**GRAND HALL D**

### **Plenary Session 4**

#### **Advances in Neural Interfaces**

**Moderators:** Parag Patil, Nitin Tandon

1:15–1:35 pm

#### **BCI for Speech**

Edward Chang

1:35–1:55 pm

#### **Sensory BCI**

Timothy Lucas

# PROGRAM SCHEDULE

1:55–2:15 pm

## **Neural Devices and Ethical Implications**

Jennifer Blumenthal-Barby

2:15–2:45 pm

## **Ethics Roundtable Discussion**

All Faculty

**2:45–3:15 pm**

**GRAND HALL E**

## **Beverage Break with Exhibitors**

**3:15–5:15 pm**

**GRAND HALL FOYER**

## **Poster Session with Wine & Cheese**

**Moderators:** Tyler Ball, Ausaf Bari, Zelma HT Kiss, Ajmal Zemmar

**Sponsored by: NeuroPace, Inc.**



**5:00–6:00 pm**

**GRAND HALL D**

## **ASSFN Business Meeting**

**Presiding Officer:** André Machado

# PROGRAM SCHEDULE

**TUESDAY, JUNE 4, 2024**

**6:30 am–12:00 pm**

**GRAND HALL FOYER**

**Registration**

**7:00–7:55 am**

**GRAND HALL FOYER**

**Continental Breakfast**

**8:00–10:00 am**

**GRAND HALL D**

**Plenary Session 5**

**Unlocking the Brain**

**Moderators:** Jason Gerrard, R. Mark Richardson

8:00–8:05 am

**Introduction**

Michael Okun

8:05–8:35 am

**Noninvasive Brain Stimulation through Temporal Interference**

Ed Boyden

8:35–9:00 am

**Development and Future Directions of Focused Ultrasound**

Kullervo Hynynen

9:00–9:25 am

**Non-Invasive Neuromodulation**

Mike Fox

9:25–9:50 am

**Group Discussion**

All Faculty

9:50–10:00 am

**Awards Ceremony**

**8:30–10:30 am**

**GRAND HALL E**

**Exhibit Hall Open**



# PROGRAM SCHEDULE

10:00–10:30 am

GRAND HALL E

**Beverage Break with Exhibitors**

10:30 am–12:00 pm

GRAND HALL D

## **Parallel Session 7**

**Connectomic Functional Neurosurgery**

**Moderators:** Bornali Kundu, Cameron McIntyre

10:30–10:50 am

**Introduction and Modeling Methods**

Cameron McIntyre

10:50–11:10 am

**Applications in Parkinson's Disease**

Chengyuan Wu

11:10–11:30 am

**Applications in Psychiatric Disorders**

Nader Pouratian

11:30–11:50 am

**Applications in Epilepsy**

Vicky Morgan

11:50–12:00 pm

**Round Table Discussion**

10:30 am–12:00 pm

GRAND HALL ABC

## **Parallel Session 8**

**Bench to Bedside Advances**

**Moderators:** Clement Hamani, Suneil Kalia

10:30–10:50 am

**Molecular Therapies-Early Pipeline**

Lorraine Kalia

10:50–11:10 am

**Delivery of Molecular Therapeutics**

Nir Lipsman

# PROGRAM SCHEDULE

11:10–11:30 am

## **Stem Cells Translation Pipeline**

Vivian Tabar

11:30–11:50 am

## **Gene Transfer: Animal Models to Human Studies**

Michael Kaplitt

11:50 am–12:00 pm

## **Questions**



**MAY 30–JUNE 2, 2026**  
**HILTON CLEVELAND DOWNTOWN**

# **2026**

## **BIENNIAL MEETING**

### **CLEVELAND, OH**



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American Society for Stereotactic  
and Functional Neurosurgery



## GRAND HALL FOYER

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### **100 Preoperative Network Expression is Associated with Stimulation Mediated Antidepressant Effects After Deep Brain Stimulation to the Medial Forebrain Bundle**

*Prashin Unadkat; Chris Conner; An Vo; David Eidelberg; Albert Fenoy*

### **101 A Multifunctional Intracortical Brain Computer Interface in the Human Precentral Gyrus**

*Nicholas Au Yong; Samuel Nason-Tomaszewski; Anna Pritchard; Brandon Jacques; Yahia Ali; Mattia Rigotti; Eun Young Choi; Darrel Deo; Francis Willett; Nicholas Card; Jaimie M. Henderson; David M. Brandman; Sergey Stavisky; Leigh R. Hochberg; Chethan Pandarinath*

### **102 Stimulation Responsiveness to Ventral Capsule Ventral Striatum and Subgenual Cingulate Stimulation**

*Garrett P. Banks; Eleonora Bartoli; Joshua Adkinson; Isabel Danstrom; Anusha Allawalla; Denise Oswald; Nicole Provenza; Ben Shofty; Victoria Pirtle; Andrew Watrous; Raissa Mathura; Nader Pouratian; Sanjay Mathew; Wayne Goodman; Kelly R. Bijanki; Sameer A. Sheth*

### **103 Preoperative Tremor Severity and Operative Parameters Predict Imbalance in Patients Undergoing Focused Ultrasound**

*Rohan Jha; Melissa Ming Jie Chua; Aryan Wadhwa; John David Rolston*

### **104 Mapping Heterogeneous Hydraulic Parameters in White Matter for Convection Enhanced Delivery**

*Tom Lilieholm; Doug Dean III; Jayse M. Weaver; Andrew L. Alexander; Raghu Raghavan; Martin Brady; Walter F. Block*

### **105 Modeling the Epileptogenic Network Disconnection with Simulated Temporal Lobe Surgery**

*Elliot G. Neal; Samantha Joell Schimmel; Zeegan George; Adam Alayli; Gavin Lockard; Keaton Piper; Fernando L. Vale; Yarema Basil Bezchlibnyk*

### **106 Deep Brain Stimulation for Epilepsy: Sweetspot for ANT DBS Connectomic Underpinnings and Meta-Analysis of Outcomes**

*Artur Vetkas; Alexandre Boutet; Jurgen Germann; Can Sarica; Anton Fomenko; Mojgan Hodaie; Suneil Kumar Kalia; Taufik Valiante; Andres M. Lozano*

### **108 Translating the Transcriptome: A Connectomic Approach for Gene Network Decoding and Clinical Integration**

*Clemens Neudorfer; Bassam Al-Fatly; Barbara Hollunder; Ningfei Li; Garance Meyer; Konstantin Butenko; Matteo Vissani; Frederic Schaper; Ehsan Tadayon; Alan Bush; Pranav Nanda; Thomas Picht; Katharina Faust; Christine Klein; Jeremiah Scharf; Matthew State; Andrea Kühn; Christos Ganos; Michael Fox; R. Mark Richardson; Andreas Horn*

**109 Low-Frequency Power in The Ventral Capsule/Ventral Striatum and Orbitofrontal Cortex: A Neural Biomarker of Obsessive-Compulsive Symptom Severity**

*Nisha Giridharan; Nicole Provenza; Anthony Allam; Raphael Bechtold; Nabeel Diab; Sameer Vikram Rajesh; Sandy Reddy; Gabriel Reyes; Evan Dastin-van Rijn; Ajay Gandhi; Samad Hirani; Huy Dang; Garrett P. Banks; Michelle Avendano-Ortega; Sarah McKay; David Borton; Eric Storch; Jeffrey Herron; Wayne Goodman; Sameer A. Sheth*

**110 Neurons in the Lateral Prefrontal Cortex Encode Task Features During Virtual Navigation**

*Mohamad Abbass; Benjamin Corrigan; Renee Johnston; Roberto Gulli; Adam J. Sachs; Jonathan C. Lau; Julio Martinez-Trujillo*

**111 Single Neuron Representations of Sequential Task Structure Emerge Rapidly in Human Anterior Cingulate and Entorhinal Cortex**

*Habiba Azab; Mohamady El-Gaby; Shraddha Shah; Raissa Mathura; Eleonora Bartoli; Andrew Watrous; Adrish Anand; Joshua Adkinson; Thomas Donoghue; Sandra Perreira; Uros Topalovic; John Sakon; Zeb Kurth-Nelson; Elliot Smith; Nanthia Suthana; Itzhak Fried; Joshua Jacobs; Matt Botvinick; Timothy Behrens; Sameer A. Sheth*

**112 Offline Simulation of Adaptive Deep Brain Stimulation Algorithm Classification for Performance Characterization During Provocation of OCD Symptoms**

*Raphael Bechtold; Nicole Provenza; Sameer Vikram Rajesh; Nisha Giridharan; Ajay Gandhi; Gabriel Reyes; Anthony Kaspa Allam; Sandy Reddy; Eric Storch; Sameer A. Sheth; Wayne Goodman; Jeffrey Herron*

**113 Cortical/Subcortical Beta Dynamics and Grey Matter Thickness in Primary and Premotor Cortex: A Brodmann Area Approach in Parkinson's Disease**

*Amirreza Alijanpourotagsara; Koorosh Mirpour; Ahmed Shalaby; Krishna Kanth Chitta; Jeon Lee; Nader Pouratian*

**114 The Spatiotemporal Network Dynamics of Speech Production**

*Kathryn Snyder; Kiefer Forseth; Nitin Tandon*

**115 Defining a Possible Globus Pallidus Hot Spot for Image-Guided Programming of DBS in Parkinsons Disease**

*Jessica Ng; Sarah Wang; Jeff Solomon; Carrie Stegner; Mahsa Malekmohammadi; Merek Gourley; Jill L. Ostrem*

**116 Ethical Considerations of Deep Brain Stimulation for Treatment Refractory Schizophrenia: Surveying Stakeholders**

*Judith Gault; Elyn R. Saks; Stephanie Lehto; Nidal Moukaddam; Patrick W. Hosokawa; Paul Appelbaum; Wayne Goodman; Nicola Cascella; Akira Sawa; Sameer A. Sheth; Steven Ojemann; John Thompson; Daniel R. Kramer; Rachel Davis*

**117 Precisely Timed, On-Demand Intracranial Brain Stimulation Using the RNS System***Edward Bader; Alex Boro; Nathaniel Killian; Emad N. Eskandar***118 A Machine Learning Framework Using Brain Coordinates to Accurately Localize Surgical Targets***Alaa Taha; Greydon Gilmore; Mohamad Abbass; Violet Liu; Chris Zajner; Brendan Santyr; Abrar Ahmed; Ali Hadi; Sandy Wong; Ali Khan; Jonathan C. Lau***119 Beta-Band Power in the Human Amygdala During a Delayed Arm-Reaching Task***Shivani Sundaram; Arthur Shao; Roberto Martin del Campo-Vera; Jonathon Cavaleri; Selena Zhang; Miguel Parra; Ryan Chung; Adith Swarup; Alexandra Kammen; Christi Heck; Xenos Mason; Charles Y. Liu; Spencer Kellis; Brian Lee***120 Multiregional Human Single Neuron Dynamics During Intertemporal Choice***Jay Gill; Mahmoud Omidbeigi; Nanthia Suthana; Jonathan Kao; Ausaf A. Bari***121 A Posterior Approach for Combined Targeting of The Centromedian Nucleus and Pulvinar for Responsive Neurostimulation***Melissa Ming Jie Chua; Rohan Jha; Justin Campbell; Aaron Warren; Shervin Rahimpour; John Rolston***122 Differential Activity of Anterior and Posterior Entorhinal Cortex During Human Episodic Memory***Cody Wolfe; Bradley Lega***123 Extent of Ablation Negatively Correlates with Post Operative Apathy in LITT Anterior Capsulotomy for OCD***Daniel Biro; Maureen Lacy; Hannah Hagy; Peter C. Warnke***124 Neuronal Firing Characteristics of the Centromedian Nucleus to Guide Deep Brain Stimulation Targeting for Epilepsy***Megan Ryan; David Isaac Satzer; Steven Ojemann; John Thompson; Daniel R. Kramer***125 Classification of Consciousness-Impairing Seizures with Intracranial Recordings Using Deep Learning***Derek Doss; Rohan Rashingkar; Graham Walter Johnson; Caen Bibro; Jared Shless; Danika Lea Paulo; Shawniqua Williams Roberson; Kevin Haas; Sarah Bick; Catie Chang; Vicky Morgan; Dario J. Englot***126 Epilepsy and Tornadoes: Neuromodulating the Pre-Ictal Funnel Cloud***Graham Walter Johnson; Derek Doss; Ghassan Makhoul; Leon Cai; Caen Bibro; Addison Cavender; Danika Lea Paulo; Baxter Rogers; Shilpa Reddy; Robert Partlow Naftel; Benoit Dawant; Catie Chang; Mark Wallace; Shawniqua Williams Roberson; Vicky Morgan; Sarah Bick; Dario J. Englot*

**127 Cingulum Bundle Electrographic Connectivity to the Affective Network Varies with Paracingulate Sulcal Morphology**

*Isabel Danstrom; Joshua Adkinson; Meghan Robinson; Lu Lin; Atul Maheshwari; Ben Shofty; Garrett P. Banks; Mohammed Ahmed Hasen; Sameer A. Sheth; Sarah Heilbronner; Alica Goldman; Kelly R. Bijanki*

**128 Frailty and Outcomes after Unilateral MRgFUS Thalamotomy for Tremor**

*Nathan Pertsch; Kazuki Sakakura; Dustin Kim; Julia Mueller; Jacob Mazza; Daniel Wolfson; Ryan Matthew Kelly; John Pearce; Shama Patel; Sepehr Sani*

**129 Spatial Localization of High-Frequency Oscillations in the Subthalamic Nucleus in Parkinson's Disease**

*Alan Bush; Matteo Vissani; Todd Herrington; R. Mark Richardson*

**130 Acute Theta-Burst Deep Brain Stimulation in Parkinsons Disease Demonstrates Cognitive and Motor Improvements**

*Kevin Wu; Jonathan Cavaleri; Wooseong Choi; Kaevon Brasfield; Melanie Cohn; Melissa L. Wilson; Kay B. Jann; Robert G. Briggs; Charles Y. Liu; Brian Lee; Xenos Mason; Darrin J. Lee*

**131 Brain State Limits Propagation of Neural Signals in Laminar Cortical Circuits**

*Natasha Kharas; Samantha Debes; Ariana Andrej; Valentin Dragoi*

**132 Characterizing Differential Tremor Sweetspots and Side Effect Sourspots Following Thalamic High-Intensity Focused Ultrasound through Probabilistic Lesion Mapping**

*Min Jae Kim; Liming Qiu; Gustavo Campos; Maya Alexis; Daniel Barbosa; Iahn Cajigas; Casey H. Halpern*

**133 Electrokinetic Convection Enhanced Delivery of Molecules to the Brain from Cortical Surface Hydrogel Reservoir**

*Jesus Cruz-Garza; Lokeshwar Sai Santosh Bhenderu; Khaled Taghlabi; Jaime Guerrero; Amir H. Faraji*

**135 Insula Risk-taking Signal is Positively Associated with Orbitofrontal Cortex Reward Prediction Error**

*Natasha Hughes; Helen Qian; Zixiang Zhao; Michael Zargari; Balbir Singh; Zhengyang Wang; Jenna Fulton; Christos Constantinidis; Shawniqua Williams Roberson; Sarah Bick; Dario J. Englot*

**136 Is the Ansa Lenticularis the Globus Pallidus Internas Secret Weapon Against Dyskinesias?**

*Shawn D'Souza; Vikram Seshadri; Jamie Toms; Pierre D'Haese; Benoit Dawant; Rui Li; Paul Koch; Paul S. Larson; Kathryn L. Holloway*

**138 Relationship Between Accumulated Thermal Dose and Early Tremor Improvement with MRgFUS**

*Tarannum Rahnema; Samuel Pichardo; G. Bruce Pike; Davide Martino; Camila Aquino; Marisol Ardila; Zelma HT Kiss; Fady Girgis*

**139 Thalamic Network Mapping in Patients with Multifocal Epilepsy Treated with RNS: Towards Network-Guided RNS Electrode Placement**

*Josue Moises Avecillas-Chasin; Varun Subramaniam; Ogechukwu Ariwodo; Andy Ho Wing Chan; Lara Marcuse; Madeline Fields; Maite La Vega-Talbott; Saadi Ghatan; Fedor Panov*

**140 Aperiodic Neural Activity is a Biomarker for Depression Severity**

*Carl Hacker; Kelly R. Bijanki; Sameer A. Sheth; Madaline Mocchi*

**142 Action of Glucagon-like Peptide-1 (GLP-1)/Gastric Inhibitory Polypeptide (GIP)-Receptor Dual-Agonism on Food Preoccupations Involves Low Frequency Oscillations Within the Human Nucleus Accumbens**

*Wonkyung Choi; Younghoon Nho; William Wilent; Nida Firdous; Andrew Chang; Gustavo Campos; David Bakalov; Liming Qiu; Robert Seilheimer; Isaac Jonathan; Jonathan Pomeranec; Marie Kerr; Disha S. Joshi; Anastassia Amaro; Matthew Hayes; Iahn Cajigas; Bijan Pesaran; Kelly Allison; Joshua Gold; Thomas Wadden; Casey H. Halpern*

**143 Connectomic Predictors of Outcome in Centromedian RNS and DBS for Generalized Epilepsy**

*Pranav Nanda; Gabriel Gonzalez-Escamilla; Aaron Warren; Clemens Neudorfer; Zachary Kons; Nathaniel D. Sisterson; Andreas Horn; R. Mark Richardson*

**144 Direct Motor Point Functional Electrical Stimulation for Improved Dexterity in Hand Movement**

*Ayobami Ward; Matthew Mender; Madison Kelberman; Jordan Lam; Nishant Ganesh Kumar; Yamaan S. Saadeh; Theodore Kung; Parag G. Patil; Cynthia Chestek*

**145 Evaluating fMRI Correlates of EEG-vigilance in Temporal Lobe Epilepsy**

*Sarah E. Goodale; Jeffery M. Harding; Haatef Pourmotabbed; Kimberly Rogge-Obando; Shiyu Wang; Caroline Martin; Caen Bibro; Vicky Morgan; Dario J. Englot; Catie Chang*

**146 Automated Preoperative Volumetric Analysis as an Independent Predictor of Seizure Irritative Zone**

*Dorian Kusyk; Christian Sanfilippo; Nicholar Blaney; Jenna Li; Timothy Quezada; Tyson Tragon; Alexander Whiting*

**147 Canonical Wnt Activator Chir99021 Prevents Epileptogenesis in the Intrahippocampal Kainate Mouse Model of Temporal Lobe Epilepsy**

*Muriel Mardones; Kevin Rostam; Margaret Nickerson; Kunal Gupta*

**148 DBS for Neuropathic Facial Pain Engages Multiple Tracts Implicated in Depression**

*Evangelia Tsolaki; Grace Eckroate; Wenxin Wei; Meskerem Tolossa; Stephano Chang; Ausaf A. Bari*

## **149 Deep Brain Stimulation of the Ventral Capsule and Ventral Striatum Drives Approach Behavior and High Beta Power in Ventrolateral Prefrontal Cortex**

Sameer Vikram Rajesh; Nicole Provenza; Gabriel Reyes; Kalman Katlowitz; Raphael Bechtold; Nabeel Diab; Sandesh Reddy; Anthony Allam; Ajay Gandhi; Samad Hirani; Nisha Giridharan; Garrett P. Banks; Mohammed Hasen; Ben Shofty; Benjamin Hayden; Jeffrey Cohn; Eric Storch; Jeffrey Herron; Mary Phillips; Wayne Goodman; Sameer A. Sheth

## **150 Hippocampal Interictal Epileptiform Discharges May Disrupt Working Memory**

Angelique Tay; Jonathan Daume; Chrystal Reed; Ueli Rutishauser; Adam N. Mamelak

## **151 Mapping the Subcortical Connectome in Parkinson's Disease Patients Undergoing Deep Brain Stimulation**

Alaa Taha; Jason Kai; Brendan Santyr; Mohamad Abbass; Greydon Gilmore; Bradley Karat; Arun Thurairajah; Ali Khan; Jonathan C. Lau

## **152 Response Inhibition is Associated with High Beta Oscillatory Power Increase in the Ventral Intermediate Nucleus of the Thalamus in Essential Tremor Patients**

Helen Qian; Leah Mann; Zixiang Zhao; Danika Lea Paulo; Daniel Claassen; Sarah Bick

## **153 Subcellular-Scale Carbon Fiber Electrodes for Single-Unit Recording in Cortex and Peripheral Nerve**

Jordan Lam; Joseph Letner; Julianna Richie; Paras Patel; Miranda Copenhaver; Abhilasha Kamboj; Jamie Phillips; Cynthia Chestek

## **154 Transcutaneous Afferent Patterned Stimulation Triggers Theta-Delta-Alpha Enhancement and Low Gamma Deterioration in the Thalamus of Essential Tremor Patients**

Cuong Luu; Youngwon Youn; Jennifer Perrault; Aaron J. Suminski; Wendell Bradley Lake

## **155 Vibrotactile Auricular Vagus Nerve Stimulation Increases Low Frequency Coherence in Intracranial EEG**

Kara Donovan; Joshua Adams; Ki Yun Park; Phillip Demarest; Gansheng Tan; Jon Timothy Willie; Jenna Gorlewicz; Peter Brunner; Eric C. Leuthardt

## **156 Comparison of Dentato-Rubro-Thalamic Tractography Methods Based on the Anatomy of the Rubral Wing**

Assaf Berger; Jongchul Chung; Zane Schnurman; Valentin Stepanov; Ling Pan; Timothy Shepherd; Alon Mogilner

## **157 Low-Intensity Focused Ultrasound of the Subthalamic Nucleus May Alter Cognitive and Motor Behaviour: Preliminary Results**

Terra Fairbanks; Hrishikesh Raghuram; Alan Coreas; Milad Naghizadeh; Shirshak Shrestha; Siyun Li; Julia Kam; G. Bruce Pike; Samuel Pichardo; Fady Girgis

**158 Imaging of Pain States and Clinical Correlates in Chronic Low-back Pain Patients Implanted with Thoracic Spinal Cord Stimulation**

Arjun Balaji Ashok; Yazan Shamli Oghli; Steven R. Glener; Isaiah Ailes; Mashaal Syed; KiChang Kang; Sara Naghizadehkashani; Islam Fayed; Feroze Mohamed; Laura Krisa; Chengyuan Wu; Caio M. Matias; Mahdi Alizadeh

**159 Phase-Amplitude Coupling as A Predictor for Optimal DBS Contact in Movement Disorders**

Ilknur Telkes; Shelby Sabourin; Tessa Harland; Julie G. Pilitsis

**160 The Globalregionaland National Macroeconomic Consequences of Idiopathic Epilepsy**

Jakob Gerstl; Emma Pair; Matilde Pittarello; Alexander Yearley; Philipp Lassarén; Joshua D. Bernstock; Christopher Sungwoon Hong; Timothy R. Smith; Melissa Ming Jie Chua

**161 Real-World Outcomes Using DBS Systems with Directionality and Multiple Independent Current Control: USA Experience**

Michael S. Okun; Kelly D. Foote; Theresa Zesiewicz; Yarema Basil Bezchlibnyk; Alexander Mark Papanastassiou; Juan Ramirez-Castaneda; Jonathan Dennis Carlson; Jason Aldred; Vibhor Krishna; Corneliu Luca; Jonathan R. Jagid; Jennifer Durphy; Leo Verhagen-Metman; Sepehr Sani; Steven Ojemann; Drew Kern; David Weintraub; Ritesh Rahani; Abdolreza Siadati; Bharathy Sundaram; Cong Zhao; Derek Martinez; Mustafa Siddiqui; Stephen B. Tatter; Lilly Chen; Edward Goldberg

**162 Contribution of Gait and Freezing of Gait in Visual System in Patients with Parkinson's Disease: An fMRI study**

Emad Alomari; Yazan Shamli Oghli; Kylee Shivok; Abdulaziz Alhussein; Mashaal Syed; Islam Fayed; Robert Sergott; Caio M. Matias; Kevin Hines; Chengyuan Wu; Tsao-Wei Liang; Mahdi Alizadeh

**163 Adoption and Accessibility of Laser Interstitial Thermal Therapy (LITT) in the United States: A Nationwide Inpatient Sample Analysis**

Can Sarica; Brian Melchiorson; Andrew Yang; Brendan Santyr; Artur Vetkas; Nardin Samuel; Ghazaleh Darmani; Cletus Cheyuo; Oliver Flouty; Ajmal Zemmar; Mojgan Hodaie; Suneil Kumar Kalia; Andres M. Lozano

**164 Local Field Potential Characteristics from Directional and Omnidirectional Leads in Parkinsons Disease: Analysis of Patients Receiving Adaptive Deep Brain Stimulation**

Travis Hassell; Todd Herrington; Martijn Beudel; Jill L. Ostrem; Simon Little; Leonardo Almeida; Adolfo Ramirez-Zamora; Alfonso Fasano; Kyle Mitchell; Elena Moro; Michal Gostkowski; Nagaraja Sarangmat; Scott Stanslaski; Lisa Tonder; Ye Tan; Tim Goble; Nathan Morelli; Robert Raike; Helen Bronte-Stewart

**165 Non-Invasive Electrophysiological Recording and Modulation of the Human Olfactory Bulb: Preliminary Findings to Advance New Perspectives for Investigating the Limbic System**

*Mahmoud Omidbeigi; Andrew Sheriff; Greg Lane; Guangyu Zhou; Bruce Tan; Christina Zelano*

**166 A Pneumatically-actuated Robot for MRI-guided Stereotactic Neurosurgical Procedures**

*Gang Li; Atharva Paralikar; Ayush Nankani; Pavel Yarmolenko; Chima Oluigbo; Kevin Cleary; Reza Monfaredi*

**167 Aperiodic Activity as a Biomarker of Seizures and Neuromodulation**

*David Isaac Satzer; Lesley Kaye; Steven Ojemann; Daniel R. Kramer; John Thompson*

**169 Guided Mindfulness Meditation Increases Interictal Discharges in Patients Undergoing Invasive EEG monitoring**

*Dorian Kusyk; Vyas Praveer; Timothy Quezada; Alexander Whiting*

**170 Personalized Evocation of Cue-hyperreactivity May Optimize Deep Brain Stimulation for Opiate Use Disorder**

*Liming Qiu; Younghoon Nho; Robert Seilheimer; Altona Tufanoglu; Neda Kaboodvand; William Wilent; David Oslin; Katherine Scangos; Anna-Rose Childress; Casey H. Halpern*

**171 Phantom Testing of Induced-Current in DBS during MRI Acquisition at 3T**

*Stephen Slovensky; Meltem Izzetoglu; Islam Fayed; Feroze Mohamed; Mahdi Alizadeh; Chengyuan Wu*

**172 Digital Phenotyping of Patients Undergoing Focused Ultrasound Thalamotomy for Essential Tremor**

*Jakob Gerstl; Gustaf von Grothusen; David J. Segar; Philip Mattisson; Joshua D. Bernstock; Melissa Ming Jie Chua; Sarah Christie; Hassan Y. Dawood; Patrick Emedom-Nnai; Jukka-Pekka Onnela; Timothy R. Smith; John David Rolston; G. Rees "Rees" Cosgrove*

**173 Direct Electrical Stimulation of the Basolateral Amygdala Modulates Oscillatory Dynamics in the Hippocampus**

*Justin Michael Campbell; Krista Wahlstrom; Martina Hollearn; Tyler Davis; Amir Arain; James Swift; Peter Brunner; Ben Shofty; Shervin Rahimpour; John Rolston; Jon Timothy Willie; Cory Inman*

**174 Thalamic Responsive Neurostimulation Charge Density and Seizure Type Correlate with Seizure Reduction and Time to Response**

*Nathaniel D. Sisterson; Pranav Nanda; Ashley Walton; Zachary Kons; Catherine Chu; Syd Cash; Lidia Moura; Joel Oster; Alexandra Urban; R. Mark Richardson*

**175 Asleep Deep Brain Stimulation for Essential Tremor**

*Tessa Harland; Jared Brougham; Matthew Hefner; Jessica Wilden*



**176 Comprehensive Map of Subthalamic Pathway Activation as a Function of DBS Parameter Settings and Stimulation Location**

Anneke Frankemolle-Gilbert; Angela Noecker; Tjitske Heida; Cameron C. McIntyre

**177 Impaired Functional Connectivity of Subcortical Arousal Centers in Wake and Sleep: Identifying Therapeutic Targets for Neuromodulation in Epilepsy**

Haatef Pourmotabbed; Caroline Martin; Sarah E. Goodale; Derek Doss; Shiyu Wang; Vicky Morgan; Catie Chang; Dario J. Englot

**178 Investigating Scalp EEG and Subthalamic Nucleus LFP Cross Correlation Based on Sleep Stage Classification**

John Thompson; Lisa Hirt; Younghoon Nho; Kristen Park; Michael Summers; Clete Kushida; Leslie West; Stephen Gliske; Casey H. Halpern; Aviva Abosch

**179 Investigation of Gustatory Pathways Using Probabilistic Tractography: Implications for MR-guided Focused Ultrasound**

Kazuki Sakakura; Alireza Borghei; Nicholas Rubert; Nathan J. Pertsch; Sepehr Sani

**180 MR Guided Focused Ultrasound using VIM and VOP/A Dual-lesions for the Treatment of Tremor Dominant Parkinsons Disease: Outcomes in Six Treated Cases**

Nathan Pertsch; Kazuki Sakakura; Julia Mueller; Dustin Kim; John Pearce; Jacob Mazza; Shama Patel; Sepehr Sani

**181 Neural Signatures and Neuromodulation in a Subject Experiencing Inhibition Control Deficits Following Temporal Resection**

Layth Mattar; Shraddha Shah; Joshua Adkinson; Raissa Mathura; Andrew Watrous; Yue Zhang; Kelly R. Bijanki; Sarah Heilbronner; Sameer A. Sheth; Garrett P. Banks; Eleonora Bartoli

**182 Pharmacokinetics of ACH in Cortex After DBS Suggest that Diffusion Rather Than Cholinesterase Activity is the Rate Limiting Step in Clearance**

Fernando L. Vale; Khadijah Shanazz; Tucker Oliver; Jamal Bogan; Philip O'Herron; Kun Xie; David Blake

**183 Pupil Diameter as a Non-invasive Readout of Disrupted Salience Dynamics in the Depressed Human Brain**

Madaline Mocchi; Eleonora Bartoli; John F. Magnotti; Jan Willem DeGee; Brian Metzger; Bailey Pascuzzi; Raissa Mathura; Jeffrey Yau; Wayne Goodman; Sameer A. Sheth; Matthew McGinley; Kelly R. Bijanki

**184 Role of Frontotemporal Networks in Anxiety and Depression During the Performance of a Cognitive Control Task**

Aniruddha Shekara; Alexander Ross; Angeliq Paulk; Alik Widge; Sydney Cash; Paula Shear; John Paul Sheehy; Ishita Basu

**185 Subthalamic Nucleus Response in Parkinsons Disease Between Movement Initiation and Cue After Holding During a Center-Out-Task**

*Jonathan Platt; Rex Tien; Madelyn Mendlen; John Thompson; Daniel R. Kramer*

**186 Successful Magnetic Resonance-Guided Focused Ultrasound Treatment of Tremor in Patients with a Skull Density Ratio of 0.4 or Less**

*Artur Vetkas; Alexandre Boutet; Can Sarica; Jurgen Germann; Brendan Santyr; Suneil Kumar Kalia; Andres M. Lozano*

**187 The Impact of Registration Accuracy on Estimates of Deep Brain Stimulation Electrode Position in Stereotactic Space**

*Mohamad Abbass; Greydon Gilmore; Brendan Santyr; Alan Chalil; Alaa Taha; Mandar Jog; Keith MacDougall; Andrew Parrent; Terry M. Peters; Jonathan C. Lau*

**188 What's in a Name?: A Volumetric Analysis of Hemispherectomy Technique Choice on the Development of Hydrocephalus**

*Akshay Sharma; Fawaz Alotaibi; Demitre Serletis; William E. Bingaman; Richard Rammo*

**189 Selective Peripheral Denervation for Cervical Dystonia: A 40-Year Comparative Analysis at Mayo Clinic**

*Damiano Giuseppe Barone; Kirsten Hayford; Robert J. Spinner*

**190 Analysis of Price Transparency for Deep Brain Stimulation in the United States**

*Anthony Bishay; Stefan Wolfgang Koester; Campbell Liles; Austin Triana; Robert J. Dambrino; Danika Lea Paulo; Michael Feldman; Tyler Joseph Ball; Sarah Bick; Lola Blackwell Chambless; Dario J. Englot*

**191 Stereotactic Frame-based Targeting of the Posterior Fossa: A Systematic Workflow**

*Anton Fomenko; Artur Vetkas; Benjamin Davidson; Newton Cho; Suneil Kumar Kalia*

**192 Temporal Lobe Epilepsy Patients Demonstrate Global Neocortical Decreases in Functional Connectivity to Nucleus Basalis**

*Addison Cavender; Ghassan Makhoul; Caen Bibro; Derek Doss; Sarah Goodale; Hernan FJ Gonzalez; Danika Lea Paulo; Sarah Bick; Catie Chang; Graham Walter Johnson; Vicky Morgan; Dario J. Englot*

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*Jan Hachmann; Kathryn Holloway; Paul Koch*

## Accreditation



This activity has been planned and implemented in accordance with the accreditation requirements and policies of the Accreditation Council for Continuing Medical Education (ACCME) through the joint providership of the Congress of Neurological Surgeons and the American Society for Stereotactic and Functional Neurosurgery. The Congress of Neurological Surgeons is accredited by the ACCME to provide continuing medical education for physicians.

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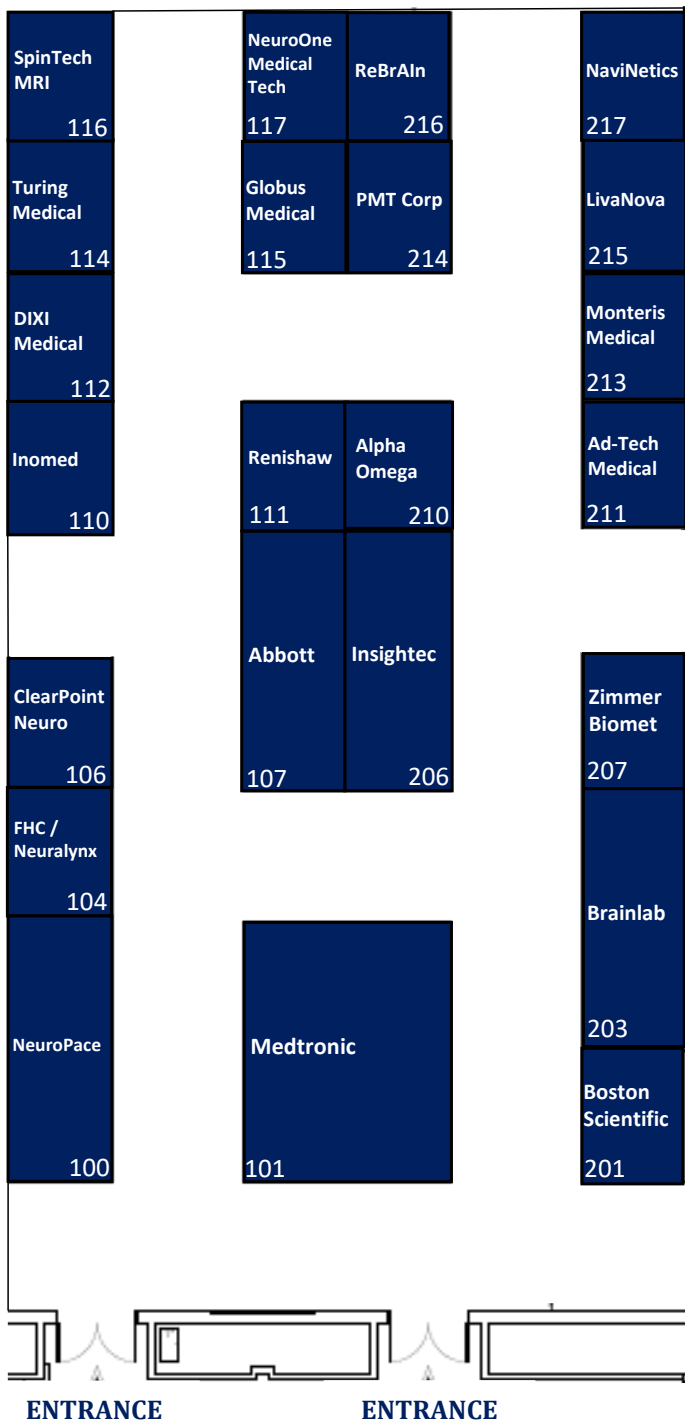


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## EXHIBIT HALL

**Sunday, June 2**

**Monday, June 3**

**Tuesday, June 4**

## GRAND HALL E

9:30 am-4:30 pm

8:30 am-5:30 pm

8:30-10:30 am

## REGISTRATION

**Saturday, June 1**

**Sunday, June 2**

**Monday, June 3**

**Tuesday, June 4**

## GRAND HALL FOYER

8:00 am-4:00 pm

6:30 am-6:00 pm

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6:30 am-12:00 pm

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## Opening Reception Grand Hall Terrace

**Sunday, June 2 — 6:00-8:00 pm**

Enjoy a delicious array of food and refreshments while reconnecting with colleagues and new contacts with exhibiting companies at the Opening Reception. Each medical attendee registered for the meeting will receive one complimentary ticket.

## Poster Session with Wine and Cheese Grand Hall Foyer

**Monday, June 3 — 3:15-5:15 pm**

Enjoy a pre-dinner glass of wine during this uninterrupted time dedicated to viewing the scientific posters and take advantage of this opportunity to interact with the poster authors.

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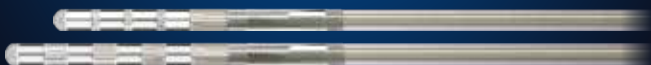
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