2024 BIENNIAL MEETING
Nashville, TN • June 1-4, 2024

Forging Connections and Collaborations in Functional Neurosurgery and Beyond
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.
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.

Jointly provided by the Congress of Neurological Surgeons and the American Society for Stereotactic and Functional Neurosurgery.
WELCOME TO THE 2024 ASSFN BIENNIAL MEETING IN NASHVILLE!


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  
University of Louisville  
Louisville, Kentucky

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

Ellen L. Air  
Scientific Program Committee  
Henry Ford Hospital  
Detroit, Michigan

Rushna Ali  
Scientific Program Committee  
Mayo Clinic  
Rochester, Minnesota

Nicole Bentley  
Scientific Program Committee  
University of Alabama at Birmingham  
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University of Pennsylvania  
Philadelphia, Pennsylvania

Jason Gerrard  
Scientific Program Committee  
University of Tennessee  
Memphis, Tennessee
MEETING DIRECTORS

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Toronto, Canada

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Case Medical Center
Cleveland, Ohio

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Scientific Program Committee
University of Florida
Gainesville, Florida

Julie G. Pilitsis
Scientific Program Committee
University of Arizona
Banner Health
Tucson, Arizona

Nathan C. Rowland
Scientific Program Committee
Medical University of South Carolina
Charleston, South Carolina

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 Saddlington 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.
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 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 Javitts 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
Go beyond clinic walls and extend movement disorder patient care, with first-of-its-kind remote neurostimulation programming in the U.S. and secure in-app video chat directly from Abbott’s Clinician Programmer.


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Brief Summary: Prior to using Abbott devices, please review the Instructions for Use for a complete listing of indications, contraindications, warnings, precautions, potential adverse events and directions for use.

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<thead>
<tr>
<th>Name</th>
<th>Institution</th>
<th>City, State</th>
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<tbody>
<tr>
<td>Taylor Abel</td>
<td>University of Pittsburgh Medical Center</td>
<td>Pittsburgh, PA</td>
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<td>Ellen Air</td>
<td>Henry Ford Hospital</td>
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<td>Rushna Ali</td>
<td>Mayo Clinic</td>
<td>Rochester, MN</td>
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<td>Elsa Arocho-Quinones</td>
<td>Medical College of Wisconsin</td>
<td>Milwaukee, WI</td>
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<td>Wael Asaad</td>
<td>Brown University</td>
<td>Westwood, MA</td>
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<td>Tyler Ball</td>
<td>Vanderbilt University</td>
<td>Nashville, TN</td>
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<td>Ausaf Bari</td>
<td>UCLA</td>
<td>Los Angeles, CA</td>
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<td>Kara Beasley</td>
<td>Boulder Neurosurgical Associates</td>
<td>Boulder, CO</td>
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<td>Sharona Ben-Haim</td>
<td>University of California San Diego</td>
<td>Cardiff-by-the-Sea, CA</td>
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<td>University of Alabama at Birmingham</td>
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<td>Sarah Bick</td>
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<td>Kelly Bijanki</td>
<td>Baylor College of Medicine</td>
<td>Houston, TX</td>
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<td>Hal Blumenfeld</td>
<td>Yale University</td>
<td>New Haven, CT</td>
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<td>Jennifer Blumenthal-Barby</td>
<td>Baylor College of Medicine</td>
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<td>Ed Boyden</td>
<td>Massachusetts Institute of Technology</td>
<td>Cambridge, MA</td>
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<td>David Burdette</td>
<td>Spectrum Health</td>
<td>Grand Rapids, MA</td>
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<td>György Buzsáki</td>
<td>NYU Langone</td>
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<td>Vanderbilt University</td>
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<td>Edward Chang</td>
<td>University of California, San Francisco</td>
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<td>Erin Conrad</td>
<td>University of Pennsylvania</td>
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<td>Christos Constantinidis</td>
<td>Vanderbilt University</td>
<td>Nashville, TN</td>
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<td>G. Rees Cosgrove</td>
<td>Brigham and Women’s Hospital, Harvard Medical School</td>
<td>Boston, MA</td>
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<tr>
<td>Arthur Cukiert</td>
<td>Sao Paulo Epilepsy Clinic</td>
<td>Sao Paulo, Brazil</td>
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<tr>
<td>Ashley Dalrymple</td>
<td>University of Utah</td>
<td>Salt Lake City, UT</td>
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<td>Eyiyemisi Damisah</td>
<td>Yale School of Medicine</td>
<td>New Haven, CT</td>
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<td>Shabbar Danish</td>
<td>Rutgers Robert Wood Johnson Medical School</td>
<td>Neptune, NJ</td>
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<td>David Darrow</td>
<td>University of Minnesota</td>
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<td>Pierre D’Haese</td>
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<td>Darin Dougherty</td>
<td>Massachusetts General Hospital</td>
<td>Charlestown, MA</td>
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<td>W. Jeffrey Elias</td>
<td>University of Virginia</td>
<td>Charlottesville, VA</td>
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<td>Jerome Engel, Jr.</td>
<td>University of California, Los Angeles</td>
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<td>Dario J. Englot</td>
<td>Vanderbilt University</td>
<td>Nashville, TN</td>
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<tr>
<td>Kelly Foote</td>
<td>University of Florida College of Medicine and McKnight Brain Institute</td>
<td>Gainesville, FL</td>
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<tr>
<td>Michael Fox</td>
<td>Berenson-Allen Center for Non Invasive Brain Stimulation, Beth Israel Deaconess Medical Center, Harvard Medical School</td>
<td>Boston, MA</td>
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<td>Jason Gerrard</td>
<td>University of Tennessee</td>
<td>Memphis, TN</td>
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<td>Shawn Glinter</td>
<td>Pendant Biosciences, Inc.</td>
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<td>Jorge González-Martínez</td>
<td>University of Pittsburgh</td>
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<td>Robert Gross</td>
<td>Rutgers</td>
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<td>Ayse Gunduz</td>
<td>University of Florida</td>
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<td>Kunal Gupta</td>
<td>Indiana University</td>
<td>Indianapolis, IN</td>
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<td>Ryder Gwinn</td>
<td>Eastside Neuroscience Institute</td>
<td>Seattle, WA</td>
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<td>Mallory Hacker</td>
<td>Vanderbilt University</td>
<td>Nashville, TN</td>
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<td>Casey Halpern</td>
<td>University of Pennsylvania</td>
<td>Philadelphia, PA</td>
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<td>Clement Hamani</td>
<td>University of Toronto</td>
<td>Toronto, ON Canada</td>
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<td>Travis Hassell</td>
<td>Vanderbilt University</td>
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<td>Leigh Hochberg</td>
<td>Massachusetts General Hospital</td>
<td>Brookline, MA</td>
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<td>Kathryn Holloway</td>
<td>VCU Health System</td>
<td>Richmond, VA</td>
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<td>Kara Johnson</td>
<td>University of Florida</td>
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<td>Lora Kahn</td>
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<td>Duke University Medical Center</td>
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<td>Darrin Lee</td>
<td>Keck School of Medicine of USC</td>
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<td>Jonathan Miller</td>
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<td>Kai Miller</td>
<td>Mayo Clinic, Minnesota</td>
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<td>Lee Thomas Miller</td>
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<tr>
<td>Alon Mogilner</td>
<td>NYU Grossman School of Medicine</td>
<td>New York, NY</td>
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<tr>
<td>Vicky Morgan</td>
<td>Vanderbilt University</td>
<td>Nashville, TN</td>
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</tbody>
</table>
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
Go beyond clinic walls and extend movement disorder patient care, with first-of-its-kind remote neurostimulation programming in the U.S.¹ and secure in-app video chat directly from Abbott’s Clinician Programmer.

SATURDAY, JUNE 1, 2024

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**
Eyiymisi 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
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
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
SUNDAY, JUNE 2, 2024

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
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!
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 Holleman; Justin Michael Campbell; Lensky Augustin; Dawn Eliashiv; Vikram Rao; Itzhak Fried; Nicholas Hasulak; Sonja Hiller; Nanthia Suthana
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
11:20–11:25 am
Modeling Aberrant Hemodynamic Autoregulation and Infraslow 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 Horn; 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 Heilbroner; 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
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 Rodríguez; 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
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
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 Gummadavelli; 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
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; Daniika 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 Parkinson’s 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 Borghei; Arthur Nascimento; Faical Isbaine; Robert E. Gross; Matthew Gombolay; Svjetlana Miocinovic
5:29-5:34 pm
Reduction of Alpha Synuclein Oligomers in Preclinical Models of Parkinson’s 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 McDonnold; 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 Parkinson’s 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!
MONDAY, JUNE 3, 2024

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
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<tr>
<th>Time</th>
<th>Event</th>
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<tbody>
<tr>
<td>8:50–9:10 am</td>
<td>Neuromodulation for Restoration of Consciousness</td>
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<td>Hal Blumenfeld</td>
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<td>9:10–9:30 am</td>
<td>Roundtable Discussion</td>
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<td>9:30–10:00 am</td>
<td>GRAND HALL E</td>
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<td>Beverage Break with Exhibitors</td>
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<td>10:00 am–12:00 pm</td>
<td>GRAND HALL D</td>
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<tr>
<td>10:00–10:20 am</td>
<td>The Evolution of Psychiatric Neuromodulation</td>
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<td><strong>Moderators:</strong> Sarah Bick, Nader Pouratian</td>
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<td>Physiological Biomarkers in Psychiatric Neurosurgery</td>
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<td>Kelly Bijanki, Sameer Sheth</td>
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<td>10:20–10:40 am</td>
<td>Clinical Trials in DBS for Depression: State of the Field</td>
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<td>Helen Mayberg</td>
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<td>10:40–11:00 am</td>
<td>Addiction as a Novel Indication for DBS</td>
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<td>Ali Rezai</td>
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<td>11:00–11:20 am</td>
<td>Interdisciplinary Engagement in Psychiatric Neurosurgery</td>
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<td>Darin Dougherty</td>
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<td>11:20 am–12:00 pm</td>
<td>Open Papers</td>
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<td>11:20–11:25 am</td>
<td>Structural, Connectivity, and Metabolic Changes Following Magnetic Resonance Guided Focused Ultrasound Capsulotomy</td>
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<td>Benjamin Andrew Davidson; Lyndon Boone; Karim Mithani; Clement Hamani; Peter Giacobbe; Sean Nestor; Ying Meng; Jennifer Rabin; Maged Goubran; Nir Lipsman</td>
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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
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
11:38–11:43 am  
**Responsive Neurostimulation for Post-Traumatic Stress Disorder: Interval Update**  
Evan Einstein; Mauricio Vallejo; Ralph Koek; Julia Schneider; 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
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<th>Time</th>
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<tr>
<td>1:55–2:15 pm</td>
<td><strong>Neural Devices and Ethical Implications</strong>&lt;br&gt;Jennifer Blumenthal-Barby</td>
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<td>2:15–2:45 pm</td>
<td><strong>Ethics Roundtable Discussion</strong>&lt;br&gt;All Faculty</td>
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<td>2:45–3:15 pm</td>
<td><strong>Beverage Break with Exhibitors</strong></td>
<td>GRAND HALL E</td>
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<td>3:15–5:15 pm</td>
<td><strong>Poster Session with Wine &amp; Cheese</strong>&lt;br&gt;<strong>Moderators:</strong> Tyler Ball, Ausaf Bari, Zelma HT Kiss, Ajmal Zemmar&lt;br&gt;<strong>Sponsored by:</strong> NeuroPace, Inc.</td>
<td>GRAND HALL FOYER</td>
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<tr>
<td>5:00–6:00 pm</td>
<td><strong>ASSFN Business Meeting</strong>&lt;br&gt;<strong>Presiding Officer:</strong> André Machado</td>
<td>GRAND HALL D</td>
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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

Claim CME
## 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

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**Parallel Session 8**  
**Bench to Bedside Advances**  
**Moderators:** Clement Hamani, Suneil Kalia

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Percept™ family with BrainSense™ technology delivers personalized, upgradeable therapy enabling clinicians to adapt DBS to patients’ evolving needs.