WHY REPLACE WHEN YOU CAN UPGRADE?

Offer more for your patients by upgrading existing Medtronic implants to the Vercise Genus™ DBS System.

Patient Focus
• With the Vercise Genus™ DBS System, patients can benefit from small, contoured, rechargeable, non-rechargeable and single-channel IPG options.
• At least a 15-year* battery life with the Genus rechargeable IPGs, reducing the need for future replacements.
• 68% of patients demonstrate either improved symptom control or reduction in adverse events after the first programming session following an upgrade to a Boston Scientific IPG.1
• Now MR-conditional.

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*The battery life is dependent on the stimulation settings and conditions.

The Vercise™ M8 Adapter is a 1 x 8 in-line connector that is designed to connect specific Medtronic® lead extensions to the Boston Scientific DBS System Stimulator as part of a deep brain stimulation procedure. The Boston Scientific Vercise M8 Adapter is compatible with the following Medtronic Leads: Model 3708640 Lead, Model 3708660 Lead, Model 3708695 Lead, Model 3708540 Lead, Model 3708560 Lead, Model 3708595 Lead.

The Boston Scientific Vercise M8 Adapter is compatible with the following Medtronic Lead extensions: Model 3708640 Extension, Model 3708660 Extension, Model 3708695 Extension, Model 3708540 Extension, Model 3708560 Extension, Model 3708595 Extension.

Indication for Use: The Boston Scientific Vercise™ M8 Adapter is a 1 x 8 in-line connector that is designed to connect specific Medtronic® lead extensions to the Boston Scientific DBS System Stimulator as part of a deep brain stimulation procedure. The Boston Scientific Vercise M8 Adapter is compatible with the following Medtronic Leads: Model 3708640 Lead, Model 3708660 Lead, Model 3708695 Lead, Model 3708540 Lead, Model 3708560 Lead, Model 3708595 Lead.

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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.

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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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WELCOME TO THE 2022 ASSFN BIENNIAL MEETING!

On behalf of the American Society for Stereotactic and Functional Neurosurgery, we are delighted to welcome you to the 2022 ASSFN Biennial Meeting at Loews Atlanta Hotel in beautiful Atlanta, Georgia.

The Scientific Program Committee has constructed a dynamic education program covering the latest advances, the newest research, and the most innovative technologies impacting the rapidly evolving field of stereotactic and functional neurosurgery. Join us as Mahlon Delong, Professor Emeritus at Emory, and Julie Pilitsis, Dean of the Charles E. Schmidt College of Medicine at Florida Atlantic University, memorialize our Honored Guest, the legendary Dr. Roy A. E. Bakay.

Don’t miss talks from our featured speakers, Carol Anderson, professor of African American Studies at Emory University and best-selling author, as she gives a special lecture on Diversity in Medicine, and Ayanna Howard, Dean of Engineering at The Ohio State University, as she gives talks on the intersection of Race, Class and Gender X Neurotechnology, Robotics and AI, and participates in a panel on Human/Machine Interactions.

Daily Plenary Sessions explore thought-provoking topics with speakers working on the leading edge of technology. This year’s Plenary Session topics are DEI in Functional Neurosurgery; Ethics in Neuromodulation; Molecular Neuromodulation; Motor and Sensory Neuromodulation; Neurosurgical Insights into Fundamental Neuroscience; and Clinical Trials and Tribulations.

In addition to the Daily Plenary Sessions, you’ll want to check out Parallel Sessions, which allow you to tailor your meeting experience to meet your specific needs. This year’s Parallel Session topics are Pediatric Neuromodulation; Functional Neuro-oncology; Advances in Movement Disorders; Advances in Epilepsy; Controversies in Neuromodulation; Advancements in Pain; Cognitive and Affective Neuromodulation; and Valley of Death.

Be sure to visit with exhibitors and enjoy a beverage while you view state-of-the-art products in the Exhibit Hall.

We hope you’ll also enjoy all that beautiful Atlanta has to offer, including diverse neighborhoods, civic landmarks, and the iconic Centennial Olympic Park and World of Coca-Cola.

Thank you again for joining us at the 2022 ASSFN Biennial Meeting!
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.
MEETING DIRECTORS

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Louisville, KY

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Emory University School of Medicine
Atlanta, GA

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Dell Medical School at University of Texas Austin
Austin, TX

Jon T. Willie
Scientific Program Committee
Washington University School of Medicine
St. Louis, MO
Roy A. E. Bakay was a towering figure in Stereotactic and Functional Neurosurgery in the 1990s and 2000s. Born in Chicago in 1949, Roy attended Beloit College (where he was valedictorian of Bachelor of Science graduates) and Northwestern University Medical School. He completed his neurosurgery residency (alongside co-resident and former Honored Guest Kim Burchiel, MD) in 1981 at University of Washington under renowned Arthur Ward, Jr. A hotbed of research, particularly seminal studies on epilepsy in nonhuman primates, Roy's research in this model would lay the foundation for his remarkable research career using NHPs for studies of neural transplantation for Parkinson's disease. After a fellowship at NIH, Dr. Bakay began his career at Emory in 1982 where he remained for 18 years. At Emory, he worked very closely with world-renowned movement disorder neurologist/neuroscientists including Mahlon R. Delong, MD, winner of the Lasker Prize for his characterization of the role of the STN in Parkinson's disease, and Jerrold L. Vitek, MD, PhD, now chair of neurology at Univ. of Minnesota. Together they pioneered microelectrode-guided pallidotomy and then DBS. In 2000, Dr. Bakay moved to Rush University Medical Center and his native
Chicago, where he remained until he was taken from us far too soon when he succumbed to gastric cancer in 2013, famously still taking call until the very untimely end.

I first came to know of Roy in 1992 when he and Drs. Delong and Vitek published their seminal paper “Posteroventral pallidotomy for Parkinson’s disease” in J. Neurosurgery, the same year that the classic paper “Leksell’s posteroventral pallidotomy in the treatment of Parkinson’s disease” was published by Lauri Laitinen, Tommy Bergenheim and Marwan Hariz, in the same journal. These papers changed the lives of many patients and doctors, including myself; they were the lynchpin of the renaissance in functional neurosurgery. In fact, after seeing them I applied to do an intra-residency CNS fellowship with Dr. Bakay in 1994 but the application was, unfortunately, not selected. I nevertheless met Roy for the first time in 1995 at the annual meeting of the American Society for Neural Transplantation and Repair, of which he was a founding member; at these annual meetings Roy was perennially larger than life, and the life of the party. Although I never worked directly with him, our professional lives intersected very frequently over the next 18 years around pallidotomy (I inherited his patients at Emory, none of whom required repeat surgery), neural transplantation (I had the great honor to work closely with him on one such trial), and epilepsy, too. Roy was one of the most important role models for my early career, exemplifying that – despite what many people say to the contrary - you can in fact be an outstanding neurosurgeon AND an outstanding neuroscientist. By honoring Dr. Bakay at this meeting it is my intention to share that message - through the memory of his life and career – with the incredible cadre of young neurosurgeon/neuroscientists in our vibrant and growing field.

Roy’s were literally impossibly large shoes to fill at Emory, where I had the great honor to work with his longtime neurology partners, most notably Dr. Delong until his retirement two years ago. Roy was a man who chose his words carefully and economically, but what he said had outsize impact, such as, in regard to DBS: “Why would you ever want to reverse a pallidotomy?” But with few words, his impact on our field was huge, and his legacy lives on in those he trained - leaders in Stereotactic and Functional Neurosurgery beginning with Phil Starr at Emory and including, at Rush, Julie Pilitsis.

– Written by Robert Gross
Carol Anderson

Bestselling author, preeminent historian of African American history and oppression, and influential voice of civil and voting rights

Carol Anderson is professor of African American Studies at Emory University. She is the author of several bestselling books including “The Second: Race and Guns in a Fatally Unequal America” (2020); “One Person, No Vote: How Voter Suppression Is Destroying Our Democracy” (2018); and the critically acclaimed, #1 bestseller “White Rage” (2016).

In 2019, Carol contributed an essay to the New York Times Magazine’s 1619 Project, an award-winning reframing of American history that placed slavery and its continuing legacy at the center of our national narrative (now available as a book).


Her research has garnered substantial fellowships from the American Council of Learned Societies, the Ford Foundation, National Humanities Center, Harvard University, and the Gilder Lehrman Institute of American History.

She has also served on working groups dealing with race at Stanford’s Center for Applied Science and Behavioral Studies, the Aspen Institute, and the United Nations. In addition, based on the strength and accessibility of her research, the leadership at Amnesty International, USA, the American Civil Liberties Union, the Ford Foundation, and others have used Eyes Off the Prize to frame and examine their human rights work in the United States.

This has also led to sought after commentary in Foreign Policy, the Washington Post, and CNN.com that places contemporary issues dealing with race, human rights, and politics in a historical perspective. Her Washington Post op-ed, “White Rage,” was the most widely shared for the paper in 2014.

Professor Anderson was a member of the U.S. State Department’s Historical Advisory Committee and the Board of Directors of the Harry S. Truman Library Institute and the National Economic and Social Rights Initiative.
Ayanna Howard
Dean of Engineering
Monte Ahuja Endowed Dean's Chair
The Ohio State University

Dr. Ayanna Howard is the Dean of Engineering at The Ohio State University and Monte Ahuja Endowed Dean’s Chair. Previously she was the Linda J. and Mark C. Smith Endowed Chair in Bioengineering and Chair of the School of Interactive Computing at the Georgia Institute of Technology. In addition, she serves on the Board of Directors for the Partnership on AI and Autodesk. Dr. Howard’s research encompasses advancements in artificial intelligence (AI), assistive technologies, and robotics, and has resulted in over 275 peer-reviewed publications.

She is a Fellow of IEEE, AAAI, AAAS, and the National Academy of Inventors (NAI). She is also the recipient of the Anita Borg Institute Richard Newton Educator ABIE Award, CRA A. Nico Habermann Award, Richard A. Tapia Achievement Award, NSBE Janice Lumpkin Educator of the Year Award, and ACM Athena Lecturer Award.

To date, Dr. Howard’s unique accomplishments have been highlighted through a number of other public recognitions, including being recognized as one of the 23 most powerful women engineers in the world by Business Insider and one of the Top 50 U.S. Women in Tech by Forbes.

In 2013, she also founded Zyrobotics, which develops STEM educational products to engage children of all abilities.

Prior to Georgia Tech, Dr. Howard was at NASA’s Jet Propulsion Laboratory where she held the title of Senior Robotics Researcher and Deputy Manager in the Office of the Chief Scientist.

ASSFN is pleased to provide complimentary WiFi for meeting attendees!

Network: Loews_Conference
Password: loewsatl2022
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<thead>
<tr>
<th>Name</th>
<th>Affiliation</th>
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<tr>
<td>Ellen L. Air</td>
<td>Henry Ford Hospital</td>
<td>Detroit, MI</td>
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<td>Rushna Ali</td>
<td>Spectrum Health Medical Group</td>
<td>Grand Rapids, MI</td>
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<td>Leonardo Almeida</td>
<td>University of Florida College of Medicine</td>
<td>Gainesville, FL</td>
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<td>Carol Anderson</td>
<td>Emory University</td>
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<td>Wael Asaad</td>
<td>Brown University</td>
<td>Westwood, MA</td>
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<td>Ausaf A. Bari</td>
<td>University of California, Los Angeles</td>
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<td>Sharona Ben-Haim</td>
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<td>David Borton</td>
<td>Brown University School of Engineering</td>
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<td>Stephanie Cernera</td>
<td>University of California, San Francisco</td>
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<td>David Charles</td>
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<td>Cynthia Chestek</td>
<td>University of Michigan</td>
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<td>Meaghan Creed</td>
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<td>Daniel J. Curry</td>
<td>Texas Children’s Hospital</td>
<td>Houston, TX</td>
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<td>Eyiyemisi Damisah</td>
<td>Yale University School of Medicine</td>
<td>New Haven, CT</td>
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<td>Shabbar F. Danish</td>
<td>Jersey Shore University Hospital</td>
<td>Neptune City, NJ</td>
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<td>Mahlon DeLong</td>
<td>Emory University School of Medicine</td>
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<td>Pierre-Francois D’Haese</td>
<td>Vanderbilt Institute for Surgery and Engineering</td>
<td>Nashville, TN</td>
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<td>Dario J. Englot</td>
<td>Vanderbilt University Medical Center</td>
<td>Nashville, TN</td>
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<td>Steven M. Falowski</td>
<td>Neurosurgical Associates of Lancaster</td>
<td>Lancaster, PA</td>
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<td>Alfonso Fasano</td>
<td>University of Toronto and University Health Network</td>
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<td>Albert J. Fenoy</td>
<td>University of Texas Houston</td>
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<td>Kelly D. Foote</td>
<td>University of Florida College of Medicine</td>
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<td>Saadi Ghatan</td>
<td>Mount Sinai Health System</td>
<td>New York, NY</td>
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<td>Shawn Glinter</td>
<td>University of Louisville School of Medicine / Pendant Biosciences, Inc.</td>
<td>Louisville, KY</td>
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INVITED SPEAKERS

Ian Yu Lee
Henry Ford Health System
Detroit, MI

Eric C. Leuthardt
Washington University School of Medicine
Saint Louis, MO

André Machado
The Cleveland Clinic Foundation
Cleveland, OH

Robert A. McGovern III
University of Minnesota
Minneapolis, MN

Cameron C. McIntyre
Duke University / Case Western Reserve University
Durham, NC

Nicole McLaughlin
Brown University
Providence, RI

Tiago A. Mestre
The University of Ottawa / The Ottawa Hospital Research Institute
Ottawa, ON

Svetlana Miocinovic
Emory University School of Medicine
Atlanta, GA

Lauren Miterko
University of Texas Southwestern Medical Center
Dallas, TX

Edjah K. Nduom
Emory University Winship Cancer Institute
Atlanta, GA

Joseph S. Neimat
University of Louisville
Louisville, KY

Jose Obeso
University Hospital, San Pablo University
Madrid, Spain

Chima Oluigbo
Children's National Medical Center
Washington, DC

Parag G. Patil
University of Michigan
Ann Arbor, MI

Julie G. Pilitsis
Florida Atlantic University
Boca Raton, FL

Francisco A. Ponce
Barrow Neurological Institute
Phoenix, AZ

Nader Pouratian
University of Texas Southwestern Medical Center
Dallas, TX

Shervin Rahimpour
University of Utah
Salt Lake City, UT

Richard Rammo
Cleveland Clinic Foundation
Cleveland, OH

R. Mark Richardson
Massachusetts General Hospital
Boston, MA

John D. Rolston
University of Utah
Salt Lake City, UT

Joshua M. Rosenow
Northwestern University Feinberg School of Medicine
Chicago, IL

Nathan C. Rowland
Medical University of South Carolina
Charleston, SC

Sepehr Sani
Rush University Medical Center
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Sridevi Sarma
Johns Hopkins University
Baltimore, MD
Jason M. Schwalb
Henry Ford Health System
Detroit, MI

Ashwini D. Sharan
Thomas Jefferson University
Philadelphia, PA

Sameer A. Sheth
Baylor College of Medicine
Houston, TX

Ludy Chen Shih
Boston University School of Medicine
Boston, MA

Konstantin V. Slavin
University of Illinois at Chicago
Chicago, IL

Adam Sonabend
Columbia University
Chicago, IL

Michael Staudt
Michigan Head and Spine Institute
Southfield, MI

Ido Strauss
Tel Aviv University Sackler School of Medicine
Tel Aviv, Israel

Michael E. Sughrue
University of Cambridge
Cambridge, UK

Jennifer A. Sweet
Case Western Reserve, University Hospitals Cleveland Medical Center
Cleveland, OH

Nitin Tandon
University of Texas Health Science Center
Houston, TX

Elizabeth C. Tyler-Kabara
Dell Medical School at University of Texas Austin
Austin, TX

Taufik A. Valiante
Toronto Western Hospital
Toronto, ON

Jamie J. Van Gompel
Mayo Clinic
Rochester, MN

Ashwin Viswanathan
Baylor College of Medicine
Houston, TX

Doris D. Wang
University of California San Francisco
San Francisco, CA

Peter C. Warnke
University of Chicago
Chicago, IL

Jessica Wilden
Willis-Knighton Health System
Shreveport, LA

Jon T. Willie
Washington University School of Medicine
St Louis, MO

Chengyuan Wu
Thomas Jefferson University
Philadelphia, PA

Daniel Yoshor
Penn Medicine
Philadelphia, PA

Kareem A. Zaghloul
National Institutes of Health
Bethesda, MD
Saturday, June 4, 2022

9:00 am-5:00 pm Ellington Ballroom Foyer
REGISTRATION

10:30 am-12:30 pm Ellington Ballroom A
SPECIAL COURSE 1
Grant Writing Workshop
Course Directors: Nader Pouratian, Jennifer A. Sweet

Learning Objectives:
▶ Describe fundamentals of successful grants
▶ List sources of research funding
▶ Identify institutional grant requirements

10:30-11:00 am
Sources of Funding
Julie G. Pilitsis, Nader Pouratian

11:00-11:20 am
Untapped Resources
André Machado, Sameer A. Sheth

11:20-11:40 am
Navigating Your Institution Policies
R. Mark Richardson

11:40 am-12:00 pm
Writing Tips
Robert E. Gross, Jennifer A. Sweet

12:00-12:30 pm
Panel Discussion
SPECIAL COURSE 2
Beyond Standard Temporal Lobectomy. Novel Techniques for Medically Intractable Epilepsy: A Video and Hands-on Session
Course Directors: Rushna Ali, Dario J. Englot

Learning Objectives:
▶ Describe indications for LITT in epilepsy
▶ Review endoscopic approach to mesial temporal lobe epilepsy
▶ Discuss approaches for treatment of multi-focal epilepsy

1:00-3:00 pm
Part 1: Video Sessions

1:00-1:40 pm
LITT Therapy for Hypothalamic Hamartomas
Daniel Curry, Jon T. Willie

1:40-2:20 pm
Endoscopic Approaches for Mesial Temporal Epilepsy
Jorge A. González-Martínez

2:20-3:00 pm
Surgical Approaches for Multifocal Epilepsy
Sharona Ben-Haim, Jamie Joseph Van Gompel

3:00-3:15 pm
Break

3:15-5:00 pm
Part 2: Hands-on Session

3:15-4:00 pm
Hands-on LITT and Endoscopic Devices
Saadi Ghatan, Jorge A. González-Martínez, Robert E. Gross

4:00-5:00 pm
Hands-on: Robotic Devices
Robert A. McGovern, Joseph S. Neimat, Chengyuan Wu

Educational Grant provided by: FHC inc., Monteris Medical

In-Kind Equipment provided by: ClearPoint Neuro Inc., FHC inc., Medtronic, Monteris Medical
SPECIAL COURSE 3
Incorporating New Technology into Your Movement Disorders Practice
Course Directors: Shabbar F. Danish, Richard Rammo

Learning Objectives:
- Apply image analysis techniques to optimize DBS treatment
- Discuss the differences between MRI, CT, and robotic approaches to DBS placement
- Identify and mitigate common risks in DBS management

1:00-1:15 pm
Planning Software Overview
Cameron C. McIntyre

1:15-2:00 pm
Hands-on: Planning Software

2:00-2:45 pm
iMRI vs. iCT vs. Robotic Overview
Ellen L. Air, Albert J. Fenoy, Sepehr Sani

2:45-3:15 pm
Hands-on: iMRI vs. iCT vs. Robotic

3:15-3:30 pm
Break

3:30-4:00 pm
Technology to Assess Your Results
Vibhor Krishna, Doris D. Wang

4:00-4:30 pm
Complication Avoidance and Management
Kathryn L. Holloway, Suneil K. Kalia

4:30-5:00 pm
Difficult Cases
Richard Rammo

In-Kind Equipment provided by: ClearPoint Neuro, Inc., Medtronic
Sunday, June 5, 2022

6:30 am-6:30 pm Ellington Ballroom Foyer
REGISTRATION

7:00-8:00 am Ellington Ballroom Foyer
CONTINENTAL BREAKFAST

7:00-8:00 am Overlook East
BREAKFAST SESSION 1
Mentorship Workshop
Moderator: Sharona Ben-Haim, Konstantin V. Slavin

Learning Objectives:
▶ Describe key characteristics of good mentees
▶ Describe key characteristics of good mentors
▶ Describe approaches to giving feedback

7:00-7:15 am
Being a Good Mentee
Jonathan D. Rolston

7:15-7:30 am
Leveraging Mentorship to Sponsorship
Kathryn L. Holloway

7:30-7:45 am
Giving and Receiving Feedback
Ellen L. Air

7:45-8:00 am
Panel Discussion
Ellen L. Air, Sharona Ben-Haim, Kathryn L. Holloway, Jonathan D. Rolston, Konstantin V. Slavin
BREAKFAST SESSION 2
Establishing Centers for Neuromodulation and Technology
Moderators: Robert E. Gross, Eric C. Leuthardt

Learning Objectives:
- Describe models of integrated Neuromodulation centers
- Identify approaches to establish a Neuromodulation center
- Identify pathways to transition technology into clinical application

7:00-7:15 am
Getting Set-up
Sameer A. Sheth

7:15-7:30 am
Which Model to Use
Peter Konrad

7:30-7:45 am
Democratizing Technology
Taufik Valiante

7:45-8:00 am
Panel Discussion
Robert E. Gross, Peter Konrad, Eric C. Leuthardt, Sameer A. Sheth, Taufik Valiante
PLENARY SESSION 1
DEI in Functional Neurosurgery
Moderators: Robert E. Gross, Nathan C. Rowland

Learning Objectives:
▶ Evaluate key sources of disparity in healthcare
▶ Describe approaches to reduce impact of disparities in healthcare
▶ Discuss approaches to increase diversity in technology and medicine

8:00-8:10 am
Welcome and Introduction to Special Lectures
Robert E. Gross

8:10-8:50 am
Special Lecture: One Person, No Vote.
Carol Anderson

8:50-9:10 am
Intersection: Race, Class and Gender X Neurotechnology, Robotics and AI
Ayanna Howard

9:10-9:30 am
Increasing DEI in Neurosurgery
Edjah K. Nduom

9:30-9:35 am
Introduction of ASSFN President
Robert E. Gross

9:35-10:00 am
Presidential Address
Joseph S. Neimat

9:30 am-4:00 pm
EXHIBIT HALL OPEN

10:00-10:20 am
BEVERAGE BREAK – VISIT THE EXHIBITS!
PARALLEL SESSION 1

Pediatric Neuromodulation
Moderator: Daniel Curry

Learning Objectives:
▶ Recognize indications for LITT in pediatric epilepsy
▶ Discuss indications for DBS in pediatric dystonia
▶ Describe disparities in application of new technology in pediatric epilepsy

10:20-10:35 am
LITT in Pediatric Epilepsy
Chima Oluigbo

10:35-10:50 am
Ethics in Pediatric Neuromodulation
Saadi Ghatan

10:50-11:05 am
DBS in Pediatric Dystonia
Gerald A. Grant

11:05-11:20 am
Modern Management of Tuberous Sclerosis
Daniel Curry

11:20 am-12:00 pm
Open Papers

11:20-11:26 am
101 Surgery for Nonlesional Epilepsy in Children. Clinical Outcomes in a Middle a Country Neurosurgical Center
Felipe Gutierrez Pineda, Hector Alfredo Jaramillo, Vicente Jaramillo, Maria Paula Fernandez Gomez

11:27-11:33 am
102 Stereotactic Magnetic Resonance Guided Laser Ablation of Periventricular Nodular Heterotopia
Ryan McCormack, Nitin Tandon

11:34-11:40 am
103 Connectivity-based Comparison of Thalamic and Pallidal Targets for Tourette Syndrome
Josue Avecillas-Chasin, Tommaso Galbiati, Mauro Porta, Domenico Servello
11:41-11:47 am
104 Invasive Intracranial EEG Monitoring for Epilepsy in the Pediatric Patient With a Shunt: Challenges and Technical Considerations
Muhammad El Shatanofy, Katherine Hofmann, John Myseros, William Gaillard, Robert Keating, Chima Oluigbo

11:48-11:54 am
105 Responsive Neurostimulation of the Centromedian Nucleus of the Thalamus in Pediatric and Adult Epilepsy
Ben Shofty, Himanshu Sharma, Ron Gadot, Huy Dang, Jay Gavvala, Vaishnav Krishnan, Alica Goldman, Mostafa Hotait, Piotr Olejniczak, Kimberly Houck, Cristina Trandafir, Daniel Curry, Sameer Sheth, Irfan Ali

11:55 am-12:01 pm
106 Use of Subdural Grid Electrodes After Stereoelectroencephalography Evaluation: Safety, Efficacy and Indications
Carlos Restrepo, Nitin Tandon

10:20 am-12:00 pm Ellington Ballroom A/B/C
PARALLEL SESSION 2
Functional Neuro-oncology
Moderators: Shabbar F. Danish, Carl Hacker

Learning Objectives:
▶ Describe non-invasive functional brain mapping techniques
▶ Name invasive functional brain mapping techniques
▶ Discuss stereotactic techniques for brain tumor mapping

10:20-10:35 am
Expanding the Functional Neurosurgeon’s Role in Neuro-oncology Through Stereotactic Radiosurgery
Adrian Laxton

10:35-10:50 am
Novel Behavioral and Cognitive Tasks for Stimulation Mapping
Michael E. Sughrue

10:50-11:05 am
Laser for Metastatic Lesions
Ian Yu Lee

11:05-11:20 am
Focused Ultrasound and the Blood Brain Barrier
Michael G. Kaplitt
11:20 am-12:00 pm

**Open Papers**

11:20-11:26 am
**107 Focused Ultrasound Mesencephalotomy for Head and Neck Cancer Pain**
W. Jeffrey Elias, Shayan Moosa, Chang-Chia Liu

11:27-11:33 am
**108 Discernible Interindividual Patterns of Global Efficiency Decline During Theoretical Brain Surgery**
Yueh-Hsin Lin, Nicholas Dadario, Lewis Crawford, Hsu-Kang Dow, Onur Tanglay, Isabella Young, Syed Ahsan, Stephane Doyen, Michael Sughrue

11:34-11:40 am
**109 EnCompass: A Comprehensive Stereotactic Neurosurgical Software Platform**
Cihan Kadipasaoglu, Nitin Tandon

11:41-11:47 am
**110 Holographic Stereotactic Neurosurgery Planning for Brain Stimulation and Recording**
Angela Noecker, Jeff Mlaker, Mark Griswold, Cameron McIntyre

11:48-11:54 am
**111 Direct In Vivo Reprogramming of Cortical Glial Progenitor Cells to Induce New Neurons**
Patrick King, Mentor Thaqi, Emily Reisenbigler, Robert Marr, Daniel Peterson

11:55 am-12:01 pm
**112 Covariation Between Pupil Diameter and Spontaneous Brain Activity Reveal Nodes of the Human Arousal Network**
Tyler Davis, Elliot Smith, Bornali Kundu, John Rolston

12:00–1:00 pm

**ATTEND A NON-CME SPONSORED LUNCH**

See page 61 for detailed information and schedule.
PLENARY SESSION 2
Ethics in Neuromodulation
Moderators: Ellen L. Air, Elizabeth C. Tyler-Kabara

Learning Objectives:
▶ Describe ethical consideration in application of artificial intelligence
▶ Discuss ethical considerations in movement disorder research
▶ Recognize ethical considerations in neuromodulation for neuropsychiatric disease

1:00-1:10 pm
Welcome and Introduction of Panel Discussion
Ellen L. Air

1:10-1:40 pm
Panel on Human/Machine Interactions with Ayanna Howard
Ayanna Howard, Ellen L. Air, Robert E. Gross, Nathan C. Rowland

1:40-2:00 pm
Disparities in Access to Neuromodulation
Shervin Rahimpour

2:00-2:20 pm
Ethics in DBS Research
Kelly D. Foote

2:20-2:40 pm
Ethics of Neuromodulation in Psychiatric Disease
Cynthia Kubu

2:40-3:00 pm
Panel Discussion and Audience Questions
3:00-3:40 pm  Mercer Ballroom
BEVERAGE BREAK – VISIT THE EXHIBIT HALL

3:40-6:00 pm  Ellington Ballroom D/E/F
PARALLEL SESSION 3
Advances in Movement Disorders
Moderators: Suneil K. Kalia, Zelma HT Kiss

Learning Objectives:
▶ Discuss use of closed-loop programming of DBS in movement disorders
▶ Describe image-based DBS programming techniques
▶ Evaluate the risks and benefits of focused ultrasound for Parkinson’s Disease

3:40-4:00 pm
Closed Loop DBS for Movement Disorders
Stephanie Cernera

4:00-4:20 pm
Tailoring Neuromodulation of the Cerebellum to Rescue Ataxia
Lauren N. Miterko

4:20-4:40 pm
Image-based DBS Programming
Alfonso Fasano

4:40-5:00 pm
Focused Ultrasound for Treatment of Parkinson's Disease
Jose Obeso

5:00-6:00 pm
Open Papers

5:00-5:06 pm
113 Meta-Bayesian Optimization for Selecting Stimulation Parameters for Neural Modulation
Mark Connolly, Faical Isbaine, Jon Willie, Annaelle Devergnas, Svjetlana Miocinovic

5:07-5:13 pm
114 A Novel Closed-Loop Brain Stimulation Device Powered by Low-Energy Ultrasound
Joseph S. Neimat, Raffaele Guida, Emrecan Demirors, Robert Bina, Ryan Burke, Steven Koenig, Tommaso Melodia, Jorge H. Jimenez
5:14-5:20 pm
115 Pallidal Deep Brain Stimulation on Dynamics of Functional Connectivity in Parkinson’s Disease
Koorosh Mirpour, Jeong Woo Choi, Kathryn Cross, Nader Pouratian

5:21-5:27 pm
116 Evaluating a Multiple-Source, Constant-Current DBS System in Parkinson’s Disease: 5-Year Follow-Up of a Prospective RCT

5:28-5:34 pm
117 Focused Ultrasound Subthalamotomy in Parkinson’s Disease: Lesion Topography and Motor Improvement
Jorge U. Mañez-Miro, Rafael Rodriguez-Rojas, Jose A. Pineda-Pardo, Marta del Álamo, Raúl Martínez-Fernández, Jose Obeso

5:35-5:41 pm
118 Irregularity of Instantaneous Gamma Frequency Characterize Proprioceptive and Visuo-motor Control Processes in Motor Cortex and Posterior Parietal Cortex
Jihye Ryu, Nader Pouratian

5:42-5:48 pm
119 Cortical and Subcortical Gait Related Neuronal Modulation During Free Walking Parkinson’s Disease Patients
Kenneth Louie, Maria Yaroshinsky, Philip Starr, Doris Wang

5:49-5:55 pm
120 Human Subthalamic Nucleus Neuronal Code for Action Switches and Movement Kinematics
Dennis London, Arash Fazl, Kalman Katlowitz, Marisol Soula, Michael Pourfar, Rozbeh Kiani, Alon Mogilner

5:56-6:02 pm
121 Evaluating Electrophysiologic and Structural Connectivity of Vim to Motor Cortex and Superior Parietal Lobule During DBS for Tremor
Christopher Conner, Keifer Forseth, Albert Fenoy
PARALLEL SESSION 4
Advances in Epilepsy
Moderators: Eyiyemisi Damisah, Richard Rammo

Learning Objectives:
▶ Describe imaging techniques to identify cortical dysplasia
▶ Discuss the application of computational analysis to identify seizure foci
▶ List the factors that impact target selection in neuromodulation of epilepsy

3:40-4:00 pm
Imaging Advancements in Cortical Dysplasia
Chima Oluigbo

4:00-4:20 pm
Computational Analysis in Epilepsy Surgery
Sridevi Sarma

4:20-4:40 pm
Novel Surgical Techniques in Medically Intractable Epilepsy

4:40-5:00 pm
Target Selection in Neuromodulation for Epilepsy
Jorge A. González-Martínez

5:00-6:00 pm
Open Papers

5:00-5:06 pm
122 Invasive Investigation of Thalamocortical Epileptic Network Activity to Select Candidates for Deep Brain Stimulation of the Centromedian Nucleus Among Patients With Medically Intractable Epilepsy
Ammar Shaikhouni, Jonathan Pindrik, Kristen Arredondo, Adam Ostendorf, Daniel Alber, Stephanie Ahrens, Christopher Beatty

5:07-5:13 pm
123 Cortico-cortical Evoked Potentials are Traveling Waves
Justin Campbell, Elliot Smith, Tyler Davis, John Rolston

5:14-5:20 pm
124 Direction and Frequency of Connectivity in the Seizure Generation Network: A Cortico-cortical Evoked Potential Study
Graham Johnson, Aarushi Negi, Derek Doss, Jasmine Jiang, Saramati Narasimhan, Danika Paulo, Shawniqua Williams Roberson, Sarah Bick, Catie Chang, Victoria Morgan, Dario Englot
5:21-5:27 pm
125 A Hierarchical Anatomical Framework and Workflow for Organizing Stereotactic Encephalography in Epilepsy
Bryan Zheng, Ben Hsieh, Nathaniel Rex, Peter Lauro, Scott Collins, Andrew Blum, Julie Roth, Neishay Ayub, Wael Asaad

5:28-5:34 pm
126 Viral Activation of the Medial Septal Nucleus (MSN) Improves Spatial Memory and Increases Seizure Threshold in a Pilocarpine Model of Status Epilepticus
Nancy Zepeda, Sasha Medvidovic, Matthew Bergosh, Wooseong Choi, Darrin Lee

5:35-5:41 pm
127 Source Localization of Ictal SEEG Predicts Postoperative Seizure Outcome
David Satzer, Yasar Esengul, Peter Warnke, Naoum Issa, Douglas Nordli Jr.

5:42-5:48 pm
128 Excitatory and Inhibitory Spatiotemporal Dynamics During Pentylenetetrazol-induced Seizures in Mice
Matthew Stern, Ken Berglund, Jake Diamond, Robert E. Gross

5:49-5:55 pm
129 Optogenetic Stimulation of the Medial Septum Modulates Hippocampal Single Unit Activity
Nealen Laxpati, Eric Cole, Claire-Anne Gutekunst, Robert E. Gross

5:56-6:02 pm
130 Fully Automated Patient Specific Head Modeling and Dynamic Source Reconstruction Platform for Stereo-EEG
Brandon Thio, Warren Grill

6:00-8:00 pm The Terrace
OPENING RECEPTION
Kick-off the Biennial Meeting outside on the Terrace at the Loews Atlanta Hotel overlooking Midtown Atlanta. Enjoy the time reconnecting with your colleagues and friends over hors d’oeuvres and cocktails.
Monday, June 6, 2022

6:30 am-5:30 pm  Ellington Ballroom Foyer
REGISTRATION

7:00-8:00 am  Ellington Ballroom Foyer
CONTINENTAL BREAKFAST

7:00-8:00 am
ATTEND A NON-CME SPONSORED BREAKFAST
See page 61 for detailed information and schedule.

7:30 am-5:00 pm  Mercer Ballroom
EXHIBIT HALL OPEN

8:00-9:20 am  Ellington Ballroom D/E/F
PLENARY SESSION 3
Molecular Neuromodulation
Moderators: Jorge A. González-Martínez, Suneil K. Kalia

Learning Objectives:
▶ Discuss surgical optimization of molecular neuromodulation
▶ Describe viral-based gene therapy delivery
▶ Evaluate the impact of LIFU in molecular neuromodulation

8:00-8:20 am
Repurposing DBS for Optical Control
Meaghan Creed

8:20-8:40 am
Surgical Delivery of Recombinant Proteins and Gene Therapy
R. Mark Richardson

8:40-9:00 am
Molecular Optimization of Delivery - Viral Based Approaches to to Non-invasive Whole Brain Delivery
Min Jee Jang

9:00-9:20 am
LIFU - Delivery of Molecular Modulators
Vibhor Krishna
PLENARY SESSION 4
Motor and Sensory Neuromodulation
Moderators: Lora Wallis Kahn, Svjetlana Miocinovic

Learning Objectives:
▶ Explain the factors influencing timing of DBS in PD
▶ Describe impact of VNS on stroke recovery
▶ Evaluate the impact of closed loop SCS on SCI recovery

10:00-10:40 am
Debate: Early vs. Late Surgery for Parkinson’s Disease

10:00-10:15 am
Early Surgery is Better
David Charles

10:15-10:30 am
Late Surgery is Better
Tiago A. Mestre

10:30-10:40 am
Discussion

10:40-11:00 am
VNS for Stroke Recovery
Seth Hays

11:00-11:20 am
Decoding of Hand Movements Using Brain Machine Interface
Cynthia Chestek

11:20-11:40 am
Closed Loop Stimulation for Spinal Cord Injury
David Borton

11:40 am-12:00 pm
Top Rated Abstracts

11:40-11:46 am
131 Intraoperative Accelerometer Reveals the Most Beneficial Patient Population for Tremor Control Using MRgFUS Thalamotomy
Hongchae Baek, Larry O. Bodden, Daniel Lockwood, Emmanuel Obusez, Benjamin Walter, Stephen Jones, Sean Nagel
11:47-11:53 am
132 Rediscovering the Human Motor Homunculus in 3-Dimensions With Implanted Electrodes
Michael A. Jensen, Kai Miller

11:54 am-12:00 pm
133 Deep Brain Stimulation of the Cholinergic Basal Forebrain Improves Cognition in Senescent Male Monkeys
Tyler Sparks, Fernando Vale, Kendyl Pennington, Christos Constantinidis, Jeannie Chen, Alvin Terry, Yi Zheng, Christopher Banerjee, Marc Plagenhoef, David Blake

12:00-1:00 pm Overlook East/West
HONORED GUEST LUNCH
Roy Bakay in Memorial
Speakers: Kim Burchiel, Mahlon DeLong, Robert E. Gross, Jeffrey Kordower, Julie Pilitsis

1:00-3:00 pm Ellington Ballroom D/E/F
PARALLEL SESSION 5
Controversies in Neuromodulation
Moderators: Camilla Kilbane, Jon T. Willie

Learning Objectives:
- Discuss the risks and benefits of lesioning for OCD
- Describe imaging and neurophysiology approaches to DBS targeting and programming
- Discuss the relative benefits of robotic vs traditional DBS implantation

1:00-1:20 pm
Debate: Lesions vs. DBS in OCD

1:00-1:10 pm
Pro DBS in OCD
Kelly Foote

1:10-1:20 pm
Pro Lesions in OCD
Nicole Laughlin
1:20-1:40 pm
Debate: DTI and rsMRI vs. Neurophysiology for DBS Targeting

1:20-1:30 pm
DTI and rsMRI for DBS Targeting
Mojgan Hodaie

1:30-1:40 pm
Neurophysiology for DBS Targeting
Joshua Rosenow

1:40-2:00 pm
Bigger Impact? Directional vs. Closed Loop Stimulation in Parkinson’s Disease

1:40-1:50 pm
Directional in Parkinson’s Disease has a Bigger Impact
Leonardo Almeida

1:50-2:00 pm
Closed Loop Stimulation in Parkinson’s Disease has a Bigger Impact
Ashwin Viswanathan

2:00-2:20 pm
Is Robotic Surgery Really Faster, More Accurate?

2:00-2:10 pm
Yes, Robotic Surgery is Really Faster, More Accurate
Shabbar F. Danish

2:10-2:20 pm
No, Robotic Surgery is not Really Faster, More Accurate
Ashwini Sharan

2:20-3:00 pm
Open Papers

2:20-2:26 pm
134 Long-term Safety, Imaging and Clinical Outcomes of Focused Ultrasound-mediated Blood-brain Barrier Opening for Alzheimer’s Disease
Ali Rezai, Manish Ranjan, Pierre D’Haese, Jeffrey Carpenter, Marc Haut, Umer Najib, Daniel Claassen, Rashi Mehta, Levi Chazen, Zion Zibli, Peter Konrad, Sally Hodder, Michael Kaplitt
2:27-2:33 pm  
135 Identification of Candidate Neural Biomarkers of Obsessive-compulsive Symptoms in Ecologically Valid Environments  

2:34-2:40 pm  
136 Novel Spatiotemporal Dynamics Revealed First-in-Human Use of Multithousand Platinum Nanorod Thing Film Biointerface  
Ahmed Raslan, Shadi Dayeh, Daniel Cleary, Youngbin Tchoe, Andrew Bourhis, Brittany Stedelin, Dominic Siler, Caleb Nerison, Angeliique Paulik, Sharona Ben-Haim

2:41-2:47 pm  
137 Impact of Operative Approach on Patient Outcomes in DBS: An Interim Report of 6-month Outcomes for Parkinson’s Disease and Essential Tremor Subjects in ADROIT  

2:48-2:54 pm  
138 Local Field Potentials Directly Code Auditory Stimuli Throughout Working Memory  
Sarah Bick, Yoaf Kfir, Syd Cash, Ziv Williams

2:55-3:01 pm  
139 Deep Brain Stimulation of the Nucleus Accumbens in the Treatment of Severe Alcohol Use Disorder: A Phase I Pilot Trial  
Benjamin Davidson, Peter Giacobbe, Tony George, Clement Hamani, Nir Lipsman
PARALLEL SESSION 6
Advancements in Pain
Moderators: Rushna Ali, Sharona Ben-Haim

Learning Objectives:
▶ List new indications for SCS
▶ Review validated outcome measure in pain treatment
▶ Describe types and impact of newer stimulation algorithms for SCS

1:00-1:20 pm
New Indications for SCS
Parag G. Patil

1:20-1:40 pm
Outcome Measures Beyond VAS
Jason M. Schwalb

1:40-2:00 pm
New Stimulation Algorithms - What's the Data?
Steven M. Falowski

2:00-2:20 pm
Pain Control at the End of Life
(Neuroablation for Cancer Pain)
Ido Strauss

2:20-3:00 pm
Open Papers

2:20-2:26 pm
140 Less is More: Optimal Surgical Settings of Radiofrequency Rhizotomy for Trigeminal Neuralgia
Rajiv Dharnipragada, Kellen Mulford, Madelyn Woolums, Andrew Grande, Donald Nixdorf, Stephen Haines, David Darrow

2:27-2:33 pm
141 A Pilot Study Comparing Algorithmic Adaptive Conventional Stimulation to High Dose Stimulation in Chronic Pain Patients
Tessa Harland, Michael Gillogly, Taylor Powell, Olga Khazen, Avi Gajjar, Melisande Nabage, Frank Trujillo, Julie Pilitsis

2:34-2:40 pm
142 Classifier Using Pontine Radial Diffusivity and Symptom Duration Accurately Predicts Recurrence of Trigeminal Neuralgia After Microvascular Decompression: A Pilot Study and Algorithm Description
Matthew Willsey, James Mossner, Cynthia Chestek, Oren Sagher, Parag Patil
2:41-2:47 pm
143 Differential Responses to Thermo-nociception and Innocuous Heat Along the Anterior-posterior Axis of the Insula
Rose Caston, Tyler Davis, Elliot Smith, John Rolston

2:48-2:54 pm
144 Optimizing Patient Outcomes Following CT-guided Percutaneous Trigeminal Tractotomy Under General Anesthesia
Hao Tan, Edward Ward, Ahmed Raslan

2:55-3:01 pm
145 A Theta-Driven Vibrotactile Brain-Computer Interface for the Treatment of Chronic Pain: A Pilot Study
Phillip Demarest, Eric Leuthardt, Nabi Rustamov, Peter Brunner, Simon Haroutounian

3:00-3:30 pm Mercer Ballroom
BEVERAGE BREAK – VISIT THE EXHIBITS!

3:30-5:00 pm Ellington Ballroom Foyer
POSTER SESSION WITH WINE & CHEESE
A complete list of poster presentations can be found on pages 40-51.
Moderator: Zelma HT Kiss

Learning Objectives:
▶ Describe advances in movement disorder surgery technology
▶ Incorporate new strategies in epilepsy surgery into your practice
▶ Identify promising new techniques in psychiatric neurosurgery

5:00-5:30 pm Ellington Ballroom D/E/F
ASSFN BUSINESS MEETING
Presiding Officer: Joseph S. Neimat
Tuesday, June 7, 2022

6:30 am-3:00 pm  Ellington Ballroom Foyer
REGISTRATION

7:00-8:00 am  Ellington Ballroom Foyer
CONTINENTAL BREAKFAST

8:00-10:30 am  Mercer Ballroom
EXHIBIT HALL OPEN

8:00-9:30 am  Ellington Ballroom D/E/F
PLENARY SESSION 5
Neurosurgical Insights into Fundamental Neuroscience
Moderators: Sameer A. Sheth, Wael Asaad

Learning Objectives:
▶ Describe neuronal signals of cognition
▶ Evaluate neuronal signals of speech
▶ Discuss neuronal signals of mood

8:00-8:20 am
Visual Cortex Stimulation to Restore Sight
Daniel Yoshor

8:20-8:40 am
Episodic Memory Guides Expectations of Future Events
Kareem A. Zaghloul

8:40-9:00 am
Decoding Speech
Nitin Tandon

9:00-9:20 am
Decoding and Treating Mood with Intracranial Recordings
Sameer A. Sheth

9:20-9:30 am
Questions and Discussion

9:30-10:00 am  Mercer Ballroom
BEVERAGE BREAK – VISIT THE EXHIBIT HALL!
PARALLEL SESSION 7
Cognitive and Affective Neuromodulation
Moderators: Casey H. Halpern, Jessica Wilden

Learning Objectives:
▶ Discuss neuromodulation approaches for Alzheimer’s and memory
▶ Identify targets for neuro modulation of PTSD
▶ Identify targets for neuromodulation of traumatic brain injury

10:00-10:20 am
ADVANCE Trial for Alzheimer’s
Francisco A. Ponce

10:20-10:40 am
CT-DBS for TBI Trial
Jaimie M. Henderson

10:40-11:00 am
DBS for Depression
Jean-Philippe Langevin

11:00-11:20 am
Neuromodulation for Memory
Michael J. Kahana

11:20-11:40 am
Closed-loop Neuromodulation and Studies of Memory
Cory S. Inman

11:40 am-12:00 pm
Laser Ablation for OCD
Peter C. Warnke

PARALLEL SESSION 8
Innovation and Avoiding the Technology Valley of Death
Moderators: Joseph S. Neimat, Shabbar F. Danish

Learning Objectives:
▶ Identify barriers to starting a company
▶ Identify approaches to build successful companies
▶ Discuss key elements of bringing new technology to market

10:00-10:20 am
Starting a New Company - A Neurosurgeon’s Perspective
Eric C. Leuthardt
10:20-10:40 am
Starting a Company - An Engineer's Perspective
Pierre-Francois D’Haese

10:40-11:00 am
Venture Capitalist Perspective – Identifying Technology for Investment
Eller M. Kelliher

11:00-11:20 am
CEO Perspective: Bringing Technology to Market
Shawn Glinter

11:20 am-12:00 pm
Panel Discussion

1:00-3:00 pm  Ellington Ballroom D/E/F
PLENARY SESSION 6
Clinical Trials and Tribulations
Moderator: Adrian Laxton, R. Mark Richardson

Learning Objectives:
▶ Discuss selecting optimal outcomes for clinical trials
▶ Describe mitigation of challenges to conducting research in COVID
▶ Discuss the UH3 support mechanism for innovative research activities

1:00-1:40 pm
Optimizing Trial Design: Should We Benchmark Existing Tech?
Paul S. Larson, André Machado

1:40-2:20 pm
Clinical Trial Innovations in a Post-COVID World
Francisco A. Ponce, Ludy Chen Shih, Michael Staudt

2:20-3:00 pm
UH3 Trials and Tribulations
Ausaf A. Bari, Casey H. Halpern

3:00-3:30 pm  Ellington Ballroom D/E/F
AWARDS CEREMONY
Presenters: Ellen L. Air, Robert E. Gross
201 Retrospective Review and Survey of MRI-guided Focused Ultrasound (MRgFUS) Thalamotomy Referrals: Experience from a Single Movement Disorder Center
Evan Einstein, Ling Pan, Alon Mogilner

202 The Impact of Optimal Thermal Neuromodulation Parameters on the Efficiency of Focused Ultrasound Treatments
Vibhor Krishna, Francesco Sammartino, Matthew Eames, John Snell

203 Frameless Linac Thalamotomy Efficiently and Safely Treats Tremor - Results of Prospective Phase I/II Clinical Trial
Evan Thomas, Erik Middlebrooks, Barton Guthrie, Harrison Walker, John Fiveash, Richard Popple, David Standaert, Markus Bredel

204 Long-term Efficacy of Unilateral High-intensity Focused Ultrasound Subthalamotomy for Parkinson’s Disease
Raúl Martínez-Fernández, Elena Natera-Villalba, Jorge U. Mañez-Miro, Rafael Rodríguez-Rojas, Marta del Álamo, Jose A. Pineda-Pardo, Ignacio Obeso, Frida Hernandez-Fernandez, Carmen Gasca-Salas, Michele Matarazzo, Lydia Vela, Fernando Alonso-Frech, Jose Obeso

205 Safety and Efficacy of Unilaterally Focused Ultrasound Subthalamotomy in Early Parkinson’s Disease: The EARLY FOCUS-I Study
Elena Natera-Villalba, Raúl Martínez-Fernández, Rafael Rodríguez-Rojas, Marta del Álamo, Jose A. Pineda-Pardo, Ignacio Obeso, Frida Hernandez-Fernandez, Carmen Gasca-Salas, Michele Matarazzo, Jose Obeso

206 Dynamics of Heat Spread in Laser Interstitial Thermocoagulation Therapy for Mesial Temporal Lobe Epilepsy
Abhijeet Gummadavelli, Robert Sterner, Veronica Chiang

207 Artificial Neural Network Control of Two Finger Groups in Real-Time Brain Machine Interfaces
Matthew Willsey, Samuel Nason, Scott Ensel, Hisham Temmar, Joseph Costello, Cynthia Chestek, Parag Patil

208 Computer Vision Aided Kinematic Testing During Deep Brain Stimulation Surgery: From Motif Extraction to Neural Correlation
Sunderland Baker, Andy Tekriwal, Steven Ojemann, Daniel Kramer, Gidon Felsen, John Thompson, Drew Kern
209 StereoEEG Based Brain-computer Interfacing Reveals Selective Recruitment of Motor Association Areas During Feedback
Kai Miller, Michael Jensen, Dora Hermes, Alexander Belsten, Peter Brunner, Gregory Worrell, Gerwin Schalk

210 Transient Time of Seizure Freedom After Radiofrequency Ablation of the Epileptic Zone Can Help Determine Success of Further Ablation via LITT
Jessica Shields, Alex Greven, Nealen Laxpati, Robert E. Gross

211 Using Coherence to Study Changes in Pre-event Connectivity in a Novel Animal Model of Mesial Temporal Lobe Epilepsy
Mani Ratnesh Sandhu, Abhijeet Gummadavelli, Mark Bower, Jon Zhou, Roni Dhaher, Victoria Phoumthipphavong, Hitten Zaveri, Dennis Spencer, Tore Eid, Jason Gerrard

212 When Stereoelectroencephalography is Inconclusive: Insight from a Two-Step Cohort Series
Adeel Ilyas, Laura Bertran, Stephen Thompson, Nitin Tandon

213 Seizure Freedom After Surgery for Insular Epilepsy: A Case Series, Systematic Review and Meta-analysis
Mostafa Fatehi Hassanabad, Ruchen Guo, Amir Ali Sepehry, Walter Hader

214 Direct Targeting Methodology Improves Accuracy in Responsive Neurostimulation of the Centromedian Thalamic Nucleus
Pranav Nanda, Zachary Kons, Athar Malik, Nathaniel Sisterson, Nora Daly, Vasileios Kokkinos, Robert Richardson

215 Thalamic Implantation During Stereoelectroencephalography Informs Decisions for Responsive Neurostimulation Therapy
Arjun Khanna, Pranav Nanda, Catherine Chu, Sydney Cash, Vasileios Kokkinos, Robert Richardson

216 Wnt Pathway Modulation in Epileptogenesis
Muriel Mardones, Kunal Gupta

217 Invasive Seizure Localization: The Role of Adding Additional Electrodes
Nolan Brown, Ali Tafreshi, Alvin Chan, Brian Lien, Elliot Choi, Frank Hsu, Sumeet Vadera
218 Long-Term Seizure Freedom and Seizure Frequency Reduction Achieved by Surgical Resection for Drug Resistant Epilepsy

219 Common Time-Frequency Markers of the Epileptogenic Zone in Adult, Pediatric, and Animal Epilepsies
Nealen Laxpati, Mark Connolly, Alejandra Fernandez, Claire-Anne Gutekunst, Robyn Selawski, Joshua Chern, Annaelle Devergnas, Robert E. Gross

220 Cortical-cortical Evoked Potentials Correlate to the Interictal Spike Network in Stereo EEG Patients
Francesco Pucci, Kenneth Taylor, Dileep Nair

221 The Endoscopic Trans-maxillary Temporal Pole Approach for Mesial Temporal Lobe Epilepsies

222 Widespread Markers of Cortical Activation Accompany Loss of Consciousness During Focal to Bilateral Tonic-clonic Seizures
Wendell Lake, Urszula Girska, Aaron Suminski, Elsa Juan, Csaba Kozma, Cynthia Papantonatos, Tom Bugnon, Colin Denis, Vaclav Kremen, Gregory Worrell, Aaron Struck, Lisa Bateman, Edward Merricks, Hal Blumenfeld, Giulio Tononi, Catherine Schevon, Melanie Boly

223 Initial Programming Times Using Image-Guided Programming With a Multiple-Source, Constant-Current DBS System
Jason Aldred, Theresa Zesiewicz, Juan Ramirez-Castaneda, Michael Okun, Corneliu Luca, Ritesh Ramdhani, Leo Verhagen Metman, Jennifer Durphy, Mustafa Siddiqui, Yarema Bezchlibnyk, Jonathan Carlson, Kelly Foote, Sepehr Sani, David Weintraub, Jonathan Jagid, Julie Pilitsis, Lilly Chen, Roshini Jain
224 Deep Learning Segmentation of the Nucleus Basalis of Meynert for Patient-specific DBS Targeting
Derek Doss, Graham Johnson, Saramati Narasimhan, Jasmine Jiang, Hernan Gonzalez, Danika Paulo, Benoit Dawant, Catie Chang, Victoria Morgan, Christos Constantinidis, Dario Englot

225 Acute Stimulation-Induced Ataxia From Thalamic Deep Brain Stimulation
Vyshak Chandra, Yusuf Mehkri, Anuj Desai, Chadwin Hanna, Jairo Hernandez, Abraham Alvarado-Gonzalez, Joshua Wong, Justin Hilliard, Kelly Foote

226 A Clinically-derived Oscillatory MER Biomarker Predicts Optimal Subthalamic Deep Brain Stimulation Amplitude and Location
Akshay Rao, Charles Lu, Asra Askari, Karlo Malaga, Kelvin Chou, Parag Patil

227 Intraoperative Localization of Deep Brain Stimulation Electrodes Through Automatic Mapping of Microelectrode Recordings to MRI
Akshay Rao, Aidan Ahamparam, Kelvin Chou, Parag Patil

228 Activation Pathways of STN and GPi Deep Brain Stimulation for Parkinson’s Disease
Aislyn DiRisio, Josue Avecillas-Chasin, Samantha Platt, Martijn Figee, Joohi Jimenez-Shahed, Helen Mayberg, Ki Sueng Choi, Brian Kopell

229 Applying Auto-segmentation to Assess Indirect Targeting of the Ventral Intermediate Nucleus in MRI-guided High Intensity Focused Ultrasound Thalamotomy
Saswat Sahoo, Mihika Thapliyal, Francesco Pucci, Hongchae Baek, Emmanuel Obusez, Daniel Lockwood, Stephen Jones, Sean Nagel

230 Restoration of Continuous Hand Function Using a Closed-Loop, Brain-Controlled Functional Electrical Stimulation System
Samuel Nason, Matthew Mender, Eric Kennedy, Joris Lambrecht, Kevin Kilgore, Srinivas Chiravuri, Nishant Ganesh Kumar, Theodore Kung, Matthew Willsey, Cynthia Chestek, Parag Patil

231 Predicting the Center of the Subthalamic Nucleus Using Structural T1-weighted MRI
Alaa Taha, Greydon Gilmore, Ali Khan, Jonathan C. Lau
232 Apathy Following Bilateral Subthalamic Deep Brain Stimulation for Parkinson's Disease: The INTREPID Randomized Controlled Trial
Tamara Stiep, Adolfo Ramirez-Zamora, Alexander Tröster, Roshini Jain, Lilly Chen, Mahsa Malekmohammadi, Michael Okun

233 Connectivity Patterns Related to Declines in Verbal Fluency With DBS in Parkinson's Disease
Alexander Alley, Joseph S. Neimat, Scott Wylie, Robert Underwood, Nelleke van Wouwe

234 Acute Localization of Maximum Beta Power Within the Subthalamic Nucleus Using Clinic Local Field Potential Recordings Reveals Minimal Variability in the Peak Frequency
Sydnei Lewis, Lisa Hirt, Michelle Case, Christopher Pulliam, James Eubanks, Steve Goetz, Robert Raike, Steven Ojemann, Daniel Kramer, Drew Kern, John Thompson

235 Sweet Spots of Standard and Directional Leads in Patients With Refractory Essential Tremor: White Matter Pathways Associated With Tremor Improvement
Josue Avecillas-Chasin, Christopher Honey, Manraj Heran, Marie Krüger

236 3D Visualization of Intraoperative Microelectrode Recordings and Macrostimulation Testing Data to Guide Final Electrode Positioning During Deep Brain Stimulation
Danika Paulo, Saramati Narasimhan, Hernan Gonzalez, Jackson Allen, Rui Li, William Rodriguez, Peter Konrad, Joseph S. Neimat, Hamid Shah, Sarah Bick, Benoit Dawant, Dario Englot

237 Spine Deformities in Adult Movement Disorders
Hamid Shah, Peter Konrad

238 Complications of Deep Brain Stimulation for Parkinson’s Disease: Systematic Review and Meta-analysis.
Neil Rasiah, Romir Maheshwary, Churl-Su Kwon, Joshua Bloomstein, Fady Girgis

239 Quantitative Kinematic Analysis of Postural Instability in Pre-surgical Evaluation Among Movement Disorder Patients
Jacob Hanson, Alec Jonason, James Jean, Robert McGovern
240 Intraoperative Motor Testing During Asleep DBS Correlates With Postoperative Motor Thresholds
John Pearce, Sepehr Sani

241 Long-Term Motor Function and Quality of Life Outcomes from a Prospective, International DBS Registry
Jan Vesper, Roshini Jain, Heleen Scholtes, Alex Wang, Michael Barbe, Steffen Paschen, Andrea Kühn, Jens Volkmann, Chong Sik Lee, Günther Deuschl

242 RebrAIn a New Clinical VIM Targeting: A Solution to Perform DBS of the VIM Under General Anaesthesia Without MER
Julien Engelhardt, Emmanuel Cuny, Nejib Zemzemi, Dominique Guehl, Nathalie Damon-Perriere, Pierre Burbaud

243 Outpatient Deep Brain Stimulation: Initial Experience
Nicholas Brandmeir, Vishal Thakur, Muhammad Babar Khan

244 Local Evoked Potentials Facilitate Functional Mapping During Deep Brain Stimulation Surgery Under Anesthesia
Enrico Opri, Faical Isbaine, Nicholas Au Yong, Jon Willie, Nicholas Boulis, Thomas Wichmann, Robert E. Gross, Svjetlana Miocinovic

245 Susceptibility Weighted Imaging MRI Approximates Intra-operative Micro-electrode Recording During Deep Brain Stimulation of the Subthalamic Nucleus for Parkinson’s Disease
Hailey Budnick, Kunal Gupta

246 Racial Disparities in the Treatment of Parkinson’s Disease With Deep Brain Stimulation Arise from Catchment Patterns
Henry Skelton, Dayton Grogan, Nealen Laxpati, Robert E. Gross, Nicholas Au Yong, Svjetlana Miocinovic

247 Theta Low-Gamma Phase Amplitude Coupling in the Human Orbitofrontal Cortex Increases During a Conflict-Processing Task
Kuang-Hsuan Chen, Austin Tang, Zachary Gilbert, Roberto Martin del Campo-Vera, Rinu Sebastian, Arthur Shao, Emiliano Tabarsi, Ryan Chung, Shivani Sundaram, Alexandra Kammen, Jonathon Cavalieri, Angad Gogia, Xenos Mason, Christi Heck, George Nune, Charles Liu, Spencer Kellis, Brian Lee
248 Human Conflict Processing: Neural Oscillations in the Modified Stroop Task
Zachary Gilbert, Ryan Chung, Kuang-Hsuan Chen, Austin Tang, Emiliano Tabarsi, Shivani Sundaram, Roberto Martin del Campo-Vera, Arthur Shao, Rinu Sebastian, Alexandra Kammen, Jonathon Cavaleri, Angad Gogia, Xenos Mason, Christi Heck, George Nune, Charles Liu, Spencer Kellis, Brian Lee

249 Neuronal Ensemble Dynamics in the Primate Prefrontal Cortex during Virtual Reality Navigation
Mohamad Abbass, Renee Johnston, Benjamin Corrigan, Roberto Gulli, Adam Sachs, Jonathan Lau, Julio Martinez-Trujillo

250 Baseline Hippocampal Beta Band Power Is Lower in the Presence of Movement Uncertainty
Zachary Gilbert, Roberto Martin del Campo-Vera, Austin Tang, Kuang-Hsuan Chen, Rinu Sebastian, Arthur Shao, Emiliano Tabarsi, Ryan Chung, Shivani Sundaram, Alexandra Kammen, Jonathon Cavaleri, Angad Gogia, Xenos Mason, Christi Heck, George Nune, Charles Liu, Spencer Kellis, Brian Lee

251 Towards using Thalamocortical Activity as a Readout of Target Engagement for Preclinical Subthalamic Nucleus Deep Brain Stimulation
James Trevathan, Kevin Cheng, Brandon Coventry, Hyun-Joo Park, Wendell Lake, Kip Ludwig, Erika Ross, Aaron Suminski

252 Single-unit Activity of Distinct SNr Subpopulations are Modulated by Motor Context
Anand Tekriwal, Gidon Felsen, Steven Ojemann, Aviva Abosch, John Thompson

253 Amygdaloid Gamma Power Modulation in the Presence of Response Uncertainty
Roberto Martin del Campo-Vera, Zachary Gilbert, Austin Tang, Jonathon Cavaleri, Arthur Shao, Kuang-Hsuan Chen, Rinu Sebastian, Emiliano Tabarsi, Ryan Chung, Shivani Sundaram, Alexandra Kammen, Angad Gogia, Xenos Mason, Christi Heck, George Nune, Charles Liu, Spencer Kellis, Brian Lee

254 Brain-Wide Intracranial Evoked Responses to Direct Temporal Lobe Electrical Stimulation
Eric Cole, Louis Blanpain, Nealen Laxpati, Robert E. Gross
255 Altered Caudate Power in Parkinson’s Disease Patients Correlates With Memory Impairment
Helen Qian, Danika Paulo, Deeptha Subramanian, Kaltra Dhima, Sarah Bick

256 Subthalamic Deep Brain Stimulation of an Anatomically Detailed Model of the Human Hyperdirect Pathway
Clayton Bingham, Cameron McIntyre

257 Oscillatory Encoding of Intertemporal Choices in Humans
Jay Gill, Mahmoud Omidbeigi, Nanthia Suthana, Ausaf Bari

258 Sciatic Nerve Stimulation Accelerates Recovery After Experimental Spinal Cord Injury
Jordan Iordanou, Jennifer Schreiber, Shih-Yen Tsai, Son Ton, Akram Imam, Brian Powers, James Walter, Martin Oudega, Gwendolyn Kartje, Russ Nockels

259 Spatio-temporal Spread of Stimulation-Induced Activity in the Lateral and Basal Nucleus of the Amygdala
Markus Adamek, Jon Willie, James Swift, Lawrence Eisenman, John Zempel, Cory Inman, Peter Brunner

261 Botulinum Toxin in Treatment of Trigeminal Neuralgia in Surgical Practice
Thomas Tangney, Ehsaun Heydari, Charles Argoff, Olga Khazen, Amit Shetty, Julie Pilitsis

262 Retrospective Review of Real-world Pain and Quality of Life Outcomes Resulting from 60-day PNS Treatment for Chronic Pain
Konstantin Slavin, Marc Huntoon, Jonathan Hagedorn, Nate Crosby, Joseph Boggs

263 Novel Anchoring Technique and Surgical Nuances for Trigeminal Ganglion Stimulation in the Treatment of Post-herpetic Trigeminal Neuropathic Facial Pain
Kunal Gupta

264 Evolution of the Targeting of the Anterior Limb of the Internal Capsule Circuits for Obsessive Compulsive Disorder: Multi-institutional experience
Josue Avecillas-Chasin, Ki Sueng Choi, Andrew Smith, Helen Mayberg, Cristina Nombela, Bryan Strange, Juan Antonio Barcia Albacar, Martijn Figuee, Brian Kopell
265 Case Series: Unilateral Amygdalotomy Ameliorates Post-Traumatic Stress Disorder Symptoms and Biomarkers in Temporal Lobe Epilepsy Patients
Jon Willie, Daniel Drane, Kelly Bijanki, Jennifer Stevens, Sean Minton, Abigail Powers, Tanja Jovanovic, Sanne van Rooij

266 Intracranial Recordings Reveal that Increased Information Flow in the Prefrontal Cortex is Linked to Major Depression Severity
John Myers, Jiayang Xiao, Brian Metzger, Joshua Adkinson, Anusha Allawala, Victoria Pirtle, Raissa Mathura, Adrish Anand, Ron Gadot, Ricardo Najera, Hernan Rey, Wayne Goodman, Sanjay Mathew, Nader Pouratian, Kelly Bijanki, Sameer Sheth

267 Dual-target Deep Brain Stimulation Drives Differential Engagement of Networks Underlying Treatment-resistant Depression
Anusha Allawala, Joshua Adkinson, Denise Oswalt, Raissa Mathura, Wayne Goodman, Nader Pouratian, Kelly Bijanki, David Borton, Sameer Sheth

268 Using Functional Ultrasound Imaging to Identify How Deep Brain Stimulation of the Medial Septum Modulates Memory Networks
Wooseong Choi, Kofi Agyeman, Lindsey Crown, Naim Lazkani, Isabella Hoang, Nancy Zepeda, Charles Liu, Vasileios Christopoulos, Darrin Lee

270 Connectomic Subcallosal Cingulate DBS: Patient-specific Versus Normative-connectome Tractography
Ki Sueng Choi, Juna Khang, Andreas Horn, Patricio Riva Posse, Helen Mayberg

271 The Neural Network of Mindfulness Meditation: Intracranial Electroencephalographic Recordings-based Study
Zahraa Al-Sharshahi, Lea Tortolero, Asam Saad, James Young, Lara Marcuse, Lizbeth Nunez Martinez, Ignacio Saez, Fedor Panov

272 Human Intracranial EEG Spectral Feature Analysis Reveals Specialization Within the Affective Salience Network
Brian Metzger, Prathik Kalva, Madaline Mocchi, Brian Cui, Joshua Adkinson, Zhengjia Wang, Raissa Mathura, Adrish Anand, Ben Shofty, Sameer Sheth, Kelly Bijanki
273 Intraoperative Valance Response Evaluation in Both VC/V5 and BNST for the Selection of Optimal DBS Target in Medically Refractory OCD
Ben Shofty, Ron Gadot, Ashwin Viswanathan, Nicole Provenza, Eric Storch, Greg Vogt, Matthew Meyers, Michelle Avendano-Ortega, Wayne Goodman, Sameer Sheth

274 Effects of Compassion Meditation on Amygdala Reactivity and Anxiety in Drug Resistant Epilepsy (DRE)
Lea Tortolero, Zahraa Al-Sharshahi, Asam Saad, James Young, Lara Marcuse, Lizbeth Nunez Martinez, Faris Gulumali, Ignacio Saez, Fedor Panov

275 The Impact of Magnetoencephalography-directed Stereo-encephalographic Depth Electrode Implantation on Seizure Control Outcome: A Single Institution’s Experience
Khashayar Mozaffari, Katherine Hofmann, Eric Chalif, Paul Boyd, Archana Pasupuleti, William Gaillard, Chima Oluigbo

276 Determining Cortical Network Properties of Social Personality Traits and Psychiatric Disorder
Martina Mustroph, Patrick Ng, Yoav Kfir, Ziv Williams

277 Sub-Nucleus Specific Changes in Human Thalamic Subnuclei Determine Clinical Response to Neurostimulation
Adeel Ilyas, Laura Bertran, Stephen Thompson, Nitin Tandon

278 Surgical Series of Targeted Resection for Medically Refractory Temporal Lobe Epilepsy With Anterior Temporal Encephaloceles
Hernan Gonzalez, Tyler Ball, Niyatee Samudra, Eric Armour, Danika Paulo, Saramati Narasimhan, Bassel Abou-Khalil, Kevin Haas, Sarah Bick, Dario Englot

279 Temporal Lobectomy Following Stereotactic Laser Amygdalohippocampotomy: Demographics, Outcomes, and Neuropathology
Jonathan Lau, Dayton Grogan, Pia Mendoza, Neal Laxpati, Daniel Drane, Matthew Schniederjan, Katie Bullinger, Jon Willie, Robert E. Gross

280 Multiplex Fluorescence Immunohistochemistry Demonstrates Neuronal Loss, Demyelination, and Perivascular Inflammation in Mesial Temporal Sclerosis
Islam Fayed, Armin Mortazavi, Alexander Ksendzovsky, Marcelle Altshuler, Kareem Zaghloul, Dragan Maric
281 Thalamic RNS: An Out for “Difficult to Treat” Epilepsy?
Andrew Willett, Meena Vessell, Joseph S. Neimat, Brittany Chapman

282 Volumetric Analysis of Auto-segmented Lesion and Regional Structures After MRI-guided High Intensity Focused Ultrasound Thalamotomy
Mihika Thapliyal, Saswat Sahoo, Francesco Pucci, Hongchae Baek, Emmanuel Obusez, Daniel Lockwood, Stephen Jones, Sean Nagel

283 Contact Localization Within Subthalamic Subnuclei in Deep Brain Stimulation for Parkinson Disease
Mohamad Abbass, Greydon Gilmore, Alan Chalil, Brendan Santyr, Andrew Parrent, Keith MacDougall, Jonathan Lau

284 Non-Linear Registration for Automatic Segmentation of Parkinson Disease Therapeutic Targets Using Clinical MRI Scans: Comparison of Methodology, Disease State, and Quality Control
Christopher Miller, Jennifer Muller, Angela Noecker, Caio Matias, Cameron McIntyre, Chengyuan Wu

285 Characterization of Human Amygdala Activation Dynamics During an Emotion Discrimination Task
Shaquia Idlett-Ali, Rex Tien, Marielle Darwin, John Thompson, Daniel Kramer

286 Encoding of Hand Position in Single Units of the Ventral Intermediate Nucleus of the Thalamus During an Intraoperative Reaching Task in Essential Tremor Patients
Rex Tien, Jonathan Platt, Madelyn Mendlen, Linea Gutierrez, Drew Kern, Steven Ojemann, John Thompson, Daniel Kramer

287 Lateral STN Subregion Neurostimulation is Associated With Axial Motor Signs Improvement in Parkinson’s Disease
Asra Askari, Brandon Zhu, Kelvin Chou, Parag Patil

288 Theta Burst Subthalamic Nucleus Stimulation for Motor and Cognitive Symptoms: A Pilot Study
Wooseong Choi, Kaevon Brasfield, Kevin Wu, Jonathan Cavaleri, Robert Briggs, Melanie Cohn, Melissa Wilson, Brian Lee, Xenos Mason, Darrin Lee
289 Dorsal Contact Location Associated With Improved Executive Function Following Deep Brain Stimulation for Parkinson's Disease
Jordan Lam, Asra Askari, Taylor Greif, Xiru Lyu, Amanda Maher, Carol Persad, Kelvin Chou, Parag Patil

290 Real-World Clinical Outcomes Using a Novel Directional System from a Multicenter Registry of Deep Brain Stimulation for Parkinson's Disease
Jan Vesper, Roshini Jain, Heleen Scholtes, Alex Wang, Michael Barbe, Steffen Paschen, Andrea Kühn, Jens Volkmann, Chong Sik Lee, Günther Deuschl

291 Minimizing Pneumocephalus During Deep Brain Stimulation Surgery
Daniel Zhang, John Pearce, Edgar Petrosyan, Alireza Borghei, Sepehr Sani

292 Electrocorticography During Deep Brain Stimulation Surgery Does not Affect Final Lead Location
Zachary Kons, Amir Hadanny, Alan Bush, Pranav Nanda, Varun Saravanan, Todd Herrington, Robert Richardson

293 Volumetric and Topographic Analysis of Lesion and Edema Formation in MR-guided Focused Ultrasound Thalamotomy: Relationships With Sonication Parameters and Adverse Events
Patrick Ng, Alfredo Morales Pinzon, Fardad Behzadi, Michele Cavallari, Andrzej Marciniak, Grégory Bliault, Kezia Irene, David Segar, Matthew N. DeSalvo, Jason White, Nathan McDannold, Charles R.G. Guttmann, G. Rees Cosgrove

295 Patient-intrinsic Similarities During Bilateral MRgFUS Thalamotomy for Essential Tremor
Graham Winston, Sara Strauss, Kristen Leeman, Arindaram Roy Choudhury, Charlene Thomas, Levi Chazen, Michael Kaplitt
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<table>
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<tr>
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<tbody>
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12:00-1:00 pm Overlook West
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12:00-1:00 pm Overlook East
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Boston Scientific DBS Research Partnerships and An update on NIH Brain Signal Controlled Stimulation Depression Study
Speakers: Sameer Anil Sheth, Stephen Carcieri

Monday, June 6, 2022

7:00-8:00 am Overlook East
NON-CME SPONSORED BREAKFAST SESSION
Using Advanced Technology to Treat Networks in Epilepsy: Hear How Experts are Using SEEG to Inform Neuromodulation Treatment and Using Responsive Stimulation Therapy to Modulate Networks in Epilepsy.
Speakers: Robert Mark Richardson, Fedor Panov
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<th>Location</th>
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| Exhibit Hall                 | Mercer Ballroom           | Sunday, June 5: 9:30 am-4:00 pm  
                          |                           | Monday, June 6: 7:30 am-5:00 pm  
                          |                           | Tuesday, June 7: 8:00-10:30 am |
| Registration                 | Ellington Ballroom Foyer  | Saturday, June 4: 9:00 am-5:00 pm  
                          |                           | Sunday, June 5: 6:30 am-6:30 pm  
                          |                           | Monday, June 6: 6:30 am-5:30 pm  
                          |                           | Tuesday, June 7: 6:30 am-3:00 pm |
| Opening Reception            | The Terrace               | Sunday, June 6: 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 | Ellington Ballroom Foyer  | Monday, June 6: 3:30-5:00 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.  
A complete listing of posters can be found on pages 40-51. |
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MRI Safety Information
RNS® Neurostimulator model RNS-320: An MRI scan may be safely performed on patients with the RNS® System (with RNS Neurostimulator model RNS-320) only under the specific conditions of safe use detailed in the MRI Guidelines for the RNS® System. Scanning under different conditions may result in device damage or malfunction and serious patient risks including permanent brain damage which may cause severe injury, coma, or death.

RNS® Neurostimulator model RNS-300M of the RNS® System is MRI Unsafe. Having an MRI scan with a model RNS-300M neurostimulator implanted may result in serious injury or possible death.

RNS® System External Components: All external components and accessories of the RNS® System such as the Magnet, RNS® Tablet, NeuroPace® Programmer, NeuroPace® Remote Monitor, and Wand are MRI Unsafe and can pose a projectile hazard in the MR environment, and therefore, must be kept out of the MRI scanner room.

Clinical Use
The RNS® System should only be implanted at Comprehensive Epilepsy Centers by neurosurgeons with adequate experience in the implantation of subdural and stereotactic implantation of intraparenchymal electrodes and in the surgical treatment of intractable epilepsy. The RNS® System should only be used by neurologists and neurosurgeons with adequate experience in the management of intractable epilepsy and in the localization of epileptic foci.

They must complete a NeuroPace® RNS® System training program and demonstrate specific expertise related to epilepsy, video-EEG monitoring, interpretation of electrocorticograms (ECoGs), the pharmacology of antiepileptic medications and selection of patients for epilepsy surgery. In some instances Neurologists who meet the experience and certification requirements but do not practice at Comprehensive Epilepsy Centers could be qualified by NeuroPace to provide post-implant programming.

Surgical
Implantation of the RNS® System and associated surgical procedure risks may cause, but are not limited to, infection, intracranial hemorrhage, tissue damage, temporary pain at the implant site, CSF leakage, seroma, and paralysis.

RNS® System and Therapy
The safety and effectiveness has not been studied in pregnant women. The effects of long-term brain stimulation on pregnancy are not well known. Strong electromagnetic interferences (EMI) can result in serious patient injury or death, damaged brain tissue, loss or change in symptom control, reoperation, stimulation to turn on or off, a return of symptoms, or a momentary increase in stimulation felt by the patient. In addition EMI, such as security screening devices and radio frequency identification, can result in delivering the programmed stimulation to the patient and appear as sensing artifacts on the ECoG recordings. The RNS® System could interact with implanted cardiac devices and result in inappropriate device response or device damage. Additional surgical procedures can result from battery malfunction, electrical short, open circuit, lead fracture, lead insulation failure, damage as a result of head trauma, or lead migration. Severe brain tissue damage can result from exposure to battery chemicals if the Neurostimulator is ruptured or pierced due to outside forces. The patient must collect data from the Neurostimulator once a day and send data to the PDMS once a week.

Medical Environment
Electrolysis on the head and neck should be avoided. Prior to the administration of Extracorporeal Shock Wave Lithotripsy or high radiation sources the administering physician should consult with the physician prescribing the RNS® System. Read the user manual to understand the steps to be taken before, during and after computerized Tomography (CT) scans.

Potential Adverse Events
Serious adverse events occurring in > 2.5% of patients and those of particular relevance reported during the RNS® System clinical studies include EEG monitoring, infection, change in seizures, medical device removal, death, device lead damage or revision, antiepileptic drug toxicity, hemorrhage, psychiatric events, status epilepticus and seizure-related injury. Refer to the product labeling for a detailed disclosure of other reported adverse events.

Rx Only: Refer to the product labeling for a detailed disclosure of specific indications, contraindications, warnings, precautions and adverse events.

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The RNS® System
There’s a smarter way to treat epilepsy.

Nearly **11 years** of Battery life*

Longer battery life means fewer procedures, which translates into lower health risk and lower cost for patients. All without the burden of recharging.

**Full Body MRI Conditional**

RNS-320 patients have access to valuable imaging options.

- **Full Body MRI Conditional**
- **No Restrictions on Leads**
- **100%**
- **All RNS-320 Patients, current and future can receive MRIs**
- **The RNS® System can now be Implanted Before Laser Ablation**

Join us for a Breakfast Symposium at ASSFN!

Hear how experts are using SEEG to inform Neuromodulation treatment in epilepsy. Hear from:

**Fedor Panov, MD**
Assistant Professor of Neurosurgery
Director, Adult Epilepsy Surgery Program
Mount Sinai Health System

**Robert Mark Richardson, MD, PhD**
Director of Functional Neurosurgery
Massachusetts General Hospital

*The median battery longevity is 10.8 years for the RNS Neurostimulator (model RNS-320), on average. Estimates for longevity were derived from medium stimulation and detection utilization (mAh/day). See Product Manuals at www.neuropace.com for more information.

**Refer to the MRI Guidelines for the RNS System to determine patient eligibility for MRI and for the specific conditions required to safely perform an MRI scan on patients implanted with RNS Neurostimulator (model RNS-320). See www.neuropace.com/MRI.

† Please check with the manufacturer of the laser to determine the conditions under which this procedure could be safe.

Rx Only. The RNS® System is an adjunctive therapy for adults with refractory, partial onset seizures with no more than 2 epileptogenic foci. See important safety information at http://www.neuropace.com/safety/. ©2022 NeuroPace, Inc. All rights reserved. NeuroPace and RNS are trademarks of NeuroPace, Inc. Mountain View, CA 94043. NP 220065 Rev 1 / Rev. Date: 2022-04
Visualize the procedure

Realize the potential

The power to plan, perform, and verify at every step for patient specific treatment that sets a new standard for neurological care.

Come see us at booth #105 for in-person demos.