### THURSDAY, JANUARY 13

<table>
<thead>
<tr>
<th>Time</th>
<th>Course</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>8-5 pm</td>
<td>PRE-MEETING COURSES</td>
<td>ADVENTHEALTH NICHOLSON CENTER</td>
</tr>
</tbody>
</table>
| 8 am-5 pm | **NANS Advanced Therapies Workshop for Pain and Neuromodulation**  
Directors: Kiran V. Patel, MD; Michael Hanes, MD |
| 8 am-5 pm | **Neuromodulation Cadaver Course for Neurosurgery and Neurology Residents and Fellows**  
Directors: Ahmed Raslan, MD; Ashwin Viswananthan, MD |

### FRIDAY, JANUARY 14

<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>7-8 am</td>
<td>CONCURRENT SESSION I</td>
<td>WALT DISNEY WORLD SWAN &amp; DOLPHIN RESORT</td>
</tr>
</tbody>
</table>
| 8 am-5 pm | **Beyond Pain and Nerves: Applied Neuromodulation for Vascular, Non-Vascular, Visceral and Residual COVID-19 Co-Morbid Conditions**  
Moderators: Jennifer Hah, MD; Damian S. Shin, MSc, PhD |
| 8 am-5 pm | **A Different Type of Pacemaker: Cardiac Function and Neuromodulation for Heart Failure and Life Threatening Arythmias**  
Tim Lamer, MD |
| 8:30 am-5 pm | **Pandemic After Effects: Use of Neuromodulation to Treat COVID-19 Sequelae**  
Peter S. Staats, MD |
| 8 am-5 pm | **Vessels and Nerves Dysfunction in Diabetes Mellitus: Neuromodulation Techniques for the Treatment of Both**  
Dalia H. Elmofty, MD |
| 8 am-5 pm | **Peripheral Nerve Stimulation for the Treatment of Overactive Bladder**  
Maunak V. Rana, MD |
| 8 am-5 pm | **Advances in Neuromodulation in Cancer Pain**  
Moderators: Ann C. Shah, MD; David Copenhaver, MD |
| 8 am-5 pm | **Improved Cancer Pain Management Through Understanding of Intrathecal Pharmacokinetics/Pharmacodynamics**  
Sanjeet Narang, MD |
| 8 am-5 pm | **Intrathecal Therapy Dosing Strategies for Cancer Pain**  
Tammy L Dann, DO, MPH |
| 8 am-5 pm | **Emerging Evidence for Peripheral Nerve Stimulation and Cancer Pain**  
Scott Pritzlaff, MD |
Optimization of Spinal Cord Stimulation for Cancer Pain  
Amitabh Gulati, MD

Device Troubleshooting for APPs  
Moderators: Molly Liter, Christy A. Gomez Hupe, DNP

Need for revisions- why and when  
Lauren Cimino, APRN, CNP

Prevention and Management of IPG Pocket Pain  
Teresita Devera, MSN, CRNP, ANP-BC

Troubleshooting IT pumps  
Chelsey Hoffman, PA-C, MS, RD

Connecting with the Future: Neuromodulation Art and Science Made Easy with Technology  
Moderators: Meredith Barad, MD; Nebojsa Nick Knezevic, MD, PhD

Simulation and Virtual Reality in Neuromodulation: Lessons Learned  
Maged Guirguis, MD

Neuromodulation Teaching in Fellowship: How Much Is Enough?  
Johnathan H. Goree, MD

A Skill and an Art: Best Ways to Learn Neuromodulation Techniques and Troubleshooting  
Magdalena M. Antescut, MD, PhD

These Are My Images: Connecting Special Groups via Social Media  
Jacqueline Weisbein, DO

FRIDAY, JANUARY 14

8:30-10:00 am  PLENARY SESSION 1

THE NEXT GENERATION  
Moderators: Susan M Moeschler, MD

The Role of Social Media for Patient Care  
Ryan S. D’Souza, MD

Telehealth, Remote Care, and Improving Patient Access  
Vwaire Orhurhu, MD

NANS Neuromodulation Certification: Ensuring Access to Quality  
Rany T. Abdallah MD PhD MBA

Presidential Address  
Peter E. Konrad, MD PhD

Lifetime Achievement and Distinguished Service Award Presentation  
Peter E. Konrad, MD PhD

10:30 am- 12pm  CONCURRENT SESSION II

Neuromodulation for Neurologic Recovery  
Moderators: Rushna P. Ali, MD; Erika A. Petersen, MD

Deep brain stimulation for stroke recovery and rehabilitation  
Andre G. Machado, MD

Utilizing advanced neuroimaging to guide target selection for management of tinnitus  
Mark Janssen

VNS/TMS in stroke  
Jessie Dawson, MD

Transcranial magnetic stimulation for TBI  
Theresa L. Bender Pape, DrPH, MA, CCC-SLP/LFACRM

Advanced Neuromodulation for Psychiatric Disorders
### 12:00-1:30 pm  
**LUNCH SYMPOSIA (NON-CME)**

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
</tr>
</thead>
</table>
| 12:00-1:30 pm| **Overdosing The Nervous System– Is This a Problem?**
|              | Gregory Davis, MD                                                     |
|              | Dosing and the Spinal Cord: The Role of Cycling
|              | Moderators: Lawrence Poree, MD PhD; David A. Provenzano, MD          |
|              | **Neuromodulation for the Treatment of Craniofacial Pain**
|              | Moderators: Meredith Barad, MD; Samer Narouze, MD PhD               |
|              | **Psychiatric Neuroengineering**
|              | Kafui Dzirasa, MD PhD                                               |
|              | **Closing the loop: adaptive DBS for OCD**
|              | Wayne Goodman, MD                                                    |
|              | **RNS for tourettes**
|              | Kelly D. Foote, MD                                                  |
|              | **Amygdala responsive neural stimulation for PTSD.**
|              | Jean-Philippe Langevin, MD                                           |
|              | **Signal Processing for Adaptive Neuromodulation to Treat Severe Intractable Mental Disorders**
|              | Nicole R. Provenza, PhD                                             |
|              | **Dosing and the Spinal Cord: The Role of Cycling**
|              | Moderators: Lawrence Poree, MD PhD; David A. Provenzano, MD          |
|              | **Overdosing The Nervous System– Is This a Problem?**
|              | Gregory Davis, MD                                                    |
|              | **Electrophysiological Basis of Cycling**
|              | Damian S. Shin PhD                                                  |
|              | **Human Data for Cycling – Clinical Outcomes & Battery Longevity**
|              | David A. Provenzano, MD                                              |
|              | **Future Scientific Methods to Optimize and Understand the Deployment of Cycling**
|              | Ricardo Vallejo, MD PhD                                             |
|              | **Neuromodulation for the Treatment of Craniofacial Pain**
|              | Moderators: Meredith Barad, MD; Samer Narouze, MD PhD               |
|              | **Patient Selection for Neuromodulation and Treatment Approach to Craniofacial Pain**
|              | Narayan R. Kissoon, MD                                               |
|              | **Portable Non-Invasive Neuromodulation in the Treatment of Headache Disorders**
|              | Nathaniel Schuster, MD                                               |
|              | **Peripheral Nerve Stimulation in Treatment Cranial Neuralgias and Trigeminal Autonomic Cephalalgias**
|              | Matthew J. Pingree, MD                                               |
|              | **International Guidelines on TMS for Use on Headache and Chronic Pain**
|              | Albert Leung                                                         |
|              | **Transcranial Magnetic Stimulation and Motor Cortex Stimulation for Treatment of Intractable Craniofacial Pain**
|              | Brian Lundstrom, MD PhD                                             |
|              | **Engineering Principles in Neurostimulation: Emerging Concepts**
|              | Moderators: Marom Bikson, PhD; Scott Lempka, PhD                    |
|              | **SCS: New waveforms and mechanisms of action**
|              | Scott Lempka, PhD                                                   |
|              | **SCS: Subthreshold mechanisms**
|              | Marom Bikson, PhD                                                   |
|              | **DBS: New waveforms and lead designs**
|              | Svjetlana Miocinovic, MD, PhD                                       |
|              | **DBS: Synaptic suppression (or StimVision)**
|              | Cameron McIntyre, PhD                                                |

### 1:30-3:30 pm  
**PLENARY SESSION II**

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>1:30-3:30 pm</td>
<td><strong>Moderators: Lawrence Poree, MD PhD MPH</strong></td>
</tr>
</tbody>
</table>
|              | **Psychiatric Neuroengineering**
|              | Kafui Dzirasa, MD PhD                                               |
FDA Approval Standards for PCLC Systems: Do IMPACT and ION Guidelines Meet the Bar to Approval
Vivek Pinto, FDA Director - DHT5B: Division of Neuromodulation

Fundamentals of Physiologic Closed-Loop Control (PCLC) Systems: Road to AI?
Tim Denison

Keynote Address
Travis N. Rieder, PhD

3:45-5:15 pm  CONCURRENT SESSION III

Identifying Alternative Cells Involved in SCS Therapy
Moderators: Magdalena Anitescu, MD PhD; Kate Meacham MD, PhD

Differential Therapy Multiplex – Identifying Alternative Cells Involved in SCS Therapy
Sam S. Eldabe, MD

Understanding the Role of Surround Inhibition in SCS Therapy
Joshua M. Rosenow, MD, FACS

Beyond the Gate: Clinical Evidence for the Novel Neuromodulation Mechanisms of Action
Mark Wallace, MD

Partnering with the US Government to Advance Neuromodulation
Moderator: Eugene Civillico, PhD

Office of the NIH Director, SPARC and Bridge2AI programs
Eugene Civillico, PhD

NIMH, neuromodulation, mental health
David McMullen, MD

Director of NIH Small Business Education and Entrepreneurial Development (SEED) Office
Matt McMahon, PhD

NINDS and neuromodulation
Kari Ashmont, PhD

Adaptive and Closed Loop Brain Neuromodulation
Moderators: Dario Englot, MD PhD; John Rolston, MD, PhD

aDBS for PD
Ian Gilron, MD, MSc, FRCPC

RNS for Obesity
Casey H. Halpern, MD

aDBS for epilepsy
Gregory Worrell, MD, PhD

aDBS for chronic pain
Prasad Shirvalkar, MD, PhD

Emerging Technologies and Indications: Peripheral Nerve Stimulation
Moderator: Lee Fisher, PhD, Kip A. Ludwig, PhD

Improving the experience of sensory neuroprostheses through biomimetic stimulation
Emily L. Graczyk, PhD

Pudendal nerve stimulation to treat detrusor underactivity
Tim M. Bruns, PhD

Closed-loop peripheral nerve stimulation to treat chronic pain
Sridevi V. Sarma, PhD

An injectable neural stimulation electrode for vagus nerve stimulation
Kip A. Ludwig, PhD

Intrathecal Drug Delivery: From Pharmacy to Pumps
**Moderators:** Rushna Ali, MD; Mark Jones, MD

**Abstract Session**

**Secondary benefits of intrathecal baclofen therapy**  
TBD

**Accelerating Non-Pain Physician Awareness of the Role of Neuromodulation: A Discussion in**  
**What Is Healthcare Delivery Science or Implementation Medicine and Why Does It Mean to Neuromodulation?**  
David Dickerson, MD

**Moderators:** Michael F. Saulino, MD, PhD; Erik Shaw, DO

**The role of interleukin 10 in pain management**  
TBD

**Improving the Technical Proficiency and Competency of Pain Medicine Fellows**  
Holwer Joswig

**Drug Interactions and Pharmacodynamics of Compounded Intrathecal Delivery**  
Ann C. Shah, MD

---

**SATURDAY, JANUARY 15**

**CONCURRENT SESSION IV**

**Partnering With Our Patients to Optimize Outcomes**

**Moderators:** Teresita Devera, MSN CRNP ANP-BC; Chelsey Hoffman, PA-C, MS, RD

**Assessing and treating mental health in the context of neuromodulation**  
Marilyn Jacobs, PhD

**Utilizing Patient tools and outcomes to define “success”**  
Ryan D’Souza, MD

**Setting Realistic Expectations for Long-Term Success**  
Molly Liter

**Choosing neumodulation versus medication in the therapy algorithm**  
Kiran V. Patel, MD

**Neuromodulation and Neurosurgical Mentorship and Educational Development**

**Moderators:** Michael D. Staudt, MD, MSc; Sharona Ben-Haim, MD

**Development and Implementation of a Neuromodulation Mentorship Program – the NANS Experience**  
Steven M. Falowski, MD

**Improving the Technical Proficiency and Competency of Pain Medicine Fellows**  
Thomas P. Pittelkow, DO, MPH

**Development and Implementation of a Neurosurgery Mentorship Program – the ASSFN Experience**  
Vibhor Krishna, MD

**Assessing the Resident Learning Curve for Neurosurgical and Interventional Procedures**  
Holwer Joswig

**Controversies in Targeted Drug Delivery**

**Moderators:** Michael F. Saulino, MD, PhD; Erik Shaw, DO

**The role of interleukin 10 in pain management**  
TBD

**To trial or not to trial: that is the question?**  
Jay S. Grider, DO, PhD, MBA

**Secondary benefits of intrathecal baclofen therapy**  
TBD

**Unique approaches to troubleshooting intrathecal delivery systems**  
Jonathan M. Hagedorn, MD

**Accelerating Non-Pain Physician Awareness of the Role of Neuromodulation: A Discussion in**

**What Is Healthcare Delivery Science or Implementation Medicine and Why Does It Mean to Neuromodulation?**  
David Dickerson, MD
What Gaps and Barriers Impact Patient Access to Neurostimulation?
Maricela C. Schnur, MD, MBA

How Can We Accelerate Uptake and Practice Change in Non Pain Care Specialist Awareness and Recommendation for Neurostimulation?
Johnathan H. Goree, MD

Strategies for Stakeholder Alignment to Drive Patient Access to Neurostimulation
Dawood Sayed, MD
## SATURDAY, JANUARY 15

### 8:30-10:00 am  PLENARY SESSION III

<table>
<thead>
<tr>
<th>Time</th>
<th>Session Title</th>
<th>Moderators</th>
</tr>
</thead>
<tbody>
<tr>
<td>8:30-10:00 am</td>
<td>Late-Breaking Clinical Trials</td>
<td>Ellen L. Air, MD, PhD; Nebojsa Nick Knezevik, MD, PhD</td>
</tr>
</tbody>
</table>

### 10:30 am-12:00 pm  CONCURRENT SESSION V

<table>
<thead>
<tr>
<th>Time</th>
<th>Session Title</th>
<th>Moderators</th>
</tr>
</thead>
<tbody>
<tr>
<td>10:30-12:00 pm</td>
<td>Spinal Cord Stimulation Mechanisms: Results from Animal Studies</td>
<td>Christy L. Hunt, DO; David Cedeno, PhD</td>
</tr>
<tr>
<td></td>
<td>SCS Modulation of Microglia</td>
<td>Christy L. Hunt, DO</td>
</tr>
<tr>
<td></td>
<td>SCS Alters Spinal Cord Gene Expression</td>
<td>David Cedeno, PhD</td>
</tr>
<tr>
<td></td>
<td>SCS Effects on Molecularly Defined Dorsal Horn Circuits</td>
<td>Andrei Sdrulla, MD, PhD</td>
</tr>
<tr>
<td></td>
<td>fMRI Imaging During SCS in Rats</td>
<td>Antonietta Canna</td>
</tr>
<tr>
<td></td>
<td>Using ECAPS to Investigate Pharmacology of SCS</td>
<td>Ilona Obara, PhD</td>
</tr>
<tr>
<td></td>
<td>New Targets and Paradigms for Psychiatric Neuromodulation</td>
<td>Cameron McIntyre, PhD; Damian S. Shin, MSc, PhD</td>
</tr>
<tr>
<td></td>
<td>Precision mapping the human cerebellum for neuromodulation for treating schizophrenia</td>
<td>Randy L. Buckner, PhD</td>
</tr>
<tr>
<td></td>
<td>Amygdala/cingulate stimulation for depression</td>
<td>Kelly R. Bijanki, PhD</td>
</tr>
<tr>
<td></td>
<td>Cerebellar stimulation for depression</td>
<td>Francis Bambico, PhD</td>
</tr>
<tr>
<td></td>
<td>Amygdala ablation for PTSD</td>
<td>Jon T. Willie, MD, PhD</td>
</tr>
<tr>
<td></td>
<td>Using ECAPS to Investigate Pharmacology of SCS</td>
<td>Ilona Obara, PhD</td>
</tr>
<tr>
<td></td>
<td>Brain Neuromodulation - Where is the evidence for what we do? (CNS Session)</td>
<td>Nader Pouratian, MD; Julie Pilitsis, MD, PhD</td>
</tr>
<tr>
<td></td>
<td>Developing multidisciplinary guidelines - the example of SCS</td>
<td>Ellen L. Air, MD, PhD</td>
</tr>
<tr>
<td></td>
<td>Surgery for psychiatric disorders</td>
<td>Nathan C. Rowland, MD, PhD</td>
</tr>
<tr>
<td></td>
<td>Surgery for epilepsy</td>
<td>Sharona Ben-Haim, MD</td>
</tr>
<tr>
<td></td>
<td>Surgery for movement disorders</td>
<td>Heather Pinckard-Dover, MD</td>
</tr>
<tr>
<td></td>
<td>Innovations in Patient and Provider Education to Improve Access to Neuromodulation</td>
<td>Johnathan H. Goree, MD; Stephanie G. Vanterpool, MD, MBA</td>
</tr>
<tr>
<td></td>
<td>Improving access to Deep Brain Stimulation through Patient Education</td>
<td>Geetha Mahendran</td>
</tr>
</tbody>
</table>

---
Using Telemedicine and Community Education to Improve Spinal Cord Stimulation Access in Rural, Underserved Populations
*Eric Cornidez, MD, MBA*

Increasing the Pipeline: How can Diversity, Equity, and Inclusion Programs Increase Access to Neuromodulation Related Fields?
*Jaleesa Jackson, MD*
### 12:00-1:30 pm  
**LUNCH SYMPOSIA (NON-CME)**

### 1:30-3:30 pm  
**PLENARY SESSION IV**

<table>
<thead>
<tr>
<th>Time</th>
<th>Session Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>1:30-3:30 pm</td>
<td>Optimizing Neuromodulation to Improve Patient Outcomes</td>
</tr>
<tr>
<td></td>
<td>Advocacy Update: How NANS is Working for You and Your Patients</td>
</tr>
<tr>
<td></td>
<td>Building the Future of Your Neuromodulation Practice</td>
</tr>
<tr>
<td></td>
<td>Keeping our Patients Safe: updates on patient safety strategies</td>
</tr>
<tr>
<td></td>
<td>Presentation of Kumar Award and Lisa Stearns Award</td>
</tr>
</tbody>
</table>

### 4:00-5:30 pm  
**CONCURRENT SESSION VI**

<table>
<thead>
<tr>
<th>Time</th>
<th>Session Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>4:00-5:30 pm</td>
<td>SAFE Analysis of Phrenic Nerve Stimulation vs Mechanical Ventilation</td>
</tr>
<tr>
<td></td>
<td>SAFE Analysis of DRG vs. SCS</td>
</tr>
<tr>
<td></td>
<td>SCS Effects on Molecularly Defined Dorsal Horn Circuits</td>
</tr>
<tr>
<td></td>
<td>SAFE Analysis of Spinal Cord Stimulation vs. Peripheral Nerve Stimulation vs. Dorsal Root Ganglion Stimulation for CRPS</td>
</tr>
<tr>
<td></td>
<td>SAFE Analysis of Fixed Output SCS vs. Closed-Loop SCS for FBSS</td>
</tr>
<tr>
<td></td>
<td>SAFE Analysis of Medial Branch Muscle Stimulation Radiofrequency Ablation for Facet Joint Pain</td>
</tr>
<tr>
<td></td>
<td>Engineering Challenges to Incorporate Brain Circuits in Device Design</td>
</tr>
<tr>
<td></td>
<td>Imaging to identify therapeutic neural circuits</td>
</tr>
<tr>
<td></td>
<td>Precision anatomical targeting with multi-contact intracranial electrodes</td>
</tr>
<tr>
<td></td>
<td>Circuit dynamics and intrinsic neuromodulation</td>
</tr>
<tr>
<td></td>
<td>Chronic recordings for circuit identification</td>
</tr>
<tr>
<td></td>
<td>Focused Ultrasound for Modulation of the Nervous System</td>
</tr>
<tr>
<td></td>
<td>Ultrasonic drug uncaging and neuromodulation</td>
</tr>
<tr>
<td></td>
<td>Remote modulation of ion channel activity</td>
</tr>
<tr>
<td></td>
<td>Low intensity ultrasound for epilepsy</td>
</tr>
<tr>
<td></td>
<td>Low intensity ultrasound for coma</td>
</tr>
</tbody>
</table>

---

**Moderators:**
- Joshua M. Rosenow, MD
- Suzanne M. Manzi, MD
- Samer N. Narouze, MD, PhD
- Joshua M. Rosenow, MD
- kirin V. Patel, MD; Lawrence Poree, MD, PhD, MPH
- Samuel Chesier, MD PhD
- Robert Levy, MD
- Einar Ottestad, MD
- Samuel Chesier, MD PhD
- Peter S. Staats, MD
- Chris Gilligan, MD
- John D. Rolston, MD, PhD; Doris D. Wang, MD, PhD
- Andreas Horn, MD, PhD
- Dania Anderson, MS
- TBD
- Coralie De Hemptinne, PhD
- Raag Airan, MD, PhD; Nathan McDannald
- Raag Airan, MD, PhD
- Jan Kubanek, PhD
- Alexander Bystritsky, MD, PhD
- Caroline Schnakers, PhD
<table>
<thead>
<tr>
<th>Abstract Session</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Using Neuromodulation for the Abdomen, Pelvis, and Genitourinary Systems</strong></td>
</tr>
<tr>
<td><em>Moderators: Corey W. Hunter, MD; Jordan Tate, MD</em></td>
</tr>
<tr>
<td><strong>Using Neuromodulation for Abdominal Pain</strong></td>
</tr>
<tr>
<td>Leo Kapural, MD</td>
</tr>
<tr>
<td><strong>Improving access to Deep Brain Stimulation through Patient Education</strong></td>
</tr>
<tr>
<td>Corey W. Hunter, MD</td>
</tr>
<tr>
<td><strong>Using Dorsal Column Stimulation for Pelvic Pain</strong></td>
</tr>
<tr>
<td>Jordan Tate, MD</td>
</tr>
<tr>
<td><strong>Sacral Nerve Stimulation for Genitourinary Pathology</strong></td>
</tr>
<tr>
<td>Rebecca McCrery, MD</td>
</tr>
</tbody>
</table>

*Faculty and presentations subject to change.*