PRELIMINARY PROGRAM

ADVANCE REGISTRATION DEADLINE: AUGUST 9, 2023

Save up to $300 when you register for the meeting and secure housing by August 9!

REGISTER TODAY AT CNS.ORG/2023
JOIN US in the District of Columbia at the 2023 CNS Annual Meeting: Imagine, Innovate, Inspire, where you’ll experience the latest neurosurgical innovations and be inspired by speakers and your peers! Come for the science and stay for these city highlights:

- Breathtaking National Landmarks like the Lincoln Memorial, Washington Monument, and Martin Luther King, Jr. Memorial
- Fascinating and informative museums including the 19 free Smithsonian Museums
- Views of the Potomac River and National Harbor
- Diverse communities and world-class cuisine

NEW FOR 2023!

**Luncheon Seminars:**
- M04: Treatment Options and Approaches to Cavernomas
- M07: FDA Update
- M11: An Interdisciplinary Approach to Facial Pain
- T19: Telemedicine in Neurosurgery: The Future Beyond Covid
- W24: LITT: Data-driven Outcomes and Controversies
- W31: Demystifying National Quality Reports

**Dinner Seminar:**
- Managing and Preventing Intraoperative Vascular Complications

**Section Sessions:**
- Stereotactic and Functional Neurosurgery: Psychiatric Neurosurgery and Cognitive Neuroscience
- Tumor: Innovation Driven by Neurosurgeons in Glioma

**Symposia:**
- Special Symposium: The Hopkins Symposium
- Special Symposium: TNT: Transforming Neurosurgery through Technology—The Innovation Symposium
- Special Symposium: Practical Neurosurgery: Perspectives by and for General Practice Neurosurgeon Leaders
- Special Symposium: Meeting of the Americas
- SYM09: Quality in Neurosurgery Practice
- SYM05B: The Importance of Wellness and The Reality of Burnout in Neurosurgery
- SYM15B: Identifying and Addressing Disparity in Neurotrauma
- SYM19B: Leading the Pack

**MEETING PURPOSE**

The purpose of the 2023 Annual Meeting of the Congress of Neurological Surgeons is to provide continuing medical education for practicing neurosurgeons, neurosurgical residents in training, and postgraduate neurosurgical fellows, as well as advanced practice providers including nurses, physician assistants, and clinical specialists.
LETTER FROM THE 2023 CNS PRESIDENT

Dear Colleagues,

I am very excited to meet you all in Washington D.C., September 9-13. As neurosurgeons, we are constantly challenged to innovate new techniques and technologies to enhance our field of practice. I invite you to get inspired with your colleagues as you explore “The District” and join us in person for the most imaginative neurosurgical event of the year.

Famous for breathtaking monuments, world-class museums, diverse communities, and incredible cuisine, Washington D.C. boasts an unmatched cultural experience. Be sure to bring a guest or your family to enjoy all this city has to offer!

While at the CNS Annual Meeting, take opportunities to connect with our Featured Speakers and Honored Guests. Keep reading to learn about our speaker lineup, along with many other exciting highlights that await you. I look forward to seeing you in September!

Sincerely,

Elad I. Levy

Thank you to the faculty from our 2023 International Partner Societies

Brazilian Society of Neurosurgery
Neurological Society of India
The Japanese Congress of Neurological Surgeons

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REGISTER AT CNS.ORG/2023
# PROGRAM AT-A-GLANCE

## SATURDAY, SEPTEMBER 9

<table>
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<tr>
<th>Time</th>
<th>Event</th>
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<tbody>
<tr>
<td>8:00 am-4:15 pm</td>
<td>Symposia (SYM01-SYM10) Special Symposium: TNT:Transforming Neurosurgery through Technology—The Innovation Symposium Special Symposium: Meeting of The Americas</td>
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</table>
| 5:00-7:00 pm  | CNS International, Resident, and Foundation Reception  
Planet Word Museum                                                                 |
| 6:30-8:30 pm  | Dinner Seminar 1: Managing and Preventing Intraoperative Vascular Complications  
Joe's Seafood, Prime Steak & Stone Crab                                                      |

## SUNDAY, SEPTEMBER 10

<table>
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<tr>
<th>Time</th>
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| 8:00 am-4:15 pm | Symposia (SYM11-SYM19) Special Symposium: Sellar and Suprasellar Tumors Outside the Box  
* A high-yield CNS collaboration with the North American Skull Base Society (NASBS)  
Special Symposium: The Hopkins Symposium  
Association of Neurosurgical Physician Associates (ANSPA) Fall 2023 CME Meeting  
Presented in Collaboration with CNS |
| 1:00-3:00 pm  | Resident SANS Challenge Preliminary Rounds*                                                        |
| 4:30-6:30 pm  | General Scientific Session I  
Marriott Marquis Washington, D.C.                                                                 |
| 6:30-8:00 pm  | Opening Reception  
Marriott Marquis Washington, D.C.                                                                 |

## MONDAY, SEPTEMBER 11

<table>
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<th>Time</th>
<th>Event</th>
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| 7:00-8:30 am | Guidelines Sessions  
Sunrise Session and Late-breaking Abstracts Sessions  
DEI Breakfast Seminar: Mentoring 101 |
| 8:15 am-4:00 pm | Exhibit Hall open*  
General Scientific Session II |
| 8:40-9:40 am  | General Scientific Session II  
Live Surgery in the Exhibit Hall* |
| 9:40-10:40 am | Beverage Break in the Exhibit Hall  
Live Surgery in the Exhibit Hall* |
| 10:00-10:30 am | Beverage Break in the Exhibit Hall*  
General Scientific Session II, continued |
| 10:40 am-12:10 pm | General Scientific Session II, continued  
Breakfast and Luncheon Seminars  
Industry Sponsored Lunch Symposia* |
| 12:20-1:50 pm | Luncheon Seminars  
Industry Sponsored Lunch Symposia* |
| 1:50-2:50 pm  | Live Surgery in the Exhibit Hall*                                                                 |
| 2:05-2:35 pm  | Live Surgery in the Exhibit Hall*                                                                 |
| 2:50-4:20 pm  | Section Sessions and Oral Presentations                                                           |
| 4:30-6:00 pm  | Operative Techniques and Case-based Discussion Sessions                                          |
| 6:00-7:30 pm  | Medical Student Town Hall*  
Medical Student Town Hall* |
| 7:30-9:30 pm  | Dinner Seminar 2: The Importance of Negotiating as a Neurosurgeon  
Morton's The Steakhouse |

Be sure to add a symposium or luncheon seminar to your registration to maximize your Annual Meeting experience!
### TUESDAY, SEPTEMBER 12

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<th>Time</th>
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<tr>
<td>7:00-8:30 am</td>
<td>Guidelines Sessions</td>
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<td>Sunrise Session and Late-breaking Abstracts Sessions</td>
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<td>8:15 am-3:00 pm</td>
<td>Exhibit Hall open*</td>
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<tr>
<td>8:40-9:40 am</td>
<td>General Scientific Session III</td>
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<td>9:40-10:40 am</td>
<td>Beverage Break in the Exhibit Hall</td>
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<td>10:00-10:30 am</td>
<td>Live Surgery in the Exhibit Hall*</td>
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<tr>
<td>10:40 am-12:10 pm</td>
<td>General Scientific Session III, continued</td>
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<td>12:20-1:50 pm</td>
<td>Luncheon Seminars</td>
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<td></td>
<td>Industry Sponsored Lunch Symposia*</td>
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<td>1:50-2:50 pm</td>
<td>Resident SANS Challenge Championship Round*</td>
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<td>Beverage Break in the Exhibit Hall</td>
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<td>2:00-2:45 pm</td>
<td>Annual Business Meeting*</td>
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<td>2:05-2:35 pm</td>
<td>Live Surgery in the Exhibit Hall*</td>
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<td>2:50-4:20 pm</td>
<td>Section Sessions and Oral Presentations</td>
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<tr>
<td>4:30-6:00 pm</td>
<td>Operative Techniques and Case-Based Discussion Sessions</td>
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<tr>
<td>6:00-7:30 pm</td>
<td>Interactive Poster Presentation Session with Wine and Cheese Reception</td>
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### WEDNESDAY, SEPTEMBER 13

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<th>Time</th>
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<td>7:00-8:30 am</td>
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<td>Sunrise Session and Late-breaking Abstracts Sessions</td>
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<td>8:15 am-1:30 pm</td>
<td>Exhibit Hall open*</td>
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<tr>
<td>8:40-9:40 am</td>
<td>General Scientific Session IV</td>
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<td>9:40-10:40 am</td>
<td>Beverage Break in the Exhibit Hall</td>
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<tr>
<td>10:00-10:30 am</td>
<td>Live Surgery in the Exhibit Hall*</td>
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<tr>
<td>10:40 am-12:10 pm</td>
<td>General Scientific Session IV, continued</td>
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<td>12:20-1:50 pm</td>
<td>Luncheon Seminars</td>
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<td></td>
<td>Industry Sponsored Lunch Symposia*</td>
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<tr>
<td>2:00-4:00 pm</td>
<td>Neurosurgical Medical Students Specialty Session 1 and 2</td>
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*Not eligible for CME credit.
**SUBSPECIALTY SESSION HIGHLIGHTS**

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<tr>
<th>ADVANCE PRACTICE PROVIDER</th>
<th>CV CEREBROVASCULAR</th>
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<tbody>
<tr>
<td><strong>SUNDAY</strong></td>
<td><strong>SATURDAY</strong></td>
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<tr>
<td>• Association of Neurosurgical Physician Associates (ANSPA) Fall 2023 CME Meeting Presented in Collaboration with the Congress of Neurological Surgeons</td>
<td>• SYM03: Aneurysms: Endovascular and Open Approaches to Complex Lesions</td>
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<td>• SYM10: 2023 CNS Cerebrovascular Neurosurgery for Residents</td>
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<td>• Dinner Seminar 1: Managing and Preventing Intraoperative Vascular Complications</td>
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<td>• Special Symposium: Hopkins Symposium</td>
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<td>• SYM12B: Microvascular Decompression for Trigeminal Neuralgia and Beyond</td>
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<td>• SYM14A: Frontiers in Management of Acute Stroke</td>
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<td>• SYM14B: Minimally Invasive Management of Intracerebral Hemorrhage</td>
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<td><strong>MONDAY</strong></td>
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<td></td>
<td>• DEI Breakfast Seminar: Mentoring 101</td>
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<td></td>
<td>• M01: Honored Guest Luncheon Seminar, L. Nelson “Nick” Hopkins: What We Can Learn From Failure</td>
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<td>• M04: Treatment Options and Approaches to Cavernomas</td>
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<td>• M13: Managing and Preventing Intraoperative Vascular Complications</td>
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<td>• Section on Cerebrovascular Surgery 1: Pushing the Envelope for Cerebrovascular Disease</td>
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<td>• Multimodal Management of Pediatric Vascular Lesions</td>
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<td><strong>TUESDAY</strong></td>
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<td></td>
<td>• T17: Keyhole Approaches for Treatment of Vascular Lesions</td>
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<td>• Section on Cerebrovascular Surgery 2: Multimodal Treatment of Cerebrovascular Disease</td>
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<td></td>
<td>• Evolving Technologies for Treatment of Cerebrovascular Lesions</td>
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<td>• Interactive Poster Presentation Session</td>
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<td><strong>WEDNESDAY</strong></td>
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<td></td>
<td>• W33: Hematology and Coagulation for Neurosurgeons</td>
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<td><strong>GENERAL</strong></td>
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<td>• SYM04A: Comprehensive Management of Spinal Trauma</td>
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</table>
TUESDAY
- T14: Honored Guest Lunch, Douglas Kondziolka: Learning and Personal Growth through Organized Neurosurgery—How to Make a Difference
- Interactive Poster Presentation Session

WEDNESDAY
- W34: Neurosurgery Publications: “Getting Published”

MEDICAL STUDENTS
SATURDAY
- SYM12: 2023 CNS Cerebrovascular Neurosurgery for Residents

SUNDAY
- SYM19A: Swimming with The Sharks: Thriving in the Neurosurgery Match and Residency

MONDAY
- M12: Advancing Your Career: Steps to Keep You Climbing
- Medical Student Town Hall

TUESDAY
- Interactive Poster Presentation Session

WEDNESDAY
- W30: Building Your Brand: Using Social Media to Drive Your Reputation
- W34: Neurosurgery Publications: “Getting Published”
- Neurosurgical Medical Students Specialty Session 1 and 2

PAIN
SATURDAY
- SYM08: An Interdisciplinary Approach to Lumbar Spine Pain

SUNDAY
- SYM12B: Microvascular Decompression for Trigeminal Neuralgia and Beyond

MONDAY
- DEI Breakfast Seminar: Mentoring 101
- M11: An Interdisciplinary Approach to Facial Pain
- Section on Pain: The Translational Science of Pain
- Microvascular Decompression for Trigeminal Neuralgia and Beyond

TUESDAY
- Interactive Poster Presentation Session
- Guideline Session IV: Occipital Neuralgia: Update

WEDNESDAY
- W29: Spinal Cord Stimulators: What to Use and When?

PE PEDIATRIC
SATURDAY
- SYM04: Endoscopic Applications in Pediatric Neurosurgery

MONDAY
- DEI Breakfast Seminar: Mentoring 101
- M06: ABPNS Board Certification: Preparation and Requirements for Certification
- Section on Pediatric Neurological Surgery 1: Contemporary Management of Craniofacial Dysmorphology
- Emerging Techniques in Pediatric Functional Neurosurgery

TUESDAY
- Section on Pediatric Neurological Surgery 2: Fellowship Training in Pediatric Neurosurgery—Challenges and Opportunities
- Complications in Neurosurgery
- Interactive Poster Presentation Session

PERIPHERAL NERVES
SATURDAY
- SYM07: Stimulation for Peripheral Nerve Pain: Practical and Practice

SUNDAY

MONDAY
- DEI Breakfast Seminar: Mentoring 101
- M09: Peripheral Nerve Entrapment Versus Radiculopathy
- Section on Peripheral Nerves 1: Latest Advances in Clinical Outcomes
- Schwannomas and Neurofibromas of the Spine and Peripheral Nerves

TUESDAY
- T20: Managing Peripheral Nerve Complications from Common Spine, Orthopedic, and Thoracic Surgeries
- Section on Peripheral Nerves 2: Expert Challenges in Peripheral Nerve Surgery—Fear and Loathing in Peripheral Nerve Surgery
- Complex Peripheral Nerve Reconstruction Cases
- Interactive Poster Presentation Session

WEDNESDAY
- W28: Controversies in Peripheral Nerve Surgery
RESIDENT
SATURDAY
• SYM10: 2023 CNS Cerebrovascular Neurosurgery for Residents
• Special Symposium: TNT: Transforming Neurosurgery through Technology—The Innovation Symposium

SUNDAY
• SYM19A: Swimming with The Sharks: Thriving in the Neurosurgery Match & Residency
• SYM19B: Leading the Pack

MONDAY
• DEI Breakfast Seminar: Mentoring 101
• M01: Honored Guest Luncheon Seminar, L. Nelson “Nick” Hopkins: What We Can Learn From Failure

TUESDAY
• T14: Honored Guest Lunch: Douglas Kondziolka: Learning and Personal Growth through Organized Neurosurgery—How to Make a Difference
• Interactive Poster Presentation Session

WEDNESDAY
• W27: Unwrapping Hospital Financials: How Neurosurgeons Can Be Affected
• W31: Demystifying National Quality Reports

STEREOTACTIC AND FUNCTIONAL
SATURDAY
• SYM06A: Epilepsy Surgery: Advanced Techniques for Network Identification, Modulation, and Resection
• SYM06B: Movement Disorder Surgery: Targeting, Execution, and Innovation

MONDAY
• DEI Breakfast Seminar: Mentoring 101
• M10: Connectomic Deep Brain Stimulation
• Section on Stereotactic and Functional Neurosurgery 1: Functional Neurosurgery—Psychiatric Neurosurgery and Cognitive Neuroscience
• Non-invasive Functional Neurosurgery

TUESDAY
• T21: Thalamic Sampling and Stimulation for Epilepsy
• Section on Stereotactic and Functional Neurosurgery 2: Functional Neuro-Oncology—Approaches to Cancer and Cancer Pain
• Innovation and Entrepreneurship in Neurosurgery
• Interactive Poster Presentation Session

SOCIOECONOMIC
SATURDAY
• SYM05A: 2023 Coding and CPT Update
• SYM05B: The Importance of Wellness and the Reality of Burnout in Neurosurgery

SUNDAY
• SYM18B: Identifying and Addressing Disparity in Neurotrauma
• SYM19A: Practical Neurosurgery
• SYM16: The Value of the Neurosurgeon

MONDAY
• DEI Breakfast Seminar: Mentoring 101
• M08: Finding Your Voice: Advocacy in Neurosurgery
• Council of State Neurosurgical Societies Session 1: Functional Neurosurgery
• Neurosurgical Contracts: How to Get What You Want

TUESDAY
• T19: Telemedicine in Neurosurgery: The Future Beyond Covid
• T22: The Socioeconomics of an Ambulatory Surgery Center
• Council of State Neurosurgical Societies Session 2: Contract Negotiation and Employment Opportunities
• Neurosurgeons as Authors

SPINE
SATURDAY
• SYM04A: Comprehensive Management of Spinal Trauma
• SYM08: An interdisciplinary Approach to Lumbar Spine

SUNDAY
• SYM13A: Advanced Minimally Invasive Spine Surgery: Operative Nuances, Indications, and Complication Avoidance
• SYM13B: Lateral Approaches to the Spine
• SYM17B: Incorporating Spinal Endoscopy into Your Practice

MONDAY
• DEI Breakfast Seminar: Mentoring 101
• Guideline Session I: Perioperative Spine—Intraoperative
• M03: Surgical Management of Primary Spinal Tumors
• Section on Disorders of Spine and Peripheral Nerves 1: Latest Advances in Spine Surgery
• Case Based Debates: Lumbar
**SUBSPECIALTY SESSION HIGHLIGHTS**

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<thead>
<tr>
<th>TUESDAY</th>
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<tbody>
<tr>
<td>• T16: Cervical Spondylotic Myelopathy: Anterior Versus Posterior</td>
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<td>• T23: My Worst Spinal Complication: Lessons Learned</td>
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<tr>
<td>• Section on Disorders of Spine and Peripheral Nerves 2: Practice Optimization for The Spine Surgeon</td>
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<td>• Case-based Debates: Cervical</td>
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<td>• Interactive Poster Presentation Session</td>
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<td>• T17: Managing Head Trauma in the Elderly Population</td>
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<td>• TR2: Emerging Treatments in Spinal Cord Injury</td>
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<tr>
<td>• Section on Neurotrauma and Critical Care 2: Neurotrauma as a Team Sport: Case Based Discussion in Complex Neurotrauma Patients</td>
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<tr>
<td>• Emerging Treatments in Spinal Cord Injury</td>
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<td>• Interactive Poster Presentation Session</td>
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<td>• W25: SI Joint Fusion: Indications, Technique, and Outcomes</td>
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<td>• W32: Authorization Headaches: Strategies to Avoid Denials and Win Appeals</td>
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### NEUROTRAUMA

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<tr>
<td>• SYM02B: Cutting Edge Treatments in Neurotrauma</td>
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### SUNDAY

| • SYM15A: Neurotrauma and Neurocritical Care Case-based Review of Guidelines and Management Principles |
| • SYM15B: Identifying and Addressing Disparity in Neurotrauma |

### MONDAY

| • DEI Breakfast Seminar: Mentoring 101 |
| • M05: Lessons Learned from the Military: Managing Neurotrauma from the Field to the Future |
| • Section on Neurotrauma and Critical Care 1: Management of TBI—From Bench to Bedside |
| • Trial by Fire: The Cases from Which I Learned the Most |
| • Guideline Session II: Brain Mets Update—Emerging Therapies |
| • M02: New Concepts in Intra-operative Guidance |
| • M03: Surgical Management of Primary Tumors |
| • Section on Tumors 1: High Grade Glioma (HGG) Surgery—Challenges and New Frontiers |
| • Novel Prospectives in Low Grade Gliomas Management |

### TUESDAY

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<tbody>
<tr>
<td>• SYM16A: Brain Tumor Update: Management of Benign Brain Tumors</td>
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<tr>
<td>• SYM16B: Brain Tumor Update: Management of Malignant Brain Tumors</td>
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<tr>
<td>• SYM12A: Immunotherapy for Brain Tumors: New Concepts</td>
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### TUESDAY (W)

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<tr>
<td>• Guideline Session III: Functioning Pituitary Adenoma</td>
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<tr>
<td>• T15: Complex Skull Base Approaches</td>
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<tr>
<td>• Section on Tumors 2: Innovation Driven by Neurosurgeons in Glioma</td>
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<tr>
<td>• New Frontiers for Recurrent Neuro-Endocrine Tumors</td>
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<td>• Interactive Poster Presentation Session</td>
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### TUESDAY (W1) WINS

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<tr>
<th>WEDNESDAY (W1) WINS</th>
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<tbody>
<tr>
<td>• SYM18B: Maximizing Your Neurosurgical Employment Opportunities</td>
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### MONDAY

| • DEI Breakfast Seminar: Mentoring 101 |
| • M12: Advancing Your Career: Steps to Keep You Climbing |

### TUESDAY (W1) WINS

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<tr>
<td>• W24: LITT: Data Driven Outcomes and Controversies</td>
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### WEDNESDAY

| • SYM18A: Neurosurgeons as Trailblazers |
| • SYM18B: Building Your Brand: Using Social Media to Drive Your Reputation |
CNS INTERNATIONAL, RESIDENT, AND FOUNDATION RECEPTION

Saturday, September 9 | 5:00-7:00 pm | Planet Word Museum

International meeting attendees, residents, and CNS Foundation awardees and donors, we welcome you to join your colleagues from around the world at this reception! Enjoy hors d’oeuvres and cocktails while chatting with some of the top international professionals in the field of neurological surgery. All registered CNS Foundation donors and awardees, residents, international attendees, and their registered guests are invited to attend. Complimentary transportation will depart from the Marriott Marquis D.C. at 4:45 pm.

OPENING RECEPTION

Sunday, September 10 | 6:30-8:00 pm | Marriott Marquis Washington D.C.

Kick off your CNS Annual Meeting experience with the Opening Reception! Enjoy live music, drinks, and delicious hors d’oeuvres. The opening reception is great for reconnecting with old friends and creating new and lasting connections with your peers!

Register today for the CNS Annual Meeting 5k! Join your peers in a 5k through Washington, D.C.! Sign up using the QR Code below and run the suggested route or your own during the CNS Annual Meeting. You can run solo or grab a few colleagues and run together. The fastest runners will be announced during the General Scientific Session on Wednesday!
MEDICAL STUDENT TOWN HALL

Monday | 6:00-7:30 pm

We invite all medical students to attend the Medical Student Town Hall! Take advantage of this opportunity to learn about navigating the match and developing a successful career in neurosurgery from a panel of Neurosurgery Residency Program Directors who will answer questions and discuss hot topics.

CNS RESIDENT SANS CHALLENGE CHAMPIONSHIP ROUND

Tuesday | 1:50-2:50 pm

See the top 3 resident programs from around the country compete for undisputable SANS bragging rights, trophies, and cash prizes!

INTERACTIVE POSTER PRESENTATION SESSION

Tuesday | 6:00-7:30 pm

The interactive poster session aims to invigorate scientific presentation and discussion, complemented by wine and cheese. Selected presenters will showcase their research, highlighting key advances in each field.
**DINNER SEMINAR 1**

Saturday, September 9 | 6:30-8:30 pm | $225
(includes three-course dinner and beverages)

- Joe’s Seafood, Prime Steak & Stone Crab
- Advance Registration Recommended
- Complimentary shuttle service will depart the Marriott Marquis Washington, D.C. at 6:15 pm.

**MANAGING AND PREVENTING INTRAOPERATIVE VASCULAR COMPLICATIONS**

**Moderators:** Nima Etminan, Christopher Ogilvy

**Faculty:** Clemens Schirmer, Stavropoula Tjoumakaris

**Seminar Description:** In this seminar, details of open neurovascular procedures will be reviewed focusing on identifying potential complications preoperatively as well as managing complications intraoperatively and postoperatively. Anatomic features of vascular lesions as well as patient-specific factors will be reviewed. Specific case examples will be provided.

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**DINNER SEMINAR 2**

Monday, September 11 | 7:30-9:30 pm | $225
(includes three-course dinner and beverages)

- Morton’s The Steakhouse
- Advance Registration Recommended
- Complimentary shuttle service will depart the Marriott Marquis Washington, D.C. at 7:15 pm.

**THE IMPORTANCE OF NEGOTIATING AS A NEUROSURGEON**

**Moderators:** Joseph Cheng

**Faculty:** Maya Babu, Fredric Meyer, Troy Payner, Edie Zusman

**Seminar Description:** Becoming a neurosurgeon does not rely on negotiation skills, with most decisions seemingly binary to either accept or reject, and out of your control. Understanding and applying techniques and strategies for meaningful negotiation is key to successfully address contract issues either for yourself or those you are recruiting. Our symposium will offer a glimpse into the needed skills to negotiate, along with the pitfalls such as loss of influence, bait and switch contracts, and metrics to understand your value.
The CNS Foundation is proud to offer the following awards in support of our four initiative pillars:

- Diversity, Equity, and Inclusion
  - Pathway to Neurosurgery for Washington, D.C. high school students
  - Pathway to Neurosurgery Think Tank
  - Future Women Leaders in Neurosurgery Scholarship
  - Impact, Pilot and Scholar Awards in Diversity, Equity, and Inclusion

- International Neurosurgery
  - International Visitorship at UPMC Neurosurgery Pittsburgh
  - Tumor Observership at University of Miami
  - Brain Tumor Observership at Icahn School of Medicine at Mount Sinai
  - Spine Observership at Duke University
  - MGH Harvard Observership in Global Neurosurgery
  - Stanford International Observership

- CNS Guidelines
  - CNSF Scholarship for CNS Guidelines and Quality

- Clinical Scientist Career Development
  - Joint Cerebrovascular Section/CNSF Young Investigator’s Award
  - NINDS/CNS Getch K12 Scholar Award

The Board of the CNS Foundation thanks supporters around the world who make our awards and programs possible. Please help us thank the following:

- The Congress of Neurological Surgeons
- Joint Cerebrovascular Section
- Joint Section on Disorders of the Spine and Peripheral Nerves
- Joint Pediatric Section
- American Society for Stereotactic and Functional Neurosurgery
- Joint Women in Neurosurgery Section
- Joint Neurotrauma and Critical Care Section
- Joint Tumor Section
- Trans-Atlantic Education Foundation
- The CNS community of neurosurgeons and individuals who generously donate and volunteer every year to the CNS Foundation.
The CNS Exhibit Hall is the best place to discover cutting-edge technology to enhance your practice. Check out in-booth demonstrations with subspecialty experts and gain hands-on experience with the latest devices – all brought to you by our industry partners. For a complete list of exhibitors, see page 47 or visit cns.org/2023.

EXHIBIT HALL HOURS

<table>
<thead>
<tr>
<th>Day</th>
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<tbody>
<tr>
<td>Monday</td>
<td>8:15 am–4:00 pm</td>
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<td>Tuesday</td>
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<td>Wednesday</td>
<td>8:15 am–1:30 pm</td>
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EXHIBIT HALL BEVERAGE BREAKS

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<th>Breaks</th>
<th>Time</th>
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<tr>
<td>Monday-Wednesday</td>
<td>9:40–10:40 am</td>
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<tr>
<td>Monday &amp; Tuesday</td>
<td>1:50–2:50 pm</td>
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Admittance to the Exhibit Hall is by CNS name badge only. Children under the age of 18 are not allowed in the Exhibit Hall.

XPERIENCE LOUNGE

Located inside the Exhibit Hall, the Xperience Lounge offers many opportunities to connect with your peers, grab a complimentary cappuccino, ask questions of CNS staff, or simply give your feet a break in the lounge area with a copy of Neurosurgery from the Neurosurgery Publications team. Make sure to stop by and enter to win Apple product giveaways, get information about CNS services, and walk away with some CNS swag!

LIVE SURGERY PRESENTATIONS

Surgeons from top institutions will operate live via telemedicine and you will have the opportunity to observe and ask questions of the operating surgeon during each beverage break.

Sponsored by: MicroVention (2), Integra LifeSciences, and Longeviti Neuro Solutions

DEVICE INNOVATION SHOWCASE

These 10-minute sessions will feature an expert showcasing the latest technology from our Industry leaders. Learn more during your afternoon break on Tuesday.

Sponsored by: GammaTile, Imperative Care, and Elekta

DIGITAL POSTERS

Digital posters can be viewed Monday-Wednesday, and can be searched by author, topics, or keyword.

NOTEWORTHY EVENTS

- **New! Neurosurgical Art Xperience:** Neurosurgeon artists will share their art and discuss how they have merged art with the practice of medicine, including the role of creativity in personal wellness to the use of art to learn or convey important anatomical concepts.

  Two nationally known medical illustrators will be present on Monday to discuss the art of neurosurgical medical illustration.

- **Honored Guest Meet & Greets:**
  - L. Nelson “Nick” Hopkins, Monday
  - Douglas Kondziolka, Tuesday

- **Book signing:**
  Have a copy of “Loonshots” signed by Safi Bahcall on Monday after the General Scientific Session
INDUSTRY HIGHLIGHTS

CONNECT WITH INDUSTRY OUTSIDE OF THE EXHIBIT HALL!

SPONSORED LUNCH SYMPOSIA WITH INDUSTRY LEADERS

Choose one of our three complimentary non-CME lunch-and-learn sessions covering important clinical topics during your lunch break from 12:20-1:50 pm in the convention center.

Sponsored by: Medtronic (2), Globus Medical, Penumbra, Merck & Co. Inc, and SI-BONE.

HANDS-ON CADAVERIC EXPERIENCE

These surgical cadaveric suites located in the convention center give you the opportunity to enhance your experience with the latest and greatest neurosurgical technology.

BREAKOUT & LUNCH SESSIONS DURING THE FULL-DAY SYMPOSIA

These 30-minute non-CME breakout sessions or 45-minute non-CME lunch sessions will be held during the full-day symposia on Saturday and Sunday. Take advantage of this opportunity to gain hands-on experience and see demonstrations of the most advanced equipment and techniques.
GENERAL SCIENTIFIC SESSIONS

GENERAL SCIENTIFIC SESSION I  Sunday, September 10 | 4:30-6:30 pm

Presiding Officer: Alexander A. Khalessi
Moderators: Edjah K. Nduom, Laura A. Snyder

Welcome to the 2023 CNS Annual Meeting
Elad I. Levy

CNS Resident Award Presentation

Neurosurgery Top Paper of the Year Presentation

Honored Guest Presentation: The Future of Stroke is Multifaceted Innovation
L. Nelson “Nick” Hopkins

Neurosurgery Futures Lecture Series: The New Vision—A Look into the Future of Surgical Anatomy Education
Maria Peris-Celda

Brain Computer Interface
Tom Oxley

Featured Speaker: Keys to Assessing Risk: Knowing When to Push or Pivot
Chris Cassidy

GENERAL SCIENTIFIC SESSION II  Monday, September 11 | 8:40 am-12:10 pm

Presiding Officer: Martina Stippler
Moderators: Akash Patel, Khoi Than

Distinguished Service Award Presentation to Russell R. Lonser
Presented by Nicholas C. Bambakidis

Founder’s Laurel Award Presentation to Volker K.H. Sonntag
Presented by Nicholas C. Bambakidis

Neurosurgery Publications Update
Douglas Kondziolka

Ukraine War: Lessons Learned
Rocco Armondo

2023 Presidential Address
Elad I. Levy

Neurosurgery Futures Lecture Series

The Value of the Neurosurgeon
Luis Tumialan

MMA Embolization Update
Howard Riina

History of African Americans in Neurosurgery
Damirez Fossett

Practical Neurosurgery: Spinal Cord Injury
David Langer

Society of Brazilian Neurosurgery Presidential Address
Wuilker Knoner Campos

Featured Speaker: Loonshots: Imagining the Impossible
Safi Bahcall
GENERAL SCIENTIFIC SESSIONS

GENERAL SCIENTIFIC SESSION III  Tuesday, September 12 | 8:40 am-12:10 pm

Presiding Officer: Daniel J. Hoh
Moderators: Sharona Ben-Haim, Anand Veeravagu

Washington Committee Update
Russell R. Lonsor

White House Fellow Update
Sanjay Gupta, Jeremy Hosein, Jeffrey Nadel, Lindsey B. Ross, Anand Veeravagu

Featured Speaker: A Moderated Conversation with Martin Eberhard
Martin Eberhard

Industry Awards Acknowledgement
Ashok R. Asthagiri, Khoi D. Than

Neurosurgery Futures Lecture Series

Honored Guest Presentation: The Nature of Things
Douglas Kondziolka

CNS Education Committee Update and Educator of the Year Award Presentation

GENERAL SCIENTIFIC SESSION IV  Wednesday, September 13 | 8:40 am-12:10 pm

Presiding Officer: Jennifer Sweet
Moderators: Tiffany Hodges, Peter Nakaji

Announcement of Innovator of the Year

Announcement of SANS Challenge Winners, Top Posters, and Residency Program Abstract Competition Winners

JCNS Presidential Address
Hiroharu Kataoka

Neurosurgery Futures Lecture Series: CSF Liquid Biopsy
Ganesh Shankar

NSI Presidential Address
Yadram Yadav

SNS Update
Nathan Selden

In Memoriam

AANS Update

ASBN Update
Nnenna Mbabuike

CNS Green Initiative

Featured Speaker: More Than Your Hippocampus: Living Beyond Your Wildest Dreams
Justin Tuck

Practical Neurosurgery: Green OR Mentality - Reducing Waste While Improving Quality
Neil Martin

CNS Foundation Award Presentations
Martina Stippler

HIMS Paper Presentation

Folic Acid Deficiency Initiative
Yogi Pattisapu

Join Us in 2024!
Garni Barkhoudarian, Edjah K. Nduom
Dr. Nick Hopkins graduated cum laude from Albany Medical College and has been a pioneer in the catheter-based treatment of neurovascular disease and stroke and has developed one of the largest and most respected stroke treatment centers in the world. His work led to the creation of a new specialty in Neurosurgery – Endovascular Neurosurgery – and his trainees serve in leadership positions throughout the US. He served as chair of the Department of Neurosurgery at the University at Buffalo for nearly 25 years, authored more than 450 peer-reviewed publications, and received numerous awards for his contributions to Neurosurgery. In 2013, he was named SUNY Distinguished Professor, the highest academic award in the NY State University system; and in 2018, he was awarded the Norton Medal, the highest award at SUNY Buffalo. In 2021, he received the Business First business leadership hall of fame award.

He conceived and spearheaded the design and build of the unique $300 million Gates Vascular Institute (GVI) and Jacobs Institute (JI) vascular innovation center, which opened in Buffalo in 2013.

Dr. Hopkins has been a leader in the Buffalo community through his service on the boards of the Albright Knox Art Gallery, the Buffalo Philharmonic Orchestra, The Gow School, and the YMCA. He enjoys golf, tennis, squash, hiking, and skiing with his family. Clubs include John’s Island Club, Buffalo Tennis and Squash, Buffalo Club, Cherry Hill Club in Canada, Shooting Star and Snake River Sporting Club in Wyoming, and The Yale Club.

Dr. Hopkins and Bonnie, his wife of 57 years, are most excited and proud of their three wonderful children and eight grandchildren. They hail from Buffalo, New York, but have additional homes in Vero Beach, Florida, Jackson, Wyoming, and a cottage in Fort Erie, Ontario.
Looking for Dr. Kondziolka at the following sessions:

**Monday, September 11**
- 8:51-8:59 am  
  *Neurosurgery Publications Update*

**Tuesday, September 12**
- 11:01-11:31 am  
  *General Scientific Session III Honored Guest Presentation: The Nature of Things*

- 12:20-1:50 pm  
  *Honored Guest Luncheon Seminar: Learning and Personal Growth through Organized Neurosurgery: How to Make a Difference*

Advance registration recommended

**Wednesday, September 13**
- 12:20-1:50 pm  
  *W34: Neurosurgery Publications: “Getting Published”*

Dr. Douglas Kondziolka received his medical degree from the University of Toronto and graduated from the Toronto neurosurgery residency program in 1991. From 1989 to 1991 at the University of Pittsburgh, he completed a master of science program in the Department of Behavioral Neuroscience and a fellowship in stereotactic surgery and radiosurgery. His thesis focused on brain radiobiology.

He joined the faculty of the Department of Neurological Surgery at the University of Pittsburgh in January 1992 and was later named Chief of Stereotactic and Functional Neurosurgery and Vice-Chair for Education. At the McGowan Institute for Regenerative Medicine, he served as principal investigator of the first two neurotransplantation trials for the care of stroke and completed a third to evaluate bone marrow-derived neuro progenitor cell line implants for stroke repair. A fourth trial was completed in 2018. He completed two clinical trials in neuromodulation for major depression as Director of the UPMC Center for Brain Function and Behavior.

In November 2012, Dr. Kondziolka joined the neurosurgery faculty at New York University as Professor and Vice-Chair for Clinical Research. He launched the first global registry platform for neurosurgery that focused initially on the broad array of radiosurgical indications. Current research is on the metabolic and vascular effects of brain tumor radiosurgery using novel neuroimaging techniques, brain tumor natural history studies, and clinical registry analytics. In 2022, he and colleague Dr. Eric Oermann launched the world’s largest open-source brain tumor imaging dataset with longitudinal data, NYUMets.

Dr. Kondziolka has published 635 articles in refereed journals, 275 book chapters, and/or invited publications, and has edited 8 books.

He has completed four randomized controlled trials. He is a two-time recipient of the Stephen Mahaley Award for brain tumor clinical research from the Joint Section on Tumors of the AANS/CNS. He received the Lars Leksell Award from the World Federation of Neurosurgical Societies. In 2004, he was honored as the Penfield Lecturer of the Canadian Neurosurgical Society. In 2006 he received the Robert Florin Award of the American Association of Neurological Surgeons for socio-economic research, and in 2007, the AANS Integra Foundation Award. In 2007 he received the Jacob Fabrikant Award from the International Stereotactic Radiosurgery Society. In 2014 he received the Bernard Sanberg Award from the American Society for Neural Therapy and Repair. In 2022 he was an Honored Guest of the North American Skull Base Society. He is humbled to be selected as a 2023 Honored Guest of the Congress of Neurological Surgeons.

He is a Past-President of the American Society for Stereotactic and Functional Neurosurgery and the International Stereotactic Radiosurgery Society. In 2006-2007, he served as President of the Congress of Neurological Surgeons. He served as the neurosurgeon for the Pittsburgh Penguins of the National Hockey League from 2002-2012. He served as co-chair of the editorial board of the *Journal of Neurosurgery* (2008-2013) and Associate Editor (2013-2021). He was a Director of the American Board of Neurological Surgery from 2014-2020 and Chair of the Oral Examination. He was appointed to the Residency Review Committee of the ACGME in neurosurgery (2020). He is Past-President of the American Academy of Neurological Surgery.

With an impressive h-index of 108, Kondziolka is Editor-in-Chief of *Neurosurgery Publications* which is the Congress of Neurological Surgeons’ suite of journals that includes *Neurosurgery, Operative Neurosurgery, and Neurosurgery Practice*. He has been a visiting professor at many of the top institutions in the United States and Canada and has lectured extensively across the world.
FEATURED SPEAKERS

Safi Bahcall
Award-winning entrepreneur and author of the international bestseller “Loonshots”

*Walter E. Dandy Orator*

**Monday, September 11**
- 11:44 am-12:10 pm

*General Scientific Session II*
Loonshots: Imagining the Impossible

Chris Cassidy
NASA Astronaut, U.S. Navy Seal, and CEO of the National Medal of Honor Museum

**Sunday, September 10**
- 6:01-6:30 pm

*General Scientific Session I*
Leadership Under Pressure: An Astro SEAL’s Perspective

Amal Clooney
Lawyer and Human Rights Advocate

*Dr. Dorothy Nash Lecture*

**Martin Eberhard**
Founder, Original Chairman and CEO of Tesla

*CNS Michael L.J. Apuzzo Lecturer on Creativity and Innovation*

**Tuesday, September 12**
- 9:15-9:40 am

*General Scientific Session III*
A Moderated Conversation with Martin Eberhard

**Justin Tuck**
Managing Director at Goldman Sachs, Two-time Super Bowl Champion

**Wednesday, September 13**
- 11:03-11:23 am

*General Scientific Session IV*
More Than Your Hippocampus: Living Beyond Your Wildest Dreams
2023 PRESIDENT: Elad I. Levy

Elad I. Levy is SUNY Distinguished Professor and L. Nelson Hopkins Endowed Chair at the State University of New York at Buffalo. He has served on the CNS Executive Committee since 2007, was appointed as one of the National Directors to the American Board of Neurological Surgery (ABNS) in 2017, and is currently the Vice-Chair of the ABNS. He has led multiple major national and international clinical trials for strokes, leading one of the country’s foremost endovascular training programs.

PRESIDENT-ELECT: Alexander A. Khalessi

Alexander A. Khalessi is the chair of the Department of Neurological Surgery and professor of Neurological Surgery, Radiology and Neurosciences at UC San Diego. In 2021, he was named the inaugural Don and Karen Cohn Chancellor's Endowed Chair in Neurosurgery, one of the highest academic honors conferred upon a faculty member in the University of California system. Since joining the Executive Committee in 2014, Dr. Khalessi has assumed progressive positional responsibilities within the CNS—including serving as Vice President, co-chair of the CNS Foundation, and Scientific Program and Annual Meeting Chair—and he looks forward to further serving the neurological community as President-elect.

2023 ANNUAL MEETING CHAIR: Lola B. Chambless

Lola B. Chambless is Associate Professor of Neurological Surgery and the Neurosurgery Residency Program Director at Vanderbilt University Medical Center. She has a busy clinical practice in brain tumor and skull base surgery and is the surgical director of the Vanderbilt Pituitary and Radiosurgery centers. She has led CNS efforts in the Education Division, Leadership Institute, and the development of the Data Science program. In 2023, she finishes her third and final year as a member of the meeting team by chairing the Annual Meeting Committee.

2023 SCIENTIFIC PROGRAM CHAIR: Garni Barkhoudarian

Garni Barkhoudarian is associate professor of neuroscience and neurosurgery at the Pacific Neuroscience Institute and Chief of Neurosurgery at Providence Saint John's Health Center. Dr. Barkhoudarian’s research interests include evaluating outcomes of pituitary and brain tumor surgery, brain tumor epigenetics and biomarkers, and unique cadaveric models of skull-base approaches. He has served in numerous capacities within the Congress of Neurological Surgeons including Self-Assessment of Neurological Surgery (SANS) Chair, Education division Vice-chair, ACCME Chair.

2023 VICE SCIENTIFIC PROGRAM CHAIR: Edjah K. Nduom

Edjah K. Nduom, MD, FAANS, is an Associate Professor and the Daniel Louis Barrow Endowed Chair in Neurosurgery at Emory University School of Medicine. Dr. Nduom joined the Executive Committee of the Congress of Neurological Surgeons in 2021, and he now has the honor of serving as Vice Scientific Program Chair. A neurosurgeon-scientist, Dr. Nduom’s clinical specialty is the resection of tumors located in eloquent regions of the brain, brainstem, and spinal cord, and his laboratory studies novel immune therapeutics for brain tumors with the support of numerous foundations and the National Institutes of Health.
The Congress of Neurological Surgeons gratefully acknowledges our Industry Allies Council Members for their continued support.

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DEVELOPING NATION RATE

In an effort to make the best in neurosurgery more accessible to doctors and scientists around the world, the CNS is pleased to offer a discounted registration rate of $150 to nonmember attendees from the following countries:

AFGHANISTAN, ANGOLA, BANGLADESH, BENIN, BHUTAN, BOLIVIA, BURKINA FASO, BURUNDI, CABO VERDE, CAMBODIA, CAMEROON, CENTRAL AFRICAN REPUBLIC, CHAD, COMOROS, CONGO, DEM. REP., CONGO, REP., CÔTE D’IVOIRE, DJIBOUTI, EGYPT, EL SALVADOR, ERITREA, ETHIOPIA, THE GAMBIA, GHANA, GUINEA, GUINEA-BISSAU, HAITI, HONDURAS, INDIA, INDONESIA, KENYA, KIRIBATI, KOREA, DEM. PEOPLE’S REP. , KYRGYZ REPUBLIC, LAO PDR, LEBANON, LESOTHO, LIBERIA, MADAGASCAR, MALAWI, MALI, MAURITANIA, MICRONESIA, FED.STS., MOLDOVA, MONGOLIA, MOROCCO, MOZAMBIQUE, MYANMAR, NEPAL, NICARAGUA, NIGER, NIGERIA, PAKISTAN, PAPUA NEW GUINEA, PHILIPPINES, RWANDA, SÃO TOMÉ AND PRINCIPE, SENEGAL, SIERRA LEONE, SOLOMON ISLANDS, SOMALIA, SOUTH SUDAN, SRI LANKA, SUDAN, SWAZILAND, SYRIAN ARAB REPUBLIC, TAJIKISTAN, TANZANIA, TIMOR-ESTE, TOGO, TUNISIA, UGANDA, UKRAINE, UZBEKISTAN, VANUATU, VIETNAM, WEST BANK AND GAZA, YEMEN, ZAMBIA, ZIMBABWE

**2023 TUMOR SECTION SYMPOSIUM**

**BRAIN AND SPINE RECURRENT TUMORS: THE NEUROSURGEON’S ROLE**

Don’t forget to purchase a ticket to the Tumor Gala on Friday night with your registration!

Join us at the 2023 Tumor Section Symposium September 8-9, 2023, at the Walter E. Washington convention center and explore technological advances in neurosurgical neuro-oncology, including tumor microenvironment and spinal oncology. **Save up to $200 when you add the Tumor Section Symposium to your Annual Meeting Registration!**

REGISTER AT CNS.ORG/2023
**Be sure to secure your seat for one or more of these ticketed sessions when you register!**

### Special Symposia

**PRICING:** **Full Day Discounted Bundles (includes lunch):** Physician $600; Nurse/NP/PA $300; Resident/Medical Student $175  
**Half Day:** Physician $450; Nurse/NP/PA $200; Resident/Medical Student $125

#### TNT: Transforming Neurosurgery through Technology: The Innovation Symposium

**Course Directors:** Nicole Bentley, Adnan Siddiqui  
**Faculty:** Vijay Agarwaul, Martin Dieck, Kevin Foley, Scott Friedman, David Gonda, Kimberly Hoang, Karl Heilman, Elad Levy, Eric Leuthardt, Adel Malek, Christoph Miethke, J Mocco, Carlos Penya, Eric Peterson, Leo Petrossian, Martin Pham, Sameer Sheth, Adnan Siddiqui, Michael Sughrue, Nicholas Theodore, Ray Turner, Juan Uribe

**Course Description:** Neurosurgeon-entrepreneurs, engineers, industrial partners, and investment professionals will discuss unique approaches to innovation that can lead to return on investment for our members and industry partners. Focus on Robotic platforms and emerging technologies. (Non-CME)

#### Meeting of the Americas

**Course Directors:** Peter Nakaji, Leonardo Rangel Castilla, Jose Valerio, Francisco Mery, Marimece Toledo, Hector Sroiano, Samuel Kalb  
**Faculty:** Alvaro Campero, Feres Chaddad, Jean de Oliviera, Marco Barajas Romero, Fernando Hakimnn, Pedro Lylyk, Gustavo Melo, Vitor Mendez Pereira, Boris Pabon, Barbra Nettel, Jose Valerio, Jaime Torres Vorzo, Andres Lozano, Fernando Vale, Virgilio Matheus, Felipe Rossel, Pedro Ramirez, Alfredo Quinones

**Course Description:** In conjunction with partner organizations, SLANC, BSN as well as including neurosurgeons from all of the Americas, this session will explore the variety of neurosurgical disciplines practiced throughout these countries. Special focus on regional challenges and differential outcomes. The Neurosurgery Paper of the Year in Global Neurosurgery will also be presented.

### Symposia

**PRICING:** **Full Day Discounted Bundles (includes lunch):** Physician $600; Nurse/NP/PA $300; Resident/Medical Student $175  
**Half Day:** Physician $450; Nurse/NP/PA $200; Resident/Medical Student $125

#### SYM01: Tumor Bundle

**Composed of two sessions:** SYM01A & SYM01B. Select this option to take both at a discounted rate.

#### SYM01A: Now What? Management of Intracranial Complications

**Course Directors:** Maryam Rahman, Brad E. Zacharia  
**Faculty:** Jeffrey N. Bruce, Frederick F. Lang, Michael Link, Colin Watts, A. Samy Youssef, Gabriel Zada

**Course Description:** Complications of Intracranial tumor surgery, including cases by skull-base and intra-axial tumor experts focusing on surgical technique and technological maladies.

#### SYM01B: 3D Surgical Neuroanatomy

**Course Director:** Juan C. Fernandez-Miranda  
**Faculty:** Mustafa K. Baskaya, Aaron A. Cohen-Gadol, Paul A. Gardner, Pablo A. Rubino, Jeffrey M. Sorenson, Necmettin Tanriover, Ugur Ture, A. Samy Youssef

**Course Description:** Relevant surgical neuroanatomy and operative cases by master surgeons using 3-D stereoscopic projection with a focus on skull-base and subcortical anatomy.

Look for this image for a SANS exam that accompanies this course and can be purchased on the Annual Meeting registration site.
SYM02: Spine/Trauma Bundle
Composed of two sessions: SYM02A & SYM02B. Select this option to take both at a discounted rate.

SYM02A: Comprehensive Management of Spinal Trauma
Course Directors: Paul Arnold, Charles Sansur
Faculty: Ken Cracknell, Sanjay Dhall, Asdrubal Falavigna, Daniel J. Hoh, Diana Jho, Rajiv Saigal, Vincent Traynelis, Thomas Wilson
Course Description: Comprehensive spine trauma management, including operative and non-operative treatment options, with an emphasis on evidence-based practice guidelines.

SYM02B: Cutting Edge Treatments in Neurotrauma
Course Directors: Anthony DiGiorgio, Patti Raksin
Faculty: Randy Bell, Jack Jallo, Brian Kwon, Geoff Manley, David Okonkwo, Ann Parr, Shelly Timmons
Course Description: Discussion on advancements in surgical techniques for traumatic brain injury and spinal cord injury; focus on targeted therapy and neurophysiologic principles.

SYM03: Aneurysms: Endovascular and Open Approaches to Complex Lesions
Course Directors: Sepideh Amin-Hanjani, Jonathan Russin
Faculty: Nicholas C. Bambakidis, H. Huntington Batjer, Rohan Chitale, Amir Dehdashti
Course Description: Includes concentration on indications, planning, and execution of bypass for the management of complex cerebrovascular lesions, as well as a hands-on component with microscopes to practice bypass techniques with course faculty. Tumor, aneurysm, ischemic disease also included.

SYM04: Endoscopic Applications in Pediatric Neurosurgery
Course Director: Carolina Sandoval-Garcia
Faculty: Jorge Gonzalez-Martinez, Caitlin Hoffman, AV Kulkarni, Hal Metzer, Catherine McClung-Smith,
Course Description: Practical clinic on endoscopic applications in management of pediatric hydrocephalus, craniosynostosis and intraventricular surgery.

SYM05: CSNS Bundle
Composed of two sessions: SYM05A & SYM05B. Select this option to take both at a discounted rate.

SYM05A: 2023 Coding and CPT Update
Course Director: Joseph Cheng
Faculty: Domagoj Coric, Kris Kimmell, Scott Meyer, Mark Oppenlander, Gregory Przybylski, John Ratliff, Teri Romano, Karin Swartz, Luis Tumialan, Anand Veeravagu
Course Description: Highlighting what is new in spinal, cranial and E&M coding including potential revenue leaks, maximizing coding for the work you are doing, and highlighting documentation pearls. An expert panel will provide information and have time to answer questions from the audience.

SYM05B: The Importance of Wellness and the Reality of Burnout in Neurosurgery
Course Directors: Stacey Wolfe, Luis Tumialan
Faculty: Frank Attenello, Allan Hamilton, Paul Klimo, Debraj Mukherjee, Gregory Murad, Clemens M. Schirmer
Course Description: Burnout is prevalent throughout medicine and neurosurgery is no exception. Residents and practicing neurosurgeons are all susceptible to burnout. This is heightened in the era of increased documentation requirements, less pay for more work, and increased technological demands.
**SYM06: Stereotactic and Functional Bundle**
Composed of two sessions: SYM06A & SYM06B. Select this option to take both at a discounted rate.

**SYM06A: Epilepsy Surgery: Advanced Techniques for Network Identification, Modulation, and Resection**

Course Directors: Eyiyemisi Damisah, John Rolston
Faculty: Kathleen Bandt, Nicole Bentley, Edward Chang, Alfanso Fasano, Robert Gross, Andrew Ko, Kai Miller, Carrie Muh, Vikram Rao, R. Mark Richardson, Steino Sarmento

Course Description: Epilepsy often requires surgery targeted to the involved network and targeting it with resection, ablation, or neuromodulation. This course will provide practice and insight in the use of neuroimaging for epilepsy, network-level monitoring, minimally invasive ablation, and cutting-edge neuromodulation strategies.

**SYM06B: Movement Disorder Surgery: Targeting, Execution, and Innovation**

Course Director: Shabbar Danish
Faculty: Aviva Aboch, Ellen Air, Sarah Bick, Vivek Buch, G. Rees Cosgrove, Cameron McIntyre, Shervin Rahimpour, Ashwin Viswanathan

Course Description: Through didactic and hands-on sessions, explore innovations in surgical targeting, novel methods of ablation such as focused ultrasound, and recent technological advances in brain stimulation, such as closed-loop systems.

**SYM07: Stimulation for Peripheral Nerve Pain: Practical and Practice**

Course Directors: Line G. Jacques, Konstantin Slavin
Faculty: Allan Belzberg, Mark Mahan, Jennifer Sweet, Christopher Winfree

Course Description: Focuses on the evaluation and management of peripheral nerve pain including multi-modal treatment of complex regional pain syndrome, peripheral nerve, dorsal ganglion, spinal cord and deep brain stimulation, as well as neurectomy and dorsal root entry zone lesioning.

**SYM08: An Interdisciplinary Approach to Lumbar Spine Pain**

Course Directors: Nandan Lad, Eric Potts
Faculty: Richard North, Eellan Sivanesan, Michael Staudt, Chengyuan Wu

Course Description: Features interdisciplinary approaches to lumbar pain, including Pain Neurosurgeons, Spine neurosurgeons, Orthopaedic surgeons, physiatrists and physical therapists. Cases will be discussed including surgical management as well as alternative approaches to spinal pain that have the potential to disrupt neurosurgical practices.

**SYM09: Quality in Neurosurgery Practice**

Course Directors: Sharona Ben-Haim, Faith Robertson
Faculty: Mohamad Bydon, Trevor Fetter, Stephen Haines, Michael Ivan, Won Kim, Neil Martin, Matthew Miller, Elizabeth Mort, James Moses, Sujatha Sankaran, Clemens M. Schirmer, Scott Simon, Jennifer Sweet, Laura Synder, Daniel Yoshor

Course Description: Empowers neurosurgeons to increase healthcare value by improving patient outcomes and experiences while reducing unnecessary costs. We aim to provide practical knowledge needed to develop, deploy, and sustain quality improvement and quality assurance initiatives.

**SYM10: 2023 CNS Cerebrovascular Neurosurgery for Residents**

Course Directors: Mandy Binning, Christopher Kellner, Justin Mascitelli

Faculty: Jeremiah Johnson, Michael Lang, Ning Lin, Nina Moore, Christopher Ogilvy, Joshua Osbun, Dimitri Sigounas, Phil Taussky

Course Description: Exposes trainees to the rapidly advancing field of Cerebrovascular Neurosurgery through close instruction by leaders in the field and hands-on training with the newest devices and training models.

**5:00-7:00 pm**

CNS International, Resident, and Foundation Reception
- Planet Word Museum
- See pg. 8 for details

**6:30-8:30 pm**

DINNER SEMINAR: Managing and Preventing Intraoperative Vascular Complications
- Joe’s Seafood, Prime Steak & Stone Crab
- See pg. 10 for details
Special Symposia

**PRICING:**
- **Full Day Discounted Bundles (includes lunch):** Physician $600; Nurse/NP/PA $300; Resident/Medical Student $175
- **Half Day:** Physician $450; Nurse/NP/PA $200; Resident/Medical Student $125

### 8:00 am-4:15 pm

**Sellar and Suprasellar Tumors Outside the Box**

_A high-yield CNS collaboration with the North American Skull Base Society (NASBS)_

Registration for the CNS Annual Meeting is not required to attend this Special Symposium.

**Price:** $600

Register for this symposium and the CNS Annual Meeting and save $150!

**Course Directors:** Siviero Agazzi, Maria Peris-Celda, Daniel Prevedello, Viviane Tabar

**Faculty:** Manish Aghi, Amjad Anaizi, Garni Barkhoudarian, Maria Peris Celda, Prashant Chittiboina, Brian Collins, Amir Dehdashti, James Evans, Juan Fernandez-Miranda, Paul Gardner, Jamie van Gompel, Luma Ghalib, Tim de Klotz, Michael Link, James Liu, Nyall London, Jose Matos, Jonathan Morris, Carlos Pinheiro Neto, Lynette Nieman, Joshua Palmer, Arjun Parasher, Marta Penas Prado, Luciano Prevedello, Maria Sevilla, Susmeeta Sharma, Jason Sheehan, Elizabeth Tyler-Kabara

**Course Description:** Offers a comprehensive series of lectures related to the most challenging and relevant aspects of the diagnosis, surgical and non-surgical management, and outcomes of sellar and suprasellar tumors. The lectures are organized in a TED-talk style format to provide a different learning experience and highlight the practical and clinically relevant concepts.

### 8:00 am-4:15 pm

**The Hopkins Symposium**

**Course Directors:** Mandy Binning, Alexander A. Khalessi

**Faculty:** Jason Davies, Ricardo Hanel, Fred Khosravi, David Langer, Michael Lawton, Demetrius Lopes, Adel Malek, J Mocco, Christopher Ogilvy, Adnan Siddiqui, Robert Spetzler, Ajay Wakhloo, Peter Kan

**Course Description:** The Hopkins Symposium is a day to honor one of the pioneers of endovascular neurosurgery and discuss how his surgical innovations have shaped modern day neurosurgery across all subspecialties. We will highlight endovascular neurosurgery as it pertains to relationships with industry, and cutting edge treatments for vascular disorders as well as common neurosurgical problems such as hydrocephalus.

**Sponsored by:** Imperative Care and Q’Apel Medical, Inc.

### 8:00 am-12:00 pm

**Practical Neurosurgery: Perspectives by and for General Practice Neurosurgeon Leaders**

**Course Directors:** Jason Ellis, Christian Sikorski

**Faculty:** Anthony Asher, Deborah Benzil, Mandy Binning, Andrew Fanous, James Fleming, Rupa Juthani, Daniel Kelly, David Langer, R. Loch MacDonald, Neil Martin, Jay McCracken, Raj Narayan, Troy Payner, Alan Scarrow, Gary Simonds, R. Morgan Stuart, Deborah Omar Zalatimo

**Course Description:** The scope and influence of neurosurgical practice in the community setting are expansive. Furthermore, community practices of all varieties remain the predominant practice setting in our field. This course explores the practical aspects of being a neurosurgical practitioner, leader, investigator, and innovator outside the traditional halls of academia.

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Symposia

**PRICING:**
- **Full Day Discounted Bundles (includes lunch):** Physician $600; Nurse/NP/PA $300; Resident/Medical Student $175
- **Half Day:** Physician $450; Nurse/NP/PA $200; Resident/Medical Student $125

### 8:00 am-4:15 pm

**SYM11: Tumor Bundle**

_Composed of two sessions:_ SYM11A & SYM11B. Select this option to take both at a discounted rate.

### 8:00 am-12:00 pm

**SYM11A: Brain Tumor Update: Management of Benign Brain Tumors**

**Course Directors:** Jacques Morcos, Gelareh Zadeh

**Faculty:** Andrew S. Little, Russell R. Lonser, Akash J. Patel, Amir Samii, Olabisi Sanusi, Walavan Sivakumur

**Course Description:** Discusses surgical and radio surgical techniques for a variety of central nervous system tumors.

### 12:45-4:15 pm

**SYM11B: Brain Tumor Update: Management of Malignant Brain Tumors**

**Course Directors:** Isabelle Germano, Michael Lim

**Faculty:** Kaizorn L. Chaichana, William Friedman, Jody Leonardo, Andrew Sloan

**Course Description:** Provides an update on malignant brain tumor management, including guidelines reviews and a focus on adjuvant surgical technologies with case-based discussions by expert faculty.
**SYM12: Tumor/ Cerebrovascular/Pain Bundle**
Composed of two sessions: SYM12A & SYM 12B. Select this option to take both at a discounted rate.

**SYM12A: Immunotherapy for Brain Tumors: New Concepts**
Course Director: E. Antonio Chiocca
Faculty: Nduka M. Amankulor, Bryan Choi, William T. Curry, Peter E. Fecci, Michael Lim, Hideho Okada, Ian F. Parney
Course Description: Provides an overview of immunological principles and defines discrete pathways regulating the initiation and progression of malignant brain tumors. Cutting-edge immunotherapeutic approaches for the treatment of CNS tumors will be discussed.

**SYM12B: Microvascular Decompression for Trigeminal Neuralgia and Beyond**
Course Director: Sharona Ben-Haim
Faculty: Andrew Grande, Christopher Honey, Raymond Sekula, Marc Sindou
Course Description: Focuses on diagnosis, management and operative technique in MVD for vascular compression syndromes including trigeminal neuralgia and other syndromes (hemifacial spasm, glossopharyngeal neuralgia, geniculate neuralgia, etc)

**SYM13: Disorders of the Spine and Peripheral Nerves Bundle**
Composed of two sessions: SYM13A & SYM13B. Select this option to take both at a discounted rate.

**SYM13A: Advanced Minimally Invasive Spine Surgery: Operative Nuances, Indications, and Complication Avoidance**
Course Director: Kai-Ming Fu
Faculty: Aaron Clark, Kurt Eichholz, Kevin Foley, Luis Tumialan, Langston Holly, Ibrahim Hussain, Catherine Miller-Simington, Saman Shabani
Course Description: Intended for surgeons with an interest and some experience in minimally invasive spine surgery. Experts in the field will discuss operative nuances, complication avoidance, and patient selection in the context of a case-based course.

**SYM13B: Lateral Approaches to the Spine**
Course Directors: Adam Kanter, Juan Uribe
Faculty: Neel Anand, Paul Park, Luiz Pimenta, Bill Taylor, David Xu
Course Description: The lateral approach to the spine is a powerful tool for the modern spine surgeon for a variety of spinal conditions, including degenerative disc disease, deformity, spondylolisthesis, and tumors. This course is ideal for surgeons and APPs regardless of extent of experience who seek to update their knowledge and skill. Leading experts in the field will give a comprehensive overview of the latest advances in the indications, technique and management of complications of lateral approach to the spine.

**SYM14: Cerebrovascular Bundle**
Composed of two sessions: SYM14A & SYM14B. Select this option to take both at a discounted rate.

**SYM14A: Frontiers in Management of Acute Stroke**
Course Directors: Adam Arthur, Vernard Fennell
Faculty: Adam Arthur, Mandy Binning, Vernard Fennell, Ricardo Hanel, Aditya Iyer, Alexander Paul
Course Description: Will look at the evolving landscape of stroke care, including acute thrombectomy trials looking to extend indications, as well as pre- and post-hospital care and innovations aimed to improve outcomes for stroke patients.

**SYM14B: Minimally Invasive Management of Intracerebral Hemorrhage**
Course Directors: Mark Bain, Christopher Kellner, Adnan Siddiqui
Faculty: Leonardo Rangel-Castilla
Course Description: Will review landmark trials in management of ICH, identifying areas of ongoing investigation. An update on recent trials will highlight ongoing efforts to evolve techniques. Demonstration of different minimally invasive techniques and technologies through case examples will be given.

**SYM14: Non-CME Lunch Session sponsored by AstraZeneca**
TR 8:00 am-4:15 pm

SYM15: Neurotrauma and Critical Care and CSNS Bundle
Composed of two sessions: SYM15A & SYM15B. Select this option to take both at a discounted rate.

TR 8:00 am-12:00 pm

SYM15A: Neurotrauma and Neurocritical Care Case-based Review of Guidelines and Management Principles
Course Directors: Lori Shutter, Emily Sieg
Faculty: Ramesh Grandhi, Greg Hawryluk, Ryan Kitagawa, Laura Ngwenya, Richard Rogers, Uzma Samadani, Berje Shammasian, Eve Tsai
Course Description: Case-based review of common but often challenging cases of brain and/or spinal cord injury. Ideal for young neurosurgeons planning on taking board examinations and older neurosurgeons wanting to refresh their knowledge base and discuss challenging cases. A review of current guidelines will also be included.

TR SE 12:45-4:15 pm

SYM15B: Identifying and Addressing Disparity in Neurotrauma
Course Director: Sarah Woodrow
Faculty: Michael Chicoine, Sonya Eden, Bharat Guthikonda, Laura Ngwenya, Kee Park, Andres Rubiano, Kibru Zewdie
Course Description: Disparities exist in neurotrauma across the globe. This symposium will bring together neurosurgeons from broad backgrounds to discuss some of the common challenges delivering comprehensive care both in our own backyards and in LMICs.

SP 12:45-4:15 pm

SYM16: The Value of the Neurosurgeon
Course Directors: Brian V. Nahed, Troy Payner, Ann Stroink
Faculty: Deb Benzil, Brian L. Hoh, Steven Kalkanis, Richard Menger, Stephen Papadopoulos
Course Description: In this era of decreasing reimbursement, increasing regulation, and increasing employed positions, it is crucial that neurosurgeons understand their own value. That value could be to their institution, their hospital, their group or their community. The panel will highlight maximizing revenue by not only volume but also cost containment, how to leverage your value in negotiations, and how to remain compliant with regulatory guidelines.

PN 8:00 am-4:15 pm

SYM17: Peripheral Nerve/ Spine Bundle
Composed of two sessions: SYM17A & SYM17B. Select this option to take both at a discounted rate.

PN 8:00 am-12:00 pm

SYM17A: Peripheral Nerve Surgery: Evaluation and Operative Techniques - Preparing for General Practice and the Oral Boards
Course Directors: Line G. Jacques, Thomas J. Wilson
Faculty: Ausaf Bari, Justin Brown, Angad S. Hanna, Andrew Jack, Mark Mahan, Shaun T. O’Leary, Elias B. Rizk, Brandon Smith, Eric L. Zager
Course Description: Designed for surgeons at any experience level, uses a combination of didactic lectures, case discussion, and hands-on demonstrations. The faculty will provide learners with fundamental knowledge in peripheral nerve evaluation, surgical exposure and management of common surgical nerve conditions.

SP 12:45-4:15 pm

SYM17B: Incorporating Spinal Endoscopy into Your Practice
Course Directors: Christoph Hofstetter, Albert Telfeian
Faculty: Nathaniel Brooks, Meng Huang, Osama Kashlan, Sanjay Konakondla, Mark Mahan, John Ogunlade, Michael Wang
Course Description: Spinal endoscopy is a growing field of spine surgery with expanding applications. In this symposium, participants will learn from spinal endoscopy experts on strategies for incorporating endoscopy for a variety of different pathologies.
SYM18: WINS Bundle
Composed of two sessions: SYM18A & SYM18B. Select this option to take both at a discounted rate.

SYM18A: Neurosurgeons as Trailblazers
Course Directors: Rushna Ali, Rupa Juthani
Faculty: Sonia Eden, Sanjay Gupta, Ray King, Kathryn Ko, Julie Pilissis, Judy Rosman, Gail Rousseau, Shelly Timmons, Richard Wohns, Victor Yang
Course Description: Intended to introduce medical students, neurosurgery trainees and junior faculty to the breadth of opportunities that exists as a neurosurgeon such as global outreach, business, innovation, community outreach and academics, with an emphasis on alternate and parallel career paths.

SYM18B: Maximizing Your Neurosurgical Employment Opportunities
Course Directors: Jennifer Sweet, Kristin Weaver
Faculty: John A. Braca, Andrew R. Conger, Anand Germnawala, Michelle Johnson, Timothy H. Lucas, Joseph S. Neimat, Judy Rossman, Justin A. Singer, Anand Veeravagu, Matthew Vuckovich, Sharon Webb
Course Description: Intended for senior neurosurgery residents and graduating fellows who are in the process of interviewing for employment. The faculty will discuss topics relevant to job applicants from the perspective of chairpersons, program directors, and recruiters. Job applicants will also have an opportunity to have their CVs reviewed and obtain interview tips from experts in this area.

SYM19: General Education Bundle
Composed of two sessions: SYM19A & SYM19B. Select this option to take both at a discounted rate.

SYM19A: Swimming with The Sharks: Thriving in the Neurosurgery Match and Residency
Course Directors: Nitin Agarwal, David Kojo Hamilton
Course Description: Nobody wants to swim with sharks, but some must swim regardless. This course, intended for residents, medical students, and foreign medical graduates, highlights lessons of resilience learned through the experience of faculty and residents. Faculty include chairpersons, program directors, program coordinators, and recent graduates, discussing topics ranging from overcoming mistakes in training to creating a pathway for a successful career.

SYM19B: Leading the Pack
Presented by the CNS Leadership Institute
Course Director: Ellen Air, Brian V. Nahed, Anand Veeravagu
Course Description: Designed for the neurosurgeon leader in conjunction with the CNS Leadership Institute. Leadership skills are necessary throughout all aspects of Neurosurgery including practice development, department management, navigating hospital administration, and organized neurosurgery. Topics will include leadership core competencies, as well as setting goals and establishing mentorship. The course will include didactic lectures as well as break-out sessions and small group exercises.

Association of Neurosurgical Physician Assistants (ASNPA) Fall 2023 CMS Meeting
Presented in collaboration with the CNS
Complimentary to all Physician Assistants, Nurse Practitioners, Nurses, and Affiliate Members! A ticket to this session will automatically be added to your itinerary when you register.
Course Directors: Jonas Konan, ANSPA President-elect
Symposium Description: This course is specifically designed by the Association of Neurosurgical Physician Assistants for Physician Assistants and Nurse Practitioners that are practicing in, or interested in, neurosurgery. The faculty will be comprised of experts in the field of neurosurgery.

General Scientific Session I
4:30-6:30 pm
See page 14 for session details.

Opening Reception
6:30-8:00 pm
Join us at the Opening Reception at the Marriott Marquis Washington, D.C.
Guidelines Sessions

7:00-8:30 am

The CNS guidelines are evidence-based summaries of the scientific literature written by topic experts to provide neurosurgeons with the information they need to provide the best care to patients suffering from neurosurgical conditions. In the Guidelines Sunrise Sessions, authors discuss the key conclusions of the recent Guidelines projects to promote dissemination of this broadly applicable information around the field.

SP Guideline Session I: Perioperative Spine—Intraoperative
Moderators: Sanjay Dhall, Daniel J. Hoh
Faculty: John Dimar, Basma Mohamed, Paul Park, Wilson Ray, Khoi D. Than, Luis Tumialan, Marjorie Wang
Session Description: This guidelines session will provide an overview of the current evidence and recommendations for intraoperative optimization for spine surgery. Clinically relevant topics include: intrawound antibiotic prophylaxis, antifibrinolytics for blood loss management, goal directed blood transfusion, management of durotomy, and neuromonitoring. Future directions and areas for further research will also be discussed.

TU Guideline Session II: Brain Mets Update—Emerging Therapies
Moderator: J. Bradley Elder
Faculty: Ian Lee, Jeffrey Olson, Mark Linskey, Brian V. Nahed
Session Description: In this session, Guidelines authors discuss their conclusions regarding Emerging Therapies for treatment of Brain Metastases.

Sunrise Science Sessions

7:00-8:30 am

The Sunrise Science Abstract sessions will be composed of the top oral abstract presentations submitted in each of the subspecialties presenting the latest scientific research.

GE Sunrise Session and Late Breaking Abstract Session: Data Science
Moderators: Eric Oermann, Daniel Orringer, Matthew Pease

TR Sunrise Session and Late Breaking Abstract Session: Neurotrauma and Critical Care
Moderators: Tene Cage, John F. Morrison

CV Sunrise Session and Late Breaking Abstract Session: Cerebrovascular
Moderators: Phil Taussky

TU Sunrise Session and Late Breaking Abstract Session: Tumor
Moderators: Isaac Yang

PE Sunrise Session and Late Breaking Abstract Session: Pediatric
Moderators: Sarah Jernigan, Laura Prolo

SP Sunrise Session and Late Breaking Abstract Session: Spine
Moderators: Andrew Ryu, Corinna Zygourakis

7:00-8:30 am

DEI Breakfast Seminar: Mentoring 101
Complimentary for all meeting attendees.
Advance registration is required.
Moderators: Sepidef-Amin Hajani, Maryam Rahman
Faculty: Sonia Eden, Kimberly Hoang, Kimberly Kicielinski, Karin Murasko, Analiz Rodriguez
Session Description: Mentoring is vital to everyone for their professional development. This session will focus on important topics including: how to find a good mentor, how to be a good mentor, the importance of sponsorship, highlighting successful local and national mentoring programs, mentorship in academics versus private practice, and identifying barriers to successful mentorship of underrepresented groups and those without a home program.
General Scientific Session II

8:40 am-12:10 pm

See page 14 for session details.

Luncheon Seminars  Be sure to secure your seat for a Luncheon Seminar when you register!

12:20-1:50 pm

All Luncheon Seminars include a plated lunch served in the seminar room. Luncheon Seminar fee is $150 each ($100 for residents, fellows, medical students, and advance practice providers)

**CV M01: Honored Guest Lunch: What We Can Learn From Failure**  
Complimentary to all residents—advance registration is recommended.  
**Speaker:** L. Nelson Hopkins  
**Description:** Recognizing, accepting, and working hard to learn from failure is a critical component to becoming successful. We will share some of the work we have done to learn from ours and others mistakes and failures.

**TU M02: New Concepts in Intra-operative Guidance**  
**Moderators:** Veronica Chang, Geirmund Unsgard.  
**Faculty:** Francesco Dimeco, Sherise Ferguson, Alexandra Golby, Peter Nakaji, Walter Stummer  
**Seminar Description:** Practicing neurosurgeons will learn how to apply existing technology to improve extent of resection including fluorescence, ultrasound, virtual reality, MRI, and more.

**SP TU M03: Surgical Management of Primary Spinal Tumors**  
**Moderators:** Paul M. Arnold, Rory Goodwin  
**Faculty:** Ziya L. Gokaslan, Laurance D. Rhines, Daniel Sciubba, John Shin  
**Seminar Description:** Review the latest treatment options for primary spinal column tumors from cervical to sacral. Advances in surgical techniques, pre-operative planning, and intra-operative application of enabling technologies for tumor resection will be highlighted. Current multi-modal management strategies for giant cell tumor, chordoma, and chondrosarcoma will be discussed with an emphasis on complication avoidance and management.

**CV M04: Treatment Options and Approaches to Cavernomas**  
**Moderator:** Adib Abla  
**Faculty:** Daniel Barrow, Jan-Karl Burkhart, Douglas Kondziolka  
**Seminar Description:** A case-based approach to selection and management of brainstem cavernous malformations. This will include the evolving landscape of medical and radio surgical care for these lesions.

**TR M05: Lessons Learned from the Military: Managing Neurotrauma from the Field to the Future**  
**Moderator:** Bradley Dengler  
**Faculty:** Rocco Armonda, Randy Bell, Cory Mossop, Ryan Morton  
**Seminar Description:** With this year’s meeting in our nation's capitol we highlight the insight developed in advancing the management of neurotrauma patients. This includes not only intense battlefield management and long-term recovery programs but also the innovation that has resulted in trying to treat often complex and severe injuries.

**PE M06: ABPNS Board Certification: Preparation and Requirements for Certification**  
**Moderators:** Daniel Donoho, Peter Madsen  
**Faculty:** Bruce Kaufman, Jodi Smith, Shenandoah Robinson  
**Seminar Description:** Review the pathway to specialty certification in Pediatric Neurosurgery. Review common shortcomings in oral board performance and case submissions mistakes. Identify pitfalls associated with board failure.

**GE M07: FDA Update**  
**Moderator:** Catherine Hill, Joshua Rosenow  
**Faculty:** Christopher Loftus, Carlos Pena  
**Seminar Description:** This session explores the current state of the FDA as it pertains to new product and medication approval processes, learning from current and former FDA administrators and innovators.

**SE M08: Finding Your Voice: Advocacy in Neurosurgery**  
**Moderator:** Krystal Tomei  
**Faculty:** Jeffrey Blount, Sonia Eden, Brian Miller, Adrienne Mortimer, Gail Rosseau, Ann Stroink  
**Seminar Description:** Advocacy is an important role that we should all espouse regardless of our practice location. It can look differently to different people. This seminar explores the challenges we face being advocates for our patients and our profession and discusses opportunities to engage in this important area.
**PN M09: Peripheral Nerve Entrapment Versus Radiculopathy**  
**Moderators:** Aaron J. Clark, Line G. Jacques  
**Faculty:** Zarina Ali, Ausaf Bari, Amgad Hanna, Jason H. Huang, Jonathan Stone, Gabriel C. Tender, Eric Zager  
**Seminar Description:** Mistaking peripheral and spinal pathology can lead to unnecessary surgery and patient suffering. The purpose of this seminar is to refine diagnostic skills in differentiating radiculopathy from common peripheral nerve entrapment syndromes.

**SE M10: Connectomic Deep Brain Stimulation**  
**Moderator:** Brian Kopell  
**Faculty:** Andrew Horn, Kate Johnson, Nader Pouratian, Ben Shafty  
**Seminar Description:** Deep brain stimulation (DBS) uses modulation of key areas in the brain to affect larger networks. This lunch session will introduce you to key imaging technologies and recent advances in network identification and modulation for DBS, with the goal of using these techniques to improve patient outcomes.

**PA M11: An Interdisciplinary Approach to Facial Pain**  
**Moderators:** John Lee, Emily Levin, Nirit Weiss  
**Faculty:** Kim Burchiel, Christina Renee Graley, Joshua Rosenow, Tejas Sankar, Glenn Treisman, Robin Yang  
**Seminar Description:** Provides a comprehensive approach of the diagnosis and management of facial pain from the perspective of neurology, dentistry, and psychiatry.

**CV M12: Advancing Your Career: Steps to Keep You Climbing**  
**Moderator:** Rushna Ali  
**Faculty:** Aviva Abosch, Tony Asher, Richard Ellenbogen, Mark N. Hadley, Kimberly Kicielinski, Katie Orrico, Judy Rosman  
**Seminar Description:** Whether in private or academic practice there is always the possibility of advancing your career. This seminar is designed to help young and mid-level neurosurgeons plan their career trajectories.

**CV M13: Managing and Preventing Intraoperative Vascular Complications**  
**Moderator:** Nima Etminan  
**Faculty:** Clemens M. Schirmer  
**Seminar Description:** A case-based approach to prevention and management of complications for common vascular lesions. This will include a selection of techniques, devices, and bail out options.

**Section Sessions**

**2:50-4:20 pm**

**CV Section on Cerebrovascular Surgery 1: Pushing the Envelope for Cerebrovascular Disease**  
**Moderators:** Gursant Atwal, Stavropoula Tjoumakaris  
**Session Description:** Focusing on the evolving landscape of care in cerebrovascular neurosurgery. This will include talks by innovators and entrepreneurs in the field. The Neurosurgery Paper of the Year in Cerebrovascular will also be presented.

  * Hopkins Lecture  
    Giuseppe Lanzino

**SE Council of State Neurosurgical Societies 1: Leadership In and Out of Neurosurgery**  
**Moderators:** Bharat Guthikonda, Aditya Pandley  
**Session Description:** Designed to provide practicing neurosurgeons and neurosurgeons in training an opportunity to hear from and interact with neurosurgical leaders who have moved to leadership positions outside of neurosurgery. All of the speakers have obtained leadership positions within medical schools, health systems, and physician groups. The Neurosurgery Paper of the Year in Socioeconomics, Health Policy, and Law will also be presented.

  * Administrative Leadership Within a Medical School  
    Lawrence Chin
  * Overseeing a Health System  
    Steven Kalkanis
  * Attributes Needed to Become a Dean  
    Julie Piilits

**Oral Abstract Presentations**
Section on Disorders of the Spine and Peripheral Nerves 1: Latest Advances in Spine Surgery
Moderators: John Chi, Robert Whitmore
Session Description: Covering the hottest technical topics in spine surgery, with a particular emphasis on minimally invasive techniques. The role of AI in spine surgery will also be discussed. The Neurosurgery Paper of the Year in Spine will also be presented.

- Spinal Cord Injury in Athletes
  David Okonkwo

- Prone Lateral: When to do it and when to not
  Juan Uribe

- Virtual Reality in Spine Surgery
  Daniel Sciubba

- Latest Advances and Future Potential of Minimally Invasive Spine Surgery
  Michael Wang

- Artificial Intelligence and Spine Surgery
  Mohammed Bydon

Oral Abstract Presentations

Section on Neurotrauma and Critical Care 1: Management of TBI: From Bench to Bedside
Moderators: Patrick Belton, Richard Rogers
Session Description: We will highlight our annual Miller lecturer and present best Abstract in neurotrauma and critical care research with more of a focus on TBI. There will be a short lecture on autoregulation in TBI with a rebuttal focusing on challenges putting these principals in practice. The Neurosurgery Paper of the Year in Neurotrauma & Critical Care will also be presented.

- Miller Lecture: Long Term Outcomes in Military Traumatic Brain Injury
  Louis French

- Autoregulation in Severe TBI: Basic Principals and Management
  Lori Shutter

- Rebuttal/Commentary
  Ryan Kitagawa

Oral Abstract Presentations

Section on Pain 1: The Translational Science of Pain
Moderators: Josué Avecillas-Chasin, Ashwin Viswanathan
Session Description: Presentation and discussion surrounding cerebral pain networks as a new frontier for the neuromodulation of pain pathways. The Neurosurgery Paper of the Year in Pain will also be presented.

- Cerebral Networks for Pain
  Michael Caterina, Yun Guan

- Closed Loop Stimulation for Pain
  Prasad Shrivalkar, Philip Starr

- ACC Stimulation for Chronic Back Pain
  Ausaf Bari

- Novel Targets for Pain
  Jeff Elias, Fred Lenz, Chang-Chia Jeff Liu, John Markman

Oral Abstract Presentations

Section on Pediatric Neurosurgery 1: Contemporary Management of Craniopharyngioma
Moderators: Katrina Ducis, David Hersh, Thomas Merchant
Session Description: A review of contemporary management of craniopharyngiomas in pediatric age group will take place. A discussion on the role of surgery, radiation and emerging application of targeted therapies will be held. The Neurosurgery Paper of the Year in Pediatrics will also be presented.

- Contemporary Management- The Surgical Perspective
  Phillip Storm

- Pathway Directed Therapies in Craniopharyngioma
  Todd Hankinson

- Contemporary Management- Role of Radiation Therapy
  Thomas Merchant

Oral Abstract Presentations

Section on Peripheral Nerves 1: Latest Advances in Clinical Outcomes
Moderators: Holly Gilmer, Brandon Smith, Kevin Swong
Session Description: This session will focus on the current techniques for treating peripheral nerve disease and potential future areas of peripheral nerve research. The Neurosurgery Paper of the Year in Peripheral Nerve will also be presented.

- Top 10 papers in Neurosurgery
- Outlook in Clinical Trials
  Shelby Burks

Oral Abstract Presentations
Section on Stereotactic and Functional Neurosurgery 1: Functional Neurosurgery: Psychiatric Neurosurgery and Cognitive Neuroscience
Moderators: JP Langevin, Helen Mayberg, Sameer Sheth
Session Description: Functional neurosurgery sits at the crossroads of technologies that may be used to both study the mind and alleviate psychiatric disease. This session will feature talks by successful practitioners in human neuroscience research using neurosurgical tools, alongside presentations covering active research into psychiatric indications. The Neurosurgery Paper of the Year in Stereotactic & Functional will also be presented.

Neuromodulation for Obesity
Casey Halpern

Intracranial Recordings and Human Memory
Bradley Lega

Challenges in Bringing Psychiatric Neurosurgical Treatments to The Clinic
Andes Lozaon, Helen Mayberg

Oral Abstract Presentations

Section on Tumor 1: High Grade Glioma (HGG) Surgery: Challenges and New Frontiers
Moderators: Tiffany Hodges, Kimberly Hoang
Session Description: This session will focus on the challenges of surgical resection of deep seated high grade gliomas, pre-surgical optimization, maintaining quality of life and oncofunctional balance in this patient population. The Neurosurgery Paper of the Year in Tumor will also be presented.

Butterfly Gliomas/Genu of the CC- Should We Operate? When?
Sherise Ferguson

Strategies to Optimize Onco-functional Balance on Insular/ Thalamic HGG
Analiz Rodrigiez

HGG and Presurgical Optimization
Erin Dunbar

HGG and Quality of Life
Erin Dunbar

Oral Abstract Presentations

Afternoon Sessions

4:30-6:00 pm

Microvascular Decompression for Trigeminal Neuralgia and Beyond
Moderator: Sharona Ben-Haim
Session Description: An interactive case based session focused on diagnosis, management and operative technique in MVD for vascular compression syndromes including trigeminal neuralgia and other syndromes (hemifacial spasm, glossopharyngeal neuralgia, geniculate neuralgia, etc)

Multimodal Management of Pediatric Vascular Lesions
Moderator: Ed Smith
Session Description: This session will cover case-based treatment paradigms for pediatric vascular malformations including aneurysms, arteriovenous malformations, Vein-of-Galen Malformations, cavernous malformations, and spinal vascular pathology. Faculty will review comprehensive management of these complex disorders, including open and endovascular approaches.

Multimodal Treatment Strategies for Complex AVF
Aaron Dumont

Multimodal Treatment of Intracranial Aneurysm
Sandi Lam

Moyamoya Disease
Ed Smith

Vein of Galen Malformation
Jan Karl Burkhardt
**SP Neurosurgical Contracts – How to Get What You Want**  
**Moderators:** Todd Barnes, John Golfinos, Jeremy Phelps  
**Session Description:** This seminar will provide an overview of what to ask for, decide what your dealbreakers are, and how to get what you want without appearing greedy. The nuanced differences between a first and second contract will also be discussed.

**SP Case Based Debates: Lumbar**  
**Moderators:** Zack Ray, Anand Veeravagu  
**Session Description:** This case-based debate session will cover current controversies in the management of lumbar degenerative disorders commonly encountered in practice.

- **Debate: L5-S1 ALIF - Lateral Versus Supine ALIF**  
  Sigurd Berven, Anand Veeravagu
- **Debate: L4-L5 LLIF - Single position versus Flip**  
  Paul Park, Khoi D. Than
- **Debate: Lumbar Disc Arthroplasty**  
  Faheem Sandhu, Christopher Shaffrey
- **Debate: Synovial Cyst with Radiculopathy. Endoscopy vs Tubular vs Interventional Percutaneous Aspiration**  
  Wende Gibbs, Christoph Hofstetter

**TR Trial by Fire: The Cases from Which I Learned the Most**  
**Moderator:** Gregory Hawryluk, Emily Sieg  
**Session Description:** Despite the best intentions, complications occur in neurosurgery patients and patients often present with complex problems. In this session, speakers will provide a case-based discussion and will discuss their personal perspectives in caring for neurotrauma patients.

**PE Emerging Techniques in Pediatric Functional Neurosurgery**  
**Moderators:** Casey Madura, Smruti Patel, Terrence Sanger  
**Course Description:** Review emerging applications in pediatric functional neurosurgery. Review the role of thalamic intracranial recordings in treatment of dystonia, evolving techniques in rhizotomy and ultrasound therapies.

**PN Schwannomas and Neurofibromas of the Spine and Peripheral Nerves**  
**Moderators:** Line G. Jacques, Ian McCutcheon  
**Session Description:** This course will discuss management of benign peripheral nerve sheath tumors, with a particular focus on dumbbell nerve tumors.

**SP Non-invasive Functional Neurosurgery**  
**Moderator:** Nolan Williams  
**Session Description:** Functional neurosurgery has consistently been at the cutting edge of noninvasive and incisionless methods. This session will explore existing modalities, new modalities, and emerging indications.

**TU Novel Prospectives in Low Grade Gliomas Management**  
**Moderator:** Isaac Yang  
**Session Description:** This session will review and discuss updates in low grade glioma management at initial diagnosis and at recurrence. Surgical, radiotherapy, and systemic treatment considerations will be presented.

- **How to Manage Incidentally Found Low Grade Gliomas**  
  Isaac Yang
- **Recurrent Low Grade Gliomas- Surgical Considerations**  
  Hugues Duffau
- **Radiotherapy Considerations for Newly Diagnosed and Recurrent Low Grade Gliomas**  
  Serah Choi
- **Systemic Treatment Considerations- Chemotherapy (Canton Trial)**  
  John de Groot

**7:30-9:30 pm**

**SP GE Dinner Seminar 2: The Importance of Negotiating as a Neurosurgeon**  
■ Morton’s The Steakhouse  
See pg. 10 for details

**6:00-7:30 pm**

**MS Medical Student Town Hall**  
See pg. 9 for details
Guidelines Sessions

7:00-8:30 am

The CNS guidelines are evidence-based summaries of the scientific literature written by topic experts to provide neurosurgeons with the information they need to provide the best care to patients suffering from neurosurgical conditions. In the Guidelines Sunrise Sessions, authors discuss the key conclusions of the recent Guidelines projects to promote dissemination of this broadly applicable information around the field.

**Guideline Session III: Pituitary Adenoma**
Moderator: Isabelle Germano
Faculty: Manish Aghi, Kevin Lillehei, Gabriel Zada
Session Description: In this session expert tumor surgeon highlight the standard of care and latest advances in contemporary management of pituitary adenomas.

**Guideline Session IV: Occipital Neuralgia—Update**
Moderator: Mike Staudt
Faculty: Joshua Rosenow, Jennifer Sweet
Session Description: This session explores the latest literature in the management of occipital neuralgia using occipital nerve stimulation. We will begin with a retrospective review of the original guidelines and a primer on neurostimulation. The use of ONS as an off-label therapy will be discussed, as will the associated implications for patients, providers and insurers. Finally, we will assess the literature behind the new guidelines update, with an understanding of the challenge of developing guidelines with low quality evidence.

Sunrise Science Sessions

7:00-8:30 am

The Sunrise Science Abstract sessions will be composed of the top oral abstract presentations submitted in each of the subspecialties presenting the latest scientific research.

**Sunrise Session and Late Breaking Abstract Session: Healthcare Disparities**
Moderators: Theresa Williamson

**Sunrise Session and Late Breaking Abstract Session: Tumor**
Moderators: Marie Roguski, John Sherman

**Sunrise Session and Late Breaking Abstract Session: Spine**
Moderators: Andrew Yew

**Sunrise Session and Late Breaking Abstract Session: CSNS**
Moderators: Celene Mulholland
TUESDAY, SEPTEMBER 12, 2023

General Scientific Session III

8:40 am-12:10 pm

See page 15 for session details.

Luncheon Seminars Be sure to secure your seat for a Luncheon Seminar when you register!

12:20-1:50 pm

All Luncheon Seminars include a plated lunch served in the seminar room. Luncheon Seminar fee is $150 each ($100 for residents, fellows, medical students, and advance practice providers)

**GE T14: Honored Guest Lunch, Douglas Kondziolka:** Learning and Personal Growth through Organized Neurosurgery—How to Make a Difference Complimentary to all residents; advance registration is recommended.

*Speaker:* Douglas Kondziolka  
*Seminar Description:* There are many ways that neurosurgeons at all levels can get involved in the conduct of their specialty, from conference planning and conduct, education, journal science, examinations, board preparation and certification, and other means. Such volunteer efforts can not only help clinicians and the public, but be personally rewarding. Dr. Kondziolka will discuss his personal path and the lessons he has learned from others along the way.

**CV T17: Keyhole Approaches for Treatment of Vascular Lesions**

*Moderator:* Peter Nakaji  
*Faculty:* Dale Ding, Nikolai Hopf, Daniel Raper, Babu Welch  
*Seminar Description:* Covering keyhole approaches to aneurysm clipping in a case-based format with a focus on key anatomic considerations of both the approach and cerebrovascular anatomy. Faculty will also discuss incorporating enhanced recovery after surgery (ERAS) protocols as a key component of a “minimally invasive” practice.

**TU T15: Complex Skull Base Approaches**

*Moderators:* Vijay Agarwal, Pamela S. Jones  
*Faculty:* James K. Liu, Nelson Oyesiku, Daniel Prevedello, Laligam Sekhar, Shaan M. Raza, Georgios Zenonos, Mario Zuccarello

*Seminar Description:* Focusing on the management of intracranial lesions necessitating a combined approach, focusing on approach selection, technique, nuance, and complication avoidance. Combined approaches will not be limited solely to open approaches, but will include both endoscopic and keyhole techniques, as well as vascular approaches.

**TU T16: Cervical Spondylotic Myelopathy- Anterior Versus Posterior**

*Moderators:* Erica Bisson, Nader Dahdaleh  
*Faculty:* Asdrubal Falavigna, Zoher Ghogawala, Mark N. Hadley, Iain Kalfas

*Seminar Description:* Explores current concepts regarding various surgical approaches for cervical spine disorders. Using a case-based format, faculty will discuss indications, techniques, and outcomes.

**TR T18: Managing Head Trauma in the Elderly Population**

*Moderators:* Liesl Close, Martina Stippler  
*Faculty:* Gretchen Brophy, Gazanfar Rahmathulla, Jamie Ulman, James Wright

*Seminar Description:* With an ever-aging population there is a need to better understand issues that are unique to this population. A diverse set of topics will be covered including management of anticoagulation, understanding frailty and its implications in neurotrauma, and prognostication in the elderly.

**SE T19: Telemedicine in Neurosurgery—The Future Beyond Covid**

*Moderator:* Mick Perez Cruet, Ann Stroink  
*Faculty:* Ellen Air, Richard G. Fessler, Katie Orrico

*Seminar Description:* Due to COVID, the use of telemedicine in neurosurgery has increased significantly. This course will describe patient selection, how to perform a physical exam, how to review imaging studies with the patient, coding and reimbursement and describe the current status of insurance coverage and regulatory issues pertaining to telemedicine.
**T20: Managing Peripheral Nerve Complications from Common Spine, Orthopedic, and Thoracic Surgeries**

**Moderators:** Line Jacques, Christopher Winfree

**Faculty:** Justin Brown, Andrew Dailey, Holly Gilmer, Amgad Hanna, Andrew Jack, Sidney Jacoby, Line G. Jacques, Mark Mohan

**Seminar Description:** Discussing management of postoperative pain, plexus, crush injuries from common spinal, orthopedic, thoracic procedures.

**T21: Thalamic Sampling and Stimulation for Epilepsy**

**Moderator:** John Rolston

**Faculty:** Saadi Ghatan, Kai Miller, Aaron Warren, Sameer Sheth

**Seminar Description:** The thalamus is a key node in epileptic networks, involved in seizure propagation and synchronization. This session will explore techniques for mapping thalamic involvement in epileptic networks and methods of modulating the thalamus and connected structures.

**T22: The Socioeconomics of an Ambulatory Surgery Center**

**Moderators:** Mick Perez Cruet, Richard Wohns

**Faculty:** Phil Arbit, William Tobler

**Seminar Description:** Ambulatory surgery centers are allowing practice autonomy at a time when reimbursements are trending downward. This course will teach participants some of the factors involved in producing a successful and productive ambulatory spine surgery center, including patient selection, minimally invasive spine procedures, complication avoidance, regulatory requirements, coding/reimbursement differences and how to start an ASC.

**SP T23: My Worst Spinal Complication: Lessons Learned**

**Moderators:** Michele Johnson, Larry Khoo

**Faculty:** Nitin Agarwal, Shekar Kurpad, Daniel Resnick, Gerald Rodts, Michael Steinmetz, Christopher Wolfio

**Seminar Description:** Sometimes the best lessons are learned the hard way. This symposium will see expert spine surgeons discuss some of their most challenging complications to provide insights into advanced clinical care of patients with spinal disorders.

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**1:50-2:50 pm**

**RE CNS Resident SANS Challenge Championship Round**

*See pg. 9 for details*

**Host:** A. Samy Youssef

**Facilitators:** Domenico Gattozzi, Omaditya Khanna

**2:00-2:45 pm**

**Annual Business Meeting**

Plan to attend the Annual Business Meeting to hear an update on CNS business from the past year. CNS members will have the opportunity to vote on any proposed bylaws amendments.

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**Section Sessions**

**2:50-4:20 pm**

**CV Section on Cerebrovascular 2: Multimodal Treatment of Cerebrovascular Disease**

**Moderators:** Stephan Munich, Kunal Vakharia

**Session Description:** Highlighting the interactions between radiosurgery, open, endovascular surgery, and neurocritical care in management of complex cerebrovascular conditions.

**Drake Lecture**

*Neal Kassel*

**Oral Abstract Presentations**

**SE Council of State Neurosurgical Societies 2: Contract Negotiation and Employment Opportunities**

**Moderators:** Daniel Fahim, John Golfinos

**Session Description:** Designed to provide the audience with expertise in the art of negotiating. Topics will include an overview of the employment demographics in neurosurgery and how to become confident negotiating for your value.

**Negotiating within an Academic Medical Center**

*Joseph Cheng*

**Asking for What You Are Worth**

*Troy Payner*

**The Demographics of Neurosurgery**

*Todd Barnes*

**Oral Abstract Presentations**

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**REGISTER AT CNS.ORG/2023 37**
Section on Disorders of the Spine and Peripheral Nerves 2: Practice Optimization for The Spine Surgeon
Moderators: Scott Meyer, Cheerag Upadhyaya
Session Description: Covering practice-based issues pertinent to the spine surgeon, including material pertaining to reimbursement and quality. The impact of social media on practice building will also be discussed.

Social Media and The Spine Surgeon: The Good, The Bad, and The Ugly
John Shin

Socioeconomic Challenges Facing Spine Surgeons
Understanding the Measures of Quality by Which Spine Care Providers are Judged
John J. Knightly

Pros and Cons of MCID and Modeling: What Does This Mean to Spine Surgeons Trying to Collect Outcomes Data?
Joseph Cheng

Oral Abstract Presentations

Section on Neurotrauma and Critical Care 2: Emerging Treatments in Spinal Cord Injury
Moderators: Jonathan Jagid, Tara (Jayde) Nail
Session Description: In this section we will highlight our annual Tator lecturer and present best Abstract in neurotrauma and critical care research with more of a focus on SCI. There will be a short lecture on lumbar drainage in SCI with a rebuttal focusing on challenges putting these principles in practice.

Tator Lecture: Why are Interventional SCI Trials so Difficult? Lessons Learned
Peter Gorman

Spinal Cord Perfusion for SCI- Is it the Future?
Brian Kwon

Rebuttal
Eve Tsai

Oral Abstract Presentations

Section on Pediatric Neurosurgery 2: Fellowship Training in Pediatric Neurosurgery—Challenges and Opportunities
Moderators: Ariana Barkley, Whitney Parker
Session Description: Review current state of fellowship training in Pediatric Neurosurgery. Highlight emerging trends in training and career building opportunities in subspecialty niches.

Training the Next Generation of Pediatric Neurosurgeons- The CHOP Experience
Greg Heuer

Fellowship Training in Pediatric Neurosurgery-Challenges and Opportunities
Francesco Mangano

Developing a Research Career During Fellowship Training
Jared Roland

Oral Abstract Presentations

Section on Peripheral Nerves 2: Expert Challenges in Peripheral Nerve Surgery—Fear and Loathing in Peripheral Nerve Surgery
Moderators: Amgad Hanna, Eric Zager
Session Description: Focusing on presentations of complex peripheral nerve cases and complex reconstruction so that faculty and attendees may discuss tips and tricks for difficult cases.

Over a Decade of Allograft: What is the Clinical Utility
Thomas J. Wilson

Are We Making Progress with Novel Therapies
Mark Mahan

Disasters Cases – Are There Solutions?
Allan Belzberg, Justin Brown, Robert Spinner

Cases for Discussion
Zarina Ali, Andrew Jack, Megan Jack, Shaun O’Leary, Gabriel Tender

Oral Abstract Presentations

THANK YOU TO ALL OF OUR SCIENTIFIC PROGRAM COMMITTEE CONTRIBUTORS!
Scan QR to view SPC contributors

MEMBERS SAVE ON REGISTRATION
JOIN WHEN YOU REGISTER TODAY!
**Section on Stereotactic and Functional Neurosurgery 2: Functional Neuro-Oncology—Approaches to Cancer and Cancer Pain**

**Moderators:** Shabbar Danish, Ahmad Raslan

**Session Description:** Concentrating on stereotactic and functional approaches to neuro-oncology, primary and secondary cancer as well as cancer pain.

- **Combining Treatment Modalities To Target Functional Vulnerabilities in Malignant Brain Tumors**
  Andrew Sloan

- **Expanding Functional Neurosurgeons’ Role in Neuro-oncology Through MRgLITT and Stereotactic Radiosurgery**
  Adrian Laxton

- **Neurosurgical Approaches to Cancer Pain**
  Ahmed Raslan

- **Transcranial Magnetic Stimulation (TMS) Applications for Cancer Pain Modulation**
  Sarah Prinsloo

**Section on Tumors 2: Innovation Driven by Neurosurgeons in Glioma**

**Moderators:** Wajd Al-Holou, Jennifer Moliterno

**Session Description:** Focusing on opportunities/strategies for neurosurgeons to be involved in and lead early stage glioma clinical trials. Phase III, microdialysis and CSF biomarker studies will be discussed in this session.

- **Phase 0: Window of Opportunity for Neurosurgeon Involvement**
  Nader Sanai

- **Phase III Trials: Challenges and Opportunities for the Practicing Neurosurgeon**
  Tony Asher

- **Present and Future of CSF Biomarker in Trials**
  Carl Kocheman

- **Microdialysis Innovation of Clinical Trials**
  Edjah K. Nduom

**Oral Abstract Presentations**

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### Afternoon Sessions

**4:30-6:00 pm**

**CV Evolving Technologies for Treatment of Cerebrovascular Lesions**

**Session Description:** This breakout will focus on evolving treatment options for cerebrovascular lesions. This will highlight new devices and trials with case-based discussion.

- **The Evolution of Flow Diverters**
  Bobby Starke

- **Intrasaccular and Neck Devices**
  J Mocco

- **Embolization for Subdural Hematoma**
  Min Park

- **Carotid Disease Management**
  Kunal Vakharia

**SP Neurosurgeons as Authors**

**Moderator:** Alan Scarrow

**Speakers:** Katrina Firlik, Mark Greenberg, Allen Hamilton, Richard Menger

**Session Description:** Neurosurgeons often have great literary ideas but frequently lack the training and time to make these ideas come to life. This seminar will provide insight from neurosurgical authors on how to convert an idea into a finished book (including textbooks, fiction and non-fiction books), how to pitch your idea to a publishing company, how to obtain funding, how to protect your intellectual property, and how to write a successful op-ed.

**SP Case-based Debates: Cervical**

**Moderators:** Zoher Ghogawala, Laura Snyder

**Session Description:** This case-based debate session will cover current controversies in the management of cervical degenerative disorders commonly encountered in practice.

- **Debate: ACDF Versus Arthroplasty**
  Kristen Jones, Laura A. Snyder

- **Debate: Unilateral Foraminal Cervical Stenosis with Radiculopathy in Young Patient. Arthroplasty vs Posterior Tubular Decompression**
  Larry Khoo, Luis Tumialan

- **Debate: Multilevel Cervical Stenosis (3 levels) with Radiculopathy and Myelopathy NO OPLL in Elderly Population. Anterior vs Posterior**
  Langston Holly, Michael Steinmetz

- **Debate: Sick 85-Year-Old Multi-level Stenosis and Loss or Lordosis - Lami vs. Laminoplasty vs. Lami/Fusion**
  James Harrop, R. John Hulbert, Praveen Mummaneni
**TE Neurotrauma as a Team Sport: Case-based Discussion in Complex Neurotrauma Patients**

**Moderator:** Ramesh Grandhi  
**Speakers:** Mark Mahan, Enyinna Nwachuku, Chris Zacko, Nathan Zwagerman  
**Session Description:** The modern care of neurotrauma patients involves a multidisciplinary team, even within neurosurgery. The purpose of this lunch seminar is to bring together leading faculty to offer perspectives on managing these complicated patients from a peripheral nerve, cerebrovascular, skull base, and neurocritical care perspective.

**PF Complications in Pediatric Neurosurgery**

**Moderators:** Catherine McClung Smith, Lauren Smith  
**Speakers:** Sarah Gaskil, Paul Grabb, Jonathan Martin, Joseph Piatt  
**Session Description:** Review complications in a pediatric focused practice and highlight identification, management and areas of practice improvement.

**PN Complex Peripheral Nerve Reconstruction Cases**

**Moderators:** Justin Brown, Mark Mahan  
**Speakers:** Allan Belzberg, Robert Spinner, Thomas J. Wilson  
**Session Description:** Discusses management of complex peripheral nerve reconstruction techniques with interactive case presentations and discussion.

**SF Innovation and Entrepreneurship in Neurosurgery**

**Moderators:** Shabbar Danish, Joseph S. Neimat  
**Speakers:** Pierre-Francois D’Haese, Shawn Glitner, Eller Kelilher, Eric Leuthardt, Nitin Tandon  
**Session Description:** This session will help participants identify barriers to starting a company, approaches to build successful companies, and discuss key elements of bringing new technology to market.

**TU New Frontiers for Recurrent Neuro-Endocrine Tumors**

**Moderator:** Ian Dunn  
**Session Description:** Review and discuss the multidisciplinary management in recurrent neuroendocrine tumors. Surgical, radiotherapy, medical, and novel treatment paradigms will be discussed.

- **Neuro-endocrine Medications**  
  Ian McCutcheron  
- **New Techniques for Combined Approaches**  
  James Liu  
- **New Frontiers in Radiosurgery and Proton Beam**  
  John Kirkpatrick  
- **Nanoparticles: Is There a Role?**

**6:00-7:30 pm**

**Interactive Poster Presentation Session**

See pg. 9 for details
**Guidelines Sessions**

**7:00-8:30 am**

The CNS guidelines are evidence-based summaries of the scientific literature written by topic experts to provide neurosurgeons with the information they need to provide the best care to patients suffering from neurosurgical conditions. In the Guidelines Sunrise Sessions, authors discuss the key conclusions of the recent Guidelines projects to promote dissemination of this broadly applicable information around the field.

**TU Guideline Session V: Low Grade Glioma**
**Moderator:** David Ormond  
**Faculty:** Daniel Orringer, Chaitra Badve, Jeffery Olson, Simon Lo, Mateo Ziu, Navid Redjal  
**Session Description:** In this session, Guidelines authors discuss the standard of care and latest advances in the management of recurrent Low Grade Glioma.

**Sunrise Science Sessions**

**7:00-8:30 am**

The Sunrise Science Abstract sessions will be comprised of the top oral abstract presentations submitted in each of the subspecialties presenting the latest scientific research.

**SF Sunrise Session and Late Breaking Abstract Session: Spine and Peripheral Nerve**
**Moderators:** Griffin Baum

**SF Sunrise Session and Late Breaking Abstract Session: Stereotactic and Functional**
**Moderators:** Patrick Pezeshkian

**CV Sunrise Session and Late Breaking Abstract Session: Cerebrovascular**
**Moderators:** Emun Abdu, Cameron G. McDougall

**MS Sunrise Session and Late Breaking Abstract Session: Medical Education Training**
**Moderators:** Nitin Agarwal, Jason Heth, David Limbrick

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**CALLING ALL NEUROSURGEON ARTISTS!**

Submit your artwork for “The Art of Neurosurgery” presentation in the Xperience Lounge on Tuesday, September 12. All mediums are welcome. Submission deadline: July 1, 2023
General Scientific Session IV

8:40 am-12:10 pm
See page 15 for session details.

Luncheon Seminars  Be sure to secure your seat for a Luncheon Seminar when you register!

12:20-1:50 pm
All Luncheon Seminars include a plated lunch served in the seminar room. Luncheon Seminar fee is $150 each ($100 for residents, fellows, medical students, and advance practice providers)

**TU W24: LITT: Data Driven Outcomes and Controversies**
Moderators: Melanie Hayden Gephart, Matthew Shepard
Faculty: Gene Barnett, Peter Fecci, Sujit Prabhu
Seminar Description: This luncheon seminar will review and discuss emergent data on indications and outcome after LITT.

**SE W25: SI Joint Fusion: Indications, Technique, and Outcomes**
Moderators: Joshua Heller, Paul Park
Faculty: Peter Grossi, Yi Lu, Yamaan Saadeh, Charles Sansur, Cara Sedney
Seminar Description: Neurosurgeons are increasingly making the diagnosis of SI joint dysfunction, and the use of operative approaches to this pathology is on the rise. This seminar will offer a review of the approaches to SI dysfunction as well as the surgical indications, techniques, and outcomes.

**TB W26: Long-term Sequela for Head Injury Patients**
Moderators: Allan Hoffer, Enyinna Nwachuku
Faculty: Uzma Samadani, Berje Shammassian
Seminar Description: Traumatic brain injury and concussion can have significant impact on patients beyond their initial hospitalization including a variety of neuropsychological, cognitive and physical issues. A multidisciplinary panel will discuss the challenges faced by many of these patients and highlight programs and resources that patients and surgeons may be able to access as part of their treatment.

**SE W27: Unwrapping Hospital Financials – How Neurosurgeons Can Be Affected**
Moderators: Joseph Cheng, Edward Vates
Faculty: Eric Eskioglu, Matt Ewend, Michael Steinmetz
Seminar Description: Hospital employed or health system supported neurosurgeons are being affected by facility finances, and increasingly expected to have a positive impact on these for their program. This session will provide expertise from health system leaders on how to keep neurosurgery on the forefront and highlight the importance of neurosurgery to a health systems’ financial footprint.

**PN W28: Controversies in Peripheral Nerve Surgery**
Moderators: Allan Belzberg, Holly Gilmer
Faculty: Zarina Ali, Aaron Filler, Megan Jack, Sidney Jacoby, Brandon Smith, Thomas J. Wilson, Chris Winfree, Eric Zager
Seminar Description: Focusing on controversial topics in peripheral nerve surgery including end-to-side nerve transfers, nerve transfers in C5 palsy, management of Parsonage-Turner syndrome (hourglass constrictions, nerve transfers), and management of piniformis syndrome.

**PA W29: Spinal Cord Stimulators: What to Use and When?**
Moderator: Owoicho Adogwa
Faculty: Ahmed Awad, Kevin Chen, Nandan Lad, Ahmed Raslan
Seminar Description: Spinal cord stimulation has become a mainstay for the treatment of an expanding list of chronic pain disorders. Accordingly, the spinal cord stimulation market continues to evolve with significant advances in hardware and software technologies. This course will examine the intersection of approved indications and advancing technologies for tailored treatments.

**WI W30: Building Your Brand: Using Social Media to Drive Your Reputation**
Moderator: Sheri Dewan
Faculty: Ali Baaj, Brian L. Hoh, Michele Johnson, Edjah K. Nduom, Analiz Rodriguez, Wuavvan Sivakumar, Anna Terry, Khoi D. Than
Seminar Description: Using current social media platforms to promote your practice including time efficiency, posts that are guaranteed to have high engagement and how to manage patient protected information.

**SE W31: Demystifying National Quality Reports**
Moderator: Mohammed Bydon
Faculty: Joseph Chang, Mark Linskey, Ann Stroink
Seminar Description: Quality metrics have become an increasingly important part of neurosurgical practice. This seminar will highlight the role quality plays to the individual physician and hospital system.
SP W32: Authorization Headaches: Strategies to Avoid Denials and Win Appeals  
**Moderator:** Kurt Eichholz  
**Faculty:** Joseph Cheng, Christopher Holland, Richard Menger, Luis Tumialan, Anand Veeravagu  
**Seminar Description:** A large part of modern-day practice is dealing with insurance authorizations, denials, and appeals. In this lunch seminar, participants will learn strategies to avoid denials and successfully manage peer-to-peer reviews and appeals.

CV W33: Hematology and Coagulation for Neurosurgeons  
**Moderator:** Judy Huang  
**Faculty:** David Hasan, R. Loch MacDonald, Shahid Nimjee, Faith Robertson  
**Seminar Description:** This seminar will explain important coagulation mechanisms, parameters, and clinical pearls in the evaluation of the coagulopathic patient.

### 2:00-4:00 pm

MS Neurosurgical Medical Students Specialty Session 1  
**Moderators:** Nicole Bentley, Bennett Levy, Kenneth Snyder  
- **Machine Learning in Neurosurgery: Best Practices and Future Frontiers**  
  Timothy Dunn, Nandan Lad  
- **Global Neurosurgery**  
  Gail Rosseau  
- **Data Driven Outcome Measures in Neurosurgery**  
  Eric Oermann  
- **Health Systems Science in Neurosurgery**  
  Kenneth Snyder  
- **Advancing Health Equity Through Neurosurgical Research**  
  Kunal Patel

MS Neurosurgical Medical Students Specialty Session 2  
**Moderators:** Damirez Fossett, Pritha Ghosh, Renee Reynolds  
- **Integrating and Optimizing Scholarly Work with Clinical Responsibilities from Medical School to Residency**  
  Albert H. Kim, Jennifer Strahle, Gregory Zipfel  
- **Building Your Brand: Strategic Social Media Use for Medical Students**  
  Jeffery P. Mullin  
- **Crafting a Narrative**  
  Nicole Bentley, Nina Yoh  
- **Maximizing Your Chances of Matching Without a Home Neurosurgery Residency Program**  
  Damirez Fossett  
- **Creating Your Niche as a Diverse Applicant in Neurosurgery**  
  Odette Harris, Anand Veeravagu  
- **Learning in the Digital Age: Resources for Medical Education and Research**  
  Lola B. Chambless, Daniel Donoho
2023 CONGRESS OF NEUROLOGICAL SURGEONS ANNUAL MEETING OBJECTIVES

The CNS enhances health and improves lives through innovative neurosurgical education, advancement of clinical practice & scientific exchange. The CNS Continuing Medical Education (CME) program provides participants various learning formats to keep current in their field, improve skills, and enhance professional performance to provide the best possible care for their patients.

The CNS CME program is designed, planned, and implemented to evaluate a comprehensive collection of activities within the subspecialty of neurosurgery. The CNS plans to yield results that contribute to lifelong learning and demonstrate change and improvement in competence.

At the conclusion of the 2023 CNS Annual Meeting, participants will be able to:
1. Alter their current practice patterns in accordance with the latest data.
2. Compare techniques based on findings discussed during case presentations.
3. Apply and/or perform new techniques based on best practices and current procedures.
4. Practice evidence-based, informed neurosurgical medicine.
5. Interpret newly found outcomes as a result of the abstract scientific presentations.
6. Demonstrate change in competence.

EDUCATIONAL FORMAT DESCRIPTIONS

The CNS offers sessions in formats to enhance your educational experience. Each session is open to all who have paid the general medical registration fee with the exception of optional Symposia, Luncheon Seminars, and Dinner Seminars, which are available for an additional fee.

SYMPOSIA

Didactic and hands-on courses with expert neurosurgical educators demonstrating clinical techniques and applications via technology, models and simulation. Hands-on Symposia provide an opportunity to improve surgical skills by applying and demonstrating learned techniques. Symposia also provide an opportunity to review case-based complex issues and discuss potential solutions.

Symposia are offered Saturday, September 9, and Sunday, September 10.

GENERAL SCIENTIFIC SESSION, SECTION SESSIONS, GUIDELINE SESSIONS, LUNCHEON SEMINARS, INTERNATIONAL SESSIONS, OPERATIVE TECHNIQUE SESSIONS, POSTER PRESENTATION SESSIONS, AND DINNER SEMINARS

Expert lecturers present research, scientific evidence and associated outcomes and demonstrate clinical techniques and applications. The basics of translational development, clinical trials, guideline review, and updated changes and evaluation of clinical experience, followed by examples of successful application, are presented in various sessions. Basic skills and information that can be applied in daily practice and professional life are also presented.

General Scientific Sessions, Section Sessions, Guidelines Session, International Sessions, Operative Technique Sessions, and Poster Presentation Sessions are offered Sunday, September 10 through Wednesday, September 13.

Luncheon Seminars are offered Monday, September 11 through Wednesday, September 13.

Dinner Seminars are offered on Saturday, September 9 and Monday, September 11.

Operative Techniques

During the Case-based Discussion Sessions, the faculty presents cases to be examined, discussed, and debated by both the audience and panel. Registered attendees will have the opportunity to submit their own cases prior to the meeting to be presented at these sessions. Don't miss these interactive sessions designed to encourage participation from everyone.

Operative Technique Sessions will take place on Monday, September 11 and Tuesday, September 12.

Live Surgery via telemedicine technology in the Exhibit Hall will take place Monday, September 11 through Wednesday September 13. CME is not offered for these sessions.

Original Science Program

Scientific abstract presentations offer original science, groundbreaking research, and the best clinical and basic neurosurgical science in the CNS Original Science Program, and allows for audience questions and moderated discussions.

Oral Presentations by subspecialty will be presented on Monday, September 11, Tuesday, September 12, and Wednesday, September 13.

Interactive Poster Session will take place on Tuesday, September 12 from 6:00-7:30 pm.

Late-breaking Abstracts will be presented on Monday, September 11 through Wednesday, September 13.
ACCREDITATION

The Congress of Neurological Surgeons is accredited by the Accreditation Council for Continuing Medical Education to provide continuing medical education for physicians.

CME CREDIT

The CNS designates this live activity for a maximum of 44 AMA PRA Category 1 Credits™. Physicians should only claim credit commensurate with the extent of their participation in the activity.

* A maximum of 21.50 AMA PRA Category 1 Credits™ may be earned for general sessions only.

ADDITIONAL CME CREDITS CAN BE EARNED BY ATTENDING THE FOLLOWING:

SYMPOSIA (SATURDAY/SUNDAY)

Half Day Sessions
Attendees will receive a maximum of 3.75 AMA PRA Category 1 Credits™ for each eligible half-day morning symposia (A) and a maximum of 3.25 AMA PRA Category 1 Credits™ for each half-day afternoon symposia (B).

Full Day Sessions
Attendees will receive a maximum of 7 AMA PRA Category 1 Credits™ for each full day symposia.

LUNCHEON SEMINARS

Attendees will receive a maximum of 1.5 AMA PRA Category 1 Credits™ for all eligible luncheon seminars.

DINNER SEMINARS

Attendees will receive a maximum of 2.0 AMA PRA Category 1 Credits™ for all eligible dinner seminars.

PREPARING POSTER PRESENTATION(S)

Physicians are eligible to claim up to 5 AMA PRA Category 1 Credits™ per poster directly from the AMA. Applicant must be listed as the first author included in the published abstracts for a conference or activity that is certified for AMA PRA Category 1 Credit™.

To claim the credit physicians must submit to the AMA the completed Direct Credit Application or Resident Credit Application, along with the required documentation and appropriate processing fee. Please visit the AMA web site for details at www.ama-assn.org.

Physicians may claim AMA PRA Category 2 Credits™ for viewing scientific posters. Physicians should self-claim credit on their AMA PRA certificate application form. Please visit the AMA website for details at www.ama-assn.org.

CME CREDIT AND CERTIFICATE OF ATTENDANCE

CME credits can be claimed through the online system at www.cns.org. The CNS CME tracking system allows you to claim CME credit or Certificate of Attendance hours for the meeting. All attendees should only claim credit or hours of attendance commensurate with the extent of their participation in the activity.

Upon completion, your CME certificate will be immediately available to print from the convenience of your home or office.

DISCLOSURES

The Accreditation Council for Continuing Medical Education (ACCME) Standards for Integrity and Independence in Accredited Continuing Education requires that anyone in a position to control the content of the educational activity disclose all financial relationships with any ACCME-defined Ineligible Company*. Failure or refusal to disclose or the inability to satisfactorily resolve the identified conflict may result in the withdrawal of the invitation to participate in any of the CNS educational activities.

The ACCME defines an “Ineligible Company” as those whose primary business is producing, marketing, selling, re-selling, or distributing healthcare products used by or on patients.

FDA STATEMENT

Some drugs or medical devices demonstrated at the Annual Meeting have not been cleared by the FDA or have been cleared by the FDA for specific purposes only. The FDA has stated that it is the physician's responsibility to determine the FDA clearance status of each drug or medical device they wish to use in clinical practice. The CNS policy provides that “off-label” uses of a drug or medical device may be described at the Annual Meeting so long as the “off-label” use of the drug or medical device is also specifically disclosed.

Any drug or medical device is “off label” if the described use is not set forth on the product's approved label. It is also each speaker's responsibility to include the FDA clearance status of any device or drug requiring FDA approval discussed or described in their presentation or to describe the lack of FDA clearance for any “off-label” uses discussed. Speakers from the audience are also required, therefore, to indicate any relevant personal/professional relationships as they discuss a given topic.
AMERICANS WITH DISABILITIES ACT

Wheelchairs, scooters, information booths, designated parking, TDD telephones, and other services are available for visitors with disabilities. For wheelchair or electric scooter rental, please contact Scoot-Around at 888-441-7575.

It is suggested that you make your reservation in advance of your arrival. Please let us know if, under the ADA, you require special accommodations or services in order to attend the CNS Annual Meeting. We want to ensure that no individual with a disability is excluded because of the absence of auxiliary aids and services. Your requirements should be sent directly to the Annual Meeting Registration and Housing Center at: cns@mcievents.com or by calling 800-931-9543. Please provide any requests at least 30 days prior to the Annual Meeting to allow adequate time to accommodate your request.

COURSE AGENDAS AND FACULTY

Agendas are subject to change. As we strive to improve the quality of your educational experience, the CNS may substitute faculty with comparable expertise when necessary.

DISCLAIMER

The material presented at the 2023 CNS Annual Meeting has been made available by the Congress of Neurological Surgeons for educational purposes only. The material is not intended to represent the only, nor necessarily the best method, procedure, or technique appropriate for the medical situations discussed, but rather is intended to present an approach, view, statement, or opinion of the faculty which may be helpful to others who face similar situations. The material is not meant to replace independent judgement by a physician for any given issue. Neither the content (whether written or oral) of any course, seminar, or other presentation in the program, nor the use of a specific product in conjunction therewith, nor the exhibition of any materials by any parties coincident with the program, should be construed as indicating endorsement or approval by the CNS, or by its committees or affiliates of the views presented; methods, procedures and/or techniques described or discussed; the products used; or the materials exhibited. The CNS disclaims any and all liability for injury or other damages resulting to any individual attending the Annual Meeting, and for all claims which may arise out of the use of the material, methods, procedures, and/or techniques demonstrated therein by such individuals, whether these claims shall be asserted by physicians or any other person. No reproductions of any kind, including audiotapes and videotape, may be made of the presentations at the 2023 CNS Annual Meeting. The CNS reserves all of its rights to such material, and commercial reproduction is specifically prohibited.

FUTURE MEETINGS

2024: HOUSTON, TEXAS September 28–October 2
2025: LOS ANGELES, CALIFORNIA October 11–15
2026: WASHINGTON, D.C. October 31–November 4

HEALTH AND SAFETY

Walter E. Washington Convention follows the current orders issued by the city of Washington, D.C. with regards to Coronavirus (COVID-19). In addition, the CNS requires that all attendees, faculty, exhibitors, and vendors participating in live in-person events be fully vaccinated by the first date of the meeting. CNS will follow all local safety protocols and health mandates. The CNS will continue to monitor for changes to requirements.

PRESS ROOM

All media representatives and journalists attending the Annual Meeting are required to register in advance. Registration, Press Room guidelines, and media credentialing policies are available online at cns.org/2023 or by calling 847-240-2500. Once on site, media are required to check in at the CNS registration area to pick up their press badges, and then proceed to the Press Room to pick up their press kits.

VISA INFORMATION

The State Department of the United States encourages international participants to apply for their visas as early as possible—at least several months before the meeting. Some consulates may have backlogs in scheduling visa interviews, so applicants should first contact the consulate to find out how long the wait is for an interview. For information on the visa process, including wait times, please visit https://travel.state.gov/content/travel/en/us-visas.html.
The following exhibitors have confirmed their participation as of March 31, 2023

- Accurate Neuromonitoring
- Acumed/Osteomed
- Ad-Tech Medical Instrument Corp.
- Aesculap
- American Association of Neurological Surgeons
- American Society of Black Neurosurgeons
- Apex Medical, Inc.
- Baylor Scott & White Health
- Beijing Honghugaoxiang Science and Technology Development Co., Ltd
- Bioplate
- Biointus
- BK Medical
- Black Forest Medical Group
- Boss Instruments Ltd
- Brain Aneurysm Foundation
- Brain Navi Biotechnology Co., Ltd.
- CarboFix Orthopedics, Inc.
- Carlsmed
- Cerapedics
- Clarus Medical, LLC
- ClearPoint Neuro, Inc.
- CMF Medicon Surgical
- Designs For Vision, Inc.
- DIXI Medical USA
- Elekta
- Elliquence
- Elsevier, Inc.
- Emergent Clinical Consulting LLC
- evonos GmbH & Co. KG
- Fehling Surgical Instruments
- FujiFilm Healthcare of Americas
- Globus Medical
- GT Medical Technologies, Inc.
- Hyperfine
- icotec Medical, Inc.
- ImmersiveTouch, Inc.
- IMRIS, Deerfield Imaging
- Indiana University Kelley School of Business Physician MBA
- INSIGHTEC
- Integra LifeSciences
- i-PRO Americas
- IRRAS
- IZI Medical
- Johnson & Johnson Medical Devices
- joimax
- Journal of Neurosurgery
- JTS Surgical
- Karl Storz Endoscopy
- Kelyniam Global, Inc.
- Kirwan Surgical Products LLC
- KLS Martin
- Leica Microsystems
- Life Instrument Corporation
- Longeviti Neuro Solutions
- Matrix Surgical USA
- Medexus Pharma
- Medical Education Research Institute (MERI)
- Mediflex
- Medivis Inc
- Medtronic
- Merck & Co., Inc.
- MicroVention
- Mitaka USA, Inc.
- Mizuho America, Inc.
- Monteris Medical
- Nadia International, Inc.
- Natus Neuro
- NeuroPace, Inc.
- NeuroPoint Alliance
- Nevro
- Nexstim
- NICO Corporation
- North American Neuromodulation Society (NANS)
- Northwell
- Novarad
- NSK America Corp.
- Olympus America Inc.
- OssDsign
- Osteocentric Technologies
- Penumbra, Inc.
- Peter Lazic US Inc.
- Phasor Health LLC
- PMT Corporation
- RapidAI
- Renishaw Inc.
- Rhaeos
- Ronin Surgical Corp.
- Rose Micro Solutions
- RosmanSearch, Inc.
- Scanlan International, Inc.
- SeaSpine
- Shukla Medical
- SI-BONE, Inc.
- Sophysa
- Spinal Elements, Inc.
- Spine Wave Inc.
- Spineology Inc.
- Stryker
- Surgeons Capital Management
- SurgeonsLab AG
- SurgiTel
- Sutter Medical Technologies USA
- Synaptive Medical
- Takayama Instrument, Inc.
- TeDan Surgical Innovations, LLC
- Thieme Publishers
- Thompson Surgical Instruments, Inc.
- Tobra Medical
- Varian, a Siemens Healthineers Co.
- Viz.ai
- VPIX Medical
- Wolters Kluwer Health
- Xoran Technologies
- ZAP Surgical Systems, Inc.
- ZEISS
- Zimmer Biomet
- ZimVie
ITEMS INCLUDED IN REGISTRATION FEE:
■ General Scientific Sessions
■ Scientific Program to include Section Sessions, Oral Abstract Presentations, Sunrise Science and Late Breaking Abstract Sessions, Guidelines Sessions, Operative Technique Sessions
■ CNS Xperience Lounge
■ Live Surgeries via Telemedicine
■ Exhibit Hall
■ Opening Reception Sunday

REGISTRATION METHODS
ONLINE
cns.org/2023

PHONE*
972-349-5539
7:00 am-5:00 pm CST

FAX*
972-349-7715

MAIL*
CNS Annual Meeting
CNS Registration and Housing Center
6100 West Plano Parkway
Suite 3500
Plano, TX 75093

*Allow five business days for registration and housing confirmation. The CNS Registration and Housing Center is not responsible for faxes not received due to mechanical failure or circumstances beyond our control.

CREDIT CARD PAYMENTS
U.S. dollars and drawn on a U.S. bank
■ Visa ■ Mastercard ■ American Express

CHECK PAYMENTS
■ U.S. dollars and drawn on a U.S. bank
■ Please note that checks cannot be processed over the phone. Checks should be mailed to the following address and will be processed. Once the check has been cashed, a confirmation will be sent.

CNS ANNUAL MEETING
CNS Registration and Housing Center
6100 West Plano Parkway
Suite 3500
Plano, TX 75093

■ Full payment must accompany your registration.
■ Any checks received from an overseas bank will be returned.
■ Any checks returned for insufficient funds are subject to additional charges.

IMPORTANT DATES TO REMEMBER

AUGUST 9 Advance Registration Discount

AUGUST 14 Housing Deadline
Last day to make any hotel changes or cancellations through the CNS Housing provider, MCI
Email: cns@mcievents.com
Phone: 972-349-5539

AUGUST 15 Any hotel changes or cancellations must be made directly with the hotel after August 15. Individual hotel cancellation policies can be found on your original housing confirmation.

AUGUST 16 Last day to cancel registration in order to receive a full refund, less a $100 processing fee

REGISTRATION CHANGE/CANCELLATION INFORMATION
Full registration refunds, less a $100 processing fee, will be granted if written requests for cancellation are received by 5:00 pm CT on August 16, 2023. Course and Seminar tickets will be refunded in full until August 16. No refunds of any kind will be given after this date, regardless of cause. Refunds will not be given for no-shows.

CANCELLATION REQUESTS ACCEPTED VIA:
E-mail: cns@mcievents.com
Fax: 972-349-7715
Mail: CNS Annual Meeting
CNS Registration and Housing Center
6100 West Plano Parkway
Suite 3500
Plano, TX 75093

NOT A CNS MEMBER? THERE’S NO BETTER TIME TO JOIN!
CNS Members have complimentary access to our world-class journals, discounts on valuable self-assessment tools, access to educational online resources, and so much more!

Plus, you’ll see instant savings – select “Active Applicant Fee” when you register for the Annual Meeting and receive an immediate discount on your 2023 Annual Meeting registration fees! See our full list of member benefits and apply at cns.org/membership.
## REGISTRATION RATES

<table>
<thead>
<tr>
<th>REGISTRATION TYPE</th>
<th>Through August 9, 2023</th>
<th>After August 9, 2023</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>CNS MEMBER REGISTRANT</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Active (Domestic)</td>
<td>$1,099</td>
<td>$1,399</td>
</tr>
<tr>
<td>Active International</td>
<td>$950</td>
<td>$1,250</td>
</tr>
<tr>
<td>Associate (Non neurosurgeons with distinction in a neurosurgical-related discipline)</td>
<td>$890</td>
<td>$1,090</td>
</tr>
<tr>
<td>Active Duty Military</td>
<td>$0</td>
<td>$0</td>
</tr>
<tr>
<td>Armed Forces (Guard/Reserve/Retiree)</td>
<td>$475</td>
<td>$675</td>
</tr>
<tr>
<td>Resident (Domestic)</td>
<td>$250</td>
<td>$350</td>
</tr>
<tr>
<td>International Resident</td>
<td>$250</td>
<td>$450</td>
</tr>
<tr>
<td>Emeritus</td>
<td>$500</td>
<td>$800</td>
</tr>
<tr>
<td>Medical Student (Enrolled in an accredited medical school in US or Canada)</td>
<td>$0</td>
<td>$200</td>
</tr>
<tr>
<td>Affiliate (Allied healthcare professionals involved in neurosurgical-related patient care, teaching, or research)</td>
<td>$450</td>
<td>$650</td>
</tr>
<tr>
<td><strong>NON-MEMBER MEDICAL REGISTRANT</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Neurosurgeon</td>
<td>$2,390</td>
<td>$2,390</td>
</tr>
<tr>
<td>Become a CNS member and save on Annual Meeting registration and enjoy all of the CNS member benefits!</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Physician (non-neurosurgeon)</td>
<td>$1,500</td>
<td>$1,700</td>
</tr>
<tr>
<td>Non-physician (Clinical Researcher/Scientist) **</td>
<td>$1,400</td>
<td>$1,700</td>
</tr>
<tr>
<td>Neurosurgeon (Faculty)</td>
<td>$1,200</td>
<td>$1,500</td>
</tr>
<tr>
<td>Resident</td>
<td>$400</td>
<td>$500</td>
</tr>
<tr>
<td>Fellow</td>
<td>$500</td>
<td>$750</td>
</tr>
<tr>
<td>Medical Student</td>
<td>$250</td>
<td>$450</td>
</tr>
<tr>
<td>PA/Physician Extender/Nurse/Nurse Practitioner</td>
<td>$600</td>
<td>$850</td>
</tr>
<tr>
<td>Corporate Representative †</td>
<td>$3,500</td>
<td>$3,500</td>
</tr>
<tr>
<td>Non-Member Graduate Student/Post-doctoral Scholar</td>
<td>$200</td>
<td>$300</td>
</tr>
<tr>
<td>ANSPA Member ††</td>
<td>$500</td>
<td>$600</td>
</tr>
<tr>
<td>Developing Nation Rate (See page X for a complete list of nations)</td>
<td>$150</td>
<td>$250</td>
</tr>
<tr>
<td>Program Coordinator</td>
<td>$0</td>
<td>$0</td>
</tr>
<tr>
<td>Spouse/Guest/Child 13 &amp; Over</td>
<td>$150</td>
<td>$250</td>
</tr>
<tr>
<td>Spouse/Guest/Child 13 &amp; Over (Resident/Fellow)</td>
<td>$150</td>
<td>$150</td>
</tr>
</tbody>
</table>

** Non-member/Non-physician category is limited to scientists, engineers, etc., involved in neurosurgical research and/or product development not affiliated with an exhibiting company.

† Corporate representatives attend for education only. They must not conduct sales activities in the meeting space, nor influence content in any way. Solicitation of medical attendees is strictly prohibited.

†† Includes one year of CNS Affiliate membership in 2023 for ANSPA Members only.
VISIT CNS.ORG/2023 TO MAKE YOUR RESERVATION TODAY! RESERVE YOUR ROOM BY AUGUST 14.

HOTEL RESERVATIONS

- Please contact MCI, the official CNS Annual Meeting Registration and Housing Center, to reserve your guest rooms.
- Hotels will not accept reservations from CNS meeting attendees directly.
- Reservations can be made online or via fax, phone, or mail.
- Be sure to complete the entire housing section on the reservation form.
- Hotel reservations are only available to registered CNS attendees. Rooms are subject to availability.

DEPOSIT

A deposit of one night's room and tax is due at the time your hotel reservation is made. This payment must be submitted with your registration fee and will be charged to the credit card provided. Please make checks payable to:

CNS Registration and Housing Center at 6100 W. Plano Parkway, Suite 3500, Plano, TX 75093.

All rooms are subject to applicable state and local taxes.

A small portion of your room rate will be used to help defray the cost of registration and housing services. Hotel reservations requested without a deposit will not be processed.

HOTEL CHANGE/CANCELLATION POLICY

The deadline for new reservations is August 14, 2023, based on availability. Please make any changes or cancellations through the CNS official housing bureau, MCI, through August 14, except for the Grand Hyatt Hotel. You may continue to make changes or cancellations for the Grand Hyatt hotel through the CNS official housing bureau, MCI, until August 30.

BEGINNING AUGUST 15, 2023

All changes, cancellations, or questions regarding your reservation must be made directly with the hotel starting August 15th, 2023, except for the Grand Hyatt Hotel. You may continue to make changes or cancellations for the Grand Hyatt hotel through the CNS official housing bureau, MCI, until August 30th. The deposit will be forfeited if a cancellation notice is not received according to the hotel policy. Your individual hotel's cancellation policy can be found in your emailed confirmation.

COMPLIMENTARY HOUSING FOR CNS RESIDENT MEMBERS AND INTERNATIONAL RESIDENT MEMBERS

Complimentary housing at the CNS Annual Meeting is available to a limited number of CNS Resident members and International Resident members on a first-come, first-served basis. To be considered for this program, members must register for the CNS Annual Meeting and complete and submit the Resident Member Housing Application by Friday, June 23, 2023.

Begin the application process at cns.org/2023/residents

AIRLINE DISCOUNTS

The CNS is pleased to offer discounts with the following airlines.

United Airlines:
www.united.com
Valid dates:
September 3–18, 2023
Enter code: ZN6W999887

Delta Airlines:
www.delta.com
Valid dates:
September 1–20, 2023
Enter code: NM2GW

AIRPORT

The 2023 CNS Annual Meeting hotels and the Walter E. Washington Convention Center are located approximately 5 miles from Ronald Reagan Washington National Airport (DCA). Taxicabs are located on the arrival (ground) level of the airport, outside the baggage claim areas. Uber and Lyft are both available in the Washington, D.C. area.
HEADQUARTERS HOTEL
MARRIOTT MARQUIS
WASHINGTON, D.C.
901 Massachusetts Avenue NW,
Washington, DC 20001

Distance to Conv. Center: Connected via underground walkway (located on level M2)

Single/Double Rate per night (Excludes state/local tax and fees): $330

Fitness Center: Complimentary

WiFi: Complimentary in-room service

Located within walking distance from historic local attractions, and exciting nightlife, uncover accommodations that are thoughtfully dynamic. Rest in guestrooms and suites with modern features and amenities. Marriott Marquis Washington, D.C., welcomes you with impeccable service and inimitable style.

GRAND HYATT WASHINGTON
1000 H Street NW,
Washington, DC 20001

Distance to Conv. Center: 0.6 Miles

Single/Double Rate per night (Excludes state/local tax and fees): $304

Fitness Center: Complimentary

WiFi: Complimentary

Centrally located in the trendy Penn Quarter with convenient in-lobby Metro Center access, this downtown hotel is an ideal spot to explore the nation’s capitol. The hotel is just steps from Washington Convention Center.

RENAISSANCE WASHINGTON, D.C. DOWNTOWN
999 9th Street NW,
Washington, DC 20001

Distance to Conv. Center: 0.3 Miles

Single/Double Rate per night (Excludes state/local tax and fees): $325

Fitness Center: Complimentary

WiFi: Complimentary in-room service

Set in the heart of the city, this upscale hotel is steps from the Walter E. Washington Convention Center. Relax in spacious hotel rooms with plush bedding, downtown views, Aveda bath products and Wi-Fi, and suites with beautiful terraces.

THANK YOU FOR YOUR CONTINUED SUPPORT OF THE CNS!
The CNS thanks you for your support in reserving your guest room through the official CNS Housing and Registration Center. The CNS, in negotiating contracts with convention centers and hotels, must commit to a minimum number of guest rooms. This commitment helps guarantee the availability of meeting space and helps control the cost of the meeting. A history of high utilization of our room block enables the CNS to negotiate better room rates for future meetings.
SAVE THE DATE!

Houston, Texas
September 28–October 2, 2024