E PLURIBUS UNUM: THE SPECIALTY OF NEUROLOGICAL SURGERY

“To strive, to seek, to find, and not to yield” —Alfred, Lord Tennyson

CONGRESS OF NEUROLOGICAL SURGEONS
2011 ANNUAL MEETING
WASHINGTON, DC
OCTOBER 1-6, 2011

Scientific Program
**Meeting Purpose**
The purpose of the 2011 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 allied health professionals including nurses, physician assistants and clinical specialists.

**What’s New**
★ The Art of Managing Complex Cranial Cases: A 3-D Video Presentation
★ Live Surgical Presentation – Unyielding Progress: Carotid Stenting (Findings and Practice)
★ Operative NEUROSURGERY®
★ Multidisciplinary Oral Presentations
★ Case Controversies with the Masters
  ◆ Malignant Glioma: Extent of Resection
  ◆ Cervical Spine Arthroplasty: Fact or Fiction
★ And More New Courses and Sessions, including:
  ◆ New Dinner Seminars on Tuesday and Wednesday Evening at top-rated restaurants in DC!
  ◆ PC11 Simulation Based Neurosurgical Training Course!
  ◆ Dinner Seminar SANS – Earn up to 2 hours additional CME!

The Congress of Neurological Surgeons exists to enhance health and improve lives worldwide through the advancement of education and scientific exchange.
<table>
<thead>
<tr>
<th>SATURDAY, OCTOBER 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>7:30 AM – 5:00 PM</td>
</tr>
<tr>
<td>1:00 – 5:00 PM</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>SUNDAY, OCTOBER 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>8:00 AM – 4:00 PM</td>
</tr>
<tr>
<td>8:00 – 11:30 AM</td>
</tr>
<tr>
<td>12:30 – 4:00 PM</td>
</tr>
<tr>
<td>1:00 – 4:00 PM</td>
</tr>
<tr>
<td>4:30 – 6:00 PM</td>
</tr>
<tr>
<td>4:35 – 4:53 PM</td>
</tr>
<tr>
<td>4:56 – 5:16 PM</td>
</tr>
<tr>
<td>4:56 – 5:16 PM</td>
</tr>
<tr>
<td>4:56 – 5:16 PM</td>
</tr>
<tr>
<td>5:18 – 5:35 PM</td>
</tr>
<tr>
<td>5:18 – 5:35 PM</td>
</tr>
<tr>
<td>5:40 – 6:00 PM</td>
</tr>
<tr>
<td>5:40 – 6:00 PM</td>
</tr>
<tr>
<td>6:00 – 8:00 PM</td>
</tr>
<tr>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>MONDAY, OCTOBER 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>7:00 – 11:30 AM</td>
</tr>
<tr>
<td>8:15 – 8:35 AM</td>
</tr>
<tr>
<td>8:15 – 8:35 AM</td>
</tr>
<tr>
<td>8:40 – 9:00 AM</td>
</tr>
<tr>
<td>8:40 – 9:00 AM</td>
</tr>
<tr>
<td>9:00 AM – 3:00 PM</td>
</tr>
<tr>
<td>9:00 – 10:00 AM</td>
</tr>
<tr>
<td>10:05 – 10:25 AM</td>
</tr>
<tr>
<td>10:05 – 10:25 AM</td>
</tr>
<tr>
<td>10:30 – 10:50 AM</td>
</tr>
<tr>
<td>10:30 – 10:50 AM</td>
</tr>
<tr>
<td>10:55 – 11:30 AM</td>
</tr>
<tr>
<td>10:55 – 11:30 AM</td>
</tr>
<tr>
<td>11:30 AM – 12:00 PM</td>
</tr>
<tr>
<td>12:00 – 1:30 PM</td>
</tr>
<tr>
<td>1:30 – 2:00 PM</td>
</tr>
<tr>
<td>2:00 – 3:30 PM</td>
</tr>
<tr>
<td>2:00 – 3:30 PM</td>
</tr>
<tr>
<td>2:00 – 3:30 PM</td>
</tr>
<tr>
<td>3:30 – 5:00 PM</td>
</tr>
<tr>
<td>3:30 – 5:00 PM</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>TUESDAY, OCTOBER 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>7:00 – 11:30 AM</td>
</tr>
<tr>
<td>7:39 – 7:59 AM</td>
</tr>
<tr>
<td>7:39 – 7:59 AM</td>
</tr>
<tr>
<td>8:35 – 8:50 AM</td>
</tr>
<tr>
<td>8:35 – 8:50 AM</td>
</tr>
<tr>
<td>9:00 AM – 5:00 PM</td>
</tr>
<tr>
<td>9:00 – 10:00 AM</td>
</tr>
<tr>
<td>Time</td>
</tr>
<tr>
<td>--------------</td>
</tr>
</tbody>
</table>
| 10:00 – 10:30 AM | L. Nelson Hopkins, III, Elad I. Levy  
Live Surgical Presentation – Unyielding Progress: Carotid Stenting (Findings and Practice) |
| 10:30 – 11:30 AM | Jeffrey Kahane, Charles J. Limb, Margaret Batjer  
Special Symposium: Music and the Mind |
| 11:30 AM – 12:00 PM | Break with Exhibitors |
| 12:00 – 1:30 PM | Luncheon Seminars |
| 1:30 – 2:00 PM | Beverage Break with Exhibitors |
| 2:00 – 3:30 PM | ★ NEW! Operative NEUROSURGERY®  
★ Section Sessions  
★ Special Course II: Guidelines and Clinical Evidence Update |
| 3:30 – 4:30 PM | CNS Annual Business Meeting |
| 3:30 – 5:00 PM | Wine and Cheese Reception with the CNS Exhibitors |
| 5:00 – 6:00 PM | CNS Resident SANS Challenge Championship Round |
| 6:00 – 7:00 PM | CNS Resident Recruitment Social |
| 6:30 – 8:30 PM | ★ Dinner Seminar I: Low Grade Glioma  
★ Dinner Seminar II: Controversies in the Treatment of Cervical Spondylotic Myelopathy |

**WEDNESDAY, OCTOBER 5**

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>7:00 – 11:30 AM</td>
<td>General Scientific Session III</td>
</tr>
</tbody>
</table>
| 7:41 – 7:58 AM | Leigh R. Hochberg  
Special Lecture: Seeking to Restore Function: Human-Robotic Interface |
| 9:00 AM – 2:00 PM | Exhibit Hall Open |
| 9:00 – 10:00 AM | Beverage Break with Exhibitors |
| 10:18 – 10:38 AM | Colonel Geoffrey S.F. Ling  
Special Lecture: Neuro Casualties of Modern War |
| 10:38 – 10:58 AM | H. Hunt Batjer  
Honored Guest Lecture: Honoring Our Public Responsibility: Creating Milestone and Matrix Based Training in an Era of Duty Hour Restrictions |
| 11:03 – 11:30 AM | Frank Deford  
Julian T. Hoff Lecture: SPORTS: The Hype and the Hypocrisy |
| 11:30 AM – 12:00 PM | Break with Exhibitors |
| 12:00 – 1:30 PM | Luncheon Seminars |
| 1:30 – 2:00 PM | Beverage Break with Exhibitors |
| 2:00 – 3:30 PM | ★ Section Sessions  
★ CNS Original Science Program II – Multidisciplinary Oral Presentations  
★ Consensus Session II: Management of Low Back Pain: What is Standard of Care? |
| 6:30 – 8:30 PM | ★ Dinner Seminar III: Current Management Strategies for Metastatic Spine Tumors  
★ Dinner Seminar IV: Cervical and Lumbar Arthroplasty |
| 7:00 PM | CNS International Reception  
Smithsonian American Art Museum and National Portrait Gallery |

**THURSDAY, OCTOBER 6**

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>8:00 – 11:30 AM</td>
<td>General Scientific Session IV</td>
</tr>
<tr>
<td>8:03 – 9:40 AM</td>
<td>Case Controversies with the Masters (Malignant Glioma: Extent of Resection)</td>
</tr>
<tr>
<td>9:40 – 10:00 AM</td>
<td>Beverage Break</td>
</tr>
<tr>
<td>10:00 – 11:25 AM</td>
<td>Case Controversies with the Masters (Cervical Spine Arthroplasty: Fact or Fiction?)</td>
</tr>
<tr>
<td>11:30 AM</td>
<td>Adjourn</td>
</tr>
</tbody>
</table>
Stay Connected to the 2011 CNS Annual Meeting

CNS Mobile Meeting Guide

Everything you need right at your fingertips...

- Locate your meetings and courses.
- Search for a particular lecturer.
- See what’s happening right now!
- Find a specific product category or company in the Exhibit Hall.
- Find out who is registered.
- Browse abstracts and digital posters.
- Add sessions and events to your calendar.
- Send messages to other attendees.
- And more!

Download at the Apple® App Store℠ or m.cns.org Today!
Dear Colleague:

On behalf of the Congress of Neurological Surgeons Executive Committee, the Scientific Program Committee, and the 2011 CNS Honored Guest, Dr. H. Hunt Batjer, I welcome you to Washington, DC for the 2011 CNS Annual Meeting, *E Pluribus Unum: The Specialty of Neurological Surgery*.

This year, we are pleased to once again partner with an international society, the Spanish Society of Neurosurgery, who has been instrumental in planning our 61st Annual Meeting along with our Scientific Program Committee. Our dynamic scientific program offers the expert lectures, case-based courses and sessions, and hands-on training opportunities you need to advance your practice in the constantly changing field of neurosurgery.

Centered on our sub-theme, *To strive, to seek, to find and not to yield*, our Sunday evening Opening Session and daily General Scientific Sessions address the challenges we as neurosurgeons face in our daily practice and the quest we embark on to ensure our specialty’s future. Our invited speakers—including US Army General (Ret.) Stanley McChrystal and Pulitzer Prize Winning Author, Jon Meacham—will amplify our theme through their lessons on leadership in challenging environments.

This CNS Original Science Program highlights the most important clinical developments and basic science research. On Monday afternoon, the Original Science Program features the top Oral Presentations in each subspecialty, followed by the interactive Neurosurgical Forum, while Wednesday afternoon offers a NEW Multidisciplinary Oral Presentations featuring top research that crosses subspecialties.

The education opportunities will continue throughout the day and into the evening, with Consensus Sessions, Section Sessions, Special Courses and the return of the popular Dinner Seminars, where expert faculty cover important clinical issues at four of DC’s top-rated restaurants. Rounding out this vibrant program are two new afternoon sessions—*The Art of Managing Complex Cranial Cases: A 3-D Video Presentation* on Monday afternoon featuring 3-D video presentations of surgical approaches by leaders in each subspecialty and Tuesday afternoon’s *Operative NEUROSURGERY*® session highlights important developments published in this *NEUROSURGERY*® supplement over the past year.

I encourage you to make time during your stay and enjoy the truly magnificent capital of the United States, as well as our abundant auxiliary program and numerous social events including the Opening Reception and the Wine and Cheese Reception with the CNS Exhibitors.

I am excited you are here as we work together to strive, to seek, to find and not to yield new techniques to continually improve our esteemed field.

Sincerely,

Christopher C. Getch
CNS President
### Saturday, October 1

<table>
<thead>
<tr>
<th>Start</th>
<th>End</th>
<th>Event</th>
<th>Room</th>
</tr>
</thead>
<tbody>
<tr>
<td>7:00 AM</td>
<td>9:00 AM</td>
<td>CSNS NE Quadrant</td>
<td>Meeting Rooms 8 &amp; 9 (Renaissance Washington, DC Downtown Hotel)</td>
</tr>
<tr>
<td>7:00 AM</td>
<td>9:00 AM</td>
<td>CSNS NW Quadrant</td>
<td>Meeting Room 5 (Renaissance Washington, DC Downtown Hotel)</td>
</tr>
<tr>
<td>7:00 AM</td>
<td>9:00 AM</td>
<td>CSNS SE Quadrant</td>
<td>Meeting Room 2 (Renaissance Washington, DC Downtown Hotel)</td>
</tr>
<tr>
<td>7:00 AM</td>
<td>9:00 AM</td>
<td>CSNS SW Quadrant</td>
<td>Meeting Room 3 (Renaissance Washington, DC Downtown Hotel)</td>
</tr>
<tr>
<td>7:00 AM</td>
<td>9:00 AM</td>
<td>CSNS/AANS Caucus</td>
<td>Meeting Rooms 10 &amp; 11 (Renaissance Washington, DC Downtown Hotel)</td>
</tr>
<tr>
<td>7:00 AM</td>
<td>9:00 AM</td>
<td>CSNS/CNS Caucus</td>
<td>Meeting Rooms 12 &amp; 13 (Renaissance Washington, DC Downtown Hotel)</td>
</tr>
<tr>
<td>7:00 AM</td>
<td>5:00 PM</td>
<td>Sergeant-At-Arms</td>
<td>209A</td>
</tr>
<tr>
<td>7:00 AM</td>
<td>5:30 PM</td>
<td>Speaker Ready Room</td>
<td>203B</td>
</tr>
<tr>
<td>7:00 AM</td>
<td>5:30 PM</td>
<td>Registration</td>
<td>West Registration</td>
</tr>
<tr>
<td>7:00 AM</td>
<td>5:30 PM</td>
<td>Association of Neurosurgical Physician Assistants 5th Annual CME Event (Speaker Ready Room)</td>
<td>Bulfinch (Grand Hyatt Washington)</td>
</tr>
<tr>
<td>7:00 AM</td>
<td>6:00 PM</td>
<td>Association of Neurosurgical Physician Assistants 5th Annual CME Event</td>
<td>Constitution Ballroom B (Grand Hyatt Washington)</td>
</tr>
<tr>
<td>7:00 AM</td>
<td>6:00 PM</td>
<td>Association of Neurosurgical Physician Assistants 5th Annual CME Event (Exhibits)</td>
<td>Constitution Ballroom A (Grand Hyatt Washington)</td>
</tr>
<tr>
<td>7:30 AM</td>
<td>5:00 PM</td>
<td>PC01: NINDS/CNS Workshop on Grant Writing and Career Development</td>
<td>140AB</td>
</tr>
<tr>
<td>8:00 AM</td>
<td>4:00 PM</td>
<td>ThinkFirst Chapter Training</td>
<td>Burnham (Grand Hyatt Washington)</td>
</tr>
<tr>
<td>8:00 AM</td>
<td>4:00 PM</td>
<td>ThinkFirst Committee Meetings</td>
<td>Potomac (Grand Hyatt Washington)</td>
</tr>
<tr>
<td>9:00 AM</td>
<td>12:00 PM</td>
<td>CSNS Plenary Session</td>
<td>Renaissance Ballrooms East &amp; West (Renaissance Washington, DC Downtown Hotel)</td>
</tr>
<tr>
<td>12:00 PM</td>
<td>1:00 PM</td>
<td>CSNS Lunch</td>
<td>Congressional Hall A &amp; B (Renaissance Washington, DC Downtown Hotel)</td>
</tr>
<tr>
<td>1:00 PM</td>
<td>2:30 PM</td>
<td>CSNS Executive Committee</td>
<td>Meeting Rooms 12 &amp; 13 (Renaissance Washington, DC Downtown Hotel)</td>
</tr>
<tr>
<td>1:00 PM</td>
<td>5:00 PM</td>
<td>PC02: 3-D Anatomy (Supratentorial)</td>
<td>145A</td>
</tr>
<tr>
<td>1:00 PM</td>
<td>5:00 PM</td>
<td>PC03: Surgical Management of Tumors in Eloquent Regions</td>
<td>202B</td>
</tr>
<tr>
<td>1:00 PM</td>
<td>5:00 PM</td>
<td>PC04: The Essentials of Neurosurgical ICU Management</td>
<td>146C</td>
</tr>
<tr>
<td>1:00 PM</td>
<td>5:00 PM</td>
<td>PC05: CPT Coding Review and What to Expect in 2012</td>
<td>144A</td>
</tr>
<tr>
<td>1:00 PM</td>
<td>5:00 PM</td>
<td>PC06: Cervical Spondylotic Myelopathy and Radiculopathy: Treatment Approaches and Options</td>
<td>206</td>
</tr>
<tr>
<td>1:00 PM</td>
<td>5:00 PM</td>
<td>PC07: Spine Biomechanics: A Focus on Junctional Pathology</td>
<td>143B</td>
</tr>
<tr>
<td>3:00 PM</td>
<td>6:00 PM</td>
<td>AANS/CNS Joint Guidelines Committee</td>
<td>Meeting Room 5 (Renaissance Washington, DC Downtown Hotel)</td>
</tr>
<tr>
<td>4:00 PM</td>
<td>4:30 PM</td>
<td>Congress Quarterly Editorial Board</td>
<td>102A</td>
</tr>
<tr>
<td>4:30 PM</td>
<td>5:30 PM</td>
<td>Neurosurgery PAC Board of Directors Meeting</td>
<td>Meeting Room 14 (Renaissance Washington, DC Downtown Hotel)</td>
</tr>
<tr>
<td>4:00 PM</td>
<td>6:00 PM</td>
<td>AANS/CNS Cerebrovascular Executive Committee Meeting</td>
<td>Grand Ballroom South (Renaissance Washington, DC Downtown Hotel)</td>
</tr>
<tr>
<td>4:30 PM</td>
<td>5:30 PM</td>
<td>CNS Publications Committee</td>
<td>101</td>
</tr>
<tr>
<td>5:00 PM</td>
<td>7:00 PM</td>
<td>PC01: Reception</td>
<td>149AB</td>
</tr>
<tr>
<td>6:00 PM</td>
<td>8:00 PM</td>
<td>Association of Neurosurgical Physician Assistants 5th Annual CME Event (Reception)</td>
<td>Constitution Ballrooms C-E (Grand Hyatt Washington)</td>
</tr>
</tbody>
</table>

### Sunday, October 2

<table>
<thead>
<tr>
<th>Start</th>
<th>End</th>
<th>Event</th>
<th>Room</th>
</tr>
</thead>
<tbody>
<tr>
<td>7:00 AM</td>
<td>5:30 PM</td>
<td>Sergeant-At-Arms</td>
<td>209A</td>
</tr>
<tr>
<td>7:00 AM</td>
<td>6:00 PM</td>
<td>Speaker Ready Room</td>
<td>203B</td>
</tr>
<tr>
<td>Time</td>
<td>Event</td>
<td>Location</td>
<td></td>
</tr>
<tr>
<td>--------</td>
<td>-----------------------------------------------------------------------</td>
<td>--------------------------------------------------------------------------</td>
<td></td>
</tr>
<tr>
<td>7:00 AM</td>
<td>7:00 PM Registration</td>
<td>West Registration</td>
<td></td>
</tr>
<tr>
<td>8:00 AM</td>
<td>4:00 PM PC08: Inpatient and Outpatient Management Dilemmas for Allied Health Care Professionals</td>
<td>143A</td>
<td></td>
</tr>
<tr>
<td>8:00 AM</td>
<td>4:00 PM PC09: Minimally Invasive Spinal Surgery</td>
<td>151AB</td>
<td></td>
</tr>
<tr>
<td>8:00 AM</td>
<td>4:00 PM PC10: Brain Tumor Update</td>
<td>146C</td>
<td></td>
</tr>
<tr>
<td>8:00 AM</td>
<td>4:00 PM PC11: Simulation Based Neurosurgical Training</td>
<td>154A</td>
<td></td>
</tr>
<tr>
<td>8:00 AM</td>
<td>11:30 AM PC12: Trauma Update Part I: Traumatic Brain Injury</td>
<td>146A</td>
<td></td>
</tr>
<tr>
<td>8:00 AM</td>
<td>11:30 PM PC13: Cranial Radiosurgery Update</td>
<td>146B</td>
<td></td>
</tr>
<tr>
<td>8:00 AM</td>
<td>11:30 AM PC14: Contemporary Principles of Spinal Deformity Surgery</td>
<td>147B</td>
<td></td>
</tr>
<tr>
<td>8:00 AM</td>
<td>11:30 AM PC15: Using Evidence-Based Medicine to Manage Spinal Disorders</td>
<td>144B</td>
<td></td>
</tr>
<tr>
<td>8:00 AM</td>
<td>11:30 AM PC16: Masters of Cranial Neuroendoscopy</td>
<td>147A</td>
<td></td>
</tr>
<tr>
<td>8:00 AM</td>
<td>11:30 AM PC17: Open Aneurysm Surgery: A 3-D Practical Course</td>
<td>145B</td>
<td></td>
</tr>
<tr>
<td>8:00 AM</td>
<td>11:30 AM PC18: Deep Brain Stimulation: Indications and Emerging Applications</td>
<td>207A</td>
<td></td>
</tr>
<tr>
<td>8:00 AM</td>
<td>4:00 PM ThinkFirst Committee Meetings</td>
<td>Cabin John (Grand Hyatt Washington)</td>
<td></td>
</tr>
<tr>
<td>8:00 AM</td>
<td>5:00 PM Sergeant-At-Arms</td>
<td>209A</td>
<td></td>
</tr>
<tr>
<td>9:00 AM</td>
<td>9:30 AM Welcome to DC</td>
<td>Penn Quarter (Renaissance Washington, DC Downtown Hotel)</td>
<td></td>
</tr>
<tr>
<td>9:00 AM</td>
<td>11:00 AM AANS/CNS Pain Executive Council Meeting</td>
<td>Meeting Room 18 (Renaissance Washington, DC Downtown Hotel)</td>
<td></td>
</tr>
<tr>
<td>10:00 AM</td>
<td>1:00 PM Society of Neurological Surgeons: Neurosurgery Summit Meeting</td>
<td>Meeting Room 3 (Renaissance Washington, DC Downtown Hotel)</td>
<td></td>
</tr>
<tr>
<td>10:00 AM</td>
<td>12:00 PM ASSFN Executive Council Meeting</td>
<td>Meeting Room 19 (Renaissance Washington, DC Downtown Hotel)</td>
<td></td>
</tr>
<tr>
<td>10:00 AM</td>
<td>11:30 AM Association of Neurosurgical Physician Assistants – Board Meeting</td>
<td>Wilson (Grand Hyatt Washington)</td>
<td></td>
</tr>
<tr>
<td>10:30 AM</td>
<td>12:00 PM CNS Fellowship Committee</td>
<td>102A</td>
<td></td>
</tr>
<tr>
<td>11:00 AM</td>
<td>12:00 PM CNS Information and Technology and CNS Web Editorial Board Committee Meeting</td>
<td>140A</td>
<td></td>
</tr>
<tr>
<td>11:30 AM</td>
<td>1:30 PM CNS Research Committee</td>
<td>142</td>
<td></td>
</tr>
<tr>
<td>12:00 PM</td>
<td>1:00 PM CSNS State Society Forum</td>
<td>Renaissance Ballroom East (Renaissance Washington, DC Downtown Hotel)</td>
<td></td>
</tr>
<tr>
<td>12:00 PM</td>
<td>2:00 PM AANS/CNS Quality Improvement Workgroup</td>
<td>Meeting Room 16 (Renaissance Washington, DC Downtown Hotel)</td>
<td></td>
</tr>
<tr>
<td>12:00 PM</td>
<td>2:00 PM CNS Education Committee Meeting</td>
<td>102B</td>
<td></td>
</tr>
<tr>
<td>12:00 PM</td>
<td>2:00 PM CNS International Division</td>
<td>101</td>
<td></td>
</tr>
<tr>
<td>12:30 PM</td>
<td>4:00 PM PC19: Cranial Neurosurgery: Complication Avoidance and Management</td>
<td>140B</td>
<td></td>
</tr>
<tr>
<td>12:30 PM</td>
<td>4:00 PM PC20: Trauma Update Part II: Spinal Cord and Spinal Column Injury</td>
<td>146A</td>
<td></td>
</tr>
<tr>
<td>12:30 PM</td>
<td>4:00 PM PC21: Implementing and Utilizing the Metastatic Brain Tumor Clinical Practice Guidelines in Everyday Practice</td>
<td>147A</td>
<td></td>
</tr>
<tr>
<td>12:30 PM</td>
<td>4:00 PM PC22: Spinal Metastatic Tumors: Contemporary Multidisciplinary Treatment</td>
<td>146B</td>
<td></td>
</tr>
<tr>
<td>12:30 PM</td>
<td>4:00 PM PC23: 3-D Anatomy (Infratentorial)</td>
<td>145A</td>
<td></td>
</tr>
<tr>
<td>12:30 PM</td>
<td>4:00 PM PC24: Principles and Practice of Peripheral Nerve Surgery</td>
<td>150A</td>
<td></td>
</tr>
<tr>
<td>12:30 PM</td>
<td>4:00 PM PC25: My Worst Spinal Complication: What I Learned</td>
<td>206</td>
<td></td>
</tr>
<tr>
<td>12:30 PM</td>
<td>4:00 PM PC26: Neurocritical Care and Neurosurgical Emergencies Update</td>
<td>207B</td>
<td></td>
</tr>
<tr>
<td>12:30 PM</td>
<td>4:00 PM PC27: Operative Indications, Options and Techniques for Epilepsy</td>
<td>144A</td>
<td></td>
</tr>
<tr>
<td>12:30 PM</td>
<td>4:00 PM PC28: Expanding Your Neurosurgical Pain Practice</td>
<td>143B</td>
<td></td>
</tr>
<tr>
<td>12:30 PM</td>
<td>4:00 PM PC29: Ethics in Neurosurgical Practice: Designing a High Quality, Meaningful, and Personally Satisfying Clinical Practice</td>
<td>143C</td>
<td></td>
</tr>
<tr>
<td>1:00 PM</td>
<td>4:00 PM CNS SANS Lifelong Learning Committee Meeting</td>
<td>102A</td>
<td></td>
</tr>
<tr>
<td>1:00 PM</td>
<td>4:00 PM CNS SANS Resident Challenge – Preliminary Rounds</td>
<td>202A</td>
<td></td>
</tr>
<tr>
<td>1:00 PM</td>
<td>4:00 PM CNS SANS Resident Challenge Green Room</td>
<td>203A</td>
<td></td>
</tr>
<tr>
<td>2:00 PM</td>
<td>3:00 PM AANS/CNS Section on Disorders of the Spine and Peripheral Nerves Rapid Response Committee Meeting</td>
<td>Meeting Room 5 (Renaissance Washington, DC Downtown Hotel)</td>
<td></td>
</tr>
<tr>
<td>Start</td>
<td>End</td>
<td>Event</td>
<td>Room</td>
</tr>
<tr>
<td>------------</td>
<td>-----------</td>
<td>----------------------------------------------------------------------</td>
<td>----------------------------------------------------------------------</td>
</tr>
<tr>
<td>2:00 PM</td>
<td>4:30 PM</td>
<td>AANS/CNS Section on Disorders of the Spine and Peripheral Nerves</td>
<td>Meeting Room 3</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Scientific Program Committee Meeting</td>
<td>(Renaissance Washington, DC Downtown Hotel)</td>
</tr>
<tr>
<td>3:00 PM</td>
<td>4:00 PM</td>
<td>Society of Neurological Surgeons Bootcamp Subcommittee Meeting</td>
<td>Meeting Room 19</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>(Renaissance Washington, DC Downtown Hotel)</td>
</tr>
<tr>
<td>4:00 PM</td>
<td>6:00 PM</td>
<td>AANS/CNS Cerebrovascular Executive Committee Meeting</td>
<td>Grand Ballroom South</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>(Renaissance Washington, DC Downtown Hotel)</td>
</tr>
<tr>
<td>4:30 PM</td>
<td>6:00 PM</td>
<td>Opening Session</td>
<td>Hall E</td>
</tr>
<tr>
<td>6:00 PM</td>
<td>8:00 PM</td>
<td>CNS Opening Reception</td>
<td>Ballroom A-C</td>
</tr>
</tbody>
</table>

**Monday, October 3**

<table>
<thead>
<tr>
<th>Start</th>
<th>End</th>
<th>Event</th>
<th>Room</th>
</tr>
</thead>
<tbody>
<tr>
<td>6:00 AM</td>
<td>7:00 AM</td>
<td>AANS/CNS Section on Tumors Executive Committee Meeting</td>
<td>Renaissance Ballroom West A</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>(Renaissance Washington, DC Downtown Hotel)</td>
</tr>
<tr>
<td>6:00 AM</td>
<td>7:00 AM</td>
<td>ThinkFirst Board of Directors Meeting</td>
<td>Wilson (Grand Hyatt Washington)</td>
</tr>
<tr>
<td>6:30 AM</td>
<td>3:00 PM</td>
<td>Speaker Ready Room</td>
<td>203B</td>
</tr>
<tr>
<td>6:30 AM</td>
<td>4:30 PM</td>
<td>Registration</td>
<td>West Registration</td>
</tr>
<tr>
<td>7:00 AM</td>
<td>11:30 AM</td>
<td>General Scientific Session I</td>
<td>Hall E</td>
</tr>
<tr>
<td>8:00 AM</td>
<td>10:30 AM</td>
<td>Spouse Hospitality Suite</td>
<td>Meeting Room 14</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>(Renaissance Washington, DC Downtown Hotel)</td>
</tr>
<tr>
<td>8:00 AM</td>
<td>3:00 PM</td>
<td>Sergeant-At-Arms</td>
<td>209A</td>
</tr>
<tr>
<td>9:00 AM</td>
<td>10:00 PM</td>
<td>Beverage Break with Exhibitors</td>
<td>Hall D</td>
</tr>
<tr>
<td>9:00 AM</td>
<td>3:00 PM</td>
<td>Exhibit Hall</td>
<td>Hall D</td>
</tr>
<tr>
<td>9:00 AM</td>
<td>3:00 PM</td>
<td>Digital Poster Center</td>
<td>Hall D</td>
</tr>
<tr>
<td>9:35 AM</td>
<td>10:00 AM</td>
<td>Product &amp; Technology Showcase – Presented by Lanx, Inc.: Clinical</td>
<td>Hall D – Demo Theater</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Applications of the Aspen™ Device</td>
<td></td>
</tr>
<tr>
<td>11:30 AM</td>
<td>2:00 PM</td>
<td>AANS/CNS Section on Disorders of the Spine and Peripheral Nerves</td>
<td>Meeting Room 2</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Executive Committee Meeting</td>
<td>(Renaissance Washington, DC Downtown Hotel)</td>
</tr>
<tr>
<td>11:30 AM</td>
<td>12:00 PM</td>
<td>Break with Exhibitors</td>
<td>Hall D</td>
</tr>
<tr>
<td>11:30 AM</td>
<td>1:30 PM</td>
<td>Research &amp; Development Expert Exchange</td>
<td>Hall D</td>
</tr>
<tr>
<td>12:00 PM</td>
<td>1:30 PM</td>
<td>M01: Resident/Honored Guest Luncheon: Your Career in Neurosurgery:</td>
<td>145A</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Pathways to Success and Failure</td>
<td></td>
</tr>
<tr>
<td>12:00 PM</td>
<td>1:30 PM</td>
<td>M02: Current Management Strategies for Craniosynostosis</td>
<td>140A</td>
</tr>
<tr>
<td>12:00 PM</td>
<td>1:30 PM</td>
<td>M03: Disc Replacement in the Cervical and Lumbar Spine</td>
<td>146A</td>
</tr>
<tr>
<td>12:00 PM</td>
<td>1:30 PM</td>
<td>M04: Nuances of Minimally Invasive Spine Surgery</td>
<td>146B</td>
</tr>
<tr>
<td>12:00 PM</td>
<td>1:30 PM</td>
<td>M05: Pseudoarthrosis of the Cervical and Lumbar Spine</td>
<td>146C</td>
</tr>
<tr>
<td>12:00 PM</td>
<td>1:30 PM</td>
<td>M06: Multidisciplinary Management of Subarachnoid Hemorrhage and</td>
<td>147A</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Vasospasm</td>
<td></td>
</tr>
<tr>
<td>12:00 PM</td>
<td>1:30 PM</td>
<td>M07: Hematology and Coagulation for Neurosurgeons: Dangers and</td>
<td>147B</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Solutions</td>
<td></td>
</tr>
<tr>
<td>12:00 PM</td>
<td>1:30 PM</td>
<td>M08: Incorporating Psychosurgery into Your Neurosurgical Practice</td>
<td>140B</td>
</tr>
<tr>
<td>12:00 PM</td>
<td>1:30 PM</td>
<td>M09: Hemorrhagic and Ischemic Stroke Update for Allied Health</td>
<td>143A</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Professionals</td>
<td></td>
</tr>
<tr>
<td>12:00 PM</td>
<td>1:30 PM</td>
<td>M10: Tumor Resection in High-Risk Locations: Techniques to Minimize</td>
<td>145B</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Collateral Damage</td>
<td></td>
</tr>
<tr>
<td>12:00 PM</td>
<td>1:30 PM</td>
<td>M11: Staying Current in Vestibular Schwannoma Management</td>
<td>143B</td>
</tr>
<tr>
<td>12:00 PM</td>
<td>1:30 PM</td>
<td>M12: Augmenting Skull Base Approaches with Endoscopy</td>
<td>143C</td>
</tr>
<tr>
<td>12:00 PM</td>
<td>1:30 PM</td>
<td>M13: Innovations in the Management of Pediatric Neurotrauma</td>
<td>144A</td>
</tr>
<tr>
<td>12:00 PM</td>
<td>1:30 PM</td>
<td>M14: Peripheral Nerve Board Review</td>
<td>144B</td>
</tr>
<tr>
<td>12:00 PM</td>
<td>1:30 PM</td>
<td>M15: Surgical, Interventional and Radiosurgical Approaches to</td>
<td>144C</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Intracranial Arteriovenous Malformations</td>
<td></td>
</tr>
<tr>
<td>12:00 PM</td>
<td>1:30 PM</td>
<td>M16: Should You Become Employed by a Hospital? There Are Alternatives,</td>
<td>149AB</td>
</tr>
<tr>
<td></td>
<td></td>
<td>How To Negotiate Your Future</td>
<td></td>
</tr>
<tr>
<td>12:00 PM</td>
<td>1:30 PM</td>
<td>AANS/CNS Neurotrauma and Critical Care Committee Meeting</td>
<td>Meeting Room 3</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>(Renaissance Washington, DC Downtown Hotel)</td>
</tr>
<tr>
<td>Time</td>
<td>Start</td>
<td>End</td>
<td>Event</td>
</tr>
<tr>
<td>----------</td>
<td>---------</td>
<td>---------</td>
<td>----------------------------------------------------------------------</td>
</tr>
<tr>
<td>1:30 PM</td>
<td>2:00 PM</td>
<td>Hall D</td>
<td>Beverage Break with Exhibitors</td>
</tr>
<tr>
<td>2:00 PM</td>
<td>3:00 PM</td>
<td>204A</td>
<td>Oral Presentations – Council of State Neurosurgical Societies</td>
</tr>
<tr>
<td>2:00 PM</td>
<td>3:00 PM</td>
<td>202A</td>
<td>Oral Presentations – Section on Cerebrovascular Surgery</td>
</tr>
<tr>
<td>2:00 PM</td>
<td>3:00 PM</td>
<td>202B</td>
<td>Oral Presentations – Section on Disorders of the Spine and Peripheral Nerves</td>
</tr>
<tr>
<td>2:00 PM</td>
<td>3:00 PM</td>
<td>206</td>
<td>Oral Presentations – Section on Neurotrauma and Critical Care</td>
</tr>
<tr>
<td>2:00 PM</td>
<td>3:00 PM</td>
<td>203A</td>
<td>Oral Presentations – Section on Pain</td>
</tr>
<tr>
<td>2:00 PM</td>
<td>3:00 PM</td>
<td>207B</td>
<td>Oral Presentations – Section on Pediatric Neurological Surgery</td>
</tr>
<tr>
<td>2:00 PM</td>
<td>3:00 PM</td>
<td>207A</td>
<td>Oral Presentations – Section on Stereotactic and Functional Neurosurgery</td>
</tr>
<tr>
<td>2:00 PM</td>
<td>3:00 PM</td>
<td>201</td>
<td>Oral Presentations – Section on Tumors</td>
</tr>
<tr>
<td>2:00 PM</td>
<td>3:00 PM</td>
<td>154AB</td>
<td>Consensus Session I: Treatment of Metastatic Brain Tumors: What Is Standard of Care?</td>
</tr>
<tr>
<td>2:00 PM</td>
<td>3:30 PM</td>
<td>152B</td>
<td>Special Course I: Concussion: A Perfect Storm and the Role of the National Football League</td>
</tr>
<tr>
<td>3:30 PM</td>
<td>5:00 PM</td>
<td>Hall E</td>
<td>The Art of Managing Complex Cranial Cases: A 3-D Video Presentation</td>
</tr>
<tr>
<td>3:30 PM</td>
<td>5:00 PM</td>
<td>East Registration</td>
<td>Neurosurgical Forum</td>
</tr>
<tr>
<td>5:00 PM</td>
<td>5:30 PM</td>
<td>Meeting Room 17</td>
<td>Neuropoint-SD Investigator Meeting</td>
</tr>
<tr>
<td>5:00 PM</td>
<td>6:30 PM</td>
<td>Penn Quarter</td>
<td>“Princeton in Neurosurgery” Reception</td>
</tr>
<tr>
<td>5:00 PM</td>
<td>7:00 PM</td>
<td>Meeting Rooms 12-13</td>
<td>American Association of South Asian Neurosurgeons Meeting</td>
</tr>
<tr>
<td>5:00 PM</td>
<td>7:00 PM</td>
<td>Renaissance Ballroom East</td>
<td>Mayfield Society Reunion</td>
</tr>
<tr>
<td>5:00 PM</td>
<td>7:00 PM</td>
<td>Farragut Square (Grand Hyatt Washington)</td>
<td>ThinkFirst 25 Year Review Reception</td>
</tr>
<tr>
<td>5:30 PM</td>
<td>6:30 PM</td>
<td>Grand Ballroom North</td>
<td>KU Neurosurgery Reception</td>
</tr>
<tr>
<td>5:30 PM</td>
<td>7:00 PM</td>
<td>Meeting Room 18</td>
<td>University of Utah Reception</td>
</tr>
<tr>
<td>5:30 PM</td>
<td>7:30 PM</td>
<td>Grand Ballroom Central</td>
<td>University of Illinois College of Medicine Alumni Reception</td>
</tr>
<tr>
<td>6:00 PM</td>
<td>8:00 PM</td>
<td>Meeting Room 16</td>
<td>Jefferson Neurosurgery Reception</td>
</tr>
<tr>
<td>6:00 PM</td>
<td>8:00 PM</td>
<td>Meeting Room 5</td>
<td>Mayo Clinic Alumni Association Reception</td>
</tr>
<tr>
<td>6:00 PM</td>
<td>9:30 PM</td>
<td>Constitution Ballroom C-E</td>
<td>ev3 Satellite Symposium: Pipeline Embolization Device for the Treatment of Large and Giant Aneurysms</td>
</tr>
<tr>
<td>6:30 PM</td>
<td>8:30 PM</td>
<td>Renaissance Ballroom West B</td>
<td>USC Neurosurgery Alumni Reception</td>
</tr>
</tbody>
</table>

**Tuesday, October 4**

<table>
<thead>
<tr>
<th>Start</th>
<th>End</th>
<th>Event</th>
<th>Room</th>
</tr>
</thead>
<tbody>
<tr>
<td>6:00 AM</td>
<td>7:00 AM</td>
<td>AANS/CNS Drugs &amp; Devices Committee Meeting</td>
<td>Meeting Room 17 (Renaissance Washington, DC Downtown Hotel)</td>
</tr>
<tr>
<td>6:30 AM</td>
<td>3:00 PM</td>
<td>Speaker Ready Room</td>
<td>203B</td>
</tr>
<tr>
<td>6:30 AM</td>
<td>4:30 PM</td>
<td>Registration</td>
<td>West Registration</td>
</tr>
<tr>
<td>7:00 AM</td>
<td>11:30 AM</td>
<td>General Scientific Session II</td>
<td>Hall E</td>
</tr>
<tr>
<td>8:00 AM</td>
<td>10:30 AM</td>
<td>Spouse Hospitality Suite</td>
<td>Meeting Room 14 (Renaissance Washington, DC Downtown Hotel)</td>
</tr>
<tr>
<td>8:00 AM</td>
<td>3:00 PM</td>
<td>Sergeant-At-Arms</td>
<td>209A</td>
</tr>
<tr>
<td>9:00 AM</td>
<td>10:00 AM</td>
<td>Beverage Break with Exhibitors</td>
<td>Hall D</td>
</tr>
<tr>
<td>9:00 AM</td>
<td>5:00 PM</td>
<td>Digital Poster Center</td>
<td>Hall D</td>
</tr>
<tr>
<td>9:00 AM</td>
<td>5:00 PM</td>
<td>Exhibit Hall</td>
<td>Hall D</td>
</tr>
<tr>
<td>9:05 AM</td>
<td>9:30 AM</td>
<td>Product &amp; Technology Showcase – Presented by Nexstim: Navigated Brain Stimulation – Optimizing the Surgical Strategy</td>
<td>Hall D – Demo Theater</td>
</tr>
<tr>
<td>Time</td>
<td>Event</td>
<td>Room</td>
<td></td>
</tr>
<tr>
<td>--------------</td>
<td>-----------------------------------------------------------------------</td>
<td>---------------</td>
<td></td>
</tr>
<tr>
<td>11:30 AM</td>
<td>Break with Exhibitors</td>
<td>Hall D</td>
<td></td>
</tr>
<tr>
<td>11:30 AM</td>
<td>Research &amp; Development Expert Exchange</td>
<td>Hall D</td>
<td></td>
</tr>
<tr>
<td>12:00 PM</td>
<td>T16: Initial and Long-term Management of Patients with Chiari Malformations and Syringomyelia</td>
<td>140A</td>
<td></td>
</tr>
<tr>
<td>12:00 PM</td>
<td>T17: Guidelines for Surgical Management Lumbar Spine Surgery</td>
<td>145A</td>
<td></td>
</tr>
<tr>
<td>12:00 PM</td>
<td>T18: Guidelines for Surgical Management of Cervical Spondylotic Myelopathy and OPLL</td>
<td>140B</td>
<td></td>
</tr>
<tr>
<td>12:00 PM</td>
<td>T19: Managing Difficult Surgical Scenarios in Spinal Surgery</td>
<td>146A</td>
<td></td>
</tr>
<tr>
<td>12:00 PM</td>
<td>T20: Multidisciplinary Management Strategies for Unruptured Aneurysms</td>
<td>143B</td>
<td></td>
</tr>
<tr>
<td>12:00 PM</td>
<td>T21: Advances in the Management of Trigeminal Neuralgia and Facial Pain</td>
<td>143C</td>
<td></td>
</tr>
<tr>
<td>12:00 PM</td>
<td>T22: Surgery and Radiosurgery for Epilepsy</td>
<td>144A</td>
<td></td>
</tr>
<tr>
<td>12:00 PM</td>
<td>T23: Staying Current in the Management of the Neurotrauma Patient</td>
<td>144B</td>
<td></td>
</tr>
<tr>
<td>12:00 PM</td>
<td>T24: Pushing the Limits of Skull Base Approaches</td>
<td>144C</td>
<td></td>
</tr>
<tr>
<td>12:00 PM</td>
<td>T25: Evidence-Based Management of Brain Metastases</td>
<td>146B</td>
<td></td>
</tr>
<tr>
<td>12:00 PM</td>
<td>T26: What’s New in Pituitary Surgery</td>
<td>146C</td>
<td></td>
</tr>
<tr>
<td>12:00 PM</td>
<td>T27: Surgical Resection of Low-Grade Gliomas: Current Strategies and Controversies</td>
<td>147A</td>
<td></td>
</tr>
<tr>
<td>12:00 PM</td>
<td>T28: Treatment Dilemmas: Normal Pressure Hydrocephalus and Pseudotumor Cerebri</td>
<td>147B</td>
<td></td>
</tr>
<tr>
<td>12:00 PM</td>
<td>T29: Spine Surgery in the Geriatric Population: Current Strategies and Controversies</td>
<td>149AB</td>
<td></td>
</tr>
<tr>
<td>12:00 PM</td>
<td>T30: Spine and Peripheral Nerve Injuries in Sports</td>
<td>152A</td>
<td></td>
</tr>
<tr>
<td>12:00 PM</td>
<td>T31: Incorporating Novel Technologies into Your Neurosurgical Practice</td>
<td>151B</td>
<td></td>
</tr>
<tr>
<td>12:00 PM</td>
<td>T32: Finding the Right Job: Identifying the “Best Fit” Practice for Your Needs</td>
<td>143A</td>
<td></td>
</tr>
<tr>
<td>12:00 PM</td>
<td>CSM Investigator’s Meeting</td>
<td>Meeting Room 3 (Renaissance Washington, DC Downtown Hotel)</td>
<td></td>
</tr>
<tr>
<td>12:05 PM</td>
<td>Product &amp; Technology Showcase – Presented by NEUROSURGERY®: How to get published in our world-class publication</td>
<td>Hall D – Demo Theater</td>
<td></td>
</tr>
<tr>
<td>12:30 PM</td>
<td>2012 CNS Annual Meeting Scientific Program Committee</td>
<td>101</td>
<td></td>
</tr>
<tr>
<td>1:30 PM</td>
<td>Beverage Break with Exhibitors</td>
<td>Hall D</td>
<td></td>
</tr>
<tr>
<td>2:00 PM</td>
<td>Break with Exhibitors</td>
<td>Hall D</td>
<td></td>
</tr>
<tr>
<td>2:00 PM</td>
<td>Operative NEUROSURGERY®</td>
<td>Hall E</td>
<td></td>
</tr>
<tr>
<td>2:00 PM</td>
<td>Section on Cerebrovascular Surgery – E. Pluribus Unum: Out of Many, One: Neurovascular Surgery</td>
<td>150A</td>
<td></td>
</tr>
<tr>
<td>2:00 PM</td>
<td>Section on Disorders of the Spine and Peripheral Nerves – Complications in Spinal Surgery: Incidence, Avoidance and Treatment</td>
<td>151A</td>
<td></td>
</tr>
<tr>
<td>2:00 PM</td>
<td>Section on Stereotactic and Functional Neurosurgery – Costs and Benefits of DBS Surgery</td>
<td>154AB</td>
<td></td>
</tr>
<tr>
<td>2:00 PM</td>
<td>Section on Tumors – Genomic Alterations in Primary Brain Tumors</td>
<td>150B</td>
<td></td>
</tr>
<tr>
<td>2:00 PM</td>
<td>Special Course II: Guidelines and Clinical Evidence Update</td>
<td>152B</td>
<td></td>
</tr>
<tr>
<td>3:30 PM</td>
<td>Wine &amp; Cheese Reception with the CNS Exhibitors</td>
<td>Hall D</td>
<td></td>
</tr>
<tr>
<td>3:30 PM</td>
<td>CNS Annual Business Meeting</td>
<td>145B</td>
<td></td>
</tr>
<tr>
<td>5:00 PM</td>
<td>CNS SANS Resident Challenge – Championship Round</td>
<td>202A</td>
<td></td>
</tr>
<tr>
<td>6:00 PM</td>
<td>CNS Resident Recruitment Social</td>
<td>202B</td>
<td></td>
</tr>
<tr>
<td>6:00 PM</td>
<td>WINS Reception</td>
<td>Renaissance Ballroom East (Renaissance Washington, DC Downtown Hotel)</td>
<td></td>
</tr>
<tr>
<td>6:30 PM</td>
<td>DIN1: Low Grade Glioma</td>
<td>The Source</td>
<td></td>
</tr>
<tr>
<td>6:30 PM</td>
<td>DIN2: Controversies in the Treatment of Cervical Spondylotic Myelopathy</td>
<td>Occidental Grill &amp; Seafood</td>
<td></td>
</tr>
</tbody>
</table>

**Wednesday, October 5**

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
<th>Room</th>
</tr>
</thead>
<tbody>
<tr>
<td>6:30 AM</td>
<td>Speaker Ready Room</td>
<td>203B</td>
</tr>
<tr>
<td>6:30 AM</td>
<td>Registration</td>
<td>West Registration</td>
</tr>
<tr>
<td>Time</td>
<td>Event</td>
<td>Room</td>
</tr>
<tr>
<td>--------</td>
<td>----------------------------------------------------------------------</td>
<td>-----------------------</td>
</tr>
<tr>
<td>7:00 AM</td>
<td><strong>General Scientific Session III</strong></td>
<td>Hall E</td>
</tr>
<tr>
<td>8:00 AM</td>
<td>Spouse Hospitality Suite</td>
<td>Meeting Room 14</td>
</tr>
<tr>
<td></td>
<td>(Renaissance Washington, DC Downtown Hotel)</td>
<td></td>
</tr>
<tr>
<td>8:00 AM</td>
<td>Sergeant-At-Arms</td>
<td>209A</td>
</tr>
<tr>
<td>9:00 AM</td>
<td>Beverage Break with Exhibitors</td>
<td>Hall D</td>
</tr>
<tr>
<td>9:00 AM</td>
<td>Digital Poster Center</td>
<td>Hall D</td>
</tr>
<tr>
<td>9:00 AM</td>
<td>Exhibit Hall</td>
<td>Hall D</td>
</tr>
<tr>
<td>11:30 AM</td>
<td>Break with Exhibitors</td>
<td>Hall D</td>
</tr>
<tr>
<td>12:00 PM</td>
<td>W32: Contemporary Management of Traumatic Spine and Spinal Cord</td>
<td>140A</td>
</tr>
<tr>
<td></td>
<td>Injury</td>
<td></td>
</tr>
<tr>
<td>12:00 PM</td>
<td>W33: Treatment of Cervical Radiculopathy: Anterior vs. Posterior</td>
<td>140B</td>
</tr>
<tr>
<td></td>
<td>Approaches</td>
<td></td>
</tr>
<tr>
<td>12:00 PM</td>
<td>W34: Open vs. Endovascular Management of Cerebral Aneurysms</td>
<td>143C</td>
</tr>
<tr>
<td>12:00 PM</td>
<td>W35: Current Strategies for Management of Pediatric Brain Tumors</td>
<td>144A</td>
</tr>
<tr>
<td>12:00 PM</td>
<td>W36: Pediatric Spine Management (Traumatic and Congenital)</td>
<td>144B</td>
</tr>
<tr>
<td>12:00 PM</td>
<td>W37: Lessons Learned: Avoidance and Management of Complications of</td>
<td>144C</td>
</tr>
<tr>
<td></td>
<td>Aneurysm Surgery</td>
<td></td>
</tr>
<tr>
<td>12:00 PM</td>
<td>W38: Peripheral Nerve Entrapment Syndromes: Diagnosis and Management</td>
<td>145A</td>
</tr>
<tr>
<td>12:00 PM</td>
<td>W39: Head Injury: Current Management Strategies</td>
<td>145B</td>
</tr>
<tr>
<td>12:00 PM</td>
<td>W40: Complication Avoidance and Management in Skull Base Surgery</td>
<td>147A</td>
</tr>
<tr>
<td>12:00 PM</td>
<td>W41: Advances in Malignant Glioma Treatment</td>
<td>147B</td>
</tr>
<tr>
<td>12:00 PM</td>
<td>W42: Neuro-Oncology and Radiosurgery: Current Indications and</td>
<td>146C</td>
</tr>
<tr>
<td></td>
<td>Controversies</td>
<td></td>
</tr>
<tr>
<td>12:00 PM</td>
<td>W43: Practical Approaches for Maximizing Reimbursement</td>
<td>146B</td>
</tr>
<tr>
<td>12:00 PM</td>
<td>W44: Innovations in the Management of Intracerebral Hemorrhage</td>
<td>146A</td>
</tr>
<tr>
<td>12:00 PM</td>
<td>W45: Comprehensive Management Strategies for the Treatment of</td>
<td>149AB</td>
</tr>
<tr>
<td></td>
<td>Movement Disorders</td>
<td></td>
</tr>
<tr>
<td>12:00 PM</td>
<td>W46: Multidisciplinary Management of Spinal Metastases</td>
<td>152A</td>
</tr>
<tr>
<td>1:30 PM</td>
<td>Beverage Break with Exhibitors</td>
<td>Hall D</td>
</tr>
<tr>
<td>2:00 PM</td>
<td>Multidisciplinary Oral Presentations</td>
<td>151B</td>
</tr>
<tr>
<td>2:00 PM</td>
<td>Consensus Session II: Management of Low Back Pain: What Is Standard</td>
<td>152B</td>
</tr>
<tr>
<td></td>
<td>of Care?</td>
<td></td>
</tr>
<tr>
<td>2:00 PM</td>
<td>Council of State Neurosurgical Societies – Impact of Conflict of</td>
<td>150A</td>
</tr>
<tr>
<td></td>
<td>Interest on Advancement of Neurosurgery</td>
<td></td>
</tr>
<tr>
<td>2:00 PM</td>
<td>Section on Neurotrauma and Critical Care – Injury Guidelines: Uniting</td>
<td>151A</td>
</tr>
<tr>
<td></td>
<td>Many Studies Into Practice</td>
<td></td>
</tr>
<tr>
<td>2:00 PM</td>
<td>Section on Pain – Complications of Pain Surgery</td>
<td>154AB</td>
</tr>
<tr>
<td>2:00 PM</td>
<td>Section on Pediatric Neurological Surgery – State-of-the-Art</td>
<td>150B</td>
</tr>
<tr>
<td></td>
<td>Management of Pediatric Tumors: Achieving Goals, Managing Risks</td>
<td></td>
</tr>
<tr>
<td>6:30 PM</td>
<td>DIN3: Current Management Strategies for Metastatic Spine Tumors</td>
<td>1789 Restaurant</td>
</tr>
<tr>
<td>6:30 PM</td>
<td>DIN4: Cervical and Lumbar Arthroplasty</td>
<td>Charlie Palmer Steak</td>
</tr>
<tr>
<td>7:00 PM</td>
<td><strong>CNS International Reception</strong></td>
<td>Smithsonian American Art Museum and National Portrait Gallery</td>
</tr>
</tbody>
</table>

**Thursday, October 6**

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
<th>Room</th>
</tr>
</thead>
<tbody>
<tr>
<td>7:30 AM</td>
<td>Speaker Ready Room</td>
<td>203B</td>
</tr>
<tr>
<td>7:30 AM</td>
<td>Registration</td>
<td>West Registration</td>
</tr>
<tr>
<td>8:00 AM</td>
<td><strong>General Scientific Session IV</strong></td>
<td>Hall E</td>
</tr>
<tr>
<td>9:40 AM</td>
<td>Beverage Break</td>
<td>Hall E</td>
</tr>
</tbody>
</table>

Stay connected at http://m.cns.org
Honored Guest

H. Hunt Batjer, MD

Michael J. Marchese Professor and Chair of the Department of Neurological Surgery, Northwestern University Feinberg School of Medicine

H. Hunt Batjer, MD, is the Michael J. Marchese Professor and Chair of the Department of Neurological Surgery at Northwestern University Feinberg School of Medicine and Chair of the Department of Neurological Surgery at Northwestern Memorial Hospital in Chicago. Dr. Batjer is recognized internationally as a leading cerebrovascular surgeon, especially for complex aneurysms, vascular malformations, and brain ischemic states.

Dr. Batjer, who joined Northwestern in 1995, is a Past President of the Congress of Neurological Surgeons and the Society of University Neurosurgeons. He is past Chairman of the AANS/CNS Section on Cerebrovascular Disease. He is an elected member of the American Academy of Neurological Surgery, The Society of Neurological Surgery, and the American Surgical Association. He is past Chairman of the American Board of Neurological Surgery and Chairman of the Board of the Interurban Neurological Society. Last year he served as Vice President of the Neurosurgical Society of America and has been nominated as President-Elect. He has also been nominated for a position as Director-at-Large with the American Association of Neurological Surgeons, and has been elected Chair of the Neurosurgical Residency Review Committee of the ACGME, and Co-Chair of the NFL Committee on Head, Neck, Spine.

Dr. Batjer came to Northwestern from the University of Texas Southwestern Medical Center at Dallas where he was Professor of Neurological Surgery and was twice voted outstanding teacher.

His academic pursuits and research in ischemic and hemorrhagic stroke have resulted in over 300 publications as well as five books and two major texts titled *The Textbook of Neurological Surgery* and *Intracranial Vascular Malformations*. He also serves on multiple editorial boards and is principal reviewer for Cerebrovascular Disease for *NEUROSURGERY®*. Dr. Batjer has served as Visiting Professor at over 50 medical universities worldwide and given 20 Endowed Lectureships.

He and his wife Janet live in Wilmette, Illinois and have four daughters.

---

**Honored Guest Presentations!**

**Monday, October 3**

8:40 AM
Red Cerebral Veins – The Science, The Art, and The Craft

12:00 PM
M01 Resident/Honored Guest Luncheon: Your Career in Neurosurgery: Pathways to Success and Failure

2:00 PM
Special Course I: Concussion: A Perfect Storm and the Role of the National Football League

**Tuesday, October 4**

7:39 AM
Overcoming a Bad Outcome: Thoughts from a Colleague

**Wednesday, October 5**

10:38 AM
Honoring Our Public Responsibility: Creating Milestone and Matrix Based Training in an Era of Duty Hour Restrictions
Jon Meacham is a Pulitzer Prize-winning biographer, Vice President and Executive Editor at Random House and the former editor of Newsweek and co-anchor of PBS’ Need to Know.

Arriving at Newsweek as a writer in 1995, he became National Affairs Editor that year, was named Managing Editor in 1998 and served as Editor from 2006 until September 2010. In May 2010 Meacham began co-anthorng PBS’s Need To Know, a weekly primetime news and public affairs series covering the economy, politics, the environment and energy, health, national security, and culture. As Executive Vice President and Executive Editor at the Random House Publishing Group, Meacham focuses on acquiring works of history, religion and biography and advising on a broad array of publishing opportunities, including digital initiatives.

His book American Lion: Andrew Jackson in the White House was published by Random House in November 2008. It debuted at #2 on The New York Times bestseller list and became a Times Notable Book. On April 20, 2009, American Lion was awarded the Pulitzer Prize for biography.


Born in Chattanooga in 1969, Meacham holds a B.A. in English Literature from The University of the South in Sewanee, Tennessee. He now serves on the university’s governing Board of Regents. He is a “Global Leader for Tomorrow” of the World Economic Forum in Davos, Switzerland and a member of the Council on Foreign Relations. He is a communicant of St. Thomas Episcopal Church Fifth Avenue, where he serves on the Vestry of the 180-year-old parish, and is a member of the Vestry of Trinity Church Wall Street. In 2005, he was awarded an honorary Doctor of Humane Letters degree from the Berkeley Divinity School at Yale University and holds three other honorary doctorates.

Meacham and his wife, Keith, the director of development at Harlem Day Charter School, live in New York City with their three children.
A one-of-a-kind commander with a remarkable record of achievement, General Stanley McChrystal is widely praised for creating a revolution in warfare that fused intelligence and operations. A four-star general, he is the former commander of US and international forces in Afghanistan and the former leader of Joint Special Operations Command (JSOC), which oversees the military’s most sensitive forces. McChrystal’s leadership of JSOC is credited with the December 2003 capture of Saddam Hussein and the June 2006 location and killing of Abu Musab al-Zarqawi, the leader of al-Qaeda in Iraq.

Join us for a Book Signing!  
Sunday, October 2 at 6:00 PM 
Grand Ballroom Foyer, Level 3

Sixth Annual John Thompson History of Medicine Lecture 
General (Ret.) Stanley McChrystal 
Former Commander of US and International Forces in Afghanistan 

Sunday, October 2 5:40 – 6:00 PM 
Maintaining Expertise in a Complex and Changing Environment

Peter C. Burger, MD, was born in New Jersey, grew up in Chicagoland and attended Oberlin College in Ohio, graduating in 1962. He graduated from Northwestern University Medical School in Chicago, in 1966 where he completed a memorable rotation on the Neurosurgery Service under Dr. Paul C. Bucy. After a rotating internship at Los Angeles County General Hospital/University of Southern California Medical Center and a two-year tour in the military, as a general medical officer at Sheppard Air Force Base in Wichita Falls, TX, he decided on pathology as a specialty and began a four year combined residency in anatomic pathology and fellowship in neuropathology at Duke University Medical Center. Completing in 1973, he then assumed a faculty position he held for twenty years. He and his wife Paula then accepted positions at Johns Hopkins University, Dr. Burger as Professor of Pathology, Oncology, and Neurosurgery.

Gerald Imber, MD, is a well known plastic surgeon and authority on cosmetic surgery, and directs a private clinic in Manhattan. An early proponent of prevention and minimally invasive procedures, he has devised many popular anti-aging techniques, and is attending surgeon at New York Presbyterian Hospital and assistant clinical professor of surgery at Weill-Cornell School of Medicine.

Dr. Imber has published many scientific papers and is a regular lecturer at professional meetings. He is also the author of a number of “beauty books” and has written on many subjects for varied publications such as Departures, and The Wall Street Journal, and appears regularly on network television. His biography, Genius on the Edge: The Bizarre Double Life of Dr. William Stewart Halsted, is an illuminating biography of a complex and troubled man whose brilliance we continue to benefit from today.
Roger Goodell is the eighth chief executive in the NFL’s 90-year history. As the NFL continues to grow in popularity, Commissioner Goodell has focused his priorities on strengthening the game and all 32 NFL franchises through innovation and communication while addressing a wide range of issues, including player health and safety, the medical needs of retired players, personal conduct, revenue sharing, stadium construction, media innovation, and international development.

During his 24-year career in the NFL, Goodell was instrumental in many league accomplishments including expansion, realignment, and stadium development. He directed the dramatic transformation and growth of the NFL’s business units, played a lead role in the launch of the NFL Network, and was a key member of the negotiating team that produced the NFL’s television agreements.

Goodell graduated magna cum laude from Washington & Jefferson College in Washington, Pennsylvania in 1981 with a degree in economics and received the school’s Walter Hudson Baker Prize for excellence in economics.

Story Landis, PhD, is Director of the National Institute for Neurological Disorders and Stroke (NINDS) which funds and conducts research aimed at reducing the burden of neurological disorders, and Chair of the NIH Stem Cell Task Force. She received her undergraduate degree from Wellesley College and her PhD from Harvard University. After faculty appointments at Harvard and Case Western Reserve University, she joined NINDS in 1995 as Scientific Director of the intramural program. She is an elected fellow of the Academy of Arts and Sciences, the American Association for the Advancement of Science, the Institute of Medicine, and the American Neurological Association and in 2002 was elected President of the Society for Neuroscience.

Charles J. Limb, MD, is an Associate Professor at the Johns Hopkins School of Medicine in the Department of Otolaryngology-Head and Neck Surgery, where he specializes in neurotology and skull base surgery. He is also a Faculty Member at the Peabody Conservatory of Music. He completed his undergraduate degree at Harvard University and his medical degree at Yale University School of Medicine, followed by surgical training at Johns Hopkins Hospital. His current areas of research focus on the study of the neural basis of musical creativity. His work has been featured by CNN, National Public Radio, TED, New York Times, Library of Congress, Discovery Channel, American Museum of Natural History and the Baltimore Symphony Orchestra.
Jeffrey Kahane has established an international reputation as a truly versatile artist, recognized for his mastery of a diverse repertoire. Since making his Carnegie Hall debut in 1983, he has given recitals in many of the nation’s major music centers and has appeared as a soloist with major orchestras around the world. Currently in his 14th season as Music Director of the Los Angeles Chamber Orchestra, he has received much recognition for his innovative programming and commitment to education and community involvement and in 2007 received ASCAP Awards for Adventurous Programming.

A graduate of the San Francisco Conservatory of Music, Mr. Kahane was the First Prize winner at the 1983 Rubinstein Competition, a finalist at the 1981 Van Cliburn Competition, recipient of a 1983 Avery Fisher Career Grant and the first Andrew Wolf Chamber Music Award in 1987.

Margaret Batjer made her first solo appearance at the age of 15 with the Chicago Symphony in Gian Carlo Menotti’s Violin Concerto. Since then, she has been re-engaged by the Chicago Symphony, as well as the Philadelphia and New York string orchestras, the St. Louis, Seattle, San Jose and Dallas symphonies, the Chamber Orchestra of Europe, the Prague Chamber Orchestra, the Halle Symphony Orchestra and the Berlin Symphony Orchestra.

Since 1998, Batjer she has served as concertmaster of the Los Angeles Chamber Orchestra and in 2005 joined the faculty of the Thornton School of Music at the University of Southern California. In 2000, she and Jeffrey Kahane inaugurated LACO’s Conversations series, performing the complete cycle of Beethoven’s sonatas for violin and piano at LA’s Zipper Concert Hall.

Leigh R. Hochberg, MD, PhD, received his Bachelors in Science with Honors in Neural Science at Brown University. During his MD and PhD research at Emory University he studied motor cortical plasticity, and with Donald Humphrey was the first to use cortical recordings from chronically implanted electrodes in macaques to drive a robot wrist. After residency and chief residency in Neurology at Massachusetts General Hospital/Brigham and Women’s Hospital/Harvard Medical School, Dr. Hochberg stayed on as a fellow in Stroke and Neurocritical Care.

Dr. Hochberg’s research focuses on the development and testing of implanted neural interfaces to help people with paralysis and other neurologic disorders and is supported by numerous career development awards. He is the IDE Sponsor-Investigator and principal clinical investigator of the pilot clinical trials of the BrainGate2 Neural Interface System, maintains clinical duties on the Acute Stroke and Neurocritical Care Services at the MGH and Brigham and Women’s Hospital; Associate Professor of Engineering, Brown University; Investigator, Center for Restorative and Regenerative Medicine, Department of Veterans Affairs, Providence VA Medical Center; and Visiting Associate Professor of Neurology at Harvard Medical School.
Geoffrey S.F. Ling, MD, PhD, FAAN, is Professor and Interim Chairman of Neurology at the Uniformed Services University of the Health Sciences (USUHS) in Bethesda, Maryland, Director of Neuro-Critical Care at Walter Reed Army Medical Center (WRAMC) in Washington, DC and attending neuro-critical care physician at Johns Hopkins Hospital in Baltimore, MD. He is an active duty Colonel in the US Army.

He is the senior neuro-critical care specialist in the Dept of Defense (DoD) and the first for the US Army. In this capacity, he has been deployed to both Afghanistan (2003) and Iraq (2005). As a member of the Joint Chiefs of Staff’s Gray Team, he was sent on shorter missions to the war theater (2009, 2011) where he contributed to the development of the military’s continuum of medical care for traumatic brain injury. This is the first system wide approach to clinically managing this disease. He is a member of the American Neurological Association, a fellow of the American Academy of Neurology, a member of the Order of Military Medical Merit and is ‘A’ designated in his military medical specialty.

Dr. Ling has received numerous national awards and has published over 125 peer-reviewed journal articles, reviews and book chapters, including the traumatic brain injury chapter in Cecil’s Textbook of Medicine, the VA-DoD Clinical Practice Guidelines for mild TBI/Concussion and Guidelines for the Field Management of Combat Related Head Trauma.

COL Ling is also a program manager with the Defense Advanced Research Projects Agency (DARPA) and was the agency’s Program Manager of the Year (2009). His portfolio of research programs focuses on restoring injured warfighters. His most notable programs are PREventing Violent Explosive Neuro Trauma (PREVENT), Revolutionizing Prosthetics and Predicting Health and Disease (PHD). PREVENT is elucidating the underlying mechanisms by which explosive blast injures the brain.

Author and commentator, Frank Deford is among the most versatile of American writers. His work has appeared in virtually every medium. The author of sixteen books, his most recent, Bliss, Remembered, is a love story set at the 1936 Berlin Olympics and in World War II.

On radio, Deford may be heard as a commentator every Wednesday on Morning Edition on National Public Radio and, on television, he is a regular correspondent on the HBO show, RealSports With Bryant Gumbel. In magazines, he is Senior Contributing Writer at Sports Illustrated.

Moreover, two of Deford’s books – the novel, Everybody’s All-American, and Alex: The Life Of A Child, his memoir about his daughter who died of cystic fibrosis – have been made into movies. Another of his books, Casey On The Loose, is being turned into a Broadway musical.

As a journalist, Deford has been elected to the Hall of Fame of the National Association of Sportscasters and Sportswriters. Six times Deford was voted by his peers as US Sportswriter of The Year. The American Journalism Review has likewise cited him as the nation’s finest sportswriter, and twice he was voted Magazine Writer of The Year by the Washington Journalism Review.

Deford has also been presented with the National Magazine Award for profiles, a Christopher Award, and journalism Honor Awards from the University of Missouri and Northeastern University, and he has received many honorary degrees. The Sporting News has described Deford as “the most influential sports voice among members of the print media,” and the magazine GQ has called him, simply, “the world’s greatest sportswriter.” In broadcast, Deford has won both an Emmy and a George Foster Peabody Award.

For sixteen years, Deford served as national chairman of the Cystic Fibrosis Foundation, and he remains chairman emeritus. He resides in Westport, Connecticut with his wife, Carol. They have two grown children – a son, Christian, and a daughter, Scarlet. A native of Baltimore, Deford is a graduate of Princeton University, where he has taught in American Studies.

Stay connected at http://m.cns.org
Section Representatives
Council of State Neurosurgical Societies
Michael P. Steinmetz

Section on Cerebrovascular Surgery
Nicholas Bambakidis
Ketan R. Bulsara

Section on Disorders of the Spine and Peripheral Nerves
Frank La Marca
Michael Y. Wang

Section on Neurotrauma and Critical Care
Eve C. Tsai

Section on Pediatric Neurological Surgery
Mark D. Krieger

Section on Pain
Alon Y. Mogilner

Section on Stereotactic and Functional Neurosurgery
Aviva Aboch

Section on Tumors
Frederick F. Lang

Information Technology Advisory Committee
Brian T. Ragel
Michael P. Steinmetz

Section Sessions
Mark D. Krieger, Co-Chair
Julie G. Pilitsis, Co-Chair

Practical Courses
Ashok R. Ashagiri, Co-Chair
Vinay Deshmukh, Co-Chair

Luncheon Seminars
Costas G. Hadjiyapanis, Co-Chair
Odette Harris, Co-Chair

Evening Sessions
Zoher Ghogawala, Co-Chair
James K. Liu, Co-Chair
James S. Harrop
Ashwini D. Sharan

Special Courses
Aviva Aboch, Co-Chair
Bernard R. Bendok, Co-Chair

3-D Video Presentations
Frank S. Bishop, Co-Chair
Steven N. Kalkanis, Co-Chair

Live Surgery Symposium
Brian T. Ragel, Chairman

Resident SANS Challenge
Zachary N. Litvack, Co-Chair
Jonathan D. Sherman, Co-Chair

Moderator Committee
Brian Lim Hoh, Chairman

Sergeant At Arms
Nicholas J. Szerlip, Chairman

Resident Liaison
Gautam U. Mehta, Chairman

Affiliates Liaison
Zoher Ghogawala, Chairman

CME/Education Chair
Jamie S. Ullman

Knowledge Gap Committee
Zoher Ghogawala, Chairman
Holly Gilmer
Brian Lim Hoh
Steven Kalkanis
Nader Pouratian
Clemens Schirmer
Ed Smith
Marjorie Wang

Auxiliary Program President
Gale England, MD

Allied Health Care
CME Liaison
Andrea Strayer, MSN, APNP, CNRN
Christopher C. Getch, MD
President

Christopher E. Wolf, MD
President-Elect

Saleem I. Abdulrauf, MD, FACS
Vice-President

Nathan R. Selden, MD, PhD, FACS, FAAP
Secretary

Daniel K. Resnick, MD
Treasurer

Gerald E. Rodts, Jr., MD
Past President

Front Row:
Ali R. Rezai, MD
Russell L. Lonser, MD
Nathan R. Selden, MD, PhD, FACS, FAAP
Daniel K. Resnick, MD
Christopher C. Getch, MD
Saleem I. Abdulrauf, MD, FACS

Christopher E. Wolf, MD
Gerald E. Rodts, Jr., MD
Jamie Sue Ullman, MD, FACS
Ashwini Dayal Sharan, MD

Michael P. Steinmetz, MD
Ganesh Rao, MD
Brian T. Ragel, MD
James S. Harrop, MD, FACS
Ricardo J. Komotar, MD
Mark E. Linskey, MD
Ashok R. Asthagiri, MD

Zoher Ghogawala, MD
Elad I. Levy, MD, FACS, FAHA
Alan M. Scarrow, MD, JD

Back Row:
Catherine A. Mazzola, MD
Steven N. Kalkanis, MD

Second Row:
Jason P. Sheehan, MD, PhD, FACS

Not Pictured:
Anil Nanda, MD, FACS
2011 STANDING COMMITTEES

Awards Committee
Gerald E. Rodts, Jr., Chair
P. David Adelson
Anthony L. Asher

Bylaws Committee
Elad I. Levy, Chair

Clinical Neurosurgery Editor Committee
Gerald A. Grant, Editor
Todd C. Hankinson
Robert A. Mericle

Compliance and Ethics Committee Roster
Alan M. Scarrow, Chair
Richard W. Byrne
E. Hunter Dyer
Richard G. Fessler
Christopher C. Getch
Elad I. Levy
Gregory J. Przybylski
John H. Sampson
Gary R. Simonds

Congress Quarterly Editorial Board
James S. Harrop, Editor
Aviva Abosch
Edward C. Benzel
Nicholas M. Boulos
L. Fernando Gonzalez
Costas George
Hadjipanayis
Zachary N. Litvack
Andre Machado
Srinivas K. Prasad
Charles J. Prestigiacomo
Alfredo Quinones-Hinojosa
Joel D. MacDonald
Henry H. Woo
Daniel L. Surdell
Michael P. Steinmetz
Edward R. Smith
Adnan Hussain Siddiqui
Joshua M. Rosenow
Howard A. Riina
Vikram C. Prabhu
Elad I. Levy
James S. Harrop
Odette Harris
Steven N. Kalkanis
Mark D. Krieger
John S. Kuo
Elad I. Levy
Zachary N. Litvack
Russell R. Lonser
Joel D. MacDonald
Allen H. Maniker
Catherine A. Mazzola
Alon Y. Mogilner
Shaun T. O’Leary
Nader Pouratian
Srinivas K. Prasad
Stacey Charlene Quintero Wolfe
Brian T. Ragel
Patricia B. Raikin
Ganesh Rao
Daniel K. Resnick
Charles L. Rosen
Charles A. Sansur
Alan M. Scarrow
Clemens M. Schirmer
Richard P. Schlenk
Nathan R. Selden
Ashwini Dayal Sharan
Jason P. Sheehan
Jonathan D. Sherman
Edward R. Smith
Robert M. Starke
Michael F. Steinmetz
Philip V. Theodosopoulos
Roland A. Torres
Marjorie C. Wang
Michael Y. Wang
Christopher E. Wolfia
A. Samy K. Youssef

Fellowsships Committee
Steven N. Kalkanis, Chair
Michele Renee Aizenberg
William S. Anderson
Bernard R. Bendok
Thomas C. Chen
Carlos A. David
Ricardo Jorge Komotar
James W. Leiphart
Elad I. Levy
J D. Mocco
Vikram C. Prabhu
Howard A. Riina
Joshua M. Rosenow
Adnan Hussain Siddiqui
Edward R. Smith
Michael P. Steinmetz
Daniel L. Surdell
Erol Vezenedaroglu
Henry W. Woo

Finance Committee
Daniel K. Resnick, Chair
Christopher C. Getch
Joel D. MacDonald
Gerald E. Rodts, Jr.
Nathan R. Selden

Future Meeting Sites Committee
Michael P. Steinmetz, Chair

Historian and Archives Committee
Issam A. Awad, Chair

Information and Technology Committee
Michael P. Steinmetz, Chair
Brian T. Ragel, Vice Chair
Samuel Robert Browd
Joseph S. Cheng
Nicholas Frank Marko
Ganesh Rao
Ashwini Dayal Sharan
Jamie Sue Ullman

International Division
Salem A. Abdulfaraj, Chair
P. David Adelson
Luis Alencar Burrrum
Borba
Jeroen R. Coppens
Aneela Darbar
Ian F. Dunn
Kurt M. Eichholz
Samer K. Elbabaa
Gerald A. Grant
Richard A. Hanel
Brian Lim Holt
James K. Liu
Yedathore Mohan
Anil Nanda
Mika Risto Niemela
Tanya M. Quinn

Membership Committee
Ashok Rajapaksa Ashagirig, Chair
Nicholas M. Boulos
Thomas C. Chen
E. Antonio Chiocca
E. Sandra Connolly
R. Webster Crowley
Richard G. Ellenbogen
Ashwini Dayal Sharan
Jamie Sue Ullman

Professional Conduct Committee
Gerald E. Rodts, Jr., Chair
A. Leland Albright
Gary M. Bloomgardan
Guy L. Clifton
James M. Ecklund

Publications Committee
James S. Harrop, Chair
Zohar Ghogawala
Gerald A. Grant
Nelson M. Oysikku
Brian T. Ragel
Jamie Sue Ullman

Research Committee
Ashok Rajapaksa Ashagirig, Chair
Nicholas M. Boulos
Thomas C. Chen
E. Antonio Chiocca
E. Sandra Connolly
R. Webster Crowley
Richard G. Ellenbogen
Zohar Ghogawala
Robert E. Gross
Murat Gunel
Guy M. McInis
John H. Park
John H. Sampson
Jonas Sheehan
Nicholas Theodore
Michael A. Vogelbaum
Edie E. Yousouf

Resident Committee
Catherine A. Mazzola, Co-Chair
Ricky Madhok, Co-Chair

SANS Lifelong Learning Committee
Jason P. Sheehan, Chair
Ashok Rajapaksa Ashagirig, Vice Chair
Osama Ahmed
Wendy Armstrong
Gordon H. Baltuch
Garri Barkhoudarian
Samuel Robert Browd
John Chi
E. Sandra Connolly
R. Webster Crowley
Dale Ding
Aaron S. Dumont
Ian F. Dunn
W. Jeffrey Elias
Julie Falardeau
Gregory N. Fuller
Patrik Gabikian
Hugh Garton
Jaime Gasco-Tamarit
Daniel James Guillaume
William L. Hills
Daniel J. Hoh

Strategic Planning Committee
Christopher E. Wolfia, Chair
Christopher C. Getch
Russell R. Lonser
Ganesh Rao
Daniel K. Resnick
Gerald E. Rodts, Jr.
Nathan R. Selden
Jamie Sue Ullman

Web Editorial Board
Brian T. Ragel, Chair
Michael P. Steinmetz, Vice Chair
Samuel Robert Browd
Joseph S. Cheng
Nicholas Frank Marko
Ganesh Rao
Ashwini Dayal Sharan
Jamie Sue Ullman

2011 Standing Committees
### Sections of the AANS/CNS

<table>
<thead>
<tr>
<th>Section</th>
<th>Chair/Leadership</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Section on Cerebrovascular Surgery</strong></td>
<td>E. Sander Connolly, Jr., Chair</td>
</tr>
<tr>
<td></td>
<td>Sepideh Amin-Hanjani, Chair-Elect</td>
</tr>
<tr>
<td></td>
<td>Fady T. Charbel, Vice-Chair</td>
</tr>
<tr>
<td></td>
<td>Sean Lavine, Secretary</td>
</tr>
<tr>
<td></td>
<td>Brian L. Hoh, Treasurer</td>
</tr>
<tr>
<td></td>
<td>Murat Gunel, Past Chair</td>
</tr>
<tr>
<td><strong>Section on Disorders of the Spine and Peripheral Nerves</strong></td>
<td>Christopher E. Wolfla, Chair</td>
</tr>
<tr>
<td></td>
<td>Joseph S. Cheng, Chair-Elect</td>
</tr>
<tr>
<td></td>
<td>Praveen Mummaneni, Secretary</td>
</tr>
<tr>
<td></td>
<td>R. John Hurlbert, Treasurer</td>
</tr>
<tr>
<td></td>
<td>Ziya L. Gokaslan, Past Chair</td>
</tr>
<tr>
<td><strong>Section on Neurotrauma and Critical Care</strong></td>
<td>Shelly D. Timmons, Chair</td>
</tr>
<tr>
<td></td>
<td>Geoffrey T. Manley, Chair-Elect</td>
</tr>
<tr>
<td></td>
<td>Jaime Sue Ullman, Secretary/Treasurer</td>
</tr>
<tr>
<td></td>
<td>Michael G. Fehlings, Past Chair</td>
</tr>
<tr>
<td><strong>Section on Pain</strong></td>
<td>Christopher J. Winfree, Chair</td>
</tr>
<tr>
<td></td>
<td>Julie Pilitsis, Vice-Chair</td>
</tr>
<tr>
<td></td>
<td>Andre Machado, Secretary-Treasurer</td>
</tr>
<tr>
<td></td>
<td>Alon Y. Mogilner, Past Chair</td>
</tr>
<tr>
<td><strong>Section on Pediatric Neurological Surgery</strong></td>
<td>Alan R. Cohen, Chair</td>
</tr>
<tr>
<td></td>
<td>Bruce A. Kaufman, Chair-Elect</td>
</tr>
<tr>
<td></td>
<td>Sarah J. Gaskill, Secretary</td>
</tr>
<tr>
<td></td>
<td>Mark Proctor, Treasurer</td>
</tr>
<tr>
<td></td>
<td>Ann-Christine Duhaime, Past Chair</td>
</tr>
<tr>
<td><strong>Section on Stereotactic and Functional Neurosurgery</strong></td>
<td>Ali R. Rezai, Chair</td>
</tr>
<tr>
<td></td>
<td>Konstantin V. Slavin, Vice-Chair</td>
</tr>
<tr>
<td></td>
<td>Aviva Abosch, Secretary-Treasurer</td>
</tr>
<tr>
<td></td>
<td>Phillip A. Starr, Past Chair</td>
</tr>
<tr>
<td><strong>Section on Tumors</strong></td>
<td>Frederick F. Lang, Jr., Chair</td>
</tr>
<tr>
<td></td>
<td>Frederick Barker, Secretary-Treasurer</td>
</tr>
<tr>
<td></td>
<td>Jeffrey N. Bruce, Past Chair</td>
</tr>
</tbody>
</table>

### AANS/CNS Committees

<table>
<thead>
<tr>
<th>Committee Name</th>
<th>Chair/Leadership</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>AANS/CNS Guidelines Committee</strong></td>
<td>Mark E. Linskey, Chair</td>
</tr>
<tr>
<td><strong>Coding and Reimbursement Committee</strong></td>
<td>R. Patrick Jacob, Chair</td>
</tr>
<tr>
<td><strong>Council of State Neurosurgical Societies</strong></td>
<td>Deborah L. Benzil, Chair</td>
</tr>
<tr>
<td><strong>Committee on Military Neurosurgeons</strong></td>
<td>Michael K. Rosner, Chair</td>
</tr>
<tr>
<td><strong>Drugs and Devices Committee</strong></td>
<td>Richard G. Fessler, Chair</td>
</tr>
<tr>
<td><strong>Emergency Neurosurgical Care Regionalization Task Force</strong></td>
<td>Shelly D. Timmons, Chair</td>
</tr>
<tr>
<td><strong>Quality Improvement Workgroup</strong></td>
<td>John Joseph Knightly, Chair</td>
</tr>
<tr>
<td><strong>Washington Committee for Neurological Surgery</strong></td>
<td>Alex B. Valadka, Chair</td>
</tr>
<tr>
<td></td>
<td>Katie Orrico, Director, Washington Office</td>
</tr>
</tbody>
</table>

### CNS Representatives to Other Organizations

<table>
<thead>
<tr>
<th>Organization Name</th>
<th>Representatives</th>
</tr>
</thead>
<tbody>
<tr>
<td>American Board of Neurological Surgery</td>
<td>Daniel L. Barrow</td>
</tr>
<tr>
<td></td>
<td>Nelson M. Oyesiku</td>
</tr>
<tr>
<td></td>
<td>Craig A. Van Der Veer</td>
</tr>
<tr>
<td>American College of Surgeons</td>
<td>Nelson M. Oyesiku</td>
</tr>
<tr>
<td>ACS Advisory Council for Neurological Surgery</td>
<td>Alex B. Valadka</td>
</tr>
<tr>
<td>Brain Attack Coalition</td>
<td>C. Michael Cawley, III</td>
</tr>
<tr>
<td></td>
<td>Mark N. Hadley</td>
</tr>
<tr>
<td>American Medical Association</td>
<td>Philip W. Tally, Delegate</td>
</tr>
<tr>
<td></td>
<td>Ann R. Stroink, Alternate Delegate</td>
</tr>
<tr>
<td>AMA Young Physicians Committee</td>
<td>David F. Jimenez</td>
</tr>
<tr>
<td>AMA CPT Editorial Panel</td>
<td>Joseph S. Cheng, Advisory</td>
</tr>
<tr>
<td>AMA Relative Value Update Committee (RUC)</td>
<td>John Ratliff, Advisory</td>
</tr>
<tr>
<td>National Institute of Neurological Disorders and Stroke (NINDS)</td>
<td>John K. Park</td>
</tr>
<tr>
<td>Neurovascular Coalition</td>
<td>John A. Wilson</td>
</tr>
<tr>
<td>CNS/ThinkFirst Foundation Liaison</td>
<td>Hugh Garton</td>
</tr>
<tr>
<td>CNS/Washington Committee (CNS Appointee)</td>
<td>Alan M. Scarrow</td>
</tr>
<tr>
<td></td>
<td>Michael P. Steinmetz</td>
</tr>
<tr>
<td></td>
<td>Alex B. Valadka</td>
</tr>
<tr>
<td>Women in Neurosurgery</td>
<td>Aviva Abosch</td>
</tr>
<tr>
<td>World Federation of Neurosurgical Societies</td>
<td>Douglas S. Kondziolkla</td>
</tr>
<tr>
<td></td>
<td>Nelson M. Oyesiku</td>
</tr>
</tbody>
</table>
AWARD WINNERS

Distinguished Service Award Winners

Lycurgus M. Davey 1966
Walter S. Lockhart Jr. 1969
Edward J. Bishop 1970
George Ablin 1971
William S. Coxe 1973
J. F. Ross Fleming 1975
Perry Black 1977
William A. Buchheit 1979
Edwin F. Downing 1980
James E. Schlesinger 1981
Richard Perrin 1984
Edward F. Downing 1985
Charles L. Plante 1986
Steven L. Giannotta 1987
Roy W. Black 1988
William A. Buchheit 1989
J. F. Graham 1990
Nayef R. F. Al-Rodhan 1991
Martin G. Lassen 1992
Martin E. Weinand 1993
Kadir Erkman 1994
Rajendra S. Mehta 1995
CNS Resident Award Winners

Arthur I. Kobrine 1974
Stephen Brem 1975
Philip H. Gutin 1976
Robert F. Spetzler 1977
Martin G. Lassen, III 1978
George R. Prioleau 1979
Larry V. Carson 1980
Ted S. Keller 1981
Mervin P. Kril 1982
J. F. Graham 1983
Fredric Meyer 1984
Emily D. Friedman 1985
Victoria C. Neave 1986
Lew Disney 1987
Martin E. Weinand 1988
Nayef R.F. Al-Rodhan 1989
Ivar Mendez 1990
Captain Charles Miller 1991
Dante J. Morassutti 1992
Stephen E. Doran 1993
Ennio Antonio Chiozza 1994
Grant P. Sinson 1995
David W. Pincus 1996
Andrew K. Metzger 1997
Robert M. Friedman 1998
Kelly D. Foote 1999
Abhaya Kulkarni 2000
Kadir Erkman 2001
Kadri Tandon 2002
Malini Narayanan 2003
Gabriel C. Tende 2004
Manish K. Aghi 2005
John A. Cowan, Jr. 2006
Betsy D. Hughes 2007
Arnold B. Etame 2008
Douglas J. Cook 2009

CNS Clinical Fellowship Award Winners

Brian Andrews 1987
Charles L. Brach, Jr. 1987
Randall Powell 1987
Eric L. Zager 1988
Jonathan E. Hodes 1989
James T. Rutka 1989
Claudio A. Feler 1990
Mazen Khayata 1990
Prem K. Pillay 1991
Isabelle M. Germano 1992
Howard C. Chandler, Jr. 1993
Nayef Al-Rodhan 1993
Sumit Das 1994
John Day 1994
Rahul Jandial 1995
Dimitris G. Placantonakis 1996
Eric C. Chang 1997
James K. Liu 2005
Alexander M.I. Mason 2005
Sanjay Mongia 2005
Richard Reed 2005
John H. Chi 2006
Andrea Jea 2006
Eric C. Leuthardt 2006
Sharad Rajpal 2006
Gordon T. Sakamoto 2006
Nader Sanai 2006
Eric Stiner 2007
Sumit Das 2007
Johnathan A. Engh 2007
Patrick Hsieh 2007
Deb A. Bhowmick 2008
Sripiros L. Blackburn 2008
Daniel Orringer 2008
Vaninder Chhabra 2007
Isaac Yang 2007
Patrick Hsieh 2008
Iyla Laufer 2008
David W. Cadotte 2008
Chiocca 1994

Past CNS Founders’ Laurel Recipients

David G. Piepras 2004
John A. Jane, Sr. 2005
Albert L. Rhoton, Jr. 2006
Tetsuo Kanno 2007
David G. Kline 2008
L. Nelson Hopkins, III 2009
Robert F. Spetzler 2010

CNS Clinical Investigation Fellowship Award Winners

P. David Adelson 1998
Peter C. Gerszten 1999
Abhaya Kulkarni 2000
Peter D. Angervine 2001
Masaki Oishi 2002
Vishal C. Gala 2003
J. D. Mocco 2004
Joshua Robert Dusick 2005
Eric S. Stiner 2006
Rahul Jandial 2007
Edward F. Chang 2008
Eric C. Chang 2009

www.cns.org
## ANNUAL MEETING HISTORY

### Past Presidents of the CNS

<table>
<thead>
<tr>
<th>President</th>
<th>Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Elmer S. Schultz*</td>
<td>1951</td>
</tr>
<tr>
<td>Hendrik J. Svien*</td>
<td>1952</td>
</tr>
<tr>
<td>Nathaniel R. Hollister</td>
<td>1953</td>
</tr>
<tr>
<td>James R. Gay</td>
<td>1954</td>
</tr>
<tr>
<td>Donald B. Sweeney*</td>
<td>1955</td>
</tr>
<tr>
<td>Bland W. Cannon*</td>
<td>1956</td>
</tr>
<tr>
<td>Frederick C. Rehfeldt*</td>
<td>1957</td>
</tr>
<tr>
<td>Raymond K. Thompson*</td>
<td>1958</td>
</tr>
<tr>
<td>Philip D. Gordy</td>
<td>1959</td>
</tr>
<tr>
<td>Thomas M. Marshall</td>
<td>1960</td>
</tr>
<tr>
<td>Martin P. Sayers</td>
<td>1961</td>
</tr>
<tr>
<td>Richard L. DeSaussure*</td>
<td>1962</td>
</tr>
<tr>
<td>A. Roy Tyrer, Jr.*</td>
<td>1963</td>
</tr>
<tr>
<td>Edward C. Weiford*</td>
<td>1964</td>
</tr>
<tr>
<td>Gordon van der Noort*</td>
<td>1965</td>
</tr>
<tr>
<td>William H. Mosberg, Jr.*</td>
<td>1966</td>
</tr>
<tr>
<td>John R. Russell*</td>
<td>1967</td>
</tr>
<tr>
<td>John Shillito, Jr.</td>
<td>1968</td>
</tr>
<tr>
<td>Paul C. Sharkey*</td>
<td>1969</td>
</tr>
<tr>
<td>John M. Thompson*</td>
<td>1970</td>
</tr>
<tr>
<td>Donald F. Dohn</td>
<td>1971</td>
</tr>
<tr>
<td>John N. Meagher*</td>
<td>1972</td>
</tr>
<tr>
<td>Bernard S. Patrick</td>
<td>1973</td>
</tr>
<tr>
<td>George T. Tindall</td>
<td>1974</td>
</tr>
<tr>
<td>James T. Robertson</td>
<td>1975</td>
</tr>
<tr>
<td>Robert G. Ojemann*</td>
<td>1976</td>
</tr>
<tr>
<td>Bruce F. Sorensen</td>
<td>1977</td>
</tr>
<tr>
<td>Albert L. Rhoton, Jr.</td>
<td>1978</td>
</tr>
<tr>
<td>David L. Kelly, Jr.</td>
<td>1979</td>
</tr>
<tr>
<td>Robert H. Wilkins</td>
<td>1980</td>
</tr>
<tr>
<td>J. Fletcher Lee</td>
<td>1981</td>
</tr>
<tr>
<td>Donald H. Stewart, Jr.</td>
<td>1982</td>
</tr>
<tr>
<td>John M. Tew, Jr.</td>
<td>1983</td>
</tr>
<tr>
<td>Edward R. Laws, Jr.</td>
<td>1984</td>
</tr>
<tr>
<td>Robert A. Ratcheson</td>
<td>1985</td>
</tr>
<tr>
<td>Joseph C. Maroon</td>
<td>1986</td>
</tr>
<tr>
<td>Donald O. Quest</td>
<td>1987</td>
</tr>
<tr>
<td>Christopher B. Shields</td>
<td>1988</td>
</tr>
<tr>
<td>J. Michael McWhorter*</td>
<td>1989</td>
</tr>
<tr>
<td>Hal L. Hankinson</td>
<td>1990</td>
</tr>
<tr>
<td>Michael Salzman</td>
<td>1991</td>
</tr>
<tr>
<td>William F. Chandler</td>
<td>1992</td>
</tr>
<tr>
<td>Arthur L. Day</td>
<td>1993</td>
</tr>
<tr>
<td>Richard A. Roski</td>
<td>1994</td>
</tr>
<tr>
<td>Ralph G. Dacey Jr.</td>
<td>1995</td>
</tr>
<tr>
<td>Stephen J. Haines</td>
<td>1996</td>
</tr>
<tr>
<td>Marc R. Mayberg</td>
<td>1997</td>
</tr>
<tr>
<td>William A. Friedman</td>
<td>1998</td>
</tr>
<tr>
<td>H. Hunt Batjer</td>
<td>1999</td>
</tr>
<tr>
<td>Daniel L. Barrow</td>
<td>2000</td>
</tr>
<tr>
<td>Issam A. Awad</td>
<td>2001</td>
</tr>
<tr>
<td>Stephen M. Papadopoulos</td>
<td>2002</td>
</tr>
<tr>
<td>Mark N. Hadley</td>
<td>2003</td>
</tr>
<tr>
<td>Vincent C. Traynelis</td>
<td>2004</td>
</tr>
<tr>
<td>Nelson M. Oyesiku</td>
<td>2005</td>
</tr>
<tr>
<td>Richard G. Ellenbogen</td>
<td>2006</td>
</tr>
<tr>
<td>Douglas Kondziolka</td>
<td>2007</td>
</tr>
<tr>
<td>Anthony L. Asher</td>
<td>2008</td>
</tr>
<tr>
<td>P. David Adelson</td>
<td>2009</td>
</tr>
<tr>
<td>Gerald E. Rotds, Jr.</td>
<td>2010</td>
</tr>
</tbody>
</table>

*indicates deceased

### CNS Annual Meeting Past Honored Guests

<table>
<thead>
<tr>
<th>Guest</th>
<th>Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Herbert Olivecrona*</td>
<td>1952</td>
</tr>
<tr>
<td>Sir Geoffrey Jefferson*</td>
<td>1953</td>
</tr>
<tr>
<td>Kenneth G. McKenzie*</td>
<td>1954</td>
</tr>
<tr>
<td>Carl W. Rand*</td>
<td>1955</td>
</tr>
<tr>
<td>Wilder G. Penfield*</td>
<td>1956</td>
</tr>
<tr>
<td>Francis Grant*</td>
<td>1957</td>
</tr>
<tr>
<td>A. Earl Walker*</td>
<td>1958</td>
</tr>
<tr>
<td>William J. German*</td>
<td>1959</td>
</tr>
<tr>
<td>Paul C. Bucy*</td>
<td>1960</td>
</tr>
<tr>
<td>Eduard A.V. Busch*</td>
<td>1961</td>
</tr>
<tr>
<td>Bronson S. Ray*</td>
<td>1962</td>
</tr>
<tr>
<td>James L. Poppen*</td>
<td>1963</td>
</tr>
<tr>
<td>Edgar A. Kahn*</td>
<td>1964</td>
</tr>
<tr>
<td>James C. White*</td>
<td>1965</td>
</tr>
<tr>
<td>Hugo Krayenbühl*</td>
<td>1966</td>
</tr>
<tr>
<td>W. James Gardner*</td>
<td>1967</td>
</tr>
<tr>
<td>Norman M. Dott*</td>
<td>1968</td>
</tr>
<tr>
<td>Wallace B. Hambly*</td>
<td>1969</td>
</tr>
<tr>
<td>Barnes Woodhall*</td>
<td>1970</td>
</tr>
<tr>
<td>Elisha S. Gurdjian*</td>
<td>1971</td>
</tr>
<tr>
<td>Francis Murphy*</td>
<td>1972</td>
</tr>
<tr>
<td>Henry G. Schwartz*</td>
<td>1973</td>
</tr>
<tr>
<td>Guy L. Odom*</td>
<td>1974</td>
</tr>
<tr>
<td>William H. Sweet*</td>
<td>1975</td>
</tr>
<tr>
<td>Lyle A. French*</td>
<td>1976</td>
</tr>
<tr>
<td>Richard C. Schneider*</td>
<td>1977</td>
</tr>
<tr>
<td>Charles G. Drake*</td>
<td>1978</td>
</tr>
<tr>
<td>Frank H. Mayfield*</td>
<td>1979</td>
</tr>
<tr>
<td>Eben Alexander, Jr.*</td>
<td>1980</td>
</tr>
<tr>
<td>J. Garber Galbraith*</td>
<td>1981</td>
</tr>
<tr>
<td>Keiji Sano</td>
<td>1982</td>
</tr>
<tr>
<td>C. Miller Fisher</td>
<td>1983</td>
</tr>
<tr>
<td>Hugo V. Rizzoli</td>
<td>1984</td>
</tr>
<tr>
<td>Walter E. Dandy*</td>
<td>1984</td>
</tr>
<tr>
<td>Sidney Goldring*</td>
<td>1985</td>
</tr>
<tr>
<td>M. Gazi Yasargil</td>
<td>1986</td>
</tr>
<tr>
<td>Thomas W. Langfitt*</td>
<td>1987</td>
</tr>
<tr>
<td>Lindsay Symon</td>
<td>1988</td>
</tr>
<tr>
<td>Thoralf M. Sundt, Jr.*</td>
<td>1989</td>
</tr>
<tr>
<td>Charles B. Wilson</td>
<td>1990</td>
</tr>
<tr>
<td>Bennett M. Stein</td>
<td>1991</td>
</tr>
<tr>
<td>Robert G. Ojemann*</td>
<td>1992</td>
</tr>
<tr>
<td>Albert L. Rhoton, Jr.</td>
<td>1993</td>
</tr>
<tr>
<td>Robert F. Spetzler</td>
<td>1994</td>
</tr>
<tr>
<td>John A. Jane, Sr.</td>
<td>1995</td>
</tr>
<tr>
<td>Peter J. Jannetta</td>
<td>1996</td>
</tr>
<tr>
<td>Nicholas T. Zervas</td>
<td>1997</td>
</tr>
<tr>
<td>John M. Tew, Jr.</td>
<td>1998</td>
</tr>
<tr>
<td>Duke S. Samson</td>
<td>1999</td>
</tr>
<tr>
<td>Edward R. Laws, Jr.</td>
<td>2000</td>
</tr>
<tr>
<td>Michael L.J. Apuzzo</td>
<td>2001</td>
</tr>
<tr>
<td>Volker K.H. Sonntag</td>
<td>2002</td>
</tr>
<tr>
<td>Julian T. Hoff*</td>
<td>2003</td>
</tr>
<tr>
<td>Arnold H. Menezes</td>
<td>2004</td>
</tr>
<tr>
<td>Roberto C. Heros</td>
<td>2005</td>
</tr>
<tr>
<td>Peter M. Black</td>
<td>2006</td>
</tr>
<tr>
<td>L. Dade Lunsford</td>
<td>2007</td>
</tr>
<tr>
<td>William F. Chandler</td>
<td>2008</td>
</tr>
<tr>
<td>James T. Rutka</td>
<td>2009</td>
</tr>
<tr>
<td>Daniel L. Barrow</td>
<td>2010</td>
</tr>
</tbody>
</table>

*indicates deceased

### Past Annual Meeting Sites

- St. Louis (Founders’ Meeting) 1951
- Memphis 1951
- Chicago 1952
- New Orleans 1953
- New York 1954
- Los Angeles 1955
- Chicago 1956
- Washington, DC 1957
- San Francisco 1958
- Miami 1959
- Chicago 1960
- New York 1961
- Houston 1962
- Denver 1963
- Miami 1964
- Chicago 1965
- San Juan 1966
- San Francisco 1967
- Toronto 1968
- Boston 1969
- St. Louis 1970
- Miami 1971
- Denver 1972
- Honolulu 1973
- Vancouver 1974
- Atlanta 1975
- New Orleans 1976
- San Francisco 1977
- Washington, DC 1978
- Las Vegas 1979
- Houston 1980
- Los Angeles 1981
- Toronto 1982
- Chicago 1983
- New York 1984
- Honolulu 1985
- New Orleans 1986
- Baltimore 1987
- Seattle 1988
- Atlanta 1989
- Los Angeles 1990
- Orlando 1991
- Washington, DC 1992
- Vancouver 1993
- Chicago 1994
- San Francisco 1995
- Montreal 1996
- New Orleans 1997
- Seattle 1998
- Boston 1999
- San Antonio 2000
- San Diego 2001
- Philadelphia 2002
- Denver 2003
- San Francisco 2004
- Boston 2005
- Chicago 2006
- San Diego 2007
- Orlando 2008
- New Orleans 2009
- San Francisco 2010
FELLOWSHIPS

Kimon Bekelis, MD
CNS Dandy Fellowship

Kimon Bekelis, MD, is currently a second year neurosurgery resident at Dartmouth-Hitchcock Medical Center. After graduating summa cum laude from the University of Athens Medical School he spent a year as a postdoctoral research fellow in neurosurgery at Johns Hopkins Hospital. He has been involved in several projects on non-invasive vascular imaging and localized delivery of molecules to the CNS, as well as in prospective studies on intra and extra cranial cerebrovascular pathology. Dr. Bekelis has a solid interest in cerebrovascular disease and plans to follow a career in open and endovascular academic neurosurgery. With the support of the Dandy Fellowship he will be studying, at Dartmouth, the feasibility of using non-invasive imaging techniques (including PET and nanoparticle assisted MRI scans) in detecting cerebral aneurysm inflammation preoperatively.

Andrea J. Chamczuk, MSc, MD
CNS Cushing Fellowship

Andrea Chamczuk, MSc, MD, originally from Toronto, Canada, completed her undergraduate training at McMaster University and her MSc at the University of Toronto. She obtained her medical degree at Saba University, where she was awarded the distinction of the Saba University Foundation Award. Dr. Chamczuk is currently completing her neurosurgical residency at the University of Buffalo, where she has been granted the UB Resident of the Year Award. She has published and presented her work on neuroendoscopy at multiple national meetings. Against a background of an outstanding introduction to neuroendoscopy, under the tutelage of Drs. W. Grand and J. Leonardo in Buffalo, she will undertake a six month neuroendoscopy clinical fellowship, under the direction of Dr. J.A. Grotenhuis in The Netherlands and Dr. M. Bettag in Germany.

Victor Chang, MD
CNS Spine Fellowship

Victor Chang, MD, is from Houston, Texas. After graduating from high school he enrolled at Stanford University where he obtained a bachelor’s degree in Philosophy and Biology. During his time at Stanford, he was first exposed to neurosurgery and neurosurgical research. From Stanford he went on to attend the University of Michigan Medical School continuing to pursue his interests in neurosurgery, and eventually matched at Henry Ford Hospital in Detroit, Michigan. During his time at Henry Ford, he collaborated with the Herrick-Davis Motion Analysis Laboratory studying the effects of cervical fusion at adjacent segments in post-ACDF patients. Through use of a biplane X-ray system they are able to measure three dimensional motion with the goal of illustrating the biomechanical processes that contribute to adjacent segment disease.

Jonathan Choi, MD
CNS Functional Fellowship

Jonathan Choi, MD, is a fourth year neurosurgery resident at Duke University Medical Center, Durham, NC. He was born in Chicago, IL and grew up in Oklahoma. His undergraduate training was at Massachusetts Institute of Technology where he studied biology. He then attended Duke University for medical school. He was awarded the Talmage Peele award for outstanding neurobiology research as a medical student for work on the relationships between speech and music. Jonathan’s current neurosurgical interests are in deep brain stimulation and in minimally invasive spine surgery. Outside of the hospital and lab, Jonathan enjoys traveling around the world with his fiancée, Wenjing, and spending time with their golden doodle, Plato.

Arthur P. Chou, MD, PhD
CNS Wilder Penfield Fellowship

Arthur Chou, MD, PhD, is currently a third year neurosurgery resident at UCLA. He is originally from Taiwan and grew up in Los Angeles. He received his PhD in neuroscience in 2006 and his MD degree in 2008. He is currently conducting research in neuro-oncology under the mentorship of Dr. Linda Liau at UCLA. After residency, Dr. Chou plans to pursue a career in academic neurosurgery focusing on malignant brain tumors. His recreational interests include cycling, swimming, and snowboarding.

Katharine M. Cronk, MD, PhD
CNS Tumor Fellowship

Katharine Cronk, MD, PhD, received a BS in Chemical Engineering from Columbia University. She later earned a PhD from Albany Medical College, exploring the role of tyrosine kinase receptors in the development of the peripheral nervous system with Dr. Frank Rice. Later, she returned to Columbia Physicians and Surgeons for an MD, during which she worked with Dr. Jeffrey Bruce looking at receptor expression on gliomas as potential pharmaceutical targets. She is currently a PGY-5 at the Barrow Neurological Institute where she is exploring the affects of radiation on the development of white matter progenitor cells using novel techniques in the Barrow Brain Tumor Research Center with Dr. Nader Sanai. She is very grateful to be the recipient of this CNS award.
FELLOWSHIPS

Vassilios G. Dimopoulos, MD
CNS Functional Fellowship

Vassilios Dimopoulos, MD, is currently a fifth year resident in neurosurgery at the University of Rochester. He received his medical degree from the University of Patras in Greece. He served as a flight surgeon in the Hellenic Air Force. Dr. Dimopoulos spent five years as a neurosurgical clinical fellow in the Medical Center of Central Georgia. His research activity has resulted in 26 publications in peer review journals. With this CNS Functional Fellowship, Dr. Dimopoulos plans to study the in vivo role of astrocyte derived adenosine in Deep Brain Stimulation, under the guidance of Dr. Nedergaard and Dr. Huang. Dr. Dimopoulos’ current research interests include DBS effect on tremor, and the role of astrocytes in the pathogenesis of tremor.

Shawn Hervey-Jumper, MD
CNS Wilder Penfield Fellowship

Shawn Hervey-Jumper, MD, is a neurosurgery resident at the University of Michigan. At Oakwood University, he completed a Bachelor’s in Science in Biology before pursuing a Medical Doctorate at The Ohio State University College of Medicine. At Ohio State he was elected into the Alpha Omega Alpha Honor Society and studied WNT signaling in glioblastoma in the laboratory of Dr. Chiocca before graduating Magna Cum Laude. In residency, Dr. Hervey-Jumper became interested in community outreach and translational neuro-oncology. Through local philanthropic support he co-founded the “Medical Mentors Program”, in which elementary classrooms are sponsored and mentored by resident volunteers. With NIH/NCI support, and mentorship from Drs. Karin Muraszko and Xing Fan, he is investigating the role of microRNA deregulation in malignant gliomas with particular interest in their potential as noninvasive tumor biomarkers.

James K. Liu, MD
CNS Tumor Fellowship

James Liu, MD, is currently a sixth year neurosurgical resident at the Cleveland Clinic. He obtained his undergraduate degree in Cell and Molecular Biology from the University of Michigan. He then received his medical degree from Case Western Reserve University, during which time he conducted research using phage display to help create modified viral vectors for targeting neuronal membranes. During his fellowship year, he will utilize phage display techniques to design novel treatment strategies targeting glioblastoma stem cells in the laboratory of Dr. Jeremy Rich in the Department of Stem Cell Biology and Regenerative Medicine. He plans to pursue a fellowship in neurosurgical oncology following the completion of his residency training.

Peter Kan, MD
CNS Vascular Fellowship

Peter Kan, MD, graduated from the University of Toronto School of Medicine and then pursued neurosurgical training at the University of Utah where he also completed a Masters of Public Health. He became a Fellow of the Royal College of Physicians and Surgeons of Canada prior to starting his endovascular fellowship at the University at Buffalo. There Dr. Kan developed a research interest in the application of robotics in endovascular neurosurgery and the use of high-fidelity simulation in endovascular training. Upon the completion of his fellowship, he would like to pursue a career in academic vascular neurosurgery, while keeping an active role in translational and educational research.

Ali K. Ozturk, MD
CNS Vascular Fellowship

Ali K. Ozturk, MD, is currently a sixth year neurosurgery resident at Yale University Department of Neurosurgery. He received his BA degree from Johns Hopkins University, and his MD degree from Yale University School of Medicine. Under the mentorship of Dr. Murat Gunel, he has focused his research on the genetic foundation of vascular diseases of the brain, specifically intracranial aneurysms and cavernous malformations. He is pleased to be the recipient of the 2009-2010 and 2011-2012 CNS cerebrovascular awards.

Timothy R. Smith, MD, PhD
CNS Socioeconomic Fellowship

Timothy Smith, MD, PhD, is currently a fifth year neurosurgery resident at Northwestern University in Chicago. He was born in Tuscola, Illinois and attended the University of Illinois and obtained a BS in Human Physiology. Dr. Smith went on to earn a PhD in Health Science and Policy from The University of California, Irvine, and an MD from UCLA. Most recently, he has just completed an MPH in Quantitative Methods from Harvard University. He believes that the foundation of all clinical practice and health policy should be solid research. His educational pathway has created a profound interest in the socioeconomic aspects of neurological surgery. Specifically, he researches the practice of defensive medicine, and its financial impact on health care.
**Zachary A. Smith, MD**  
**CNS Spine Fellowship**

Zachary Smith, MD, received his undergraduate degree in molecular biology and biochemistry as a Presidential Scholar from Dartmouth College. He then pursued his medical training at UCLA Medical School where he additionally received his neurosurgical degree. At UCLA, he developed his initial interest in minimally invasive spine under the mentorship of Dr. Larry Khoo. He will use the support of the CNS Spine Fellowship to pursue a clinical fellowship in Minimally Invasive and Complex Spine with Dr. Richard G. Fessler at Northwestern Medical Center. In tandem with clinical training, the CNS Spine Fellowship will allow him to pursue a biomechanical research study specifically addressing a comparison of minimally invasive vs. open laminectomy for lumbar decompression. He is grateful for this opportunity provided by the Congress of Neurological Surgeons.

**Monique J. Vanaman, MD**  
**CNS Spine Fellowship**

Monique Vanaman, MD, is currently a third-year neurosurgery resident at the University of Michigan, Ann Arbor. She received her undergraduate degree in women’s studies from the University of California, Los Angeles. She then attended medical school and spent a year as a Doris Duke Clinic Research Fellow at Columbia University. With the support of the CNS Spine Fellowship and the mentorship of Drs. Stephen Sullivan, Paul Park and Frank LaMarca, she will develop and validate a model-based simulator for training residents to perform minimally invasive microdiscectomies.

**Neil Datta**  
**CSNS Medical Student Summer Fellowship in Socioeconomic Research**

Neil Datta is currently a medical student at Boston University School of Medicine (BUSM). He is a devotee of medical sciences, in particular neuroscience and neurosurgery. In fact, he has been involved with movement disorder related research at BUSM and engaged in research regarding cerebral hemorrhages during a 2010 summer research fellowship. During his undergraduate career, he was an editor of multiple science and neurology magazines (e.g. Synapse, The Nerve); he continued his leadership in the neurosciences into medical school by becoming the president of both the Student Interest Group in Neurology (SIGN) and the Clinical Neuroscience Society at Boston University School of Medicine. Now, he seeks to expand his knowledge in neurosurgery and pursue his interest in healthcare reform.

---

**Announcing the 2012-2013 CNS Fellowships!**

Log on to www.cns.org for details and to submit your application. **Deadline: November 30, 2011**
The following companies have provided an educational grant in support of the 2011 CNS Annual Meeting.

- Abbott Vascular
- Codman, a Johnson & Johnson Company
- DePuy Spine, a Johnson & Johnson Company
- Globus
- Integra
- K2M
- Lippincott Williams and Wilkins – WKH
- Stryker
- Synthes Spine

The following companies have provided support for the CNS Practical Courses.

- Ad-Tech Medical Instrument Corporation
- Alpha Omega
- Brainlab, Inc.
- Carl Zeiss Meditec, Inc.
- Codman, a Johnson & Johnson Company
- DePuy Spine, Inc., a Johnson & Johnson Company
- Elekta, Inc.
- Fred Haer Corporation (FHC)
- Globus Medical Inc.
- ImmersiveTouch
- Integra
- Medtronic Navigation
- Medtronic
- Medtronic NT
- MRI Interventions, Inc.
- Nuvasive
- Stryker CMF
- Stryker Neuro, Spine, ENT
- Stryker Spine
- Synthes Anspach
- Synthes CMF
- Synthes Spine
- TrueVision Systems, Inc.
- Varian Medical Systems
CONTINUING MEDICAL EDUCATION

CNS Annual Meeting Objectives

The Congress of Neurological Surgeons exists to enhance health and improve lives worldwide through the advancement of education and scientific exchange in the field of neurosurgery. The CNS Continuing Medical Education (CME) program provides participants with various learning formats to keep current in the field and to 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 not only contribute to lifelong learning, but also demonstrate change and improvement in competence and performance.

At the conclusion of the 2011 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 scientific abstract presentations.
6. Demonstrate change in competence or performance.

Educational Formats

Educational Format Descriptions

The CNS offers sessions in a variety of 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 Practical Courses, Luncheon Seminars and Dinner Seminars, which are available for an additional fee.

Practical Courses

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

★ Practical Courses are offered Saturday, October 1 and Sunday, October 2.

General Scientific Session, Section Session, Special Course, Luncheon Seminar and Dinner Seminar Lectures

Expert lecturers present research, best scientific evidence, and associated outcomes demonstrating 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. They will present basic skills and information you can apply in your daily practice and professional life.

★ General Scientific Sessions, Section Sessions and Special Courses are offered Sunday, October 2 through Thursday, October 6.

★ Luncheon Seminars are offered Monday, October 3 through Wednesday, October 5.

★ Dinner Seminars are offered on Tuesday, October 4 and Wednesday, October 5.

Interactive Discussion with Audience Response Polling during the CNS Consensus Sessions

Consensus Sessions provide an opportunity for expert presentations, discussion, and peer debate on various topics, treatments, guidelines, and solutions. A review of the best evidence-based literature is conducted and then an opportunity is provided to share your perspective on the optimal management of these disorders as a consensus is reached for the best application of surgical strategies in a variety of clinical scenarios.

★ Consensus Sessions are offered on Monday, October 3 and Wednesday, October 5.

Case-Based Education

Challenging neurosurgical cases will be reviewed and discussed in a variety of innovative formats including 3-D Video Presentation, Live Surgical Presentation and Panel Discussions.

★ Monday, October 3, The Art of Managing Complex Cranial Cases: A 3-D Video Presentation.

★ Tuesday, October 4, Unyielding Progress: Carotid Stenting (Findings and Practice) – Live Surgical Presentation during the General Scientific Session.

★ Tuesday, October 4, Operative NEUROSURGERY®.

Original Scientific Program

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

★ Monday, October 3, Oral Presentations by subspecialty and the CNS Neurosurgical Forum.

★ Wednesday, October 5, Oral Presentations in a multidisciplinary session.
CONTINUING MEDICAL EDUCATION

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

AMA Credit Designation Statement
US Physicians: The CNS designates this live activity for a maximum of 40.75 AMA PRA Category 1 Credit(s)™. Physicians should only claim credit commensurate with the extent of their participation in the activity.

CME Credit
The same number of category 1 credits awarded will be applied toward the Continuing Education Award in Neurosurgery.

* A maximum of 21.25 AMA PRA Category 1 Credit(s)™ may be earned for general sessions only.

ALLIED HEALTH PROFESSIONALS: The CNS cannot designate its Annual Meeting as meeting the criteria for credit for nurses and other allied health professionals. For credit that may be acceptable to state medical associations, specialty societies or state boards for medical licensure, please contact those organizations directly.

Additional CME Credits can be earned by attending the following:

Practical Courses
Attendees will receive a maximum of four (4) AMA PRA Category 1 Credits™ for Saturday half-day Practical Courses, a maximum of three-and-a-half (3.5) AMA PRA Category 1 Credits™ for Sunday half-day Practical Courses, and a maximum of seven (7) AMA PRA Category 1 Credits™ for each eligible full-day Sunday Practical Course. Physicians should only claim credit commensurate with the extent of their participation in the activity.

Luncheon Seminars
Attendees will receive a maximum of one-and-a-half (1.5) AMA PRA Category 1 Credits™ for all eligible Luncheon Seminars. Physicians should only claim credit commensurate with the extent of their participation in the activity.

Dinner Seminars
Attendees will receive a maximum of two (2) AMA PRA Category 1 Credits™ for all eligible Dinner Seminars. Physicians should only claim credit commensurate with the extent of their participation in the activity.

Posters
Physicians may claim a maximum of five (5) AMA PRA Category 1 Credits™ directly from the AMA for preparing a poster presentation, which is also included in the published abstracts. Physicians may claim them on their AMA PRA certificate application or apply directly to the AMA for an AMA PRA Category 1 Credits™ certificate.

Claiming CME Credit
Physicians should only claim credit for the number of credits for the learning activities at the Annual Meeting in which they actively participated.

The CME Tracking system, at www.cns.org, lets you create and print a CME certificate immediately following the CNS Annual Meeting, while you are still in Washington, DC or from the convenience of your home or office.

Log in using your last name and the e-mail address with which you registered. You will need to enter the number of hours you are claiming for each session you attended including Practical Courses, Luncheon Seminars, Dinner Seminars, General Scientific Sessions, the Original Science Program, Special Courses, Section Sessions and The Art of Managing Complex Cranial Cases and Operative NEUROSURGERY®. Physicians should only claim credit for the number of credits for the learning activities at the Annual Meeting in which they actively participated.

Upon completion of this process, your CME certificate will be sent to you via e-mail at the email address you used at registration and can be printed directly online.

Evaluations
Evaluations are essential to ensure that the Congress of Neurological Surgeons is producing the highest quality medical education. Your feedback is valued and much appreciated in assisting with these efforts.

All evaluations will be available online at www.cns.org shortly after the session has concluded. You will also receive an e-mail with a link to the evaluation web site. You will need to log in using your last name and the e-mail address with which you registered.

Disclosures
The Accreditation Council for Continuing Medical Education Updated Standards for Commercial Support requires that anyone in a position to control the content of the educational activity has disclosed all financial relationships with any commercial interest. 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 a “commercial interest” as any entity producing, marketing, re-selling or distributing healthcare goods or services consumed by, or used on, patients. Before the activity, all speakers will disclose the existence of any applicable financial interests and/or commercial relationships. Disclosures can also be found on pages 30-39.

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 responsibility of the physician to determine the FDA clearance status of each drug or medical device he or she wishes 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 products approval label. A listing of these disclosures is available on pages 40-41.
## DISCLOSURE INFORMATION

The Congress of Neurological Surgeons controls the content and production of this CME activity and attempts to assure the presentation of balanced, objective information. In accordance with the Standards for Commercial Support established by the Accreditation Council for Continuing Medical Education, speakers are asked to disclose any relationship they have with commercial companies which may be related to the content of their lecture.

Speakers who have disclosed a relationship with commercial companies whose products may have a relevance to their presentation are listed below. Planners are designated by f and faculty by F.

### Key:
- Faculty = F
- Planner = P

### Positional Interest Codes:
1. CEO
2. Consultant
3. Director
4. Editorial Board
5. Employee
6. N/A
7. Owner
8. Stockholder

### Disclosure Information

<table>
<thead>
<tr>
<th>Name</th>
<th>Position</th>
<th>Company or Organization</th>
</tr>
</thead>
<tbody>
<tr>
<td>Saleem I. Abdulrauf, MD FACS</td>
<td>Consulting Agreement – Scanlan Inc</td>
<td>Scanlan Inc (6); Scanlan Inc (6)</td>
</tr>
<tr>
<td>Paul Anderson, MD F</td>
<td>Consulting Agreement – Medtronic</td>
<td>Medtronic (2); Medtronic (2)</td>
</tr>
<tr>
<td>Liliyana Angelov, MD F</td>
<td>Honoraria – BrainLab</td>
<td></td>
</tr>
<tr>
<td>Paul M. Arnold, MD F</td>
<td>Other – AOSpine North America</td>
<td></td>
</tr>
<tr>
<td>Adam S. Arthur, MD MPH F</td>
<td>Consulting Agreement – Codman Neurovascular; EV3 (2); Microvention, Inc.; Grants – Microvention, Inc.</td>
<td></td>
</tr>
<tr>
<td>Anthony L. Asher, MD FACS F</td>
<td>Consulting Agreement – Hyperbranch Medical Technology (2); Pioneer Surgical (2); Salient Medical Technology (2); Other – Hyperbranch Medical Technology (6)</td>
<td></td>
</tr>
<tr>
<td>A. Leland Albright, MD F</td>
<td>Board Trustee or Officer Position – Varian; Stockholder – Accuray</td>
<td>Varian; Stockholder – Accuray</td>
</tr>
<tr>
<td>Behrooz A. Akbarnia, MD F</td>
<td>Consulting Agreement – DePuy Spine</td>
<td>DePuy Spine (2); Ellipse (2); K2M (2); Nuvasive (2); Other – DePuy Spine (6); Ellipse (6); Growing Spine Foundation (7); Journal of Orthopaedic Science (4); K2M (6); Nuvasive (6); OREF (6); OREF (7); Scoliosis Research Society (7); Royalty – DePuy Spine (6)</td>
</tr>
<tr>
<td>Michael J. Alexander, MD FACS</td>
<td>Consulting Agreement – Codman Neurovascular (6); Stryker Neurovascular (6)</td>
<td>Codman Neurovascular; Stryker Neurovascular</td>
</tr>
<tr>
<td>Christopher P. Ames, MD F</td>
<td>Consulting Agreement – DePuy</td>
<td>DePuy (2); Medtronic (2); Stryker (2); Royalty – Aesalgs (2); LAWX (2)</td>
</tr>
<tr>
<td>Sepideh Amin-Hanjani, MD F</td>
<td>Other – GE Healthcare</td>
<td>GE Healthcare (6); VasSol, Inc. (6)</td>
</tr>
<tr>
<td>Paul Anderson, MD F</td>
<td>Consulting Agreement – Medtronic</td>
<td>Medtronic (2)</td>
</tr>
<tr>
<td>Liliyana Angelov, MD F</td>
<td>Honoraria – BrainLab</td>
<td>BrainLab</td>
</tr>
<tr>
<td>Paul M. Arnold, MD F</td>
<td>Other – AOSpine North America</td>
<td>AOSpine North America (6)</td>
</tr>
<tr>
<td>Adam S. Arthur, MD MPH F</td>
<td>Consulting Agreement – Codman Neurovascular; EV3 (2); Microvention, Inc.; Grants – Microvention, Inc.</td>
<td></td>
</tr>
<tr>
<td>Anthony L. Asher, MD FACS F</td>
<td>Consulting Agreement – Hyperbranch Medical Technology (2); Pioneer Surgical (2); Salient Medical Technology (2); Other – Hyperbranch Medical Technology (6)</td>
<td></td>
</tr>
<tr>
<td>James I. Ausman, MD F</td>
<td>Board Trustee or Officer Position – Future Healthcare Strategies; Ownership Interest – Future Healthcare Strategies (1)</td>
<td></td>
</tr>
<tr>
<td>Tepu Z. Aziz, MD FRCs F</td>
<td>Honoraria – Medtronic Inc. (6); St. Jude Medical (6)</td>
<td></td>
</tr>
<tr>
<td>Nicholas Bambakisidis, MD F</td>
<td>Consulting Agreement – Medtronic Sofamor Danek (2); Royalty – Aesalgs (2); LAWX (2)</td>
<td></td>
</tr>
<tr>
<td>Nicholas M. Barbaro, MD F</td>
<td>Other – Elekta (6); National Institutes of Health (NIHDS) (6)</td>
<td></td>
</tr>
<tr>
<td>James E. Baumgartner, MD F</td>
<td>Other – Cord Blood Registry (6)</td>
<td></td>
</tr>
<tr>
<td>James Bender, MD F</td>
<td>Salary – Immunocellular Therapies (7)</td>
<td></td>
</tr>
<tr>
<td>Edward C. Benzel, MD F</td>
<td>Consulting Agreement – Ortho MEMS (7); Ownership Interest – AxioMed (2); Royalty – AxioMed (2)</td>
<td></td>
</tr>
<tr>
<td>Sigurd Berven, MD F</td>
<td>Consulting Agreement – Biomet (2); DePuy Spine (2); Medtronic (2); Ownership Interest – Acculif (2)</td>
<td></td>
</tr>
<tr>
<td>Shay Bess, MD F</td>
<td>Consulting Agreement – Allsource (6); DePuy Spine (6); Royalty – Pioneer (6)</td>
<td></td>
</tr>
<tr>
<td>Mark H. Bilsky, MD F</td>
<td>Royalty – DePuy Spine (2)</td>
<td></td>
</tr>
<tr>
<td>Keith L. Black, MD F</td>
<td>Ownership Interest – Immunocellular Therapeutics (2)</td>
<td></td>
</tr>
<tr>
<td>Oheneba Boachie-Adjei, MD F</td>
<td>Honoraria – K2M (2); Osteotech (6); Other – DePuy Spine (6); Royalty – DePuy Spine (6); K2M (6)</td>
<td></td>
</tr>
<tr>
<td>Christopher Bono, MD F</td>
<td>Consulting Agreement – Harvard Clinical Research Institute (2); Royalty – Informa Health Care (6); Wolter Kluwer (6)</td>
<td></td>
</tr>
<tr>
<td>Nicholas M. Boulis, MD F</td>
<td>Consulting Agreement – Ceregene (2); Medtronic (2); Other – NeuralStem (6)</td>
<td></td>
</tr>
<tr>
<td>Charles L. Branch, MD F</td>
<td>Consulting Agreement – Medtronic (2); Royalty – Medtronic (6)</td>
<td></td>
</tr>
<tr>
<td>Samuel Robert Bров, MD F</td>
<td>Consulting Agreement – Medtronic (2); Royalty – Medtronic (6)</td>
<td></td>
</tr>
<tr>
<td>M. Ross Bullock, MD F</td>
<td>Consulting Agreement – Codman (6); Integra (6); Oxygen Biotherapeutics (6); Grants – Department of Defense (6)</td>
<td></td>
</tr>
<tr>
<td>Douglas C. Burton, MD F</td>
<td>Consulting Agreement – DePuy Spine (6); Other – DePuy Spine (6); Royalty – DePuy Spine (6)</td>
<td></td>
</tr>
<tr>
<td>Ali Bydon, MD F</td>
<td>Other – DePuy Spine (6)</td>
<td></td>
</tr>
<tr>
<td>Susan Chang, MD F</td>
<td>Other – Novartis (6); Schering Plough (6)</td>
<td></td>
</tr>
<tr>
<td>Jens Chapman, MD F</td>
<td>Consulting Agreement – Allergan (2); Ipsen (2); Medtronic (2); Pfizer (2); Honoraria – Teva (6); Other – Allergan (6); Medtronic (6)</td>
<td></td>
</tr>
<tr>
<td>Thomas C. Chen, MD F</td>
<td>Ownership Interest – Applied Integrin Sciences (7); ß-Axonomy (7); C5Rα (7); NeOnc (7); Tocagen (7); Salary – ERC (7); Pharmaco-kinesis (7)</td>
<td></td>
</tr>
<tr>
<td>John Chi, MD F</td>
<td>Consulting Agreement – Synthes (2)</td>
<td></td>
</tr>
<tr>
<td>Dean Chou, MDP</td>
<td>Honoraria – Stryker (2)</td>
<td></td>
</tr>
<tr>
<td>Guy L. Clifton, MD F</td>
<td>Ownership Interest – Baxter (6); Becton Dickinson (8); Johnson and Johnson (8); MedeCoach (8); Novartis (8); Roche Pharmaceuticals (8); Sanofi Aventis (8); Summit Air Ambulance (8)</td>
<td></td>
</tr>
<tr>
<td>Kevin M. Cockroft, MD F</td>
<td>Consulting Agreement – ev3 Neurovascular/Covidiën (6); Honoraria – Bayer-Nippon (6); Other – ev3 Neurovascular (6)</td>
<td></td>
</tr>
</tbody>
</table>
**DISCLOSURE INFORMATION**

<table>
<thead>
<tr>
<th>Name</th>
<th>Disclosure Type</th>
<th>Company/Institution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chaim B. Colen, MD PhD</td>
<td>Ownership Interest</td>
<td>Colen Publishing, LLC (8)</td>
</tr>
<tr>
<td>William M. Coplin, MD</td>
<td>Consulting Agreement</td>
<td>Astellas Pharma US (2); EKR Therapeutics (2); Integra Neurosciences (2)</td>
</tr>
<tr>
<td>Domagaj Coric, MD</td>
<td>Consulting Agreement</td>
<td>Depuy Spine (2); Pioneer Surgical (2); Spinal Motion (2); Spine Wave (2)</td>
</tr>
<tr>
<td>Terry Coyne, MD</td>
<td>Intellectual Fees</td>
<td>Medtronic Inc (6)</td>
</tr>
<tr>
<td>Ralph G. Dacey, MD</td>
<td>Consulting Agreement</td>
<td>Lanx, Inc (2); Pulse Therapeutics, Inc (2); Other – Endostim, Inc (3); Neuronolocs, Inc. (3); Stereotaxis, Inc (6); Royalty – Anschap, Inc (6) Synergetics, Inc (6)</td>
</tr>
<tr>
<td>Antonio A. F. De Salles, MD</td>
<td>Ownership Interest</td>
<td>Medtronic; Honoraria – BrainLab</td>
</tr>
<tr>
<td>Mark B. Dekutoski, MD</td>
<td>Consulting Agreement</td>
<td>Mayo Medical Ventures (2); Medtronic (2); Honoraria – AO Foundation (6); Other – Broadwater Associates CME Group (6); DePuy (6); Medtronic (6); Stryker (6); Synthes (6)</td>
</tr>
<tr>
<td>Rick B. Delamarter, MD</td>
<td>Royalty</td>
<td>Stryker (2); Synthes (2)</td>
</tr>
<tr>
<td>Johnny B. Delashaw, MD</td>
<td>Consulting Agreement</td>
<td>Covidien (2)</td>
</tr>
<tr>
<td>Franco DeMonte, MD</td>
<td>Consulting Agreement</td>
<td>Medtronic</td>
</tr>
<tr>
<td>Vinay Deshmukh, MD</td>
<td>Consulting Agreement</td>
<td>Pioneer Surgical Technology (6)</td>
</tr>
<tr>
<td>Gary A. Dix, MD</td>
<td>Consulting Agreement</td>
<td>Alphatec Spine (7); Biotron (2); DePuy Spine (2); SpineWave (2); Other – Facet Solutions (7); Ownership Interest – Pioneer Surgical (6); Royalty – Globus Medical (2)</td>
</tr>
<tr>
<td>Ann-Christine Duhaime, MD</td>
<td>Consulting Agreement</td>
<td>Ethicon – National Institutes of Health</td>
</tr>
<tr>
<td>E. Hunter Dyer, MD</td>
<td>Ownership Interest</td>
<td>Pioneer Surgical (6)</td>
</tr>
<tr>
<td>James M. Ecklund, MD</td>
<td>Consulting Agreement</td>
<td>Brainscipe (2); Ownership Interest – Neurostrike, LLC (1)</td>
</tr>
<tr>
<td>W. Jeffrey Elias, MD</td>
<td>Consulting Agreement</td>
<td>Honoraria – Focused Ultrasound Surgery Foundation (2); Other – Focused Ultrasound Surgery Foundation (6)</td>
</tr>
<tr>
<td>Michael G. Fehlings, MD PhD</td>
<td>Consulting Agreement</td>
<td>Medtronic (2); Honoraria – DePuy (6); Royalty – DePuy (6); Medtronic (6); Stryker (6)</td>
</tr>
<tr>
<td>Joseph A. Fisher, MD</td>
<td>Intellectual Fees</td>
<td>Respirac (2)</td>
</tr>
<tr>
<td>Kelly D. Foote, MD</td>
<td>Other</td>
<td>ANS/St. Jude (6); Medtronic Neurological (6); Neurospace (6)</td>
</tr>
<tr>
<td>Fred H. Geisler, MD PhD</td>
<td>Consulting Agreement</td>
<td>Aesculap; Medtronic; NuVasive; SI-BONE (6); Spinal Motion; Vertiflex; Zimmer; Stockholder – Disc Motion; Implant</td>
</tr>
<tr>
<td>Ziya L. Gokaslan, MD</td>
<td>Ownership Interest</td>
<td>AO North America (7); Other – AO North America (6); DePuy (6); Medtronic (6); NREF (6); Spinal Kinetics Stock (8); Other – US Spine Stock (8)</td>
</tr>
<tr>
<td>John G. Golfinos, MD</td>
<td>Consulting Agreement</td>
<td>Stryker (2); Honoraria – Medtronic (2); Ownership Interest – Viewray (6)</td>
</tr>
<tr>
<td>L. Fernando Gonzalez, MD</td>
<td>Consulting Agreement</td>
<td>Boston Scientific (2); Johnson and Johnson (2)</td>
</tr>
<tr>
<td>Gerald A. Grant, MD</td>
<td>Consulting Agreement</td>
<td>Ethicon (2)</td>
</tr>
<tr>
<td>Alexander L. Green, MBBS BSc</td>
<td>Consulting Agreement</td>
<td>Honoraria – Medtronic Inc. (6); St. Jude Medical (6)</td>
</tr>
<tr>
<td>Michael W. Groff, MD FACS</td>
<td>Consulting Agreement</td>
<td>EBI Spine Biomet (2); Smith &amp; Nephew (2); Royalty – DePuy Spine (2)</td>
</tr>
<tr>
<td>Robert E. Gross, MD PhD</td>
<td>Consulting Agreement</td>
<td>Bayer Healthcare (2); Boston Scientific (2); GeneGrafts (2); St. Jude Medical (2)</td>
</tr>
<tr>
<td>Andre Grotenhuis, MD</td>
<td>Consulting Agreement</td>
<td>B.Braun Aesculap (2)</td>
</tr>
<tr>
<td>Munish Gupta, MD</td>
<td>Ownership Interest</td>
<td>M4 Genomics LLC (8)</td>
</tr>
<tr>
<td>R. Guzman, MD</td>
<td>Consulting Agreement</td>
<td>DePuy Spine (2); Lanx (2); Osteotech (2); Honoraria – AO (2); Intellectual Fees – Medtronic (6); Other – FOSA (7); Ownership Interest – Acrotech (6); Johnson &amp; Johnson (6); Pfizer (6); Pioneer (6); Proctor and Gamble (6); Royalty – DePuy Spine (6)</td>
</tr>
<tr>
<td>Raphael Guzman, MD</td>
<td>Other</td>
<td>Synthes (6)</td>
</tr>
<tr>
<td>Costas George Hadjipanayis, MD PhD</td>
<td>Consulting Agreement</td>
<td>Meditech (2)</td>
</tr>
<tr>
<td>Regis W. Haid, MD</td>
<td>Consulting Agreement</td>
<td>Globus Medical (2); Piedmont Health Care (2); Other – Nuvasive (6); Globus Medical; Medtronic Sofamor Danek; Ownership Interest – Spine Universe (4); Royalty – Medtronic (6); Medtronic (6)</td>
</tr>
<tr>
<td>Clement Hamani, MD</td>
<td>Consulting Agreement</td>
<td>St Jude Medical (2); Honoraria – Medtronic (6); St. Jude Medical (6)</td>
</tr>
<tr>
<td>Ricardo A. Hanel, MD PhD</td>
<td>Consulting Agreement</td>
<td>Johnson and Johnson (6); NuVasive (6)</td>
</tr>
<tr>
<td>James S. Harrop, MD</td>
<td>Consulting Agreement</td>
<td>DePuy spine (2); Honoraria – Ethicon (6); Other – Axiomed (6); Geron (6)</td>
</tr>
<tr>
<td>Robert Hart, MD</td>
<td>Consulting Agreement</td>
<td>DePuy Spine (6); Honoraria – Synthes (6); Other – DePuy Spine (6); Medtronic (6); OREF (6); Spine Connect (6); Synthes (6); Royalty – Scaspine (6)</td>
</tr>
<tr>
<td>Roger Hartl, MD</td>
<td>Other</td>
<td>Apatech (6); BrainLab (6); SpineWave (6); Synthes (6)</td>
</tr>
<tr>
<td>Elma W. Hawkins, MD</td>
<td>Consulting Agreement</td>
<td>Immunocellular Therapeutics (7)</td>
</tr>
<tr>
<td>Carl B. Heilman, MD</td>
<td>Consulting Agreement</td>
<td>Medtronic (2)</td>
</tr>
<tr>
<td>Jaimie M. Henderson, MD</td>
<td>Honoraria</td>
<td>Medtronic (6); Other – Intelect Medical (7); Neuro Corp (7)</td>
</tr>
<tr>
<td>Leigh R. Hochberg, MD PhD</td>
<td>Other</td>
<td>Cyberkinetics (6)</td>
</tr>
<tr>
<td>Kathryn L. Holloway, MD</td>
<td>Consulting Agreement</td>
<td>Medtronic (2)</td>
</tr>
<tr>
<td>Langston T. Holly, MD</td>
<td>Consulting Agreement</td>
<td>Medtronic (6)</td>
</tr>
<tr>
<td>L. Nelson Hopkins, MD</td>
<td>Consulting Agreement</td>
<td>Abbott Vascular (2); Abbott Vascular (6); AccessClosure (7); Boston Scientific (2); Micrus (2); Micrus (7); W. L. Gore (2); Honoraria – BARD (6); Boston Scientific (6); Cleveland Clinic (6); Complete Conference Management (6); Cordis (2); Cordis (6); Memorial Healthcare System (6); SCAI (6); Ownership Interest – AccessClosure (6); Boston Scientific (6); Micrus (6); Valor Medical (6)</td>
</tr>
<tr>
<td>Richard A. Hostin, MD</td>
<td>Honoraria</td>
<td>DePuy Spine (6); Other – Axial Biotech (6)</td>
</tr>
<tr>
<td>Kade T. Huntsman, MD</td>
<td>Consulting Agreement</td>
<td>NuVasive (2)</td>
</tr>
<tr>
<td>Jonathan Hyde, MD</td>
<td>Consulting Agreement</td>
<td>NuVasive (2)</td>
</tr>
</tbody>
</table>

Stay connected at http://m.cns.org
DISCLOSURE INFORMATION

Robert E. Isaacs, MD
Consulting Agreement – Medtronic (2); NuVasive (2); Ownership Interest – Bioshape Solutions (6); Safewire, LLC (6)

Pascal Jabbour, MD
Consulting Agreement – Codman Neurovascular (2); EV3 (2)

Michael Janssen, MD
Other – AOSNA (6)

Bechir Jarraya, MD
Consulting Agreement – Oxford Biomedica (6)

Zelma H.T. Kiss, MDF
Synthes (6)

Eric Klineberg, MDF
Other – AOSNA (6)

Frances E. Jensen, MD
Ownership Interest

Shazia Javed, MB ChB MRCS
Consulting Agreement – Renishaw Plc

Ayaj Jawahar, MSc MD
Consulting Agreement – K2Medical Inc. (2); SeaSpine (2)

J. Patrick Johnson, MD
Consulting Agreement – ALPHATEC (2); Pioneer Medical (2); SpineWave (2); Other – FlexUSpine (6)

Iain H. Kalfas, MD
Royalty – Mako (6)

Michael Gordon Kaplitt, MD PhD
Consulting Agreement – Medtronic (2); Neurologix (2)

M. Kelleher, MD
Salary – Oxford Biomedica (5)

Kaveh Khajavi, MD
Honorary – NuVasive (6)

Mohamad A. Khaled, MD MSurg
Other – Focused Ultrasound Surgery Foundations (6)

Sue Kingsman, PhD
Ownership Interest – Oxford Biomedica (2)

Zelma H.T. Kiss, MD
Other – Medtronic (6)

Eric Klineberg, MD
Consulting Agreement – Synthes (6); Honorary – DePuy Spine (6); Stryker (6); Synthes (6); Other – AO (6); OREF (6); Synthes (6)

Douglas Kondziolka, MD MSc
FRCS(C) FACS
Consulting Agreement – Elekta (2); Ownership Interest – SciencEngines, Inc (7)

Brian H. Kopell, MD
Consulting Agreement – Neurostream Technologies (6); Prism Clinical Imaging (6)

Eric Klineberg, MDF
Ownership Interest – AOSNA (6)

Frances E. Jensen, MD
Salary

Michael Janssen, MD
Consulting Agreement – Codman Neurovascular (2); EV3 (2)

Bechir Jarraya, MD
Ownership Interest

Jean P. Konrad, MD
Ownership Interest

Charles Kuntz, IV, MD
Consulting Agreement – Synthes (2); Other – AO Spine – Research and Education (6); Synthes, Stryker Research Education (6); Ownership Interest – Mayfield Clinic, CKIV Alignment (8); Precision Radiotherapy (8); Priority Consult (8); The Christ Hospital Spine Surgery Center (8)

Frank La Marca, MD
Consulting Agreement – Biomet (6); Globus (6); Lanx (6); Stryker (6); Honorary – Medtronic (6)

Virgínia Lafage, PhD
Other – Nemaris (7); Ownership Interest – Nemaris (8)

David J. Langer, MD
Consulting Agreement – ELANA Inc.; Stockholder – Vassal Inc

Giuseppe Lanzino, MD
Grants – ev3; Synthes

Paul S. Larson, MD
Grants – Surgivision, Inc.; Honorary – Medtronic, Inc.

Carl Lauryssen, MD
Royalty – Alphatech (2); Pioneer (2); Spinal Kinetics (2)

Sean Lavine, MDP
Consulting Agreement – Codman Neurovascular (6)

Michael T. Lawton, MD
Royalty – Mizuho America (6)

James W. Leiphart, MD
Consulting Agreement – EV3 Inc. (2); Other – AO North America (6); Neuropace (6)

Lawrence Lenke, MD
Other – DePuy Spine (6); Royalty – Medtronic (6); Quality Medical Publishing (6)

Elad I. Levy, MD
Consulting Agreement – Codman & Shurtleff, Inc. (2); Cordis; Neurovascular (2); EV3 (2); Micrus Endovascular (2); TheraSyn Sensors, Inc. (2); Honorary – Boston Scientific (6); Other – Abbott Vascular (6); Boston Scientific (6); Codman & Shurtleff, Inc. (6); Ev3 (6); Micrus Endovascular (6); Ownership Interest – Intratech Medical Ltd. (8); Lynx/Access Closure (8)

Robert M. Levy, MD PhD
Consulting Agreement – Bioness Incorporated; Codman & Shurtleff, Inc. (2); Medtronic Neurological; Spinal Modulation; St. Jude Medical Neuromodulation; Stryker; Vertos Medical

Charles J. Limb, MD
Consulting Agreement – Advanced Bionics Corporation (6)

Geoffrey S.F. Ling, MD
Consulting Agreement – Sanofi (2); Bristol-Myers (2)

Zachary N. Litvack, MD
Consulting Agreement – Advanced Bionics Corporation (6)

Robert M. Levy, MD PhD
Consulting Agreement – Bioness Incorporated; Codman & Shurtleff, Inc. (2); Medtronic Neurological; Spinal Modulation; St. Jude Medical Neuromodulation; Stryker; Vertos Medical

Michael William McDermott, MD
Other – National Institutes of Health (6)

Christopher McPherson, MDP
Ownership Interest – Precision Radiotherapy LLC (8); Priority Consult LLC (8); The Christ Hospital Spine Surgery Center (8); Salary – Mayfield Clinic (5)

Stefan A. Mindea, MDF
Consulting Agreement – DePuy (6); Medtronic (6)

James Miskin, PhD
Salary – Oxford Biomedica (5)

Kryiacos Mitropoulos, PhD
Salary – Oxford Biomedica (5)

J D. Mocco, MD
Consulting Agreement – Actelion (2); Edge Therapeutics (2); Nificous (2); Other – Lazarus Effect (7); Boston Scientific (6); Codman Neurovascular (6)
DISCLOSURE INFORMATION

Alon Y. Mogilner, MD\textsuperscript{F, F}
Consulting Agreement – Medtronic Neurological (2); Honoraria – Intelect Medical (6)

Praveen V. Mummaneni, MD\textsuperscript{F}
Consulting Agreement – DePuy Spine (2); Medtronic (2); Ownership Interest – 2N LLC (8)

Gregory Mundis, MD\textsuperscript{F}
Consulting Agreement – K2M (6); Nuvasive (6); Other – DePuy Spine (6)

Jeffrey A. Murphy, MS\textsuperscript{F}
Salary – DePuy Orthopedics (5)

Raj K. Narayan, MD, FACS\textsuperscript{F}
Consulting Agreement – BHR Pharma; Codman; Integra

Pradeep K. Narotam, MD
FCS(SA) FRCS(C) FACS\textsuperscript{F}
Consulting Agreement – Integra Life (6)

Stuart Naylor, MD\textsuperscript{F}
Salary – Oxford Biomedica (5)

Russ P. Nockels, MD\textsuperscript{F}
Consulting Agreement – Medtronic (2); Royalty – Medtronic (6)

Josef Novotny, PhD\textsuperscript{F}
Consulting Agreement – AB Elekta (2)

Pierce D. Nunley, MD\textsuperscript{F}
Consulting Agreement – LDR Spine (2); Spinal Motion (2); Royalty – K2Medical Inc. (2)

Michael F. O’Brien, MD\textsuperscript{F}
Consulting Agreement – DePuy Spine (2); Medtronic (2); Osteotech (6); Intellectual Fees – DePuy Spine (6); Ownership Interest – Axial Biotech (6); Royalty – DePuy Spine (6); Medtronic (6)

Hideho Okada, MD PhD\textsuperscript{F}
Other – Stemline Therapeutics (6)

David O. Okonkwo, MD PhD\textsuperscript{F}
Consulting Agreement – Lanz (2); Medtronic (2); Synthes (2)

John E. Ottole, MD\textsuperscript{F}
Consulting Agreement – Globus Medical, Inc.; Pioneer Surgical; Royalty – Globus Medical (2)

Stephane Palfi, MD\textsuperscript{F}
Consulting Agreement – Oxford Biomedica (6)

Richard D. Pen, MD\textsuperscript{F}
Ownership Interest – CNS Therapeutics (2)

Frank M. Phillips, MD\textsuperscript{F}
Consulting Agreement – NuVasive (2); Royalty – NuVasive (2)

Laurent Piorot, MD PhD\textsuperscript{F}
Consulting Agreement – Boston Scientific (2); EV3 (2); Microvention (2)

Luiz Pimenta, MD\textsuperscript{F}
Consulting Agreement – NuVasive (2); Zyga Tech (2)

Srinivas K. Prasad, MD\textsuperscript{F, F}
Consulting Agreement – Synthes Spine (6); Honoraria – Stryker Spine (6)

Graham Price, MBBS BSc\textsuperscript{F}
Salary – Oxford Biomedica (5)

Gregory J. Przybylski, MD PhD\textsuperscript{F}
Salary – NIH (6)

Scott Ralph, MD\textsuperscript{F}
Salary – Oxford Biomedica (5)

John K. Ratliff, MD\textsuperscript{F, F}
Consulting Agreement – Stryker Spine (2); Ownership Interest – Johnson and Johnson (6); Royalty – Biomet Spine (2)

Daniel Refai, MD\textsuperscript{F, F}
Consulting Agreement – Aesculap Implant Systems (2); Stryker Education (2)

Jean M. Regis, MD\textsuperscript{F}
Other Financial or Material Support – Accuray, BrainLab, Elekta, Tomotherapy.

Harold L. Rekate, MD\textsuperscript{F}
Consulting Agreement – Codman Corporation (2)

Ali R. Rezai, MD\textsuperscript{F, F}
Consulting Agreement – Autonomic Technologies (6); Neurologix (6); Ownership Interest – Autonomic Technologies (3); Intelect Medical (6); Surgivision (6)

Laurence D. Rhines, MD\textsuperscript{F}
Honoraria – Biomet (2); Medtronic (2)

Daniele Rigamonti, MD\textsuperscript{F}
Honoraria – Braun Aesculap

Howard A. Riina, MD\textsuperscript{F, F}
Other – New York Presbyterian Hospital Research Grant (6); Ownership Interest – eVisio Medical Systems (6); Neurovaxx (6)

Andrew J. Ringer, MD\textsuperscript{F}
Consulting Agreement – eV3 (6)

David W. Roberts, MD\textsuperscript{F}
Consulting Agreement – Medtronic, Inc. (2) Other – Zeiss (6); Carl Zeiss Meditec, Inc.; Dusa Pharmaceuticals; Medtronic, Inc. (6); NeuroPace, Inc.

Gerald E. Rodts, MD\textsuperscript{F}
Consulting Agreement – Globus Medical, Inc. (2); Medtronic (2); Orthofix, Inc. (2)

Eric P. Roger, MD BSc FRCS(C)P
Consulting Agreement – Aesculap Medical (6)

Charles L. Rosen, MD PhD\textsuperscript{F}
Other – National Institutes of Health (6); Synthes (6); Ownership Interest – Medtronic (6); Merck (6); Optika Technologies (3); Pfizer (6)

Joshua M. Rosenow, MD FACS\textsuperscript{F, F}
Consulting Agreement – Boston Scientific Neuroradiology (2); Medtronic Navigation (2)

Oren Sagher, MD BA\textsuperscript{F, F}
Other – Medtronic (6)

John H. Sampson, MD PhD
MHS\textsuperscript{F}
Consulting Agreement – BrainLAB (6); Cellidex (6); Intellectual Fees – Cellidex (6)

Faheem A. Sandhu, MD\textsuperscript{F}
Royalty – Custom Spine (2); K2M (2)

Charles A. Sansur, MD MHS\textsuperscript{F, F}
Consulting Agreement – Synthes (2)

Rick Sasso, MD\textsuperscript{F}
Other – Cerapdics (6); Royalty – Medtronic (6)

Meic H. Schmidt, MD\textsuperscript{F}
Consulting Agreement – Aesculap (2)

Henry W.S. Schroeder, MD PhD\textsuperscript{F}
Consulting Agreement – Karl Storz GmbH & Co. KG (2)

Frank Schwab, MD\textsuperscript{F}
Consulting Agreement – DePuy Spine (2); Honoraria – Medtronic (6); Other – Medtronic (6); Nemaris (7); SRS (6); Ownership Interest – Nemaris (8)

Theodore H. Schwartz, MD FACS\textsuperscript{F}
Consulting Agreement – Integra (6); Honoraria – VisionSense (6)

Daniel M. Sciuibba, BS MD\textsuperscript{F, F}
Honoraria – Medtronic (6)

Sarah Scorer, BSc MSc\textsuperscript{F}
Salary – Oxford Biomedica (5)

Nathan R. Selden, MD PhD FACS
FAAP\textsuperscript{F, F}
Other – Bioscience Innovation Fund (6); Committee Chair – Society of Neurological Surgeons (4)

Christopher J. Shaffrey, MD
FACS\textsuperscript{F}
Consulting Agreement – Biomet (6); Honoraria – DePuy (6); Stryker (6); Other – AOSSpine North America (6); Department of Defense (6); National Institutes of Health; Royalty – Medtronic (6)

Mitesh Vinp Shah, MD\textsuperscript{F}
Consulting Agreement – Arthrocare (2); Lanz (2)

Ashwini Dayal Sharan, MD\textsuperscript{F, F}
Consulting Agreement – Covidian (6); ICVRX (6); Medtronic (6); Non Linear (6); Consulting Agreement – St. Jude (6); Honoraria – Intelect (6); Honararia – Medtronic (6); Honoraria – St. Jude (6); Other – Zimmer (6)

Jonathan D. Sherman, MD\textsuperscript{F}
Consulting Agreement – Depuy (2); Medtronic (2)

Lori Anne Shutter, MD\textsuperscript{F}
Honoraria – Codman / J&J (2)

Stay connected at http://m.cns.org
DISCLOSURE INFORMATION

Adnan Hussain Siddiqui, MD PhD
Consulting Agreement – Codman & Shurtleff, Inc. (2); Concentric Medical (2); ev3/Covidien Vascular Therapies (2); Guidepoint Global Consulting (2); Micrus Endovascular (2); Penumbra (2); Grants – National Institute of Health; Honoraria – American Association of Neurological Surgeons (6); Codman (6); Codman Speaker’s Bureau (6); Emergency Medicine Conference (6); Genetech (6); Genetech Speaker’s Bureau (6); Neocure Group, LLC (6); Other – Abbott Vascular (6); Codman Advisory Board (6); National Institutes of Health (6); University at Buffalo (6); Ownership Interest – Hotspur (6); Intratech Medical (6); Stimsox (6); Valor Medical (6)

Konstantin V. Slavin, MD PhD
Consulting Agreement – Greatbatch (2); Medtronic (2); St. Jude Medical (2); Vycor Medical (2); Honoraria – Medtronic (2); St. Jude Medical (2); Other – Boston Scientific (6); Integra (6)

Andrew E. Sloan, MD PhD
Consulting Agreement – Moniteris Medical (2); RealBio (2); Surgical Theatre (2); Grants – National Cancer Institute (6); Other – Genentech (6); Roche Pharmaceuticals, Inc (6); Ownership Interest – Rubicon Genomics (6)

Jonathan R. Slotkin, MD
Consulting Agreement – InVivo Therapeutics (2); Stryker Spine (2)

Justin S. Smith, MD PhD
Consulting Agreement – Axial Biotech (2); Biomet (2); Medtronic Sofamor Danek (2); Other – DePuy Spine (6); Medtronic Sofamor Danek (6)

Mark M. Souweidane, MD
Consulting Agreement – Aesculap, Inc.

Robert F. Spetzler, MD
Consulting Agreement – Zeiss (6)

Michael P. Steinmetz, MD PhD
Honoraria – Biomet Spine (2)

International Spine Study Group
Other – DePuy Spine (6)

Garnette R. Sutherland, MD
Consulting Agreement – IMRIS Inc. (8)

Charles Teo, MD
Consulting Agreement – Aesculap

Nicholas Theodore, MD FACSF
Consulting Agreement – Biomet (2); Stryker Spine (2); Synthes Spine (2); Royalty – Stryker Spine (6); Synthes Spine (6)

Shelly D. Timmons, MD PhD
Honoraria – Solvay Pharmaceuticals (2); Synthes (6)

Roland A. Torres, BA MD
Consulting Agreement – Integra Neuroscience (2); Other – National Institutes of Health/NINDS (6)

Vincent C. Traynelis, MD
Consulting Agreement – Medtronic (2); United HealthCare (2); Royalty – Medtronic (6)

Trent Lane Tredway, MD
Honoraria – Medtronic (6); Synthes (6)

Eve C. Tsai, MD PhD FRCS
Other – Brainlab (6)

Erol Veznedaroglu, MD PhD
Consulting Agreement – Codman (2); Cordis (2); Microvention (2); Micrus (2)

Marjorie C. Wang, MD MPH
Salary – Robert Wood Johnson Physician Faculty Scholars Program (6)

Michael Y. Wang, MD PhD
Consulting Agreement – Aesculap Spine (2); Biomet (2); Depuy Spine (2); Ownership Interest – NeuroConsulting Specialists, LLC (8); NeuroConsulting, LLC (8)

Clarence B. Watridge, MD
Other – Medical Education & Research Institute (7); Medtronic (6); National Institutes of Health; NINDS (6); Spinal Motion (6)

Jeffrey S. Weinberg, MD
Honoraria – Brainlab (6)

William Charles Welch, MD, FACSF
Consulting Agreement – Best Doctors (2); Synthes Spine (2); Zimmer Spine (2); Ownership Interest – Pittsburgh Standard Spine (7); Welch Research and Development (8)

Timothy F. Witham, MD BS
Honoraria – Globus Medical (6); Stryker Spine (6); Other – Integra Life Science (6)

Henry H. Woo, MD
Consulting Agreement – Codman and Shurtleff (2); ev3 Neurovascular (2); Other – Siemens (6); Ownership Interest – Vascular Simulations LLC (3); Royalty – Codman and Shurtleff (2)

Eric J. Zigler, MD
Consulting Agreement – Synthes Spine (6); Other – Expanding Orthopaedics (6); FlexusSpine (6); Medtronic, DePuy, AO Spine (6); Spineart (6); Stryker Spine (6); Royalty – K2M (6); Osprey (6); Zimmer Spine (6)

Burt Yaszay, MD
Consulting Agreement – K2M, Ellipse (2)

Burt Yaszay, MD
Consulting Agreement – Synthes (2); Honoraria – DePuy Spine (2)

Sangwook Yoon, MD
Other – AOSNA (6); Biomet (6); OMEGA (6); OREF (6); Phygen (6); Royalty – Nexgen (6); Stryker (6)

A. Samy K. Youssef, MD PhD
Honoraria – Synthes (6)

John S. Yu, MD
Board Trustee or Officer Position – Immunocellular Therapeutics, Ltd.

Jack E. Zigler, MD
Consulting Agreement – Synthes Spine (6); Other – Expanding Orthopaedics (6); FlexusSpine (6); Medtronic, DePuy, AO Spine (6); Spineart (6); Stryker Spine (6); Royalty – K2M (6); Osprey (6); Zimmer Spine (6)
DISCLOSURE INFORMATION

Yedathore Mohan, MD*
Aaron Moehnty, MD* A
Asma Mohheet, MD* M
Michelle Monje
Deiss, MD* H
Walter Montanera, MD* M
Stephen J. Monette, MD* M
Karam Moon, MD* M
Lucy Mooney, BS* M
Brad Moore, MD* M
Leon E. Moores, MD, FACS*
Omar Moraes, MD* M
Christopher J. Moran, MD*
Jacques J. Morcos, MD* A
Akio Morita, MD, PhD*
John Morrison, MD, MS* F
Martin M. Mortazavi, MD*
ZieB. Moses, BSE* F
Shaye I. Moskowitz, MD*
Thomas Mroz, MD* M
Lynn Mubita, BS* M
John Mugamba, MD*
Maki Mukawa, MD*
Debrah Mukherjee, MD, MPH*
Pratik Mukherjee, MD, PhD*
Gregory J. Murad, MD* M
Raj Murali, MD*
Holli Murphy, MD*
Timothy M. Murphy, MD* F
Nanette Myers, MBA*
John S. Myers, MD*
Robert Partlow Natello, MD*
Daniel Nagasawa, BA*
Jean S. Nagel, MD*
Brian V. Nahed, MD*
Peter Nakaji, MD* A
Anil Nanda, MD, FACS* F
Tadashi Nariai, MD, PhD*
Raghu N. Natarajan, PhD*
Avery B. Nathens, MD, MPH, PhD*
Narendra Nathoo, MD, MDP
Ann B. Nattinger, MD, MPH*
Vanita Natu, MD*
Roman E. Navarro, MD*
Gabrielle Navon, BA*
Edith K. Nduom, MD*
Dan Neal, MS*
Jayson Andreau Neil, MD*
Joseph Samir Neimat, MD*
Andrea Salmaggi, MD*
Tetsuro Sameshima, MD, PhD*
Mehul Sampat, PhD*
Mike S. Samson, MD*
Owen B. Samuels, MD*
Nader Sanai, MD* F
Matthew Robert Sanborn, MD*
Justin Sanchez, PhD*
David I. Sandberg, MD*
Ana Sanz, MD*
Robert M. Sapolsky, MD*
Julie Sargent, MD*
Deanna Mary Sasaki-Adams, MD*
Miyoshi Sato, MD*
Jennifer Gentry Savage, MD*
Luise E. Savastano, MD*
Raymond Sawaya, MD*
Alan M. Scarrow, MD* F
Massimo Scarrati, MD*
Karl Schaller, MD*
Wouter I. Schievink, MD*
Clements M. Schirmer, MD* F
Cody D. Schlaff, MD*
Richard P. Schenk, MD* F
Michael Schmidt, MD*
Brian Schmit, PhD*
Steven J. Schneider, MD*
Michael Schuler, MD* F
Lonni Schultz, PhD*
Peter Schultz, MD*
Jason M. Schwab, MD*
Michael Schwartz, MD*
Patrick Schweder, MD*
Daniel M. Sciubba, BS*
Ciera Scott, BA*
Edward W. Scott, PhD*
R. Michael Scott, MD*
Alfred Pkonk Seeg, BS*
Mano Seguin, MD*
Laligam N. Sekhar, FACS*
Chandra N. Sen, MD*
Mery A. Sevonor, MD*
Mark Edwin Shaffrey, MD*
Prashit Shah, MD*
Javed Shahid, MD*
Ushananthi Shankaralingam, BSc*
Kathirkamanthan Shankunathan, MD* F

*Disclosure Information
Disclosure Information

Faculty Presentations Including Non-FDA Approved Investigational Drugs or Devices

October 1, 2011

PC04: The Essentials of Neurosurgical ICU Management
William M. Caplin

PC06: Cervical Spondylotic Myelopathy and Radicalopathy: Treatment Approaches and Options
Kurt M. Eichholz

October 2, 2011

PC08: Inpatient and Outpatient Management Dilemmas for Allied Health Care Professionals
Nathanial P. Brooks

PC09: Health Care Professionals Dilemmas for Allied Health Care Professionals
Dilemmas for Allied

PC10: Health Care Professionals Dilemmas for Allied Health Care Professionals

PC11: Simulation Based Neurosurgical Training
James S. Harrop,
Ashwin Dayal Sharan

PC12: Trauma Update Part I: Traumatic Brain Injury
Raj K. Narayan,
Harold L. Rekate

PC13: Cranial Radiosurgery Update
Antonio A. F. De Salles

PC14: Contemporary Principles of Spinal Deformity Surgery
Charles Kantz, IV,
Frank La Marca

PC15: Using Evidence-Based Medicine to Manage Spinal Disorders
John Chi

PC16: Masters of Cranial Neuroendoscopy
Theodore H. Schwartz
James M. Drake

PC18: Cranial Neurosurgery: Complication Avoidance and Management
Raj K. Narayan

PC20: Trauma Update Part II: Spinal Cord and Spinal Column Injury
James S. Harrop

PC25: My Worst Spinal Complication: What I Learned
Charles Kantz, IV,
Praveen V. Mummaneni

PC27: Operative Indications, Options and Technique for Epilepsy
Guy M. McKhann,
David W. Roberts,
Robert E. Wharen

PC28: Expanding Your Neurosurgical Pain Practice
Jeffrey A. Brown,
Julie G. Pilitsis,
Konstantin V. Slavin,
Christopher J. Winfree

October 3, 2011

General Scientific Session I
Ashwin Dayal Sharan

M03: Disc Replacement in the Cervical and Lumbar Spine
Carl Laurysen

M04: Nuances of Minimally Invasive Spine Surgery
Laiz Pimenta

M05: Pseudoarthrosis of the Cervical and Lumbar Spine
Christopher E. Wolfia

M06: Multidisciplinary Management of Subarachnoid Hemorrhage and Vasospasm
Kevin M. Cockett

M07: Hematology and Coagulation for Neurosurgeons: Dangers and Solutions
Issam A. Awad,
Edward A.M. Duckworth

M08: Incorporating Psychosurgery into Your Neurosurgical Practice
Emad N. Eskander,
Kelly D. Foote,
Robert E. Gross,
Brian H. Kopell

M10: Tumor Resection in High-Risk Locations: Techniques to Minimize Collateral Damage
Gerardo Conesa

M11: Staying Current in Vestibular Schwannoma Management
Enrique Urculo

M15: Surgical, Interventional and Radiosurgical Approaches to Intracranial Arteriovenous Malformations
Bernard R. Bendok

Section on Cerebrovascular Surgery Oral Presentations
920 R Loach Macdonald

Section on Disorders of the Spine and Peripheral Nerves Oral Presentations
966 W. Jeffrey Elias,
Diane Hsu,
Mohammad A. Khaleed,
Stephen J. Monteith,
Robert Frysinger,
Johanna Loomba,
Jason Drozgail,
Scott Wylie,
Tiffini Voss,
Madeline Harrison,
Fred Wooten,
Max Wotter

969 Muhammad Abd-El-Barr,
Nicholas Maline,
Kelly D. Foote,
Michael S. Okun,
Justin Sanchez

Section on Tumors Oral Presentations
971 Garnette R.
Sutherland, Sanju Lama
976 Costas George
Hadjopanayis,
Simon Ronald Platt,
Edjah K. Nduom,
Marc Kent,
Courtenay Freeman,
Revaz Machaidze,
Milota Kaluzova

Section on Cerebrovascular Surgery Neurosurgical Forum
29 Satoshi Suzuki,
Michiyoshi Sato,
Shinzo Ota,
Tomoko Fukuushina,
Akiko Ota, Tatsu Ota,
Katsuya Goto
31 Sharon W. Welleh,
Parham Yashar, Peter Kan
36 Samia Teuffac,
L. Fernando Gonzalez,
Pascal Jabbour,
Stavropoula I.
Tjoumakaris,
David S. Gordon,
Aaron S. Dumont,
Robert H. Ransmesser

Section on Disorders of the Spine and Peripheral Nerves Neurosurgical Forum
62 Ian G. Dorward,
Lawrence Lenke,
Woohin Cho,
Linda A. Koester,
Brenda A. Sides
69 Luis Marchi,
Leonardo Oliveira,
Evelado Coutinho,
Luz Pimenta
103 Kaveh Khesavi

Section on Pain Neurosurgical Forum
Christopher J. Winfree
134 Sean J. Nagel,
Kara D. Beasley,
Milton S. Doguankar,
Andre Machado
136 Sarah B. Alme,
Ajinkya Joglekar

Section on Stereotactic and Functional Neurosurgery Neurosurgical Forum
Aviva Abosch
Konstantin V. Slavin
161 Kathryn L. Holloway,
George Gitchel,
Dimirtri Karles, Alen Docev
177 James McInerney,
Omar Akram Zailatino,
Moksha RamaSingh,
Gareth M. Davies,
Elana Farace
DISCLOSURE INFORMATION

Section on Tumors
Neurosurgical Forum
187 Manabu Omishi,
Tomotsugu Ichikawa,
Kazuhiko Kurozumi,
Kentarou Fujii,
Koichi Yoshida,
Satoshi Inoue,
Hiroyuki Michie,
E. Antonio Chiocca,
Balveen Kaur, Isao Date
190 Juan A. Barcia,
Ana Sanz, Paloma Balugo,
Pedro Alonso-Lera,
Juan Raul Brin,
Javier Saceda, Miguel Yus,
Manuela Jurquera,
Mendes Gonzalez-Hidalgo,
M. Victoria Acedo,
Tomas Ortiz,
Antonio Oliviero
214 Ian F. Pollack,
Regina Jakaci,
Lisa H. Butterfield,
Hidetaka Okada
193 Sarah C. Jost,
Keith M. Rich,
Parnaz Massoumzadeh,
Josh Shimony,
Dimitry Yablonsky,
Tammie Benzinger
214 Orin Bloch,
Brien J. Jian,
Rajwant Kaur,
Michael Prados,
Susan Chang,
Jennifer L. Clarke,
Nicholas Dutowsky,
Michael William McDermott,
Mitchell S. Berger,
Manish Kumar Aghi,
Andrew T. Parsa
226 Roberto Jose Diaz,
Christian Smith,
James T. Rutka

October 4, 2011

T17: Guidelines for Surgical Management
Lumbar Spine Surgery
Sanjay S. Dhall
Eric J. Woodard

T18: Guidelines for Surgical Management of Cervical Spondylotic Myelopathy and OPLL
Michael W. Gruff

T19: Managing Difficult Surgical Scenarios in Spinal Surgery
Michele Marie Johnson

T20: Multidisciplinary Management Strategies for Unruptured Aneurysms
Jose Maria Roda

T21: Advances in the Management of Trigeminal Neuralgia and Facial Pain
Francisco Robaina
Konstantin V. Slavin

T22: Surgery and Radiosurgery for Epilepsy
Warren W. Beling
Ashwini Daval Sharan

T27: Surgical Resection of Low-Grade Gliomas: Current Strategies and Controversies
Susan Chang

T28: Treatment Dilemmas: Normal Pressure Hydrocephalus and Pseudotumor Cerebri
Harold L. Rekate

T29: Spine Surgery in the Geriatric Population: Current Strategies and Controversies
Frank La Marca

T30: Spine and Peripheral Nerve Injuries in Sports
Nicholas Theodore
Christopher J. Winfree

Section on Stereotactic and Functional Neurosurgery
Arivis Aboesn
David Charles
Emad N. Eskandar
Kelly D. Foote
Konstantin V. Slavin

Section on Tumors
Daniel P. Cahill
Michael A. Vogelbaum

Diğer Seminar I
Low Grade Glioma
Jaishri Blakeley

October 5, 2011

General Scientific Session III
Douglas L. Brockmeyer
Julie G. Pilitsis

W32: Contemporary Management of Traumatic Spine and Spinal Cord Injury
Christopher E. Wolf

W33: Treatment of Cervical Radiculopathy: Anterior vs. Posterior Approaches
Richard G. Fessler

W36: Pediatric Spine Management (Traumatic and Congenital)
Richard C. E. Anderson

W44: Innervations in the Management of Intracerebral Hemorrhage
Issam A. Awad

W45: Comprehensive Management Strategies for the Treatment of Movement Disorders
Juan Barcia
Robert E. Gross
Michael Gordon Kaplitt

W46: Multidisciplinary Management of Spinal Metastases
Narayan Sundaresan

Multidisciplinary Oral Presentations
984 Deepak Kumar Gupta
985 David A. Canavagh,
Asaf Javanar,
Pierce D. Nunley,
Domagoj Coric,
Phillip A. Utter,
Eubulus J. Kerr,
Charles R. Gordon,
Gay O. Danielsion

Section on Pain
Julie G. Pilitsis
Ashwini Daval Sharan
Konstantin V. Slavin
Christopher J. Winfree

Dinner Seminar IV
Cervical and Lumbar Arthroplasty
Domagoj Coric

October 6, 2011

General Scientific Session IV
Edward C. Benz
Domagoj Coric
David W. Roberts
Michael A. Vogelbaum

Digital Posters

1032 Robert Emerson Ayer
1098 Inuki Arrotegui
1119 Robert E. Elliott, Ann Morsi, Michael L. Smith, Anthony Frempong-Boadu
1120 Robert E. Elliott, Matthew M. Kang, Michael L. Smith, Anthony Frempong-Boadu
1122 Chul-Woo Lee, Kang Jun Yoon
1133 Luis Marchi, Leonardo Oliveira, Etelelo Coutinho, Luiz Pimenta
1135 Luis Marchi, Leonardo Oliveira, Etelelo Coutinho, Luiz Pimenta
1144 Robert M. Galler
1149 Boris Silberstein, Bruskin Alexander, Alexandrovsky Vitaly
1151 Haines Eauk, Daniel Gene Kang, Ronald A. Lehman, Mario J. Cardoso, Rachel Gaume, Divya Ambati
1162 Khalid A. Sethi, Thomas J. Webster, Gorbath Deborah, Christine Ann Snyder
1200 Javier Saceda, Alberto Isia, Susana Santiago, Carmen Morales, Juan Barcia, Kenan Deniz
1202 Kamran Majid, Mark Moldavsky, Brandon Bucklen, Mir Hussein, Saif Khalil
1203 Joshua E. Heller, Justin S. Smith, Woonjin Cho, Kar-Ming G. Fu, Daniel R. Chernavsky, Christopher I. Shaffrey
1204 Kamran Majid, Mark Moldavsky, Brandon Bucklen, Mir Hussein, Saif Khalil
1206 Reginald J. Davis, Jon Block, Larry Miller
1215 John Stark

1217 John Stark
1239 Namath Syed
Hussain, Mick J. Perez-Cruet
1240 Youssef Moumene
1252 Sandro M. Krieg, Raimund Trabold, Sebastian M. Sonanini, Nikolsas Plesnile
1272 Sarah B. Alme, Benjamin Somberg
1278 Susan E. Wozniak, Eric M. Thompson, Nathan R. Schlen
1299 Robert E. Elliott, Ann Morsi, Eric Geller, Orrin Devinsky, Werner Doyle
1306 Tomotsugu Ichikawa, Takashi Agari, Masahiro Kameda, Toru Satoh, Isao Date
1036 Motomasa Furuse, Shin-Ichi Miyatake, Erina Yoritsune, Shinji Kawabata, Toshihiko Kuroiwa
1371 Tadashi Nariai, Motoki Inagi, Yoji Tanaka, Masaru Aoyagi, Kichii Ishiwata, Jun Toyohara, Tatsuya Kawabe, Masaaki Yamamoto, Kikuo Ohno
1376 A. Samy K. Youssef, Angela Elizabeth Downes, Khaled Al baby, Ali Koth, Fernando L. Vale, Harry R. Van Loveren
1406 Kevork Bekelski, Pablo A. Valdes, Frederic Leblond, A. Kim, Brian Wilson, Brent T. Harris, Nathan E. Simmons, Kadir Erken, Keith Paulsen, David W. Roberts
1418 Bartolome Bejarano
1467 David Fortin, Jeremy Guerin, Bertin Nahum
1472 David Fortin, Pierre-Étienne Morin, David Mathieu, Francois-Michel Paré
1503 Hirofumi Nakatomi

Stay connected at http://m.cns.org

41
PRACTICAL COURSES

PC01  Room 140AB  7:30 AM – 5:00 PM  Complimentary for Residents and Junior Faculty!
NINDS/CNS Workshop on Grant Writing and Career Development
Course Directors: E. Antonio Chiocca, Stephen J. Korn
Faculty: Mitchel S. Berger, S. Thomas Carmichael, Robert J. Dempsey, Aaron S. Dumont, Frances Jensen, Walter J. Koroshetz, Michelle Monje-Deisseroth, John K. Park, Natalia Rost, Gregory J. Zipfel
Learning Objectives: Balancing a research career and clinical neurosurgery is challenging. A key to success is to master the art of grant writing. This course is led by faculty who have successfully obtained funding from the National Institutes of Health (NIH) at different stages of their careers and faculty that sit or have sat on NIH study sections that review grants. Participants are encouraged to bring their own grants-in-progress; time will be set aside for the faculty to review these grants and provide individual instruction. Upon completion, participants will be able to describe the methods for writing successful grants, both for the NIH and private foundations and prepare their own grant applications based on tips and tricks that have helped the faculty write their own successful grants.
This course is restricted to Residents and junior faculty (Five years or less out from completion of training). No CME will be awarded for this course. Please visit the Registration Desk to obtain a ticket.

PC02  Room 145A  1:00 – 5:00 PM  $450
3-D Anatomy (Supratentorial)
Course Director: Albert L. Rhoton, Jr.
Learning Objectives: This course will provide three-dimensional microsurgical instruction on the following topics: routes through the anterior and posterior cerebrum and temporal lobe; anatomy and approaches to the lateral and third ventricles and pineal region; anterior skull base and cavernous sinus; and transphenoidal, transmaxillary and transoral approaches. Upon completion, participants will be able to plan the routes through the anterior and posterior cerebrum and temporal lobe and will identify the anatomy and approaches to the lateral and third ventricles and pineal region, the anterior skull base and cavernous sinus and transsphenoidal, transmaxillary and transoral approaches.

PC03  Room 202B  1:00 – 5:00 PM  $450
Surgical Management of Tumors in Eloquent Regions
Course Director: Linda M. Liu
Faculty: Mitchel S. Berger, Hugues Duffau, Allan H. Friedman, Guy M. McKhann, Nader Pouratian
Learning Objectives: Upon completion, participants will be able to identify the indications for surgical management of tumors within eloquent areas of the brain. They will also be able to integrate current technologies for pre-operative and intra-operative brain mapping for tumors in eloquent cortex and fiber tracts into surgical planning by recognizing how they can enhance the safety of surgery, while considering their limitations. Additionally, they will be able to strategize how to avoid common technical errors in brain mapping techniques.

PC04  Room 146C  1:00 – 5:00 PM  $275
The Essentials of Neurosurgical ICU Management
Course Directors: Owen B. Samuels, Alex B. Valadka
Faculty: William Coplin, Peter LeRoux, Adam Webb
Learning Objectives: This course focuses on ancillary care personnel and will provide a broad spectrum of information regarding the management of critically-ill neurosurgical patients. Upon completion, participants will be able to incorporate the most up-to-date recommendations into treatment plans for increased intracranial pressure management, hemodynamic monitoring and measurement, ventilatory support, infection prevention and treatment, neurological examination, and electrocorticography monitoring.
Nursing contact hours may be provided through AANN. The American Association of Neuroscience Nurses is accredited as a provider of continuing nursing education by the American Nurses Credentialing Center’s Commission on Accreditation. Physician assistants will receive credit for attendance. Each physician assistant will need to contact their individual membership association and certification board to determine the requirements for accepting credits. All attendees will receive a confirmation of attendance.

PC05  Room 144A  1:00 – 5:00 PM  $450
CPT Coding Review and What to Expect in 2012
Course Director: Joseph S. Cheng
Faculty: Mina Foroohar, William Mitchell, Kimberly Pollock, John K. Ratliff, G. Edward Vates
Learning Objectives: This course provides a summary of the anticipated CPT 2012 coding changes and also reviews the 2011 coding changes that affect neurosurgeons. Upon completion, participants will be able to apply new and revised CPT coding concepts to key neurosurgical and reporting services with CPT codes and modifiers in order to effectively protect surgical and evaluation/management reimbursement. They will also be able to strategize how to avoid compliance issues with regard to new regulations.
**PRACTICAL COURSES**

**PC06**  Room 206  1:00 – 5:00 PM  **$550**

Cervical Spondylotic Myelopathy and Radiculopathy: Treatment Approaches and Options  
**Course Director:** Michael G. Kaiser  
**Faculty:** Kurt M. Eichholz, James S. Harrop, Langston T. Holly, John E. O’Ttole  
**Learning Objectives:** The pathophysiology, clinical presentation, and current diagnostic modalities involved in the care of cervical degenerative disease will be discussed in this course. The indications, techniques and complications associated with the operative management of cervical degenerative disease, including correction of degenerative deformities, will be reviewed through lectures, case-presentations and hands-on practical exercises. Upon completion, participants will be able to identify the appropriate indications and recommend state-of-the-art techniques for surgical management of degenerative disease of the cervical spine, as well as steps to avoid common complications.

**PC07**  Room 143B  1:00 – 5:00 PM  **$450**

Spine Biomechanics: A Focus on Junctional Pathology  
**Course Director:** Edward C. Benzel  
**Faculty:** Ajit A. Krishnaney, Praveen V. Mummaneni, Gregory R. Trost, Michael Y. Wang  
**Learning Objectives:** This course presents the physical principles and biomechanical foundations of spinal surgery and stabilization via a didactic and interactive case discussion format. Upon completion, participants will be able to integrate biomechanical principles and strategies into their surgical planning and strategize to avoid and manage complications.

---

... Is Dr. Lee presenting any new breakthroughs on arachnoid cysts?

---

Stay connected with the CNS Mobile Meeting Guide!

- Browse abstracts and digital posters.
- Search by author, key words or subspecialty.

iPhone and iPad users may download the app from the Apple App Store.

Connect with your Android and laptop at http://m.cns.org!
PRACTICAL COURSES

**PC08** Room 143A  8:00 AM – 4:00 PM  $325

Inpatient and Outpatient Management Dilemmas for Allied Health Care Professionals

**Course Directors:** John A. Jane, Jr., Andrea L. Strayer, MSN, APNB, CNRN

**Faculty:** Nathaniel P. Brooks, Aaron S. Dumont, Elena Farace, David O. Okonkwo, Nader Pouratian, Mark Edwin Shaffrey, Justin S. Smith, Michael P. Steinmetz

**Learning Objectives:** Upon completion, participants will be able to discuss current evidence, clinical management of a variety of neurological diagnoses such as trauma, cerebral aneurysm, and brain tumors. Participants will be able to analyze minimally invasive spine surgery options, endoscopic approaches to the pituitary and skull base as well as restorative neurosurgery. Lastly, participants will investigate the marked increase in falls in the elderly and implications for care as well as the prevention and treatment of surgical site infection.

Nursing contact hours may be provided through AANN. The American Association of Neuroscience Nurses is accredited as a provider of continuing nursing education by the American Nurses Credentialing Center’s Commission on Accreditation. Physician assistants will receive credit for attendance. Each physician assistant will need to contact his or her individual membership association and certification board to determine the requirements for accepting credits. All attendees will receive a confirmation of attendance.

**PC09** Room 151AB  8:00 AM – 4:00 PM  $1,600

Minimally Invasive Spinal Surgery

**Course Director:** Richard G. Fessler

**Faculty:** Kurt M. Eichholz, Langston T. Holly, John C. Liu, Alfred T. Ogden, John E. O’Toole, Avelino Parajon, Justin S. Smith, Trent Lane Tredway

**Learning Objectives:** This course will focus on minimally invasive procedures for cervical and lumbar spine surgery. Techniques for decompression, fixation, and fusion will be discussed. Upon completion, participants will be able to incorporate various minimally invasive techniques into their approach for cervical and lumbar spine surgery, and identify the indications, results and potential complications for these procedures.

Hands-on lab with specimens.

**PC10** Room 146C  8:00 AM – 4:00 PM  $500

Brain Tumor Update

**Course Directors:** Frederick F. Lang, Andrew T. Parsa

**Faculty:** Manish K. Aghi, Frederick G. Barker, John A. Boockvar, Jeffrey N. Bruce, Johnny B. Delashaw, Franco DeMonte, Michael Lim, Russell R. Lonser, Mark Edwin Shaffrey, Charles Teo, Philip V. Theodosopoulos, Isaac Yang

**Learning Objectives:** This course includes current research topics but emphasizes practical management issues. It will provide an up to date overview of current management strategies for major types of glial tumors including astrocytomas, oligodendrogliomas and others. Treatment strategies for major types of benign and malignant brain tumors of non-glial origin will be also be discussed. Upon completion, participants will be able to formulate treatment plans based on the state of the art management of benign and malignant brain tumors including meningiomas, acoustic neuromas, skull base tumors, pediatric tumors and metastases. Participants will also be able to incorporate current concepts in glioma management including surgical techniques, adjuvant treatments, tumor biology and clinical management decisions into their treatment plans.

**PC11** Room 154A  8:00 AM – 4:00 PM  Complimentary

Simulation Based Neurosurgical Training

**Course Directors:** James S. Harrop, Darlene Angela Lobel, Ali R. Rezai

**Faculty:** Paul A. Anderson, Bernard R. Bendok, Peter Campbell, Rohan Chitale, James B. Elder, Thomas Kerwin, Elad I. Levy, J D. Mocco, Daniel M. Prevedello, Andrew J. Ringer, Ben Z. Rothberg, Clemens M. Schirmer, Ashwini D. Sharan, Adrian H. Siddiqui, Don Stredney, Erol Veznedaroglu

**Learning Objectives:** Upon completion, participants will be able to demonstrate proficiency using realistic simulators for craniotomy for trauma, placement of an external ventricular drain; cervical spine decompression and lumbar pedicle screw placement; repair of CSF leak; performance of cerebral angiogram; and performance of retrosigmoid craniotomy. Participants will also be able to describe indications for basic concepts and techniques in management of traumatic brain injury, degenerative spine disease, cerebrovascular disease, and skull base tumors.

This course is for PGY3, PGY4 and PGY5 residents. Registration is limited to 27 residents. Please visit the Registration Desk to obtain a ticket.

**PC12** Room 146A  8:00 – 11:30 AM  $450

Trauma Update Part I: Traumatic Brain Injury

**Course Director:** Raj K. Narayan

**Faculty:** M. Ross Bullock, Geoffrey T. Manley, David O. Okonkwo, Harold Rekate, Lori Anne Shutter, Shelly D. Timmons

**Learning Objectives:** This course reviews the current thinking on the non-surgical and surgical treatment of traumatic brain injury in pediatrics and adults. Newer monitoring techniques, as well as promising new therapies, will be discussed. Upon completion, participants will be able to structure treatment plans around recent developments in this field, along with current management surgical and non-surgical strategies and guidelines.

**PC13** Room 146B  8:00 – 11:30 AM  $450

Cranial Radiosurgery Update

**Course Director:** Randy L. Jensen

**Faculty:** David W. Andrews, Steven D. Chang, Antonio A.F. DeSalles, Michael William McDermott, Jason P. Sheehan, Andrew E. Sloan

**Learning Objectives:** Upon completion, participants will be able to recommend radiosurgery more safely by recognizing the appropriate use of radiosurgery for benign and malignant cranial lesions; differentiate the differences between the various radiosurgery delivery platforms; discuss radiosurgery delivery techniques to avoid injury to intracranial neurovascular structures; identify the indications for the use of radiosurgery for functional disorders and pain; and apply techniques learned in this course to formulate a radiosurgery plan for a given cranial pathology.
## PRACTICAL COURSES

### PC14  Room 147B  8:00 – 11:30 AM  $450
Contemporary Principles of Spinal Deformity Surgery  
**Course Directors:** Praveen V. Mummaneni, Christopher I. Shaffrey  
**Faculty:** Christopher P. Ames, James S. Harrop, Robert F. Heary, Tyler R. Koski, Charles Kuntz, IV, Frank La Marca, David O. Okonkwo  
**Learning Objectives:** Upon completion, participants will be able to describe indications and surgical techniques for the correction of spinal deformity, identify common and uncommon complications and salvage strategies in complex deformity cases, and theorize spinal deformity case management using cases provided by the audience and by faculty.

### PC15  Room 144B  8:00 – 11:30 AM  $450
Using Evidence-Based Medicine to Manage Spinal Disorders  
**Course Directors:** Peter D. Angevine, Paul C. McCormick  
**Faculty:** Mark H. Bilsky, John Chi, John E. O’Toole, Marjorie C. Wang  
**Learning Objectives:** Topics to be discussed will include spinal tumors, degenerative cervical and lumbar disease, use of biological substances, and minimally invasive techniques. Upon completion, participants will be able to incorporate the latest evidence into their management of spinal disorders.

### PC16  Room 147A  8:00 – 11:30 AM  $450
Masters of Cranial Neuroendoscopy  
**Course Directors:** Alan R. Cohen, James M. Drake  
**Faculty:** Philippe Decq, Jonathan A. Engh, J. Andre Grotenhuis, Carl B. Heilman, John Jane, Jr., David F. Jimenez, Henry W.S. Schroeder, Theodore H. Schwartz, Mark M. Souweidane, Charles Teo, John C. Wellons, III  
**Learning Objectives:** This course will cover the management of pituitary adenomas, meningiomas, craniopharyngiomas, chordomas, hydrocephalus, intraventricular tumors and cysts and other skull base tumors. Upon completion, participants will be able to strategize the use of endoscopy for intracranial applications including endonasal and intraventricular approaches.

### PC18  Room 207A  8:00 – 11:30 AM  $450
Deep Brain Stimulation: Indications and Emerging Applications  
**Course Director:** Robert E. Gross  
**Faculty:** Kelly D. Foote, Clement Hamani, Zehna H. T. Kiss, Andre Machado, Karl A. Silkay  
**Learning Objectives:** Upon completion, participants will be able to analyze the approved indications, the rationale for the various approved brain targets, and the outcomes from clinical trials of deep brain stimulation for Parkinson’s disease, essential tremor and dystonia. They will also identify the rationale for non-approved targets being investigated for Parkinson’s disease, essential tremor, and dystonia, consider the possible advantages over approved targets, and analyze preliminary outcomes from clinical trials of these targets. Participants will also be able to recognize possible non-approved indications for deep brain stimulation currently under investigation, including the epilepsies, psychiatric disorders, and Tourette syndrome; the rationale for the various targets being investigated; and preliminary outcomes from clinical trials.

### PC19  Room 140B  12:30 – 4:00 PM  $450
Cranial Neurosurgery: Complication Avoidance and Management  
**Course Director:** William T. Couldwell  
**Faculty:** Ossama Al-Mefty, Alim-Louis Benabid, Mitchel S. Berger, Raj K. Narayan  
**Learning Objectives:** Using case presentations, didactic lectures and interaction with faculty, clinical scenarios that may result in complications, with their appropriate management will be reviewed. Further, strategies designed to anticipate complications so that they may be avoided will also be discussed. Upon completion, participants will be able to identify common complications associated with a variety of cranial procedures and plan strategies to avoid and manage them.

### PC20  Room 146A  12:30 – 4:00 PM  $450
Trauma Update Part II: Spinal Cord and Spinal Column Injury  
**Course Director:** Michael G. Fehlings  
**Faculty:** Bizhan Aarabi, Steven Casha, Richard G. Ellenbogen, James S. Harrop, Christopher I. Shaffrey  
**Learning Objectives:** Upon completion, participants will be able to incorporate the classification of spinal trauma, principles of management of spinal cord injury (SCI) including the appropriate use of steroids and the timing of surgery and the principles of managing cervical, thoracic and thoracolumbar spine injuries into treatment plans. They will also be able to recognize emerging clinical trials in acute SCI and issues of pediatric spine trauma.

---

Stay connected at http://m.cns.org
PRACTICAL COURSES

PC21 Room 147A 12:30 – 4:00 PM $450
Implementing and Utilizing the Metastatic Brain Tumor Clinical Practice Guidelines in Everyday Practice

Course Director: Steven N. Kalkanis
Faculty: David W. Andrews, Anthony L. Asher, Douglas Kondziolka, Mark E. Linskey, Jeffrey J. Olson
Learning Objectives: There has been a rapid evolution of evidence based medicine and guidelines for neurosurgery, including cranial disorders. This is a course on evidence-based medicine and guidelines for Neurosurgery. Specifically, the recent evidence-based medicine literature as reflected in guidelines will be reviewed concerning the treatment of cranial disorders. These will be discussed in terms of strengths, weaknesses and limitations in applying to clinical practice. The course will review neurosurgical guidelines for cranial disorders including cranial trauma, hydrocephalus and metastases. Upon completion, participants will be able to discuss the current state of evidence based medicine and guidelines for cranial disorders and construct a process for accruing evidence-based medicine and guidelines, as well as potential limitations.

PC22 Room 146B 12:30 – 4:00 PM $450
Spinal Metastatic Tumors: Contemporary Multidisciplinary Treatment

Course Director: Peter C. Gerszten
Faculty: Lilyana Angelov, Mark H. Bilsky, Steven D. Chang, Jason P. Sheehan, Jason Andrew Weaver
Learning Objectives: This course will provide participants with an exposure to radiosurgery and newer adjuvant therapies for spine tumors. The course will include a detailed explanation of the radiobiological principles of hypofractionated radiotherapy. An emphasis will be placed on the indications and limitations of spine radiosurgery and other adjuvant therapies and how they might be used in combinations to treat both benign and malignant tumors of the spine. The various technologies available to perform spine radiosurgery will also be described and compared in detail. This will be a true practical course, with all participants having the opportunity for hands-on experience by planning actual cases. Upon completion, participants will be able to analyze the most commonly used techniques for spine radiosurgery; discuss the current indications and current literature regarding outcomes after spine radiosurgery; describe the current relative contraindications to spine radiosurgery; and strategize the mitigation of the potential risks and complications of spine radiosurgery.

PC23 Room 145A 12:30 – 4:00 PM $450
3-D Anatomy (Infratentorial)

Course Director: Albert L. Rhoton, Jr.
Learning Objectives: This course will provide three-dimensional microsurgical instruction on the anatomy and approaches through the temporal bone; cerebellum and fourth ventricle; far lateral and transcondylar approaches; approaches to the cerebellopontine angle; and the anatomy and approaches to the jugular foramen. Upon completion, participants will be able to describe the anatomy of these areas and discuss the three-dimensional neurovascular relationships of each region.

PC24 Room 150A 12:30 – 4:00 PM $450
Principles and Practice of Peripheral Nerve Surgery

Course Directors: Allan H. Friedman, Robert J. Spinner
Faculty: Allan J. Belzberg, Allen H. Maniker, Rajiv Midha, Lynda J.S. Yang, Eric L. Zager
Learning Objectives: Upon completion, participants will be able to assess patients with peripheral nerve lesions, including aspects of history, physical exam, electrodiagnostic and imaging modalities; discuss the relevant biology of nerve injury and regeneration; determine the selection of patients with nerve injury for operation including timing of intervention; identify nerve conditions that require emergency and urgent management; and plan for the management of patients with peripheral nerve tumors or common entrapment neuropathies.

PC25 Room 206 12:30 – 4:00 PM $500
My Worst Spinal Complication: What I Learned

Course Director: Charles Kantz, IV
Faculty: Robert J. Bohinski, Richard G. Fessler, Robert F. Heary, Praveen V. Mummmaneni, Laurence D. Rhines, Christopher I. Shaffrey, Michael P. Steinmetz
Learning Objectives: Contemporary avoidance, evaluation, and management of surgical complications remain controversial. Despite significant medical advances, surgical complications can result in poor clinical outcomes and increased medical costs. There is a need for a better understanding of these surgical complications. This course will present and review the avoidance, evaluation, pathophysiology, and treatment of surgical complications. Upon completion, participants will be able to integrate contemporary evaluation and pathophysiology recognition of spinal complications as well as complication avoidance and management strategies into their current treatment plans.

PC26 Room 207B 12:30 – 4:00 PM $450
Neurocritical Care and Neurosurgical Emergencies Update

Course Director: Jack Jallo
Faculty: Pascal Jabbour, Douglas Laske, Christopher J. Madden, John K. Ratliff, Matthew Vibbert
Learning Objectives: This course is designed to promote rapid identification and a better understanding of the management of neurosurgical emergencies. Upon completion, participants will be able to design key management strategies for emergencies involving the brain, spine and peripheral nerves by evaluating the current evidence for patient specific therapies, applying the latest modalities in the management and understanding of neurosurgical emergencies, identifying controversies in management of these emergencies, considering the role of the surgeon in emergency neurosurgery and understanding the physiology of a variety of neurosurgical emergencies.
**PRACTICAL COURSES**

**PC27  Room 144A  12:30 – 4:00 PM  $450**
Operative Indications, Options and Techniques for Epilepsy  
Course Director: Gordon H. Baltuch  
Faculty: Nicholas M. Barbaro, Warren W. Boling, Guy M. McKhann, David W. Roberts, Robert E. Wharen, Kareem A. Zaghloul  
Learning Objectives: The course is designed to cover the current thinking of the indications, various options and surgical management of medically intractable epilepsy patients. Upon completion, participants will be able to identify the indications, plan surgical techniques, and analyze results and complications of epilepsy surgery.

**PC28  Room 143B  12:30 – 4:00 PM  $450**
Expanding Your Neurosurgical Pain Practice  
Course Director: Julie G. Pilitsis  
Faculty: Giovanni Broggi, Jeffrey A. Brown, Alon Y. Mogilner, Oren Sagher, Konstantin V. Slavin, Christopher J. Winfree  
Learning Objectives: Upon completion, participants will be able to illustrate the physiology and operative techniques of recent advances in neurosurgical pain management; describe the current role of ablative neurosurgical procedures for pain and theorize how to efficiently and effectively perform pain procedures in a busy neurosurgical practice. Please visit the Registration Desk to obtain a ticket.

**PC29  Room 143C  12:30–4:00 PM  Complimentary**
Ethics in Neurosurgical Practice: Designing a High Quality, Meaningful, and Personally Satisfying Clinical Practice  
Course Director: Nicholas Bambakidis  
Faculty: Edward C. Benzel, Charles V. Burton, Fahd R. Khan, Charles D. Rosen  
Learning Objectives: Upon completion, participants will be able to strategize ways to maintain high ethical standards within their neurosurgical practices by analyzing the necessary, major tenets and by recognizing specific clinical scenarios that may jeopardize an ethical neurosurgical practice. Please visit the Registration Desk to obtain a ticket.

Who will be the next CNS Resident SANS Challenge Champion?  
Cheer on your colleagues at the 2011 CNS Resident SANS Challenge as they compete in live rounds and see who will be the next champion!

**Preliminary Rounds:**  
Sunday, October 2  
1:00 – 4:00 PM  
Walter E. Washington Convention Center  
Room 202A

**Championship Round:**  
Tuesday, October 4  
5:00 – 6:00 PM  
Walter E. Washington Convention Center  
Room 202A
TAKE A CLOSER LOOK AT THE LATEST TECHNOLOGY

Get your hands on the latest advances and technological innovations in the field of neurosurgery with these activities in the Exhibit Hall!

**CNS Product & Technology Showcase** (See Schedule on page 50)

**Research & Development Expert Exchange** (See Schedule on page 50)
   Discuss your concerns and ideas with engineers and product developers from leading companies.

**In-Booth Product Demonstrations** (See Schedule on page 51)

**Wine & Cheese Experience with the CNS Exhibitors**

**Also available in the exhibit hall:**
- Digital Poster Center
- Daily Beverage Breaks
- E-mail Stations

**CNS Member Services Booth #1221**
Stop by for membership information, world-class publications and demos of the following CNS products!
- **NEUROSURGERY®**
- CNS University
- CNS Job Placement Service (JPS)
- SANS Lifelong Learning
- Simulation Area
Opening Session
4:30 – 6:00 PM      Walter E. Washington Convention Center     Hall E

Opening Session
Presiding Officer: Daniel K. Resnick
Moderators: Mark E. Linskey, Alan M. Scarrow
Learning Objectives: Upon completion, participants will be able to strategize for the intricacies in neurological surgery by learning about mechanisms used to adapt to the complexities of changing environments, important anatomic relationships as they relate to surgical anatomy and approaches for intracranial surgery, and the latest pathological developments as they relate to neurological surgery.

4:30 – 4:35 PM
Introduction and Disclosures
Daniel K. Resnick

4:35 – 4:53 PM
Striving To Optimize Outcome: The Anatomic Foundation of Neurological Surgery
Albert L. Rhoton, Jr.

4:53 – 4:56 PM
Introduction of Special Lecturer Gerald Imber
Daniel K. Resnick

4:56 – 5:16 PM
Special Lecture
Genius on the Edge: The Bizarre Double Life of Dr. William Stewart Halsted
Gerald Imber

5:16 – 5:18 PM
Introduction of Special Lecturer Peter C. Burger
Ganesh Rao

5:18 – 5:35 PM
Special Lecture
Seeking New Paradigms in Neuropathology – Anatomic, Genetic and Molecular
Peter C. Burger

5:35 – 5:40 PM
Introduction of John Thompson History of Medicine Lecturer
General (Ret.) Stanley McChrystal
Rocco A. Armonda

5:40 – 6:00 PM
John Thompson History of Medicine Lecture
Maintaining Expertise in a Complex and Changing Environment
General (Ret.) Stanley McChrystal

6:00 PM Book Signing with Gerald Imber
Grand Ballroom Foyer, Level 3

CNS OPENING RECEPTION
Sunday, October 2 ★ 6:00 – 8:00 PM
Immediately following the Opening Session, join your colleagues in the Walter E. Washington Convention Center Grand Ballroom for fabulous food, beverages and music.
Each registered attendee will receive one complimentary ticket to the Opening Reception.
THE CNS PRODUCT & TECHNOLOGY SHOWCASE

The Demo Theater located in booth 522 provides a unique forum to learn about the latest products and services!

MONDAY, OCTOBER 3

9:35 – 10:00 AM  Lanx, Inc. has invited Dr. Jeffrey Oppenheim to discuss Clinical Applications of the Aspen™ Device

TUESDAY, OCTOBER 4

9:05 – 9:30 AM  Nexstim Inc. has invited Dr. Thomas Picht from Charité University Hospital in Berlin to discuss Navigated Brain Stimulation – Optimizing the Surgical Strategy

12:05 – 1:00 PM  How to Submit a Paper to NEUROSURGERY®

Part I. Elements of Quality Scientific Articles – Nelson M. Oyesiku, MD, Editor-in-Chief

Part II. Evidence-based Manuscripts – Fred Barker, MD, Section Editor

Part III. Submitting Your Manuscript Demonstration – Duncan MacRae, Managing Editor

Part IV. Q&A

RESEARCH & DEVELOPMENT EXPERT EXCHANGE

The following product developers, engineers, and researchers will be available to discuss your concerns and ideas for neurosurgical technology.

11:30 AM – 1:30 PM  Monday, October 3 and Tuesday, October 4

Carl Zeiss Meditec, Inc.  1338

Frank Rudolph  ZEISS Neuro Product Manager
Subject/Product: Newest developments in neurosurgical microscopy

Dr. Roland Guckler  ZEISS IOF Product Manager
Subject/Product: Recent advances in intraoperative fluorescence (IOF) imaging

Avi Yaron  CTO, Inventor of VSii 3D Endo-Microscope
Subject/Product: VSii 3D Endo-Microscope

Kelyniam Global, Inc  1005

James Ketner  President, CEO and Chairman
Subject/Product: Custom Cranial Implants Made of PEEK-OPTIMA®

Chris Breault  Operations Director
Subject/Product: Rapid Medical Prototyping Revolutionary Rapid Turnaround

Pro Med Instruments, Inc.  1202

Matthias E. Schuele, MBA  Subject/Product: New Generation Skull Clamp & Navigation Adaptors
Available: Monday, October 3: 11:30AM – 12:30 PM
Tuesday, October 4: 12:30 PM – 1:30 PM
## IN-BOOTH DEMONSTRATIONS

Visit these exhibitors at the designated times for in-booth demonstrations of their latest products!

<table>
<thead>
<tr>
<th>Exhibitor</th>
<th>Booth Number</th>
<th>Product/Service</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Atlas Spine, Inc.</strong></td>
<td>1407</td>
<td>MIS TLIF Strategies: True Position Spacer System</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>October 3, 4, 5</strong> 9:00 – 10:00 AM, 11:30 AM – 12:00 PM, and 1:30 – 2:00 PM</td>
</tr>
<tr>
<td><strong>Carl Zeiss Meditec, Inc.</strong></td>
<td>1338</td>
<td>Intraoperative fluorescence (INFRARED 800, BLUE 400, YELLOW 560)</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>October 3</strong> 9:00, 10:00, 11:00 AM and 12:00, 1:00, 2:00, 3:00 PM</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>October 4</strong> 9:00, 10:00, 11:00 AM and 12:00, 1:00, 2:00, 3:00, 4:00, 5:00 PM</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>October 5</strong> 9:00, 10:00, 11:00 AM and 12:00, 1:00, 2:00 PM</td>
</tr>
<tr>
<td><strong>OPMI VARIO 700 surgical microscope</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>October 3</strong> 9:00, 10:00, 11:00 AM and 12:00, 1:00, 2:00, 3:00 PM</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>October 4</strong> 9:00, 10:00, 11:00 AM and 12:00, 1:00, 2:00, 3:00, 4:00, 5:00 PM</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>October 5</strong> 9:00, 10:00, 11:00 AM and 12:00, 1:00, 2:00 PM</td>
</tr>
<tr>
<td><strong>PENTERO 900 surgical microscope</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>October 3</strong> 9:00, 10:00, 11:00 AM and 12:00, 1:00, 2:00, 3:00 PM</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>October 4</strong> 9:00, 10:00, 11:00 AM and 12:00, 1:00, 2:00, 3:00, 4:00, 5:00 PM</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>October 5</strong> 9:00, 10:00, 11:00 AM and 12:00, 1:00, 2:00 PM</td>
</tr>
<tr>
<td><strong>VSii 3D Endo-Microscope</strong></td>
<td></td>
<td><strong>October 3, 4, 5</strong> 1:00 PM</td>
</tr>
<tr>
<td><strong>Elekta</strong></td>
<td>1040</td>
<td>Leksell Gamma Plan 10</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>October 3</strong> 11:30 AM – 2:00 PM</td>
</tr>
<tr>
<td></td>
<td></td>
<td>SonoWand Invite</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>October 4</strong> 11:30 AM – 2:00 PM</td>
</tr>
<tr>
<td><strong>Leica Microsystems, Inc.</strong></td>
<td>548</td>
<td>Wirelessly transfer/edit surgical videos directly on the Apple® iPad.</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>October 3</strong> 9:00 – 10:00 AM and 1:30 – 2:00 PM</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>October 4</strong> 11:30 AM – 12:00 PM</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Techniques/instrumentation used for fluorescence of 5-ALA in GBM tumors.</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>October 3</strong> 11:30 AM – 12:00 PM</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>October 4</strong> 9:00 – 10:00 AM and 1:30 – 2:00 PM</td>
</tr>
<tr>
<td><strong>Nexstim, Inc.</strong></td>
<td>1009</td>
<td>Nexstim Navigated Brain Stimulation System (NBS)</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>October 3</strong> 9:00 AM – 3:00 PM</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>October 4</strong> 9:00 AM – 5:00 PM</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>October 5</strong> 9:00 AM – 2:00 PM</td>
</tr>
<tr>
<td><strong>Orthofix</strong></td>
<td>831</td>
<td>Spine Fusion Stimulation</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>October 3</strong> 9:00 – 10:00 AM</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>October 4</strong> 9:00 – 10:00 AM and 1:30 – 2:30 PM</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>October 5</strong> 9:00 AM – 10:00 AM</td>
</tr>
<tr>
<td><strong>PHOENIX™ Minimally Invasive Spinal Fixation System</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>October 3</strong> 9:00 – 10:00 AM</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>October 4</strong> 9:00 – 10:00 AM and 1:30 – 2:30 PM</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>October 5</strong> 9:00 AM – 10:00 AM</td>
</tr>
<tr>
<td><strong>FIREBIRD™ Deformity Correction System</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>October 3</strong> 9:00 – 10:00 AM</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>October 4</strong> 9:00 – 10:00 AM and 1:30 – 2:30 PM</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>October 5</strong> 9:00 AM – 10:00 AM</td>
</tr>
<tr>
<td><strong>Biologics, Featuring Trinity Evolution™ and Collage Osteoconductive Scaffold</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>October 3</strong> 9:00 – 10:00 AM</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>October 4</strong> 9:00 – 10:00 AM and 1:30 – 2:30 PM</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>October 5</strong> 9:00 AM – 10:00 AM</td>
</tr>
<tr>
<td><strong>Pro Med Instruments, Inc.</strong></td>
<td>1202</td>
<td>New Generation Skull Clamp</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>October 3</strong> 11:30 AM – 1:30 PM</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>October 4</strong> 11:30 AM to 1:30 PM and 3:30 – 5:00 PM</td>
</tr>
<tr>
<td><strong>Siemens Healthcare</strong></td>
<td>805</td>
<td>Arcadis Orbic 3D</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>October 3</strong> 9:00 AM – 3:00 PM</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>October 4</strong> 9:00 AM – 5:00 PM</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>October 5</strong> 9:00 AM – 2:00 PM</td>
</tr>
</tbody>
</table>
**Monday, October 3 Program Highlights**

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
</tr>
</thead>
</table>
| 8:15 – 8:35 AM   | ★ Translational Neuroscience  
|                  | *Story C. Landis, PhD*                                                 |
| 9:00 AM – 3:00 PM| ★ Exhibit Hall Open                                                    |
| 10:05 – 10:25 AM | ★ Presidential Address  
|                  | *Christopher C. Getch*                                                 |
| 10:30 – 10:50 AM | ★ Concussion in the NFL  
|                  | *Roger Goodell*                                                        |
| 10:55 – 11:30 AM | ★ Walter E. Dandy Oration  
|                  | *Jon Meacham*                                                          |
| 11:30 AM         | ★ Book Signing with Jon Meacham in the Exhibit Hall                    |
| 2:00 – 3:30 PM   | ★ Special Course I: Concussion: A Perfect Storm and the Role of the National Football League |
|                  | ★ Consensus Session I: Treatment of Metastatic Brain Tumors: What Is Standard of Care? |
| 2:00 – 5:00 PM   | ★ CNS Original Science Program I  
|                  | ★ Oral Presentations  
|                  | ★ Neurosurgical Forum                                                  |
| 3:30 – 5:00 PM   | ★ The Art of Managing Complex Cranial Cases: A 3-D Video Presentation   |
General Scientific Session I

**Presiding Officer:** Christopher E. Wolfla

**Moderators:** Ashwini Dayal Sharan, Ganesh Rao

**Learning Objectives:** Upon completion, participants will be able to incorporate the latest developments in managing intracranial aneurysms, metastatic brain disease, and minimally invasive spine surgery, into their current treatment plans. Participants will also describe the latest efforts by experts to evaluate and treat sport related concussions in all levels of play.

### Schedule

#### Monday, October 3

**7:00 – 7:05 AM**

*Introduction and Disclosures*
  - Christopher E. Wolfla

**7:05 – 7:22 AM**

*Unyielding Progress: Giant Aneurysm Management Paradigms*
  - Laligam N. Sekhar

**7:22 – 7:39 AM**

*Striving to Improve Survival: Current Management of Brain Metastases*
  - Raymond Sawaya

**7:39 – 7:56 AM**

*Striving To Define a Surgical Paradigm: Role of Minimally Invasive Spine Surgery in the Thoracic Spine*
  - Richard G. Fessler

**7:56 – 8:11 AM**

**CNS RESIDENT AWARD**
  - Jonathan Riley

  **900 A Phase I Safety Trial for Intraspinal Stem Cell Transplantation in ALS: Assessment of Perioperative Morbidity and Procedural Safety**
  - Jonathan Riley, Thais Federici, Meraida Polack, Eva Feldman, Jonathan Glass, Nicholas M. Boulis

**8:11 – 8:15 AM**

*Introduction of Special Lecturer Story C. Landis*
  - Christopher E. Wolfla

**8:15 – 8:35 AM**

*Special Lecture Translational Neuroscience*
  - Story C. Landis, PhD

**8:35 – 8:40 AM**

*Introduction of Honored Guest H. Hunt Batjer*
  - Ralph G. Dacey

**8:40 – 9:00 AM**

*Honored Guest Lecture Red Cerebral Veins – The Science, The Art, and The Craft H. Hunt Batjer*

**9:00 – 10:00 AM**

*Beverage Break with Exhibitors*

**10:00 – 10:05 AM**

*Introduction of CNS President Christopher C. Getch*
  - Douglas Kondziolka

**10:05 – 10:25 AM**

*CNS President Presidential Address*
  - Christopher C. Getch

**10:25 – 10:30 AM**

*Introduction of Special Lecturer Roger Goodell*
  - Richard G. Ellenbogen, H. Hunt Batjer

**10:30 – 10:50 AM**

*Special Lecture Concussion in the NFL*
  - Roger Goodell

**10:50 – 10:55 AM**

*Introduction of Walter E. Dandy Orator Jon Meacham*
  - Russell R. Lonser

**10:55 – 11:30 AM**

*Walter E. Dandy Oration Leadership in a Time of Crisis*
  - Jon Meacham

**11:30 AM – 12:00 PM**

*Break with Exhibitors*

**11:30 AM Book Signing with Jon Meacham in the Exhibit Hall, Booth 1221!**

---

Stay connected at [http://m.cns.org](http://m.cns.org)
LUNCHEON SEMINARS

12:00 – 1:30 PM

All Luncheon Seminars include a plated lunch served in the seminar room. Luncheon Seminar fees are $75 each ($60 for Residents/Fellows/Medical Students/Nurses/Physician Extenders).

**M01**
Room 145A
Resident/Honored Guest Luncheon – Your Career in Neurosurgery: Pathways to Success and Failure

*Complimentary for CNS Resident Members!*

**Moderator:** Catherine A. Mazzola

**Faculty:** H. Hunt Batjer

**Learning Objectives:** Participants and the CNS Honored Guest will review and discuss challenges and changes in neurosurgical education, career development and lifelong learning. Upon completion, participants will be able to identify successful career development and professional strategies, and utilize these methods to enhance their own training and lifelong learning.

**M05**
Room 146C
Pseudoarthrosis of the Cervical and Lumbar Spine

**Moderator:** William Charles Welch

**Faculty:** Anthony J. Caputy, Michael G. Kaiser, Gregory R. Trost, Timothy R. Witham

**Learning Objectives:** Upon completion, participants will be able to identify the appropriate imaging modalities to accurately diagnose a pseudoarthrosis of either the cervical or lumbar spine and incorporate management strategies to increase the potential for successful clinical outcome by considering the results and potential complications of current salvage techniques.

**M02**
Room 140A
Current Management Strategies for Craniosynostosis

**Moderator:** Robert F. Keating

**Faculty:** James T. Goodrich, Jose Hinojosa, David F. Jimenez, Mark R. Proctor

**Learning Objectives:** Upon completion, participants will be able to discuss various forms of syndromic and non-syndromic cranial synostosis and add various techniques available for repair of craniosynostosis to their management strategies.

**M06**
Room 147A
Multidisciplinary Management of Subarachnoid Hemorrhage and Vasospasm

**Moderator:** R. Loch Macdonald

**Faculty:** Adam S. Arthur, Kevin M. Cockroft, Luis Ley, Robert H. Rosenwasser

**Learning Objectives:** Upon completion, participants will be able to compare the current surgical, interventional and medical management of subarachnoid hemorrhage and vasospasm secondary to ruptured intracranial aneurysms and vascular malformations.

**M03**
Room 146A
Disc Replacement in the Cervical and Lumbar Spine

**Moderator:** Regis W. Haid

**Faculty:** Peter D. Angevine, Wayne Gluf, Carl Lauryssen, Luis M. Tumialan

**Learning Objectives:** Upon completion, participants will be able to discuss the state-of-the-art cervical and lumbar disc arthroplasty technology and discuss its indications for use.

**M07**
Room 147B
Hematology and Coagulation for Neurosurgeons: Dangers and Solutions

**Moderator:** Issam A. Awad

**Faculty:** Edward A.M. Duckworth, Michael T. Lawton, Maciej S. Lesniak, Alex B. Valadka

**Learning Objectives:** Neurosurgeons commonly face acute peri- and intraoperative decisions regarding the diagnosis and management of coagulopathy that are crucial to patient safety and excellent outcomes. Upon completion, participants will review important coagulation mechanisms, parameters, indications and clinical pearls to their current strategy, list important screening guidelines and define the key points of emergency and intraoperative coagulation management.

**M04**
Room 146B
Nuances of Minimally Invasive Spine Surgery

**Moderator:** Richard G. Fessler

**Faculty:** Avetino Parajon, Luiz Pimenta, Faheem A. Sandhu, Jean-Paul Wolinsky

**Learning Objectives:** Upon completion, participants will be able to discuss the current indications, plan techniques appropriate for minimally invasive spinal surgery and describe the expected outcomes and complications associated with these techniques.

**M08**
Room 140B
Incorporating Psychosurgery into Your Neurosurgical Practice

**Moderator:** Rees Cosgrove

**Faculty:** Giovanni Broggi, Emad N. Eskandar, Kelly D. Foote, Robert E. Gross, Brian H. Kopell

**Learning Objectives:** Upon completion, participants will be able to incorporate the latest developments in the neurosurgical treatment of psychiatric disorders and knowledge of indications for surgical treatment of these disorders and common psychiatric disorders amenable to surgical intervention into practice plans.
Learning Objectives: Upon completion, participants will be able to discuss surgical and interventional advances in the management of acute hemorrhagic and ischemic stroke. Participants will also be able to update treatment plans with current treatment paradigms for acute hemorrhagic and ischemic stroke in patients.

Nursing contact hours may be provided through AANN. The American Association of Neuroscience Nurses is accredited as a provider of continuing nursing education by the American Nurses Credentialing Center's Commission on Accreditation. Physician assistants will receive credit for attendance. Each physician assistant will need to contact his or her individual membership association and certification board to determine the requirements for accepting credits. All attendees will receive a confirmation of attendance. No CMEs will be awarded to physician participants.

Room 143A
Hemorrhagic and Ischemic Stroke Update for Allied Health Professionals
Moderator: Erol Veznedaroglu
Faculty: Ricardo A. Hanel, Brian Lim Hoh, Christopher S. Ogilvy, Adnan Hussain Siddiqui
Learning Objectives: Upon completion, participants will be able to plan various approaches and identify current indications and risks of endoscopy for intraventricular and skull base surgery.

Room 143B
Staying Current in Vestibular Schwannoma Management
Moderator: Franco DeMonte
Faculty: Johnny B. Delashaw, Douglas Kondziolka, Andrew T. Parsa, Enrique Urculo
Learning Objectives: Upon completion, participants will be able to discuss surgical and interventional advances in the management of acute hemorrhagic and ischemic stroke. Participants will also be able to update treatment plans with current treatment paradigms for acute hemorrhagic and ischemic stroke in patients.

Room 144A
Innovations in the Management of Pediatric Neurotrauma
Moderator: Ann-Christine Duhaime
Faculty: Shenandoah Robinson, Phillip B. Storm, Roland A. Torres
Learning Objectives: Upon completion, participants will be able to incorporate the latest advancements in pediatric neurotrauma research, emerging technologies being developed for managing pediatric brain injury and latest surgical techniques available for treating pediatric brain injury into their management strategies.

Room 144B
Peripheral Nerve Board Review
Moderator: Lynda J.S. Yang
Faculty: Allan J. Belzberg, Allen H. Maniker, Rajiv Midha, Robert J. Spinner
Learning Objectives: Upon completion, participants will be able to address the important peripheral nerve injuries frequently presented on board examinations, demonstrate comprehension of the peripheral nerve physical examination and explain how to manage peripheral nerve injury/disease surgically and non-surgically.

Room 144C
Surgical, Interventional and Radiosurgical Approaches to Intracranial Arteriovenous Malformations
Moderator: Bernard R. Bendok
Faculty: Daniel L. Barrow, Francisco Gonzalez-Llanos, Howard A. Riina
Learning Objectives: Upon completion, participants will be able to account for the natural history of arteriovenous malformations of the brain and the relative merits and limitations of radiosurgery, microsurgery and embolization for treatment of this disease when planning treatment strategies.

Room 149AB
Should You Become Employed by a Hospital? There Are Alternatives. How To Negotiate Your Future
Moderator: James I. Ausman
Faculty: Gregory B. Lanford, Troy D. Payner, Khalid A. Sethi, K. Michael Webb
Learning Objectives: Participants will be able to discuss the advantages and disadvantages of becoming hospital employees. Participants will be able to demonstrate the factors associated with successful negotiations with hospital administrators to maximize satisfaction with their practice.
Meet the Authors During the Original Science Program

Interact with authors of the best clinical and basic science of 2011 in this neurosurgical marketplace of ideas.

**Monday, October 3, 2:00 – 5:00 PM,**

★ **ORAL PRESENTATIONS** deliver the highest-ranked abstracts from each neurosurgical subspecialty. *Level Two Meeting Rooms*

★ **NEUROSURGICAL FORUM** authors make dynamic oral presentations to small groups in one interdisciplinary session. *East Registration*

**Wednesday, October 5, 2:00 – 3:30 PM**

★ **NEW MULTIDISCIPLINARY ORAL PRESENTATION** delivers the highest-ranked original science that crosses neurosurgical subspecialties. *Room 151B*

All abstracts will also be on display in the Digital Poster Center in the Exhibit Hall during open Exhibit Hall Hours:

- **Monday:** 9:00 AM – 3:00 PM
- **Tuesday:** 9:00 AM – 5:00 PM
- **Wednesday:** 9:00 AM – 2:00 PM
**Original Science Program**

**Oral Presentations and the Neurosurgical Forum**

Upon completion, participants will be able to discuss the findings of novel neurosurgical studies, critique the design and methodology of these studies, list important areas for further knowledge development and research and identify the most important ongoing clinical trials.

**Oral Presentations**

2:00 – 3:30 PM

**Council of State Neurosurgical Societies**

**Moderators:** Catherine A. Mazzola, Michael P. Steinmetz

★ **SAM HASSENBUSCH YOUNG NEUROSURGEON AWARD**

2:00 – 2:09 PM

901

Helmeted vs. Non-helmeted Patients: A Retrospective Review of Outcomes at a Level One Trauma Center

Kristopher Gray Hooten, Gregory J. Murad

★ **JULIUS GOODMAN RESIDENT AWARD**

2:09 – 2:18 PM

902

Results of a National Neurosurgery Resident Survey on Duty Hour Regulations

Kyle Michael Fargen, Mishti Chakraborty, William A. Friedman

2:18 – 2:27 PM

903

Increased Morbidity in Teaching Hospitals After Introduction of the ACGME Work-hour Restriction After Elective Craniotomy for Meningioma

Travis Michael Dumont, Anand Indulal Rughani

2:27 – 2:36 PM

904

Socioeconomic Implications of Clipping or Coiling Small Unruptured Intracranial Aneurysms: Age-Stratified Risk Curves, Length of Stay, and Total Charges Calculated from 14,050 Patients in the Nationwide Inpatient Sample Database

Matthew F. Lawson, Dan Neal, J D. Mocco, Brian Lim Hoh

2:36 – 2:45 PM

905

Effects of a Structured Competency-Based Curriculum, Mobile, and Digital Resources in Neurosurgery Residency Education

Nestor R. Gonzalez, Neil A. Martin

2:45 – 2:54 PM

906

The Effect of Centralization of Caseload for Primary Brain Tumor Surgeries: Updated Trends from 2001-2007

Miriam Nuno, Debraj Mukherjee, Christine Carico, Chirag G. Patil

2:54 – 3:03 PM

907

The Impact of Insurance Status on the Outcomes After Surgery for Acute Spinal Cord Injury

Hormuzdiyar H. Dasenbrock, Timothy F. Witham, Ziya L. Gokaslan, Ali Bydon

3:03 – 3:12 PM

908

The Effect of Fatigue on Cognitive Ability and Psychomotor Skill in Neurology and Neurological Surgery Residents

Aruna Janju, Tanya Simuni, Andrew Ketterer, Ross Malik, Kanav Kahol, Peter Lee, Narina Simonian, Steven Quinn, H. Hunt Batjer

3:12 – 3:21 PM

909

The Fate of Abstracts Presented at the Annual Congress of Neurological Surgeons: Publication Rates and Factors Predictive of Success

Cameron Elliott, Vivek Mehta, Candice Poon, Monika Oliver, Sita Gourishankar

3:21 – 3:30 PM

910

What Is the Minimum Improvement in Pain, Disability, and Quality of Life That Is Associated with Cost-effectiveness: Introduction of the Concept of Minimum Cost Effective Difference (MCED)

Scott L. Parker, Owoicho Adogwa, David Shau, Stephen Mendenhall, Clinton J. Devlin, Matthew McGirt

3:30 – 5:00 PM

**Neurosurgical Forum**

3:30 – 5:00 PM

East Registration

**Council of State Neurosurgical Societies**

**Moderators:** Catherine A. Mazzola, Michael P. Steinmetz

1 In-training Factors Predictive of a Sustained Productive Academic Career Path in Neurological Surgery

R. Webster Crowley, Ashok Raajappa Asthaqiri, Robert M. Starke, Edie E. Zusman, E. Antonio Chiocca, Russell R. Lonser

2 Prevention of Deep Vein Thrombosis in Neurological Surgery: Results From a Survey on 1100 Patients Undergoing Elective Intradural Cranial Procedures. A Multitool Prophylaxis Protocol

Mario Ganau, Leonello Tacconi

3 Addressing the Costs Associated with Seizure Prophylaxis Beyond a 7-Day Period in Patients with Traumatic Brain Injury

Joshua E. Medow, Christopher Nickele, Daniel K. Resnick, Christopher Doede, Carin Bouchard, Lisa Vanovenhoven

4 Neurosurgeons and Ownership of Innovation at Academic Institutions

Maya A. Babu, Brian V. Nahed

Stay connected at http://m.cns.org
<table>
<thead>
<tr>
<th>Oral Presentations</th>
<th>2:00 – 3:30 PM</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Section on Cerebrovascular Surgery</strong></td>
<td>Room 202A</td>
</tr>
<tr>
<td>Moderators: Nicholas Bambakidis, Adnan Hussain Siddiqui</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>2:00 – 2:09 PM</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Follow-Up Angiography In Subarachnoid Hemorrhage With Negative Initial Angiography</strong></td>
</tr>
<tr>
<td>Richard Dalyai, Thana Theofanis, Kunal Vakharia, George M. Ghobrial, Aaron S. Dumont, Pascal Jabbour, L. Fernando Gonzalez, Robert H. Rosenwasser, Stavropoula I. Tjoumakaris</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>2:09 – 2:18 PM</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>GALBRAITH AWARD</strong></td>
</tr>
<tr>
<td>912</td>
</tr>
<tr>
<td>Carotid Recanalization in Non-Acute Internal Carotid Artery Occlusion: A Therapeutic Option for Ischemic Stroke</td>
</tr>
<tr>
<td>Leopoldo Guimaraens, Hugo Cuellar, Teresa Sola, Elio Vivas, Alfredo Casasco, Prashant Chittiboina, Anil Nanda, Jacques Theron</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>2:18 – 2:27 PM</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>SYNTHES CEREBROVASCULAR AWARD</strong></td>
</tr>
<tr>
<td>913</td>
</tr>
<tr>
<td>Treatment Benefit of Clipping or Coiling Small Unruptured Intracranial Aneurysms: Age-Stratified Risk Curves Calculated from 14,050 Patients in the Nationwide Inpatient Sample Database</td>
</tr>
<tr>
<td>Matthew F. Lawson, Dan Neal, J D. Mocco, Brian Lim Hoh</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>2:27 – 2:36 PM</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Cerebral Revascularization for Complex Intracranial Aneurysms: Indications, Techniques, and Results in 102 Cases</strong></td>
</tr>
<tr>
<td>Eric S. Nusbaum, Tariq Janjua, Archie Defillo, Leslie A. Nusbaum</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>2:36 – 2:45 PM</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Mid-term Anatomical Results After Endovascular Treatment of Ruptured Intracranial Aneurysms with GDC™ and Matrix™ Coils: Analysis of the CLARITY Series</strong></td>
</tr>
<tr>
<td>Laurent Pierot, Christophe Cognard, Frédéric Ricolfi, René Anxionnat, CLARITY Investigators</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>2:45 – 2:54 PM</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Impact of Changes in Intraoperative Somato-sensory Evoked Potentials (SSEPs) on Stroke Rates After Clipping of Intracranial Aneurysms</strong></td>
</tr>
<tr>
<td>Robert Thomas Wicks, Gustavo Pradilla, Shaan Mohammed Raza, Uri Haddelsburg, Judy Huang, Rafael J. Tamargo</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>2:54 – 3:03 PM</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Feasibility, Safety, and Periprocedural Complications Associated with Endovascular Treatment of Ruptured Aneurysms Under Conscious Sedation and Local Anesthesia</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>3:03 – 3:12 PM</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Prospective Volume Staged Stereotactic Radiosurgery for Large Arteriovenous Malformations</strong></td>
</tr>
<tr>
<td>Hideyuki Kano, Douglas Kondziolka, Kyung-Jae Park, Phillip Parry, Huai-Che Yang, Sait Sirin, Ajay Niranjan, Josef Novotny, John Flickinger, L. Dade Lunsford</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>3:12 – 3:21 PM</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>30 Years Treatment Experience of Moyamoya Disease in a Single Institute: Long-term Follow-up of Surgically or Medically Treated Cases</strong></td>
</tr>
<tr>
<td>Tadashi Nariai, Maki Mukawa, Yoji Tanaka, Motoki Inaji, Masaru Aoyagi, Yoshiharu Matsushima, Kikuo Ohno</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>3:21 – 3:30 PM</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Effect of Clazosentan on Clinical Outcome After Aneurysmal Subarachnoid Hemorrhage and Surgical Clipping: Results of the CONSCIOUS-2 Study</strong></td>
</tr>
<tr>
<td>R. Loch Macdonald</td>
</tr>
</tbody>
</table>
11 Simulated Diagnostic Cerebral Angiography in Neurosurgical Training: A Pilot Program
Alejandro M. Spiotta, Peter A. Rasmussen, Thomas J. Masaryk, Edward C. Benzel, Richard P. Schlenk

12 Is Packing Density Important In Stent-Assisted Coiling?
Hayan Dayoub, Stavropoula I. Tjoumakaris, L. Fernando Gonzalez, Aaron S. Dumont, Robert H. Rosenwasser, Pascal Jabbour

Travis Michael Dumont, Anand Indulal Rughani

14 Monocyte Chemotactic Protein-1 (MCP-1) Promotes Inflammatory Vascular Repair of Aneurysms via a Macrophage Inflammatory Protein-1α (MIP-1α) and Macrophage Inflammatory Protein-2 (MIP-2)-Dependent Pathway
Brian Lim Hoh, Koji Hosaka, Daniel Downes, Kamil Nowicki, Christina Fernandez, Christopher Batich, Edward W. Scott

15 Efficacy of Self-Expandable Porus Stent as Sole Curative Treatment for Extracranial Carotid Pseudoaneurysms
Peng R. Chen, Arthur L. Day

16 Withdrawn

17 Complement Factor H Polymorphism Independently Predicts Mortality After Intracerebral Hemorrhage

18 Endovascular Treatment of Proximal Internal Carotid Artery Occlusion and Tandem Middle Cerebral Artery Occlusion In Acute Ischemic Stroke
Richard Dalyai, Vismay Thakkar, Pascal Jabbour, Saurbh Singhal, George M. Ghobrial, L. Fernando Gonzalez, Aaron S. Dumont, Robert H. Rosenwasser, Stavropoula I. Tjoumakaris

19 ICAM-1 and VCAM-1 Expression in Haptoglobin 2-2 Mice After Subarachnoid Hemorrhage (SAH)
Tomas Garzon-Muvdi, Gustavo Pradilla, Robert Thomas Wicks, Lindsay Edwards, Jacob Ruzevick, Matthew Bender, Rafael J. Tamargo
31 Treatment and Outcomes of Acute Vertebrobasilar Artery Occlusion: One Institution’s Experience
Sharon W. Webb, Parham Yashar, Peter Kan

32 Surgical and Endovascular Treatment of Pediatric Spinal Arteriovenous Malformations

33 Surgical Revascularization in North American Adults with Moyamoya Phenomenon: Long-term Angiographic Follow-up
Eric J. Arias, Gavin Peter Dunn, Timothy M. Murphy, Colin Derdeyn, Daniel Refai, Michael R. Chicoine, Robert L. Grubb, Jr., Christopher J. Moran, DeWitte T. Cross, Ralph G. Dacey, Jr., Gregory J. Zipfel

34 Brain Endothelial Expression of Notch Pathway Proteins in Human Brain Arteriovenous Malformations
Sandra J. Hill-Felberg, Hope H. Wu, Steven A. Toms, Amir R. Dehdashti

35 Fundamentals of Angiography Instruction: Results of a Simulator-Based Pilot Study of Neurosurgical Residents
Kyle Michael Fargen, Adnan Hussain Siddiqui, Erol Veznedaroglu, Raymond D. Turner, IV, Andrew J. Ringer, J D. Mocco

36 Temporary Endovascular Bypass: Rescue Technique During Mechanical Thrombolysis
Sonia Tejulack, L. Fernando Gonzalez, Pascal Jabbour, Stavropoulia I. Tjoumakaris, David S. Gordon, Aaron S. Dumont, Robert H. Rosenwasser

37 The Impact of Temporary Artery Occlusion During Intracranial Aneurysm Surgery in Subarachnoid Hemorrhage Patients
Christoph Johannes Griesenauer, Tyler L. Poston, Martin M. Mortazavi, Michael Falola, Chevis N. Shannon, Winfield S. Fisher, III

38 Does Temporary Artery Occlusion Time Effect Long Term Clinical Outcome of Elective Intracranial Aneurysm Clipping Patients?
Tyler L. Poston, Christoph Johannes Griesenauer, Martin M. Mortazavi, Michael Falola, Chevis N. Shannon, Winfield S. Fisher, III

39 Minority Inequities in Stroke: Severity Related to Race and Socioeconomic Status
Gabrielle Navon, Roberta P. Glick, Heidi Beckstrom, Valerie Carter, Mir Yadhullahti

40 Withdrawn

41 Withdrawn

42 Practical Clinical Use of DSC-MRI for Surgical Treatment of Moyamoya Disease
Yosuke Ishii, Tadashi Nariai, Yoji Tanaka, Maki Mukawa, Motoki Inaji, Kikuo Ohno

43 Unilateral Craniotomy for Bilateral Aneurysms
Kranthi Kumar Sunnepaneni, Praveen Ankathi, Barada Prasad Sahu, Aniruddha Kumar Purohit, Rajesh Alagolu

44 Carotid Artery Angioplasty and Stenting for Patients Less than 70 Years of Age
Ryan David Alkins, Charles Matouk, Juan P. Cruz, Tom R. Marotta, Walter Montanera, Julian Spears

45 Calcitonin Gene-related Peptid (CGRP) Expression in Hp2-2 Mice After Subarachnoid Hemorrhage (SAH) in Intracranial Structures
Tomas Garzon-Muvdi, Gustavo Pradilla, Robert Thomas Wicks, Jacob Ruzevick, Lindsay Edwards, Matthew Bender, Juan A. Mejia, Rafael J. Tamargo

46 Visual Complications Following Stent Assisted Endovascular Embolization of Paraophthalmic and Suprasellar Variant Superior Hypophyseal Ophthalmic Segment ICA Aneurysms: The Duke Cerebrovascular Center Experience in 57 Patients

47 The Effect of Telemedicine on Stroke Outcome in the Delaware Valley
Pascal Jabbour, Stavropoulia I. Tjoumakaris, L. Fernando Gonzalez, Aaron S. Dumont, Robert H. Rosenwasser

48 Prokineticin 2 Is a Novel Mediator of Cerebral Ischemic Injury
Michelle Cheng, Alex G. Lee, Collin Calbertson, GuoHua Sun, Nathan C. Manley, Heng Zhao, David M. Lyons, Qun-Yong Zhou, Gary K. Steinberg, Robert M. Sapolsky

49 Comparison of Techniques for Stent-assisted Coil Embolization of Aneurysms
Alejandro M. Spiotta, Anne-Marie Wheeler, Saksith Smithason, Ferdinand Hui, Shaye I. Moskowitz
Use of Precise CO2 Manipulation and Transcranial Doppler in the Assessment of Cerebral Autoregulation After Aneurysmal Subarachnoid Hemorrhage
Leodante B. da Costa, Jr, Jorn Fierstra, David Houlden, Michael Schwartz, Joseph A. Fisher

Necrostatin-1 Promotes Hematoma Resolution and Attenuates Cerebral Edema Following Intracerebral Hemorrhage
Cargill H. Alleyne, Jr., Melanie King, Krishnan M. Dhandapani

Establishment of Dedicated Neuro-ICU Reduces Mortality in Aneurysmal Subarachnoid Hemorrhage
Michael J. Alexander, David Palestrant, Chad Miller, Asma Moheet, Wouter I. Schievink

Oral Contraceptive and Hormone Replacement Therapy Use in Women with Intracerebral Aneurysms
Lisa Anne Feldman, John F. Reavey-Cantwell, Scott Douglas Simon, Michael Chen

Dural AV Fistulas with Intracranial Hemorrhage: Diagnostic and Therapeutic Implications
Ghaus M. Malik

Aneurysmal Subarachnoid Hemorrhage with Intraventricular Blood: A Strong Predictor of Hydrocephalus and the Need for Shunting
Ali F. Krisht, Svetlana Pravdenkova

Improving Delivery of Stroke Care Across Institutions Within a Health System: A Work in Process
Richard D. Fessler, Carrie Stover, Vickie Gordon, Bruce Silverman, Paul Callis

Aneurysm Embolization Grade: A Predictive Tool To Determine Treatment Success and Risk for Recurrence After Coil Embolization of Intracranial Aneurysms
Walter P. Jacobsen, Eric M. Deshaies, Amit Singla

Quantitative Xenon CT Helps Identify Moyamoya Patients at Risk for Major Ischemic Stroke After EC-IC Bypass
Terry Burns, Thomas Pulling, Greg Zaharchuk, Gary K. Steinberg

Multimodality Treatment of Arteriovenous Malformations (AVMs) of Basal Ganglia and Thalamus: Factors Affecting Outcome and Obliteration
Parijosh Pandey, Ciara D. Harraher, Steven D. Chang, John Adler, Huy M. Do, Richard Levy, Michael P. Marks, Gary K. Steinberg

Monday, October 3

Oral Presentations 2:00 – 3:30 PM Room 202B
Section on Disorders of the Spine and Peripheral Nerves Moderators: D. Kojo Hamilton, Adam S. Kanter

2:00 – 2:09 PM
921
Early vs. Delayed Surgical Decompression for Traumatic Cervical Spinal Cord Injury: Results of the Surgical Trial in Acute Spinal Cord Injury Study (STASCIS)

2:09 – 2:18 PM
922
Impact of Early and Late Complications on Patient Outcomes Following Surgical Treatment of Cervical Spondylotic Myelopathy Based on a Prospective Multicenter Study: The AOSpine North America CSM Study
Michael G. Fehlings, Justin S. Smith, Christopher I. Shaffrey, Branko Kopjar, Paul M. Arnold, Sangwook Yoon, Alexander R. Vaccaro, Darrel S. Brodke, Michael Janssen, Jens Chapman, Rick Sasso, Eric J. Woodard, Robert J. Banco, Eric M. Massicotte, Mark B. Dekutoski, Ziya L. Gokaslan, Christopher Bono

2:18 – 2:27 PM
923
International Variations in the Clinical Presentation and Management of Cervical Spondylotic Myelopathy (CSM). One Year Outcomes of the AOSpine Multi-Center Prospective Study
Michael G. Fehlings, Branko Kopjar, Helton Defino, Shashank Sharad Kale, Guiseppe Barbagallo, Ronald H.M.A. Bartels, Qiang Zhou, Paul M. Arnold, Mehmet Zileli, Gamaliel Tan, Yasutsugu Yukawa, Osmar Moraes, Manuel Alvarado, Massimo Serrati, Tomoaki Toyone, Ciaran Bolger

2:27 – 2:36 PM
924
Over Correction by Osteotomy for Sagittal Plane Deformity: It Happens and Here is Why

2:36 – 2:45 PM
925
Revision Instrumented Fusion Improves Two-year Pain, Disability, and Quality of Life in Patients with Lumbar Pseudoarthrosis: Defining the Long-term Effectiveness of Surgery
Owoicho Adogwa, Scott L. Parker, David Shau, Stephen Mendenhall, Clinton J. Devin, Joseph S. Cheng, Matthew McGirt
The Biomechanical Consequences of Rod Reduction on Pedicle Screws: Should it Be Avoided?
Haines Paik, Daniel Gene Kang, Ronald A. Lehman, Anton E. Dmitriev, Rachel Gaume, Divya Ambati

Meta-analysis of Fusion Rates for Minimally Invasive Transforminal Lumbar Interbody Fusion Performed Without Posterolateral Bone Grafting
Daniel Gene Kang, David Gwinn, Ronald A. Lehman

Failure of Porous Tantalum Cervical Interbody Fusion Devices: Two-Year Results from a Prospective, Randomized, Multi-Center, Clinical Study
Manish K. Kasliwad, David Baskins, Vincent C. Traynelis

Assessment of Symptomatic Rod Fracture Following Posterior Instrumented Fusion for Adult Spinal Deformity
Justin S. Smith, Christopher I. Shaffrey, Christopher P. Ames, Vedat Deviren, Kai-Ming G. Fu, Frank Schwab, Virginie Lafage, Shay Bess, International Spine Study Group

Crescent Sign on Magnetic Resonance Angiography Denotes Incomplete Stent Apposition and Correlates with Diffusion-Weighted Changes in Aneurysm Stent-Coiling
Robert Heller, William R. Miele, Daniel Do-dai, Adel M. Malek

Predictors of Success in the Surgical Treatment for Cervical Spondylotic Myelopathy: Analysis of the AOSpine North America Multi-Center Prospective Study in 260 Subjects

Radiographic and Clinical Outcomes of Posterior Column Osteotomies in Spinal Deformity Correction: Analysis of 128 Patients
Ian G. Dorward, Lawrence Lenke, Woojin Cho, Linda A. Koester, Brenda A. Sides

Does Plating Improve Anterior Lumbar Interbody Fusion Clinical Outcomes?
Laura Ann Snyder, Samuel Kalb, Udaya K. Kakarla, Nicholas Theodore

Withdrawn

A Preliminary Analysis of Outcomes, and Direct Cost for Four Diagnostic Categories of Adult Spinal Deformity (ASD)

Staging Regimen in Adult Spinal Deformity Surgery Significantly Impact Functional Outcome, Complications and Total Hospital Days
Hamid Hassanzadeh, Joseph Gjolaj, Mostafa El Daourawy, Amit Jain, Richard L. Skolasky, Jr., Khaled Kebaish

The Effect of Pedicle Screw Hubbing on Pullout Resistance in the Thoracic Spine
Haines Paik, Daniel Gene Kang, Ronald A. Lehman, Anton E. Dmitriev, Rachel Gaume, Divya Ambati

Radiolucenty and Pseudoarthrosis After 4-year Follow-up on a Minimally Invasive Presacral Approach
Luis Marchi, Leonardo Oliveira, Etevaldo Coutinho, Luiz Pimenta

Complications After 9-years Follow-up in Three Different Nucleus Replacement Devices
Luis Marchi, Leonardo Oliveira, Etevaldo Coutinho, Luiz Pimenta

Survival and Maturation of Human Spinal Neural Precursors (hNPCs) Grafted into Trauma Injured Spinal Cord in Immunosuppressed Minipig
Sassan Keshavarzi, Roman E. Navarro, Joseph D. Ciacci, Martin Marsala

Quantitative Assessment of Thecal Sac Decompression Following Lumbar Decompression: Comparison of a Minimally Invasive and an Open Approach
Lacey E. Bresnahan, Silviu Diaconu, Steven Quinn, Narmo Simonian, Raghu N. Natarajan, George R. Cybulski, Richard G. Fessler
72 Combined Assessment of Pelvic Tilt, Pelvic Incidence/Lumbar Lordosis Mismatch and Sagittal Vertical Axis Predicts Disability in Adult Spinal Deformity: A Prospective Analysis

73 Surgical Treatment for Moderate Sized Main Thoracic Scoliosis Demonstrates Similar Acute Perioperative Outcomes for Adolescent and Adult Idiopathic Scoliosis: A Prospective, Matched Cohort Evaluation

74 Functional Limitations Due to Lumbar Stiffness Correlate with Pain Related Disability Measures and Sagittal Imbalance Among Adult Spinal Deformity Patients

75 Impact of Systemic Hypertension on MRI Signal Cord Changes in Cervical Stenosis Patients: An Observational Study
Samuel Kalb, Nikolay L. Martirosyan, Maughan K. Sindhwani, Hasan Zaidi, Nicholas Theodore

76 Revision Decompression and Fusion Improves Two-year Pain, Disability, and Quality of Life in Patients with Same Level Recurrent Lumbar Stenosis: Defining the Long-term Effectiveness of Surgery
Owoicho Adogwa, Scott L. Parker, David Shau, Stephen Mendenhall, Clinton J. Devin, Joseph S. Cheng, Matthew McGirt

77 Withdrawn

78 Cost-effectiveness of Ventral Fusion, Dorsal Fusion, and Dorsal Non-fusion Surgery for Cervical Spondylotic Myelopathy: 1-year Clinical and Economic Outcomes

79 Early vs. Delayed Endoscopic Surgery for Carpal Tunnel Syndrome: A Prospective Study
Pankaj Kumar Singh, P.S. Chandra

80 30-day Readmissions After Elective Spine Surgery for Degenerative Conditions Among US Medicare Beneficiaries
Marjorie C. Wang, Purushottam W. Laud, Ann B. Nattinger

81 Extent of Preoperative Depression Predicts Outcome After Revision Lumbar Surgery for Adjacent Segment Disease, Recurrent Stenosis, and Pseudoarthrosis
Owoicho Adogwa, Scott L. Parker, David Shau, Stephen Mendenhall, Joseph S. Cheng, Clinton J. Devin, Matthew McGirt

82 The Efficacy of Minimally Invasive Discectomy Compared to Open Discectomy: A Meta-Analysis of Prospective Randomized Controlled Trials

83 Peri-operative and Delayed Complications Associated with Surgical Treatment of Cervical Spondylotic Myelopathy Based on a Prospective Multicenter Study of 302 Patients
Justin S. Smith, Christopher I. Shaffrey, Branko Kapjar, Paul M. Arnold, Sangwook Yoon, Alexander R. Vaccaro, Darrel S. Brodke, Michael Janssen, Jens Chapman, Rick Sasso, Eric J. Woodard, Robert J. Banco, Eric M. Massicotte, Mark B. Dekutoski, Ziya L. Gokaslan, Christopher Bono, Michael G. Fehlings

84 Withdrawn

85 Radiographic Correction Achievable in Adult Degenerative Scoliosis Treated by XLIF: Influence of Choice of Fixation
Frank M. Phillips, Saifdar Khan, Jonathan Hyde, Kade T. Huntsman, Robert E. Isaacs, Vedat Deviren

86 Early Outcomes Comparison of MIS vs. Open Surgery after TLIF with Pedicle Screw Fixation
Gary A. Dix, Joseph S. Cheng, Kurt M. Eichholz, Douglas Linville, Jeffrey A. Murphy

87 Posterior Cervical Foraminotomy for Cervical Radiculopathy: Symptomatic and Functional Outcomes in 1085 Cases with Long-term Follow-up
Ephraim Church, Ryan Faught, Casey H. Halpern, Usha Balmuri, Mark Attiah, Sharon Hayden, Marie Kerr, Eileen Maloney-Wilensky, Jantice Bynum, Stephen J. Dante, William Charles Welch, Frederick A. Simone
88 Impact of Diabetes on Symptoms and Treatment Outcomes in Patients with Cervical Spondylotic Myelopathy: The Results of the AOSpine North America Multi-Center Prospective Study
Paul M. Arnold, Branko Kopjar, Michael G. Fehlings, Sangwook Yoon, Alexander R. Vaccaro, Darrel S. Brodke, Christopher L. Shaffrey, Eric J. Woodard, Robert J. Banco, Jens Chapman, Michael Janssen, Rick Sasso, Christopher Bono, Mark B. Dekutoski, Ziya L. Gokaslan

89 Cerebrospinal Fluid, Wound, and Hematoma Complications Following Intradural Spine Surgery
Jason Marshall Hoover, Michelle J. Clarke, Nicholas Michael Wetjen, Jay Mandrekar, William E. Krauss

90 Cervical Spine Cord Infarct After Decompressive Surgery
Samuel Kalb, Bruce Dean, Randall W. Porter, Nikolay L. Martirosyan, Nicholas Theodore

91 Correction of Sagittal Malalignment Following Pedicle Subtraction Osteotomy Improves Cervical Lordosis

92 Analysis of Expression Levels of Specific MicroRNA as Related to the Duration of Compression in a Spinal Cord Injury Mouse Model
Mateo Ziu, Jennifer Gentry Savage, Lauren Fletcher, David F. Jimenez, Murat Dicigaylioglu, Viktor Bartanusz

93 Laminectomy and Extension of Instrumented Fusion Improves Two-year Pain, Disability, and Quality of Life in Patients with Adjacent Segment Disease: Defining the Long-term Effectiveness of Surgery
Owoicho Adogwa, Scott L. Parker, David Shau, Stephen Mendenhall, Clinton J. Devin, Joseph S. Cheng, Matthew McGirt

94 Can Different Surgical Strategies Result in Satisfactory Post-Operative Sagittal Alignment?

95 Dysphagia After Anterior Cervical Spine Surgery: Incidence and Risk Factors
Samuel Kalb, Richard Lejevre, Marco T. Reis, Matthew C. Cowperthwaite, Nicholas Theodore, Douglas John Fox, Jr., Volker K. H. Sonntag

96 Withdrawn

97 Determination of Minimum Clinically Important Difference (MCID) in Pain, Disability, and Quality of Life After Extension of Fusion for Adjacent Segment Disease
Scott L. Parker, Owoicho Adogwa, David Shau, Stephen Mendenhall, Clinton J. Devin, Joseph S. Cheng, Matthew McGirt

98 Comparison Between Patient and Surgeon Perceptions of Spine Neurosurgical Outcomes: A Prospective Blinded Database Study
Laura Kaplan, Feifei Liu, Jingjing Shen, Ben Z. Roitberg

99 Patient Comorbidities and Complications Following Spinal Surgery: A Societal-based Cost Analysis

100 Perioperative and Long-term Outcomes Following Surgery for Cervical Spine Deformity
Matthew Grosso, Roy Hwang, Thomas Mroz, Ajit A. Krishnaney, Edward C. Benzel, Michael P. Steinmetz

101 Self Reported Functional Limitations Due to Lumbar Stiffness Correlate with Age and SRS-22 Scores Among Asymptomatic Volunteers

102 Pedicle Subtraction Osteotomy with Extension of Fusion to the Pelvis: Does Anterior Interbody Support at L5-S1 Improve Sagittal and Pelvic Parameters?

103 Radiographic and Clinical Outcomes of One Institution’s Early Experience with Extreme Lateral Interbody Fusion (XLIF) in the Treatment of Degenerative Scoliosis
Kaveh Khajavi

104 The Ventral Lamina and Superior Facet Rule: The Key to Accurate Placement for Thoracic Pedicle Screws
Daniel Gene Kang, Ronald A. Lehman, Lawrence Lenke, Rachel Gaume, Haines Paik
105 Safety of Intramedullary Peripheral Nerve Grafts for Severe Spinal Cord Injuries
Hooshang Saberi

106 Minimally Invasive Carpal Tunnel Release: A Safe Alternative to Open Release Procedures
Marc Christopher Manix, Prashant Chittiboina, Anirban Deep Banerjee, Anil Nanda

107 The Safety and Efficacy of Outpatient Anterior Cervical Decompression and Fusion for Symptomatic Spondylosis: Results of A Prospective Cohort Series of 180 Cases
Rajesh Reddy, Eric M. Massicotte, Michael G. Fehlings

108 Lumbar Disc Ruptures: Sequestrectomy vs. Discectomy
Panagiotis G. Papakonstantou, Theophilos S. Paleologos, Anastasios Venetiakis, Moschos Fratzoglou, Panagiotis Kokkalis, Georgios Stamatopoulos, Emmanuel Chatzidakis, Theodoulos Kyriakou

109 Difficulties in Treating Tuberculosis of the Central Nervous System (CNS TB): Surgical Experience of 14 Cases in a Tertiary Care Neuro-surgical Setup in Kolkata in Eight Months’ Period
Laxmi Narayan Tripathy, Kaushik Sil, S. Basu, H. Jain

110 Surgical Management of Symptomatic Sacral Tarlov Cysts
Matthew B. Potts, Mary H. McGrath, Philip R. Weinstein

Oral Presentations 2:00 – 3:30 PM
Room 206

Section on Neurotrauma and Critical Care
Moderators: Odette Harris, Shelly D. Timmons

★ SYNTHESES AWARD FOR RESIDENT RESEARCH ON BRAIN AND CRANIOFACIAL INJURY
2:00 – 2:09 PM

931 Benchmarking Trauma Center Performance in TBI: The Limitations of Mortality Outcomes
Sunjay Vishnu Sharma, Barbara Haas, David Gomez, Charles deMestral, James T. Rutka, Avery B. Nathens

★ SYNTHESES AWARD FOR RESIDENT RESEARCH ON SPINAL CORD AND SPINAL COLUMN INJURY
2:09 – 2:18 PM

932 Effects of a Combined Immunomodulatory Therapy and Chondroitinase After Spinal Cord Hemisection Injury
Virgilio Matheus, Christopher A. Iannotti, Megan Clark, Grosso Matthew, Michael P. Steinmetz

2:18 – 2:27 PM

933 Mild Traumatic Brain Injury Results in Atrophy of Bilateral Hippocampi over Time as Well as Persistent Impaired Memory
Sandya Venugopal, Mehul Sampat, Sara C. LaHue, Shelly Cooper, Hana A. Lee, Janshir Ghajar, Geoffrey T. Manley, Pratik Mukherjee
2:27 – 2:36 PM

934 Histopathological Prevalence of Alzheimer’s Disease in Patients Undergoing Shunting for Normal Pressure
Abhay Moghekar, Barbara Crain, David Solomon, Sevil Yasar, Richard O’Brien, Daniele Rigamonti
2:36 – 2:45 PM

Pradeep K. Narotam, John Morrison, Michael Schmidt, Narendra Nathoo
2:45 – 2:54 PM

936 PET Molecular Imaging To Investigate the Higher Brain Dysfunction in Patients with Neurotrauma
Toshiki Tomori, Tadashi Nariai, Motoki Inaji, Mikio Hiura, Chihiro Hosoda, Kichi Ishiwata, Kenji Ishii, Kikuo Ohno
2:54 – 3:03 PM

937 Procalcitonin Is a More Specific Marker and Has a Higher Positive Predictive Value for Identifying Cases of Spinal Postoperative Infections than ESR or CRP
Katharine M. Cronk, Nicholas Theodore
3:03 – 3:12 PM

938 Carbamylated Erythropoietin Promotes Angiogenesis and Neurogenesis, and Improves Functional Outcome After Traumatic Brain Injury in Rats
Asim Mahmood, Ye Xiong, Michael Chopp
3:12 – 3:21 PM

939 Progressive Hemorrhagic Injury as a Surrogate Measure of Treatment Effect in Motor Complete Spinal Cord Injury
Bizhan Aarabi, Melvin Alexander, Stuart Mirvis, Kathirkananthan Shanmuganathan, Katie Zacherl, Khawar Ali
3:21 – 3:30 PM

940 Functional Outcome Measures and Predictors of Neuropsychological Testing Following Brain Tissue Oxygen Monitoring in TBI
Jason Jer Jia Chang, Gretchen Otto, Shirley Whitkanack, Jason Barber, Randall Matthew Chesnut, Suryaya Dikmen, Nancy Temkin
<table>
<thead>
<tr>
<th>Session</th>
<th>Title</th>
<th>Authors</th>
</tr>
</thead>
<tbody>
<tr>
<td>111</td>
<td>Specific Role of Transcranial Doppler Ultrasound for Patients with Wartime Traumatic Brain Injury</td>
<td>Rocco Armonda, Teodoro Tigno, Sven Markus Hochheimer, Frederick L. Stephens, Randy Scott Bell, Alexander H. Vo, Meryl A. Severson, III, Robert Doniger Ecker, Alexander Y. Razumovsky</td>
</tr>
<tr>
<td>112</td>
<td>Admission Hyperglycemia Reflects both Early Glucose Variability and ICU-mortality in Head Trauma Patients</td>
<td>Lara Prisco, Mario Ganau</td>
</tr>
<tr>
<td>113</td>
<td>Role of Arginine Vasopressin V1a and V2 Receptors for Secondary Brain Damage After Experimental Traumatic Brain Injury in Mice</td>
<td>Sandro M. Krieg, Raimund Trabold, Sebastian M. Sonanini, Nikolaus Plesnila</td>
</tr>
<tr>
<td>114</td>
<td>Quantification on a National Scale of Mortality Risk from Defects in Serum Glucose Control at Intensive Care Admission After Traumatic Brain Injury</td>
<td>Jonathan A. Hyam, Cathy A. Welch, David A. Harrison, David K. Menon, Kathy Rowan</td>
</tr>
<tr>
<td>115</td>
<td>Comprehensive Analysis of Diffusion Tensor Imaging in Spinal Cord Injury</td>
<td>Shekar N. Kurpad, Brian Schmit, John L. Ulmer</td>
</tr>
<tr>
<td>116</td>
<td>Biocompatibility of a Novel Biomaterial for Adult Neural Progenitor Cell Proliferation and Differentiation</td>
<td>Eve C. Tsai, Ushanathini Shanmugalingam, Matthew Coyle, Xudong Cao</td>
</tr>
<tr>
<td>117</td>
<td>Withdrawn</td>
<td></td>
</tr>
<tr>
<td>118</td>
<td>Cranioplasty Following Decompressive Craniectomy in Traumatic Brain Injury: Experience at Level - I Apex Trauma Center</td>
<td>Noufal Basheer, Deepak Kumar Gupta, Ashok Kumar Mahapatra, Deepak Aggrawal, Sumit Sirha</td>
</tr>
<tr>
<td>119</td>
<td>Biomechanical Analysis of Lateral Neck Injury Thresholds Under Coronal Loading</td>
<td>Christopher E. Wolfra, Narayan Yoganandan, Dennis J. Maiman, John R. Humm</td>
</tr>
<tr>
<td>120</td>
<td>Cryopreservation vs. Subcutaneous Preservation for the Infection Rate of Autologous Cranioplasty</td>
<td>Cheng-Hsin Cheng</td>
</tr>
<tr>
<td>121</td>
<td>Uncoupled Neuronal-glial Metabolism Following Severe Traumatic Brain Injury</td>
<td>Sanju Lama, Boguslaw Tomank, Garnette R. Sutherland</td>
</tr>
<tr>
<td>123</td>
<td>Prognostic Value of Age, Especially for Old (Over 65), in Determining Decompressive Craniectomy in Traumatic Brain Injury</td>
<td>Jong Wook Choi, Hyen-Ho Jung, Kam Whang, Myeong Sub Lee, Hun-Joo Kim, Sun Ki Hong, Chul Hu, Jhin Soo Pyen</td>
</tr>
<tr>
<td>125</td>
<td>Longitudinal Incidence and Concurrence Rates for Traumatic Brain Injury and Spine Injury: A Retrospective Analysis of the National Inpatient Sample Database over a Twenty-Year Period</td>
<td>Peter Sebastian Amenta, Muhammad Ali, James S. Harrop, Ashwini Dayal Sharan, John Kevin Ratliff, Srinivas K. Prasad</td>
</tr>
<tr>
<td>126</td>
<td>Development and Early Experience with an iPhone App for Sideline Concussion Testing</td>
<td>Richard A. Rovin, Nikhil Sharma, Guillaume Caraudeau</td>
</tr>
<tr>
<td>127</td>
<td>Acute and Subacute Neural Stem Cell Delivery for Traumatic Brain Injury</td>
<td>Chirag D. Gandhi, Mevan Siriwardane, Nolan Skop, Allen H. Maniker, Steve Levison</td>
</tr>
<tr>
<td>128</td>
<td>Minimal Invasive Decompression of Chronic Subdural Hematomas Using Hollow Screws: Therapeutic Efficacy, Patients’ Acceptance and Quality of Life</td>
<td>Sandro M. Krieg, Fanny Aldinger, Jens Gempf, Michael Stoffel, Bernhard Meyer, Jürgen Kreutzer</td>
</tr>
<tr>
<td>129</td>
<td>Brain CT Scan Compared to Somatosensory Evoked Potential (SSEP) Grade for Predicting Outcome and Functional Recovery in Comatose Patients with Traumatic Brain Injury (TBI)</td>
<td>Parviz Dolati-Ardejani, Rajiv Midha, Michael L. Schwartz, David A. Houlden</td>
</tr>
</tbody>
</table>
**ORIGINAl SCIENCE PROGRAM**

130  
First Eight Hours Clinical Spinal Cord Injury Decompression  
Confirmed Promising Experimental Data  
Kreso Sasa Duric, Marin F. Stancic  

Oral Presentations  
2:00 – 3:30 PM  
Room 203A  

Section on Pain  
Moderators: Joshua M. Rosenow, Christopher J. Winfree  

★ RONALD TASKER AWARD  

2:00 – 2:09 PM  
941  
Peripheral Neuromodulation for Headache and Craniofacial Pain: Indications, Outcomes, and Complications from a Single Center  
Antonios Mammis, Alon Y. Mogilner  

2:09 – 2:18 PM  
942  
Recurrent Symptoms Following Craniovertebral Decompression for Chiari Malformation: The Role of Disturbed CSF Dynamics  
Girish V. Kulkarni, Andrew Tarnaris, Hollie Murphy, Marek Czosnyka, Zofia Czosnyka, Graham Flint  

2:18 – 2:27 PM  
943  
Cost-effectiveness of Intrathecal Drug Therapy in the Treatment of Chronic Non-malignant Pain  
Krishna Kumar, Syed A.A. Rizvi, Mariam Abbas, Sharon Bishop  

2:27 – 2:36 PM  
944  
Role and Cost Impact of Polyanalgesia in Intrathecal Drug Therapy  
Krishna Kumar, Syed A.A. Rizvi, Sharon Bishop  

2:36 – 2:45 PM  
945  
Failure of Motor Cortex Stimulation in the Management of Neuropathic Pain  
Adam J. Sachs, Harish Babu, Jaimie M. Henderson  

2:45 – 2:54 PM  
946  
Impact of Cymbalta in Perioperative Spine Patients: An Early Look  
Ciera Scott, Lee Hyer, M. Sami Walid, Joe S. Robinson  

2:54 – 3:03 PM  
947  
Outcomes After Percutaneous Surgery for Patients with Multiple Sclerosis Related Trigeminal Neuralgia  
Grant W. Mallory, Bruce E. Pollock  

3:03 – 3:12 PM  
948  
Effectiveness of Repeat Glycerol Rhizotomy in Treating Trigeminal Neuralgia  
Matthew Bender, Gustavo Pradilla, Sachin Batra, Alfred Pokmeng See, Carol James, Benjamin S. Carson, Michael Lim  

3:12 – 3:21 PM  
949  
Safety of Microvascular Decompression for Trigeminal Neuralgia in the Elderly  
Anand Rughani, Travis Michael Dumont, Chih-Ta Lin, Bruce I. Tranmer, Michael Horgan  

3:21 – 3:30 PM  
950  
Determination of Minimum Clinically Important Difference (MCID) in Pain Improvement after Microvascular Decompression for Trigeminal Neuralgia  
Vishruth K. Reddy, Scott L. Parker, Dennis T. Lockney, Samit A. Patrawala, Robert A. Mericle  

Neurosurgical Forum  
3:30 – 5:00 PM  
East Registration  

Section on Pain  
Moderators: Joshua M. Rosenow, Christopher J. Winfree  

131  
Surgical Treatment of Trigeminal Neuralgia in Patients with Multiple Sclerosis  
Matthew Bender, Gustavo Pradilla, Sachin Batra, Alfred Pokmeng See, Neal Bhutiani, Carol James, Michael Lim, Benjamin S. Carson  

132  
Effectiveness of Repeat Radiofrequency Thermocoagulation in the Treatment of Recurrent Trigeminal Neuralgia  
Matthew Bender, Gustavo Pradilla, Sachin Batra, Alfred Pokmeng See, Neal Bhutiani, Carol James, Michael Lim, Benjamin S. Carson  

133  
Safety and Efficacy of Secondary Microvascular Decompression as Treatment for Recurrent Trigeminal Neuralgia  
Gustavo Pradilla, Neal Bhutiani, Sachin Batra, Matthew Bender, Alfred Pokmeng See, Tomas Garzon-Muvdi, Carol James, Benjamin S. Carson, Michael Lim  

134  
Long-term Outcomes of Occipital Neurostimulation with Paddle Electrodes for the Treatment of Intractable Headaches  
Sean J. Nagel, Kara D. Beasley, Milind S. Deogaonkar, Andre Machado  

135  
CSF Dynamics in Idiopathic Syringomyelia  
Girish V. Kulkarni, Andrew Tarnaris, Hollie Murphy, Marek Czosnyka, Graham Flint, Zofia Czosnyka  

Stay connected at http://m.cns.org
2:00 – 2:09 PM
951 Identification of the Rho Guanine Nucleotide Exchange Factor, Trio as a Novel Therapeutic Target for Medulloblastoma Invasion
Salvatore M. Zavarella, Sebastien Didier, Mark Mittler, Steven J. Schneider, Marc H. Symons

2:09 – 2:18 PM
952 Incidence, Survival, and the Impact of Radiotherapy in Pediatric Primary Spinal Cord Tumors

2:18 – 2:27 PM
953 Evaluating the Children's Hospital of Alabama Endoscopic Third Ventriculostomy Experience Using the ETV Success Score: An External Validation Study
Robert Parlilow Nafiel, Gavin T. Reed, Abhaya Vivek Kalkarni, John C. Wellons, III

2:27 – 2:36 PM
954 Management of Dandy-Walker Complex-Associated Hydrocephalus by Combined Endoscopic Third Ventriculostomy and Choroid Plexus Cauterization (ETV/CPC) in 42 East African Children
Michael C. Dewan, Benjamin Warf, John Mugamba

2:36 – 2:45 PM
955 Using Statistical Process Control Methodology to Decrease the Shunt Infection Rate at a Stand Alone Children's Hospital
Corey Raffel, Mike Fetzer, Dennis J. Cunningham

2:45 – 2:54 PM
956 Vagal Nerve Stimulation for Partial and Generalized Epilepsy From Infancy to Adolescence
Eric M. Thompson, Susan E. Wozniak, Colin Roberts, Valerie C. Anderson, Nathan R. Selden

2:54 – 3:03 PM
957 Characterization of the Supplementary Motor Area Syndrome and Seizure Outcome Following Medial Frontal Lobe Resections in Pediatric Epilepsy Surgery
Chester Yarbrough, Aimen S. Kasasbeh, David D. Limbrick, Jr., Karen Steger-May, Francesco T. Mangano, Matthew D. Smyth

3:03 – 3:12 PM
958 Middle Cerebral Artery Aneurysms in Children: Case Series and Literature Search

3:12 – 3:21 PM
959 The Comparison of Early Results of Three Operational Methods in 138 Children with Non-syndromic Craniosynostosis: Trans-sutural Distraction Osteogenesis, Rotating Distraction Osteogenesis and Conventional Craniotomy and Remodeling
Soo Han Yoon, She-Hyuck Park, Dong Ha Park

3:21 – 3:30 PM
960 Hematologic Abnormalities Observed in Pediatric Patients Treated with Prolonged Continuous Hypertonic Saline for Elevated Intracranial Pressure.
David D. Gonda, Chiazo Amene, Hal S. Meltzer, Michael L. Levy
Variation of the Interfrontal Angle in Children with Metopic Synostosis
Ryan Thomson Kellogg, Jeffrey Marcus, Gerald A. Grant

Insights into the Pathogenesis of Papilledema in an Experimental Model of Hydrocephalus
Satish Krishnamurthy, J. Li, Kenneth Jenrow

The Effects of Diesel Exhaust Particles on Neural Tube Development in the Early Stage Chicken Embryo
Hakan Simsek, Ahmet Colak, Serdar Kaya, Murat Kutlay, Aptullah Haholu

Conservative Management for Pure Pediatric Lumbar Seat-belt Fracture: A Case Report
Yong-Jun Cho, Dong-Hwa Heo, Seung-Hoon Sheen, Suk-Hyung Kang, Gyojun Hwang, Mi-Sook Yong, Hyae-Young Shin

Image-guided CSF Shunting in the Pediatric Population: Catheter Accuracy and Shunt Survival
Michael Robert Levitt, Brent R. O’Neill, Gisele E. Ishak, Paritosh C. Khanna, Jeffrey G. Ojemann, Samuel Robert Browd

Pre-operative Anatomic Features of the Third Ventricle and Implications on Endoscopic Third Ventriculostomy Outcome
Brian J. Dlouhy, Ana W. Capuano, Karthik H. Madhavan, James Torner, Jeremy D.W. Greenlee

Percutaneously-placed Ventriculo-atrial Shunts: Better Option in Complex Pediatric Shunt Patients?
Ameet V. Chitale, Robert E. Keating, John S. Myseros, Amanda Yaun, Steven Lossef, Suresh N. Magge

Spinal Arachnoid Cysts in the Pediatric Population: Report of 31 Cases and a Review of the Literature
Aaron E. Bond, Gabriel Zada, J. Gordon McComb, Mark D. Krieger

Intraoperative MRI During Temporal Lobectomy in Children: Does It Help?
David J. Donahue, Angel Hernandez, Saleem Malik, M. Perry

Progression of Cerebrospinal Fluid White Blood Cell Count and Differential During Treatment of Shunt Infection
Ahilan Sivaganesan, Daniel H. Fulkerson, Jason David Hill, John Edwards, Joel C. Boaz, Andrew Jea

Return to Sports After Surgery to Correct Adolescent Idiopathic Scoliosis
Ronald A. Lehman, Daniel Gene Kang, Lawrence Lenke, Daniel Sucato

The Frequency and Severity of Traumatic Brain Injury in the Pediatric Population Following Motocross Accidents
David J. Daniels, Ross Puffer, Fredric B. Meyer, Mark B. Dekutoski, Amy McIntosh, Nicholas Michael Wetjen

Hydrocephalus Associated with Childhood Non-accidental Head Trauma
Sudhakar Vadivelu, Debbie Esernio-Jenssen, Harold L. Rekate, Raj K. Nanayan, Mark Mittler, Steven J. Schneider

Outcomes of Decompressive Craniectomy in the Pediatric Population
Margaret Riordan, Zulma Sarah Tovar-Spinoza

Chiari Type 1 Malformation with Papilledema in Children
Sarah Ferrand-Sorbets, Martine Fohlen, Christine Bulteaux, Francois Audren, Patricia Koskas, Olivier Delalande, Georg Dorfmuller

Pediatric Spinal Glioblastoma Multiforme
Chiagozie Ononiwu, Chetan Bettegowda, Vivek Mehta, George I. Jallo

Split Cord Malformations
Pranav Ghodgaonkar

Comparison of Clinical Outcomes of Duraplasty Grafts in Posterior Fossa Decompression for Chiari I Malformations
Menarvia K.C. Nixon, Anil Nanda, Brian K. Willis, Bharat Guthikonda

Arachnoid Cysts in Medically Refractory Epilepsy
James E. Baumgartner, Ricky J.L. Haywood-Watson
2:00 – 2:09 PM

**Human Dorsal Anterior Cingulate Cortex Neurons Recruit Cognitive Control**
Matthew Kamal Mian, Sameer A. Sheth, Shaun Patel, Wael Asaad, Ziv Williams, Emad N. Eskandar

2:09 – 2:18 PM

**Single-unit Responses Selective for Whole Faces in the Human Amygdala**
Adam N. Mamelak, Ueli Rutishauser, Oana Tudusociuc, Ian B. Ross, Christopher A. Heller, Ralph Adolphs

2:18 – 2:27 PM

**Postural Fall in Blood Pressure in Parkinson’s Disease Is Reduced by Pedunculopontine Nucleus Region Stimulation**

2:27 – 2:36 PM

**Decision Conflict Modulates Spiking Activity and Oscillatory Power in the Human Subthalamic Nucleus During Action Selection**
Kareem A. Zaghloul, Bradley Lega, Christoph T. Weidemann, Jurg L. Jaggi, Gordon H. Baltuch, Michael J. Kahana

2:36 – 2:45 PM

**Dopamine Gene Therapy Approach for the Treatment of Parkinson’s Disease: Phase I/II Clinical Trial Update**

2:45 – 2:54 PM

**MR Guided Focused Ultrasound Lesioning for the Treatment of Essential Tremor: A New Paradigm for Noninvasive Lesioning and Neuromodulation**
W. Jeffrey Elias, Diane Huss, Mohamad A. Khaled, Stephen J. Monteith, Robert Frysinger, Johanna Loomba, Jason Drzegol, Scott Wylie, Tiffini Voss, Madalaine Harrison, Fred Wooten, Max Wintermark

2:54 – 3:03 PM

**Deep Brain Stimulation of the Nucleus Accumbens Attenuates Binge Eating in Mice: Preliminary Evidence for A Potential Therapeutic Role of Neuromodulation in Treatment-Refractory Obesity**

3:03 – 3:12 PM

**Optical Control of Neural Stem Cell Grafts in Experimental Stroke Model**
Marcel M. Daadi, Inbal Goshen, Jill Klausner, Christopher Lee-Messer, GuoHua Sun, Karl Deisseroth, Gary K. Steinberg

3:12 – 3:21 PM

**Neurons of the Human Nucleus Accumbens (NAcc) Encode the Temporal Sequence of Reward Expectation and Signal Unexpected Loss**
Muhammad Abd-El-Barr, Nicholas Maling, Kelly D. Foote, Michael S. Okun, Justin Sanchez

3:21 – 3:30 PM

**Tracking Accuracy of T2- and Diffusion-weighted Magnetic Resonance Imaging for Infusate Distribution by Convection-Enhanced Delivery**
Rajiv Iyer, John A. Butman, Stuart Walbridge, Neville D. Gai, John D. Heiss, Russell R. Lonser

**The Utility of the O-arm in Frameless Deep Brain Stimulation Surgery**
Kathryn L. Holloway, George Gitchel, Dimitri Karles, Alen Docef

**Randomized, Double-Blinded, Multi-Center, Placebo- Controlled Trial of Deep Brain Stimulation for Essential Tremor**
Jonathan A. Hyam, Shazia Javed, Erlick A.C. Pereira, Puneet Plaha, Lucy Mooney, Beth Forrow, Carole Joint, Alan Whone, Steven Gill, Alexander L. Green, Tipu Z. Aziz

**Single Unit and Oscillatory Activity During Reward Learning in the Human Substantia Nigra**
Bradley Lega, Michael J. Kahana, Jurg L. Jaggi, Gordon H. Baltuch, Kareem A. Zaghloul
164 Deep Brain Stimulation in the Central Nucleus of the Amygdala Decreases Consumption of Sucrose Pellets in a Reversible Manner
Emily Marie Lehmann, Shani E. Ross, J. Wayne Aldridge

165 Gene Delivery of the Clostridial Tetanus Toxin Light Chain Inhibits Neural Activity in Rats
Nicholas Boulis

166 Utilization Patterns of DBS in Parkinson’s and Essential Tremor in the US
Julie G. Pilitsis, Mary Linton Peters, Anthony Michael Burrows, Julie Sargent, Jennifer Tseng, Sing Chau Ng

167 Interhemispheric Subdural Electrodes (IHSE): Utility, Technique and Safety
Tarek Abuelem, David Elliot Friedman, Satish Agadi, Angus A. Wilfong, Daniel Yoshor

168 Identifying Brain Networks Using Single Pulse Electrical Stimulation (SPES) and Resting State Functional MRI Connectivity Analysis
Laszlo Entz, Stephan Bickel, Emilia Toth, Corey J. Keller, Sharif Vakili, James Corines, Sara Stream, Sanjay Jain, Istvan Ulbert, Ashesh Mehta

169 Extent of Temporal Lobe Resection Predicts Seizure-Freedom in Low-grade Brain Tumor Patients
Dario J. Englot, Seunggu J. Han, Mitchel S. Berger, Nicholas M. Barbaro, Edward F. Chang

170 Enhancing Efficiency of Intracerebral Delivery: A Study of Phantom Brain Dynamics
John Paul Argenti, Anahi Hurtado, Lee Margolin, Jonathan Berry, Miles Cunningham

171 A Magnetic Resonance Imaging and Histologic Comparison between Radiofrequency, GammaKnife Radiosurgery, and Focused Ultrasound Lesions in Brain
Mohamad A. Khaled, W. Jeffrey Elias, Robert Fryninger, Jason P. Sheehan, Max Wintersmark, M. Beatriz Lopes

172 Technical Modifications to Minimize Incidence of Aseptic Meningitis and CSF Leakage Following Microvascular Decompression: Analysis of 100 Consecutive Patients Treated at a Single Institution
Jonathan Forbes, Michael Stoker, Calvin Michael Cooper, Joseph Samir Neimat, Peter Konrad

173 Anterior Temporal Lobectomy and Amygdalohippocampectomy for Mesial Temporal Sclerosis: Predictors of Long-term Seizure Control
Robert E. Elliott, Robert John Bollo, Jonathan Berliner, Alyson Silverberg, Chad Carlson, Eric Geller, Orrin Devinsky, Werner Doyle

174 Gamma Knife Radiosurgery vs. Percutaneous Retrogasserian Glycerol Rhizotomy for Multiple Sclerosis Related Trigeminal Neuralgia
Khaled Effendi, Mario Seguin, Jocelyn Blanchard, David Mathieu

175 Cortical Plasticity Following Cingulotomy for Obsessive-Compulsive Disorder
Sameer A. Sheth, Patrick Schweder, Christian Strong, Matthew Kamal Mian, Darin D. Dougherty, Emad N. Eskandar

176 Paradoxical Enlargement of the Epileptogenic Mesial Temporal Structure
Mohammed Alsaidi, Kourosh Jafari, David Ramsay, Jorge A. Gutierrez, Kost Elisevich

177 Predictors of Neurocognitive Impairment Following Deep Brain Stimulator Implantation for Essential Tremor
James McInerney, Omar Akram Zalatimo, Moksha Ranasinghe, Gareth M. Davies, Elana Fanace

178 Posterior Hypothalamotomy for Intractable Aggressivity
Jose Augusto Nasser Dos Santos, Asdrubal Falavigna, Armando Alaminos

179 In-Vivo Segmentation of the Human Amygdala Using Diffusion Tensor Imaging and Probabilistic Tractography
Ausaf Bari, Zhong Zheng, Antonio DeSalles, Nader Pouratian

Oral Presentations 2:00 – 3:30 PM
Room 201

Section on Tumors
Moderators: Costas George Hadjipanayis, Frederick F. Lang

2:00 – 2:09 PM
971 Clinical Experience with an Image Guided Surgical Robot
Garnette R. Sutherland, Sanju Lama

Stay connected at http://m.cns.org
**ORIGINAL SCIENCE PROGRAM**

**INTEGRA FOUNDATION AWARD**
2:09 – 2:18 PM
972
Gamma Knife Radiosurgery for the Management of Glomus Tumors: A Multicenter Study
Jason P. Sheehan, Shota Tanaka, Michael J. Link, Bruce E. Pollock, Douglas Kondziolka, David Mathieu, Alfred Byron Young, Anthony M. Kaufmann, Heyoung McBride, Zheng Xu, L. Dade Lunsford

**NATIONAL BRAIN TUMOR SOCIETY MAHALEY CLINICAL RESEARCH AWARD**
2:18 – 2:27 PM
973
A Phase I Study of Vaccination with Lethally Irradiated Glioma Cells Mixed with GM-K562 Cells in Patients Undergoing Craniotomy for Recurrent Tumor
William T. Curry, Jr., Tracy Batchelor, Pankaj Kumar Agarwalla, Jan Drappatz, Frederick George Barker, Patrick Y. Wen, Glenn Dranoff

2:27 – 2:36 PM
974
Clinical Features of Pre-operative and Post-operative Epilepsy in Intracranial Meningiomas and the Use of Peri-operative Anti-epileptic Drugs
Say Ayala-Soriano, Andrew Tarnaris, Paul Edward Dodds, Jesus Lafuente, David G.T. Thomas, Laurence Dale Watkins

**JOURNAL OF NEURO-ONCOLOGY AWARD**
2:36 – 2:45 PM
975
An RNAi Screen Identifies TRRAP as a Regulator of Brain Tumor-Initiating Cell Differentiation

**AMERICAN BRAIN TUMOR ASSOCIATION YOUNG INVESTIGATOR AWARD**
2:45 – 2:54 PM
976
Canine Model of Convection-Enhanced Delivery of Cetuximab Conjugated Iron-Oxide Nanoparticles Monitored with Magnetic Resonance Imaging
Costas George Hadjipanayis, Simon Ronald Platt, Edjah K. Nduom, Marc Kent, Courtenay Freeman, Revaz Machaidze, Milota Kaluzova

2:54 – 3:03 PM
977
Expanded Endoscopic Surgery for Clival Chordomas: Experience with 60 Cases
Maria Koutourousiou, Matthew J. Tormenti, Alessandro Paluzzi, Stephanie L. Henry, Juan Carlos Fernandez-Miranda, Carl Snyderman, Paul A. Gardner

3:03 – 3:12 PM
978
Surgeries in Sitting Position for Patients with a Patent Foramen Oval: An Evaluation of the Risk of a Paradoxical Venous Air Embolism
Guenther C. Feigl, Karlheinz Decker, Boris Krischek, Rainer Ritz, Kristofer Ramina, Marcos S. Tatagiba

**PREUSS AWARD**
3:12 – 3:21 PM
979
Resection of Malignant Glioma Results in Significant Decrease in Circulating Tumor-Specific Hypermethylated DNA. A Potential Biomarker?
Kyle Weaver, Larry Pierce, Sharon Phillips

**STRYKER NEURO-ONCOLOGY AWARD**
3:21 – 3:30 PM
980
Gliomas Promote Local and Systemic Immunosuppression Through Induction of B7-H1 Expression in Tumor-Associated Macrophages
Orin Bloch, Brian J. Jian, Courtney Crane, Gurvinder Kaur, Rajwant Kaur, Martin J. Rutkowski, Andrew T. Parsa

**Neurosurgical Forum**
3:30 – 5:00 PM

**Section on Tumors**

**Moderators:** Costas George Hadjipanayis, Frederick F. Lang

180
Wound Complications in Recurrent Glioma Surgery
Jason Marshall Hoover, Jay Mandrekar, Fredric B. Meyer, Ian F. Parney

181
A Phase II Study of Gliadel® Wafers in Association with Prolonged Metronomic Temozolamide and Radiation Therapy in Newly Diagnosed Glioblastomas: Preliminary Results
Francesco DiMeco, Paola Gaviani, Cecilia Casali, Antonio Silvani, Federico G. Legnani, Carlo L. Solero, Andrea Salmaggi

182
Predictors of Inpatient Complications and Outcomes Following Surgical Resection of Hypothalamic Hamartomas
Debraj Mukherjee, Miriam Nuno, Christine Carico, Chirag G. Patil

183
Bevacizumab Induces Apoptosis and p53 Overexpression in Glioblastoma Stem Cells
Demirkan Gursel, Benjamin Shin, Jan-Karl Burkhardt, Cody D. Schlaff, John Andrew Boockvar

184
Surgery for Primary Intraventricular Lesions: Experience with 251 Cases
Rahul Ved, Basant Kumar Misra
186
Withdrawn

187
Anti-angiogenic and Anti-invasive Effect of Cilengitide on Experimental Glioma
Manabu Onishi, Tomotsugu Ichikawa, Kazuhiro Kurozumi, Kentaro Fujii, Koichi Yoshida, Satoshi Inoue, Hiroyuki Michiue, E. Antonio Chiocca, Balveen Kaur, Isao Date

188
Intracranial Delivery of Cell Metabolic Inhibitors for Glioma
Robert Thomas Wicks, Betty Tyler, Javad Azadi, Kristin L. Martin, Alp Yurter, Henry Brem

189
Anti-CD47 Treatment: A Potential Pro-phagocytic Immunotherapy for Glioblastoma Multiforme
Marcus Alexander, Jian Wang, Siddhartha S. Mitra, Chase Richard, Humberto Contreras-Trujillo, Debasis Sahoo, Irving Weissman, Samuel Henry Cheshier

190
Induction of Plasticity with Cortical Stimulation Permits Enhanced Resection of Tumors in Broca’s Area
Juan A. Barcia, Ana Sanz, Paloma Balago, Pedro Alonso-Lera, Juan Raúl Brin, Javier Saceda, Miguel Yus, Manuela Jorquera, Mercedes Gonzalez-Hidalgo, M. Victoria Acevedo, Tomás Ortiz, Antonio Oliviero

191
Complications and Risk Factor Analysis of Ommaya Reservoir Placement in 835 Patients
Rory R. Mayer, John Matthew Debnam, Dima Suki, Ryan Seiji Kitagawa, Ian E. McCutcheon, Morris Groves, Raymond Sawaya, Jeffrey S. Weinberg

★ SYNTHES SKULL BASE AWARD

192
Transsphenoidal Resection of Sellar Tumors Using High Field Intraoperative MRI
Nicholas J. Szerlip, Dimitris G. Placantonakis, Yi-Chen Zhang, David Rubin, Marc Alan Goldman, Sasan Karimi, Viviane S. Tábar

193
Withdrawn

194
Withdrawn

195
Factors Associated with Delay to Pituitary Adenoma Diagnosis in Patients with Visual Loss
Arman Jahangiri, Kathleen L. Lamborn, Lewis Blevins, Sandeep Kunwar, Manish Kumar Aghi

196
Results of A Pilot Study of Vaccinations with HLA-A2-Restricted Glioma Antigen-Peptides in Combination with Poly-ICLC for Children with Newly Diagnosed Malignant Brain Stem Gliomas, Non-Brainstem High-Grade Gliomas, or Recurrent Unresectable Gliomas
Ian F. Pollack, Regina Jakacki, Lisa H. Butterfield, Hideho Okada

197
Protein Phosphatase 2A Mediates Dormancy of Hypoxic Glioblastoma Multiforme-derived Tumor Stem-like Cells
Christoph Hofstetter, Demirkan Gersel, Lynn Mubita, Ramana Gorrepati, Eric C. Holland, John Andrew Boockvar

198
Obstetric Outcomes in Pregnant Women with the Neurofibromatosis Tumor Suppressor Syndrome
Anna R. Terry, Frederick George Barker, Lisa Leffert, Brian Bateman, Scott Plotkin

199
MRI Measurements of Oxygen Extraction Fraction in Patients with Metastatic Tumors Undergoing Stereotactic Radiosurgery Treatment
Sarah C. Jost, Keith M. Rich, Parinaz Massoumzadeh, Josh Shimony, Dimitriy Yablonskiy, Tammie Benzinger

200
Withdrawn

201
Coherent Raman Scattering Microscopy for Brain Tumor Surgery
Daniel A. Orringer, Chris Freudiger, Tom Chen, Geoffrey Young, X Sunney Xie, Oren Sagher

202
Craniohypophygioma Cell Growth Can Be Promoted by GH and Inhibited by Tamoxifen: Involvement of GH Related Receptors
Qiang Li, Chao You, Liang Liu, Zhengxi Rao, Xiutian Sima, Liangxue Zhou, Jianguo Xu

203
Inhibition of Cadherin-mediated Neurite Outgrowth in Human Glioblastoma Cells via Treatment with a Recombinant Cadherin Ectodomain Fusion Protein
Christopher Paul Cifarelli

204
Impact of Intraoperative Stimulation Brain Mapping on Glioma Surgery Outcome: A Meta-analysis
Philip C. De Witt Hamer, Santiago Gil Robles, Aeilko H. Zwinderman, Hugues Duffau, Mitchel S. Berger

205
A Prognostic and Predictive microRNA (miRNA) that Down-regulate MGMT in Glioblastoma
Wei Zhang, Deepa Kushwaha, Bob S. Carter, Tao Jiang, Clark C. Chen
<table>
<thead>
<tr>
<th>Page</th>
<th>Title</th>
<th>Authors</th>
</tr>
</thead>
<tbody>
<tr>
<td>206</td>
<td>Carotid Artery Injury During Endoscopic Endonasal Surgery: Incidence and Outcomes</td>
<td>Paul A. Gardner, Juan Carlos Fernandez-Miranda, Matthew Tormenti, Carl Snyderman</td>
</tr>
<tr>
<td>207</td>
<td>Gamma Knife Radiosurgery for Acromegaly</td>
<td>Xiaomin Liu, Hideyuki Kano, Douglas Kondziolka, John Flickinger, L. Dade Lunsford</td>
</tr>
<tr>
<td>208</td>
<td>Laser Interstitial Thermal Therapy Utilizing Continuous MRI Based Thermometry for Guidance During Ablation: Initial Experience with Intracranial Neoplasms</td>
<td>Gaurav Gupta, Rachid Assina, Shabbar F. Danish</td>
</tr>
<tr>
<td>209</td>
<td>Gamma-Knife Radiosurgery in Craniophangioma Management</td>
<td>Maria Elena Kasak, Jordi Pérez Bovet, Nuria E. Martinez Moreno, Roberto Martinez Alvarez</td>
</tr>
<tr>
<td>210</td>
<td>CNTF Receptor Subunit-alpha Is a Marker for Glioma Cancer Stem Cells and Correlates with Tumor Grade in Primary Brain Tumors</td>
<td>Jie Lu, Alexander Ksendzovsky, Chunzhang Yang, Gautam U. Mehta, Zhengping Zhuang, Russell L. Lonser</td>
</tr>
<tr>
<td>211</td>
<td>The Impact of Reporting Standard Guidelines on Publications of Vestibular Schwannomas Treated with Microsurgical Resection</td>
<td>Seunggu J. Han, Michael Oh, Michael Edward Sughrue, Derick M. Aranda, Martin J. Rutkowski, Andrew T. Parsa</td>
</tr>
<tr>
<td>212</td>
<td>Regulatory T Cell Populations Increase After Naïve T-cell Co-culture with Glioblastoma Cell Lines through the B7-H1 Mediated Pathway</td>
<td>Brian J. Jian, Yelena S. Fuks, Courtney Crane, Andrew T. Parsa</td>
</tr>
<tr>
<td>213</td>
<td>Withdrawn</td>
<td></td>
</tr>
<tr>
<td>214</td>
<td>Progression of Glioblastoma After Treatment with Bevacizumab Is Diffusely Infiltrative: Implications for Surgical Intervention</td>
<td>Orin Bloch, Brian J. Jian, Rajwant Kaur, Michael Prados, Susan Chang, Jennifer L. Clarke, Nicholas Butowski, Michael William McDermott, Mitchel S. Berger, Manish Kumar Aghi, Andrew T. Parsa</td>
</tr>
<tr>
<td>215</td>
<td>Microvessel Density in Fluorescence-Enhanced Brain Tumor Resection</td>
<td>Ziv B. Moses, Pablo A. Valdes, Keith Paulsen, Brent T. Harris, David W. Roberts</td>
</tr>
<tr>
<td>216</td>
<td>Radiographic Response of Brain Metastasis After Linear Accelerator Radiosurgery</td>
<td>Maryam Rahman, Joseph Bridger Cox, Yueh-Yun Chi, Jamal Carter, William A. Friedman, Gregory J. Murad</td>
</tr>
<tr>
<td>217</td>
<td>Usefulness of MET-PET, FLT-PET and FMISO-PET for Surgical Treatment of Gliomas</td>
<td>Takashi Tamiya, Keisuke Miyake, Masaki Okada, Nobuyuki Kawai</td>
</tr>
<tr>
<td>218</td>
<td>Outcome After Transphenoidal Transstubercular Approach for Supradiaphragmatic Craniophangiomas: A Retrospective Study of 33 Consecutive Monocentric Cases</td>
<td>Thomas Graillon, Frederic Castinetti, Thierry Brue, Regis Gras, Henry Dufour</td>
</tr>
<tr>
<td>219</td>
<td>Microsurgical Management of the Vestibular Schwannomas: The Importance of Maintaining Vestibular Capsule Plane to Preserve Neural Function</td>
<td>Akio Morita, Toshikazu Kimura, Tetsuro Sameshima</td>
</tr>
<tr>
<td>220</td>
<td>Treatment Modalities and Survival Outcomes for Intracranial Epidermoid Tumors with Malignant Transformation</td>
<td>Isaac Yang, Daniel Nagasawa, Marko Spasic, Andrew Yew, Winward Choy, Quinton Gopen</td>
</tr>
<tr>
<td>221</td>
<td>New Onset Cranial Nerve Deficits After Cyberknife Radiosurgery for Complex Skull Base Meningiomas</td>
<td>Samuel Kalb, Naveen Maramreddy, M. Yashar S. Kalani, Patricia Rojas-Castillo, Young-Don Kim, Robert F. Spetzler, Randall W. Porter</td>
</tr>
<tr>
<td>222</td>
<td>Scalp Tumors with Intracranial Extension in 60 Patients: Multidisciplinary Surgical Strategies and Outcomes</td>
<td>Rory R. Mayer, Daniel K. Fahim, Kriti Mohan, Justin Sacks, Ganesh Rao, David M. Adelman, Ian E. McCutcheon</td>
</tr>
<tr>
<td>223</td>
<td>The Role of Adjuvant Radiotherapy Dose in the Long-term Management of Primary Spinal Cord Ependymomas</td>
<td>Winward Choy, Won Kim, Daniel Nagasawa, Marko Spasic, Antonio A. F. De Salles, Isaac Yang</td>
</tr>
<tr>
<td>224</td>
<td>Withdrawn</td>
<td></td>
</tr>
<tr>
<td>225</td>
<td>Accuracy of Preoperative Navigated Brain Stimulation for Surgery in Central Region Tumors</td>
<td>Sandro M. Krieg, Ehab Shibani, Niels Buchmann, Jens Gempt, Bernhard Meyer, Florian Ringel</td>
</tr>
</tbody>
</table>
226
Aurora Kinase B as a Molecular Target for the Treatment of Malignant Brain Tumors
Roberto Jose Diaz, Christian Smith, James T. Rutka

227
Endoscopic Endonasal Compared with Microscopic Transsphenoidal and Open Transcranial Resection of Craniopharyngiomas: A Systematic Review of Outcomes
Ricardo Jorge Komotar, Dan Raper, Robert M. Starke, Vijay K. Anand, Theodore H. Schwartz

228
Endoscopic Endonasal vs. Open Transcranial Resection of Anterior Midline Skull Base Meningiomas: A Systematic Review of Outcomes
Ricardo Jorge Komotar, Dan Raper, Robert M. Starke, Vijay K. Anand, Theodore H. Schwartz
AFTERNOON SESSIONS

SPECIAL COURSE I 2:00 – 3:30 PM
Room 152B
Concussion: A Perfect Storm and the Role of the National Football League
Course Directors: H. Hunt Batjer, Richard G. Ellenbogen
Learning Objectives: Upon completion, participants will be able to discuss the effect of sport related concussion on athletes of all ages and levels. They will also able to describe the salient features of chronic traumatic encephalopathy. Additionally, they will be able to apply current guidelines for treatment and criteria for returning athletes to play after concussion to their therapy plans.

2:00 – 2:20 PM
Traumatic Brain Injury: The Roles of Organized Sports and Organized Medicine
H. Hunt Batjer

2:20 – 2:40 PM
Advocacy and Education
Richard G. Ellenbogen

2:40 – 3:00 PM
On Field Assessment and Return to Play
Margot Putukian

3:00 – 3:20 PM
Former Player Health Issues and Chronic Traumatic Encephalopathy
Mitchel S. Berger

3:20 – 3:30 PM
Questions and Answers

CONSENSUS SESSION I 2:00 – 3:30 PM
Room 154AB
Treatment of Metastatic Brain Tumors: What Is Standard of Care?
Moderator: William A. Friedman
Learning Objectives: Upon completion, course participants will understand state of the art medical, surgical, and radiation approaches to metastatic brain tumors. They will review the best evidence based literature and understand how to best interpret these studies and in turn, apply them to their treatment plans.

2:00 – 2:15 PM
Introduction and Instruction on Polling Device
William A. Friedman

2:15 – 2:30 PM
Surgical Management of Metastatic Tumors of the Brain
Raymond Sawaya

2:30 – 2:45 PM
Risks and Benefits of Whole Brain Radiation for Metastatic Brain Tumors
John M. Buatti

2:45 – 3:00 PM
Radiosurgery for Metastatic Brain Tumors
William A. Friedman

3:00 – 3:15 PM
Problems with Design and Interpretation of Class I Studies as Applied to Metastatic Brain Tumors
Robert F. Harbaugh

3:15 – 3:25 PM
Audience Polling

3:25 – 3:30 PM
Discussion

THE ART OF MANAGING COMPLEX CRANIAL CASES: A 3-D VIDEO PRESENTATION

Course Director: Aaron A. Cohen-Gadol
Faculty: William T. Couldwell, Duke S. Samson
Learning Objectives: This 90 minute session will review the important technical nuances for complex cranial cases. Detailed surgical videos of different procedures (for tumors and vascular lesions) will be reviewed using 3D high definition surgical videos to maximize the learning experience for the viewers. The value of step-by-step technical tenets presented in these videos will be augmented by a panel of experts who will further describe their preference in technique and argue the pros and cons of different technical strategies. The following operations will be reviewed in a great detail: dissection of the Sylvian fissure, clip ligation of anterior circulation aneurysms, microvascular decompression for treatment of trigeminal neuralgia and hemifacial spasm, approaching lesions in the pineal region and posterior third ventricle, extended retromastoid craniotomy for resection of tumors involving cranial nerves, lateral suboccipital approach for removal of meningiomas located in the craniocervical junction, and low and high flow bypass techniques in handling vascular lesions. The novel nuances of technique for handling these operations will be beneficial to the general neurosurgeon who deals with all facets of cranial surgery. Upon completion, participants will be able to plan related surgical techniques to minimize intraoperative complications.
Unyielding Progress: Carotid Stenting
*Live Surgery from the GSS!*

Drs. L. Nelson Hopkins, III and Elad I. Levy address the application of stenting for carotid disease and present a live carotid stenting procedure, direct from the University at Buffalo Neurosurgery via telemedicine.

Tuesday, October 4  10:00 – 10:30 AM  Hall E

---

What is Standard of Care?
Weigh In During the CNS Consensus Sessions!

Share your perspective on the optimum management of these disorders and build consensus among your colleagues on the best application of surgical strategies in a variety of clinical scenarios.

**Treatment of Metastatic Brain Tumors**
Consensus Session I
Room 154AB
Monday, October 3
See page 76

**Management of Low Back Pain**
Consensus Session II
Room 152B
Wednesday, October 5
See page 90
<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>9:00 AM – 5:00 PM</td>
<td>Exhibit Hall Open</td>
</tr>
</tbody>
</table>
| 10:00 – 10:30 AM | Live Surgical Presentation  
                   Unyielding Progress: Carotid Stenting  
                   (Findings and Practice)           |
| 10:35 – 11:30 AM | Music and the Mind Symposium  
                   Jeffrey Kahane, Charles J. Limb,  
                   Margaret Batjer                   |
| 2:00 – 3:30 PM  | Special Course II: Guidelines and Clinical Evidence Update  
                   Operative NEUROSURGERY®            |
| 3:30 – 4:30 PM  | CNS Annual Business Meeting                                  |
| 3:30 – 5:00 PM  | Wine & Cheese Reception with the CNS Exhibitors              |
| 5:00 – 6:00 PM  | CNS Resident SANS Challenge Championship Round              |
| 6:00 – 7:00 PM  | CNS Resident Recruitment Social                              |
| 6:30 – 8:30 PM  | Dinner Seminar I: Low Grade Glioma  
                   Dinner Seminar II: Controversies in the  
                   Treatment of Cervical Spondylotic Myelopathy |
General Scientific Session II
7:00 – 11:30 AM  Walter E. Washington Convention Center  Hall E

**General Scientific Session II**
**Presiding Officer:** Daniel K. Resnick
**Moderators:** Steven N. Kalkanis, Russell R. Lonser
**Learning Objectives:** Upon completion, participants will be able to evaluate the latest classification schemes that have been used to characterize gliomas and spinal instability from metastatic disease. They will also be able to consider the latest advances in endoscopic techniques for accessing pathology of the ventricular system and the newest research on the effect of music on brain physiology.

7:00 – 7:05 AM
**Introduction and Disclosures**
Daniel K. Resnick

7:05 – 7:22 AM
**Seeking Better Treatment: Endoscopic Third Ventricular Surgery**
Alan R. Cohen

7:22 – 7:39 AM
**Seeking New Understanding: Genome Based Classification of Gliomas**
Linda M. Liau

7:39 – 7:59 AM
**Honored Guest Lecture**

3:4
**Overcoming a Bad Outcome: Thoughts from a Colleague**
H. Hunt Batjer

7:59 – 8:16 AM
**Seeking Consensus: Classifying Neoplastic Spinal Instability**
Mark H. Bilsky

8:16 – 8:33 AM
**Seeking New Solutions: Stimulation of Diseased Brain Circuits in Depression**
Ali R. Rezai

8:33 – 8:35 AM
**Introduction of Spanish Neurosurgical Society President**
Miguel Manrique
Anil Nanda

8:35 – 8:50 AM
**Spanish Neurosurgical Society Presidential Lecture**
**Epilepsy Surgery: Resection or Modulation**
Miguel Manrique

8:50 – 8:53 AM
**NeuroPoint Alliance Update**
Anthony L. Asher

8:53 – 8:55 AM
**CNS Fellowship Awards Presentation**
Steven N. Kalkanis

8:55 – 8:56 AM
**Presentation of Neurosurgical Forum Winners**
Ganesh Rao

8:56 – 9:00 AM
**Distinguished Service Award Presentation to Mark E. Linskey**
Anthony L. Asher

9:00 – 10:00 AM
**Beverage Break with Exhibitors**

10:00 – 10:30 AM
**Live Surgical Presentation**
**Unyielding Progress: Carotid Stenting** *(Findings and Practice)*
L. Nelson Hopkins III, Elad I. Levy

10:30 – 10:35 AM
**Introduction to the Music and the Mind Symposium**
H. Hunt Batjer, Margaret Batjer

10:35 – 11:30 AM
**Special Symposium**
**Music and the Mind**
Jeffrey Kahane, Charles J. Limb, Margaret Batjer

11:30 AM – 12:00 PM
**Break with Exhibitors**
Luncheon Seminars 12:00 – 1:30 PM

All Luncheon Seminars include a plated lunch served in the seminar room. Luncheon Seminar fees are $75 each ($60 for Residents/Fellows/Medical Students/Nurses/Physician Extenders).

Room 140A
Initial and Long-Term Management of Patients with Chiari Malformations and Syringomyelia
Moderator: Richard G. Ellenbogen
Faculty: Samuel Henry Cheshire, Neil Feldstein, John D. Heiss
Learning Objectives: Upon completion, participants will be able to consider various medical and surgical treatment options in the management of Chiari I malformations, their controversies and the differences in management of pediatric versus adult Chiari I malformations. Participants will also be able to incorporate new research relevant to the treatment of Chiari I malformations and syringomyelia into treatment plans.

Room 145A
Guidelines for Surgical Management of Lumbar Spine Surgery
Moderator: Charles L. Branch, Jr.
Faculty: Sanjay S. Dhall, Iain H. Kalfas, Jean-Paul Wolinsky, Eric J. Woodard
Learning Objectives: Upon completion, participants will be able to assess the current literature on surgical treatment of degenerative lumbar spine disease. Participants will also be able to analyze the indications and expected outcomes for various lumbar spine surgical procedures to improve their treatment plans.

Room 140B
Guidelines for Surgical Management of Cervical Spondylotic Myelopathy and OPLL
Moderator: Paul C. McCormick
Faculty: Michael W. Groff, Michael G. Kaiser, Paul K. Maurer, Daniel K. Resnick
Learning Objectives: Upon completion, participants will be able to assess the differential diagnosis of cervical spondylotic myelopathy and evaluate the treatment options available. Participants will also be able to analyze outcomes of treatment in patients with cervical spondylotic myelopathy.

Room 146A
Managing Difficult Surgical Scenarios in Spinal Surgery
Moderator: Edward C. Benzel
Faculty: J. Patrick Johnson, Michele M. Johnson, Michael P. Steinmetz, Gregory R. Trost
Learning Objectives: Upon completion, participants will be able to identify operative events dictating the need for intraoperative salvage techniques in spinal surgery and plan for the specific techniques necessary to rectify intraoperative difficulties.

Room 143B
Multidisciplinary Management Strategies for Unruptured Aneurysms
Moderator: Robert A. Solomon
Faculty: C. Michael Cawley, Robert M. Friedlander, Giuseppe Lanzino, Michael T. Lawton, Jose Maria Roda
Learning Objectives: Upon completion, participants will be able to discuss the epidemiology and natural history of unruptured intracranial aneurysms and construct appropriate treatment algorithms for these lesions.

Room 143C
Advances in the Management of Trigeminal Neuralgia and Facial Pain
Moderator: Kim J. Burchiel
Faculty: John Y.K. Lee, Robert M. Levy, Francisco J. Robaina, Konstantin V. Slavin
Learning Objectives: Upon completion, participants will be able to incorporate surgical, percutaneous, radiosurgical and neuromodulation options for trigeminal neuralgia and facial pain syndromes into practice while recognizing the complications and outcomes with these approaches.

Room 144A
Surgery and Radiosurgery for Epilepsy
Moderator: Nicholas M. Barbaro
Faculty: Warren W. Boling, Jean M. Regis, Jose Rumia, Ashwini Dayal Sharan
Learning Objectives: Upon completion, participants will be able to describe the clinical features of seizure disorders and be able to incorporate various techniques in the preoperative, intraoperative and postoperative management of patients with epilepsy into their treatment plans.

Room 144B
Staying Current in the Management of the Neurotrauma Patient
Moderator: Geoffrey T. Manley
Faculty: Odette Harris, Roger Hartl, Ruth Prieto, Alex B. Valadka
Learning Objectives: Upon completion, participants will be able to update treatment strategies with the latest technological advancements in managing patients with traumatic brain injury and describe how these new technologies can improve outcomes.

Room 144C
Pushing the Limits of Skull Base Approaches
Moderator: Albert L. Rhoton, Jr.
Faculty: Miguel A. Arnaez Sanchez, Franco Demonte, Jacques J. Morcos, Chandra N. Sen
Learning Objectives: Upon completion, participants will be able to discuss the common pathologies affecting the skull base, add the various surgical approaches available for treating skull base lesions to current therapies and identify the available surgical adjuncts in managing patients with skull base lesions.
T25 Room 146B Evidence-Based Management of Brain Metastases
Moderator: Raymond Sawaya
Faculty: David W. Andrews, Randy L. Jensen, Steven N. Kalkanis, Steven A. Toms
Learning Objectives: Upon completion, participants will be able to discuss the current status of research pertaining to the treatment of brain metastases and incorporate surgical and radiosurgical treatment options appropriate for treating intracranial metastases, their complications and results into their current management strategies.

T26 Room 146C What’s New in Pituitary Surgery
Moderator: Nelson M. Oyesiku
Faculty: Edward R. Laws, Ian E. McCutcheon, Edward H. Oldfield, Michael Powell
Learning Objectives: Upon completion, participants will identify the technical fundamentals and nuances in performing pituitary surgery, and integrate new techniques and advances in treatment to their current practice options.

T27 Room 147A Surgical Resection of Low-Grade Gliomas: Current Strategies and Controversies
Moderator: Mitchel S. Berger
Faculty: Susan Chang, Hughes Duffau, Santiago Gil-Robles, Nader Sanai
Learning Objectives: Upon completion, participants will be able to compare various surgical and medical modalities appropriate for the treatment of low grade gliomas, as well as current research pertaining to the management of these tumors to their current treatment strategies.

T28 Room 147B Treatment Dilemmas: Normal Pressure Hydrocephalus and Pseudotumor Cerebri
Moderator: Daniele Rigamonti
Faculty: Harold L. Rekate, Elizabeth C. Tyler-Kabara, Daniel Yoshor
Learning Objectives: Upon completion, participants will be able to implement the diagnosis and treatment of patients with normal pressure hydrocephalus and pseudotumor cerebri.

T29 Room 149B Spine Surgery in the Geriatric Population: Current Strategies and Controversies
Moderator: Mark N. Hadley
Faculty: Christopher P. Ames, Nancy E. Epstein, Frank La Marca, Todd D. McCall
Learning Objectives: Upon completion, participants will be able to discuss the characteristics of spinal disorders unique to elderly patients and identify surgical considerations for treating spinal disorders in the aging population.

T30 Room 152A Spine and Peripheral Nerve Injuries in Sports
Moderator: Douglas L. Brockmeyer
Faculty: Langston T. Holly, Nicholas Theodore, Christopher J. Winfree
Learning Objectives: Upon completion, participants will be able to discuss the unique spine injuries associated with various sporting activities, describe surgical and non-surgical management of sports related spinal injuries, and identify the variability in sports related spine and spinal cord injuries across different age groups.

T31 Room 151B Incorporating Novel Technologies into Your Neurosurgical Practice
Moderator: David J. Langer
Faculty: Mario Ammirati, Pascal Jabbour, Neil A. Martin
Learning Objectives: This course will introduce participants to commercially available “off the shelf” technology which can be easily utilized in an academic or private practice. It will include a user demonstration as well as a highlight of the breadth of new computer technology capabilities. Additionally, it will address “real world” experience, with an emphasis on the benefits and pitfalls of their adoption. Likely future advances and consequential impacts on medical practice will be covered as well. Upon completion, participants will be able to formulate strategic treatment plans involving the new technology referenced in this course.

T32 Room 143A Finding the Right Job: Identifying the “Best Fit” Practice for Your Needs
Moderator: John K. Ratliff
Faculty: Devin V. Amin, Chaim B. Colen, Stefan A. Mindea
Learning Objectives: Upon completion, participants will be able to customize their job search to best meet their practice expectations by learning to identify applicable, desirable characteristics and strengthening their negotiation skills.
**AFTERNOON SESSIONS**

**SPECIAL COURSE II**  
2:00 – 3:30 PM  
Room 152B

**Guidelines and Clinical Evidence Update**  
Course Director: Mark E. Linskey  
Learning Objective: Upon completion, participants will be able to strategize various treatments in the subspecialties of neurosurgery including, stereotactic and functional, cerebrovascular, spinal surgery, and neuro-oncologic surgery and support their use with the best available evidence.

2:00 – 2:10 PM  
Introduction  
Mark E. Linskey

2:10 – 2:25 PM  
Stereotactic and Functional Neurosurgery  
Joshua M. Rosenow

2:25 – 2:30 PM  
Discussion

2:30 – 2:45 PM  
Cerebrovascular Surgery  
Byron Gregory Thompson

2:45 – 2:50 PM  
Discussion

2:50 – 3:05 PM  
Spine and Peripheral Nerves  
Daniel K. Resnick

3:05 – 3:10 PM  
Discussion

3:10 – 3:25 PM  
Tumors  
Steven N. Kalkanis

3:25 – 3:30 PM  
Discussion

---

**Section on Cerebrovascular Surgery**  
2:00 – 3:30 PM  
Room 150A

**E Pluribus Unum: Out of Many, One: Neurovascular Surgery**  
Moderators: Nicholas Bambakidis, Ketan R. Bulsara  
Learning Objectives: Upon completion, participants will be able to incorporate practical lessons learned into their management plans related to neurovascular problems.

2:00 – 2:05 PM  
Introduction of Drake Lecturer Fredric B. Meyer  
E. Sander Connolly

2:05 – 2:25 PM  
Drake Lecture  
Fredric B. Meyer

2:25 – 2:45 PM  
Complications Associated with Flow Diverters  
Henry H. Woo

2:45 – 3:00 PM  
How My Management of AVMs Changed in the Microsurgery/Endovascular/Radiosurgery Era  
Duke S. Samson

3:00 – 3:15 PM  
What Is the Next Great Endovascular Treatment for the Management of Acute Ischemic Stroke?  
Adnan H. Siddiqui

3:15 – 3:30 PM  
CV Section and SNIS: Two Societies with Convergent Goals  
Michael J. Alexander

---

**Operative NEUROSURGERY®**

Operative Neurosurgery has been published as a quarterly supplement of NEUROSURGERY® since January 2005 with the intent to convey the “craft of neurosurgery.” This publication documents the nuances of how master surgeons manage simple and complex neurosurgical procedures.

This session, led by NEUROSURGERY® Editor-in-Chief, Nelson M. Oyesiku, MD, will expand on the success of the print form of Operative Neurosurgery by showcasing narrated video of novel neurosurgical techniques.

Moderators: Brian T. Ragel, Garnette R. Sutherland  
Learning Objectives: Upon completion, participants will be able to discuss the latest surgical techniques available for managing specific neurological pathologies. Information will be delivered via operative examples with guidance provided by experts in neurosurgery.

2:00 – 2:05 PM  
Introduction  
Nelson M. Oyesiku

2:05 – 2:25 PM  
Michael T. Lawton

2:25 – 2:45 PM  
John Diaz Day

2:45 – 3:05 PM  
Christopher I. Shaffrey

3:05 – 3:30 PM  
Garnette Sutherland
### Section on Disorders of the Spine and Peripheral Nerves
2:00 – 3:30 PM  
Room 151A

**Complications in Spinal Surgery: Incidence, Avoidance and Treatment**  
**Moderators:** Frank La Marca, Praveen V. Mummaneni  
**Learning Objectives:** Participants will have the opportunity to be involved in live discussion of complication scenarios with faculty panel. Upon completion, participants will be able to prepare for common complications associated with several specific spinal operations by identifying risk factors, necessary precautions for avoidance and distinguishing management and treatment protocol.

#### 2:00 – 2:15 PM
**Cervical Fusion Operations: Incidence, Avoidance and Treatment of Adjacent Segment Degeneration**  
Michael W. Groff

#### 2:15 – 2:30 PM
**XLIF/DLIF Procedures: Incidence and Avoidance of Complications**  
Adam S. Kanter

#### 2:30 – 2:45 PM
**Multilevel Thoracolumbar Fusion for Deformity: Avoidance and Treatment of Sagittal Imbalance**  
Christopher I. Shaffrey

#### 2:45 – 3:00 PM
**Multilevel Lumbar Surgery for Degenerative Disease: Incidence, Avoidance and Treatment of Post Laminectomy Kyphosis and/or Proximal Junctional Kyphosis**  
Tyler R. Koski

#### 3:00 – 3:15 PM
**Arthrodesis in the Era of Minimally Invasive Fusion Procedures and Biologic Graft Augmentation: Incidence of Pseudoarthrosis and Treatment**  
Michael Y. Wang

#### 3:15 – 3:30 PM
**Presentation of a Case Study: What Went Wrong? How Could It Have Been Avoided? What Can Be Done Now?**  
Daniel M. Sciubba

### Section on Stereotactic and Functional Neurosurgery
2:00 – 3:30 PM  
Room 154AB

**Costs and Benefits of DBS Surgery**  
**Moderators:** Aviva Abosch, Konstantin V. Slavin  
**Learning Objectives:** Upon completion, participants will be able to analyze the clinical benefits of deep brain stimulation in the context of the current healthcare environment.

#### 2:00 – 2:30 PM
**Quality of Life Following Deep Brain Stimulation**  
Kelly D. Foote

#### 2:30 – 3:00 PM
**Costs of Deep Brain Stimulation: A Neurosurgeon’s Perspective**  
Emad N. Eskandar

#### 3:00 – 3:30 PM
**Paying for Cutting-edge Care and Therapeutic Innovation in the Current Healthcare Environment**  
David Charles

---

**WINS is proud to announce an evening with CNN Chief Political Correspondent, Candy Crowley**

**Tuesday, October 4  
6:00 PM**

Renaissance Washington, DC Downtown Hotel  
Renaissance Ballroom East
Afternoon Sessions

Section on Tumors 2:00 – 3:30 PM
Room 150B

Genomic Alterations in Primary Brain Tumors
Moderators: Daniel P. Cahill, Ricardo J. Komotar
Learning Objectives: This course will stress the importance of histopathologic sampling for accurate molecular diagnosis and prognosis. It will cover the four molecular groups of gliomas: BRAF mutant, IDH mutant, 1p/19q co-deleted tumors and glioblastoma. Upon completion, participants will be able to integrate this molecular stratification into clinical decision-making and the planning of ongoing clinical trials.

2:00 – 2:02 PM
Overview: Why Genomics Matter to the Clinical Neurosurgeon
Daniel P. Cahill

2:02 – 2:22 PM
Low Grade Tumors with BRAF Mutations: Clinical Implications
Ian F. Pollack

2:22 – 2:42 PM
IDH Tumors: Sharpening Diagnostics for High Grade Gliomas
Donald Will Parsons

2:42 – 3:02 PM
Importance of 1p/19q Co-deletion in Clinical Practice and Clinical Trials
Michael A. Vogelbaum

3:02 – 3:22 PM
Multigene Predictor of Glioma Outcome
Kenneth D. Aldape

3:22 – 3:30 PM
RTOG and ACTION: An Update on Brain Tumor Clinical Trial Consortia and Neurosurgery
Manish K. Aghi

3:30 – 4:30 PM
CNS Annual Business Meeting
Room 145B

5:00 – 6:00 PM
CNS Resident SANS Challenge Championship Round
Room 202A

6:00 – 7:00 PM
CNS Resident Recruitment Social
Room 202B

Join Us...
Wine and Cheese Reception
With the CNS Exhibitors
Tuesday, October 4
3:30 - 5:00 PM
Exhibit Hall
Hall D
EVENING SESSIONS

Dinner Seminar I 6:30 – 8:30 PM $190

NEW Low Grade Glioma
Moderator: Alfredo Quinones-Hinojosa
Faculty: Jaishri Blakeley, Michael William McDermott, Joseph M. Piepmeier

Learning Objectives: Participants will be able to discuss the latest developments in the diagnosis and treatment of low grade glioma. Specifically, the roles of surgery, radiation and chemotherapy will be described.

The Source
The Source has received a #3 ranking on Washingtonian Magazine’s “Top 100 Restaurants” list and offers guests a menu that features modern interpretations of Asian dishes.

Dinner Seminar includes a 3-course plated dinner and wine service. Transportation will depart the Renaissance Washington, DC Downtown Hotel at 6:00 PM sharp.

Earn additional CME with Dinner Seminar SANS!

6:30 – 6:45 PM
Introductory Remarks

6:45 – 7:15 PM
Role of Surgery in the Management of Low Grade Glioma
Joseph M. Piepmeier

7:15 – 7:45 PM
Role of Chemotherapy in the Management of Low Grade Glioma
Jaishri Blakeley

7:45 – 8:15 PM
Role of Radiation in the Management of Low Grade Glioma
Michael William McDermott

8:15 – 8:30 PM
Discussion

Dinner Seminar II 6:30 – 8:30 PM $190

NEW Controversies in the Treatment of Cervical Spondylotic Myelopathy
Moderator: Paul C. McCormick
Faculty: Michael G. Fehlings, Zoher Ghogawala, Paul K. Maurer

Learning Objectives: Upon completion, learners will be able to understand the importance of repetitive motion and shear injury as pathophysiological mechanisms underlying cervical spondylotic myelopathy (CSM), identify the major morbidities following surgery for CSM: dysphagia, C5 palsy, neck pain, etc., plan to utilize the validated outcome measures (SF-36, Neck Disability Index, etc) for assessing functional outcome following surgery for CSM, and recognize the importance of collecting utility measures (e.g. EQ-5D) and healthcare costs in order to perform an economic analysis for different treatment options for CSM.

Occidental Grill & Seafood
Continuing its historical tradition of providing Washington, DC with great food and hospitality, the Occidental remains a place where notables set out to eat and “Where Statesmen Dine”.

Dinner Seminar includes a 3-course plated dinner and wine service. Transportation will depart the Renaissance Washington, DC Downtown Hotel at 6:00 PM sharp.

6:30 – 6:45 PM
Introductory Remarks

6:45 – 7:15 PM
Ventral vs. Dorsal Surgery for CSM: Complications and Outcomes
Michael G. Fehlings

7:15 – 7:45 PM
Comparative Effectiveness for CSM: What is the Best Operation for CSM?
Zoher Ghogawala

7:45 – 8:15 PM
What is the Role of Laminoplasty in the Treatment of CSM?
Paul K. Maurer

8:15 – 8:30 PM
Discussion

Attention Residents!

Make new connections with recruiters and physicians looking to add to their practice at the 2011 CNS Resident Recruitment Social.

Tuesday, October 4 ★ 6:00 – 7:00 PM ★ Room 202B

Stay connected at http://m.cns.org
“To strive, to seek, to find, and not to yield”
-Alfred, Lord Tennyson

Wednesday, October 5
Program Highlights

9:00 AM – 2:00 PM  ★ Exhibit Hall Open

10:18 – 10:38 AM  ★ Neuro Casualties of Modern War
Colonel Geoffrey S.F. Ling

11:03 – 11:30 AM  ★ SPORTS: The Hype and the Hypocrisy
Frank Deford

2:00 – 3:30 PM  ★ CNS Original Science Program
Multidisciplinary Oral Presentations
★ Consensus Session II: Management of
Low Back Pain: What is Standard of Care?

6:30 – 8:30 PM  ★ Dinner Seminar III: Current
Management Strategies for Metastatic
Spine Tumors
★ Dinner Seminar IV: Cervical and
Lumbar Arthroplasty

7:00 PM  ★ CNS International Reception
Smithsonian American Art Museum and
National Portrait Gallery
General Scientific Session III

Presiding Officer: Nathan R. Selden
Moderators: Ashok R. Asthagiri, Julie G. Pilitsis
Learning Objectives: Upon completion, participants will be able to update their patient treatment plans based on the latest developments in techniques used for pediatric spinal fusion, robotic-interfaces for brain-injured patients, and the basic biology of peripheral nerve repair and the use of prosthesis for patients with injured limbs.

7:00 – 7:05 AM
Introduction and Disclosures
Nathan R. Selden

7:05 – 7:07 AM
Introduction of Japanese Congress of Neurological Surgeons President Kuniaki Ogasawara
Christopher C. Getch

7:07 – 7:22 AM
Japanese Congress of Neurological Surgeons Presidential Lecture
Kuniaki Ogasawara

7:22 – 7:39 AM
Pediatric Spine Fusion and Instrumentation
Douglas L. Brockmeyer

7:39 – 7:41 AM
Introduction of Special Lecturer Leigh R. Hochberg
Julie G. Pilitsis

7:41 – 7:58 AM
Special Lecture
Seeking to Restore Function: Human-Robotic Interface
Leigh R. Hochberg

7:58 – 8:13 AM
Unyielding Progress: Delivering Neurosurgical Care to the Developing World
Ashwin Viswanathan

8:13 – 8:30 AM
Striving To Better Understand: The Biology of Peripheral Nerve Repair
Rajiv Midha

8:30 – 8:47 AM
Seeking New Paradigms in Epilepsy: Stereotactic Radiosurgery for Epilepsy
Jean M. Regis

8:47 – 8:50 AM
American Association of Neurological Surgeons Update
Paul C. McCormick

8:50 – 8:55 AM
Presentation of CNS Founders’ Laurel to Ralph G. Dacey, Jr.
P. David Adelson

8:55 – 9:00 AM
Presidential Acknowledgement
Christopher C. Getch

9:00 – 10:00 AM
Beverage Break with Exhibitors

10:00 – 10:15 AM
NEUROSURGERY®: The State of the Journal
Nelson M. Oyesiku

10:15 – 10:18 AM
Introduction of Special Lecturer Colonel Geoffrey S.F. Ling
Colonel Leon E. Moores

10:18 – 10:38 AM
Special Lecture
Neuro Casualties of Modern War
Colonel Geoffrey S.F. Ling

10:38 – 10:58 AM
Honored Guest Lecture
Honoring Our Public Responsibility: Creating Milestone and Matrix Based Training in an Era of Duty Hour Restrictions
H. Hunt Batjer

10:58 – 11:03 AM
Introduction of Julian T. Hoff Lecturer Frank Deford
Nathan R. Selden

11:03 – 11:30 AM
Julian T. Hoff Lecture
SPORTS: The Hype and the Hypocrisy
Frank Deford

11:30 AM – 12:00 PM
Exhibit Hall

11:30 AM Book Signing with Frank Deford in the Exhibit Hall – Booth 1221!
All Luncheon Seminars include a plated lunch served in the seminar room. Luncheon Seminar fees are $75 each ($60 for Residents/Fellows/Medical Students/Nurses/Physician Extenders).

**Room 140A**
**Contemporary Management of Traumatic Spine and Spinal Cord Injury**
**Moderator:** Michael G. Fehlings  
**Faculty:** Daryl R. Fourney, Barth A. Green, Jack Jallo, Michael P. Steinmetz  
**Learning Objectives:** Upon completion, participants will be able to discuss advances in the medical treatment of traumatic spinal cord injury, as well as state of the art surgical management of cervical spine trauma and spinal cord injury. Participants will also be able to write protocols for identifying and assessing cervical spine injury in the comatose patient.

**Room 140B**
**Treatment of Cervical Radiculopathy: Anterior vs. Posterior Approaches**  
**Moderator:** John A. Jane, Sr.  
**Faculty:** Anthony J. Caputy, Richard G. Fessler, Paul K. Maurer, Russ P. Nockels  
**Learning Objectives:** Upon completion, participants will be able to analyze their current treatment strategy for Cervical Radiculopathy by identifying the advantages and disadvantages of the various surgical approaches for the management of cervical disc herniation with radiculopathy, including the anterior foraminotomy approach, as well as more traditional approaches.

**Room 140C**
**Open vs. Endovascular Management of Cerebral Aneurysms**
**Moderator:** Arthur L. Day  
**Faculty:** Peng Roc Chen, Aaron S. Dumont, David J. Langer, John Allen Wilson  
**Learning Objectives:** Upon completion, participants will be able to discuss emerging technologies and innovations in open vascular neurosurgery, list emerging technologies and innovations in endovascular neurosurgery, and strategize how to apply these technologies to managing patients with neurovascular diseases.

**Room 146A**
**Current Strategies for Management of Pediatric Brain Tumors**
**Moderator:** James T. Rutka  
**Faculty:** Frederick A. Boop, Michael H. Handler, John S. Myseros, R. Michael Scott  
**Learning Objectives:** Upon completion, participants will be able to identify the various types of pediatric brain tumors and consider current modalities of surgical and medical therapy for them when reviewing their current management strategies.

**Room 147B**
**Pediatric Spine Management (Traumatic and Congenital)**
**Moderator:** David W. Pincus  
**Faculty:** Richard C. E. Anderson, Paul Klimo, Dachling Pang, Jonathan R. Slotkin  
**Learning Objectives:** Upon completion, participants will be able to identify the various traumatic spine and spinal cord injuries and the various congenital spine and spinal cord diseases affecting the pediatric population. Participants will also be able to add various surgical and non-surgical management techniques available for managing traumatic and congenital spine and spinal cord injuries in the pediatric population to therapy plans.

**Room 148C**
**Lessons Learned: Avoidance and Management of Complications of Aneurysm Surgery**
**Moderator:** Giuseppe Lanzino  
**Faculty:** Ali F. Krisht, Michael T. Lawton, Andreas Raabe  
**Learning Objectives:** Upon completion, participants will be able to discuss the common complications in aneurysm surgery, describe management of complications occurring during aneurysm surgery, and list the different techniques available to manage complications with adjunctive technologies.

**Room 149A**
**Peripheral Nerve Entrapment Syndromes: Diagnosis and Management**
**Moderator:** Eric L. Zager  
**Faculty:** Nicholas M. Boulis, W. Jeffrey Elias, Line Jacques, Rajiv Midha  
**Learning Objectives:** Upon completion, participants will be able to discuss basic nerve entrapment syndromes and their medical and surgical management, as well as indications and techniques for peripheral nerve surgery. Participants will also be able to list strategies for augmenting peripheral nerve surgery in their practices.

**Room 150B**
**Head Injury: Current Management Strategies**
**Moderator:** Shelly D. Timmons  
**Faculty:** Patricia B. Raksin, Eve C. Tsai, Alex B. Valadka  
**Learning Objectives:** Upon completion, participants will be able to review their strategies for managing traumatic brain injury by assessing current practice standards, practical issues surrounding management, and the unique challenges facing patients with traumatic brain injury.
**LUNCHEON SEMINARS**

**12:00 – 1:30 PM**

**Room 147A**

**Complication Avoidance and Management in Skull Base Surgery**
**Moderator:** Jeffrey J. Olson  
**Faculty:** Ossama Al-Mefty, Bartolome Bejarano, Joung H. Lee, Laligam N. Sekhar  
**Learning Objectives:** Upon completion, participants will be able to describe the common complications occurring in skull base surgery, and identify various techniques available for managing complications during skull base surgery and the role of adjunctive technologies in managing complications during and after skull base surgery.

**Room 147B**

**Advances in Malignant Glioma Treatment**
**Moderator:** Alfredo Quinones-Hinojosa  
**Faculty:** Jeffrey N. Bruce, Jose Campos, David W. Roberts, Mark Edwin Shaffrey  
**Learning Objectives:** Upon completion, participants will be able to discuss current and emerging techniques for treating patients with malignant gliomas and consider the impact on treatment strategies for these patients.

**Room 146A**

**Innovations in the Management of Intracerebral Hemorrhage**
**Moderator:** Issam A. Awad  
**Faculty:** E. Sander Connolly, Robert L. Dodd, Neil A. Martin, Mario Zuccarello  
**Learning Objectives:** Upon completion, participants will be able to discuss natural history of intracerebral hemorrhage, identify traditional surgical and new minimally invasive options for management of intracerebral hemorrhage and discuss indications, outcomes, and complications from these approaches.

**Room 146B**

**Practical Approaches for Maximizing Reimbursement**
**Moderator:** Joseph S. Cheng  
**Faculty:** Jeffrey W. Cozzens, Holly Gilmer, Alan M. Scarrow, Clarence B. Watridge  
**Learning Objectives:** Upon completion, participants will be able to discuss the pressures in the current economic environment affecting medical reimbursement, design strategies for maximizing reimbursement in the existing economic environment and identify approaching challenges in medical reimbursement.

**Room 146C**

**Neuro-Oncology and Radiosurgery: Current Indications and Controversies**
**Moderator:** Michael William McDermott  
**Faculty:** Steven D. Chang, John G. Golfinos, Jason P. Sheehan  
**Learning Objectives:** Upon completion, participants will be able to compare their current treatment plans to evidence in the medical literature evaluating the use of radiosurgery for neurosurgical disorders including tumors of the brain and spine.

**Room 146D**

**Comprehensive Management Strategies for the Treatment of Movement Disorders**
**Moderator:** Robert E. Gross  
**Faculty:** Aviva Abosch, Juan Barcia, Michael Gordon Kaplitt, Paul S. Larson  
**Learning Objectives:** Upon completion, participants will be able to consider the indications for deep brain stimulation for movement disorder and outcomes and risks related to deep brain stimulation when assessing their management strategies for the treatment of movement disorders.

**Room 149AB**

**Multidisciplinary Management of Spinal Metastases**
**Moderator:** Ziya L. Gokaslan  
**Faculty:** Mark H. Bilsky, Laurence D. Rhines, Meic H. Schmidt, Narayan Sundaresan  
**Learning Objectives:** Upon completion, participants will be able to incorporate current diagnostic and treatment strategies for metastatic tumors of the spine into their treatment plans. They will also be able to conceptualize a framework for decision making about surgery, conventional radiation, radiosurgery, and vertebral augmentation for these disorders.
The Differential Effect of Deep Brain Stimulation on Oculomotor Function in Parkinson’s Disease Patients with STN or GPi Implants
Jared Fridley, Gareth John Adams, Ping Sun, Michelle York, Farah Atassi, Eugene Lai, Ashwin Viswanathan, Daniel Yoshor

Clinical and Imaging Outcomes After a Fifteen Year Follow-up of Arteriovenous Malformations Treated with Gamma Knife Radiosurgery
Maria Elena Kusak, Laura Paul, Nuria E. Martínez, Jorge Gutiérrez, Germán Rey Portolés, Roberto Martínez Álvarez

The Incidence of Pulmonary Embolism in Patients Treated with Spinal Fusion Procedures for Different Surgical Indications
Benjamin M. Zussman, Mitchell Gil Maltenfort, Ashwini Dayal Sharan, John K. Ratliff, James S. Harrop

Open-label, Dose Confirmation Study of Interstitial 131I-chTNT-1/B Mab (Cotara®) for the Treatment of Glioblastoma Multiforme (GBM) at First Relapse
Deepak Kumar Gupta

Vascular Targeting Enhancement of Radiosurgery for Cerebral Arteriovenous Malformations
Rajesh Reddy, Jacob M. Fairhall, Robert Smeel, Marcus A. Stoodley

Selective Increase in Tension in the C5 Contribution to the Upper Trunk with Positioning for ACDF
Vinay Somashekar, R. Scott Graham, Anthony Owusu

Posterolateral and/or Posterior Interbody Fusion for Low Back Pain
Nicholas Theodore
AFTERNOON SESSIONS

3:00 – 3:15 PM
Use of Bone Graft Extenders, Substitutes and Enhancers
Michael W. Groff

3:15 – 3:25 PM
Audience Polling

3:25 – 3:30 PM
Conclusions

Council of State Neurosurgical Societies 2:00 – 3:30 PM Room 150A
Impact of Conflict of Interest on Advancement of Neurosurgery
Moderators: Alan M. Scarrow, Michael P. Steinmetz
Learning Objectives: This course covers the nature of conflict of interest as it relates to the practice of neurological surgery. It also addresses the current requirements for divestiture and disclosure when entering a relationship with a corporation as well as the nature of intellectual property development in the current medico-legal environment. Upon completion, participants will be able to strategically plan their level of involvement with corporate relationships.

2:00 – 2:30 PM
Conflict of Interest in 2011
Nicholas M. Boulis

2:30 – 3:00 PM
Divestiture and Disclosure
E. Hunter Dyer

3:00 – 3:30 PM
Innovation Under Scrutiny
Richard G. Fessler

Section on Neurotrauma and Critical Care 2:00 – 3:30 PM Room 151A
Injury Guidelines: Unitin Many Studies into Practice
Moderators: Shelly D. Timmons, Eve C. Tsai
Learning Objectives: Upon completion, participants will be able to describe the current results regarding the citicoline brain injury treatment trial. Participants will also be able to discuss the effect of brain and spine injury guidelines on practice as well as their socioeconomic and legal aspects. Lastly, they will be able to update their treatment strategies based on the information learned.

2:00 – 2:20 PM
Update on the Citicoline Brain Injury Treatment (COBRIT Trial)
Ross Zafonte

2:20 – 2:40 PM
Brain Injury – How Guidelines Should Affect Practice and Have Affected Practice and What Should be Done in the Future
Shelly D. Timmons

2:40 – 3:00 PM
Spine Injury – How Guidelines Should Affect Practice and Have Affected Practice and What Should be Done in the Future
Beverly C. Walters

3:00 – 3:20 PM
Socioeconomic and Legal Aspects of Guidelines
Alex B. Valadka

3:20 – 3:30 PM
Discussion

Section on Pain 2:00 – 3:30 PM Room 154AB
Complications of Pain Surgery
Moderators: Julie G. Pilitsis, Konstantin V. Slavin
Learning Objectives: Upon completion, participants will be able to formulate treatment plans based upon the perioperative management of patients with chronic pain, the management of operative complications associated with pain surgery, and strategies to minimize complications of neuromodulation.

2:00 – 2:30 PM
Complications of Spinal Surgery for Pain
Ashwini D. Sharan

2:30 – 3:00 PM
Complications of Neuromodulation
Christopher J. Winfree

3:00 – 3:30 PM
Complications of Intrathecal Therapy
Richard D. Penn

Section on Pediatric Neurological Surgery 2:00 – 3:30 PM Room 150B
State-of-the-Art Management of Pediatric Tumors: Achieving Goals, Managing Risks
Moderators: Michael H. Handler, Mark D. Krieger
Learning Objectives: Participants will have the opportunity to engage in live case-based discussions with the faculty panel. Upon completion, participants will be able to discuss and formulate surgical plans for the treatment of common pediatric tumors based on current literature. They will also gain an understanding of the roles of chemotherapy, radiation therapy, and second-look surgery in the management of these tumors.

2:00 – 2:10 PM
Medulloblastoma: Literature Review
David I. Sandberg

2:10 – 2:20 PM
Medulloblastoma: Expert Opinion
Corey Raffel

2:20 – 2:30 PM
Ependymoma: Literature Review
Greg Olavarria
### EVENING SESSIONS

<table>
<thead>
<tr>
<th>Dinner Seminar III</th>
<th>6:30 – 8:30 PM</th>
<th>Dinner Seminar IV</th>
<th>6:30 – 8:30 PM</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Current Management Strategies for Metastatic Spine Tumors</strong></td>
<td><strong>Cervical and Lumbar Arthroplasty</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Moderator:</strong> Laurence D. Rhines</td>
<td><strong>Moderator:</strong> Michael Y. Wang</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Faculty:</strong> Mark H. Bilsky, Peter C. Gerstsen, Ziya L. Gokaslan</td>
<td><strong>Faculty:</strong> Domagoj Coric, Fred H. Geisler, James S. Harrop, Gregory R. Trost</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Learning Objectives:</strong> Upon completion, participants will be able to discuss the latest developments in the management of metastatic spine tumors. Specifically, participants will be able to identify criteria for patient selection regarding surgery, radiosurgery and other treatment techniques.</td>
<td><strong>Learning Objectives:</strong> Upon completion, participants will be able to describe the quality of the evidence available for spinal arthroplasty. Participants will be able to discuss the advantages and disadvantages of cervical and lumbar arthroplasty, as well as the role it may have in current and future treatment of degenerative spine disease.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1789 Restaurant is the quintessential Washington, DC dining experience. Chosen by readers of Gourmet magazine as one of America’s Top Tables, its inspired creativity is delivered in a relaxed country-inn elegance. Dinner Seminar includes a 3-course plated dinner and wine service. Transportation will depart the Renaissance Washington, DC Downtown Hotel at 6:00 PM sharp.</td>
<td><strong>Charlie Palmer Steak</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Recipient of the 2010, 2009, 2008 Wine Spectator Best of Award of Excellence, Charlie Palmer Steak is dedicated to big, bold American food.</strong> Dinner Seminar includes a 3-course plated dinner and wine service. Transportation will depart the Renaissance Washington, DC Downtown Hotel at 6:00 PM sharp.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Earn additional CME with Dinner Seminar SANS!**

6:30 – 6:45 PM
**Introductory Remarks**

6:45 – 7:15 PM
**Evaluation and Decision Making in Metastatic Spine Disease**
Mark H. Bilsky

7:15 – 7:45 PM
**Surgical Management of Spinal Metastasis**
Ziya L. Gokaslan

7:45 – 8:15 PM
**Therapeutic Advances: Spinal Stereotactic Radiosurgery and Vertebral Augmentation**
Peter C. Gerstsen

8:15 – 8:30 PM
**Spinal Metastasis: Case Presentations**
Laurence D. Rhines

**CNS International Reception**
**Wednesday, October 5, 2011**
**Smithsonian American Art Museum and National Portrait Gallery**
**7:00 - 8:30 PM**

The CNS invites all international attendees to join us for an evening of art and camaraderie. Shuttle transportation will depart the Renaissance Washington, DC Downtown Hotel at 6:45 PM.
General Scientific Session IV

Presiding Officer: Saleem I. Abdulrauf
Moderators: Brian T. Ragel, Jonas Sheehan

Learning Objectives: Upon completion, participants will be able to formulate management strategies including the latest technological developments in maximizing the resection of primary brain tumors. Participants will also be able to justify the need for preserving motion segments in the diseased cervical spine with arthroplasty techniques.

8:00 – 8:03 AM
Introduction and Disclosures
Saleem I. Abdulrauf

8:03 – 8:08 AM
Introduction: Case Controversies with the Masters (Malignant Glioma: Extent of Resection)
Jonas Sheehan

8:08 – 8:28 AM
Why Maximizing Resection Matters
John K. Park

8:28 – 8:48 AM
Adjuncts for Maximizing Resection: Intraoperative MRI
Jeffrey S. Weinberg

8:48 – 9:08 AM
Adjuncts for Maximizing Resection: 5-ALA
David W. Roberts

9:08 – 9:28 AM
Why Extent of Resection Doesn’t Matter
Michael A. Vogelbaum

9:28 – 9:40 AM
Panel Discussion and Audience Questions

9:40 – 10:00 AM
Beverage Break

10:00 – 10:05 AM
Introduction: Case Controversies with the Masters (Cervical Spine Arthroplasty: Fact or Fiction?)
James S. Harrop

10:05 – 10:25 AM
Need for Arthroplasty
Domagoj Coric

10:25 – 10:45 AM
Lack of Need for Arthroplasty
Edward C. Benzel

10:45 – 11:00 AM
Presentation of Cases
Wayne Gluf

11:00 – 11:15 AM
Operative Case Presentation
Mark Edwin Shaffrey

11:15 – 11:25 AM
Panel Discussion and Audience Questions

11:25 – 11:30 AM
Concluding Remarks
Christopher C. Getch
**Admission**

Admission to the Scientific Sessions and the CNS Exhibits is by CNS badge only. Badges are distributed at the CNS Registration area in the Walter E. Washington Convention Center West Registration on Level 1.

**Americans with Disabilities Act**

The Walter E. Washington DC Convention Center provides the following services: ramps to entrances and elevated areas, multiple passenger elevators located convenient to all meeting rooms, restroom facilities for the disabled and tactile braille signage at the entrances to all meeting rooms and restrooms, and inside and outside all passenger elevators.

**Attire**

Professional attire is appropriate at the Annual Meeting and the Exhibit Hall. Some Washington, DC restaurants require coats and ties for gentlemen. Please check each restaurant’s policy when making reservations.

**Auxiliary Tours, Optional Evening Events and CNS Social Activities**

Auxiliary Tours provide spouses and guests with an opportunity to explore the “must see” attractions in the Washington, DC area.

All tours will depart from Renaissance Washington, DC Downtown Hotel. Please arrive 15 minutes prior to the scheduled departure time.

All registered CNS Annual Meeting spouses and guests are invited to visit the Spouse Hospitality Suite, Monday through Wednesday for daily continental breakfast from 8:00 – 10:30 AM. (Please note that admittance to the Spouse Hospitality Suite is by Spouse/Guest badge only.) The Spouse Hospitality Suite is located in Meeting Room 14 at the Renaissance Washington, DC Downtown Hotel.

Optional evening events are available to all registered attendees and our corporate supporters. We encourage you to share this information with your spouse or guest for their convenience. All registered attendees will receive one complementary ticket to the CNS Opening Reception on Sunday, October 2. See page 49 for more details.

**Badges**

CNS Annual Meeting badge colors represent the registration category of attendees:

- ★ Blue Medical attendee including CNS Members and Non-members
- ☆ Gray Medical Students, Allied Health, Nurses
- ☂ Clear Guests and Spouses
- ✨ Yellow Exhibitors
- ★★ Red Staff
Disclaimer
The material presented at the 2011 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 or procedure 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.

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 of the views presented, the products used, or the materials exhibited by the CNS or by its Committees or Affiliates.

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 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 CNS Annual Meeting. The CNS reserves all of its rights to such material, and commercial reproduction is specifically prohibited.

Exhibit Hall Highlights
Breaks with Exhibitors
Monday – Wednesday  9:00 – 10:00 AM
11:30 AM – 12:00 PM
1:30 – 2:00 PM

In-Booth Demonstrations
See page 51 for schedule.

Product & Technology Showcase
See page 50 for schedule.

Research & Development Expert Exchange
See page 50 for details.

Wine & Cheese Experience with the CNS Exhibitors
Tuesday, October 4, 3:30 – 5:00 PM

Exhibit Hall Hours
The CNS Exhibit Hall is located on Level 2 of the Walter E. Washington Convention Center.
Monday, October 3   9:00 AM – 3:00 PM
Tuesday, October 4   9:00 AM – 5:00 PM
Wednesday, October 5 9:00 AM – 2:00 PM

Admittance to the Exhibit Hall is by the CNS name badge only. Children under the age of 18 are not allowed in the CNS Exhibit Hall.

Future Meetings
<table>
<thead>
<tr>
<th>Location</th>
<th>Dates</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chicago, IL</td>
<td>October 6-10, 2012</td>
</tr>
<tr>
<td>San Francisco, CA</td>
<td>October 19-24, 2013</td>
</tr>
<tr>
<td>Boston, MA</td>
<td>October 18-23, 2014</td>
</tr>
</tbody>
</table>

Housing Information
Renaissance Washington, DC Downtown Hotel
999 Ninth Street, NW
Washington, DC 20001
202 898 9000

Grand Hyatt Washington
1000 H Street, NW
Washington, DC 20001
202 582 1234

Capital Hilton
1001 16th Street, NW
Washington, DC 20036
202 393 1000

Morrison-Clark
1015 L Street, NW
Washington, DC 20001
202 898 1200

St. Regis
923 16th & K Streets, NW
Washington, DC 20006
202 638 2626

W
515 15th Street, NW
Washington, DC 20004
202 661 2400

Westin City Center
1400 M Street, NW
Washington, DC 20004
202 429 1700

The Willard Washington, DC
1401 Pennsylvania Avenue
Washington, DC 20004
202 628 9100

Member Services Booth
The CNS Member Services Booth is located in the Exhibit Hall, Booth #1221. Staff members will be available to assist you and answer any questions you may have about the CNS, NEUROSURGERY® or your CNS Membership and its member services.

Online Access
E-mail Stations
You will be able to check your e-mail at the E-mail Stations in the Exhibit Hall. Please be sure to have your mail server URL, e-mail account username and password.
**General Information**

**Mobile Meeting Guide**
For your convenience, the CNS offers a Mobile Meeting Guide. This electronic supplement to the program book provides you a convenient way to search for meetings, events, faculty members, abstracts, exhibitors and more. Use your Smartphone or laptop to visit http://m.cns.org and take advantage of this service throughout the CNS Annual Meeting! iPod Touch, iPhone, and iPad users may also download the app at the Apple App Store.

**Posters**
The CNS Neurosurgical Forum features dynamic oral presentations supported by illustrated posters. This interdisciplinary session will be presented on Monday, 3:30 – 5:00 PM in East Registration on Level 1 of the Walter E. Washington Convention Center. The CNS multidisciplinary oral presentations will be presented on Wednesday, 2:00 – 3:30 PM in Room 151B on Level 1 on the Walter E. Washington Convention Center. Scientific posters, in the CNS enhanced digital format, will be on display Monday through Wednesday in the Exhibit Hall.

**Press Room**
Press activities will take place at the Walter E. Washington Convention Center. Press registration is available onsite with proper credentials. Please stop by the Registration area for details. Please note, some sessions prohibit press admittance.

**Registration Information**
Registration is located in the Walter E. Washington Convention Center West Registration area on Level 1.

**Registration Hours:**
Saturday, October 1 7:00 AM – 5:30 PM
Sunday, October 2 7:00 AM – 7:00 PM
Monday, October 3 6:30 AM – 4:30 PM
Tuesday, October 4 6:30 AM – 4:30 PM
Wednesday, October 5 6:30 AM – 3:00 PM
Thursday, October 6 7:30 AM – 11:30 AM

**Sergeant-at-Arms**
If you are interested in becoming a Sergeant-at-Arms volunteer, please stop by Room 209A in the Walter E. Washington Convention Center.

**Shuttle Services**
Limited shuttle service to the Walter E. Washington Convention Center will be available from the CNS hotels. A shuttle schedule will be posted at the hotels and convention center. Due to the close proximity, the Renaissance Washington DC Downtown will not be shuttled.

**Speaker Ready Room**
All speakers and oral presentation abstract presenters should visit the Speaker Ready Room at the Walter E. Washington Convention Center prior to their presentations.

**Ticket Sales**
Tickets for all courses, evening events, and tours are available for purchase in the Registration area on Level 1 of the Walter E. Washington Convention Center.

---

**Where can I see the latest image-guidance systems?**

- Easily locate the CNS Member Services Booth and all other exhibiting companies in the Exhibit Hall.
- Browse exhibitor list by company or product.

* iPhone and iPad users may download the app from the Apple App Store. Connect with your Android and laptop at http://m.cns.org!
Level Two and Three Floor Plans

Level Two Overview

Level Two
- Practical Courses
- Sergeant-at-Arms (209A)
- Speaker Ready Room (203B)
- Oral Presentations
- CNS Resident SANS Challenge
- CNS Resident Recruitment Social
- Annual Business Meeting

Level Three
- Opening Reception
Stay connected at http://m.cns.org

Level Two Exhibit Hall Floor Plan
### Exhibitors

<table>
<thead>
<tr>
<th>Company Name</th>
<th>Booth No.</th>
<th>Address</th>
<th>Phone</th>
<th>Website</th>
<th>Services or Products</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Accutome, Inc.</strong></td>
<td>1347</td>
<td>3222 Phoenixville Pike, Malvern, PA 19355</td>
<td>610-889-0200</td>
<td><a href="http://www.accutome.com">www.accutome.com</a></td>
<td>Accutome will offer a complete line of diamond bladed surgical and nerve transplant knives. Also repair services for any brand or style of diamond scalpel.</td>
</tr>
<tr>
<td><strong>Ad-Tech Medical Instrument Corporation</strong></td>
<td>946</td>
<td>1901 William Street, Racine, WI 53404</td>
<td>800-776-1555</td>
<td><a href="http://www.adtechmedical.com">www.adtechmedical.com</a></td>
<td>For over 25 years, Epilepsy Centers have made Ad-Tech their choice for invasive electrodes for brain mapping and epilepsy monitoring. We offer a large variety of electrodes and accessories to meet you and your patient needs. Visit our booth to discover why Ad-Tech is your best choice.</td>
</tr>
<tr>
<td><strong>Aesculap Implant Systems, LLC</strong></td>
<td>1606</td>
<td>3773 Corporate Parkway, Center Valley, PA 18034</td>
<td>800-234-9179</td>
<td><a href="http://www.aesculapimplantsystems.com">www.aesculapimplantsystems.com</a></td>
<td>Combining years of R&amp;D along with modern technology, Aesculap Implant Systems offers a complete line of implant systems and instruments to both Spine and Orthopaedic surgeons. Aesculap Implant Systems is committed to excellence in satisfying surgeon and patient needs through the delivery of innovative, cost-effective operative solutions.</td>
</tr>
<tr>
<td><strong>Allen Medical Systems</strong></td>
<td>821</td>
<td>One Post Office Square, Acton, MA 01720</td>
<td>978-266-4200</td>
<td><a href="http://www.allenmedical.com">www.allenmedical.com</a></td>
<td>Allen develops technologically-advanced patient positioning systems that enhance surgical access. Allen Spine System turns any OR table into a surgical spine system. It enables intraoperative flexion of the lumbar spine from kyphosis to lordosis, and increased C-arm/O-arm access. The patient supports are optimized for effective pressure management during long procedures.</td>
</tr>
<tr>
<td><strong>Alpha Omega</strong></td>
<td>1555</td>
<td>5755 North Point Parkway, Unit 229, Alpharetta, GA 30022</td>
<td>877-919-6288</td>
<td><a href="http://www.alphaomega-eng.com">www.alphaomega-eng.com</a></td>
<td>Alpha Omega specializes in manufacturing Microelectrode Recording (MER) devices used for intraoperative brain mapping during DBS implant surgery. Alpha Omega has designed two complete product lines to suit your needs. The MicroGuide Pro is a sophisticated, multi-channel research system, and the NeuroNav line offers portable, turn-key integrated MER systems.</td>
</tr>
<tr>
<td><strong>AMBU, Inc.</strong></td>
<td>903</td>
<td>6740 Baymeadow Drive, Glen Burnie, MD 21060</td>
<td>800-262-8462</td>
<td><a href="http://www.ambuusa.com">www.ambuusa.com</a></td>
<td>Surgical Stim Probes and Pain pumps.</td>
</tr>
<tr>
<td><strong>Amedica / US Spine</strong></td>
<td>1106</td>
<td>1885 West 2100 South, Salt Lake City, UT 84119</td>
<td>801-839-3500</td>
<td><a href="http://www.amedicacorp.com">www.amedicacorp.com</a></td>
<td>Amedica/US Spine has a well-balanced portfolio including a full-line of implants and instruments to address MIS, interbody fusion, facet fusion and deformity correction. In addition, Amedica manufactures the innovative Silicon Nitride ceramic implants for use in the spine and orthopedic device markets.</td>
</tr>
<tr>
<td><strong>American Association of Neurological Surgeons</strong></td>
<td>604</td>
<td>5550 Meadowbrook Drive, Rolling Meadows, IL 60008</td>
<td>847-378-0500</td>
<td><a href="http://www.aans.org">www.aans.org</a></td>
<td>The AANS offers many benefits to its members including neurosurgical and practice management publications, information on AANS meetings including coding and practice management courses, and alternate options to earn CME credit. Other benefits include the AANS Journal of Neurosurgery, AANS Online Career Center, malpractice insurance, medical transcription services and more!</td>
</tr>
<tr>
<td><strong>American Express OPEN</strong></td>
<td>1633</td>
<td>200 Vesey Street, New York, NY 10285</td>
<td>212-640-2000</td>
<td><a href="http://www.open.com">www.open.com</a></td>
<td>American Express business cards give you access to benefits and can help you save money, gain control over your business expenses and earn valuable rewards.</td>
</tr>
<tr>
<td><strong>American Surgical Company</strong></td>
<td>535</td>
<td>82 Sanderson Avenue, Lynn, MA 01902</td>
<td>800-343-0060</td>
<td><a href="http://www.amsursp.com">www.amsursp.com</a></td>
<td>American Surgical Company offers an inventive approach to neurosurgery by empowering surgeons with an innovative array of products of varying materials non-adherent qualities and thicknesses. We believe there is no universal sponge for neurosurgery and that surgeons, not manufacturers, have the unique ability to determine which materials work best in their procedures.</td>
</tr>
</tbody>
</table>
### EXHIBITORS

<table>
<thead>
<tr>
<th>Company Name</th>
<th>Booth Number</th>
<th>Address</th>
<th>Phone Number</th>
<th>Website</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amniox Medical</td>
<td>1047</td>
<td>2221 Newmarket Parkway, Suite 106, Marietta, GA 30067</td>
<td>888-709-2140</td>
<td><a href="http://www.amnioxmedical.com">www.amnioxmedical.com</a></td>
<td>Amniox™ Medical is the leader in amnion regenerative tissue therapies.</td>
</tr>
<tr>
<td>Apex Medical, Inc.</td>
<td>1149</td>
<td>100 Quaker Lane, Malvern, PA 19355</td>
<td>610-240-4905</td>
<td><a href="http://www.apexmed.com">www.apexmed.com</a></td>
<td>Apex Arachnoid Knives™ enable delicate, safe, sharp microdissection in a design as elegant and comfortable as that of reusable instruments. Please visit our exhibit to let us help you solve your current surgical challenges with another custom design of unparalleled quality and performance of our existing instruments.</td>
</tr>
<tr>
<td>Arteriocyte Medical Systems, Inc.</td>
<td>702</td>
<td>45 South Street, Hopkinton, MA 01748</td>
<td>508-497-9350</td>
<td><a href="http://www.arteriocyte.com">www.arteriocyte.com</a></td>
<td>Arteriocyte Medical Systems is dedicated to developing innovative solutions to improve the outcomes of surgical procedures. Magellen® Autologous Platelet Separator System is designed to be used in a clinical laboratory or intraoperatively at the point-of-care for safe and rapid preparation of platelet-rich plasma (PRP) and/or concentrated bone marrow.</td>
</tr>
<tr>
<td>ASSI-Accurate Surgical</td>
<td>607</td>
<td>300 Shames Drive, Westbury, NY 11590</td>
<td>800-645-3569</td>
<td><a href="http://www.accuratesurgical.com">www.accuratesurgical.com</a></td>
<td>ASSI will be displaying its complete line of Noble Real Non-Stick Bipolar Forceps, Sterilization Racks and Baskets, our Fiber Optic LED Light Source and Headlights, Bipolar Scissors as well as our line of Fine Hand Crafted Titanium and Stainless Steel Microsurgical Instrumentation.</td>
</tr>
<tr>
<td>Astor &amp; Black Custom Clothiers</td>
<td>848</td>
<td>81 South 5th Street, Columbus, OH 43215</td>
<td>614-857-9000</td>
<td><a href="http://www.astorandblack.com">www.astorandblack.com</a></td>
<td>Astor &amp; Black provides its customers with the highest quality of hand-made, fully canvassed, custom suits. Each suit is created to the exact specifications of our highly valued clients. Hand-picked stitching, functional buttonholes, and Bemberg silk linings come standard on all garments. With thousands of fabrics to choose from, satisfaction is guaranteed.</td>
</tr>
<tr>
<td>Atlas Spine</td>
<td>1407</td>
<td>1555 Jupiter Park Drive, Suite 4, Jupiter, FL 33458</td>
<td>561-741-1870</td>
<td><a href="http://www.atlasspine.com">www.atlasspine.com</a></td>
<td>Atlas Spine strives to create spinal implant and instrument systems that combine the highest level of performance with simplicity of use to enhance patient outcomes. We seek to accomplish this by consulting with today’s leading spine surgeons to develop fully integrated implant/instruments systems which efficiently achieve their surgical goals.</td>
</tr>
<tr>
<td>Bacterin International, Inc.</td>
<td>1209</td>
<td>600 Cruiser Lane, Belgrade, MT 59714-9719</td>
<td>406-388-0480</td>
<td><a href="http://www.bacterin.com">www.bacterin.com</a></td>
<td>Bacterin International Holdings, Inc. develops specialized allografts with an emphasis on safety, proven clinical efficacy, and providing cost-effective, competitive solutions. We invite you to learn more about OsteoSponge®, OsteoSelect® DBM Putty, and other Bacterin Biologics for your grafting needs. Stop by our booth or visit <a href="http://www.bacterin.com">www.bacterin.com</a> for more information.</td>
</tr>
</tbody>
</table>

Thank you to these companies for providing an educational grant in support of the 2011 CNS Annual Meeting!
<table>
<thead>
<tr>
<th>EXHIBITORS</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Baxano, Inc.</strong></td>
<td>1210</td>
</tr>
</tbody>
</table>
| 655 River Oaks Parkway  
San Jose, CA 95134  
408-514-2200  
www.baxano.com | | 
| BAXANO’s iO-Flex® System is a game-changing system that decompresses central, lateral recess and foraminal stenosis while preserving facet joint integrity and stability in laminectomy and fusion surgery. Up to two levels can be decompressed through a single-point access with either an open or tube-based exposure using the iO-Flex® System. | | 
| **Baxter Healthcare** | 1635 | 
| One Baxter Parkway  
Deerfield, IL 60015-4625  
800-423-2090  
www.baxterbiosurgery.com | | 
| Baxter is a global, diversified healthcare company with expertise in medical devices, pharmaceuticals, and biotechnology. The company continues its quest for advancing BioSurgery by offering products for hemostasis and osteostimulative bone graft substitute based on a patented silicate substitution process for accelerated bone formation. | | 
| **Biomet Microfixation** | 1013 | 
| 1520 Tradeport Drive  
Jacksonville, FL 32218  
904-741-4400  
www.biometmicrofixation.com | | 
| Biomet Microfixation is a leading manufacturer and distributor of advanced craniomaxillofacial products. Biomet offers a complete portfolio of neurosurgical reconstruction products aimed at improving clinical outcomes, increasing OR efficiency and enhancing ease-of-use. Visit us at booth 1013 to view our latest innovations. | | 
| **Biomet Spine** | 809 | 
| 100 Interpace Parkway  
Parsippany, NJ 07054  
973-299-9300  
www.biometspine.com | | 
| Applying today’s most advanced engineering and manufacturing technologies, we’ve developed our product line to offer surgeons a comprehensive approach for a wide variety of surgical applications for the spine. Visit our exhibit to see how our products can help surgeons change lives for the better, one patient at a time. | | 
| **BK Medical Systems Inc.** | 1507 | 
| 8 Centennial Drive  
Peabody, MA 01960  
800-876-7226  
www.bkmed.com | | 
| New Gold Standard Premium performance neuroimaging from BK Medical. The unparalleled function and design of our two, new dedicated neurosurgical transducers, combined with the flex Focus 700 system’s flexibility and superb image quality, provide neurosurgeons with a unique ultrasound imaging solution to address the clinical challenges they face every day. | | 
| **Blue Chip Surgical Center Partners, LLC** | 1615 | 
| 4760 Red Bank Expressway, Suite 222  
Cincinnati, OH 45227  
513-561-8900 x16  
www.bluechipsurgical.com | | 
| Blue Chip Surgical develops and manages physician-led, physician-owned outpatient surgical centers, with an emphasis in integrating Spine. Our development model includes Hospital JV, de Novo and acquisitions; while our operating model has been successfully implemented across all platforms, exhibiting core competencies in managed care negotiations, cost controls, surgeon recruiting, staffing and financing, ensuring maximum potential. | | 
| **Boston Scientific** | 1249 | 
| 25155 Rye Canyon Loop  
Valencia, CA 91355  
661-949-4000  
www.controlyourpain.com | | 
| Boston Scientific’s Precision Plus SCS System powered by SmoothWave™ Technology blends sophistication and simplicity to deliver life-changing therapy for chronic pain patients. Investing in innovative products, clinical initiatives, and world-class service, Boston Scientific is committed to Making Life smoother™ for physicians, patients and the Neuromodulation community. | | 
| **Brainlab, Inc.** | 1326 | 
| 3 Westbrook Corporate Center, Suite 400  
Westchester, IL 60154  
708-409-1343  
www.brainlab.com | | 
| Brainlab develops, manufactures and markets software-driven medical technology that supports targeted, less-invasive treatment. Core products are image-guided systems and software that provide real-time information used for surgical navigation and radiosurgical planning and delivery. Founded in 1989, the privately held Brainlab group has 5,000 systems installed in over 80 countries. brainlab.com |
Find civilized alternatives to traditional vertebral body distraction, foraminal exposure and to the plethora of problems still plaguing product performance in everyday spinal surgery.

Cadwell Laboratories, Inc. 649
909 N. Kellogg Street
Kennewick, WA 99336
509-735-6481
www.cadwell.com

Founded in 1979 by brothers John and Carl Cadwell, Cadwell Laboratories continues to set new standards with innovations in clinical EMG/NCV/EP instrumentation, Intraoperative Neuromonitoring, Clinical Monitoring, Sleep Diagnostics, Ambulatory EEG & PSG.

Carl Zeiss Meditec, Inc. 1338
5160 Hacienda Drive
Dublin, CA 94568
925-357-4100
www.meditec.zeiss.com/neuro

Carl Zeiss pioneered the concept of the surgical microscope and today is the world’s leading provider of surgical microscopes and visualization solutions. As an integrated medical technology company, Carl Zeiss is able to bundle research and development to accelerate future product innovations.

CCV 907
712 South Milwaukee Avenue
Libertyville, IL 60048
877-272-4869
www.citowcv.com

The CCV Cervical Visualizer is a Table Mounted Radiolucent Positioner for use in Cervical Vertebral Surgery. Gently migrating the shoulders during Radiography WITHOUT Taping the Trapezius, Pulling the Arms with Kurlix, or exposing Staff to Radiation, the CCV works with ANY sized Patient...every time! Arrange your Trial! 1-877-C7-CITOW
Codman, a Johnson & Johnson Company
325 Paramount Drive
Raynham, MA 02767
508-880-8100
www.codman.com

Codman, a Johnson & Johnson Company, is a global neuroscience and neurovascular company that offers a wide range of devices and solutions for the diagnosis and treatment of neurological disorders, including adult and pediatric hydrocephalus, critical care, pain, aneurysms and cerebral arteriovenous malformations. More information can be found at www.codman.com.

Cosman Medical
76 Cambridge Street
Burlington, MA 01803
781-272-6561
www.cosmanmedical.com

Cosman Medical is the world leader in RF generators and electrodes for Trigeminal Neuralgia, DREZ, cordotomy, spinal pain and functional stereotactic procedures. With 40 years’ experience, Cosman provides technologically advanced and cost-effective solutions. The touch-screen G4 graphics generator and RFG-1A generator are major advances in RF capability – setting new standards for functionality and reliability.

Concentric Medical, Inc.
301 East Evelyn Avenue
Mountain View, CA 94041-1530
877-471-0075
www.concentric-medical.com

Concentric Medical, Inc., headquartered in Mountain View, CA, is a medical device company focused on the design, development and commercialization of minimally invasive medical devices for use in the neurovasculature. Concentric Medical manufactures the Trevo™ System, Merci Retriever®, Merci® Microcatheter, Merci® Balloon Guide Catheter and the DAC™ Catheter.

Congress of Neurological Surgeons
10 North Martingale Road, Suite 190
Schaumburg, IL 60173
www.cns.org

The Congress of Neurological Surgeons is a world leader in education and innovation, providing its members with premier educational programs and promoting innovative research critical to the advancement of neurosurgery. Through service on its volunteer committees, the CNS members guide the future of neurosurgery while developing their own leadership skills.

Corazon Inc.
5000 McKnight Road, Suite 300
Pittsburgh, PA 15237
412-364-8200
www.corazoninc.com

Corazon is a recognized leader in strategic program development for the heart, vascular, and neuro specialties. Corazon brings unparalleled experience and expertise to a full spectrum of services, including consulting, recruitment, and interim management.

Covidien
555 Long Wharf Drive
New Haven, CT 06511
203-845-1000
www.covidien.com

Covidien BioSurgery delivers innovative surgical biomaterials that are supported by a strong base of clinical evidence and provide superior outcomes for healthcare providers and their patients. For more information please visit our booth #1109.

CUDA Surgical
6018 Bowdendale Avenue
Jacksonville, FL 32216
904-737-7611
www.sunoptictech.com

CUDA Surgical offers a complete line of state-of-the-art Xenon Light Sources, LED battery powered headlights, Surgical Fiberoptic Headlights, Fiberoptic Cables, and Video Products for the Operating Room and Office-Based surgical procedures. When the Surgeons’ needs require PREMIUM PERFORMANCE.

Cybertech Medical
1815 Wright Avenue
La Verne, CA 91750
909-447-7050
www.cybertechmedical.com

Industry leading spinal support. Cybertech pioneered mechanical advantage abdominal compression to bring superior support to the patient, come feel the smooth power of Cybertech. CTO to SI, Cybertech offers superior control, comfort, and compliance.

DePuy Spine
325 Paramount Drive
Raynham, MA 02767
508-880-8100
www.depuy spine.com

The second largest spine company in the world, DePuy Spine develops innovative orthopaedic and neurosurgical products that address key areas of spinal care, including cervical, aging spine, vertebral body replacement, minimally invasive surgery and the emerging area of biologics. More information on DePuy Spine products can be found at www.depuy spine.com.

Thank you to these companies for providing an educational grant in support of the 2011 CNS Annual Meeting!
Designs For Vision, Inc.  
760 Koehler Avenue  
Ronkonkoma, NY 11779  
800-345-4009  
www.designsforvision.com

Just See It™ with Designs for Vision's lightweight custom-made Surgical Telescopes – now available with Nike® frames. These Telescopes improve visual acuity and reduce back and neck pain. See It Even Better™ with the L.E.D. Daylite™ or Twin Beam™ L.E.D., providing the brightest and safest untethered illumination.

DJO Incorporated  
1430 Decision Street  
Vista, CA 92081-8339  
760-727-1280  
www.djoglobal.com

DJO is a leading global medical device company providing solutions for musculoskeletal and vascular health, and pain management. The Company’s products help patients prevent injuries or rehabilitate after surgery, injury or degenerative disease. DJO’s brands include Aircast®, DonJoy®, ProCare®, CME™, Empi®, Saunders®, Chattanooga Group™, DJO Surgical, Cefar®-Complex® and Ormed®. Visit www.DJOglobal.com.

Domain Surgical  
1370 South 2100 East  
Salt Lake City, UT 84108  
801-924-4950  
www.domainsurgical.com

Our products provide advanced thermal control for precision in tissue dissection, tumor resection, and hemostasis. Our patent-pending technology produces surface-only tissue effects with energy that does not pass through the patient, reducing the potential for collateral tissue damage from thermal injury and stray electrical current.

Eizai Nanao Corporation  
5710 Warland Drive  
Cypress, CA 90630  
562-431-5011  
www.radiforce.com

Eizo RadiForce monitors ranging from 1MP-10MP are versatile LCDs available for your medical imaging and surgical needs. With large format monitors and monitor mangers, distracting multiple monitor configurations with many bezel separations are no longer an issue. One large easy to use screen with 21 simultaneous inputs makes your OR possibilities endless.

Elekta  
4775 Peachtree Industrial Boulevard  
Norcross, GA 30092  
770-670-2592  
www.elekta.com

A human care company, Elekta pioneers significant innovations and clinical solutions for treating cancer and brain disorders. The company develops tools and treatment planning systems for radiation therapy and radiosurgery, as well as workflow enhancing software systems. Through its products and services, Elekta aims to improve, prolong, and save patient lives.

elliquence, LLC  
2455 Grand Avenue  
Baldwin, NY 11510  
516-277-9000  
www.elliquence.com

elliquence, LLC; formerly Ellman Innovations manufactures patented Radiowave technology with innovative devices for neurosurgery and spine procedures. Surgi-Max® Plus permits precision, tissue preservation, non-adherent bipolar effects and surgical versatility. Our unique Micro Bipolar System can offer an additional alternative for minimally invasive neurosurgery.

Eisai, Inc.  
100 Tice Boulevard  
Woodcliff Lake, NJ 07677  
201-692-1100  
www.eisai.com

Eisai Inc. is the U.S. pharmaceutical operation of Eisai Co. Ltd., a research-based human healthcare(hhc) company that discovers, develops, and markets products throughout the world. Eisai's areas of commercial focus include neurology, gastrointestinal disorders and oncology/critical care.

Elsevier–Saunders/Mosby  
1600 JFK Boulevard, Suite 1800  
Philadelphia, PA 19103  
215-239-3900  
www.elsevierhealth.com

Come see new titles and new editions of Youman’s Neurological Surgery, Schmidek and Sweet’s Operative Neurosurgical Techniques, Brain Tumors, Minimally Invasive Percutaneous Spinal Techniques, Core Techniques in Operative Neurosurgery, Cerebral Revascularization, Principles of Neurosurgery, 2 Volume Spine Surgery and more. Best selling journals and the Neurosurgery Clinics and Neuroimaging Clinics.
ev3 Inc.
9775 Toledo Way
Irvine, CA 92618
763-398-7000
www.ev3.net

ev3, Inc. is now a part of Covidien, a leading global healthcare products company that creates innovative medical solutions for better patient outcomes and delivers value through clinical leadership and excellence. ev3’s portfolio includes plaque excision systems, PTA balloons, stents, embolic protection, thrombectomy, embolization coils, liquid embolics, occlusion balloons and procedural support solutions.

ExpertPlan Consulting Services
50 Millstone Road, Building 400, Suite 300
East Windsor, NJ 08520
609-918-2500
www.expertplan.com

ExpertPlan offers a complete range of consulting, research, administrative and communication services throughout the entire field of qualified and nonqualified plans. Our expert plan administrators, actuaries and compliance specialists allow ExpertPlan to maintain an unparalleled record of fulfilling clients’ needs and building solid, long-term relationships.

Fehling Surgical Instruments, Inc.
509 Broadstone Lane
Acworth, GA 30101
800-334-5464
www.fehlingsurgical.com

Fehling Surgical Instruments provides innovative surgical instrument designs using state-of-the-art materials combined with enhanced technology manufacturing techniques. Results are products like the “Fehling CERAMO® Surgical Instrument Line”. See AND feel new Cranial Micro Instruments, a wide variety of Ejector Kerrisons and more.

FHC, Inc.
1201 Main Street
Bowdoin, ME 04287
207-666-8190
www.fh-co.com

Introducing Waypoint™ Navigator featuring CranialVault™ Atlas for convenient planning and lead visualization for traditional stereotaxy and innovative frameless Platform; the STar™ Drive precisely positions D.ZAP™ microelectrodes for optimal recording signals; and portable Guideline 4000 LP+™ provides multi-channel recording, stimulation, LFP analysis and data export. 24/7 technical and OR equipment support!

Focused Ultrasound Surgery Foundation
1230 Cedars Court, Suite F
Charlottesville, VA 22903
434-220-4993
www.fusfoundation.org

The Focused Ultrasound Surgery Foundation was established to shorten the time from technology development to patient treatment; to foster new applications; and to accelerate the worldwide adoption of MRgFUS.

The Foundation will engage in three primary activities: education, translational and clinical research, and the creation of a network of research and development centers.

Globus Medical
2560 General Armistead Avenue
Audubon, PA 19403
610-930-1800
www.globusmedical.com

Globus Medical, the world’s largest privately held spinal company, is driving significant technological advancements across a complete suite of spinal products. Globus is driven to utilize superior engineering and technology to achieve pain free, active lives for all patients with spinal disorders.

Gundersen Lutheran Health System
1900 South Avenue
LaCrosse, WI 54601
608-775-3637
www.gundluth.org

Gundersen Lutheran Health System, based in LaCrosse, Wis., offers the opportunity for you to practice award winning, cutting-edge, patient and family centered medicine, while enjoying a great lifestyle. We are a physician led, integrated, multi-specialty practice that offers the opportunity to teach and do research.

Hans Biomed USA, Inc.
140 Sylvan Avenue, Suite 4
Englewood Cliffs, NJ 07632
201-224-2333
www.hansbiomed.com

Hans Biomend is a Tissue Bank looking for distributors for our allograft and DBM products.

Harlequin Recruiting
955 South Downing Street
Denver, CO 80209
303-832-1866
www.harlequinna.com

Harlequin Recruiting is a premier physician recruiting firm specializing in Neurosurgery. We work with all types of facilities nationwide including academic institutions, hospitals, private practices, and clinics. We represent opportunities for Neurosurgeons in every neurosurgery sub-specialty. We work with our candidates confidentially on personalized, comprehensive searches for their individual preferences and criteria.
**Harvest Technologies Corp.**  1253
40 Grissom Road, Suite 100
Plymouth, MA 02360
508-732-7500
www.harvesttech.com

Harvest manufactures the first-of-its-kind SmartPREP® 2 Cell Concentration System with BMAC® (Bone Marrow Aspirate Concentrate) kits for Concentrating Autologous Adult Stem Cells, and APC+® kits for Concentrating Platelets--both at point-of-care in only 15 minutes, and both with small volume 30mL kits available.

**Hemedex, Inc.**  1603
222 Third Street, Suite 0123
Cambridge, MA 02142
617-577-1759
www.hemedex.com

The Hemedex Bowman Perfusion Monitor addresses the need for continuous, real-time measurements of cerebral perfusion in absolute units. Hemedex's technology provides early warnings of tissue ischemia and can help target appropriate therapies rapidly and accurately. It provides clinicians with a powerful tool to generate valuable prognostic data.

**Hitachi Aloka Medical**  635
10 Fairfield Boulevard
Wallingford, CT 06492
203-269-5088
www.aloka.com

Hitachi Aloka Medical’s commitment to ultrasound for surgeons offers a wide range of consoles and specifically designed transducers to meet the needs of every surgeon. Recognized for our superior image quality, system reliability and use of cutting edge technology, we remain the standard in the field of ultrasound for surgeons.

**Holmed Corporation**  706
40 Norfolk Avenue
South Easton, MA 02375
508-238-3351
www.holmed.net

Working hand-in-hand surgeon to engineer, we design instruments to meet today’s stringent requirement. Our staff tests products to higher standards than our competition. We provide easy to use cart effective products that are safe.

**Hospital Corporation of America (HCA)**  650
3 Maryland Farms, Suite 250
Brentwood, TN 37027
866-889-0203
www.practicewithus.com

HCA owns and operates 164 healthcare facilities in 20 states with opportunities coast to coast. HCA was one of the nation’s first hospital companies. We are committed to the care and improvement of human life. We strive to deliver quality healthcare that meets the needs of the communities we serve.

**HOYA Corporation (PENTAX)**  1821
2-17-12 Yushima, Bunkyo-Ku
Tokyo 113-0034, Japan
81-3-5840-6141
www.bone.pentax.jp/inquiry_e.php

HOYA Corporation (PENTAX) PENTAX, a division of HOYA Corporation, has launched a series of surgical loupes, PRISMVUE. It relieves operator’s neck pain as it is designed to view surgical field without bending neck with the use of the prisms. In addition, reliable optical technology of PENTAX enabled PRISMVUE to give wide and bright sight.

**Ikegami Electronics USA, Inc.**  1509
37 Brook Ave
Maywood, NJ 07607
201-368-9171
www.Ikegami.com

Ikegami manufacturers Medical Grade Microscopy HDTV Cameras and Monitors.

**Impulse Monitoring Inc.**  1624
10420 Little Patuxent Parkway, Suite 250
Columbia, MD 21044
410-740-2370
www.impulsemonitoring.com

Impulse Monitoring, Inc. (IMI) is an intraoperative monitoring (IOM) service company located in Columbia, MD. IMI is distinguished in the marketplace on the strength of its clinical standards, best practices and its extensive use of technology to provide increased value to our clients. IMI currently monitors over 20,000 cases per year.

**IMRIS Inc.**  1034
100-1370 Sony Place
Winnipeg, MB R3T 1N5 Canada
204-480-7070
www.imris.com

IMRIS is a global leader in providing image guided therapy solutions. These solutions feature fully integrated surgical and interventional suites that incorporate magnetic resonance, fluoroscopy and computed tomography to deliver on-demand imaging during procedures. IMRIS’s systems serve the neurosurgical, cardiovascular and neurovascular markets and have been selected by leading medical institutions around the world.

**Inion Inc.**  802
2800 Glades Circle, Suite 138
Weston, FL 33327
954-659-9224
www.inion.com

Inion Inc. is a medical device company focused on the development and successful commercialization of innovative biodegradable and bioactive implants in key target markets. The company’s target segments are spine and specialty orthopedics.
InnerSpace, Inc. provides surgeons with solutions to treat Traumatic Brain Injury. The company has created a revolutionary ICP sensor, AirPulse ICP, and has integrated access for multimodal monitoring.

Innovasis Inc. is a rapidly growing company engaged in the research, development, manufacturing and marketing of spinal implant devices and other neurosurgical related products. We offer a full spinal product line with implants and instruments that address the major pathologies and focus areas of traditional spinal and cranial surgery.

Integra LifeSciences, a world leader in medical devices, is dedicated to limiting uncertainty for surgeons so they can concentrate on providing the best patient care. Integra offers a vast portfolio of implants, devices, instruments and systems used in neurosurgery and neuro-critical care.

INTEGRIS Health is Oklahoma’s largest not-for-profit health system – with hospitals, rehab centers, physician clinics and mental health facilities throughout much of the state. Our mission is to improve the health of the people and communities we serve.

Jeil Medical Corporation produces plates screws for neuro surgery, oral maxillo facial surgery, guided bone regeneration and orthodontics.
Karl Storz Endoscopy-America, Inc.  
2151 East Grand Avenue  
El Segundo, CA 90245  
800-421-0837  
www.karlstorz.com

KARL STORZ Endoscopy-America, Inc., an international leader in endoscopy equipment and instrumentation. The company designs, engineers, manufactures and markets products that emphasize visionary design, precision craftsmanship and clinical effectiveness. KARL STORZ sets the industry standard for complete and specialized instruments in neurosurgery.

Kelyniam Global, Inc.  
97 River Road  
Canton, CT 06019  
800-280-8192  
www.kelyniam.com

Kelyniam is a global original manufacturer of Custom Skull Implants using PEEK-OPTIMA LT, from Invibio. We offer revolutionary turn around as fast as 24 hours in emergency cases from receipt of CT data.

Kinamed, Inc.  
820 Flynn Road  
Camarillo, CA 93012  
805-384-2748  
www.kinamed.com

Kinamed offers the NeuroPro® Rigid Fixation System designed specifically for neurosurgical skull base and cranial applications. The system includes many unique tools for the neurosurgeon, including the Temporalis Muscle Suspension Plate with suture eyelets for secure repositioning of the temporalis muscle, Chiari Malformation Plate, and single-use Quick Tap Power Driver.

Kirwan Surgical Products, LLC  
180 Enterprise Drive  
Marshfield, MA 02050  
781-834-9500  
www.ksp.com


KLS Martin Group  
P.O. Box 16369  
Jacksonville, FL 32245  
904-641-7746  
www.klsmartin.com

KLS-Martin is a company dedicated to providing innovative medical devices for neurosurgery. We offer a wide variety of surgical instruments, titanium plates and mesh, custom cranial implants, and the revolutionary SonicWeld Rx system for resorbable fixation. Currently based out of Jacksonville, Florida, we have highly qualified representatives covering the needs of surgeons throughout North America.

Koros USA, Inc.  
610 Flinn Avenue  
Moorpark, CA 93021  
805-529-0825  
www.korosusa.com

For over 30 years Koros USA, Inc. has been designing and distributing state-of-the-art surgical instruments. Like the Cervical Black Belt, Lumbar Super Slide and ALIF Polaris Retractors along with our Rotating Osteo Punch and Ejector Punch Plus Rongeurs and fine hand instruments.

Lanx, Inc.  
310 Interlocken Parkway, Suite 120  
Broomfield, CO 80021  
303-443-7500  
www.lanx.com

Lanx specializes in systems and implants for all segments of spinal surgery. Integrating leading technology, intellectual property, and state-of-the-art engineering, each product is designed to simplify surgery and improve the quality of care for patients worldwide by providing surgeons with innovative spinal products.

LDR  
4030 West Braker Lane, Suite 360  
Austin, TX 78759  
512-344-3300  
www.ldrspine.com

LDR creates innovative fusion and non-fusion spinal technologies for surgeons and patients in 26 countries. Partnering with surgeons and sales people, LDR provides spinal systems and instrumentation that make spine surgery reproducible, easier to perform, and restores optimum stability and mobility to patients. We have A Passion for Innovation!
<table>
<thead>
<tr>
<th>Exhibitor Name</th>
<th>Booth</th>
<th>Address</th>
<th>Phone</th>
<th>Website</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Life Instrument Corporation</td>
<td>1153</td>
<td>91 French Avenue, Braintree, MA 02184</td>
<td>781-849-0109</td>
<td><a href="http://www.lifeinstruments.com">www.lifeinstruments.com</a></td>
<td>Life Instrument Corporation is dedicated to serving neurosurgeons and orthopedic surgeons with the highest quality surgical instruments. Since the 1980’s, spine surgery has advanced with new procedures and new approaches to the spine. Life Instrument Corporation was founded to meet the needs of spine surgeons for these new surgical techniques.</td>
</tr>
<tr>
<td>LifeIMAGE</td>
<td>1307</td>
<td>1 Gateway Center, 300 Washington Street, Suite 507, Newton, MA 02458</td>
<td>617-244-8411</td>
<td><a href="http://www.lifeimage.com">www.lifeimage.com</a></td>
<td>lifeIMAGE makes it possible for physicians and practices to instantly exchange medical imaging information. Secure, electronic transmission of image data to anyone, anywhere can grow referral networks, create opportunities for distance consulting, and ensure the fastest possible collaboration in time-sensitive neurosurgical treatment planning. For more information visit <a href="http://www.lifeimage.com">www.lifeimage.com</a>.</td>
</tr>
<tr>
<td>LifeNet Health</td>
<td>749</td>
<td>1860 Concert Drive, Virginia Beach, VA 23453</td>
<td>757-464-4761</td>
<td><a href="http://www.accesslifenethealth.org">www.accesslifenethealth.org</a></td>
<td>LifeNet Health helps save lives and restore health for thousands of patients each year. We are the world’s most trusted provider of transplant solutions, from organ procurement to new innovations in bio-implant technologies and cellular therapies—while always honoring the donors and healthcare professionals that allow the healing process.</td>
</tr>
<tr>
<td>Lippincott Williams and Wilkins – WKH</td>
<td>1502</td>
<td>Two Commerce Square, 2001 Market Street, Philadelphia, PA 19103</td>
<td>215-521-8300</td>
<td><a href="http://www.lww.com">www.lww.com</a></td>
<td>Lippincott Williams &amp; Wilkins, a Wolters Kluwer Health company is a leading international publisher of medical books, journals, and electronic media. We proudly offer specialized publications and software for physicians, nurses, students and clinicians. Please visit our booth to browse our comprehensive product line.</td>
</tr>
<tr>
<td>Market Access Partners</td>
<td>1405</td>
<td>3236 Meadowview Road, Evergreen, CO 80439</td>
<td>303-526-1900</td>
<td><a href="http://www.marketaccesspartners.com">www.marketaccesspartners.com</a></td>
<td>Market Access Partners provides market research consulting to the medical device and pharmaceutical industries. We use innovative, qualitative and quantitative methodologies to research opinions of physicians, nurses and patients. We offer a management-oriented approach to product development.</td>
</tr>
<tr>
<td>Mary Washington Healthcare</td>
<td>1804</td>
<td>1101 Sam Perry Boulevard, Suite 419, Fredericksburg, VA 22401</td>
<td>540-741-4831</td>
<td><a href="http://www.marywashingtonhealthcare.com">www.marywashingtonhealthcare.com</a></td>
<td>Mary Washington Healthcare is a fully integrated, regional medical system located in Fredericksburg, VA within an hour from D.C. and Richmond. Mary Washington Healthcare includes Mary Washington Hospital a 437-bed advanced regional hospital, and Stafford Hospital, a 100-bed community hospital. Advertising for a Neurosurgical practice opportunity.</td>
</tr>
<tr>
<td>MASEP Infini Medical Science Technology Dev.</td>
<td>1639</td>
<td>17870 Castleton Street, Suite 395, City of Industry, CA 91748</td>
<td>626-965-3200</td>
<td><a href="http://www.masepinfini.com">www.masepinfini.com</a></td>
<td>MASEP Infini designs, manufactures, and distributes state-of-the-art stereotactic radiosurgery equipment. Our innovative designs increase the accessibility of these systems world-wide. We want to be the customer’s first choice when selecting a stereotactic radiosurgery system.</td>
</tr>
</tbody>
</table>
**Massaging Insoles by Superior Health, Inc.**

328 Blacktail Court
Apopka, FL 32703
407-814-7788
www.massaginginsoles.com

World’s best glycerin filled therapeutic massaging insoles. Two year replacement warranty. Machine or hand washable. Sport impact tested to fit in any shoe or sandal. Healthy and natural approach to foot care. Stop by #1702 for a free test walk and ask about the meeting special.

---

**Medivance**

321 South Taylor Avenue, Suite 200
Louisville, CO 80027
877-267-2314
www.medivance.com

The Arctic Sun® by Medivance® is the Targeted Temperature Management™ system of choice in top hospitals around the world. The non-invasive technology rapidly achieves target temperature and maintains prescribed temperature with precision. Normothermia and hypothermia protocols can be preprogrammed in the device to ensure safe and consistent delivery of therapy.

---

**Mazor Robotics**

459 Vanderbilt Avenue
Brooklyn, NY 11238
347-844-9794
www.mazorrobotics.com

Renaissance™, Mazor Robotics guidance system for spine surgery, provides a safer surgical environment for patients, surgeons, and OR staff. It is transforming spine surgery from freehand to highly accurate procedures that raise the standard of care with better clinical outcomes, validated in over 2,000 procedures worldwide.

---

**Mazur Marketing**

1315 North Highland Avenue, Suite 105
Aurora, IL 60506
630-892-2797
www.newrongeur.com

MAZUR MARKETING provides physician designed surgical instruments used primarily in spine surgery. The premier instrument is the Mazur Rongeur with angled concave tip for accurately shaping and smoothing all bone surfaces, especially the anterior cervical spine. Non-clogging tip. Made with highest quality German stainless steel and German manufacturing craftsmanship.

---

**MedCure, Inc.**

12013 NE Marx
Portland, OR 97220
503-764-9919
www.medcure.org

MedCure supports medical education and research with our Surgical Training Centers, Total Course Management that handles all details for medical facility courses, Specimen Escorting Services when you need an extra set of hands, or simply by providing anatomical specimens.

---

**Medtronic**

2600 Sofamor Danek Drive
Memphis, TN 38132
901-396-3133
www.medtronic.com

At Medtronic, we’re committed to Innovating for life by pushing the boundaries of medical technology and changing the way the world treats chronic disease. To do that, we’re thinking beyond products and beyond the status quo - to continually find more ways to help people live better, longer.
Möeller-Wedel GmbH
Rosengarten 10
22880 Wedel, Sch
Germany
+49-4103-709-272
www.moeller-wedel.com
Founded in 1864 as an optical company in Wedel, MÖLLER WEDEL is today a worldwide renowned manufacturer of surgical microscopes. State of the art technology as ICG, the Microscope Imaging and Operation System MÖLLER MIOS, and accessories that will satisfy all surgeons requirements present MÖLLER as a modern and innovative company.

Monteris Medical, Inc.
100-78 Innovation Drive
Winnipeg, Manitoba R3T 6C2
Canada
204-272-2220
www.monteris.com
Monteris Medical offers AutoLITT®: MRI guided laser interstitial thermal therapy (LITT) for the focused ablation of difficult to treat brain tumors. Monteris also offers the Axiis® Stereotactic Miniframe: a single use positioning platform for placement and guidance of tools for brain biopsies.
www.monteris.com

Mountain States Health Alliance
400 North State of Franklin Road
Johnson City, TN 37604
423-202-5654
www.msha.com
Mountain States Health Alliance nestled in beautiful Northeast TN and Southwest Virginia, a 13 hospital system, providing care to 29 counties and 1.2 million residents, seeks BC/BE Neurosurgeon to join a vibrant Healthcare Organization. Please visit Booth 1410 for further details.

MRI INTERVENTIONS INC.
5 Musick
Irvine, CA 92618
949-900-6833
www.mriinterventions.com
MRI INTERVENTIONS INC. is a leader in the field of MRI-guided interventions, creating innovative platforms for performing the next generation of interventional procedures in the brain and heart. Utilizing a hospital’s existing MRI suite, MRI INTERVENTIONS’ FDA cleared ClearPoint™ system is designed to enable a range of minimally invasive procedures in the brain.
**Nadia International, Inc.**  
4301 West William Cannon Drive, Suite 150-B, #295  
Austin, TX 78749  
512-301-3888  
www.ronadro.com

Surgical/Educational bronze sculptures specifically created for the neurosurgeon. These museum quality limited editions are sculpted by the world famous sculptor, Ronadro. Ronadro has over 7000 surgeons in 72 countries collecting his fine works of medical art.

**National Institute of Neurological Disorders & Stroke (NINDS)**  
31 Center Drive, Building 31, Room 8A07  
Bethesda, MD 20892  
301-496-5751  
www.ninds.nih.gov

The National Institute of Neurological Disorders and Stroke (NINDS) provides information about available research support and offers free publications for patients and their families on stroke and other neurological disorders. Members of the NINDS staff will be available to assist you. Printed materials are available.

**NEOS Surgery, S.L.**  
Paseo Mikeletegui 2  
20009 Donostia  
San Sebastián (Guipúzcoa)  
Spain  
+34-93-594-47-26  
www.neosurgery.com

NEOS Surgery researches, develops, produces and commercializes medical devices which contribute to the improvement of quality of life thanks to advances in medical techniques which facilitate surgery and patient treatment. NEOS will exhibit two of its cranial fixation devices at the CNS: the Cranial Loop and the Cranial Loop L.

**NeuroLogica Corporation**  
14 Electronics Avenue  
Danvers, MA 01923  
706-714-7006  
www.neurologica.com

NeuroLogica Corporation, located in the Boston metro area, designs, manufactures and markets innovative medical imaging equipment for healthcare facilities and private practices worldwide. NeuroLogica is known for its portable CT and SPECT scanners. Products: BodyTom™ Portable Full Body CT, CereTom® Portable Small Bore CT, inSPira HD™ Portable High Resolution SPECT.

**NeuroPoint Alliance (NPA)**  
5550 Meadowbrook Drive  
Rolling Meadows, IL 60008  
847-378-0500  
www.aans.org

NeuroPoint Alliance (NPA) was developed to administer data management, neurosurgical clinical services and outcomes measurement. NPA's newest initiative, National Neurosurgery Quality and Outcomes Database (N2QOD), is a quality improvement networking platform, where Practice groups can assess acceptable benchmarks for quality of care and target areas where quality improvement is needed.

**New World Rarities, Ltd.**  
670 Old Willets Path  
Hauppauge, NY 11788  
800-431-1018  
www.newworldrarities.com

New World Rarities is one of the largest wholesalers of gold, silver, and platinum coins in the U.S. While specializing in numismatic material we offer a large selection of bullion related products. Since 1973 New World Rarities has become a worldwide multimillion dollar organization through our reputation, reliability, and performance.

**Nexstim, Inc.**  
1360 Union Hill Road, Suite 3C  
Alpharetta, GA 30004  
770-664-1000  
www.nexstim.com

Nexstim's Navigated Brain Stimulation (NBS) System integrates TMS, EMGs, and MRI guided navigation to non-invasively stimulate and map the motor cortex with the accuracy of DCS. In 2009, Nexstim received FDA clearance for Pre-Procedural Planning. Future FDA applications currently in clinical trials are: Stroke Rehabilitation, Speech, and Depression.

**NICO Corporation**  
9190 Priority Way West Drive, Suite 203  
Indianapolis, IN 46240  
317-660-7118  
www.niconeuro.com

NICO's products are designed for use in minimally invasive neurosurgical procedures such as endonasal, retrosigmoidal, supra-occipital and open craniotomy approaches, including spinal surgery. We provide the clinician a more controlled, efficient and less traumatic alternative to tumor resection with the intent to improve clinical and economic outcomes for the patient.
NOC2 Healthcare
209 10th Avenue South, Suite 411
Nashville, TN 37203
615-712-9574
www.noc2healthcare.com

NOC2 invites you to join OUR NETWORK. We offer you participation in medical research, specialized educational forums, and advisory board participation. We partner with medical, biotech, and pharmaceutical industries for compliant scopes of work. Please come by and discuss details that can help your practice and your profession.

Noras MRI Products
Leibnizstrasse 4
D-97204 Hoechberg
Germany
877-296-6727
www.mri-products.com

NORAS MRI products GmbH is known for its 8 Ch head coil and head holder for intra-operative neurosurgery. This product was developed in cooperation with Brainlab and Siemens and enables MR supported, neurosurgical interventions, including automatic registration for neuro-navigation.

North American Spine Society
7075 Veterans Boulevard
Burr Ridge, IL 60527-5614
630-230-3600
www.spine.org

North American Spine Society (NASS) is a multidisciplinary medical organization dedicated to fostering the highest quality, evidence-based, and ethical spine care by promoting education, research and advocacy.

NovaBone Products, LLC
1551 Atlantic Boulevard, #105
Jacksonville, FL 32207
904-807-0140
www.novabone.com

NovaBone Products provides a best-in-class synthetic bone graft substitute. The unique bioactive grafting technology delivers an osteoconductive matrix while signaling and stimulating osteoblastic activity to the site. For ease of use and surgical convenience, NovaBone is available in a variety of forms and sizes.

NSI-US, Inc.
6767 South Spruce Street, Suite 220
Centennial, CO 80112
303-860-0261
www.nsi-us.com

NSI-US, Inc. is in the business of designing, developing, manufacturing, marketing & selling medical devices, medical software & other activities associated with commercializing medical business products.

NuTech Medical
2641 Rocky Ridge Lane
Birmingham, AL 35216
205-290-2158
www.nutechmedical.com

Nutech Medical, a true biological company, specializes in innovative allograft based products. Nutech distributes conventional and machined allograft from LifeNet Health. With NuCel, Nutech is able to offer the youngest adult stem cell product on the market. Nutech’s product, NuFix, stabilizes the spine through facet fixation and is quickly becoming a staple in every spine surgeon’s practice.

OmniGuide, Inc.
One Kendall Square, Suite B1301
Cambridge, MA 02139
617-551-8444
www.omni-guide.com

OmniGuide, Inc., is the worldwide leader in precision optical scalpels enabling new procedures in minimally invasive surgery. The Company’s BeamPath Co2 laser flexible fiber system is a clinically targeted, precision microsurgical instrument optimized for Neurosurgery and is ideal for tissue cutting, delicate dissection and gentle peeling near critical structures.

OMT LLC
3848 SW 30th Avenue
Hollywood, FL 33312
954-327-1447
www.omtmedical.com

OMT LLC is a neurosurgical manufacturer of disposable products. Our Neuro Patties are designed, manufactured, patented, and received FDA approval and physician’s endorsements. Our innovative surgical Patties meet the neurosurgeon’s demands for a thin, soft and tapered Pattie that conforms to anatomical sites like no other. OMT markets its disposable Neuro Patties worldwide.

Ono & Co., Ltd.
6F GinzaNF Bldg. 2-12-5
Ginza, Chuo-Ku Tokyo
Japan
+81-3-3544-5351
www.kezlex.com/en

Kezlex®, medical models manufactured by Ono & Co., Ltd., are based on patients’ CT and MRI data. They precisely reproduce the inner structure; including bones, nerves, and blood vessels, and can be drilled or clipped like human organs, for surgical simulation and education. They are employed at many hands-on workshops.
Orthofix, Inc.  831
3451 Plano Parkway
Lewisville, TX 75056
214-937-2293
www.orthofix.com

Orthofix products surround the patient with preventative, intra-operative and post-operative treatment options. Our spine solutions help surgeons respond with the best treatments available to enhance clinical outcomes, including Spinal Implants, Biologics Technology, Bone Growth Stimulators, and Spine Bracing. Our promise is to be Customer Focused, Patient Driven and Always Responsive.

OsteoMed  1644
3885 Arapaho Road
Addison, TX 75001
972-677-4600
www.osteomed.com

OsteoMed is a global innovative leader in the development and manufacturing of specialty medical and surgical implants for the neurosurgical market. Products include innovative spinal process fusion devices, instrument-less cranial flap replacement devices, dynamic surgical mesh options, and biological bone substitutes.

OsteoSymbionics LLC  518
1768 East 25th Street, Suite 316
Cleveland, OH 44114
216-881-8500
www.osteosymbionics.com

OsteoSymbionics has the only clear hard tissue implant for patient-specific craniofacial reconstruction. Clear implants allow visualization before closure. Come see how our range of materials and products can meet your needs.

Paradigm Spine  624
505 Park Avenue, 14th Floor
New York, NY 10022
212-583-9700
www.paradigmspine.com

Paradigm Spine offers Degenerative and Scoliosis solutions in over 50 countries. The company markets the coflex® Interlaminar/Interspinous Stabilization device for spinal stenosis, the coflex-F® Posterior Stabilization device for posterior fusion, the DCI™ System designed as a functionally dynamic cervical spine implant and the DSS® Spinal Stabilization Pedicle based system.

Peachtree Financial Solutions  1306
3301 Quantum Boulevard, 2nd Floor
Boynton Beach, FL 33426
866-303-2032
www.peachfunding.com

Peachtree Financial Solutions, the premier Medical Lien Funding source, gives Medical Providers the opportunity to sell their Medical Liens (LOPs) related to personal injury cases. Peachtree’s attorney network helps grow your practice through our referral program, and our pre-approval program removes risk by approving transactions before medical service is provided.

Penumbra, Inc.  1002
1351 Harbor Bay Parkway
Alameda, CA 94502
510-748-3200
www.penumbrainc.com

Penumbra, Inc. is an independent medical device company committed to delivering clinically beneficial products that help patients suffering from stroke and other neurovascular diseases. Penumbra’s headquarters is located in Alameda, California. The Penumbra System continuous aspiration thrombectomy devices, the Penumbra Coil 400 and Neuron guiding catheters are commercially available worldwide.

Performance Grafts, LLC  825
2106 West Pioneer Parkway, Suite 132
Arlington, TX 76013
817-226-9900
www.performancegrafts.com

Performance Grafts provides bone tissue and allograft products offering premium processing and sterilization, superior handling and integrity, less post-operative pain, decreased operating time and smaller incisions. Precision machined allograft surfaces reduce the chance of post-operative complication and contribute to ease of placement.

PeriOptix, Inc.  1346
1001 Avenida Pico, #C620
San Clemente, CA 92673
949-366-3333
www.perioptix.com

PeriOptix™ introduces the new Solaris mini™LED Headlight. No other LED is lighter, smaller or “cooler”, weighing only 5.9g. PeriOptix introduces the lightest through the lens (TTL) design on the market. Weighing in at only 36 grams, the elegant and streamlined PeriOptix™TL loupe offers a customized angle of declination and working distance.
At Pfizer, we apply science and our global resources to improve health and well-being at every stage of life. Every day, Pfizer colleagues work across developed and emerging markets to advance wellness, prevention, treatments and cures that challenge the most feared diseases of our time.

Pioneer Surgical Technology, Inc. is a progressive medical device firm with a comprehensive portfolio of industry-leading orthopaedic, biologic, and spine products. Pioneer is focused on creating innovative, cost-effective surgical solutions that benefit surgeons and provide better patient outcomes.

PMT® Corporation is the premier supplier of an extensive line of neurosurgical products. Offering high-end neck braces, including halo systems and orthotic vests for cervical, thoracic and lumbar spinal immobilization. PMT® also offers Cortac®, cortical surface electrodes and Depthalon®, depth electrodes for epilepsy monitoring; microsurgical, irrigation and Fukushima® instruments.

PMI premiers a new skull clamp designed for faster set-up, integrated interfaces, built-in navigation and superior stability. PMI designs and manufactures the largest selection of cranial stabilization and brain retractor systems for neurosurgery. Innovations: DORO® Skull Clamps with Quick-Rail™ Technology, autoclavable Headrest Systems and FDA-cleared MRI-safe Radiolucent Headrest System. World’s First Adjustable NON-STICK Bipolar Forceps.

Renishaw is Delivering precision with advanced engineering technology in stereotactic neurosurgery. Our products cover a range of complementary solutions from neurosurgical robotics and surgical planning to imaged-guided implantable devices to further enhance consistency and accuracy of functional and stereotactic neurosurgery surgery now and for the next generation of implantable-led therapies.

The Swedish Seating System is an ergonomically designed operatory stool. Our 400-D combines unparalleled support with an elegant design and the hydraulic mechanism allows the stool’s back and seat to ‘float’, independently following one’s movement.

Rhausler Cervical Plating Systems for ACDF offers the surgeon flexibility of Dynamic, Semiconstrained, and “Low Profile” Quick Plate plating systems. With all three plating systems available using the same locking bone screw and insertion tools throughout, minimizes the insertion tools required and simplifies the use of using all 3 plates.
<table>
<thead>
<tr>
<th>Exhibitors</th>
<th>Booth Number</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Riverside Health System</strong></td>
<td>1725</td>
</tr>
</tbody>
</table>
| 701 Town Center Drive, Suite 1000  
Newport News, VA 23606  
757-534-7037  
www.riversideonline.com | |
| Riverside Medical Group, a division of Riverside Health System, is located in southeastern Virginia and encompasses 440+ providers in all major specialties. Historically dominated by acute and long-term care facility investments, Riverside is now a working model of physician-directed transition of healthcare: resilient and flexible enough to face inevitable changes. | |
| **Rose Micro Solutions LLC** | 824 |
| 4105 Seneca Street  
West Seneca, NY 14224  
716-608-0009  
www.rosemicrosolutions.com | |
| Rose Micro Solutions is a “family” business consisting of 4 brothers. We sell high quality optical loupes and LED lights for less. We named our company after our mother “Rose.” Please call us at 716-608-0009 or visit us at www.rosemicrosolutions.com. | |
| **RosmanSearch, Inc.** | 1246 |
| 30799 Pinetree Road, #250  
Pepper Pike, OH 44124  
216-256-9020  
www.rosmansearch.com | |
| RosmanSearch, Inc. provides targeted neurosurgical services to community and academic neurosurgery practices nationwide. We specialize solely in neurosurgical recruitment. Whether you need a general neurosurgeon or any neurosurgical subspecialty, we can find the right fit for your practice! | |
| **Scanlan International, Inc.** | 921 |
| One Scanlan Plaza  
St. Paul, MN 55107  
651-298-0997  
www.scanlaninternational.com | |
| **Sentio, LLC** | 747 |
| 21520 Bridge Street  
Southfield, MI 48033  
248-416-0740  
www.sentionmg.com | |
| Sentio MMG is a proprietary nerve mapping and avoidance system developed to solve one of the most overwhelming challenges in spine surgery today; the ability to perform MIS procedures while avoiding injury to nerves. Sentio MMG is easy to use, surgeon driven, and requires no significant set-up time. | |
| **SheerVision** | 1816 |
| 4030 Palos Verdes Drive North, Suite 104  
Rolling Hills Estates, CA 90274  
310-265-8918  
www.sheervision.com | |
| SheerVision designs, develops and manufactures loupe & headlight systems that enhance vision through exceptional visual acuity and powerful illumination. SheerVision’s optics (2.5x-5.0x) offer exceptional visual quality coupled with affordability. Their V-Ray headlight projects 9,000+ foot candles of light to outperform most loupe mounted headlights. SheerVision is also the exclusive provider of Under Armour Performance Eyewear Loupes. | |
| **SI-Bone, Inc.** | 1708 |
| 3055 Olin Avenue, Suite 620  
San Jose, CA 95128  
408-207-0700  
www.si-bone.com | |
| SI-BONE, Inc. is the leading sacroiliac (SI) joint medical device company dedicated to the development of tools for diagnosing and treating patients with low back issues related to SI joint pathology. The company is manufacturing and marketing a minimally invasive surgical (MIS) technique for the treatment of SI joint pathology. | |

Scott & White Healthcare, a fully integrated health system, is the largest multi-specialty practice in Texas, and the sixth largest group practices in the Nation. Scott & White employs more than 110 physicians and research scientists who care for patients covering 25,000 square miles across central Texas.
## EXHIBITORS

<table>
<thead>
<tr>
<th>Exhibitor Name</th>
<th>Booth Number</th>
<th>Address</th>
<th>Phone Number</th>
<th>Website</th>
</tr>
</thead>
<tbody>
<tr>
<td>Siemens Healthcare</td>
<td>805</td>
<td>51 Valley Stream Parkway Malvern, PA 19355</td>
<td>888-826-9702</td>
<td><a href="http://www.usa.siemens.com/healthcare">www.usa.siemens.com/healthcare</a></td>
</tr>
<tr>
<td>Spinal Elements, Inc.</td>
<td>1102</td>
<td>2744 Loker Avenue West, Suite 100 Carlsbad, CA 92010</td>
<td>760-607-1821</td>
<td><a href="http://www.spinalelements.com">www.spinalelements.com</a></td>
</tr>
<tr>
<td>Sophysa USA, Inc.</td>
<td>826</td>
<td>303 South Main Street Crown Point, IN 46307</td>
<td>219-663-7711</td>
<td><a href="http://www.sophysa.com">www.sophysa.com</a></td>
</tr>
<tr>
<td>Söring Medical Technology</td>
<td>654</td>
<td>8000 NW 31 Street, Suite 8 Miami, FL 33122</td>
<td>305-677-3920</td>
<td><a href="http://www.soering.com">www.soering.com</a></td>
</tr>
<tr>
<td>Spectrum Health Medical Group</td>
<td>723</td>
<td>100 Michigan Street NE Grand Rapids, MI 49503</td>
<td>800-788-8410</td>
<td><a href="http://www.shmg.org">www.shmg.org</a></td>
</tr>
<tr>
<td>SpinalMotion, Inc.</td>
<td>1409</td>
<td>201 San Antonio Circle, Suite 115 Mountain View, CA 94040</td>
<td>650-947-3472</td>
<td><a href="http://www.spinalmotion.com">www.spinalmotion.com</a></td>
</tr>
<tr>
<td>Spine View, Inc.</td>
<td>508</td>
<td>48810 Kato Road, Suite 100E Fremont, CA 94538</td>
<td>510-743-5069</td>
<td><a href="http://www.spineview.com">www.spineview.com</a></td>
</tr>
<tr>
<td>Spine Wave</td>
<td>1617</td>
<td>3 Enterprise Drive, Suite 210 Shelton, CT 06484</td>
<td>203-944-9494</td>
<td><a href="http://www.spinewave.com">www.spinewave.com</a></td>
</tr>
</tbody>
</table>

**Siemens Healthcare**
Siemens Healthcare is one of the world’s largest suppliers to the medical industry with core competence and innovative strength in diagnostic imaging and therapeutic technologies. An innovation leader for more than 130 years, Siemens is helping neurological surgeons diagnose and treat disease by offering state-of-the-art technology.

**Sophysa USA, Inc.**
Sophysa is focused on the design and manufacture of innovative CSF Management technologies and solutions. Sophysa’s pioneering research and development continues to expand the reach of the global neurosurgical community focusing on Hydrocephalus and related disorders of CSF dynamics.

**Söring Medical Technology**
Söring pioneer, in ultrasound technology and innovative solutions for ultrasound surgery offers one-of-the-kind solutions for non-contact coagulation. Söring’s success hinges on continuous improvement, Sonoca 300, an ultrasonic dissector by Söring Germany is the only unit worldwide offering three working frequencies in one (25,35, and 55 kHz).

**Spectrum Health Medical Group**
Spectrum Health Medical Group was formed in October, 2008 to complement the other elements of its system: the Spectrum Health Hospital Group and Priority Health. Spectrum Health Medical Group has dual purposes: – Provide better patient care, in terms of patient outcomes and patient experiences. – Provide physicians with the greatest possible personal and professional satisfaction.

**Spinal Elements, Inc.**
Spinal Elements develops and markets innovative spinal technologies. The portfolio includes: Mosaic® Cervical Implant; Atomic® Anterior Cervical Plate; Crystal® Cervical Interbody, Lucent® Lumbar Interbody, and Lucent Magnum® Anterior Lumbar Interbody; Mercury® Classic Pedicle Screw, and Magnum+® Stand Alone ALIF with screws. Spinal Elements is also developing the Zyre® facet implant.

**SpinalMotion, Inc.**
SpinalMotion is focused exclusively on spinal disc arthroplasty, developing innovative technology designed to further enhance option for patients suffering from degenerative disc disease. SpinalMotion was founded in 2003. The company is located in Mountain View, California. To learn more, please visit our website at www.spinalmotion.com

**Spine View, Inc.**
Spine View, Inc. is committed to the development and commercialization of novel, minimally-invasive technologies aimed at improving spinal decompression and fusion procedures. We are introducing our next-generation enSpire Surgical Discectomy System, which is designed to facilitate more complete discectomies and accelerate tissue removal in interbody fusion.

**Spine Wave**
Spine Wave develops and markets clinical solutions for several market segments including: nuclear replacement and augmentation, vertebral compression fracture repair and spinal fusion. The company’s product portfolio includes: NuCore® Injectable Nucleus, StaXx® XD Expandable Device, CapSure® PS2 Spine System, Sniper® Spine System, and several additional products. www.spinewave.com
<table>
<thead>
<tr>
<th>Exhibitors</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Spineology Inc.</strong></td>
<td>1146</td>
</tr>
</tbody>
</table>
| 7800 3rd Street North, Suite 600  
St. Paul, MN 55128  
651-256-8500  
www.spineology.com  
Spineology, the innovator in anatomy-conserving spine surgery, develops surgical techniques, instruments and implants that conserve spinal bone, nerve and muscle tissues. Spineology is committed to increasing procedural efficiency, reducing surgical morbidity and accelerating patient recovery. Learn more at spineology.com. | |
| **SurgiTel/General Scientific Corporation** | 846 |
| 77 Enterprise Drive  
Ann Arbor, MI 48103  
734-996-9200  
www.surgitel.com  
SurgiTel Systems is dedicated to offering the best in ergonomics, vision, and comfort. Coupling SurgiTel Systems’ High Definition Optics with Oakley Frames, we offer the very best in magnification systems. SurgiCam, our new loupe-mounted camera system, is digital and lightweight allowing the viewers to see images at the user’s perspective. | |
| **St. Jude Medical** | 1204 |
| 6901 Preston Road  
Plano, TX 75024  
972-309-8000  
www.sjmneo.com  
St. Jude Medical is dedicated to putting more control into the hands of those who treat chronic pain. Products include Penta™ leads, the first five-column leads for lateral coverage and precise field control; radiopaque, mechanical locking Swift-Lock™ anchor; and MultiSteering™ technology for real-time assessment and coverage of multifocal pain. sjmneo.com | |
| **Stryker** | 1213 |
| 4100 East Milham Avenue  
Kalamazoo, MI 49001  
800-253-3210  
www.stryker.com  
Stryker is one of the world’s leading medical technology companies and is dedicated to helping healthcare professionals perform their jobs more efficiently while enhancing patient care. We provide state-of-the-art medical and surgical equipment to help people lead more active and more satisfying lives. www.stryker.com | |
| **Surgical Acuity** | 503 |
| 3225 Deming Way, Suite 190  
Middleton, WI 53562  
608-831-2555  
www.surgicalacuity.com  
Surgical Acuity designs and manufactures high-performance magnification loupes for surgeons and other medical professionals. Renowned for quality craftsmanship, Surgical Acuity loupes deliver remarkable resolution over a deep and wide viewing field. Superior visualization is achieved through innovative, lightweight optics made from only the finest grade of glass. | |
| **Synthes** | 1028 |
| 1302 Wrights Lane East  
West Chester, PA 19380  
610-719-5000  
www.synthes.com  
Synthes is a leading global medical device company. We develop, produce and market instruments, implants and biomaterials for the surgical fixation, correction and regeneration of the human skeleton and its soft tissues. | |
| **Synthes Anspach** | 1028 |
| 4500 Riverside Drive  
Palm Beach Gardens, FL 33410  
561-627-1080  
www.anspack.com  
Synthes Anspach manufactures high performance instrument systems for neurosurgery, neurotology, spinal procedures, and otolaryngology. Our power systems provide consistent power and smooth performance for even the most demanding applications. The advanced design of our instruments assures unparalleled performance and reliability, while allowing effortless assembly, meeting surgeon and staff needs. | |
| **TeDan Surgical Innovations** | 1020 |
| 11333 Chimney Rock Road, # 180  
Houston, TX 77035  
713-726-0886  
www.tedansurgical.com  
| **The Brain Aneurysm Foundation** | 1348 |
| 269 Hanover Street, Building 3  
Hanover, MA 02339  
781-826-5556  
www.bafound.org  
The Brain Aneurysm Foundation is the nations ONLY non-profit organization solely dedicated to providing critical awareness, education support and research funding to reduce the incidence of brain aneurysm ruptures. | |
<table>
<thead>
<tr>
<th>EXHIBITORS</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>The NeuroMatrix Group</strong></td>
<td>1354</td>
</tr>
<tr>
<td>6250 Shiloh Road, Suite 110</td>
<td></td>
</tr>
<tr>
<td>Alpharetta, GA 30005</td>
<td></td>
</tr>
<tr>
<td>770-781-0800</td>
<td></td>
</tr>
<tr>
<td><a href="http://www.neuromatrix.com">www.neuromatrix.com</a></td>
<td></td>
</tr>
<tr>
<td>The mission of NeuroMatrix, established in 1993, is to elevate the standards and practice of Intraoperative Neurophysiologic Monitoring for optimal patient outcomes. With the top clinical staff in the field, we offer the highest level of accurate IONM available today. With education, integrity, and compassion, We Make Surgery Safer®.</td>
<td></td>
</tr>
<tr>
<td><strong>The New York Times</strong></td>
<td>1605</td>
</tr>
<tr>
<td>613 South Avenue</td>
<td></td>
</tr>
<tr>
<td>Weston, MA 02493</td>
<td></td>
</tr>
<tr>
<td>781-890-2666</td>
<td></td>
</tr>
<tr>
<td><a href="http://www.ontheavenuemarketing.com">www.ontheavenuemarketing.com</a></td>
<td></td>
</tr>
<tr>
<td>The <em>New York Times</em> is the largest metropolitan newspaper in the US. It is frequently relied upon as the official and authoritative reference for modern events. Visit the New York Times booth for 50% off home delivery and receive a special gift with subscription.</td>
<td></td>
</tr>
<tr>
<td><strong>Thieme Publishers</strong></td>
<td>1402</td>
</tr>
<tr>
<td>333 7th Avenue</td>
<td></td>
</tr>
<tr>
<td>New York, NY 10001</td>
<td></td>
</tr>
<tr>
<td>212-760-0888</td>
<td></td>
</tr>
<tr>
<td><a href="http://www.thieme.com">www.thieme.com</a></td>
<td></td>
</tr>
<tr>
<td>Thieme is an award-winning international medical and science publisher serving health professionals and students for more than 100 years. Thieme promotes the latest advancements in clinical practice, publishes the latest research findings, advocates medical education and is known for the high-quality and didactic nature of its books, journals, and electronic products.</td>
<td></td>
</tr>
<tr>
<td><strong>ThinkFirst National Injury Prevention Foundation</strong></td>
<td>803</td>
</tr>
<tr>
<td>1801 N. Mill Street, Suite F</td>
<td></td>
</tr>
<tr>
<td>Naperville, IL 60563</td>
<td></td>
</tr>
<tr>
<td>630-961-1400</td>
<td></td>
</tr>
<tr>
<td><a href="http://www.thinkfirst.org">www.thinkfirst.org</a></td>
<td></td>
</tr>
<tr>
<td>The ThinkFirst National Injury Prevention Foundation, now in our 25th year, is an independent 501(c)(3) nonprofit, focused on educating children, teens and families on reducing their risk for injury. See all ThinkFirst has to offer physicians, chapters and corporate sponsors for use in public education and media events.</td>
<td></td>
</tr>
<tr>
<td><strong>Thompson Surgical Instruments</strong></td>
<td>1505</td>
</tr>
<tr>
<td>10170 East Cherry Bend Road</td>
<td></td>
</tr>
<tr>
<td>Traverse City, MI 49684</td>
<td></td>
</tr>
<tr>
<td>231-922-0177</td>
<td></td>
</tr>
<tr>
<td><a href="http://www.thompsonsurgical.com">www.thompsonsurgical.com</a></td>
<td></td>
</tr>
<tr>
<td>Thompson Surgical Instruments, Inc. is the market leader in surgical retraction and the original manufacturer of the table mounted retractor. In use for over thirty years, the Thompson Retractor is the only mechanical retractor to offer one frame for all exposure needs, multi-planed independent retraction, and unlimited customization.</td>
<td></td>
</tr>
<tr>
<td><strong>Trimedyne, Inc.</strong></td>
<td>746</td>
</tr>
<tr>
<td>25901 Commercentre Drive</td>
<td></td>
</tr>
<tr>
<td>Lake Forest, CA 92630</td>
<td></td>
</tr>
<tr>
<td>949-951-3800</td>
<td></td>
</tr>
<tr>
<td><a href="http://www.trimedyne.com">www.trimedyne.com</a></td>
<td></td>
</tr>
<tr>
<td>Trimedyne’s economical, reliable 80 and 30 Watt Holmium Lasers; fast vaporizing, durable VaporMAX® Side Firing Fibers costing only $650 each*; and inexpensive, convenient FlexMAX® Single Use and Reusable Lithotripsy Fibers provide unexcelled clinical results and offer the best value for your money. * In U.S. dollars, Ex Works, Lake Forest, CA USA.</td>
<td></td>
</tr>
<tr>
<td><strong>TrueVision Systems, Inc.</strong></td>
<td>646</td>
</tr>
<tr>
<td>315 Bollay Drive, Suite 101</td>
<td></td>
</tr>
<tr>
<td>Santa Barbara, CA 93117</td>
<td></td>
</tr>
<tr>
<td>805-963-9700</td>
<td></td>
</tr>
<tr>
<td><a href="http://www.truevisionsys.com">www.truevisionsys.com</a></td>
<td></td>
</tr>
<tr>
<td>TrueVision® 3D Surgical is the leader in digital 3D visualization for microsurgery. Based in Santa Barbara, Calif., TrueVision® has developed and patented an intelligent, real-time, 3D surgical visualization platform. The company is focused on developing a suite of 3D guidance applications for microsurgery to assist surgeons and positively impact patient outcomes.</td>
<td></td>
</tr>
<tr>
<td><strong>Vascular Simulations, LLC</strong></td>
<td>904</td>
</tr>
<tr>
<td>25 Health Sciences Drive, #101</td>
<td></td>
</tr>
<tr>
<td>Stony Brook , NY 11790</td>
<td></td>
</tr>
<tr>
<td>877-851-6164</td>
<td></td>
</tr>
<tr>
<td><a href="http://www.vascularsimulations.com">www.vascularsimulations.com</a></td>
<td></td>
</tr>
<tr>
<td>Introducing the worlds’ first Neuro Vascular Replication System, created from human CT scan imagery, powered by the True-flow Pulsatile Flow Generator. For medical device development and testing, surgical education and procedural training.</td>
<td></td>
</tr>
<tr>
<td><strong>Vertebral Technologies, Inc.</strong></td>
<td>1819</td>
</tr>
<tr>
<td>5909 Baker Road, Suite 550</td>
<td></td>
</tr>
<tr>
<td>Minnetonka, MN 55345</td>
<td></td>
</tr>
<tr>
<td>952-912-5400</td>
<td></td>
</tr>
<tr>
<td><a href="http://www.vti-spine.com">www.vti-spine.com</a></td>
<td></td>
</tr>
<tr>
<td>improved and less-invasive spinal therapies. The company received 510(k) clearance to market from the U.S. Food and Drug Administration (FDA) for the InterFuse device in June 2008. VTI will be dispaying the InterFuse P and T at the CNS Annual Meeting.</td>
<td></td>
</tr>
<tr>
<td><strong>Visionsense Corporation</strong></td>
<td>648</td>
</tr>
<tr>
<td>1270 Avenue of the Americas, #302</td>
<td></td>
</tr>
<tr>
<td>New York, NY 10020</td>
<td></td>
</tr>
<tr>
<td>845-680-0233</td>
<td></td>
</tr>
<tr>
<td><a href="http://www.visionsense.com">www.visionsense.com</a></td>
<td></td>
</tr>
<tr>
<td>Visionsense develops novel visualization solutions that bring stereoscopic sight to minimally invasive surgery (MIS). With advanced sensor technology and proprietary software, the Visionsense system delivers depth perception, high resolution images and maneuvering flexibility through the smallest access diameters. Visionsense’s VSII system can be used in Neuro, ENT and Spine procedures.</td>
<td></td>
</tr>
</tbody>
</table>
Visualase, Inc. has developed a laser ablation technology for minimally invasive MRI-guided destruction of tissue. The Visualase system (510(k) cleared by FDA for soft tissue ablation) has been used successfully in over 100 neurosurgical procedures to destroy various targets in the brain, including primary and metastatic tumors, amygdalo-hippocampal structures, and hypothalamic hamartomas.

Vycor Medical, Inc. innovative neurosurgical devices and therapy. Vycor’s ViewSite Brain Access System (VBAS) allows access to deep brain lesions in a minimally invasive method under image guidance. See how this simple device makes so much sense in dealing with the limitations of conventional brain retractors. access deep tumors; evacuate hemorrhages.

Weatherby Healthcare, an elite staffing company known since 1995 for its superior customer service - Red Ribbon Service, provides each Neurological Surgeon with a personal consultant who locates the best opportunity from hundreds of temporary jobs nationwide. Meeting the needs of the Neurological Surgeon and patients alike is our top priority.

### PRODUCT/SERVICE GUIDE

#### Allografts / Human Tissue
- Aesculap Implant Systems, LLC 1606
- Amniox Medical 1047
- Innovatis, Inc. 536
- K2M, Inc. 609
- Lanx, Inc. 1309
- LifeNet Health 749
- MiMedx Group, Inc. 1349
- Orthofix, Inc. 831
- Seapine 1736
- Spineology Inc. 1146
- Synthes 1028

#### Aneurysm Clips and Accessories
- Apex Medical, Inc. 1149
- CMF Medicon Surgical Inc. 1814
- Mizuho America, Inc. 1048

#### Bone Growth Stimulators
- DJO Incorporated 621
- NovaBone Products, LLC 807
- Orthofix, Inc. 831

#### Bone Substitute
- Aesculap Implant Systems, LLC 1606
- Amedica / US Spine 1106
- Baxter Healthcare 1635
- Biomet Microfixation 1013
- Harvest Technologies Corp. 1253
- Inion Inc. 802
- Kelyniam Global, Inc. 1005
- NovaBone Products, LLC 807
- OsteoMed 1644
- Pioneer Surgical 853

#### Business Management Solutions
- NeuroPoint Alliance (NPA) 603
- Peachtree Financial Solutions 1306

#### Cervical Collars
- Aspen Medical Products 514
- PMT Corporation 1023

#### Computer Hardware
- Eizo Nanao Corporation 623

#### Computer Software for Office Management
- TrueVision Systems, Inc. 646

#### Computer Software for Surgical Applications
- FHC 1722
- Hans Biomed USA, Inc. 1818
- Mazor Robotics 721
- Medtech 1625
- Nexstim, Inc. 1009

#### Continuing Medical Education Courses
- American Association of Neurological Surgeons 604
- Cadwell Laboratories, Inc. 649
- Congress of Neurological Surgeons 1221
- North American Spine Society 705

#### Craniotomes, Drills & Accessories
- CMF Medicon Surgical Inc. 1814
- Kelyniam Global, Inc. 1005
- Kirwan Surgical Products, LLC 925
- KLS Martin Group 1444
- Stryker 1213
- Vycor Medical, Inc. 1612

#### CSF Drainage Devices
- Innerspace, Inc. 1504
- Integra 1332
- Sophysa USA, Inc. 826
- Vycor Medical, Inc. 1612

#### CT/MRI Magnetic Source Imaging
- Eizo Nanao Corporation 623
- IMRIS Inc. 1034
- NeuroLogica Corporation 629
- Noras MRI Products 1726
- Visualase, Inc. 1803

#### Diagnostic Imaging
- BK Medical Systems Inc. 1507
- Cadwell Laboratories, Inc. 649
- CCV 907
- Eizo Nanao Corporation 623
- lifeIMAGE 1307
- Nexstim, Inc. 1009
- Noras MRI Products 1726
- TrueVision Systems, Inc. 646

#### Dura Substitute
- Codman, a Johnson & Johnson Company 639
- Integra 1332

#### Endoscopes, Neurological
- Carl Zeiss Meditec, Inc. 1338
- Karl Storz Endoscopy-America, Inc. 1302
- VisionSense Corporation 648
- Vycor Medical, Inc. 1612

#### Endovascular Devices
- MicroVention, Inc. 949
- Vascular Simulations, LLC 904

#### Financial Services (Professional & Personal)
- ExpertPlan Consulting Services 1305
- Peachtree Financial Solutions 1306
# PRODUCT/SERVICE GUIDE

## Functional Stereotactic Surgery
- **Alpha Omega** 1555
- **Cosman Medical** 923
- **FHC** 1722
- **Hans Biomed USA, Inc.** 1818
- **Medtech** 1625
- **Monteris Medical, Inc.** 1833
- **MRI INTERVENTIONS INC.** 707
- **Renishaw plc** 506
- **Visualase, Inc.** 1803

## Halo Systems / Spinal Orthosis / Spinal Support Systems
- **Aspen Medical Products** 514
- **PMT Corporation** 1023
- **Pro Med Instruments, Inc.** 1202

## Headlights, Surgical
- **Carl Zeiss Meditec, Inc.** 1338
- **Designs For Vision, Inc.** 1602
- **KLS Martin Group** 1444
- **PeriOptix, Inc.** 1346
- **Rose Micro Solutions LLC** 824
- **SurgiTel/General Scientific Corporation** 846

## Health & Sports Equipment
- **Massaging Insoles by Superior Health, Inc.** 1702
- **ThinkFirst National Injury Prevention Foundation** 803

## Hemostats
- **Baxter Healthcare** 1635
- **Fehling Surgical Instruments, Inc.** 538

## Image-Guided Navigation Systems
- **BK Medical Systems Inc.** 1507
- **FHC** 1722
- **Hans Biomed USA, Inc.** 1818
- **Medtech** 1625
- **MRI INTERVENTIONS INC.** 707
- **Nexstim, Inc.** 1009
- **Pro Med Instruments, Inc.** 1202
- **Renishaw plc** 506
- **Siemens Healthcare** 805
- **Stryker** 1213
- **TrueVision Systems, Inc.** 646

## Insurance
- **MES Solutions** 1723

## Lasers
- **Monteris Medical, Inc.** 1833
- **OmniGuide, Inc.** 1046
- **Visualase, Inc.** 1803

## Management Consultants
- **Blue Chip Surgical Center Partners, LLC** 1615
- **Corazon Inc.** 1353
- **MES Solutions** 1723
- **NOC2 Healthcare** 754

## Medical Devices
- **Allen Medical Systems** 821
- **Amedica / US Spine** 1106
- **Arterioctye Medical Systems, Inc.** 702
- **Aspen Medical Products** 514
- **Atlas Spine** 1407
- **Baxano, Inc.** 1210
- **Biomet Microfixation** 1013
- **BK Medical Systems Inc.** 1507
- **Boston Scientific** 1249
- **Cadwell Laboratories, Inc.** 649
- **Carl Zeiss Meditec, Inc.** 1338
- **Centinel Spine, Inc.** 632
- **CMF Medicom Surgical Inc.** 1814
- **Codman, a Johnson & Johnson Company** 639
- **Cosman Medical** 923
- **Covidien** 1109
- **DePuy Spine** 639
- **DJO Incorporated** 621
- **Domain Surgical** 1628
- **Eizo Nanao Corporation** 623
- **Elekta** 1040
- **ellicience, LLC** 1211
- **ev3 Inc.** 545
- **FHC** 1722
- **Globus Medical** 1016
- **Hans Biomed USA, Inc.** 1818
- **Harvest Technologies Corp.** 1253
- **Holmed Corporation** 706
- **Ikegami Electronics USA, Inc.** 1509
- **Inion Inc.** 802
- **Innerspace, Inc.** 1504
- **Jell Medical Corporation** 1733
- **K2M, Inc.** 609
- **Karl Storz Endoscopy-America, Inc.** 1302
- **Kelenima Global, Inc.** 1005
- **Lanx, Inc.** 1309
- **LDR** 1350
- **Massaging Insoles by Superior Health, Inc.** 1702
- **Mazor Robotics** 721
- **Medivance** 534
- **Medtech** 1625
- **MicroVention, Inc.** 949
- **MiMedx Group, Inc.** 1349
- **Mizuho America, Inc.** 1048
- **Monteris Medical, Inc.** 1833
- **NEOS Surgery, S.L.** 1554
- **NeuroLogica Corporation** 629
- **Nexstim, Inc.** 1009
- **NICO Corporation** 1247
- **Noras MRI Products** 1726
- **NovaBone Products, LLC** 807
- **NSI-US, Inc.** 1006
- **OMT LLC** 1724
- **Orthofix, Inc.** 831
- **OsteoMed** 1644
- **OsteoSymbiontics LLC** 518
- **Paradigm Spine** 624
- **Pioneer Surgical** 853
- **Pro-Dex Medical Devices** 1614
- **Renishaw plc** 506
- **SeaSpine** 1736
<table>
<thead>
<tr>
<th>Company Name</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sentio, LLC</td>
<td>747</td>
</tr>
<tr>
<td>SI-Bone, Inc.</td>
<td>1708</td>
</tr>
<tr>
<td>Sophysa USA, Inc.</td>
<td>826</td>
</tr>
<tr>
<td>Spinal Elements, Inc.</td>
<td>1102</td>
</tr>
<tr>
<td>SpinalMotion, Inc.</td>
<td>1409</td>
</tr>
<tr>
<td>Spine Wave</td>
<td>1617</td>
</tr>
<tr>
<td>Spineology Inc.</td>
<td>1146</td>
</tr>
<tr>
<td>Synthes</td>
<td>1213</td>
</tr>
<tr>
<td>Vascular Simulations, LLC</td>
<td>1028</td>
</tr>
<tr>
<td>Vertebral Technologies, Inc.</td>
<td>904</td>
</tr>
<tr>
<td>Visualase, Inc.</td>
<td>1819</td>
</tr>
<tr>
<td>Wenzel Spine, Inc.</td>
<td>1803</td>
</tr>
</tbody>
</table>

### Microscope Systems

<table>
<thead>
<tr>
<th>Company Name</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Carl Zeiss Meditec, Inc.</td>
<td>1338</td>
</tr>
<tr>
<td>Leica Microsystems, Inc.</td>
<td>548</td>
</tr>
<tr>
<td>Möller-Wedel GmbH</td>
<td>828</td>
</tr>
<tr>
<td>PeriOptix, Inc.</td>
<td>1346</td>
</tr>
<tr>
<td>Rose Micro Solutions LLC</td>
<td>824</td>
</tr>
<tr>
<td>SheerVision</td>
<td>1816</td>
</tr>
<tr>
<td>TrueVision Systems, Inc.</td>
<td>646</td>
</tr>
</tbody>
</table>

### Microsurgical Instrumentation

<table>
<thead>
<tr>
<th>Company Name</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accutome, Inc.</td>
<td>1347</td>
</tr>
<tr>
<td>Apex Medical, Inc.</td>
<td>1149</td>
</tr>
<tr>
<td>ASSI-Accurate Surgical</td>
<td>607</td>
</tr>
<tr>
<td>Biomet Microfixation</td>
<td>1013</td>
</tr>
<tr>
<td>CMF Medicon Surgical Inc.</td>
<td>1814</td>
</tr>
<tr>
<td>Codman, a Johnson &amp; Johnson Company</td>
<td>639</td>
</tr>
<tr>
<td>Fehling Surgical Instruments, Inc.</td>
<td>538</td>
</tr>
<tr>
<td>FHC</td>
<td>1722</td>
</tr>
<tr>
<td>Hans Biomed USA, Inc.</td>
<td>1818</td>
</tr>
<tr>
<td>Karl Storz Endoscopy-America, Inc.</td>
<td>1302</td>
</tr>
<tr>
<td>Kirwan Surgical Products, LLC</td>
<td>925</td>
</tr>
<tr>
<td>Mizuho America, Inc.</td>
<td>1048</td>
</tr>
<tr>
<td>OmniGuide, Inc.</td>
<td>1046</td>
</tr>
<tr>
<td>Vycor Medical, Inc.</td>
<td>1612</td>
</tr>
</tbody>
</table>

### Monitoring Systems

<table>
<thead>
<tr>
<th>Company Name</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cadwell Laboratories, Inc.</td>
<td>649</td>
</tr>
<tr>
<td>Concentric Medical, Inc.</td>
<td>1408</td>
</tr>
<tr>
<td>Ikegami Electronics USA, Inc.</td>
<td>1509</td>
</tr>
<tr>
<td>Innerspace, Inc.</td>
<td>1504</td>
</tr>
<tr>
<td>Integra</td>
<td>1332</td>
</tr>
<tr>
<td>Sentio, LLC</td>
<td>747</td>
</tr>
<tr>
<td>Sophysa USA, Inc.</td>
<td>826</td>
</tr>
</tbody>
</table>

### Operating Tables & Accessories

<table>
<thead>
<tr>
<th>Company Name</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mizuho America, Inc.</td>
<td>1048</td>
</tr>
</tbody>
</table>

### Patient Education Information

<table>
<thead>
<tr>
<th>Company Name</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Massaging Insoles by Superior Health, Inc.</td>
<td>1702</td>
</tr>
<tr>
<td>Nadia International, Inc.</td>
<td>924</td>
</tr>
<tr>
<td>National Institute of Neurological Disorders &amp; Stroke (NINDS)</td>
<td>1837</td>
</tr>
<tr>
<td>The Brain Aneurysm Foundation</td>
<td>1348</td>
</tr>
<tr>
<td>ThinkFirst National Injury Prevention Foundation</td>
<td>803</td>
</tr>
</tbody>
</table>

### Pharmaceuticals

<table>
<thead>
<tr>
<th>Company Name</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eisai, Inc.</td>
<td>1011</td>
</tr>
</tbody>
</table>

### Practice Management

<table>
<thead>
<tr>
<th>Company Name</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>MES Solutions</td>
<td>1723</td>
</tr>
<tr>
<td>NeuroPoint Alliance (NPA)</td>
<td>603</td>
</tr>
<tr>
<td>RosmanSearch, Inc.</td>
<td>1246</td>
</tr>
<tr>
<td>Scott &amp; White Healthcare System</td>
<td>1508</td>
</tr>
</tbody>
</table>

### Publishers, Scientific / Journals

<table>
<thead>
<tr>
<th>Company Name</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Congress of Neurological Surgeons</td>
<td>1221</td>
</tr>
<tr>
<td>Journal of Neurosurgery</td>
<td>602</td>
</tr>
<tr>
<td>Lippincott Williams and Wilkins – WKH</td>
<td>1502</td>
</tr>
<tr>
<td>Thieme Publishers</td>
<td>1402</td>
</tr>
</tbody>
</table>

### Recruiters

<table>
<thead>
<tr>
<th>Company Name</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Corazon Inc.</td>
<td>1353</td>
</tr>
<tr>
<td>Gundersen Lutheran Health System</td>
<td>1817</td>
</tr>
<tr>
<td>Harlequin Recruiting</td>
<td>724</td>
</tr>
<tr>
<td>Hospital Corporation of America</td>
<td>650</td>
</tr>
<tr>
<td>INTEGRIS Health, Inc.</td>
<td>622</td>
</tr>
<tr>
<td>Kaiser Permanente</td>
<td>502</td>
</tr>
<tr>
<td>Mary Washington Healthcare</td>
<td>1804</td>
</tr>
<tr>
<td>MES Solutions</td>
<td>1723</td>
</tr>
<tr>
<td>Mountain States Health Alliance</td>
<td>1410</td>
</tr>
<tr>
<td>NeuroPoint Alliance (NPA)</td>
<td>603</td>
</tr>
<tr>
<td>RosmanSearch, Inc.</td>
<td>1246</td>
</tr>
<tr>
<td>Scott &amp; White Healthcare System</td>
<td>1508</td>
</tr>
<tr>
<td>Spectrum Health Medical Group</td>
<td>723</td>
</tr>
<tr>
<td>Weatherby Healthcare (formerly, Weatherby Locums)</td>
<td>849</td>
</tr>
</tbody>
</table>

### Rehabilitation

<table>
<thead>
<tr>
<th>Company Name</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cadwell Laboratories, Inc.</td>
<td>649</td>
</tr>
<tr>
<td>DJO Incorporated</td>
<td>621</td>
</tr>
<tr>
<td>Nexstim, Inc.</td>
<td>1009</td>
</tr>
</tbody>
</table>

### Research, Medical Marketing

<table>
<thead>
<tr>
<th>Company Name</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kelyniam Global, Inc.</td>
<td>1005</td>
</tr>
<tr>
<td>Market Access Partners</td>
<td>1405</td>
</tr>
</tbody>
</table>

### Rigid Fixation / Plating Systems

<table>
<thead>
<tr>
<th>Company Name</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aesculap Implant Systems, LLC</td>
<td>1606</td>
</tr>
<tr>
<td>Amedica / US Spine</td>
<td>1106</td>
</tr>
<tr>
<td>Atlas Spine</td>
<td>1407</td>
</tr>
<tr>
<td>Biomet Microfixation</td>
<td>1013</td>
</tr>
<tr>
<td>DePuy Spine</td>
<td>639</td>
</tr>
<tr>
<td>Deil Medical Corporation</td>
<td>1733</td>
</tr>
<tr>
<td>K2M, Inc.</td>
<td>609</td>
</tr>
<tr>
<td>KLS Martin Group</td>
<td>1444</td>
</tr>
<tr>
<td>Pioneer Surgical</td>
<td>853</td>
</tr>
<tr>
<td>Pro Med Instruments, Inc.</td>
<td>1202</td>
</tr>
<tr>
<td>Spineology Inc.</td>
<td>1146</td>
</tr>
<tr>
<td>Stryker</td>
<td>1213</td>
</tr>
<tr>
<td>Synthes</td>
<td>1028</td>
</tr>
</tbody>
</table>

### Robotics

<table>
<thead>
<tr>
<th>Company Name</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mazor Robotics</td>
<td>721</td>
</tr>
<tr>
<td>Medtech</td>
<td>1625</td>
</tr>
<tr>
<td>Renishaw plc</td>
<td>506</td>
</tr>
</tbody>
</table>
### Shunts & Valves

<table>
<thead>
<tr>
<th>Company</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Codman, a Johnson &amp; Johnson Company</td>
<td>639</td>
</tr>
<tr>
<td>Sophysa USA, Inc.</td>
<td>826</td>
</tr>
<tr>
<td>Integra</td>
<td>1332</td>
</tr>
</tbody>
</table>

### Spinal Fixation Instrumentation

<table>
<thead>
<tr>
<th>Company</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aesculap Implant Systems, LLC</td>
<td>1606</td>
</tr>
<tr>
<td>Amedica / US Spine</td>
<td>1106</td>
</tr>
<tr>
<td>Atlas Spine</td>
<td>1407</td>
</tr>
<tr>
<td>ChoiceSpine</td>
<td>1007</td>
</tr>
<tr>
<td>CMF Medicon Surgical Inc.</td>
<td>1814</td>
</tr>
<tr>
<td>Covidien</td>
<td>1109</td>
</tr>
<tr>
<td>DePuy Spine</td>
<td>639</td>
</tr>
<tr>
<td>Globus Medical</td>
<td>1016</td>
</tr>
<tr>
<td>Holmed Corporation</td>
<td>706</td>
</tr>
<tr>
<td>Innovasis, Inc.</td>
<td>536</td>
</tr>
<tr>
<td>K2M, Inc.</td>
<td>609</td>
</tr>
<tr>
<td>Lanx, Inc.</td>
<td>1309</td>
</tr>
<tr>
<td>Mazor Robotics</td>
<td>721</td>
</tr>
<tr>
<td>Orthofix, Inc.</td>
<td>831</td>
</tr>
<tr>
<td>OsteoMed</td>
<td>1644</td>
</tr>
<tr>
<td>Pioneer Surgical</td>
<td>853</td>
</tr>
<tr>
<td>SI-Bone, Inc.</td>
<td>1708</td>
</tr>
<tr>
<td>Spine Wave</td>
<td>1617</td>
</tr>
<tr>
<td>Spineology Inc.</td>
<td>1146</td>
</tr>
<tr>
<td>Synthes</td>
<td>1028</td>
</tr>
<tr>
<td>Vertebral Technologies, Inc.</td>
<td>1819</td>
</tr>
</tbody>
</table>

### Spinal Support Systems

<table>
<thead>
<tr>
<th>Company</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aspen Medical Products</td>
<td>514</td>
</tr>
<tr>
<td>Atlas Spine</td>
<td>1407</td>
</tr>
<tr>
<td>DePuy Spine</td>
<td>639</td>
</tr>
<tr>
<td>PMT Corporation</td>
<td>1023</td>
</tr>
<tr>
<td>Pro Med Instruments, Inc.</td>
<td>1202</td>
</tr>
<tr>
<td>Spineology Inc.</td>
<td>1146</td>
</tr>
<tr>
<td>Stryker</td>
<td>1213</td>
</tr>
<tr>
<td>Vertebral Technologies, Inc.</td>
<td>1819</td>
</tr>
</tbody>
</table>

### Stereotactic Radiosurgery Systems

<table>
<thead>
<tr>
<th>Company</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Elekta</td>
<td>1040</td>
</tr>
<tr>
<td>Integra</td>
<td>1332</td>
</tr>
<tr>
<td>MASEP Infini Medical Science Technology Dev.</td>
<td>1639</td>
</tr>
<tr>
<td>Monteris Medical, Inc.</td>
<td>1833</td>
</tr>
<tr>
<td>Visualase, Inc.</td>
<td>1803</td>
</tr>
</tbody>
</table>

### Sterilization Containers

<table>
<thead>
<tr>
<th>Company</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>ASSI-Accurate Surgical</td>
<td>607</td>
</tr>
<tr>
<td>Elekta</td>
<td>1040</td>
</tr>
<tr>
<td>Fehling Surgical Instruments, Inc.</td>
<td>538</td>
</tr>
<tr>
<td>Jeil Medical Corporation</td>
<td>1733</td>
</tr>
<tr>
<td>Jewel Precision</td>
<td>1734</td>
</tr>
</tbody>
</table>

### Surgical Instruments / Supplies

<table>
<thead>
<tr>
<th>Company</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aesculap Implant Systems, LLC</td>
<td>1606</td>
</tr>
<tr>
<td>Apex Medical, Inc.</td>
<td>1149</td>
</tr>
<tr>
<td>ASSI-Accurate Surgical</td>
<td>607</td>
</tr>
<tr>
<td>Atlas Spine</td>
<td>1407</td>
</tr>
<tr>
<td>Baxano, Inc.</td>
<td>1210</td>
</tr>
<tr>
<td>Biomet Microfixation</td>
<td>1013</td>
</tr>
<tr>
<td>BK Medical Systems Inc.</td>
<td>1507</td>
</tr>
<tr>
<td>Buxton BioMedical</td>
<td>902</td>
</tr>
<tr>
<td>Codman, a Johnson &amp; Johnson Company</td>
<td>639</td>
</tr>
<tr>
<td>Covidien</td>
<td>1109</td>
</tr>
<tr>
<td>Domain Surgical</td>
<td>1628</td>
</tr>
<tr>
<td>Elekta</td>
<td>1040</td>
</tr>
<tr>
<td>Fehling Surgical Instruments, Inc.</td>
<td>538</td>
</tr>
<tr>
<td>Globus Medical</td>
<td>1016</td>
</tr>
<tr>
<td>Holmed Corporation</td>
<td>706</td>
</tr>
<tr>
<td>Innovasis, Inc.</td>
<td>536</td>
</tr>
<tr>
<td>Jeil Medical Corporation</td>
<td>1733</td>
</tr>
<tr>
<td>Karl Storz Endoscopy-America, Inc.</td>
<td>1302</td>
</tr>
<tr>
<td>Kirwan Surgical Products, LLC</td>
<td>925</td>
</tr>
<tr>
<td>KLS Martin Group</td>
<td>1444</td>
</tr>
<tr>
<td>Koros USA, Inc.</td>
<td>1510</td>
</tr>
<tr>
<td>Leica Microsystems, Inc.</td>
<td>548</td>
</tr>
<tr>
<td>Life Instrument Corporation</td>
<td>1153</td>
</tr>
<tr>
<td>Mazur Marketing</td>
<td>906</td>
</tr>
<tr>
<td>Mizuho America, Inc.</td>
<td>1048</td>
</tr>
<tr>
<td>OmniGuide, Inc.</td>
<td>1046</td>
</tr>
<tr>
<td>Orthofix, Inc.</td>
<td>831</td>
</tr>
<tr>
<td>OsteoMed</td>
<td>1644</td>
</tr>
<tr>
<td>Pioneer Surgical</td>
<td>853</td>
</tr>
<tr>
<td>Pro Med Instruments, Inc.</td>
<td>1202</td>
</tr>
<tr>
<td>Pro-Dex Medical Devices</td>
<td>1614</td>
</tr>
<tr>
<td>Rose Micro Solutions LLC</td>
<td>824</td>
</tr>
<tr>
<td>TeDan Surgical Innovations</td>
<td>1020</td>
</tr>
<tr>
<td>Thompson Surgical Instruments</td>
<td>1505</td>
</tr>
<tr>
<td>Vycor Medical, Inc.</td>
<td>1612</td>
</tr>
<tr>
<td>American Surgical Company</td>
<td>535</td>
</tr>
<tr>
<td>OMT LLC</td>
<td>1724</td>
</tr>
</tbody>
</table>

### Telescopes, Surgical (Loupes)

<table>
<thead>
<tr>
<th>Company</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Carl Zeiss Meditec, Inc.</td>
<td>1338</td>
</tr>
<tr>
<td>Designs For Vision, Inc.</td>
<td>1602</td>
</tr>
<tr>
<td>HOYA Corporation (PENTAX)</td>
<td>1821</td>
</tr>
<tr>
<td>PeriOptix, Inc.</td>
<td>1346</td>
</tr>
<tr>
<td>Rose Micro Solutions LLC</td>
<td>824</td>
</tr>
<tr>
<td>SheerVision</td>
<td>1816</td>
</tr>
<tr>
<td>Surgical Acuity</td>
<td>503</td>
</tr>
<tr>
<td>SurgiTel/General Scientific Corporation</td>
<td>846</td>
</tr>
</tbody>
</table>

### Transportation

<table>
<thead>
<tr>
<th>Company</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accutome, Inc.</td>
<td>1347</td>
</tr>
</tbody>
</table>

### Ultrasound Equipment

<table>
<thead>
<tr>
<th>Company</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>BK Medical Systems Inc.</td>
<td>1507</td>
</tr>
<tr>
<td>Elekta</td>
<td>1040</td>
</tr>
<tr>
<td>Hitachi Aloka Medical</td>
<td>635</td>
</tr>
<tr>
<td>Siemens Healthcare</td>
<td>805</td>
</tr>
</tbody>
</table>

### Video Equipment

<table>
<thead>
<tr>
<th>Company</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eizo Nanao Corporation</td>
<td>623</td>
</tr>
<tr>
<td>Ikegami Electronics USA, Inc.</td>
<td>1509</td>
</tr>
<tr>
<td>Karl Storz Endoscopy-America, Inc.</td>
<td>1302</td>
</tr>
<tr>
<td>Leica Microsystems, Inc.</td>
<td>548</td>
</tr>
<tr>
<td>SurgiTel/General Scientific Corporation</td>
<td>846</td>
</tr>
<tr>
<td>TrueVision Systems, Inc.</td>
<td>646</td>
</tr>
</tbody>
</table>
Join the Congress of Neurological Surgeons today for access to:

- Complimentary subscriptions to world-class publications –
  - NEUROSURGERY®
  - Operative Neurosurgery
  - Clinical Neurosurgery
  - Congress Quarterly

- Online Courses & Lectures
- Online Resources
- Networking Opportunities
- Fellowship Awards

Plus valuable discounts on SANS Lifelong Learning, the CNS Annual Meeting and more.

Visit www.cns.org to learn more and apply today!