

# CONGRESS OF NEUROLOGICAL SURGEONS



## SCIENTIFIC PROGRAM



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The Congress of Neurological Surgeons exists to enhance health and improve lives worldwide through the advancement of education and scientific exchange.


***CNS 60<sup>th</sup> Anniversary Meeting!***



## Saturday, October 16

1:00 – 5:00 PM  
**Afternoon Practical Courses**  
 (PC01 – PC09)

## Sunday, October 17

8:00 AM – 4:00 PM  
 **Neuromodulation Symposium**

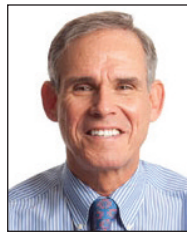
8:00 AM – 4:00 PM  
**Full Day Practical Courses**  
 (PC10 – PC13)

8:00 – 11:30 AM  
**Morning Practical Courses**  
 (PC14 – PC25)

12:30 – 4:00 PM  
**Afternoon Practical Courses**  
 (PC26 – PC36)

1:00 – 4:00 PM  
**CNS Resident SANS Challenge  
 Preliminary Rounds**

4:30 – 6:00 PM  
**INAUGURAL OPENING SESSION  
 San Francisco Marriott  
 Challenging Neurosurgical Environments:  
 Obstacles and Opportunities**



4:35 – 4:55 PM  
**Eric J. Topol**  
 The Wireless Health  
 Revolution



4:57 – 5:15 PM  
**Colonel  
 Ronald K. Poropatich**  
 Improving Healthcare  
 Delivery to Our Soldiers  
 through Telemedicine



5:20 – 5:45 PM  
**Captain James Lovell**  
 Fifth Annual John  
 Thompson History of  
 Medicine Lecture  
 Apollo 13: Overcoming  
 Obstacles and  
 Challenges



5:45 – 6:00 PM  
**Colonel  
 Rocco A. Armonda**  
 Neurosurgery on the  
 Front Lines: Conflict in  
 Iraq and Afghanistan



6:00 – 8:00 PM  
**CNS Opening Reception**  
 San Francisco Marriott,  
 Yerba Buena Salon 8-15



## Monday, October 18

7:00 – 11:30 AM  
**GENERAL SCIENTIFIC SESSION I:  
 Neurosurgical Pioneers: Foundation for  
 Future Innovation**



8:40 – 9:00 AM  
**Daniel L. Barrow**  
 Honored Guest Lecture  
 Cavernous  
 Malformations: A  
 Paradigm for Progress

9:00 AM – 3:00 PM  
**Exhibit Hall Open**

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



10:05 – 10:35 AM  
**Condoleezza Rice**  
 Eleventh Annual  
 Walter E. Dandy Oration  
 Remarks by  
 Condoleezza Rice



10:55 – 11:30 AM  
**Gerald E. Rodts, Jr.**  
 Presidential Address

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

12:00 – 1:30 PM  
**Luncheon Seminars**

1:30 – 3:00 PM  

- **Top Ten Abstracts**
- **Special Course I**
- **Consensus Session I**

3:00 – 4:30 PM  
**CNS Neurosurgical Forum**



7:00 – 11:30 AM

**GENERAL SCIENTIFIC SESSION II:  
Overcoming Obstacles through  
Understanding of Anatomy and Biology**

9:00 AM – 4:30 PM  
**Exhibit Hall Open**

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

10:00 – 10:20 AM  
**Daniel L. Barrow**  
*Honored Guest Lecture*  
**This is Not Your Father's  
Medical Practice**



10:55 – 11:30 AM  
**Yoon-Woo Lee**  
*International Leadership  
Lecture*  
**Technological Innovation  
and Future Society**

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

12:00 – 1:30 PM  
**Luncheon Seminars**

- 1:30 – 3:00 PM
- **NEW 3-D Spine Cadaveric Demonstration**
  - **Section Sessions**
  - **Special Course II**
  - **Consensus Sessions II & III**

3:00 – 4:00 PM  
**CNS Annual Business Meeting**

3:00 – 4:30 PM  
**NEW California Wine & Cheese  
Experience with the CNS  
Exhibitors**

5:00 – 6:00 PM  
**CNS Resident SANS Challenge Finals**

6:00 – 7:00 PM  
**CNS Resident Recruitment Social**

6:30 – 8:30 PM  
**NEW Dinner Seminar I**  
**Harris' Restaurant**

7:00 – 11:30 AM

**GENERAL SCIENTIFIC SESSION III:  
Conquering Obstacles: Present and Future  
Neurosurgical Paradigms**



7:52 – 8:10 AM  
**Gregory Dumanian**  
**Targeted Peripheral  
Nerve Reinnervation in  
Arm Amputees**



8:12 – 8:30 AM  
**Eric Mann**  
**Regulatory  
Considerations in  
Neurosurgery:  
FDA Perspective**



8:32 – 8:50 AM  
**Bernard Lo**  
**Conflict of Interest: The  
Institute of Medicine  
Perspective**

9:00 AM – 2:00 PM  
**Exhibit Hall Open**

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



10:05 – 10:35 AM  
**Michael Lewis**  
*Julian T. Hoff Lecture*  
**A Morning with  
Michael Lewis**

10:50 – 11:10 AM  
**Daniel L. Barrow**  
*Honored Guest Lecture*  
**Intraoperative Misadventures: Complication  
Avoidance and Management in Aneurysm  
Surgery**

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

12:00 – 1:30 PM  
**Luncheon Seminars**

- 1:30 – 3:00 PM
- **3-D Cranial Cadaveric Demonstration**
  - **Section Sessions**
  - **Special Course III**
  - **Consensus Session IV**

6:30 – 8:30 PM  
**NEW Dinner Seminar II**  
**Boulevard Restaurant**

7:00 – 8:30 PM  
**CNS International Reception**  
**Legion of Honor**

8:00 – 11:30 AM

**GENERAL SCIENTIFIC SESSION IV**

8:00 – 9:00 AM  
**3-D Digital Masters Video Symposium**  
**NEW Now in 3-D!**

9:00 – 10:30 AM  
**Cases and Coffee with the Masters**

10:30 – 11:30 AM  
**3-D Digital Masters Video Symposium**  
**NEW Now in 3-D!**

## Check Out the New Mobile Meeting Guide!

Allowing you instant access to:

- Find Meeting rooms.
- Browse abstracts.
- Search faculty members.
- Create your schedule.

iPhone, iPod Touch and iPad users access the new 2010 CNS Annual Meeting app. This application, available from the iTunes App Store, allows you full access to the Annual Meeting content from the palm of your hand!

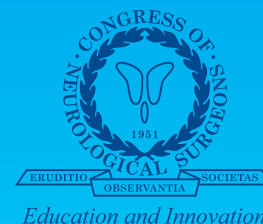
BlackBerry, Android and Smartphone users may access the web version.

**Stay connected to  
<http://m.cns.org>  
for the latest meeting  
updates!**





# Welcome



## KOREAN NEUROSURGICAL SOCIETY!

*Please join us for these special lectures and events.*



### **KNS Presidential Address**

Kyu-Sung Lee

***Highlights from the 2010 Korean Neurosurgical Society Meeting***

**Tuesday, October 19 8:08 – 8:25 AM Ballroom, Level 3**



### **International Leadership Lecture**

Yoon-Woo Lee

Vice Chairman and Chairman of the Board of Directors

Samsung Electronics Co., Ltd.

***Technological Innovation and Future Society***

**Tuesday, October 19 10:55 – 11:30 AM Ballroom, Level 3**



# President's Message



## Dear Colleague:

On behalf of the Congress of Neurological Surgeons Executive Committee, the Scientific Program Committee, and the 2010 CNS Honored Guest, Dr. Daniel L. Barrow, I welcome you to San Francisco, California for the 2010 CNS Annual Meeting.

This anniversary meeting celebrates 60 years of the CNS' commitment to advancing neurosurgery worldwide. Since our first Annual Meeting in 1951, the CNS has continued to evolve and has become the premier organization dedicated to neurosurgical education and scientific exchange. We are pleased to partner once again with an international society, the Korean Neurosurgical Society, who has been instrumental in this ***Celebration of Neurosurgery!***

The CNS Scientific Program Committee has put together an innovative program that offers more value for your time away from the office, including more expert lectures, case-based courses and sessions, and hands-on training opportunities. Our inaugural Opening Session, which precedes the Opening Reception, will cover Challenging Neurosurgical Environments, focusing on the impact of government health care reform, as well as the ongoing conflict in Afghanistan and current management paradigms for soldiers with traumatic brain injuries. During our General Scientific Sessions, Monday through Wednesday, we will address the obstacles we face daily and identify opportunities to overcome these challenges. And as always, our Thursday General Session includes the interactive Cases and Coffee discussions with subspecialty experts as well as our Digital Masters Video Presentations – now in 3-D!

The education opportunities continue throughout the day, and now, into the evening as well. The CNS Original Science Program will be the highlight of Monday afternoon, presenting the highest-impact research during the Top Ten Abstracts and the Neurosurgical Forum. The popular Operative Techniques with the Masters will now offer two live cadaveric demonstrations – the new 3-D Demonstration of Spinal Surgical Approaches and the original 3-D Demonstration of Cranial Surgical Approaches. Two new Dinner Seminars have also been added on Tuesday and Wednesday evenings to discuss critical issues facing the spine and tumor subspecialties, while allowing you to dine at San Francisco's top restaurants. Four Consensus Sessions address topics ranging from the CREST Trial to the unification of brain death criteria, and three Special Courses cover guidelines for spinal fusion, emerging indications for deep brain stimulation, and the impact of health care reform.

I am pleased you are here as we reflect on the past 60 years and look forward to the future challenges and opportunities in neurosurgery. Take time during your stay to truly enjoy and experience one of America's most beloved cities and a true world-class destination – San Francisco, California.

Sincerely,

A handwritten signature in black ink, appearing to read "G. E. Rodts, Jr.", written in a cursive style.

Gerald E. Rodts, Jr., MD  
CNS President

# SCHEDULE OF EVENTS

All sessions/events are held at the Moscone West Convention Center unless otherwise stated.

## SATURDAY, OCTOBER 16

Start	End	Event	Room
7:00 AM	9:00 AM	CSNS NE Quadrant	Pacific I (Marriott Marquis)
7:00 AM	9:00 AM	CSNS NW Quadrant	Pacific A (Marriott Marquis)
7:00 AM	9:00 AM	CSNS SE Quadrant	Pacific B (Marriott Marquis)
7:00 AM	9:00 AM	CSNS SW Quadrant	Pacific C (Marriott Marquis)
7:00 AM	9:00 AM	CSNS/AANS Caucus	Pacific H (Marriott Marquis)
7:00 AM	9:00 AM	CSNS/CNS Caucus	Pacific J (Marriott Marquis)
7:00 AM	5:00 PM	CSNS Conference Room	Pacific E (Marriott Marquis)
7:00 AM	5:30 PM	Speaker Ready Room	2000
7:00 AM	5:30 PM	Association of Neurosurgical Physician Assistants 4th Annual CME Event Speaker Ready Room	Walnut (Marriott Marquis)
7:00 AM	5:30 PM	CNS Registration	Lobby
7:00 AM	6:00 PM	Association of Neurosurgical Physician Assistants 4th Annual CME Event	Golden Gate C2 (Marriott Marquis)
7:00 AM	6:00 PM	Association of Neurosurgical Physician Assistants 4th Annual CME Event Exhibits	Golden Gate C1 (Marriott Marquis)
8:00 AM	4:00 PM	ThinkFirst National Injury Prevention Foundation Chapter Training	Sierra A (Marriott Marquis)
8:00 AM	5:00 PM	CNS Annual Meeting Office	Overlook 2024
8:00 AM	5:00 PM	CNS Executive Committee/Press Room	Overlook 2018
8:00 AM	5:00 PM	CSNS Office	Pacific F (Marriott Marquis)
8:00 AM	5:00 PM	Sergeant-At-Arms	Overlook 2022
9:00 AM	11:30 AM	CSNS Plenary Session	Golden Gate B (Marriott Marquis)
11:30 AM	1:00 PM	CSNS Lunch	Golden Gate A (Marriott Marquis)
1:00 PM	2:30 PM	CSNS Executive Committee	Pacific J (Marriott Marquis)
1:00 PM	5:00 PM	PC01: 3-D Anatomy (Supratentorial)	3000
1:00 PM	5:00 PM	PC02: Operating in Eloquent Cortex	2002
1:00 PM	5:00 PM	PC03: Successful Grant Writing for the Neurosurgeon	2007
1:00 PM	5:00 PM	PC04: Cranial Vascular Malformations: Surgical and Endovascular Techniques	2009
1:00 PM	5:00 PM	PC05: The Essentials of Neurosurgical ICU Management	2005
1:00 PM	5:00 PM	PC06: 2010 CPT Coding Update	2003
1:00 PM	5:00 PM	PC07: Cervical Spondylotic Myelopathy and Radiculopathy: Treatment Approaches and Options	2001
1:00 PM	5:00 PM	PC08: Spine Biomechanics for Clinical Practice	2006
1:00 PM	5:00 PM	PC09: Microneurosurgery with Professor Yasargil: Pearls, Pitfalls, and Avoidance of Complications	2004
2:00 PM	3:00 PM	Evidence-Based Medicine Methodology Refresher Course	Nob Hill D (Marriott Marquis)
3:00 PM	6:00 PM	AANS/CNS Joint Guidelines Committee	Nob Hill ABC (Marriott Marquis)
3:00 PM	7:00 PM	AANS/CNS Section on Disorders of the Spine and Peripheral Nerves Executive Committee Meeting	Sierra K (Marriott Marquis)
4:00 PM	6:00 PM	CAST Committee	Sierra D (Marriott Marquis)
4:30 PM	5:30 PM	Neurosurgery PAC Board Meeting	Club Room (Marriott Marquis)
6:00 PM	8:00 PM	Association of Neurosurgical Physician Assistants 4th Annual CME Event Reception	Golden Gate C1 (Marriott Marquis)

## SUNDAY, OCTOBER 17

Start	End	Event	Room
7:00 AM	5:30 PM	Sergeant-At-Arms	Overlook 2022
7:00 AM	6:00 PM	CNS Registration	Lobby
7:00 AM	6:00 PM	Speaker Ready Room	2000
8:00 AM	11:30 AM	PC14: The Neurosurgeon as Innovator: Being on the Leading Edge of Neurosurgery	2003
8:00 AM	11:30 AM	PC15: Practice Development in an Era of Reform	2018



# SCHEDULE OF EVENTS

8:00 AM	11:30 AM	PC16: Brain Tumor Update (Part I): Gliomas	2011
8:00 AM	11:30 AM	PC17: Trauma Update (Part I): Traumatic Brain Injury	2004
8:00 AM	11:30 AM	PC18: Implementing and Utilizing the New Degenerative Cervical Spine Clinical Practice Guidelines in Everyday Practice	3002
8:00 AM	11:30 AM	PC19: Radiosurgery Update (Part I): Cranial	3014
8:00 AM	11:30 AM	PC20: Update on Spinal Deformity Surgery and Principles	3016
8:00 AM	11:30 AM	PC21: Emerging Technology for Spinal Disorders	2002
8:00 AM	11:30 AM	PC22: Spine Update: A Critical Assessment of Peer-Reviewed Spine Literature for the Practicing Neurosurgeon	2006
8:00 AM	11:30 AM	PC23: Simulator-Based Training in Endovascular Techniques and Nuances	2008
8:00 AM	11:30 AM	PC24: Surgical Approaches to the Ventricular System: A 3-D Practical Course	3000
8:00 AM	11:30 AM	PC25: Open Aneurysm Surgery: A 3-D Practical Course	2001
8:00 AM	12:00 PM	CNS Oral Board Review	Sierra F (Marriott Marquis)
8:00 AM	4:00 PM	SYM1: Neuromodulation Symposium: 2010 and Beyond	Golden Gate Ballroom (Marriott Marquis)
8:00 AM	4:00 PM	PC10: Hands On: Cerebral Revascularization	UCSF
8:00 AM	4:00 PM	PC11: Inpatient and Outpatient Management Dilemmas for Allied Health Care Professionals	2020
8:00 AM	4:00 PM	PC12: Intracranial Endoscopy	2022-2024
8:00 AM	4:00 PM	PC13: Minimally Invasive Techniques for Cervical and Lumbar Spinal Surgery	2014-2016
8:00 AM	4:30 PM	ThinkFirst National Injury Prevention Foundation Board of Directors Meeting	Pacific A (Marriott Marquis)
8:00 AM	5:00 PM	CNS Annual Meeting Office	Overlook 2024
8:00 AM	5:00 PM	CNS Executive Committee/Press Room	Overlook 2018
8:00 AM	5:00 PM	CSNS Office	Pacific F (Marriott Marquis)
9:00 AM	9:45 AM	San Francisco Orientation	Club Room (Marriott Marquis)
9:00 AM	12:00 PM	Neurosurgery Summit Meeting	Pacific J (Marriott Marquis)
10:00 AM	11:30 AM	Association of Neurosurgical Physician Assistants - Board Meeting	Sierra H (Marriott Marquis)
11:00 AM	12:00 PM	CNS Information and Technology/Web Committee	Pacific G (Marriott Marquis)
11:00 AM	1:00 PM	Women in Neurosurgery (WINS) Executive Committee Meeting	Foothill A (Marriott Marquis)
11:30 AM	1:00 PM	CNS Fellowships Committee	Pacific E (Marriott Marquis)
12:00 PM	2:00 PM	AANS/CNS Quality Improvement Workgroup	Pacific B (Marriott Marquis)
12:00 PM	2:00 PM	CNS Education Committee	Pacific C (Marriott Marquis)
12:00 PM	2:00 PM	CNS International Division	Sierra J (Marriott Marquis)
12:00 PM	4:00 PM	CNS Consensus Rehearsal	Sierra B (Marriott Marquis)
12:30 PM	4:00 PM	PC26: Cranial Complications Prevention and Management	2003
12:30 PM	4:00 PM	PC27: Brain Tumor Update (Part II): Non-Glial Tumors	2011
12:30 PM	4:00 PM	PC28: Trauma Update (Part II): Spinal Cord and Column Injury	2004
12:30 PM	4:00 PM	PC29: Implementing and Utilizing the New Metastatic Brain Tumor Clinical Practice Guidelines in Everyday Practice	3002
12:30 PM	4:00 PM	PC30: Spinal Oncology Update (Part II): Radiosurgery and Adjuvant Therapies	3014
12:30 PM	4:00 PM	PC31: 3-D Anatomy (Infratentorial)	3000
12:30 PM	4:00 PM	PC32: Update on Spinal Surgery Indications and Technique	2005
12:30 PM	4:00 PM	PC33: Peripheral Nerve Surgery: The Basics and Beyond	2009
12:30 PM	4:00 PM	PC34: Mastering Spinal Disorders: Dealing with Complexities	2007
12:30 PM	4:00 PM	PC35: Neurocritical Care and Neurosurgical Emergencies Update	2006
12:30 PM	4:00 PM	PC36: Operative Indications, Options and Technique for Epilepsy	2002
1:00 PM	2:00 PM	Washington Communications and Public Relations (CPR) Committee Meeting	Sierra C (Marriott Marquis)
1:00 PM	3:00 PM	CSNS State Societies Forum	Pacific H (Marriott Marquis)
1:00 PM	4:00 PM	CNS Resident SANS Challenge - Preliminary Rounds	3018-3022
1:00 PM	4:00 PM	CNS SANS Challenge Green Room	3001
1:00 PM	4:00 PM	Society of Neurological Surgeons Bootcamp Sub-Committee	Foothill F (Marriott Marquis)
1:00 PM	4:30 PM	CNS SANS Lifelong Learning Committee	Pacific I (Marriott Marquis)
2:00 PM	4:00 PM	AANS/CNS Section on Disorders of the Spine and Peripheral Nerves - Scientific Program Committee	Sierra K (Marriott Marquis)

# SCHEDULE OF EVENTS

2:00 PM	4:00 PM	Protect Investigator Meeting	Sierra F
2:00 PM	4:00 PM	WFNS Nominating Committee Meeting	Sierra G (Marriott Marquis)
2:00 PM	4:00 PM	Atlas User Group	Pacific G (Marriott Marquis)
2:30 PM	4:30 PM	AANS/CNS Section on Cerebrovascular Surgery Executive Meeting	Pacific J (Marriott Marquis)
3:00 PM	3:30 PM	Congress Quarterly Editorial Board	Sierra D (Marriott Marquis)
3:30 PM	4:30 PM	CNS Publications Committee	Sierra I (Marriott Marquis)
3:30 PM	4:30 PM	Ohio State Neurological Society Meeting	Pacific H (Marriott Marquis)
4:30 PM	6:00 PM	CNS Opening Session: Challenging Neurosurgical Environments: Obstacles and Opportunities	Verba Buena Salon 1-7 (Marriott Marquis)
6:00 PM	8:00 PM	CNS Opening Reception	Verba Buena Salon 8-15 (Marriott Marquis)

## MONDAY, OCTOBER 18

Start	End	Event	Room
6:00 AM	7:00 AM	AANS/CNS Section on Tumors Executive Committee Meeting	Verba Buena Salon 7 (Marriott Marquis)
6:00 AM	7:00 AM	AANS/CNS Drugs and Devices Committee	Pacific H (Marriott Marquis)
6:30 AM	3:00 PM	Speaker Ready Room	2000
6:30 AM	4:30 PM	CNS Registration	Lobby
7:00 AM	10:30 AM	CNS Spouse Hospitality Suite	View Lounge (Marriott Marquis)
7:00 AM	11:30 AM	General Scientific Session I - Neurosurgical Pioneers: Foundation for Future Innovation	Ballroom, Level 3
8:00 AM	3:00 PM	Sergeant-At-Arms	Overlook 2022
8:00 AM	5:00 PM	CNS Annual Meeting Office	Overlook 2024
8:00 AM	5:00 PM	CNS Executive Committee/Press Room	Overlook 2018
8:00 AM	5:00 PM	CSNS Office	Pacific F (Marriott Marquis)
9:00 AM	10:00 AM	Beverage Break with Exhibitors	Exhibit Hall
9:00 AM	3:00 PM	Exhibits Open	Exhibit Hall
9:00 AM	3:00 PM	Digital Poster Center	Exhibit Hall
9:30 AM	9:55 AM	Product & Technology Showcase - Lanx, Inc.	Exhibit Hall, Level 1
11:30 AM	11:55 AM	Product & Technology Showcase - MASEP Infini	Exhibit Hall, Level 1
11:30 AM	12:00 PM	Break with Exhibitors	Exhibit Hall
11:30 AM	1:15 PM	AANS/CNS Section on Neurotrauma and Critical Care Executive Council Meeting	Pacific I (Marriott Marquis)
12:00 PM	12:25 PM	Product & Technology Showcase - Aesculap Implant Systems	Exhibit Hall, Level 1
12:00 PM	1:30 PM	AANS/CNS Section on Pain Executive Council Meeting	Pacific D (Marriott Marquis)
12:00 PM	1:30 PM	M01: Resident/Honored Guest Luncheon	2002
12:00 PM	1:30 PM	M02: Craniosynostosis (Open versus Endoscopic Management)	2003
12:00 PM	1:30 PM	M03: Disk Arthroplasty of the Cervical and Lumbar Spine	2004
12:00 PM	1:30 PM	M04: Minimally Invasive Spine Surgery	2005
12:00 PM	1:30 PM	M05: Pseudoarthrosis of the Cervical and Lumbar Spine	2006
12:00 PM	1:30 PM	M06: Surgical, Interventional and Medical Management of Subarachnoid Hemorrhage and Vasospasm	2007
12:00 PM	1:30 PM	M07: Hematology and Coagulation for Neurosurgeons: Pitfalls and Solutions	2008
12:00 PM	1:30 PM	M08: Psychosurgery	2009
12:00 PM	1:30 PM	M09: Stroke Update for Allied Health Professionals	2011
12:00 PM	1:30 PM	M10: Surgery for Tumors in Eloquent Cortex	2016
12:00 PM	1:30 PM	M11: Vestibular Schwannoma Management	2018
12:00 PM	1:30 PM	M12: The Role of Endoscopy in Keyhole Approaches to the Skull Base	2020
12:00 PM	1:30 PM	M13: Pediatric Neurotrauma Update	2022
12:00 PM	1:30 PM	M14: Peripheral Nerve Board Review	2024
12:00 PM	1:30 PM	M15: Surgical, Interventional and Radiosurgical Approaches to Intracranial Arteriovenous Malformations	3000
12:15 PM	3:00 PM	CNS Auxiliary Luncheon	Tommy Toy's
1:30 PM	3:00 PM	Top Ten Abstracts - Council of State Neurosurgical Societies	3018



# SCHEDULE OF EVENTS

1:30 PM	3:00 PM	Top Ten Abstracts - Section on Cerebrovascular Surgery	3002
1:30 PM	3:00 PM	Top Ten Abstracts - Section on Disorders of the Spine and Peripheral Nerves	3001
1:30 PM	3:00 PM	Top Ten Abstracts - Section on Neurotrauma and Critical Care	3016
1:30 PM	3:00 PM	Top Ten Abstracts - Section on Pain	3003
1:30 PM	3:00 PM	Top Ten Abstracts - Section on Pediatric Neurological Surgery	3022
1:30 PM	3:00 PM	Top Ten Abstracts - Section on Stereotactic and Functional Neurosurgery	3020
1:30 PM	3:00 PM	Top Ten Abstracts - Section on Tumors	3014
1:30 PM	3:00 PM	Special Course I: Guidelines for the Performance of Fusion Procedures for Degenerative Disease of the Lumbar Spine	2014
1:30 PM	3:00 PM	Consensus Session I: The Carotid Revascularization Endarterectomy Versus Stenting Trial (CREST) and Modern Management of Carotid Stenosis	2001
3:00 PM	4:30 PM	Neurosurgical Forum	Ballroom, Level 3
4:30 PM	6:00 PM	Joint Military Committee	Golden Gate A (Marriott Marquis)
5:00 PM	6:00 PM	NEUROSURGERY® Editorial Board Reception	B Restaurant
5:00 PM	7:00 PM	UCSF Department of Neurosurgery Cocktail Reception	Club Room (Marriott Marquis)
5:00 PM	7:30 PM	American Association of South Asian Neurosurgeons (AASAN) Meeting	Golden Gate C1-C2 (Marriott Marquis)
5:30 PM	7:00 PM	The Ohio State Neurosurgery Alumni Event	Yerba Buena Salon 12 (Marriott Marquis)
6:00 PM	8:00 PM	USC Neurosurgery Reception	Nob Hill C (Marriott Marquis)
6:00 PM	8:30 PM	Jefferson Alumni Cocktail Reception	Yerba Buena Salon 4 (Marriott Marquis)
6:00 PM	7:30 PM	University of Mississippi Medical Center Reception	Yerba Buena Salon 5 (Marriott Marquis)
6:30 PM	8:00 PM	Mayo Clinic Alumni Association Reception	Juniper (Marriott Marquis)

## TUESDAY, OCTOBER 19

Start	End	Event	Room
6:30 AM	3:00 PM	Speaker Ready Room	2000
6:30 AM	4:30 PM	CNS Registration	Lobby
7:00 AM	10:30 AM	CNS Spouse Hospitality Suite	View Lounge (Marriott Marquis)
7:00 AM	11:30 AM	General Scientific Session II: Overcoming Obstacles through Understanding of Anatomy and Biology	Ballroom, Level 3
8:00 AM	3:00 PM	Sergeant-At-Arms	Overlook 2022
8:00 AM	5:00 PM	CNS Annual Meeting Office	Overlook 2024
8:00 AM	5:00 PM	CNS Executive Committee/Press Room	Overlook 2018
8:00 AM	5:00 PM	CSNS Office	Pacific F (Marriott Marquis)
9:00 AM	10:00 AM	Beverage Break with Exhibitors	Exhibit Hall
9:00 AM	3:00 PM	Digital Poster Center	Exhibit Hall
9:00 AM	4:30 PM	Exhibits Open	Exhibit Hall
9:15 AM	10:00 AM	Live Surgical Presentation via Telemedicine Technology: Technical Nuances in Microneurosurgery: Live Microvascular Decompression Surgery for Trigeminal Neuralgia	Exhibit Hall, Level 1
11:30 AM	11:55 AM	Product & Technology Showcase - Salient Surgical	Exhibit Hall, Level 1
11:30 AM	12:00 PM	Break with Exhibitors	Exhibit Hall
11:30 AM	1:30 PM	CNS Research Committee	Yerba Buena Salon 10 (Marriott Marquis)
11:30 AM	3:00 PM	Research & Development Expert Exchange	Exhibit Hall
12:00 PM	1:30 PM	ASSFN Executive Council Meeting	Club Room (Marriott Marquis)
12:00 PM	1:30 PM	T16: Surgical Management of Chiari and Syringomyelia	2002
12:00 PM	1:30 PM	T17: Surgical Intervention for Lumbar Spine: What the Literature Supports	2003
12:00 PM	1:30 PM	T18: Cervical Spondylotic Myelopathy and OPLL: Guidelines for Surgical Management	2004
12:00 PM	1:30 PM	T19: Intraoperative Salvage Techniques: Getting Out of Trouble in Spinal Surgery	2005
12:00 PM	1:30 PM	T20: Unruptured Aneurysm Management Strategies	2006
12:00 PM	1:30 PM	T21: Management of Trigeminal Neuralgia and Facial Pain	2007
12:00 PM	1:30 PM	T22: Surgery and Radiosurgery for Epilepsy	2008
12:00 PM	1:30 PM	T23: Emerging Technologies in Treatment of Neurotrauma	2009

# SCHEDULE OF EVENTS

12:00 PM	1:30 PM	T24: Skull Base Approaches	2011
12:00 PM	1:30 PM	T25: State of the Art Management of Brain Metastases	2016
12:00 PM	1:30 PM	T26: Pituitary Surgery	2018
12:00 PM	1:30 PM	T27: Management of Low Grade Gliomas: Current Strategies and Dilemmas	2020
12:00 PM	1:30 PM	T28: Management Strategies for Normal Pressure Hydrocephalus and Pseudotumor Cerebri	2022
12:00 PM	1:30 PM	T29: Treatment of the Aging Spine	2024
12:00 PM	1:30 PM	T30: Sports Related Spinal and Peripheral Nerve Injuries	3000
12:00 PM	1:30 PM	CSM Investigator's Meeting	Yerba Buena Salon 11 (Marriott Marquis)
12:30 PM	4:00 PM	2011 CNS Annual Meeting Scientific Program Committee	3022
1:30 PM	3:00 PM	Special Course II: Deep Brain Stimulation: Advancing Technology and Expanding Indications	3002
1:30 PM	3:00 PM	Consensus Session II: Futility or Utility? Hemispherectomy for Increased Traumatic Intracranial Pressure	2001
1:30 PM	3:00 PM	Consensus Session III: Is Bone Morphogenic Protein Usage in Spinal Surgery Safe, Effective and Worth the Cost?	3001
1:30 PM	3:00 PM	Council of State Neurosurgical Societies - Ancillary Services: Keeping Out of Trouble	3020
1:30 PM	3:00 PM	Section on Cerebrovascular Surgery - Neurovascular Surgery: Where We Were and Where We Are Going	3016
1:30 PM	3:00 PM	Section on Pediatric Neurological Surgery - Implications for Play: Concussion, Chiari and Arachnoid Cysts	3018
1:30 PM	3:00 PM	Section on Tumors - Cancer, Neurosurgery, and Nanotechnology: A New Triumvirate	3014
1:30 PM	3:00 PM	Operative Techniques with the Masters: A 3-D Cadaveric Demonstration of Spinal Surgical Approaches	Ballroom, Level 3
3:00 PM	4:00 PM	CNS Annual Business Meeting	2014
3:00 PM	4:30 PM	California Wine & Cheese Experience with the CNS Exhibitors	Exhibit Hall
4:30 PM	5:30 PM	NeuroPoint - SD Meeting	Walnut (Marriott Marquis)
5:00 PM	6:00 PM	CNS Resident SANS Challenge - Championship Round	Yerba Buena Salon 8 (Marriott Marquis)
5:00 PM	6:30 PM	Emory Alumni Reception	Club Room (Marriott Marquis)
6:00 PM	7:00 PM	CNS Resident Recruitment Social	Yerba Buena Salon 7 (Marriott Marquis)
6:00 PM	7:00 PM	AANS/CNS Section on Tumors Young Neurosurgeons' Reception	Nob Hill AB (Marriott Marquis)
6:00 PM	8:00 PM	Women in Neurosurgery (WINS) Reception	Yerba Buena Salon 4-6 (Marriott Marquis)
6:00 PM	9:30 PM	OmniGuide, Inc Satellite Symposium: New Techniques in Lateral Skull Base Surgery	Golden Gate B (Marriott Marquis)
6:30 PM	8:30 PM	CNS Dinner Seminar I: Controversies in the Management of Metastatic Brain Tumors	Harris' Restaurant

## WEDNESDAY, OCTOBER 20

Start	End	Event	Room
6:30 AM	3:00 PM	CNS Registration	Lobby
6:30 AM	3:00 PM	Speaker Ready Room	2000
7:00 AM	10:30 AM	CNS Spouse Hospitality Suite	View Lounge (Marriott Marquis)
7:00 AM	11:30 AM	General Scientific Session III: Conquering Obstacles: Present and Future Neurosurgical Paradigms	Ballroom, Level 3
8:00 AM	3:00 PM	Sergeant-At-Arms	Overlook 2022
8:00 AM	5:00 PM	CNS Annual Meeting Office	Overlook 2024
8:00 AM	5:00 PM	CNS Executive Committee/Press Room	Overlook 2018
9:00 AM	10:00 AM	Beverage Break with Exhibitors	Exhibit Hall
9:00 AM	2:00 PM	Exhibits Open	Exhibit Hall
9:00 AM	3:00 PM	Digital Poster Center	Exhibit Hall
9:15 AM	10:00 AM	Live Surgical Presentation via Telemedicine Technology: Technical Nuances in Microneurosurgery: Live Microvascular Decompression Surgery for Hemifacial Spasm	Exhibit Hall, Level 1
11:30 AM	12:00 PM	Break with Exhibitors	Exhibit Hall
12:00 PM	1:30 PM	W31: Metastatic Spine Disease Management Options	2002
12:00 PM	1:30 PM	W32: Spine Trauma and Spinal Cord Injury	2003



# SCHEDULE OF EVENTS

12:00 PM	1:30 PM	W33: Anterior versus Posterior Approaches for Cervical Radiculopathy	2004
12:00 PM	1:30 PM	W34: Innovations in Open and Endovascular Management of Aneurysms	2005
12:00 PM	1:30 PM	W35: Pediatric Brain Tumor Treatment Strategies	2006
12:00 PM	1:30 PM	W36: Pediatric Spine Management (Traumatic and Congenital)	2007
12:00 PM	1:30 PM	W37: Complications of Aneurysm Surgery: Avoidance and Management	2008
12:00 PM	1:30 PM	W38: Common and Uncommon Peripheral Nerve Entrapment Syndromes	2009
12:00 PM	1:30 PM	W39: Management of Head Injury	2011
12:00 PM	1:30 PM	W40: Management of Complications in Skull Base Surgery	2016
12:00 PM	1:30 PM	W41: Malignant Gliomas: Future Treatment Strategies	2018
12:00 PM	1:30 PM	W42: Radiosurgery in Neuro-Oncology	2020
12:00 PM	1:30 PM	W43: Strategies for Maximizing Reimbursement	2022
12:00 PM	1:30 PM	W44: New Evolutions and Future Trends in the Management of Intracerebral Hemorrhage	2024
12:00 PM	1:30 PM	W45: Deep Brain Stimulation for Movement Disorders	3000
1:30 PM	3:00 PM	Special Course III: Impact of Healthcare Reform on Your Neurosurgical Practice	2014
1:30 PM	3:00 PM	Consensus Session IV: Unification of Brain Death Criteria	2001
1:30 PM	3:00 PM	Section on Disorders of the Spine and Peripheral Nerves - Management of Spinal Column and Peripheral Nerve Neoplasms	3001
1:30 PM	3:00 PM	Section on Neurotrauma and Critical Care - Mild Traumatic Brain Injury and Sports-Related Concussion	3014
1:30 PM	3:00 PM	Section on Pain: Coding and Reimbursement in a Neurosurgical Pain Practice	3018
1:30 PM	3:00 PM	Section on Stereotactic and Functional Neurosurgery - Complication Avoidance in Deep Brain Stimulation Surgery	3016
1:30 PM	3:00 PM	Operative Techniques with the Masters: A 3-D Cadaveric Demonstration of Cranial Surgical Approaches	Ballroom, Level 3
6:30 PM	8:30 PM	CNS Dinner Seminar II: Spinal Arthroplasty: Fact and Fiction	Boulevard Restaurant
7:00 PM	8:30 PM	CNS International Reception	The Legion of Honor

## THURSDAY, OCTOBER 21

Start	End	Event	Room
7:30 AM	11:00 AM	CNS Registration	Lobby
7:30 AM	11:00 AM	Speaker Ready Room	2000
8:00 AM	9:00 AM	General Scientific Session IV: 3-D Digital Masters Video Symposium	Ballroom, Level 3
8:00 AM	12:00 PM	CNS Annual Meeting Office	Overlook 2024
8:00 AM	12:00 PM	CNS Executive Committee/Press Room	Overlook 2018
9:00 AM	10:30 AM	Cases and Coffee with the Masters - Trauma	3001
9:00 AM	10:30 AM	Cases and Coffee with the Masters - Tumor	3014
9:00 AM	10:30 AM	Cases and Coffee with the Masters - Vascular/Endovascular	3002
9:00 AM	10:30 AM	Cases and Coffee with the Masters - Pediatric	3016
9:00 AM	10:30 AM	Cases and Coffee with the Masters - Stereotactic, Functional and Pain	3018
9:00 AM	10:30 AM	Cases and Coffee with the Masters - Spine/Peripheral Nerves	Ballroom, Level 3
10:30 AM	11:30 AM	General Scientific Session IV: 3-D Digital Masters Video Symposium	Ballroom, Level 3



HONORED GUEST  
**DANIEL L. BARROW, MD**

**D**aniel Louis Barrow, MD, graduated magna cum laude from Westminster College and received his medical degree from Southern Illinois University School of Medicine. He completed his general surgery internship and neurosurgical residency at Emory University Affiliated Hospitals and obtained his neurology training at Massachusetts General Hospital. Upon completing his neurosurgical residency, he completed a fellowship in cerebrovascular surgery at the Mayo Clinic in Rochester, Minnesota and obtained additional training at the Barrow Neurological Institute in Phoenix, Arizona. He is the MBNA/Bowman Professor and Chairman of the Department of Neurosurgery and Director of the Emory Stroke Center at Emory University School of Medicine.

Dr. Barrow has authored more than 250 scientific articles and chapters in medical textbooks. He has authored or edited fourteen monographs, including a major textbook of neurosurgery, *The Practice of Neurosurgery*. He has been a visiting professor at major universities throughout North America, Europe and Asia. His research interests have focused on cerebrovascular disease and stroke. Throughout his career in medicine, he has won many awards, including induction into the honorary medical society, Alpha Omega Alpha. In 1997, Dr. Barrow received the Distinguished Alumnus Award from Southern Illinois University School of Medicine, and in 1998, he received the Alumni Achievement Award from Westminster College.

Dr. Barrow has been active in organized neurosurgery, holding a variety of leadership and editorial positions. He was on the Executive Committee of the CNS from 1989 – 2001 and served as Scientific Program Committee Chairman (1991), Annual Meeting Committee Chairman (1992), Secretary (1992-1995), and President (1999-2000). He was President of the Georgia Neurosurgical Society and member of the AANS/CNS Washington Committee. Dr. Barrow has been on the editorial boards of *Clinical Neurosurgery*, *NEUROSURGERY*, *Neurosurgical Consultations*, *Neurologia Medico Chirurgica*, *The Journal of the Korean Neurosurgical Society*; has co-edited *Contemporary Neurosurgery* (1985-1995); edited *Perspectives in Neurological Surgery* (1989-1992); and chaired the AANS Publications Committee. He is a Director of the American Board of Neurological Surgery and currently serves as Secretary of the Board.

Dr. Barrow is an avid outdoorsman who enjoys hunting, fishing, and other outdoor sporting activities. He is married to Mollie Winston Barrow, a practicing oral and maxillofacial surgeon. They live in Atlanta and have three children – Emily (age 21), Jack (age 19), and Tom (age 17).

***Don't miss these presentations by our Honored Guest!***

Monday, October 18 ♦ 8:40 – 9:00 AM  
**Cavernous Malformations: A Paradigm for Progress**  
12:00 – 1:30 PM  
**M01 Resident/Honored Guest Luncheon**

Tuesday, October 19 ♦ 10:00 – 10:20 AM  
**This is Not Your Father's Medical Practice**

Wednesday, October 20 ♦ 10:50 – 11:10 AM  
**Intraoperative Misadventures: Complication Avoidance and Management in Aneurysm Surgery**

Thursday, October 21 ♦ 9:00 – 10:30 AM  
**Cases and Coffee with the Masters: Vascular/Endovascular**  
10:30 – 10:45 AM  
**3-D Digital Masters Video Symposium**



**ELEVENTH ANNUAL  
WALTER E. DANDY ORATION  
CONDOLEEZZA RICE**

FORMER SECRETARY OF STATE  
PROFESSOR OF BUSINESS AND POLITICAL  
SCIENCE, STANFORD UNIVERSITY

**Monday, October 18 10:05 – 10:35 AM**  
*Remarks by Condoleezza Rice*

**C**ondoleezza Rice is a professor of business and political science at Stanford University and the Thomas and Barbara Stephenson Senior Fellow on Public Policy at the Hoover Institution.

From January 2005 to 2009, she served as the 66th Secretary of State of the United States. Before serving as America's chief diplomat, she served as assistant to the president for national security affairs (National Security Advisor) from January 2001 to 2005.

Rice joined the Stanford University faculty as a professor of political science in 1981 and served as Stanford University's provost from 1993 to 1999. She was a senior fellow at the Hoover Institution from 1991 to 1993 and returned to the Hoover Institution after serving as provost until 2001. As a professor, Rice won two of the highest teaching honors: the 1984 Walter J. Gores Award for Excellence in Teaching and the 1993 School of Humanities and Sciences Dean's Award for Distinguished Teaching.

She has authored and co-authored several books, including *Germany Unified and Europe Transformed: A Study in Statecraft* (1995), with Philip Zelikow; *The Gorbachev Era* (1986), with Alexander Dallin, *Uncertain Allegiance: The Soviet Union and the Czechoslovak Army* (1984) and *Extraordinary, Ordinary People: A Memoir of Family* (October 2010).

Rice served as a member of the boards of directors for the Chevron, Charles Schwab and Transamerica corporations. She was a founding board member of the Center for a New Generation, an educational support fund for schools in East Palo Alto and East Menlo Park, Calif., and was vice president of the Boys and Girls Club of the Peninsula. She currently serves on the board of the Boys and Girls Club of America.

Rice has been involved in a number of humanitarian pursuits, most notably with PEPFAR (The President's Emergency Plan for AIDS Relief) and in creating and serving on the board of the Millennium Challenge Corporation. Both endeavors increased aid to developing countries and the world's poorest, most disadvantaged populations. PEPFAR was the largest commitment of funds from any single nation to combat a single disease at any time in history and the Millennium Challenge Corporation promotes sustainable economic growth and poverty reduction.

She currently serves as a member of the board of trustees of the John F. Kennedy Center for the Performing Arts. In addition, she is a fellow of the American Academy of Arts and Sciences. Rice earned her bachelor's degree in political science, cum laude and Phi Beta Kappa, from the University of Denver in 1974; her master's from the University of Notre Dame in 1975; and her PhD from the Graduate School of International Studies at the University of Denver in 1981.

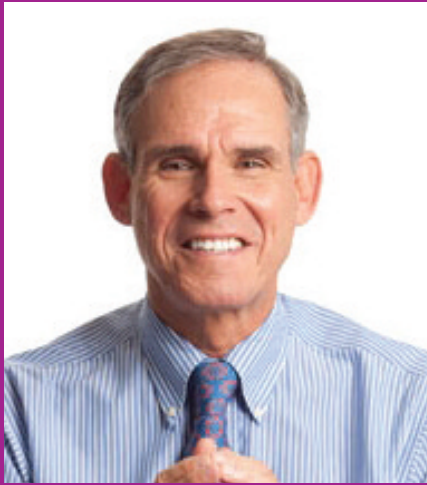


**Join us for a book signing  
in the Exhibit Hall!  
Monday, October 18  
11:10 AM**

**PAST WALTER E. DANDY ORATORS**

Walter Isaacson	2009
Maya Angelou, PhD	2008
Sir Salman Rushdie	2007
David McCullough	2006
Professor Wole Soyinka	2005
President Mikhail Gorbachev	2004
Roberta L. Bondar, MD, PhD	2003
Jane Goodall, PhD	2002
Stephen E. Ambrose, PhD	2001
Senator John Glenn	2000





**SPECIAL LECTURE**

**ERIC J. TOPOL, MD**

DIRECTOR OF THE SCRIPPS  
TRANSLATIONAL SCIENCE INSTITUTE

**Sunday, October 17 4:35 – 4:55 PM**  
*The Wireless Health Revolution*

**E**ric J. Topol, MD, is the Director of the Scripps Translational Science Institute, a National Institutes of Health funded program of the Clinical and Translational Science Award (CTSA) Consortium focused on advancing individualized medicine. He is the Chief Academic Officer of Scripps Health, a Senior Consultant cardiologist practitioner at Scripps Clinic, and Professor of Translational Genomics at The Scripps Research Institute.

Prior to coming to Scripps, Dr. Topol served on the faculty of Case Western as a professor in genetics, chaired the Department of Cardiovascular Medicine at Cleveland Clinic for 15 years and raised its status to rank #1 by US News and World Report for 11 consecutive years, and was Founder of the Cleveland Clinic Lerner College of Medicine. His work in the genomics of heart attack has led to the discovery of key genes recognized by the American Heart Association twice as top 10 research advances. As a leader in clinical trials of novel therapeutics, he administered recombinant t-PA to the first patient in 1984, pioneered and led the clinical development of clopidogrel (Plavix), bivalirudin (Angiomax), and abciximab (ReoPro). He has over 1,000 original peer reviewed publications, and has edited over 30 books, including the *Textbook of Interventional Cardiology* (5th ed), and the *Textbook of Cardiovascular Medicine* (3rd ed). As Founder and Vice Chairman of the West Wireless Health Institute, he has been a medical innovator in wireless medicine, including wireless ECG telemetry, vital signs and remote monitoring for heart failure. Dr. Topol has been elected to the Institute of Medicine of the National Academy of Sciences, the American Association of Physicians and recognized by the Institute of Scientific Information (ISI) to be in the top 10 cited biomedical researchers in medicine in the past decade.

**C**olonel Ronald K. Poropatich, MD, is the Deputy Director of the Telemedicine and Advanced Technology Research Center (TATRC), US Army Medical Research and Materiel Command (USAMRMC) at Fort Detrick, Maryland, which manages over \$450 million/year in federally funded research in advanced medical technology. He also works towards wide-scale implementation of telehealth applications across the US Army Medical Department. Colonel Poropatich is a Professor of Medicine at the Uniformed Services University of the Health Sciences in Bethesda, Maryland, and is the Chair of the NATO Telemedicine Expert Team. He is a former President and Board Member of the American Telemedicine Association and a practicing Pulmonary Medicine physician at the Walter Reed Army Medical Center in Washington, DC. He currently serves as an Associate Editor for *Telemedicine* and *e-Health Journal*.

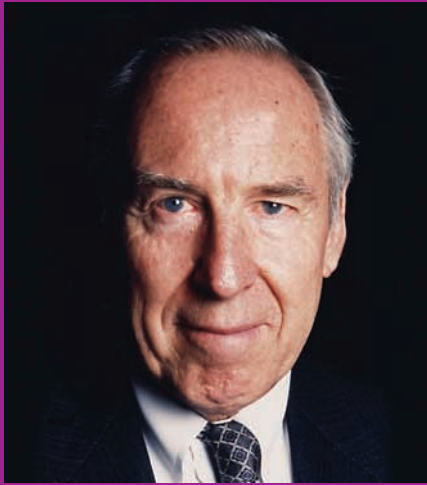


**SPECIAL LECTURE**

**COLONEL  
RONALD K. POROPATICH, MD**

DEPUTY DIRECTOR OF THE TELEMEDICINE  
AND ADVANCED TECHNOLOGY RESEARCH  
CENTER, US ARMY MEDICAL RESEARCH AND  
MATERIEL COMMAND

**Sunday, October 17 4:57 – 5:15 PM**  
*Improving Healthcare Delivery to Our  
Soldiers through Telemedicine*



**FIFTH ANNUAL  
JOHN THOMPSON HISTORY  
OF MEDICINE LECTURE  
CAPTAIN JAMES LOVELL**

NASA LEGEND AND  
APOLLO 13 COMMANDER

**Sunday, October 17 5:20 – 5:45 PM**  
*Apollo 13: Overcoming Obstacles  
and Challenges*

Captain James Lovell, Jr., was chosen in September 1962 for the space program where he executed various commands in the Gemini Mission Program, including the history-making Gemini 7 flight that saw the first rendezvous of two manned spacecraft in 1965. At the close of the Gemini program, Captain Lovell became command module pilot and navigator on Apollo 8, humanity's maiden voyage to the moon, where he and his crew were the first humans to leave the earth's gravitational influence. His final flight was on the perilous Apollo 13 mission in 1970. As spacecraft commander, he and his crew successfully modified their lunar module into an effective lifeboat when their cryogenic oxygen system failed, conserving both electrical power and water in sufficient supply to ensure their survival in space and their safe return to Earth.

In 1973, Captain Lovell left the space program and today, he is president of Lovell Communications, a business devoted to disseminating information about the US space program.

Captain Lovell attended the University of Wisconsin and graduated from the US Naval Academy, the University of Southern California Aviation Safety School, and the Harvard Business School's Advanced Management Program. He has also garnered an impressive share of honors, including the Presidential Medal of Freedom, the French Legion of Honor, NASA Distinguished and Exceptional Service Medals, and many others. He is also a fellow in the Society of Experimental Test Pilots.

In 1994, Captain Lovell and Jeff Kluger wrote *Lost Moon*, the story of the courageous mission of *Apollo 13*. In 1995, the film version of the best-seller, *Apollo 13*, was released to rave reviews.



*Join us for a book signing in the Yerba Buena Foyer  
Sunday, October 17, 6:00 PM*

**R**occo A. Armonda, MD, currently serves as the Director, Division of Neurosurgery, at the Uniformed Services University of the Health Sciences and Director of Cerebrovascular Surgery and Interventional Neuroradiology for the National Capital Neurosurgery Consortium at National Naval Medical Center and Walter Reed Army Medical Center. He completed his undergraduate studies at the United States Military Academy at West Point in 1986 and matriculated to the Uniformed Services University of the Health Sciences (USUHS). He graduated from USUHS with academic honors, and was inspired to pursue neurosurgery while working with Professor Malcolm Carpenter, MD.

His surgical internship and neurosurgery residency were completed at Walter Reed Army Medical Center under the direction of LTC (ret) Richard G. Ellenbogen, MD. Dr. Armonda was selected for a fellowship in Cerebrovascular Surgery and Interventional Neuroradiology with Dr. Robert H. Rosenwasser at Thomas Jefferson University in Philadelphia from 1997-1999.

His assignments have included Commander of the 207th Neurosurgery Team in Operation Iraqi Freedom from March 2003 through February 2004 where he was awarded the Bronze Medal for service. Additional awards have included the Young Neurosurgeon's Award in 2005 from the AANS and the Army Medical Proficiency "A" Designator for excellence in both clinical and academic medicine in 2009.

Dr. Armonda's focus continues in the area of cerebrovascular disease and trauma with an emphasis on neurocritical care. He has advanced the use of multi-modal monitoring and treatment techniques to patients with neurotrauma and stroke with both invasive and non-invasive monitoring, which includes the application of hypothermia in severe wartime trauma. His seminal work includes the detection and treatment of traumatic cerebrovasospasm, traumatic pseudoaneurysms, decompressive craniotomy for wartime trauma, cranial-facial post-traumatic reconstruction, multimodal AVM treatments and the design and deployment of the advanced neurointerventional operating room.

He enjoys active outdoor life with his wife Heidi and their children; Michael, Emma, Madison, Gabriella, Adrianna, and Michelle.



**COLONEL  
ROCCO A. ARMONDA, MD**

DIRECTOR, DIVISION OF NEUROSURGERY,  
UNIFORMED SERVICES UNIVERSITY OF  
THE HEALTH SCIENCES  
DIRECTOR, CEREBROVASCULAR SURGERY  
AND INTERVENTIONAL NEURORADIOLOGY  
NATIONAL CAPITAL NEUROSURGERY  
CONSORTIUM

**Sunday, October 17 5:45 – 6:00 PM**  
*Neurosurgery on the Front Lines:  
Conflict in Iraq and Afghanistan*



## INTERNATIONAL LEADERSHIP LECTURE

### YOON-WOO LEE

VICE CHAIRMAN AND CHAIRMAN OF THE BOARD OF DIRECTORS

SAMSUNG ELECTRONICS, CO., LTD.

**Tuesday, October 19 10:55 – 11:30 AM**

*Technological Innovation and Future Society*

**Y**oon-Woo Lee is currently Vice Chairman and Chairman of the Board of Directors of Samsung Electronics Co., Ltd. Prior to his 2008 appointment as Vice Chairman and CEO, Mr. Lee served various leadership roles within the company including Chairman, Global Collaboration and Chief Executive Officer of Samsung Advanced Institute of Technology. An engineer and 40-year veteran of Samsung, Mr. Lee's leadership and in-depth technology expertise have helped build Samsung into the world's largest electronics company. He has received many distinguished awards including the 60 Proud Engineers of Korea Award in 2006, the New Management Innovation Award in 1999, Order of Industrial Service Merit Award, Gold Tower, in 1999, the Grand Prize of Korean Productivity Award in 1995, The 20th Century Management Grand Prix in 1995, and the Order of Industrial Service Merit, Silver Tower, Korea Award in 1993.

Mr. Lee graduated with BSEE Degree from Seoul National University B.S.E.E College of Engineering in 1969.

In an age of super-specialists with focused projects and interests, Gregory Ara Dumanian, MD, is the consummate generalist. A summa cum laude from Harvard College, Dr. Dumanian returned to his roots on the south side of Chicago to study medicine at the University of Chicago where he graduated AOA.

Dr. Dumanian trained in general surgery at the Massachusetts General Hospital. He followed this with a residency in Plastic Surgery at the University of Pittsburgh for three years (including a research fellowship in thrombosis and microvascular surgery). He subsequently did a year of hand surgery at the Curtis Hand Center in Baltimore, where he focused on peripheral nerve surgery.

Recruited to Northwestern to perform hand surgery, Dr. Dumanian has developed a varied practice in abdominal wall reconstruction, reconstructive microsurgery, hand surgery, peripheral nerve surgery, and general plastic surgery. He created the "bionic arm procedure" for amputees along with Dr. Todd Kuiken – recognized as the first advance in upper extremity prosthetics since World War II. He has lectured nationally and internationally on the topics of abdominal wall reconstruction and peripheral nerve surgery, and has given instructional courses on these topics at national meetings. He has written 60 papers and 17 book chapters. He has active boards in surgery, plastic surgery, and hand surgery. He is an associate editor of the *Journal of Plastic and Reconstructive Surgery* and the *Journal of Hand Surgery*.

Dedicated to education, Dr. Dumanian is the program director in plastic surgery at Northwestern University. He has won the teaching award for plastic surgery on four occasions, and has won a similar award within the Department of Surgery five times.



## SPECIAL LECTURE

### GREGORY A. DUMANIAN, MD

PROFESSOR OF SURGERY AND PROGRAM DIRECTOR OF PLASTIC SURGERY  
NORTHWESTERN UNIVERSITY

**Wednesday, October 20 7:52 – 8:10 AM**

*Targeted Peripheral Nerve Reinnervation in Arm Amputees*





## SPECIAL LECTURE

### ERIC A. MANN, MD, PhD

CAPTAIN UNITED STATES PUBLIC HEALTH SERVICE

Eric A. Mann, MD, PhD, currently serves as the Clinical Deputy Director for the Division of Ophthalmic, Neurological, and Ear, Nose, and Throat Devices in the Center for Devices and Radiological Health (CDRH) at the US Food and Drug Administration. He earned his medical degree and his PhD in Microbiology and Immunology from the Medical College of Pennsylvania in 1988. After his internship in General Surgery at St. Francis Hospital and Medical Center, Hartford, Connecticut, he completed a residency in Otolaryngology-Head and Neck Surgery at the University of Connecticut Health Center, Farmington, Connecticut in 1993.

Dr. Mann is board-certified in his specialty and previously served as attending surgeon at the Walter Reed Army Medical Center (1993-1997) in Washington, DC, and as Senior Staff Surgeon at the NIH Clinical Center in Bethesda, Maryland (1999-2001). He holds an appointment as Assistant Professor of Surgery at the Uniformed Services University of the Health Sciences in Bethesda, Maryland, and serves as a commissioned officer in the US Public Health Service. He has been actively involved in the premarket regulation of devices since his arrival at CDRH in 2001.

**Wednesday, October 20 8:12 – 8:30 AM**

*Regulatory Considerations in  
Neurosurgery: FDA Perspective*

Bernard Lo, MD, currently serves at the University of California at San Francisco as Professor of Medicine and Director of the Program in Medical Ethics at UCSF and also National Program Director for the Greenwall Faculty Scholars Program in Bioethics. He is a member of the Institute of Medicine (IOM), where he served on the IOM Council, and chaired a recent IOM Committee on Conflicts of Interest in Medicine. He is Co-Chair of the Standards Working Group of the California Institute of Regenerative Medicine, which recommends regulations for stem cell research funded by the state of California. He is a member of the Centers for Disease Control and Prevention (CDC) Ethics Subcommittee of the Advisory Committee to the Director and serves on the DSMB for NIH-sponsored HIV vaccine trials and on the Ethics Working Group of the HIV Prevention Trials Network. At UCSF, Dr. Lo leads the Research Ethics Component of the NIH-funded Clinical and Translational Science Institute and is Co-Director of the Policy and Ethics Core of the Center for AIDS Prevention Studies. Dr. Lo is the author of *Resolving Ethical Dilemmas: A Guide for Clinicians* (4th ed., 2010) and *Ethical Issues in Clinical Research* (2010).



## SPECIAL LECTURE

### BERNARD LO, MD

PROFESSOR OF MEDICINE AND DIRECTOR  
OF THE PROGRAM IN MEDICAL ETHICS  
UNIVERSITY OF CALIFORNIA AT  
SAN FRANCISCO

**Wednesday, October 20 8:32 – 8:50 AM**

*Conflict of Interest: The Institute of  
Medicine Perspective*



**FOURTH ANNUAL  
JULIAN T. HOFF LECTURE**

**MICHAEL LEWIS**

FINANCIAL JOURNALIST AND  
BEST-SELLING AUTHOR

**Wednesday, October 20 10:05 – 10:35 AM**  
*A Morning with Michael Lewis*

A shrewd observer of politics, finance and the American scene, Michael Lewis combines keen insight with his signature wit, making him one of today's leading social commentators.

A renowned best-selling author, Lewis is also a regular contributor to *The New York Times Magazine*, *Vanity Fair*, *Slate* and *Bloomberg*. Lewis' most recent book, *The Big Short: Inside the Doomsday Machine* (2010), is a darkly humorous account of how the event that was considered impossible—the free fall of the American economy—finally occurred. He proves that truth really is stranger than fiction with a razor-sharp analysis of the heroes and villains that drove America's economy overboard.

Lewis first made a name for himself in 1989 with the chart-topping *Liar's Poker: Rising Through the Wreckage of Wall Street*, an inside look at his career as a bond trader that best-selling author Tom Wolfe called "the funniest book on Wall Street I've ever read," and earned Lewis the label of "America's poet laureate of capital" from The Los Angeles Times. *Liar's Poker* spent 62 weeks on The New York Times Best-Seller List and remains one of the signature books of the 1980s.

Lewis traversed the 1980s' get-rich-quick jungle with *The Money Culture* (1992); chronicled the 1996 presidential campaign in *Losers: The Road to Everyplace but the White House*; crafted a 20-week New York Times Best-Seller in 2001 with *The New, New Thing* ("The book that does for Silicon Valley what *Liar's Poker* did for Wall Street."); explored the internet boom in *Next: The Future Just Happened* (2002).

Lewis' 2003 release *Moneyball: The Art of Winning an Unfair Game* offers an unprecedented look behind the scenes of a Major League Baseball franchise. This New York Times best-seller details the effect that an innovative personnel approach has had in allowing the small-budget Oakland Athletics to consistently rank among baseball's best.

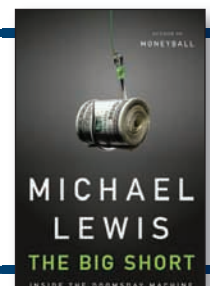
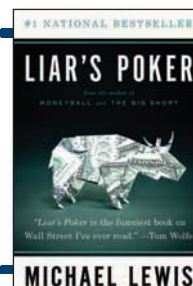
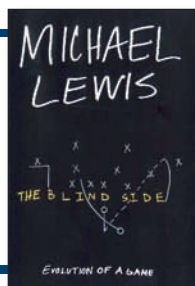
In 2006, Lewis took his second dive into the world of professional sports with *The Blind Side: Evolution of a Game*. He delves into the substructure of football and tells the inspirational true story of Baltimore Raven Michael Oher. The 2009 film adaptation of *The Blind Side*, starring Sandra Bullock, Tim McGraw and Kathy Bates, broke the box office record for the biggest opening weekend of a sports film in history.

Lewis' 2009 release *Home Game: An Accidental Guide to Fatherhood* (May 2009), is a compilation of stories he wrote for his column "Dad Again" in *Slate*, detailing the parenting realities thrust upon him—not always happily, but often hilariously—by the births of his three children.

A native of New Orleans, Michael Lewis graduated from Princeton University with a degree in art history and earned a master's at The London School of Economics. Prior to his career as an author, he worked with The Salomon Brothers on Wall Street and in London. He lives in Berkeley with his wife Tabitha Soren and their three children.



**Join us for a book signing in  
the Exhibit Hall – Booth #137!  
Wednesday, October 20  
11:30 AM**





# Green Matters to the CNS!

Partnering with San Francisco's Moscone Convention Center, the convention center that is leading the country in its green efforts and initiatives, the CNS has also taken steps to minimize its carbon footprint. Here are the actions the CNS together with the Moscone Convention Center are taking towards a greener tomorrow.

- 🍷 Nearly 2 million pounds of waste from the Moscone Convention Center is annually diverted from San Francisco's landfill.
- 🍷 The Moscone Convention Center relies on organic and locally grown produce and utilizes renewable resources for all food and beverage service.
- 🍷 The Moscone Convention Center provides an efficient recycling program that separates bottles, cans and glass.
- 🍷 The CNS provides the option to view the program book and meeting content online.
- 🍷 The Moscone Convention Center's lighting fixtures are the most energy-efficient and utilize their daylight sensors to reduce electricity.
- 🍷 The CNS limits the usage of bottled waters by offering water coolers.
- 🍷 All Annual Meeting Publications are printed using soy-based inks.
- 🍷 The CNS Online Evaluations and CME forms offer flexibility and expanded access to complete at your convenience with no paper waste.
- 🍷 The CNS utilizes reusable meeting signage throughout the convention center and hotel.
- 🍷 The CNS provides exhibitors with a paperless service manual and encourages exhibitors to provide more digital information sharing.
- 🍷 The CNS partners with a transportation vendor utilizing low-emission green transportation options including hybrids, flex-fuel and biodiesel vehicles when possible.
- 🍷 The CNS provides options for proper disposal of post-program recycling and waste.

**Minimize Your Carbon Footprint!**





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**Pain**

Julie G. Pilitsis

**Pediatric Neurological Surgery**

Mark D. Krieger

**Stereotactic and Functional**

**Neurosurgery**

Konstantin V. Slavin

**Tumor**

Atom Sarkar

Costas G. Hadjipanayis

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**Neurosurgical Societies**

Michael P. Steinmetz

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**Spine**

Michael W. Groff

**Peripheral Nerves**

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**Neurotrauma and Critical Care**

Roland A. Torres

**Pain**

Julie G. Pilitsis

**Pediatric Neurological Surgery**

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**Stereotactic and Functional**

**Neurosurgery**

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Brian T. Ragel  
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Frank S. Bishop, *Advisor*

**Resident SANS Challenge**

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Daniel Yoshor

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Andrea L. Strayer, MSN, APNP,  
CNRN



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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 Amyes	1980
Edward F. Downing	1984
J. Charles Rich	1986
Ronald I. Apfelbaum	1987
E. Fletcher Eyster	1988
Fremont P. Wirth	1989
Merwyn Bagan	1990
Roy W. Black	1992
Russell L. Travis	1993
Steven L. Giannotta	1995
John Thompson	1996
Charles L. Plante	1997
Robert H. Wilkins	1998
Gregory D. Willard	2000
Richard Perrin	2001
Laurie L. Behncke	2002
Katie O. Orrico	2003
Albert L. Rhoton, Jr.	2004
Beverly C. Walters	2005
CNS Auxiliary	2006
Rodrick Faccio	2007
Troy M. Tippett	2008
ThinkFirst Foundation	2009
<b>Alex B. Valadka</b>	<b>2010</b>

## CNS CLINICAL INVESTIGATION FELLOWSHIP AWARD WINNERS

P. David Adelson	1998
Peter C. Gerszten	1999
Abhaya Kulkarni	2000
Peter D. Angevine	2001
Masaki Oishi	2002
Vishal C. Gala	2003
J. Mocco	2004
Joshua Robert Dusick	2005
Eric S. Stiner	2006
Rahul Jandial	2007
Edward F. Chang	2008
Eric C. Chang	2009
<b>Arnold B. Etame</b>	<b>2010</b>

## CNS RESIDENT AWARD WINNERS

Arthur I. Kobrine	1974
Stephen Brem	1975
Philip H. Gutin	1976
Robert F. Spetzler	1977
Martin G. Luken, 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 Chiocca	1994
Grant P. Sinson	1995
David W. Pincus	1996
Andrew K. Metzger	1997
Robert M. Friedlander	1998
Kelly D. Foote	1999
Abhaya Kulkarni	2000
Kadir Erkman	2001
Nitin Tandon	2002
Malini Narayanan	2003
Gabriel C. Tender	2004
Manish K. Aghi	2005
John A. Cowan, Jr.	2006
Hongyan Jenny Zou	2007
Dimitris G. Placantonakis	2008
Thomas Santarius	2009
<b>Matthew J. McGirt</b>	<b>2010</b>

## PAST CNS FOUNDERS' LAUREL RECIPIENTS

David G. Piepgras	2004
John A. Jane, Sr.	2005
Albert L. Rhoton	2006
Tetsuo Kanno	2007
David G. Kline	2008
L. Nelson Hopkins, III	2009
<b>Robert F. Spetzler</b>	<b>2010</b>

## CNS CLINICAL FELLOWSHIP AWARD WINNERS

Brian Andrews	1987	James K. Liu	2005
Charles L. Branch, Jr.	1987	Alexander M.I. Mason	2005
Randall Powell	1987	Sanjay Mongia	2005
Eric L. Zager	1988	Richard Reed	2005
Jonathan E. Hodes	1989	John H. Chi	2006
James T. Rutka	1989	Andrea Jea	2006
Claudio A. Feler	1990	Eric C. Leuthardt	2006
Mazen Khayata	1990	Sharad Rajpal	2006
Prem K. Pillay	1991	Gordon T. Sakamoto	2006
Isabelle M. Germano	1992	Nader Sanai	2006
Howard C. Chandler, Jr.	1993	Eric Stiner	2007
Nayef Al-Rodhan	1993	Sumit Das	2007
John D. Day	1994	Brad Elder	2007
Gregory J. Przybylski	1994	Daniel Orringer	2007
Jason A. Brodkey	1995	Ben Waldau	2007
Fotios D. Vrionis	1995	Vaninder Chhabra	2007
Bruce E. Pollock	1996	Isaac Yang	2007
John H. Wong	1996	Patrick Hsieh	2007
Ali R. Rezai	1997	Iyla Laufer	2007
Fernando L. Vale	1997	Deb A. Bhowmick	2008
A. Giancarlo Vishteh	1997	Spiros L. Blackburn	2008
J. Nozipo Maraire	1998	Abraham Boskovitz	2008
Ghassan Bejjani	1998	Edward F. Chang	2008
Daniel Yoshor	1999	Hayan Dayoub	2008
Odette Harris	1999	Johnathan A. Engh	2008
Robert J. Spinner	2000	Gregory W.J. Hawryluk	2008
Gavin W. Britz	2000	Joseph C. Hsieh	2008
William Mitchell	2000	Christopher A. Iannotti	2008
Alan Boulos	2000	Jody Leonardo	2008
James McInerney	2001	Timothy H. Lucas, II	2008
Lynda Jun-San Yang	2001	Cian J. O'Kelly	2008
Geoffrey P. Zubay	2001	Chirag Patil	2008
Diana Barrett-Wiseman	2002	Angel N. Boev	2009
Alexandra J. Golby	2002	David W. Cadotte	2009
G. Michael Lemole, Jr.	2002	Eric C. Chang	2009
Charles Y. Liu	2002	Azadeh Farin	2009
John C. Wellons, III	2002	Marie-Noëllë Hérbert-Blouin	2009
Aurangzeb Nagy	2003	Kristopher Kahle	2009
Deepa Soni	2003	Jared Knopman	2009
Elizabeth Tyler-Kabara	2003	Ali K. Ozturk	2009
Samir Lapsiwala	2003	Nirav N. Patel	2009
Joshua P. Medow	2003	Gabriel Zada	2009
Gyorgy Szieifert	2003	<b>Adib Abila</b>	<b>2010</b>
Richard Benjamin Rodgers	2004	<b>Jason J. Chang</b>	<b>2010</b>
David M. Hasan	2004	<b>Douglas Cook</b>	<b>2010</b>
Karim Mukhida	2004	<b>Arnold B. Etame</b>	<b>2010</b>
Carlos A. Bagley	2004	<b>Betsy D. Hughes</b>	<b>2010</b>
John F. Hamilton	2004	<b>Kristopher Kahle</b>	<b>2010</b>
Henry E. Aryan	2005	<b>Tyler J. Kenning</b>	<b>2010</b>
Jorge A. Gonzalez-Martinez	2005	<b>Alexander Khalessi</b>	<b>2010</b>
Jeffrey J. Laurent	2005	<b>Sabareesh K. Natarajan</b>	<b>2010</b>

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**Daniel K. Resnick, MD**  
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FACS, FAAP  
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Gerald E. Rodts, Jr., MD  
P. David Adelson, MD, FACS,  
FAAP

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Christopher E. Wolfla, MD  
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Ashwini Dayal Sharan, MD  
Ganesh Rao, MD  
Saleem I. Abdulrauf, MD, FACS

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Michael P. Steinmetz, MD  
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Brian T. Ragel, MD  
Not Pictured:  
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Jason P. Sheehan, MD, PhD, FACS



# Celebrating Our Past

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

\* 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

## CNS ANNUAL MEETING PAST HONORED GUESTS

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

\* indicates deceased



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L. Fernando Gonzalez  
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Hadjipanayis  
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Andre Machado  
Srinivas K. Prasad  
Charles J. Prestigiacomo  
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Howard A. Riina  
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Shaun T. O'Leary  
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Srinivas K. Prasad  
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Brian T. Ragel  
Ganesh Rao  
Ashwini Dayal Sharan

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Luis Alencar Biurrum Borba  
Jereoen R. Coppens  
Aneela Darbar  
Ian F. Dunn  
Jorge Luis Eller  
Jason Andrew Felton  
Zoher Ghogawala  
Gerald A. Grant  
Ricardo A. Hanel  
Daniel Hänggi  
Brian Lim Hoh  
Shekar N. Kurpad  
Jonathon J. Lebovitz  
James K. Liu  
Kelly B. Mahaney  
Stephen J. Monteith  
Brian Nahed  
Mika Risto Niemela  
Sheri K. Palejwala  
Aditya S. Pandey  
Jogi V. Pattisapu  
Tanya Quinn  
Brian T. Ragel  
Ganesh Rao  
Pablo F. Recinos  
Mohan Y. S.  
Deanna Mary Sasaki-Adams  
Karl Schaller  
Ashwini Dayal Sharan  
Jason P. Sheehan  
Michael P. Steinmetz  
Sonia Teufack  
Ugur Ture  
Jamie S. Ullman  
Miroslav J. Vukic

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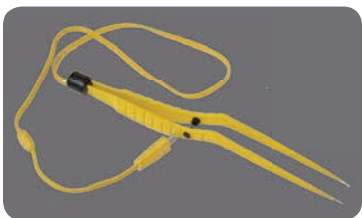
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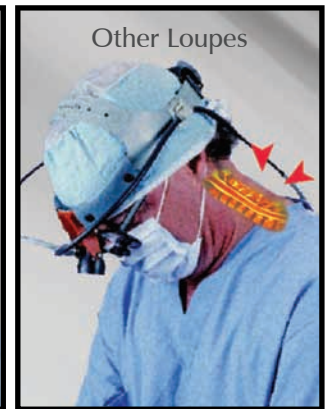


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## 2010 CNS DOMESTIC FELLOWS

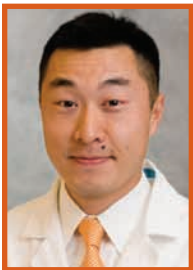


**Adib Ablu, MD**  
CNS/ev3 Neurovascular Fellowship

Adib Ablu, MD, is a fifth-year neurosurgery resident at Barrow Neurological Institute. At Duke University, he completed a double major in electrical and biomedical engineering. He then attended medical school at University of Pittsburgh. In residency, Dr. Ablu became interested in Cerebrovascular and

Skull Base Surgery and in related clinical and translational research. He is working on prospective studies involving children with hypothalamic hamartomas and prospective trials of antibiotic-impregnated ventricular catheters and has presented his research nationally and internationally.

While in residency, he will attend the University at Buffalo to pursue Endovascular training. Under the mentorship of Drs. Peter Nakaji, John Wanebo, and Mark Preul, the CNS/ev3 Neurovascular Fellowship will allow Dr. Ablu to investigate potential upregulatory angiogenic therapies in an animal model of moya-moya.



**Jason J. Chang, MD**  
CNS Dandy Fellowship

Jason J. Chang, MD, earned a Bachelors in Science within the field of Neuroscience and Behavioral Biology at Emory University. He went on to pursue an MD at the University of Kentucky and spent time as a Doris Duke Clinical Research Fellow at the University of Texas at Southwestern Medical Center.

He is a resident at the University of Washington with interests in cerebral metabolism and functional outcomes following physiologic insults. Under the mentorship of Drs. Randall M. Chesnut and Nancy Temkin, he will examine functional correlates to brain oxygenation in the setting of traumatic brain injury.



**Douglas Cook, BSc, MD, PhD**  
CNS/Micrus Endovascular Neurosurgery Fellowship

D.J. Cook, BSc, MD, PhD, is a neurosurgery resident at the University of Toronto. He is currently enrolled in the Surgeon-Scientist Program finishing a PhD in the Institute of Medical Science, University of Toronto, focused on molecular and preclinical

studies in primate models of stroke under the supervision of Dr. Michael Tymianski, Principal Investigator of the Toronto Western Hospital Neuroprotection Lab. Dr. Cook is a graduate of the University of Toronto Medical School and the University of Guelph Department of Biological Sciences. He resides in Toronto with his wife Rebecca and children Douglas and Elise. Upon completing his training, Dr. Cook intends to pursue a fellowship in complex cerebrovascular and skull base surgery.



**Arnold B. Etame, MD**  
CNS Wilder Penfield Fellowship

Arnold B. Etame, MD, received his BS Magna Cum Laude from the SUNY at New Paltz, his MD with Distinction in Research from the University of Iowa where he was elected to the Alpha Omega Alpha Honor Society, and commenced Neurosurgery Specialization at the University of Michigan in

2005. Under the tutelage of Dr. James T. Rutka, he was awarded a Neuro-oncology Research Fellowship with the Labatt Brain Tumor Research Centre at the Hospital for Sick Children in Toronto. He is undertaking PhD studies with Dr Rutka as well at the University of Toronto, with a focus on optimizing nanoparticle-based delivery strategies for targeting invasive pathways in malignant gliomas. He is very grateful to be the recipient of the recipient of CNS Wilder Penfield Fellowship.



**Betsy D. Hughes, MD**  
CNS/Synthes Spine Fellowship

Betsy D. Hughes, MD, is currently a third year neurosurgery resident at Duke University Medical Center. She completed her undergraduate degree in Biology from the University of Georgia, and attended medical school at the Medical College of Georgia. She has a devoted interest in spinal cord

injury. She will investigate the therapeutic potential of HMG-CoA reductase inhibitors (statins) in acute spinal cord injury under the guidance of Dr. David Warner.



**Kristopher Kahle, MD, PhD**  
CNS/Penumbra Fellowship

Kristopher Kahle, MD, PhD, is a PGY-4 neurosurgery resident at the Massachusetts General Hospital and Harvard Medical School in Boston. He received his undergraduate degree in philosophy from the University of Chicago. At Yale University School of Medicine, he performed his Ph.D. training in

cellular and molecular physiology with Dr. Richard Lifton. As the 2010-2011 CNS/Penumbra Fellowship recipient, he will study the role of electroneutral ion transport processes in cytotoxic cerebral edema following ischemic stroke, in collaboration with Dr. J. Marc Simard at the University of Maryland. Dr. Kahle has clinical interests in pediatric neurosurgery.

## 2010 CNS MEDICAL STUDENT FELLOWS



**Tyler J. Kenning, MD**  
CNS/Karl Storz Endoscopy Fellowship

Tyler J. Kenning, MD, is currently a neurosurgery resident at Albany Medical Center. After completing his undergraduate degree in biology from Washington and Lee University, he attended Jefferson Medical College. During residency, he developed an interest in both traumatic brain injury and intracranial endoscopy. With the CNS/Karl Storz Endoscopy Fellowship and along with Dr. Yu-Hung Kuo, he will be conducting a randomized, controlled trial for the treatment of adult intraventricular hemorrhage, comparing intraventricular thrombolysis and endoscopic evacuation. Upon completion of his residency, he will be conducting a fellowship in endoscopic skull base surgery with Dr. James Evans at Thomas Jefferson University Hospital.



**Alexander Khalessi, MD**  
CNS/MicroVention Vascular Fellowship

After completing his undergraduate and master's training at Stanford University, Alexander Khalessi obtained his MD from the Johns Hopkins School of Medicine. Having trained in diagnostic angiography as a USC neurosurgical resident, Dr. Khalessi completed his endovascular neurosurgical fellowship with Drs. Nick Hopkins and Elad Levy at the University of Buffalo. He further serves as a member of the Residency Review Committee for Neurological Surgery at the ACGME.

Dr. Khalessi currently operates as a clinical instructor at LAC and USC. He supervises the neurosurgical, endovascular, and stroke service for the medically indigent of Los Angeles. The CNS/MicroVention Vascular Fellowship will further his research interests in mechanical thrombectomy for ischemic stroke. Dr. Khalessi will ultimately pursue a combined open and endovascular neurosurgical practice in June 2011.



**Sabareesh K. Natarajan, MD, MS**  
CNS Cushing Fellowship

Sabareesh K. Natarajan, MD, MS, is a neurosurgery resident at the University at Buffalo. He completed his General Surgery residency at PGIIMER, one of the top institutes in India with a special interest in peripheral vascular surgery. He did clinical/ research fellowships in Cerebrovascular Surgery with Dr. Laligam N. Sekhar at the University of Washington and Neuroendovascular surgery with Drs. Hopkins and Levy at UB Neurosurgery and Toshiba Stroke Research Center. His research interests are outcomes after treatment of cerebrovascular pathologies, endovascular stroke therapy, robotics and surgical device developments, vascular grafts, cerebral hemodynamic and animal models for intracranial aneurysms. Now with the support of the CNS Cushing's fellowship, Dr. Natarajan will be evaluating the role of transvenous angioplasty for treatment of chronic venous insufficiency in Multiple Sclerosis by a randomized controlled trial conducted at the University of Buffalo.



**Brian Hanak**  
CNS/CSNS Medical Student Summer Fellowship in Socioeconomic Research

Brian Hanak became interested in neuroscience as an undergraduate at Yale University where he graduated with honors in biology (BS, neuroscience focus) and researched phenotypic differentiation of olfactory bulb neural stem cells when he was not running on the cross-country and track teams. Beginning medical school with the intention of pursuing a career in neurosurgery he served as the president of the Harvard Medical School Cushing Neurosurgical Society and studying immunologic ligand expression in glioblastoma. Now, entering his final year of medical school, he is looking forward to neurosurgery residency training and he is grateful to the CNS/CSNS for supporting his next research endeavor as he investigates post-operative intensive care unit requirements following elective craniotomy under the mentorship of Dr. William Curry at Massachusetts General Hospital.



**Grettel Zamora-Berridi**  
CNS/CSNS Medical Student Summer Fellowship in Socioeconomic Research

Grettel Zamora-Berridi is a second year medical student at the University of Michigan Medical School. She graduated from Johns Hopkins University with a BA in Neuroscience, and further pursued a Master's in Health Science (MHS) from Johns Hopkins School of Public Health. Prior to starting medical school, Ms. Zamora-Berridi spent several years working as research assistant in the Brain Tumor and Stem Cell Laboratory at Johns Hopkins Medical School. Under the mentorship of Dr. Karin Muraszko and the support of the University of Michigan Department of Neurosurgery's Project Shunt she will be looking at the socioeconomic factors and the role of Fumonisin FB1 in the etiology of neural tube defects in Guatemala.

## Announcing the 2011-2012 CNS Fellowships!

Log on to [www.cns.org](http://www.cns.org) for details and to submit your application. Deadline November 30, 2010.



# CONTINUING MEDICAL EDUCATION (CME)

## Accreditation

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

## CME Credit

US Physicians: The CNS designates this live activity for a maximum of 41 *AMA PRA Category 1 Credits™*. Physicians should only claim credit commensurate with the extent of their participation in the activity.

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

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 and Neuromodulation Symposium

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) for Sunday morning and afternoon half-day Practical Courses and a maximum of seven (7) *AMA PRA Category 1 Credits™* for each eligible full-day Practical Course or the Neuromodulation Symposium. 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.

Physicians may claim *AMA PRA Category 2 Credits™* for viewing scientific posters. Physicians should self-claim credit on their AMA PRA certificate application form. Please visit the AMA web site for details at [www.ama-assn.org](http://www.ama-assn.org).

## Claiming CME Credit

CME credits can be claimed through the online CME tracking system at [www.cns.org](http://www.cns.org). The system creates and prints a CME certificate immediately following the CNS Annual Meeting either while you are still in San Francisco or from the convenience of your home or office. CME certificates will not be mailed. Log in using either your registration ID number (see the six digit number on your badge) and your last name, the e-mail address that you used to register and your last name, or your CNS username and password. After logging in, simply follow the links to claim credits. CME Certificates can be printed directly from the online CME system once you have entered the hours you are claiming. Physicians should only claim credit for the educational activities at the Annual Meeting in which they participated. You will also be able to complete the evaluations at the same time although it is not mandatory to receive CME credit.

## Disclosure Statement

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. Speakers from the audience are also required, therefore, to indicate any relevant personal/professional relationships as they discuss a given topic. Handout materials are prepared and submitted for distribution by

the presenters who are solely responsible for their content.

Before the program, all speakers will disclose the existence of any financial interest and/or other relationship they might have with the manufacturer(s) of any commercial product(s) to be discussed during their presentation. Disclosures can be found on pages 30-40.

## Evaluations

All evaluations are available online. You will receive an e-mail with a link to the evaluation web site. The evaluations can also be accessed from [www.cns.org](http://www.cns.org). You will need to log in with either your registration ID number (see the six digit number on your confirmation e-mail and your badge) and last name, the e-mail address that you used to register and your last name, or your CNS username and password. Evaluations for each session will be available on the web site shortly after the session has concluded.

Evaluations are essential to ensure that the Congress of Neurological Surgeons is producing the highest quality medical education. We appreciate your feedback!

## 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 40-42.

## Meeting Purpose

The purpose of the 2010 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.

## **Corporate Supporters of the CNS Annual Meeting, Practical Courses and 3-D Cadaveric Demonstrations**

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*Consulting Agreement* – Pathology Department, Selcuk University, Meram School of Medicine, Konya, Turkey

**Bakay, Roy A. E.<sup>F</sup>**

*Consulting Agreement* – Bayer; Medtronic Inc.  
*Grants* – National Institutes of Health

**Baltuch, Gordon H.<sup>P,F</sup>**

*Consulting Agreement* – Medtronic

**Barbaro, Nicholas M.<sup>F</sup>**

*Grants* – Elekta; National Institutes of Health

**Barnett, Gene H.<sup>F</sup>**

*Consulting Agreement* – Monteris Medical, Inc.  
*Other Financial or Material Support* – Medtronic

**Baysefer, Alper<sup>F</sup>**

*Consulting Agreement* – Neurosurgery Department, Selcuk University, Meram School of Medicine, Konya, Turkey

**Beaurain, Jacques<sup>F</sup>**

*Other Financial or Material Support* – LDR Medical

**Belzberg, Allan J.<sup>F</sup>**

*Grants* – Children's Tumor Foundation

**Bendok, Bernard R.<sup>P,F</sup>**

*Grants* – Microvention  
*Other Financial or Material Support* – Microvention

**Benzel, Edward C.<sup>P,F</sup>**

*Board Trustee or Officer Position* – Axiomed; OrthoMEMS; Turning Point  
*Consulting Agreement* – Altiva; Axiomed; DePuy; Integra LifeSciences; Nanovis; OrthoMems; Spinemark; Turning Point  
*Grants* – OrthoMEMS  
*Honoraria* – DePuy Spine; Integra  
*Other Financial or Material Support* – Axiomed; DePuy Spine  
*Royalty* – DePuy

*Ownership Interest* – Axiomed; CBI; OrthoMEMS

*Stockholder* – Axiomed; CBI; DePuy Spine; OrthoMEMS

**Berenstein, Alejandro<sup>F</sup>**

*Stockholder* – VasSol, Inc

**Berger, Mitchel S.<sup>P,F</sup>**

*Other Financial or Material Support* – National Institutes of Health

**Bernard, Pierre<sup>F</sup>**

*Other Financial or Material Support* – LDR Medical

**Berven, Sigurd<sup>F</sup>**

*Consulting Agreement* – Biomet; DePuy; Kyphon; Medtronic; Osteotech; Pioneer; US Spine  
*Grants* – AO; DePuy; Kyphon; Medtronic  
*Honoraria* – Kyphon  
*Other Financial or Material Support* – Osteotech; Scient's  
*Ownership Interest* – Acculif

**Bess, Shay<sup>F</sup>**

*Consulting Agreement* – Alphatec; Nuvasive; Stryker  
*Grants* – DePuy Spine

**Beutler, William J.<sup>F</sup>**

*Consulting Agreement* – Globus Medical Incorporation

**Bilsky, Mark H.<sup>F</sup>**

*Honoraria* – Depuy Spine

**Boachie-Adjei, Oheneba<sup>F</sup>**

*Consulting Agreement* – DePuy Spine; K2M; Osteotech  
*Grants* – DePuy Spine  
*Honoraria* – DePuy Spine  
*Other Financial or Material Support* – K2M  
*Stockholder* – K2M

**Boulis, Nicholas M.<sup>P,F</sup>**

*Consulting Agreement* – Ceregene; Medtronic  
*Grants* – NeuralStem  
*Other Financial or Material Support* – Emory University; NeuralStem

**Branch, Charles L.<sup>F</sup>**

*Consulting Agreement* – Medtronic

**Bridwell, Keith<sup>F</sup>**

*Consulting Agreement* – DePuy; Medtronic; Stryker  
*Grants* – Medtronic

**Bruce, Jeffrey N.<sup>F</sup>**

*Grants* – National Institutes of Health

**Bullock, M. Ross<sup>F</sup>**

*Consulting Agreement* – Codman; Integra; Oxygen Biotherapeutics  
*Grants* – Department of Defense

**Burton, Douglas C.<sup>F</sup>**

*Consulting Agreement* – DePuy Spine  
*Grants* – DePuy Spine  
*Other Financial or Material Support* – DePuy Spine  
*Stockholder* – DePuy Spine

**Cannestra, Andrew F.<sup>F</sup>**

*Consulting Agreement* – Aesculap Spine; Custom Spine; DePuy Spine; Kyphon/Medtronic

**Cengiz, Sahika Liva<sup>F</sup>**

*Consulting Agreement* – Neurosurgery Department, Selcuk University, Meram School of Medicine, Konya, Turkey

**Chabardès, Stéphan<sup>F</sup>**

*Grants* – Medtronic

**Chang, Steven D.<sup>F</sup>**

*Stockholder* – Accuray

**Chang, Susan<sup>F</sup>**

*Grants* – Novartis; Schering Plough

**Charbel, Fady T.<sup>F</sup>**

*Board Trustee or Officer Position* – VasSol Inc.  
*Consulting Agreement* – Transonic, inc  
*Stockholder* – Vassol, inc



# DISCLOSURE INFORMATION

**Chaudhuri, Ajay<sup>F</sup>**

*Honoraria* – BMS; Lilly; Merck; Novo Nordisk; Sanofi–Aventis

**Chen, Thomas C.<sup>P,F</sup>**

*Board Trustee or Officer Position* – ERC; NeoOnc; Pharmaco–kinesis  
*Ownership Interest* – Aespis; Axonology; C5Rx; NeOnc; Tocagen  
*Salary* – ERC; Pharmaco–kinesis  
*Stockholder* – AITI; Axonology; C5Rx; Tocagen

**Cheng, Ming Liang<sup>F</sup>**

*Grants* – Medtronic

**Cheng, Joseph S.<sup>P,F</sup>**

*Honoraria* – Synthes

**Chesnut, Randall<sup>F</sup>**

*Consulting Agreement* – Integra Life Sciences; Synthes

**Chewing, Samuel J.<sup>F</sup>**

*Consulting Agreement* – DePuy

**Chi, John<sup>P</sup>**

*Consulting Agreement* – Stryker Spine

**Chin, Lawrence S.<sup>F</sup>**

*Consulting Agreement* – Confluent Surgical Inc.

**Chiocca, E. Antonio<sup>P,F</sup>**

*Consulting Agreement* – Bexion; Ceregene  
*Honoraria* – Journal of Neurosurgery  
*Royalty* – Oxford Biomedica UK

**Choi, Gun<sup>F</sup>**

*Consulting Agreement* – Wolf

**Clavenna, Andrew<sup>F</sup>**

*Consulting Agreement* – Globus Medical Incorporation

**Clifton, Guy L.<sup>P</sup>**

*Ownership Interest* – Beckton Dickinson; Johnson and Johnson; MedeCoach; Novartis; Pfizer; Roche Pharmaceuticals; Sanofi Aventis; Summit Air Ambulance

**Cockroft, Kevin M.<sup>P,F</sup>**

*Grants* – Coaxia Inc.; Medical Research Council (UK); National Institutes of Health  
*Honoraria* – Bayer Nippon  
*Other Financial or Material Support* – ev3 Endovascular

**Colen, Chaim B.<sup>P,F</sup>**

*Honoraria* – Colen Publishing, LLC  
*Ownership Interest* – Colen Publishing, LLC

**Collins, Michael W.<sup>F</sup>**

*Consulting Agreement* – ImpACT Applications, INC.

**Connolly, Patrick J.<sup>F</sup>**

*Consulting Agreement* – Apatech  
*Grants* – Apatech

**Coplin, William M.<sup>F</sup>**

*Consulting Agreement* – Astellas Pharma US; EKR Therapeutics; Integra Neurosciences

**Coric, Domagoj<sup>F</sup>**

*Consulting Agreement* – Depuy Spine; Pioneer Surgical; Spinal Motion; Spinewave  
*Stockholder* – Pioneer Surgical; Spinewave

**Cosgrove, Rees<sup>F</sup>**

*Stockholder* – Confluent Surgical Inc.; Covidien

**Dacey, Ralph G.<sup>P,F</sup>**

*Board Trustee or Officer Position* – AANS; Neuroolutions; Society of Neurological Surgery  
*Consulting Agreement* – Anspach; Lanx, Inc.; Pulse Therapeutics, Inc.; Synergetics, Inc.  
*Other Financial or Material Support* – Stereotaxis, Inc  
*Ownership Interest* – Endostim, Inc.; Neuroolutions, Inc  
*Royalty* – Anspach; Synergetics, Inc  
*Stockholder* – Endostim; Stereotaxis

**Dailey, Andrew T.<sup>F</sup>**

*Consulting Agreement* – Biomet  
*Grants* – Stryker

**Dam–Hieu, Phong<sup>F</sup>**

*Grants* – LDR Medical

**Dandona, Paresh<sup>F</sup>**

*Consulting Agreement* – Amylin; GSK; Sanofi–Aventis  
*Grants* – Amylin; GSK; Sanofi–Aventis  
*Honoraria* – Amylin; BMS; Eli Lilly; GSK; Merck; Sanofi–Aventis;  
*Other Financial or Material Support* – Sanofi–Aventis

**David, Carlos A.<sup>P,F</sup>**

*Consulting Agreement* – Codman Neurovascular

**De Salles, Antonio A. F.<sup>F</sup>**

*Grants* – Medtronic  
*Honoraria* – BrainLab

**Dekutoski, Mark B.<sup>F</sup>**

*Consulting Agreement* – Medtronic  
*Other Financial or Material Support* – Medtronic

**Delaney, Peter<sup>F</sup>**

*Consulting Agreement* – Optiscan Ltd, Pty

**Delashaw, Johnny B.<sup>F</sup>**

*Consulting Agreement* – Confluent Surgical Inc.; Covidien

**DeMonte, Franco<sup>F</sup>**

*Consulting Agreement* – Medtronic

**Deshmukh, Vinay<sup>P,F</sup>**

*Consulting Agreement* – Pioneer Surgical Technology

**Dufour, Thierry<sup>F</sup>**

*Other Financial or Material Support* – LDR Medical

**Duhaime, Ann–Christine<sup>F</sup>**

*Grants* – National Institutes of Health

**Dumont, Aaron S.<sup>F</sup>**

*Consulting Agreement* – Actelion Pharmaceuticals  
*Grants* – National Institutes of Health

**Durden, Donald L.<sup>F</sup>**

*Consulting Agreement* – Semaphore

**Eck, Jason<sup>F</sup>**

*Consulting Agreement* – Medtronic  
*Grants* – Apatech

**Ecklund, James M.<sup>P</sup>**

*Consulting Agreement* – Brainscope  
*Ownership Interest* – NeuroStrike, LLC

**Eddleman, Christopher S.<sup>P,F</sup>**

*Grants* – Bracco

**Elias, W. Jeffrey<sup>P,F</sup>**

*Honoraria* – Focused Ultrasound Surgery Foundation

**Erdi, Mehmet Fatih<sup>F</sup>**

*Consulting Agreement* – Neurosurgery Department, Selcuk University, Meram School of Medicine, Konya, Turkey

**Eskander, Mark S.<sup>F</sup>**

*Grants* – Apatech

**Esposito, Felice<sup>F</sup>**

*Grants* – Baxter; Covidien

**Federici, Thais<sup>F</sup>**

*Honoraria* – NeuralStem

**Fehlings, Michael G.<sup>P,F</sup>**

*Consulting Agreement* – Covidien; Depuy Spine  
*Grants* – Baxter; DePuy Spine; Medtronic; Synthes  
*Other Financial or Material Support* – Baxter; Depuy Spine; Synthes  
*Royalty* – Depuy Spine

**Fessler, Richard G.<sup>F</sup>**

*Consulting Agreement* – Medtronic; Stryker  
*Grants* – Medtronic

**Foley, Kevin T.**

*Consulting Agreement* – ArthroCare; Medtronic; NuVasive  
*Intellectual Fees* – ArthroCare  
*Ownership Interest* – TrueVision  
*Royalty* – Medtronic

**Foote, Kelly D.<sup>F</sup>**

*Grants* – ANS/St. Jude; Medtronic Neurological; Neuropace  
*Other Financial or Material Support* – Medtronic Neurological; St. Jude

**Fountas, Kostas N.<sup>F</sup>**

*Grants* – Johnson & Johnson Hellas

**Fukushima, Takanori<sup>F</sup>**

*Consulting Agreement* – American Surgical Sponges; Anspach; Biomet; Integra; Mizuho America

**Gaab, Michael R.<sup>F</sup>**

*Consulting Agreement* – Karl Storz

**Gailloud, Philippe<sup>F</sup>**

*Consulting Agreement* – Codman Neurovascular  
*Other* – Seimens Medical

**Gardner, Paul A.<sup>F</sup>**

*Other Financial or Material Support* – KLS Martin; Storz; Stryker

**Gavin, Cormac G.<sup>F</sup>**

*Grants* – Anspach/ Forth Medical UK

**Geisler, Fred H.<sup>F</sup>**

*Consulting Agreement* – Aesculap; Medtronic; NuVasive; SI–BONE, Inc.; Spinal Motion; Vertiflex; Zimmer  
*Stockholder* – Disc Motion; Impliant

**Gerdes, Jeffrey S.<sup>F</sup>**

*Grants* – Anulex Technologies

**Gerszten, Peter C.<sup>F</sup>**

*Consulting Agreement* – ArthroCare

**Ghajar, Jamshid<sup>F</sup>**

*Board Trustee or Officer Position* – Brain Trauma Foundation; Neurodynamics Inc; Sync–Think Inc.

**Gill, Steven<sup>F</sup>**

*Consulting Agreement* – Medtronic; Renishaw

**Gjoraas, Amy<sup>F</sup>**

*Other Financial or Material Support* – Medtronic, Inc.

**Glassman, Steven D.<sup>F</sup>**

*Consulting Agreement* – Medtronic  
*Grants* – Medtronic  
*Other Financial or Material Support* – Medtronic

**Gokaslan, Ziya L.<sup>F</sup>**

*Grants* – AO North America  
*Other Financial or Material Support* – AO North America; AO Spine; DePuy Spine; Integra; NREF  
*Stockholder* – Spinal Kinetics; U.S. Spinal Technologies

**Golfinos, John G.<sup>P,F</sup>**

*Honoraria* – Medtronic  
*Ownership Interest* – Viewray

# DISCLOSURE INFORMATION

**Graham-Smith, Arnold<sup>F</sup>**

*Consulting Agreement* – SI-BONE, Inc.

**Groff, Michael W.<sup>P,F</sup>**

*Consulting Agreement* – Biomet EBI Spine; DePuy Spine  
*Other Financial or Material Support* – Biomet EBI Spine; DePuy Spine  
*Royalty* – Biomet EBI Spine; DePuy Spine

**Gross, Robert E.<sup>P,F</sup>**

*Consulting Agreement* – Advanced Bionic Inc.; Bayer Healthcare; Boston Scientific; Gene Grants; St. Jude's Medical/ANS  
*Grants* – Medtronic; Neuropace  
*Stockholder* – NeuroVista

**Gunel, Murat<sup>P,F</sup>**

*Grants* – National Institutes of Health/National Institute of Neurological Disorders and Stroke

**Gwinn, Ryder<sup>F</sup>**

*Consulting Agreement* – ANS/St. Jude  
*Stockholder* – Nevro Corp.

**Haglund, Michael M.<sup>F</sup>**

*Grants* – National Institutes of Health R01 Cortical Organization of Language

**Haid, Regis W.<sup>F</sup>**

*Other Financial or Material Support* – Globus Medical; Medtronic

**Halki, J. Jay<sup>F</sup>**

*Consulting Agreement* – SI-BONE, Inc.

**Hanel, Ricardo A.<sup>P,F</sup>**

*Consulting Agreement* – Neurovasx

**Harrop, James S.<sup>P,F</sup>**

*Consulting Agreement* – DePuy Spine; Medtronic Spine; Neural Stem  
*Honoraria* – Axiomed; Neurostem  
*Other Financial or Material Support* – Ascubio; Axiomed; Geron

**Hart, David J.<sup>F</sup>**

*Consulting Agreement* – Aesculap Spine; DePuy Spine

**Hart, Robert<sup>F</sup>**

*Consulting Agreement* – Medtronic; SeaSpine  
*Grants* – DePuy Spine; Medtronic  
*Honoraria* – DePuy Spine; Kyphon; Medtronic  
*Other Financial or Material Support* – DePuy Spine

**Hartl, Roger<sup>F</sup>**

*Consulting Agreement* – ApaTech; BrainLab; Synthes

**Hawkinson, Nicola<sup>F</sup>**

*Consulting Agreement* – DePuy Spine  
*Stockholder* – Spine-Search, LLC

**Heary, Robert F.<sup>F</sup>**

*Grants* – Biomet Spine; DePuy Spine  
*Other Financial or Material Support* – Biomet Spine; DePuy Spine; Zimmer Spine  
*Royalty* – DePuy Spine; Thieme Medical Publishers; Zimmer Spine

**Henderson, Jaimie M.<sup>P,F</sup>**

*Honoraria* – Medtronic  
*Other Financial or Material Support* – Intellect Medical; Nevro Corp.

**Hilton, Donald L.<sup>F</sup>**

*Consulting Agreement* – Medtronic

**Hoh, Brian Lim<sup>F</sup>**

*Consulting Agreement* – Actelion Pharmaceuticals; Micrus Endovascular  
*Grants* – Brain Aneurysm Foundation; Codman; Thomas H. Maren Foundation; Micrus; National Institutes of Health  
*Other Financial or Material Support* – Micrus Endovascular  
*Honoraria* – Actelion; Codman  
Neurovascular; Cordis

**Hokanson, Karl<sup>F</sup>**

*Other Financial or Material Support* – Medtronic, Inc.

**Holly, Langston T.<sup>F</sup>**

*Consulting Agreement* – Medtronic  
*Grants* – National Institutes of Health

**Hopkins, L. Nelson<sup>F</sup>**

*Board Trustee or Officer Position* – AccessClosure; Micrus  
*Consulting Agreement* – Abbott; AccessClosure; Bard; Boston Scientific; Cordis; Lumen Biomedical; Micrus; Toshiba; W. L. Gore  
*Grants* – Abbott; Boston Scientific; Cordis; ev3; Toshiba  
*Honoraria* – BARD; Boston Scientific; Cleveland Clinic; Complete Conference Management; Cordis; Memorial Healthcare System; SCAI  
*Other Financial or Material Support* – Abbott Vascular; Nurcon Conferences/Strategic Medical Seminars  
*Stockholder* – AccessClosure; Boston Scientific; Cordis; Covidien; Micrus

**Horowitz, Michael B.<sup>F</sup>**

*Consulting Agreement* – ev3

**Hostin, Richard A.<sup>F</sup>**

*Grants* – DePuy Spine

**Hovorka, Istvan<sup>F</sup>**

*Other Financial or Material Support* – LDR Medical

**Huffman, George V.<sup>F</sup>**

*Consulting Agreement* – Anulex Technologies

**Huppert, Jean<sup>F</sup>**

*Other Financial or Material Support* – LDR Medical

**Hutchinson, Peter J.<sup>F</sup>**

*Honoraria* – Brain Trauma Foundation; Codman

**International Spine Study Group<sup>F</sup>**

*Grants* – DePuy Spine

**Jabbour, Pascal<sup>F</sup>**

*Consulting Agreement* – Codman  
Neurovascular

**Jallo, Jack<sup>F</sup>**

*Consulting Agreement* – Confluent Surgical Inc.; Covidien; Nuvasive  
*Other Financial or Material Support* – Nuvasive

**Jallo, George I.<sup>F</sup>**

*Consulting Agreement* – Codman; Medtronic

**Janssen, Michael<sup>F</sup>**

*Other Financial or Material Support* – AOSpine North America.

**Javed, Shazia<sup>F</sup>**

*Consulting Agreement* – Renishaw Plc

**Johnson, J. Patrick<sup>F</sup>**

*Consulting Agreement* – Alphatec; Biomet; DePuy; FlexUspine; Johnson & Johnson; Pioneer Medical; SpineWave  
*Stockholder* – Alphatec; FlexUspine; Pioneer Medical; SpineWave

**Julien, Terrence D.<sup>F</sup>**

*Consulting Agreement* – Globus Medical; Orthovita; Stryker Spine  
*Honoraria* – Medtronic  
*Stockholder* – Orthovita

**Kaiser, Michael G.<sup>P,F</sup>**

*Grants* – Medtronic Inc  
*Honoraria* – Globus Medical

**Kalfas, Iain H.<sup>F</sup>**

*Honoraria* – Synthes

**Kanter, Adam S.<sup>P,F</sup>**

*Consulting Agreement* – NuVasive

**Kaplitt, Michael Gordon<sup>P,F</sup>**

*Consulting Agreement* – Medtronic; Neurologix

**Karahalios, Dean G.<sup>F</sup>**

*Grants* – Anulex Technologies

**Kassam, Amin B.<sup>F</sup>**

*Consulting Agreement* – Nico

**Keating, Robert F.<sup>F</sup>**

*Grants* – ASAP Organization

**Khoo, Larry T.<sup>F</sup>**

*Consulting Agreement* – DePuy Spine; Globus Medical; Trans1; Zimmer Spine

**Kim, Kee Duk<sup>F</sup>**

*Consulting Agreement* – Covidien; Globus Medical Inc

**Klineberg, Eric<sup>F</sup>**

*Grants* – DePuy Spine; Synthes  
*Honoraria* – Synthes

**Kondziolka, Douglas<sup>P,F</sup>**

*Consulting Agreement* – Elekta AB  
*Ownership Interest* – SciencEngines, Inc

**Kopell, Brian H.<sup>P,F</sup>**

*Consulting Agreement* – Neurostream Technologies; Prism Clinical Imaging

**Kopjar, Branko<sup>F</sup>**

*Consulting Agreement* – Cerapedics; Fidia; Johnson and Johnson; Lanx; Scientx; Synthes; Vertiflex

**Kopp, Julie<sup>F</sup>**

*Other Financial or Material Support* – Medtronic, Inc.

**Koski, Tyler R.<sup>F</sup>**

*Consulting Agreement* – Medtronic  
*Honoraria* – DePuy; Stryker

**Kuntz, Charles<sup>F</sup>**

*Consulting Agreement* – Synthes  
*Grants* – Synthes; Stryker; AO Spine  
*Stockholder* – Mayfield Clinic; Mayfield Spine Center; Precision Radiotherapy; Priority Consult; Cinicnati Imaging; CKIV Alignment

**La Marca, Frank<sup>F</sup>**

*Consulting Agreement* – Biomet; DePuy; Medtronic

**Lafage, Virginie<sup>F</sup>**

*Stockholder* – Nemaris

**Lange, Jeffrey<sup>F</sup>**

*Grants* – Apatech

**Langer, David J.<sup>F</sup>**

*Consulting Agreement* – ELANA Inc.  
*Stockholder* – VasSol, Inc.

**Lanzino, Giuseppe<sup>F</sup>**

*Grants* – ev3; Synthes  
*Honoraria* – Synthes

**Larson, Paul S.<sup>F</sup>**

*Grants* – Surgivision, Inc.  
*Honoraria* – Medtronic, Inc.

**Lavine, Sean D.<sup>F</sup>**

*Consulting Agreement* – Codman  
Neurovascular

**Lawton, Michael T.<sup>P,F</sup>**

*Royalty* – Mizuho America

**Lee, Joung H.<sup>F</sup>**

*Grants* – Integra Neurosciences

**Lee, Sang-Ho<sup>F</sup>**

*Other Financial or Material Support* – Wooridul Spine Hospital

# DISCLOSURE INFORMATION

**Leiphart, James W.<sup>P,F</sup>**

*Other Financial or Material Support* – AO North America; Neuropace

**Leonard, Jeffrey R.<sup>P</sup>**

*Honoraria* – Medtronic

**Lerner, Jason<sup>F</sup>**

*Stockholder* – Depuy Spine

**LeRoux, Peter D.<sup>F</sup>**

*Consulting Agreement* – Edge Therapeutics  
*Grants* – Interga; National Institutes of Health; Neurologica

**Lesniak, Maciej S.<sup>F</sup>**

*Grants* – National Institutes of Health

**Leuthardt, Eric C.<sup>F</sup>**

*Stockholder* – Neuroolutions

**Levy, Robert M.<sup>F</sup>**

*Consulting Agreement* – St. Jude Medical Neuromodulation

**Levy, Elad I.<sup>P,F</sup>**

*Consulting Agreement* – Codman Neurovascular; ev3; Micrus Endovascular; TheraSyn Sensors, Inc.  
*Grants* – Boston Scientific; ev3; Micrus Endovascular  
*Honoraria* – Boston Scientific  
*Other Financial or Material Support* – Abbott Vascular; Boston Scientific; ev3; Micrus Endovascular  
*Ownership Interest* – Intratech Medical Ltd.; Mynx/Access Closure  
*Stockholder* – Mynx/Access Closure

**Levy, Robert M.<sup>F</sup>**

*Consulting Agreement* – Bioness Incorporated; Medtronic Neurological; St. Jude Medical Neuromodulation; Spinal Modulation; Stryker; Vertos Medical

**Liau, Linda M.<sup>F</sup>**

*Grants* – Agios Pharmaceuticals, Inc.; Eisai, Inc.; Northwest Biotherapeutics, Inc.

**Lindquist, Christer E. H.<sup>F</sup>**

*Consulting Agreement* – Elekta Ltd

**Linskey, Mark E.<sup>P,F</sup>**

*Board Trustee or Officer Position* – AANS/CNS Joint Tumor Section; Council of State Neurosurgical Societies; TNA – The Facial Pain Association  
*Intellectual Fees* – Dawes Patent Law Group  
*Other Financial or Material Support* – AANS/CNS Joint Tumor Section – Executive Committee; AANS/CNS Washington Committee; Council of State Neurosurgical Societies; TNA – The Facial Pain Association

**Litvack, Zachary N.<sup>P</sup>**

*Consulting Agreement* – Integra LifeSciences Corp.

**Lunsford, L. Dade<sup>F</sup>**

*Consulting Agreement* – AB Elekta  
*Honoraria* – AB Elekta  
*Stockholder* – AB Elekta

**MacDonald, Joel D.<sup>P</sup>**

*Intellectual Fees* – Aesculap  
*Other Financial or Material Support* – Medtronic  
*Ownership Interest* – Amedica

**Macdonald, R. Loch<sup>F</sup>**

*Consulting Agreement* – Actelion Pharmaceuticals Ltd.  
*Grants* – Actelion Pharmaceuticals Ltd.; Physicians Services Incorporated Foundation  
*Stockholder* – Edge Therapeutics

**Machado, Andre<sup>P,F</sup>**

*Consulting Agreement* – Boston Scientific; IntElect Medical; Monteris  
*Grants* – National Institutes of Health  
*Stockholder* – IntElect Medical  
*Other Financial or Material Support* – IntElect Medical  
*Ownership Interest* – IntElect Medical

**Manley, Geoffrey T.<sup>F</sup>**

*Consulting Agreement* – Codman; Synthes, Department of Defense  
*Grants* – National Institutes of Health  
*Other Financial or Material Support* – Integra

**Maroon, Joseph C.<sup>F</sup>**

*Stockholder* – ImPACT Applications Inc.

**Martin, Neil A.<sup>F</sup>**

*Consulting Agreement* – Karl Storz

**Mayer, Stephan A.<sup>F</sup>**

*Consulting Agreement* – Actelion Pharmaceuticals Ltd.; Edge Therapeutics

**McDermott, Michael William<sup>F</sup>**

*Consulting Agreement* – Nycomed  
*Grants* – National Institutes of Health

**McGirt, Matthew<sup>F</sup>**

*Grants* – Globus Medical

**McKerracher, Lisa<sup>F</sup>**

*Stockholder* – Bioaxone

**Mehmetoglu, Idris<sup>F</sup>**

*Consulting Agreement* – Biochemistry Department, Selcuk University, School of Medicine; Konya; Turkey

**Mehrkens, Jan H.<sup>F</sup>**

*Honoraria* – Medtronic

**Mericle, Robert A.<sup>P,F</sup>**

*Consulting Agreement* – ev3, Inc.  
*Other Financial or Material Support* – ev3 Neurovascular – Physician Trainer/Physician Proctor

**Mesiwala, Ali Hakim<sup>F</sup>**

*Consulting Agreement* – NuVasive

**Messer, Julie M.<sup>F</sup>**

*Stockholder* – Anulex Technologies

**Metzler, Michael<sup>F</sup>**

*Other Financial or Material Support* – Medtronic, Inc.

**Meyer, Bernhard<sup>F</sup>**

*Consulting Agreement* – Medtronic; Synthes; Ulrich Medical

**Midha, Rajiv<sup>F</sup>**

*Grants* – Canadian Institute for Health Research; Integra; Integra Life Sciences Foundation

**Mocco, J D.<sup>P,F</sup>**

*Consulting Agreement* – Actelion; Edge Therapeutics; Lazarus Effect; Nfocus  
*Grants* – Access Closure; Codman Neurovascular  
*Honoraria* – Actelion Pharmaceuticals; Edge Therapeutics; Nfocus  
*Neuromedical*  
*Other Financial or Material Support* – Access Closure; Boston Scientific; Codman Neurovascular; Lazarus Effect

**Mogilner, Alon Y.<sup>P,F</sup>**

*Consulting Agreement* – Medtronic Neurological  
*Grants* – Intelect Medical; St. Jude Neuromodulation  
*Honoraria* – Intelect Medical

**Morrell, Martha J.<sup>F</sup>**

*Board Trustee or Officer Position* – NeuroPace

**Mummaneni, Praveen V.<sup>P,F</sup>**

*Consulting Agreement* – DePuy Spine; Medtronic  
*Grants* – Medtronic  
*Other Financial or Material Support* – DePuy Spine  
*Ownership Interest* – 2N LLC

**Mundis, Gregory<sup>F</sup>**

*Grants* – DePuy Spine  
*Other Financial or Material Support* – Nuvasive

**Nakaji, Peter<sup>F</sup>**

*Consulting Agreement* – Aesculap; Medtronic Navigation

**Narayan, Raj K.<sup>F</sup>**

*Consulting Agreement* – BHR Pharma; Codman; Integra

**Nemergut, Edward<sup>P,F</sup>**

*Grants* – Advanced Circulatory Systems Inc.

**Neuwelt, Edward A.<sup>F</sup>**

*Grants* – AMAG Pharmaceuticals

**Nogueira, Raul G.<sup>F</sup>**

*Consulting Agreement* – CoAxia Inc.; Concentric Medical Inc.; ev3 Neurovascular Inc.  
*Other Financial or Material Support* – CoAxia Inc.; Concentric Medical Inc.; ev3 Neurovascular Inc.

**North, Richard B.<sup>F</sup>**

*Other Financial or Material Support* – Boston Scientific Corp.; Medtronic, Inc.; St. Jude Medical, Inc.

**Nunley, Pierce D.<sup>F</sup>**

*Consulting Agreement* – K2 Medical; Spinal Motion  
*Honoraria* – LDR Spine; Nuvasive Inc.  
*Other Financial or Material Support* – LDR Spine; Osprey Medical; Spinal Motion  
*Stockholder* – Pradigm Spine; Spineology; Vertebral Technologies

**OBrien, Michael F.<sup>F</sup>**

*Consulting Agreement* – DePuy Spine; Medtronic; Osteotech  
*Grants* – DePuy Spine  
*Honoraria* – DePuy Spine  
*Other Financial or Material Support* – Axial Biotech; DePuy Spine  
*Stockholder* – DePuy Spine; Medtronic

**Ogilvy, Christopher S.<sup>F</sup>**

*Consulting Agreement* – Mizuoho America, Inc.  
*Grants* – Actelion Pharmaceuticals

**Okonkwo, David O.<sup>P,F</sup>**

*Consulting Agreement* – Lanx; Medtronic; Synthes  
*Grants* – Synthes  
*Honoraria* – Medtronic

**Okun, Michael S.<sup>F</sup>**

*Other Financial or Material Support* – Medtronic; National Parkinson Foundation of Excellence; St. Jude

**O'Leary, Shaun T.<sup>P</sup>**

*Consulting Agreement* – Spinewave  
*Honoraria* – Medtronic

**Olson, Jeffrey J.<sup>F</sup>**

*Grants* – Boehringer-Ingelheim, Inc.; National Cancer Institute; Radiation Therapy Oncology Group; Wyeth, Inc.  
*Other Financial or Material Support* – Millenium, Inc.

**O'Toole, John E.<sup>F</sup>**

*Consulting Agreement* – Globus Medical, Inc.; Pioneer Surgical

**Paluch, Rocco<sup>F</sup>**

*Honoraria* – ABCWG Anthropometric Workshop

**Pannullo, Susan C.<sup>P</sup>**

*Honoraria* – Schering Plough/Merck



# DISCLOSURE INFORMATION

**Park, Kwan<sup>F</sup>**

*Consulting Agreement* – Department of Neurosurgery, Samsung Medical Center,

**Park, Paul<sup>F</sup>**

*Consulting Agreement* – Depuy Spine  
*Grants* – Orthofix

**Patel, Aman B.<sup>F</sup>**

*Consulting Agreement* – Codman  
Neurovascular

**Patel, Naresh P.<sup>F</sup>**

*Consulting Agreement* – Medtronic;  
Orthofix; Stryker Spine

**Pelofsky, Stanley<sup>F</sup>**

*Stockholder* – Oklahoma Spine  
Hospital

**Pierot, Laurent<sup>F</sup>**

*Consulting Agreement* – Boston  
Scientific; ev3

**Pile-Spellman, John<sup>F</sup>**

*Other Financial or Material Support* –  
Hibernia Medical, LLC

**Pilitsis, Julie G.<sup>P,F</sup>**

*Grants* – National Institutes of Health  
*Other Financial or Material Support* –  
National Institutes of Health

**Pimenta, Luiz<sup>F</sup>**

*Consulting Agreement* – Apatech;  
Globus Medical; Impliant, Inc.; MDT;  
Nuvasive; Trans1, Zyga

**Powell, Michael P.<sup>F</sup>**

*Honoraria* – Covidien

**Prasad, Srinivas K.<sup>P</sup>**

*Honoraria* – Stryker Spine

**Prestigiacomo, Charles J.<sup>P</sup>**

*Consulting Agreement* – Boston  
Scientific; Edge Therapeutics  
*Other Financial or Material Support* –  
International Brain Research  
Foundation; Thermopeutix

**Raabe, Andreas<sup>F</sup>**

*Consulting Agreement* – Actelion  
Pharmaceuticals Ltd.; BrainLab; Carl  
Zeiss

**Raksin, Patricia B.<sup>P,F</sup>**

*Grants* – National Institutes of Health  
*Other Financial or Material Support* –  
National Institutes of Health

**Ram, Zvi<sup>F</sup>**

*Consulting Agreement* – Antisense  
Pharma; ARK Therapeutics; NovoCure

**Rao, Ganesh P.<sup>F</sup>**

*Consulting Agreement* – Aesculap

**Ratliff, John K.<sup>F</sup>**

*Consulting Agreement* – Stryker  
*Other Financial or Material Support* –  
Biomet

**Rasmussen, Peter**

*Grants* – Micrus Endovascular;  
*Honoraria* – ev3; Minneapolis Heart  
Institute; Possis/Medrad

**Reckling, W. Carlton<sup>F</sup>**

*Consulting Agreement* – SI-BONE, Inc.

**Regis, Jean M.<sup>F</sup>**

*Other Financial or Material Support* –  
Accuray, BrainLab, Elekta,  
Tomotherapy

**Reinert, Michael<sup>F</sup>**

*Grants* – Karl Storz

**Resnick, Daniel K.<sup>P,F</sup>**

*Grants* – National Institutes of Health

**Rezai, Ali R.<sup>P,F</sup>**

*Consulting Agreement* – Autonomic  
Technologies; Medtronic Neurological;  
Neurologix  
*Honoraria* – Medtronic Neurological  
*Other Financial or Material Support* –  
Autonomic Technologies Inc.; IntElect  
Medical  
*Ownership Interest* – Autonomic  
Technologies; IntElect Medical  
*Stockholder* – Autonomic  
Technologies; Surgivision Inc.

**Rhines, Laurence D.<sup>F</sup>**

*Honoraria* – Biomet

**Rigamonti, Daniele<sup>F</sup>**

*Honoraria* – Braun Aesculap

**Riina, Howard A.<sup>P,F</sup>**

*Grants* – New York Presbyterian  
Hospital  
*Other Financial or Material Support* –  
New York Presbyterian Hospital  
Research Grant  
*Ownership Interest* – eVisio Medical  
Systems; Neurovasx  
*Stockholder* – eVisio Medical Systems;  
Neurovasx

**Ringel, Florian A.<sup>F</sup>**

*Honoraria* – Ulrich Medical

**Ringer, Andrew J.<sup>F</sup>**

*Consulting Agreement* – ev3  
*Honoraria* – Aesculap; Boston  
Scientific

**Roberts, David W.<sup>F</sup>**

*Consulting Agreement* – Medtronic, Inc  
*Other Financial or Material Support* –  
Carl Zeiss Meditec, Inc.; Dusa  
Pharmaceuticals; Medtronic, Inc.;  
NeuroPace, Inc.

**Rodts, Gerald E.<sup>P,F</sup>**

*Consulting Agreement* – Medtronic,  
Inc.  
*Other Financial or Material Support* –  
Globus Medical, Inc.  
*Royalty* – Globus Medical, Inc.  
*Stockholder* – SpineUniverse.com

**Roger, Eric P.<sup>F</sup>**

*Consulting Agreement* – Medtronic;  
Stryker  
*Other Financial or Material Support* –  
Medtronic

**Rosen, Charles L.<sup>P</sup>**

*Ownership Interest* – Medtronic;  
Merck; Optika Technologies; Pfizer  
*Other Financial or Material Support* –  
National Institutes of Health; Synthes

**Rosenow, Joshua M.<sup>P,F</sup>**

*Consulting Agreement* – Boston  
Scientific Neuromodulation; Medtronic  
Navigation

**Rudolf, Leonard M.<sup>F</sup>**

*Ownership Interest* – SI-BONE, Inc.  
*Salary* – SI-BONE, Inc.

**Ryken, Timothy C.<sup>F</sup>**

*Consulting Agreement* – Eisai;  
Medtronic Inc.; Merck Inc./Schering-  
Plough Inc.

**Rymer, Marilyn<sup>F</sup>**

*Honoraria* – Concentric Medical;  
Genentech

**Sagher, Oren<sup>P,F</sup>**

*Grants* – Medtronic  
*Other Financial or Material Support* –  
Medtronic

**Sasso, Rick<sup>F</sup>**

*Consulting Agreement* – Stryker  
*Grants* – AO; Cerapedics; Medtronic;  
Smith and Nephew; Stryker  
*Other Financial or Material Support* –  
Medtronic  
*Stockholder* – Biomet; Spinecore

**Schmidt, Meic H.<sup>F</sup>**

*Consulting Agreement* – Aesculap

**Schwab, Frank<sup>F</sup>**

*Consulting Agreement* – DePuy;  
Medtronic  
*Grants* – DePuy; Medtronic  
*Other Financial or Material Support* –  
DePuy  
*Stockholder* – Nemaris

**Sciubba, Daniel M.<sup>P,F</sup>**

*Consulting Agreement* – DePuy;  
Lifecell; Medtronic  
*Honoraria* – DePuy

**Scuderi, Gaetano J.<sup>F</sup>**

*Board Trustee or Officer Position* –  
Cytonics

**Selden, Nathan R.<sup>P,F</sup>**

*Grants* – Cameron Foundation; Oregon  
Bioscience Innovation Fund (Oregon  
Health & Science University  
*Other Financial or Material Support* –  
Cameron Foundation; Oregon  
Bioscience Innovation Fund (Oregon  
Health & Science University); Society of  
Neurological Surgeons

**Servi, Andrew<sup>F</sup>**

*Other Financial or Material Support* –  
Medtronic

**Shaffrey, Christopher I.<sup>F</sup>**

*Consulting Agreement* – Biomet;  
Depuy; Medtronic  
*Grants* – AO; Biomet; Department of  
Defense; DePuy Spine; Medtronic;  
NACTN, National Institutes of Health;  
Synthes  
*Honoraria* – DePuy Spine; Medtronic  
*Other Financial or Material Support* –  
AO; Medtronic  
*Stockholder* – Medtronic

**Shaffrey, Mark Edwin<sup>F</sup>**

*Other Financial or Material Support* –  
Depuy Spine

**Shamie, A. Nick<sup>F</sup>**

*Consulting Agreement* – SI-BONE, Inc.

**Sharan, Ashwini Dayal<sup>P,F</sup>**

*Consulting Agreement* – Medtronic; St.  
Jude  
*Grants* – Integra  
*Honoraria* – Medtronic; St. Jude  
*Other Financial or Material Support* –  
Zimmer  
*Royalty* – Zimmer

**Sherman, John<sup>F</sup>**

*Stockholder* – Anulex Technologies

**Shutter, Lori Anne<sup>F</sup>**

*Grants* – UCB Pharma

**Siddiqui, Adnan Hussain<sup>P,F</sup>**

*Consulting Agreement* – Codman  
Neurovascular; Concentric Medical;  
Cordis Corporation; ev3; Micrus  
Endovascular  
*Grants* – National Institute of Health;  
University of Buffalo  
*Honoraria* – American Association of  
Neurological Surgeons; Codman  
Neurovascular; Emergency Medicine  
Conference; Genentech; Neocure Group  
LLC  
*Other Financial or Material Support* –  
Abbott Vascular; Codman  
Neurovascular; Genentech; National  
Institutes of Health; University at  
Buffalo

**Simard, J. Marc<sup>F</sup>**

*Consulting Agreement* – Remedy  
Pharmaceuticals

**Slavin, Konstantin V.<sup>P,F</sup>**

*Consulting Agreement* – Greatbatch;  
Medtronic; St. Jude Medical; Vycor  
Medical  
*Grants* – Boston Scientific; Integra; St.  
Jude Medical  
*Honoraria* – Medtronic; St. Jude Medical  
*Other Financial or Material Support* –  
Boston Scientific; Integra  
*Stockholder* – Vycor Medical

# DISCLOSURE INFORMATION

**Sloan, Andrew E.<sup>P,F</sup>**

*Consulting Agreement* – Genentech; Monteris Medical; Surgical Theatre  
*Grants* – National Cancer Institute  
*Other Financial or Material Support* – Genentech  
*Ownership Interest* – Rubicon Genomics

**Slotkin, Jonathan<sup>F</sup>**

*Consulting Agreement* – InVivo Therapeutics, Incorporated; Stryker Spine  
*Honoraria* – Synthes Spine

**Smith, Wade<sup>F</sup>**

*Consulting Agreement* – Concentric Medical  
*Ownership Interest* – Concentric Medical

**Smith, Justin S.<sup>P,F</sup>**

*Consulting Agreement* – Axial Biotech; Biomet; DePuy Spine; Medtronic  
*Grants* – AO; DePuy Spine  
*Honoraria* – Biomet; DePuy; Medtronic  
*Other Financial or Material Support* – Biomet; DePuy; Medtronic

**Smucker, Joseph<sup>F</sup>**

*Grants* – Medtronic

**Solorzano, Guillermo<sup>P</sup>**

*Honoraria* – Pfizer

**Sonmez, Fatma Cavide<sup>F</sup>**

*Consulting Agreement* – Pathology Department, Selcuk University, Meram School of Medicine, Konya, Turkey

**Souweidane, Mark M.<sup>F</sup>**

*Consulting Agreement* – Aesculap, Inc.

**Spiotta, Alejandro M.<sup>F</sup>**

*Consulting Agreement* – Codman  
*Grants* – Codman; Integra

**Starr, Philip A.<sup>F</sup>**

*Consulting Agreement* – Boston Scientific  
*Grants* – Sugivision, Inc.

**Steib, Jean-Paul<sup>F</sup>**

*Other Financial or Material Support* – LDR Medical

**Steinmetz, Michael P.<sup>P,F</sup>**

*Consulting Agreement* – Biomet Spine  
*Other Financial or Material Support* – Biomet

**Stoffel, Michael<sup>F</sup>**

*Honoraria* – Ulrich Medical

**Tamargo, Rafael J.<sup>F</sup>**

*Grants* – Walter E. Dandy, M.D. Endowment; Mr. and Mrs. J. Dorsey Brown; Rosenberg Family

**Teo, Charles<sup>F</sup>**

*Consulting Agreement* – Aesculap; Medtronic

**Theodore, Nicholas<sup>F</sup>**

*Consulting Agreement* – Stryker Spine; Synthes Spine  
*Grants* – Stryker Spine; Synthes Spine

**Thorn, Kerri<sup>F</sup>**

*Grants* – asap

**Timmons, Shelly D.<sup>F</sup>**

*Grants* – National Institutes of Health  
*Honoraria* – American College of Surgeons; Synthes

**Topol, Eric J.<sup>F</sup>**

*Officer/Board of Directors* – Dexcom; Sotera

**Torres, Roland A.<sup>P,F</sup>**

*Consulting Agreement* – Integra Neuroscience  
*Grants* – National Institutes of Health/National Institute of Neurological Disorders and Stroke  
*Other Financial or Material Support* – National Institutes of Health/National Institute of Neurological Disorders and Stroke

**Tosun, Murat<sup>F</sup>**

*Consulting Agreement* – Histopathology Department, Kocatepe University, School of Medicine, Afyon, Turkey

**Traynelis, Vincent C.<sup>P,F</sup>**

*Consulting Agreement* – Medtronic; United HealthCare  
*Other Financial or Material Support* – Medtronic  
*Royalty* – Medtronic

**Trost, Gregory R.<sup>F</sup>**

*Honoraria* – Medtronic

**Tsai, Eve C.<sup>F</sup>**

*Other* – Stryker; Synthes

**Ullman, Jamie Sue<sup>P,F</sup>**

*Consulting Agreement* – Oxygen Biotherapeutics  
*Honoraria* – Brain Trauma Foundation

**Uribe, Juan S.<sup>F</sup>**

*Consulting Agreement* – Nuvasive; Orthofix

**Ustun, Mehmet Erkan<sup>F</sup>**

*Consulting Agreement* – Neurosurgery Department, Selcuk University, Meram School of Medicine, Konya, Turkey

**Vajkoczy, Peter<sup>F</sup>**

*Honoraria* – Actelion Pharmaceuticals Ltd.; Aesculap; ELANA; Essex; Roche

**Veznedaroglu, Erol<sup>F</sup>**

*Consulting Agreement* – Micrus, Codman, Cordis, Microvention

**Vila, Thierry<sup>F</sup>**

*Consulting Agreement* – LDR Medical

**Vital, Jean-Marc<sup>F</sup>**

*Other Financial or Material Support* – LDR Medical

**Vogelbaum, Michael A.<sup>P,F</sup>**

*Consulting Agreement* – Ark Therapeutics; AstraZeneca; NeuralStem; Schering Plough  
*Honoraria* – BrainLab; Schering Plough  
*Ownership Interest* – RosmanSearch

**Wang, Michael Y.<sup>P,F</sup>**

*Consulting Agreement* – Aesculap Spine; Biomet Spine; Depuy Spine  
*Ownership Interest* – NeuroConsulting Specialists, LLC

**Watridge, Clarence B.<sup>F</sup>**

*Other Financial or Material Support* – Medical Education & Research Institute; Medtronic; National Institutes of Health; National Institute of Neurological Disorders and Stroke; Spinal Motion

**Welch, William Charles<sup>F</sup>**

*Board Trustee or Officer Position* – Pittsburgh Standard Spine  
*Consulting Agreement* – Zimmer Spine  
*Grants* – Synthes Spine  
*Other Financial or Material Support* – Lanx  
*Stockholder* – Covidien

**Wohns, Richard N.<sup>F</sup>**

*Board Trustee or Officer Position* – Ranier Technology; US Radiosurgery  
*Consulting Agreement* – NeoSpine

**Wolfla, Christopher E.<sup>P,F</sup>**

*Grants* – DePuy Spine

**Woo, Henry H.<sup>P,F</sup>**

*Consulting Agreement* – Micrus Endovascular

**Wood, Kirkham<sup>F</sup>**

*Grants* – DePuy Spine; Medtronic  
*Other Financial or Material Support* – Globus; Synthes  
*Stockholder* – Trans1 Inc.

**Woodard, Eric J.<sup>F</sup>**

*Board Trustee or Officer Position* – In Vivo Therapeutics  
*Consulting Agreement* – Stryker  
*Honoraria* – Depuy  
*Other Financial or Material Support* – Synthes  
*Stockholder* – Medtronic

**Yang, Lynda Jun-San<sup>P</sup>**

*Other Financial or Material Support* – Sparton Corp.

**Yonas, Howard<sup>F</sup>**

*Stockholder* – Neurologica

**Yoo, Albert<sup>F</sup>**

*Grants* – Penumbra Inc.

**Yosunkaya, Alper<sup>F</sup>**

*Consulting Agreement* – Anesthesiology and Reanimation Department, Selcuk University, Meram School of Medicine, Konya, Turkey

**Zaidat, Osama O.<sup>F</sup>**

*Consulting Agreement* – Boston Scientific

**Zipfel, Gregory J.<sup>P,F</sup>**

*Grants* – Boston Scientific; Synthes CMF  
*Honoraria* – Synthes CMF

**Zrinzo, Ludvic<sup>F</sup>**

*Honoraria* – Medtronic; St. Jude Medical

**Zuccarello, Mario<sup>F</sup>**

*Grants* – National Institutes of Health/National Institute of Neurological Disorders and Stroke

**Zucherman, James<sup>F</sup>**

*Consulting Agreement* – Stryker

# DISCLOSURE INFORMATION

The following individuals have disclosed that they do not have a relationship with commercial companies whose products may have a relevance to their participation in the Annual Meeting. Planners are designated by <sup>P</sup> and Faculty by <sup>F</sup>.

A. Elhammady, Mohamed Samy <sup>F</sup>	Arai, Yoshio <sup>F</sup>	Bliss, Tonya <sup>F</sup>	Cash, Sydney <sup>F</sup>	Coutinho, Etevaldo <sup>F</sup>
A. Tosteson, Anna N. <sup>F</sup>	Aranda, Derick M. <sup>F</sup>	Blount, Jeffrey P. <sup>F</sup>	Casha, Steven <sup>F</sup>	Cozzens, Jeffrey W. <sup>F</sup>
Aarabi, Bizhan <sup>F</sup>	Ardouin, Claire <sup>F</sup>	Boakye, Maxwell <sup>F</sup>	Castellano, Antonella <sup>F</sup>	Critides, Samuel D. <sup>F</sup>
Aaronson, Oran <sup>F</sup>	Argyelan, Miklos <sup>F</sup>	Boison, Detlev <sup>F</sup>	Castelli, Michael <sup>F</sup>	Crocker, Matthew <sup>F</sup>
Abbott, Rick <sup>F</sup>	Aribisala, Benjamin <sup>F</sup>	Bolger, Ciaran <sup>F</sup>	Cavalcanti, Daniel Dutra <sup>F</sup>	Cross, Cindy <sup>F</sup>
Abdel-Aziz, Samer <sup>F</sup>	Arita, Kazunori <sup>F</sup>	Boltes, Peggy <sup>F</sup>	Cavanaugh, David A. <sup>F</sup>	Crowley, R. Webster <sup>P</sup>
Abhinav, Kumar <sup>F</sup>	Armonda, Rocco <sup>F</sup>	Bono, Christopher <sup>F</sup>	Cawley, C. Michael <sup>F</sup>	Cui, Jian Guo <sup>F</sup>
Abla, Adib Adnan <sup>F</sup>	Armstrong, Don L. <sup>F</sup>	Boockvar, John A. <sup>P,F</sup>	Cepeda, Carlos <sup>F</sup>	Cunningham, John P. <sup>F</sup>
Abrahams, John M. <sup>F</sup>	Armstrong, Wendy <sup>P</sup>	Boop, Frederick A. <sup>F</sup>	Chaichana, Kaisorn L. <sup>F</sup>	Curry, William T. <sup>F</sup>
Abram, Steven R. <sup>F</sup>	Arnold, Paul M. <sup>F</sup>	Borba, Luis Alencar Biurrum <sup>P</sup>	Chan, Michael <sup>F</sup>	Czech, Thomas <sup>F</sup>
Abramova, Marina <sup>F</sup>	Arrigo, Robert <sup>F</sup>	Bot, Joost C.J. <sup>F</sup>	Chandela, Sid <sup>F</sup>	Daadi, Marcel M. <sup>F</sup>
Achanta, Pragathi <sup>F</sup>	Asaad, Wael <sup>F</sup>	Boucher, Orland K. <sup>F</sup>	Chang, David <sup>F</sup>	Dabiri, Samira <sup>F</sup>
Acosta, Fernando <sup>F</sup>	Asthagiri, Ashok Rajappa <sup>P,F</sup>	Bowers, Dawn <sup>F</sup>	Chang, Eric L. <sup>F</sup>	D'Ambrosio, Anthony D. <sup>F</sup>
Adamo, Matthew Armand <sup>F</sup>	Attabib, Najmedden <sup>F</sup>	Breivik, Cathrine <sup>F</sup>	Chang, Isaac <sup>F</sup>	Danielson, Guy O. <sup>F</sup>
Adams, Hadie <sup>F</sup>	Atwell, Jodi <sup>F</sup>	Brem, Henry <sup>F</sup>	Chang, Jin Woo <sup>P,F</sup>	Darbar, Aneela <sup>P</sup>
Adel, Joseph G. <sup>F</sup>	Avendaño, Javier <sup>F</sup>	Brennan, Cameron <sup>F</sup>	Chang, Peter <sup>F</sup>	Dasenbrock, Hormuzdiyar H. <sup>F</sup>
Adkins, Dana E. <sup>F</sup>	Awad, Issam A. <sup>P,F</sup>	Brennan, Ryan <sup>F</sup>	Chang, Won Seok <sup>F</sup>	Dashti, Shervin R. <sup>F</sup>
Adogwa, Owoicho <sup>F</sup>	Awan, Nasir R. <sup>F</sup>	Brisman, Jonathan <sup>F</sup>	Chang, Yue-Fang <sup>F</sup>	Day, Arthur L. <sup>F</sup>
Adrian, Iliescu <sup>F</sup>	Aziz, Khaled M. <sup>F</sup>	Brocheton, Jessy <sup>F</sup>	Chapman, Jens <sup>F</sup>	Ddumba, Edward <sup>F</sup>
Afif, Afif Mohammad <sup>F</sup>	Aziz, Tipu Z. <sup>F</sup>	Brockmeyer, Douglas L. <sup>F</sup>	Charvet, Guillaume <sup>F</sup>	de Kelft, Erik Van <sup>F</sup>
Aghi, Manish Kumar <sup>F</sup>	Baaj, Ali A. <sup>F</sup>	Brodke, Darrel S. <sup>F</sup>	Chen, Chun Siang <sup>P</sup>	De Oliveira, Evandro <sup>F</sup>
Agombar, David <sup>F</sup>	Badjatia, Neeraj <sup>F</sup>	Bronov, Oleg <sup>F</sup>	Chen, Clark C. <sup>F</sup>	de Oliveira, Ricardo Santos <sup>F</sup>
Agrawal, Basheal Mohan <sup>F</sup>	Bae, Jun Seok <sup>F</sup>	Brooks, David <sup>F</sup>	Chen, Selby G. <sup>F</sup>	Debu, Bettina <sup>F</sup>
Agrawal, Deepak <sup>F</sup>	Bahuleyan, Biji <sup>F</sup>	Brooks, William H. <sup>F</sup>	Chen, Tom <sup>F</sup>	Defino, Helton <sup>F</sup>
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# DISCLOSURE INFORMATION

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Kwon, Do Hoon<sup>F</sup>  
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Lehmann, Emily Marie<sup>F</sup>  
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Lei, Liang<sup>F</sup>  
Leizman, Daniel<sup>F</sup>  
Leonetti, John P.<sup>F</sup>  
Lesko, Jim<sup>F</sup>  
Leung, Richard<sup>F</sup>  
Levine, Michael<sup>F</sup>  
Levine, Nicholas Brandon<sup>F</sup>  
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Li, Xiaohua<sup>F</sup>  
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Li, Zongjin<sup>F</sup>  
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Lim, Dong-Jun<sup>F</sup>  
Lim, Michael<sup>F</sup>  
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Lin, Chih<sup>F</sup>  
Lin, Ning<sup>F</sup>  
Lin, Shih-Chun<sup>F</sup>  
Line, Breton G.<sup>F</sup>  
Lingsma, Hester F.<sup>F</sup>  
Litofsky, N. Scott<sup>F</sup>  
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Loftus, Christopher M.<sup>F</sup>  
Long, Donlin M.<sup>F</sup>  
Lonser, Russell R.<sup>P, F</sup>  
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Ludwig, Thomas<sup>F</sup>  
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Lyons, Mark K.<sup>F</sup>  
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MacLeod, David<sup>F</sup>  
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Madison, Michael T.<sup>F</sup>  
Magge, Subu N.<sup>F</sup>  
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Marks, Warren<sup>F</sup>  
Marky, Andrew<sup>F</sup>  
Marotta, Tom R.<sup>F</sup>  
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Martirosyan, Nikolay L.<sup>F</sup>  
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Mason, Alexander<sup>F</sup>  
Mastronardi, Luciano<sup>F</sup>  
Mathern, Gary W.<sup>F</sup>  
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Maxwell, Alexander J.<sup>F</sup>  
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Neil-Dwyer, Glen<sup>F</sup>  
Nejat, Farideh<sup>F</sup>  
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Osterby, Kurt<sup>F</sup>  
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Pape, Heiko<sup>F</sup>  
Park, Chun Kun<sup>F</sup>  
Park, John K.<sup>P, F</sup>  
Park, Jongsoo<sup>F</sup>  
Park, Jung Yul<sup>F</sup>  
Park, Kinam<sup>F</sup>  
Park, Kwan<sup>F</sup>  
Park, Se-Hyuck<sup>F</sup>  
Park, Seoungwoo<sup>F</sup>  
Park, Tae S.<sup>P</sup>  
Parker, Scott<sup>F</sup>  
Parker, Stephen<sup>F</sup>  
Parmar, Hemant<sup>F</sup>  
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Parsa, Andrew T.<sup>P, F</sup>  
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Patel, Ashish D.<sup>F</sup>  
Patel, Nikunj<sup>F</sup>  
Patel, Shaun<sup>F</sup>  
Patel, Umang<sup>F</sup>  
Patil, Parag<sup>F</sup>  
Pavese, Nicola<sup>F</sup>  
Payner, Troy D.<sup>F</sup>  
Pendleton, Courtney<sup>F</sup>  
Pendleton, Courtney Anne<sup>F</sup>  
Peng, Cheney<sup>F</sup>  
Peng, Qiong<sup>F</sup>  
Pereira, Marta P.<sup>F</sup>  
Pereira, Vitor Mendes<sup>F</sup>  
Perez-Neri, Ivan<sup>F</sup>  
Perra, Joseph<sup>F</sup>  
Perry, Edward C.<sup>F</sup>  
Peterson, Eric C.<sup>F</sup>  
Petraglia, Anthony L.<sup>F</sup>  
Petrucci, Ralph<sup>F</sup>  
Philbert, Martin<sup>F</sup>  
Piallat, Brigitte<sup>F</sup>  
Pichas, Stefanos D.<sup>F</sup>  
Pickard, John Douglas<sup>F</sup>  
Pieper, Steve<sup>F</sup>  
Piepmeier, Joseph M.<sup>F</sup>  
Pierson, Christopher<sup>F</sup>  
Pincus, David W.<sup>F</sup>  
Pisansky, Marc T.<sup>F</sup>  
Plaha, Puneet<sup>F</sup>  
Pluder, Mauro<sup>F</sup>  
Policeni, Bruno<sup>F</sup>  
Polithodorakis, Ioannis<sup>F</sup>  
Pollak, Pierre<sup>F</sup>  
Pollo, Kledia<sup>F</sup>  
Pollock, Bruce E.<sup>F</sup>  
Pollock, Kimberly<sup>F</sup>  
Polly, David W.<sup>F</sup>  
Poon, Wai Sang<sup>F</sup>  
Porcherot, Jean<sup>F</sup>  
Poropatchi, Ronald K.<sup>F</sup>  
Portolés, Germán Rey<sup>F</sup>  
Post, Kalmon D.<sup>F</sup>  
Pouratian, Nader<sup>P, F</sup>  
Prabhu, Sujit S.<sup>F</sup>  
Prabhu, Vikram C.<sup>P</sup>  
Preuss, Alexander<sup>F</sup>  
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Price, Angela V.<sup>F</sup>  
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# DISCLOSURE INFORMATION

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Pritz, Michael B.<sup>F</sup>  
Proctor, Mark R.<sup>F</sup>  
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Puligopu, Aneel Kumar<sup>F</sup>  
Purger, David<sup>F</sup>  
Purohit, Aniruddha Kumar<sup>F</sup>  
Quackenbush, John<sup>F</sup>  
Quaghebeur, Gerardine<sup>F</sup>  
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Quigley, Katie<sup>F</sup>  
Quigley, Matthew<sup>F</sup>  
Quinones-Hinojosa, Alfredo<sup>P.F</sup>  
Quintero Wolfe, Stacey  
    Charlene<sup>F</sup>  
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Rahme, Rudy<sup>F</sup>  
Rainey, Jessica<sup>F</sup>  
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Rassner, Ulrich<sup>F</sup>  
Ray, Wilson Zachary<sup>F</sup>  
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Redjal, Navid<sup>F</sup>  
Reed, Gavin T.<sup>F</sup>  
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Reyes, Juvenal<sup>F</sup>  
Rhines, Laurence D.<sup>F</sup>  
Rhoton, Albert L.<sup>F</sup>  
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Rice, Condoleezza<sup>F</sup>  
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Riley, Jonathan<sup>F</sup>  
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Ross, Shani E.<sup>F</sup>  
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Sanger, Terrence<sup>F</sup>  
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Sayadipour, Amirali<sup>F</sup>  
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Schaar, Bruce<sup>F</sup>  
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Schmidt, Michael<sup>F</sup>  
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Sperle, Katherine<sup>F</sup>  
Spetzler, Robert F.<sup>F</sup>  
Spinks, Theodore James<sup>F</sup>  
Spinner, Robert J.<sup>F</sup>  
Spiro, Richard M.<sup>F</sup>  
Spurgeon, Angela N.<sup>F</sup>  
St. Clair, Eric G.<sup>F</sup>  
Stabile, Lauren<sup>F</sup>  
Stanca, Ples<sup>F</sup>  
Stapleton, Christopher J.<sup>F</sup>  
Starke, Robert M.<sup>F</sup>  
Steinberg, Gary K.<sup>F</sup>  
Stewart, Brent<sup>F</sup>  
Steyerberg, Ewout W.<sup>F</sup>  
Stieg, Philip E.<sup>F</sup>  
Stippler, Martina<sup>F</sup>  
Stoll, Edward<sup>F</sup>  
Stovner, Lars J.<sup>F</sup>  
Strayer, Andrea L.<sup>P.F</sup>  
Stroink, Ann R.<sup>F</sup>  
Stuart, R. Morgan<sup>F</sup>  
Studebaker, Adam<sup>F</sup>  
Stueer, Carsten<sup>F</sup>  
Sturkenboom, M.C.J.M.<sup>F</sup>  
Sturkenboom, Miriam<sup>F</sup>  
Subach, Brian R.<sup>F</sup>  
Subhash, Hreshbesh<sup>F</sup>  
Sughrue, Michael Edward<sup>F</sup>  
Sugiyama, Taku<sup>F</sup>  
Suki, Dima<sup>F</sup>  
Summers, Paul<sup>F</sup>  
Sun, Dandan<sup>F</sup>  
Sun, GuoHua<sup>F</sup>  
Sun, Hai<sup>F</sup>  
Sundaresan, Narayan<sup>F</sup>  
Surdell, Daniel L.<sup>P.F</sup>  
Svendsen, Clive<sup>F</sup>  
Sweet, Jennifer A.<sup>F</sup>  
Szerlip, Nicholas J.<sup>P</sup>  
Takeda, Yukari<sup>F</sup>  
Tally, Philip W.<sup>F</sup>  
Tan, Gamaliel<sup>F</sup>  
Tan, Lee A.<sup>F</sup>  
Tanaka, Shota<sup>F</sup>  
Tender, Gabriel Claudiu<sup>F</sup>  
Teramoto, Akira<sup>F</sup>  
Terra, Vera Cristina<sup>F</sup>  
Teufack, Sonia<sup>F</sup>  
Teves, Lucy<sup>F</sup>  
Thawani, Jayesh P.<sup>F</sup>  
Theiler, Amy<sup>F</sup>  
Theodosopoulos, Philip V.<sup>P.F</sup>  
Thiele, Robert H.<sup>F</sup>  
Thirumala, Parthasarathy D.<sup>F</sup>  
Thompson, Byron Gregory<sup>F</sup>  
Thompson, Eric M.<sup>F</sup>  
Thon, Niklas<sup>F</sup>  
Tighe, Allyson<sup>F</sup>  
Tihan, Tarik<sup>F</sup>  
Timofeev, Ivan<sup>F</sup>  
Timurkaynak, Erdener<sup>F</sup>  
Tindimwebwa, Josphe<sup>F</sup>  
Tokimura, Hiroshi<sup>F</sup>  
Tomita, Tadanori<sup>F</sup>  
Tomoyuki, Takigawa<sup>F</sup>  
Tomycz, Luke<sup>F</sup>  
Tomycz, Nestor Denys<sup>F</sup>  
Torres, Napoleon Rafael<sup>F</sup>  
Tosteson, Tor D.<sup>F</sup>  
Tsai, Yi-Hsin<sup>F</sup>  
Tsimpas, Asterios<sup>F</sup>  
Tso, Michael K.<sup>F</sup>  
Tsuang, Fon-Yih<sup>F</sup>  
Tsung, Andrew J.<sup>F</sup>  
Tu, Yong-Kwang<sup>F</sup>  
Tuladhar, Suchita<sup>F</sup>  
Tuli, Sagun<sup>F</sup>  
Ture, Ugur<sup>P.F</sup>  
Tymianski, Michael<sup>F</sup>  
Uchida, Hiroki<sup>F</sup>  
Uchihashi, Yoshito<sup>F</sup>  
Ulm, Bernhard<sup>F</sup>  
Umredkar, Alok Arvind<sup>F</sup>  
Upadhyaya, Cheerag D.<sup>F</sup>  
Urgo, Louisa<sup>F</sup>  
Utter, Phillip A.<sup>F</sup>  
Valadka, Alex B.<sup>F</sup>  
Vallera, Daniel A.<sup>F</sup>  
Vandertop, William P.<sup>F</sup>  
Vannemreddy, Prasad S.S.V.<sup>F</sup>  
Varughese, Jobin<sup>F</sup>  
Vazquez, Gabriela<sup>F</sup>  
Velasco-Cruz, Antonio  
    Augusto<sup>F</sup>  
Vellimana, Ananth K.<sup>F</sup>  
Verissimo, Francisco<sup>F</sup>  
Vermulen, Lee<sup>F</sup>  
Vierhapper, Heinrich<sup>F</sup>  
Vik, Anne<sup>F</sup>  
Visse, Edward<sup>F</sup>  
Vitz, Todd<sup>P</sup>  
Vivas, Elio<sup>F</sup>  
Vives, Kenneth P.<sup>F</sup>  
Volpon, Marcelo Santos<sup>F</sup>  
Vukic, Miroslav J.<sup>P</sup>  
Walcott, Brian Patrick<sup>F</sup>  
Waldron, James S.<sup>F</sup>  
Walker, Corey<sup>F</sup>  
Walker, Marion L.<sup>F</sup>  
Walkup, Raymond R.<sup>F</sup>  
Walter, Kevin A.<sup>P.F</sup>  
Walters, Leena<sup>F</sup>  
Wang, Daphne<sup>F</sup>  
Wang, Doris D.<sup>F</sup>  
Wang, Huan<sup>F</sup>  
Wang, Ricky<sup>F</sup>  
Wang, Shouyan<sup>F</sup>  
Ward, Herbert<sup>F</sup>  
Washington, Chad<sup>F</sup>  
Waters, Michael F.<sup>F</sup>  
Waterworth, Alan<sup>F</sup>  
Watson, Karriem S.<sup>F</sup>  
Weber, Peter B.<sup>F</sup>  
Wei, Fang<sup>F</sup>  
Weil, Robert John<sup>F</sup>  
Weinberg, Jeffrey S.<sup>P.F</sup>  
Weingart, Jon D.<sup>F</sup>  
Weintraub, David<sup>F</sup>  
Wellons, John<sup>F</sup>  
Werner, Lillian<sup>F</sup>  
Westerveld, Michael<sup>F</sup>  
Westphal, Manfred<sup>F</sup>  
Wharen, Robert E.<sup>F</sup>  
Whitehead, William E.<sup>F</sup>  
Whitworth, Louis A.<sup>F</sup>  
Wibom, Carl<sup>F</sup>  
Wijman, Christine<sup>F</sup>



# DISCLOSURE INFORMATION

Williams, Brian Jeremy<sup>F</sup>  
Wilson, David Aaron<sup>F</sup>  
Wilson, John Allen<sup>F</sup>  
Wind, Joshua James<sup>F</sup>  
Winfree, Christopher J.<sup>P, F</sup>  
Winn, Robert J.<sup>F</sup>  
Wisoff, Jeffrey H.<sup>F</sup>  
Witham, Timothy F.<sup>F</sup>  
Witt, Thomas C.<sup>F</sup>  
Witten, Ilana<sup>F</sup>  
Wolf, Stefan<sup>F</sup>  
Wolfsberger, Stefan<sup>F</sup>  
Wolinsky, Jean-Paul<sup>P, F</sup>  
Wong, George K.C.<sup>F</sup>  
Wong, John H.<sup>F</sup>  
Wood, Josh<sup>F</sup>

Woodmansee, Whitney<sup>F</sup>  
Worth, Robert M.<sup>F</sup>  
Wrench, Margaret R.<sup>F</sup>  
Wrubel, David<sup>P</sup>  
Wu, Adam S.<sup>F</sup>  
Wu, Hongtao<sup>F</sup>  
Wu, Jau-Ching<sup>F</sup>  
Wu, Joseph C.<sup>F</sup>  
Wu, Samuel<sup>F</sup>  
Xiao, Chuan-Guo<sup>F</sup>  
Xiong, Ye<sup>F</sup>  
Xu, Risheng<sup>F</sup>  
Xuelian, Wang<sup>F</sup>  
Yadla, Sanjay<sup>F</sup>  
Yamaguchi, Fumio<sup>F</sup>  
Yamahata, Hitoshi<sup>F</sup>

Yamamoto, Daisuke<sup>F</sup>  
Yang, Dongmei<sup>F</sup>  
Yang, Huai-che<sup>F</sup>  
Yang, Hyun-Jeong<sup>F</sup>  
Yang, Isaac<sup>F</sup>  
Yang, Jin Suh<sup>F</sup>  
Yang, Seung-Yeob<sup>F</sup>  
Yang, Yuhui<sup>F</sup>  
Yasargil, M. Gazi<sup>F</sup>  
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Yaun, Amanda<sup>F</sup>  
Yavagal, Dileep<sup>F</sup>  
Yelisyyev, Andriy<sup>F</sup>  
Yen, Chun Po<sup>F</sup>  
Yilmaz, Saliha<sup>F</sup>  
Yoo, Do-sung<sup>F</sup>

Yoo, Heon<sup>F</sup>  
Yoon, Seung-Hwan<sup>F</sup>  
Yoon, Young Sul<sup>F</sup>  
Yoshor, Daniel<sup>P, F</sup>  
Young, Alfred Byron<sup>F</sup>  
Yu, Byron M.<sup>F</sup>  
Yun, Jonathan<sup>F</sup>  
Yunoue, Shunji<sup>F</sup>  
Zacharatos, Haralabos<sup>F</sup>  
Zacharia, Brad E.<sup>F</sup>  
Zacharoulis, Stergios<sup>F</sup>  
Zada, Gabriel<sup>F</sup>  
Zadeh, Gelareh<sup>F</sup>  
Zager, Eric L.<sup>F</sup>  
Zaghloul, Kareem A.<sup>F</sup>  
Zahed, Cameron<sup>F</sup>

Zeilman, Pamela<sup>F</sup>  
Zhan, Ke<sup>F</sup>  
Zhang, Jianfeng<sup>F</sup>  
Zhang, Wei<sup>F</sup>  
Zhang, Yi Jonathan<sup>F</sup>  
Zhi, Zhongwei<sup>F</sup>  
Zhou, Meng-Liang<sup>F</sup>  
Zhou, Qiang<sup>F</sup>  
Zilani, Gulam<sup>F</sup>  
Zileli, Mehmet<sup>F</sup>  
Zimine, Ivan<sup>F</sup>  
Zimmerman, Richard S.<sup>F</sup>  
Zinn, Pascal O.<sup>F</sup>  
Zlokovic, Berislav<sup>F</sup>  
Zomorodi, Ali R.<sup>F</sup>  
Zusman, Edie E.<sup>P, F</sup>

## NON-FDA APPROVED LISTING

### Faculty Presentations including Non-FDA Approved Investigational Drugs or Devices

October 16, 2010

**PC02:** Operating in Eloquent Cortex  
*Mitchel S. Berger, Guy M. McKhann*

**PC04:** Cranial Vascular Malformations:  
Surgical and Endovascular Techniques  
*Philippe Gailloud, Robert A. Mericle*

**PC05:** The Essentials of Neurosurgical  
ICU Management  
*Wade Smith*

**PC07:** Cervical Spondylotic  
Myelopathy and Radiculopathy:  
Treatment Approaches and Options  
*Kurt M. Eichholz, James S. Harrop,  
Vincent C. Traynelis*

**PC08:** Spine Biomechanics for Clinical  
Practice  
*Edward C. Benzel,  
Praveen V. Mummaneni*

October 17, 2010

**Neuromodulation Symposium:**  
Neuromodulation: 2010 and Beyond  
*Giancarlo Barolat, Alim-Louis Benabid,  
Emad N. Eskandar, Robert E. Gross,  
Jaimie M. Henderson, Brian H. Kopell,  
Guy McKhann, Alon Y. Mogilner,  
Ashwini Dayal Sharan,  
Konstantin V. Slavin*

**Opening Session:** Challenging  
Neurosurgical Environments:  
Obstacles and Opportunities  
*Richard W. Byrne*

**PC10:** Hands On: Cerebral  
Revascularization  
*David J. Langer, Michael Reinert*

**PC11:** Inpatient and Outpatient  
Management Dilemmas  
*Aaron S. Dumont,  
Praveen V. Mummaneni,  
Christopher I. Shaffrey*

**PC12:** Intracranial Endoscopy  
*Felice Esposito, Theodore H. Schwartz*

**PC13:** Minimally Invasive Techniques  
for Cervical and Lumbar Spinal  
Surgery  
*Farbod Asgarzadie, Andrew Frank  
Cannestra, David J. Hart*

**PC17:** Trauma Update (Part I):  
Traumatic Brain Injury  
*Lori Anne Shutter*

**PC18:** Implementing and Utilizing the  
New Degenerative Cervical Spine  
Clinical Practice Guidelines in  
Everyday Practice  
*Michael G. Kaiser,  
Praveen V. Mummaneni*

**PC19:** Radio Surgery Update (Part I):  
Cranial  
*Andrew E. Sloan*

**PC20:** Update on Spinal Deformity  
Surgery and Principles  
*Peter D. Angevine, James S. Harrop,  
Charles Kuntz, Praveen V. Mummaneni*

**PC21:** Emerging Technology for Spinal  
Disorders  
*Domagoj Coric*

**PC23:** Simulator-Based Training in  
Endovascular Techniques and  
Nuances  
*Christopher S. Ogilvy*

**PC26:** Cranial Complications  
Prevention and Management  
*Mitchel S. Berger, Raj K. Narayan*

**PC28:** Trauma Update (Part II): Spinal  
Cord and Column Injury  
*James S. Harrop*

**PC29:** Implementing and Utilizing the  
New Metastatic Brain Tumor Clinical  
Practice Guidelines in Everyday  
Practice  
*Jeffrey J. Olson, Timothy C. Ryken*

**PC32:** Update on Spinal Surgery  
Indications and Technique  
*Praven V. Mummaneni, Juan S. Uribe,  
Michael Y. Wang*

**PC34:** Mastering Spinal Disorders:  
Dealing with Complexities  
*Charles Kuntz, Praveen V. Mummaneni*

**PC35:** Neurocritical Care and  
Neurosurgical Emergencies Update  
*Jack Jallo, Lori Anne Shutter*

**PC36:** Operative Indications, Options  
and Technique for Epilepsy  
*Gordon H. Baltuch, Nicholas M. Barbaro,  
Guy M. McKhann, David W. Roberts,  
Robert E. Wharen*

October 18, 2010

**General Scientific Session I -**  
Neurosurgical Pioneers: Foundation for  
Future Innovation  
*Mitchel S. Berger, Ali R. Rezai*

**M03:** Disk Arthroplasty of the Cervical  
and Lumbar Spine  
*Domagoj Coric*

**M04:** Minimally Invasive Spine Surgery  
*Jean-Paul Wolinsky*

**M05:** Pseudoarthrosis of the Cervical  
and Lumbar Spine  
*William Charles Welch,  
Christopher E. Wolfa*

**M07:** Hematology and Coagulation for  
Neurosurgeons: Pitfalls and Solutions  
*Seung-Chyul Hong*

**M08:** Psychosurgery  
*Emad N. Eskandar, Robert E. Gross,  
Kelly D. Foote, Brian H. Kopell, Ali R.  
Rezai*

**M09:** Stroke Update for Allied Health  
Professionals  
*Ricardo A. Hanel, Christopher S. Ogilvy*

**M10:** Surgery for Tumors in Eloquent  
Cortex  
*Mitchel S. Berger, Linda A. Liau*

**M12:** The Role of Endoscopy in  
Keyhole Approaches to the Skull Base  
*Yong Ko, Theodore H. Schwartz*

**M13:** Pediatric Neurotrauma Update  
*Dong Won Kim*

**M15:** Surgical, Interventional and  
Radiosurgical Approaches to  
Intracranial Arteriovenous  
Malformations  
*Do Hoon Kwon*

**Section on Cerebrovascular Surgery  
Top Ten Abstracts**  
**#920** *Bernard R. Bendok*

**Section on Disorders of the Spine  
and Peripheral Nerves Top Ten  
Abstracts:**  
**#929** *Michael G. Fehlings*

**Section on Pain Top Ten Abstracts**  
*Christopher J. Winfree*

**#943** *Robert M. Levy*

## Section on Stereotactic and Functional Neurosurgery Top Ten Abstracts

#961 Robert R. Goodman

#966 Alim-Louis Benabid

#967 Jan H. Mehrkens

# 969 Stéphan Chabardès

**Consensus Session I:** The Carotid Revascularization Endarterectomy Versus Stenting Trial (CREST) and Modern Management of Carotid Stenosis  
*Christopher S. Ogilvy*

**Special Course I** - Guidelines for the Performance of Fusion Procedures for Degenerative Disease of the Lumbar Spine

*Peter D. Angevine, Daniel K. Resnick*

## Section on Cerebrovascular Surgery Neurosurgical Forum

#14 Sabareesh Kumar Natarajan

#25 Doniel Drazin

#27 Sabareesh Kumar Natarajan

#43 Diederik Olivier Bulter

#62 Muhammad Zeeshan Memon

## Section on Disorders of the Spine and Peripheral Nerves Neurosurgical Forum

*Edward C. Benzel, Michael W. Groff*

#63 Pierre Bernard

#71 Nicholas M. Boulis

#77 Jacques Beaurain

#82 David M. Panczykowski

#92 Andrew Clavenna

#97 Krishna Kumar

#111 Luiz Pimenta

## Section on Neurotrauma and Critical Care Neurosurgical Forum

#120 Erin N. Kiehna

## Section on Pain Neurosurgical Forum

*Christopher J. Winfree*

#141 Karl Hokanson

## Section on Pediatric Neurological Surgery Neurosurgical Forum

*Mark D. Krieger*

#149 Eric M. Thompson

## Section on Stereotactic and Functional Neurosurgery Neurosurgical Forum

*Emad N. Eskandar*

#163 Robert Mark Richardson

#172 Philip A. Starr

#179 Robert E. Elliott

## Section on Tumors Neurosurgical Forum

#203 M. Sam Eljamel

#207 Daniel A. Orringer

#211 Seymur Gahramanov

October 19, 2010

**General Scientific Session II** – Overcoming Obstacles through Understanding of Anatomy and Biology  
*P. David Adelson, Ali R. Rezaei*

**T17:** Surgical Intervention for Lumbar Spine: What the Literature Supports  
*Timothy C. Ryken*

**T19:** Intraoperative Salvage Techniques: Getting Out of Trouble in Spinal Surgery  
*Edward C. Benzel, Michael W. Groff*

**T20:** Unruptured Aneurysm Management Strategies  
*Giuseppe Lanzino, Aman B. Patel*

**T21:** Management of Trigeminal Neuralgia and Facial Pain  
*Jung Yul Park, Konstantin V. Slavin*

**T22:** Surgery and Radiosurgery for Epilepsy  
*Nicholas M. Barbaro, Ha-Young Choi, Ashwini Dayal Sharan*

**T27:** Management of Low Grade Gliomas: Current Strategies and Dilemmas  
*Mitchel S. Berger, Susan Chang, Zvi Ram*

**T28:** Management Strategies for Normal Pressure Hydrocephalus and Pseudotumor Cerebri  
*John M. McGregor*

**T29:** Treatment of the Aging Spine  
*Peter D. Angevine*

**T30:** Sports Related Spinal and Peripheral Nerve Injuries  
*Young Sul Yoon*

**Special Course II** – Deep Brain Stimulation: Advancing Technology and Expanding Indications  
*Robert E. Gross, Ali R. Rezaei, Ashwini Dayal Sharan, Philip A. Starr*

**Section on Cerebrovascular Surgery** - Neurovascular Surgery: Where We Were and Where We Are Going  
*Sean D. Lavine, Peter A. Rasmussen*

**Section on Tumors:** Cancer, Neurosurgery, and Nanotechnology: A New Triumverate  
*Costas George Hadjipanayis*

**Consensus Session III** - Is Bone Morphogenic Protein Usage in Spinal Surgery Safe, Effective and Worth the Cost?  
*Peter D. Angevine, Edward C. Benzel, Kevin S. Cahill, Michael Y. Wang*

**Operative Techniques with the Masters:** A 3-D Demonstration of Spinal Surgical Approaches  
*Edward C. Benzel, Joseph S. Cheng*

**Dinner Seminar I** – Controversies in the Management of Metastatic Brain Tumors  
*Michael A. Vogelbaum*

October 20, 2010

**W31:** Metastatic Spine Disease Management Options  
*Narayan Sundaresan*

**W32:** Spine Trauma and Spinal Cord Injury  
*Christopher E. Wolfla*

**W33:** Anterior versus Posterior Approaches for Cervical Radiculopathy  
*Sang-Gu Lee*

**W34:** Innovations in Open and Endovascular Management of Aneurysms  
*David J. Langer, Robert A. Mericle*

**W36:** Pediatric Spine Management (Traumatic and Congenital)  
*Richard C. E. Anderson, David W. Pincus*

**W37:** Complications of Aneurysm Surgery: Avoidance and Management  
*Giuseppe Lanzino, Andreas Raabe*

**W41:** Malignant Gliomas: Future Treatment Strategies  
*Jeffrey N. Bruce, E. Antonio Chiocca, Amy B. Heimberger, Zvi Ram*

**W42:** Radiosurgery in Neuro-Oncology  
*Michael A. Vogelbaum*

**W45:** Deep Brain Stimulation for Movement Disorders  
*Robert E. Gross, Michael Gordon Kaplitt, Philip A. Starr*

**Section on Neurotrauma and Critical Care** – Mild Traumatic Brain Injury and Sports-Related Concussion  
*Jamshid Ghajar*

**Section on Stereotactic and Functional Neurosurgery** - Complication Avoidance in Deep Brain Stimulation Surgery  
*Jill L. Ostram, Caroline A. Racine*

**Section on Pain** - Coding and Reimbursement in a Neurosurgical Pain Practice  
*Andre Machado, Christopher J. Winfree*

**Dinner Seminar II** – Spinal Arthroplasty: Fact and Fiction  
*Domagoj Coric, Fred H. Geisler, James S. Harrop, Praveen V. Mummaneni*

October 21, 2010

**General Scientific Session IV** – 3-D Digital Masters Video Symposium and Cases and Coffee with the Masters  
*Nicholas M. Barbaro, Paul S. Larson, Oren Sagher, Roland A. Torres, Michael A. Vogelbaum*

## Digital Posters

#1015 Sabareesh Kumar Natarajan

#1051 Gregory J. Velat

#1058 Jaechan Park

#1096 Jorn Fierstra

#1112 Rana S. Dhillon

#1137 Muhammad Zeeshan Memon

#1158 Gustavo Pradilla

#1178 Paula Eboli

#1184 Debraj Mukherjee

#1194 Terry Burns

#1205 Elias Boulos Rizk

#1214 Nicandro Figueiredo

#1228 Bohdan W. Chopko

#1248 Eric Klineberg

#1262 Quentin J. Malone

#1264 Matthew McGirt

#1283 Paul A. Gardner

#1291 Jean-Pierre Mobasser

#1295 James S. Anderson

#1296 Charles S. Theofilos

#1297 Luiz Pimenta

#1298 Rafael F. Cardona

# DISCLOSURE INFORMATION

#1317 Beejal Y. Amin  
#1318 Luiz Pimenta  
#1319 Luiz Pimenta  
#1361 Dwight Saulle  
#1382 Jeremy Lee Fogelson  
#1407 Gopalakrishnan Balamurali  
#1414 Ravish V. Patwardhan  
#1429 John H. Shin  
#1434 Robert Jackson  
#1436 Ira M. Goldstein  
#1437 Robert Jackson  
#1438 Maximino Tellez-Gutierrez  
#1446 James H. Maxwell  
#1514 Nicholas M. Boulis  
#1516 Sergio Rivero  
#1517 Bharat Guthikonda  
#1518 Arun Tungaria  
#1539 David W. Pincus  
#1573 Jin Hoon Park  
#1601 Barbara Massa Micon  
#1623 Michael Lang  
#1644 Leopold Arko IV  
#1672 Gordon Li  
#1685 Edward R. Laws  
#1745 Jeff W. Chen  
#1809 Stefan Wolfsberger  
#1817 Sanjay Bhatia  
#1825 James Han  
#1827 Engelbert Knosp  
#1848 Sagar R. Shah  
#1868 Graeme F. Woodworth

## Neurotrauma CME\*



Strengthen your proficiency with  
the *new* SANS Neurotrauma  
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The CNS is proud to introduce a new module of its popular Self-Assessment in Neurological Surgery (SANS) product, launching this October. This dynamic learner-driven tool allows you to improve your surgical decision making skills relative to neurotrauma and critical care, while also providing CME credit.

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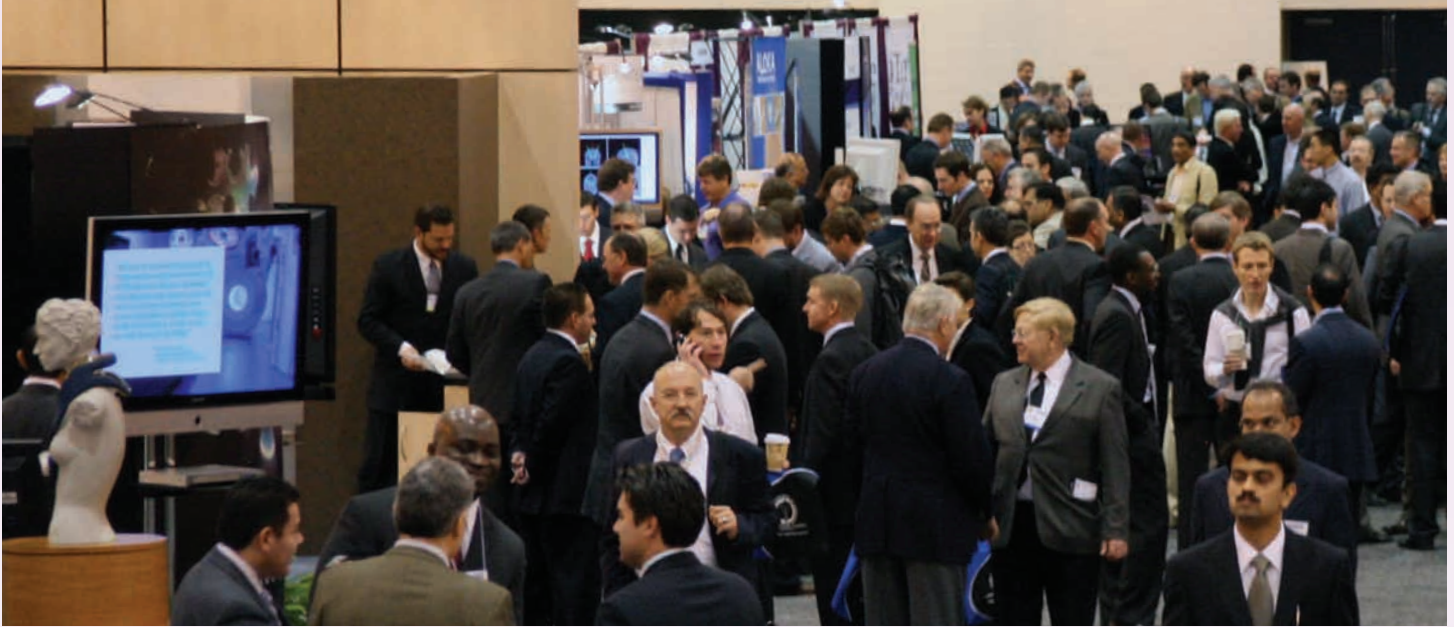
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# Find the Latest Advances and Technology in the Exhibit Hall!

The 2010 CNS Exhibit Hall gives attendees a forum to learn about the latest technological innovations and advances in the field of neurosurgery. Exhibitors from around the world will be ready to demonstrate their latest products and services. Stop by the Exhibit Hall and catch up with your current corporate contacts and make new connections. You will find these exciting *NEW* opportunities for education and networking, as well as the valuable resources you expect in the 2010 Exhibit Hall!

**NEW CNS Product & Technology Showcase.**  
This stage, located in the back of the exhibit hall, provides a unique forum to educate attendees about the latest products and services, during select open exhibit hours on Monday and Tuesday afternoon.

**NEW California Wine & Cheese Experience with the CNS Exhibitors.**  
**Tuesday, October 19**  
**3:00 – 4:30 PM**

Join your colleagues in the Exhibit Hall on Tuesday afternoon for a California Wine & Cheese Experience. Visit with vintners from select California wineries to learn about the characteristics unique to each winery. Sommeliers will also be in attendance to make personal recommendations and answer any questions about the selections available. Don't miss this opportunity to experience California's world-class wine regions while also viewing the latest developments in neurosurgical products and services.

**Research & Development Expert Exchange** – Engineers, product developers and researchers from participating exhibiting companies will be available to discuss your concerns and ideas for neurosurgical technology.

**In-Booth Demonstrations** – Get demonstrations from participating exhibitors during select hours. See page 45 for complete schedule.

**NEW Live Surgical Presentations.**  
**Tuesday, October 19**  
**9:15 – 10:00 AM**  
**Wednesday, October 20**  
**9:15 – 10:00 AM**

Catch two cutting edge presentations delivered using telemedicine technology in the new CNS Product & Technology Showcase. See page 83 for details.

**CNS Member Services** – offering membership information, publications and demos of the following CNS products:

- **CNS University of Neurosurgery** – Browse many of the CNS leading educational tools, including the CNS Image Database, the video theatre and a collection of online courses and lectures.
- **CNS Job Placement Service (JPS)** – Post your resume and be seen by hundreds of leading recruiters from across the country.
- **SANS Lifelong Learning**, including SANS: Spine, SANS: Pediatrics, SANS *Competencies* and the new SANS: Neurotrauma.
- **CNS Video Theatre** – Master neurosurgeons will demonstrate neurosurgical techniques in this acclaimed video series.
- **E-mail Stations** – Stay in touch with home and the office through these complimentary stations!

*See pages 109-127 for a complete listing of the 2010 CNS Exhibitors!*

# VISIT THE EXHIBIT HALL FOR THE

**NEW**

## THE CNS PRODUCT & TECHNOLOGY SHOWCASE!

This stage, located in the rear of the Level 1 Exhibit Hall, provides a unique forum to learn about the latest products and services!

### MONDAY, OCTOBER 18

**9:30 – 9:55 AM** Lanx, Inc. has invited **Dr. Dean G. Karahalios** to discuss *TLIF with Unilateral Pedicle Screws and the Aspen™ Spinous Process Fixation.*



**11:30 – 11:55 AM** MASEP Infini has invited **Dr. Dilek Ozturk** to discuss *Infini Rotary Gamma Ray Radiosurgery System.*



**12:00 – 12:25 PM** Aesculap Implant Systems has invited **Scott Leary, MD**, to discuss *Minimally Invasive Techniques with Percutaneous Pedicle Screws.*



### TUESDAY, OCTOBER 19

**11:30 – 11:55 AM** Salient Surgical has invited **Dr. Christopher Taleghani, MD, MBA, Cumberland Brain & Spine** to discuss *Improved visualization and reduction of epidural bleeding with the use of the Aquamantys EVS in MIS TLIF's.*



## RESEARCH & DEVELOPMENT EXPERT EXCHANGE

TUESDAY, OCTOBER 19

11:30 AM – 3:00 PM

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

### Elekta

109

**Mans Barsne**  
Vice President, Research & Development  
Neuroscience  
Available: 1:00 – 3:00 PM  
Products: Leksell Gamma Knife and Leksell Stereotactic System

### Osteomed

162

**Geronimo Hernandez**  
Senior Engineer  
Product: Neuro Plating  
**Naren Rengamath**  
Manager, Engineering CMF/Neuro  
Product: Osteoflap

### Hemedex

161

**Charles Welch**  
Director, New Product Development  
Product: Bowman Perfusion Monitor

### Vycor Medical

2503

**Theodore Novak**  
Director of Engineering  
Product: Vycor ViewSite™ Brain Acces System

### OneMedNet Corporation

2103

**David Branson**  
Director, Product Management  
Available: 11:30 AM – 1:30 PM  
Product: Rapid and Secure Electronic Transfer of Imaging Studies

### Ziehm Imaging

861

**Greg Jett**, Product Manager  
**Ron Villane**, Chief Engineer  
Product: FD3D - 3D flat panel C-Arm with open architecture for surgical navigation

# LATEST PRODUCTS AND TECHNOLOGY!

## ***In-Booth Demonstrations!***

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### **Baxano, Inc. 140**

iO-Flex™ System for precision lumbar decompression from the “inside out”  
October 18, 19 and 20: 9:00 – 10:00 AM and 11:30 AM – 12:00 PM

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### **Berkeley Advanced Biomaterials 763**

Bi-Ostetic Foam HA/TCP in collagen matrix  
October 18, 19 and 20: 11:30 AM

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### **Codman 117**

SPETZLER™-MALIS® Disposable Nonstick Forceps: Nuances in the Management of AVMs and Giant Aneurysms  
October 19: 11:30 AM – 12:30 PM and 3:00 – 4:30 PM

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### **Concentric Medical, Inc. 3218**

Advanced Techniques with Retrieval Technology for AIS  
October 18 and 19: 10:00 AM and 2:00 PM  
October 20: 10:00 AM

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### **Hemedex Inc. 161**

Hemedex: Bowman Perfusion Monitor  
October 18, 19 and 20: 9:15 – 9:45 AM

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### **HHW Technologies, Inc 2101**

F1 H1D Portable Surgical Headlight  
October 18, 19 and 20: Morning and Afternoon Breaks

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### **LifeNet Health 455**

Vertigraft Laminoplasty Spacer  
October 18: 9:30 – 10:00 AM and 11:30 AM – 12:00 PM

OsteoCleanse Autograft Cleaning Service and Storage System  
October 19: 9:30 – 10:00 AM and 11:30 AM – 12:00 PM

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### **Nexstim 943**

Nexstim NBS  
October 18: 9:00 AM – 3:00 PM  
October 19: 9:00 AM – 4:30 PM  
October 20: 9:00 AM – 2:00 PM

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### **Orthofix Spine 839**

Firebird™ Spinal Fixation System and Phoenix™ Minimally Invasive Spinal Fixation System  
October 18, 19 and 20: 9:00 – 10:00 AM and 11:30 AM – 12:00 PM

Ascent™ LE Posterior Occipital Cervico-Thoracic (POCT) System  
October 18, 19 and 20: 9:00 – 10:00 AM and 11:30 AM – 12:00 PM

Pillar™ SA PEEK Spacer System  
October 18, 19 and 20: 9:00 – 10:00 AM and 11:30 AM – 12:00 PM

Trinity™ Evolution Allogeneic Cancellous Bone Matrix  
October 18, 19 and 20: 9:00 – 10:00 AM and 11:30 AM – 12:00 PM

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### **Siemens Healthcare 408**

Arcadis Orbic 3D  
October 18, 19 and 20: During Lunch Breaks

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### **Spine View, Inc. 2502**

enSpire™ Technology Overview  
October 18: 9:35 AM and 11:40 AM  
October 19 and 20: 9:30 AM and 11:40 AM

Live enSpire™ Demo  
October 18: 10:45 AM and 11:50 AM  
October 19 and 20: 9:45 AM and 11:50 AM

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### **TomoTherapy, Inc. 2303**

TomoTherapy SRS/SBRT treatment planning  
October 18, 19 and 20: 11:30 AM

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### **Vertebral Technologies, Inc. (VTI) 2700**

InterFuse P UPLIF® Approach for Large Footprint Interbody Fusion Device  
October 18: 9:00 – 9:30 AM  
October 19: 9:30 – 10:00 AM 11:30 AM – 12:00 PM  
October 20: 9:30 – 10:00 AM



# SATURDAY OCTOBER 16

## PRACTICAL COURSES 1:00 – 5:00 PM

**PC01**  **Room 3000** **\$450**

### 3-D Anatomy (Supratentorial)

Course Director: *Albert L. Rhoton, Jr.*

**Learning Objectives:** This course will provide detailed three-dimensional instruction on the microsurgical anatomy of the anterior cerebrum, posterior cerebrum, temporal lobe, third ventricle, pineal region, anterior skull base and cavernous sinus regions. Transsphenoidal, transmaxillary and transoral approaches will be described in relationship to the three-dimensional anatomy and exposure of corresponding anatomic structures. Upon completion of this course, participants will be able to describe the anatomy of the supratentorial compartment, describe and discuss approaches to supratentorial regions and identify the complexities of the three-dimensional neurovascular relationships of each region.

**PC02** **Room 2002** **\$450**

### Operating in Eloquent Cortex

Course Director: *Michael M. Haggund*

Faculty: *Mitchel S. Berger, Gerald A. Grant, Guy M. McKhann, II*

**Learning Objectives:** This course will provide an in-depth review of techniques and technologies for the identification and manipulation of eloquent regions within the cerebral hemispheres. Upon completion of this course, participants will be able to describe available technologies for performing safer and more effective procedures within and around the eloquent cortex and describe their use.

**PC03** **Room 2007** **Complimentary!**

### Successful Grant Writing for the Neurosurgeon

Course Director: *E. Antonio Chiocca*

Faculty: *Robert J. Dempsey, Linda M. Liau, E. Sander Connolly, Jr., Manish Kumar Agbi, Atom Sarkar, Stephen J. Korn, PhD, Edie E. Zusman*

**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. At the conclusion of this session, 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. 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.

**PC04** **Room 2009** **\$450**

### Cranial Vascular Malformations: Surgical and Endovascular Techniques

Course Directors: *Rafael J. Tamargo, E. Sander Connolly, Jr.*

Faculty: *H. Hunt Batjer, Robert A. Mericle, Christer E. Lindquist, Philippe Gailloud*

**Learning Objectives:** At the conclusion of this course, participants will be able to discuss the epidemiology and presentation of cranial arteriovenous malformations and arteriovenous fistulas, as well as microsurgical, endovascular, and radiosurgical treatment options, and outcomes. The spectrum of transcranial microsurgical approaches, endovascular interventions and radiosurgical treatments will be reviewed and compared, allowing participants to evaluate the advantages and disadvantages inherent in each approach. Participants will also be able to discuss complication avoidance and management or perioperative and intraoperative challenges.

**PC05** **Room 2005** **\$200**

### The Essentials of Neurosurgical ICU Management

Course Directors: *Alex B. Valadka, Owen B. Samuels*

Faculty: *William M. Coplin, Wade Smith, Geoffrey T. Manley, Peter D. LeRoux*

**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. Participants will be able to discuss the most up-to-date recommendations 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 his or her individual membership association and certification board to determine the requirements for accepting credits. All attendees will receive a confirmation of attendance.*

**PC06** **Room 2003** **\$450**

### 2010 CPT Coding Update

Course Director: *Joseph S. Cheng*

Faculty: *R. Patrick Jacob, Robert R. Johnson, William Mitchell, Kimberly Pollock, John K. Ratliff*

**Learning Objectives:** This course provides a summary of the anticipated CPT 2011 coding changes and also reviews the 2010 coding changes that affect neurosurgeons. Upon completion of this course, participants will be able to apply new and revised CPT coding concepts to key neurosurgical services, reporting services with CPT codes and modifiers to effectively protect surgical and evaluation/management reimbursement, as well as explain compliance issues with regard to new regulations.

## PRACTICAL COURSES 1:00 – 5:00 PM

**PC07 Room 2001 \$550**

### Cervical Spondylotic Myelopathy and Radiculopathy: Treatment Approaches and Options

Course Directors: *Vincent C. Traynelis, Michael G. Kaiser*  
 Faculty: *John E. O'Toole, Kurt M. Eichholz, Langston T. Holly, James S. Harrop*

**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 of this course, participants will be able to discuss the appropriate indications and state-of-the-art techniques for surgical management of degenerative disease of the cervical spine, as well as steps to avoid common complications.

**PC08 Room 2006 \$450**

### Spine Biomechanics for Clinical Practice

Course Director: *Edward C. Benzel*  
 Faculty: *Ajit A. Krishnaney, Michael Y. Wang, Praveen V. Mummaneni, Gregory R. Trost*

**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 of this course, participants will be able to discuss biomechanical principles and strategies to address clinical problems. Complication avoidance and management are emphasized.

**PC09 Room 2004 \$450**

### Microneurosurgery with Professor Yasargil: Pearls, Pitfalls, and Avoidance of Complications

Course Director: *M. Gazi Yasargil*  
 Faculty: *Saleem I. Abdulrauf, Ugur Ture*

**Learning Objectives:** This course will provide an in-depth review of microsurgical techniques using intraoperative video from Dr. Yasargil's experience in the treatment of intracranial neoplasms and vascular lesions. Specific segments will be allocated to intrinsic and ventricular tumors, cerebral aneurysms, and cerebral vascular malformations. Emphasis will be placed on surgical technique, pearls, pitfalls and steps to avoid complications. Upon completion of the course, participants will be able to describe various approaches to intracranial lesions, discuss potential pitfalls to a variety of cranial approaches, as well as describe ways to avoid complications.

## Check out the New Mobile Meeting Guide!

Allowing you instant access to:

- Find Meeting rooms.
- Browse abstracts.
- Search faculty members.
- Create your schedule.

iPhone, iPod Touch and iPad users access the new 2010 CNS Annual Meeting app. This application, available from the iTunes App Store, allows you full access to the Annual Meeting content from the palm of your hand!

BlackBerry, Android and Smartphone users may access the web version.

Stay connected to <http://m.cns.org> for the latest meeting updates!





# SUNDAY OCTOBER 17

## PRACTICAL COURSES 8:00 AM–4:00 PM

### PC10 – UCSF \$800

#### Hands-On: Cerebral Revascularization

Course Directors: *Fady T. Charbel, Sepideh Amin-Hanjani*

Faculty: *Jacques J. Morcos, Gary K. Steinberg, David J. Langer, Michael T. Lawton, Michael Reinert, Ketan R. Bulsara, Ali Alaraj, Gregory J. Zipfel, Daniel Hänggi*

**Learning Objectives:** Participants will get an overview of open and endovascular approaches to cerebral revascular indications, approaches and associated complications. Upon completion of the course, participants will be able to discuss the indications, approaches and the various techniques used for cerebral revascularization. Participants will be able to demonstrate hands-on cerebral revascularization techniques to apply to their practice.

*This course will be held off site at University of California, San Francisco Robert A. Schindler, MD Surgical Skills Classroom, 1855 Folsom Street, Room 258. Shuttle transportation will depart Moscone West Convention Center at 7:30 AM.*

### PC11 Room 2020 \$325

#### Inpatient and Outpatient Management Dilemmas for Allied Health Care Professionals

Course Directors: *John A. Jane, Jr., Mark E. Shaffrey, Andrea L. Strayer, MSN, APNP, CNRN*

Faculty: *Praveen V. Mummaneni, Christopher I. Shaffrey, David O. Okonkwo, Michael P. Steinmetz, Aaron S. Dumont, Elana Farace, Nader Pouratian*

**Learning Objectives:** Upon completion of the course, participants will be able to discuss clinical management of a variety of cranial and spinal conditions, including trauma, cerebral aneurysm, brain tumors and peripheral nerve injury. Participants will be able to analyze new technology available in spine surgery including artificial cervical discs and minimal access surgical options. Participants will be able to discuss outpatient management challenges including wound management, orthoses, medication management and patient history, and neurologic examination “red flags”.

*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.*

### PC12 – Cadaver Course Room 2022 \$1,300

#### Intracranial Endoscopy

Course Directors: *Theodore H. Schwartz, David F. Jimenez*

Faculty: *John A. Jane, Jr., Felice Esposito, Fred Gentili, Charles Teo, Michael R. Gaab, Peter Nakaji, Alan Cohen, Mark M. Souweidane*

**Learning Objectives:** Upon completion of this course, participants will be able to describe the use of endoscopy for intracranial applications including endonasal and intraventricular approaches. Topics covered include the management of pituitary adenomas, meningiomas, craniopharyngiomas, chordomas, hydrocephalus, intraventricular tumors and cysts and other skull base tumors. Participants will be able to describe the use of the latest endoscopic instrumentation available for both didactic and hands-on instruction using cadaveric models.

### PC13 – Cadaver Course Room 2014 \$1,600

#### Minimally Invasive Techniques for Cervical and Lumbar Spinal Surgery

Course Directors: *Kevin T. Foley, Larry T. Khoo*

Faculty: *Donald L. Hilton, Jr., Muwaffak Abdulbak, Langston T. Holly, Paul Park, David J. Hart, Farbod Asgarzadie, Andrew Frank Cannestra*

**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 of this course, participants will be able to describe various minimally invasive techniques for cervical and lumbar spine surgery, and identify the indications, results and potential complications for these procedures.

## PRACTICAL COURSES 8:00 – 11:30 AM

### PC14 Room 2003 \$450

#### The Neurosurgeon as Innovator: Being on the Leading Edge of Neurosurgery

Course Directors: *John M. Abrabams, Vinay Deshmukh*

Faculty: *John Adler, Eric C. Leuthardt*

**Learning Objectives:** At the completion of this course, participants will be able to discuss the essential role that innovation plays in the field of neurosurgery. Presentations by seasoned surgeon-entrepreneurs will reveal the pitfalls and rewards of a clinician pursuing innovation. The importance of transparent and ethically sound relationships, and how such relationships foster innovation, will be emphasized. The course will be a workshop for budding entrepreneurs. Through interactive teaching modules, two products will be “developed” by panelists and course participants. These mock “case presentations” will provide a detailed understanding of how an idea is generated, evaluated, and ultimately turned into a viable product. Panelists, which include established surgeon-innovators and venture capitalists, will highlight the essentials of successful entrepreneurship.



## PRACTICAL COURSES 8:00 –11:30 AM

### PC15 Room 2018 *Complimentary!*

#### Practice Development in an Era of Reform

Course Director: *Alan M. Scarrow*

Faculty: *John A. Kusske, Daniel K. Resnick, Alex B. Valadka, Philip W. Tally, John K. Ratliff*

**Learning Objectives:** Health care reform has resulted in changes that impact various aspects of the neurosurgical practice. Participants will be able to discuss an overview of new federal legislation, quality measures, emergency room triage, electronic health records options, and the ability to remain innovative during the era of reform.

### PC16 Room 2011 \$450

#### Brain Tumor Update (Part I): Gliomas

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

Faculty: *John A. Boockvar, Michael Lim, Manish K. Agbi, Mark E. Shaffrey, Jeffrey S. Weinberg, Frederick G. Barker, Russell R. Lonser*

**Learning Objectives:** This course will provide an up-to-date overview of current management strategies for major types of glial tumors including astrocytomas, oligodendrogliomas and others. The seminar includes current research topics but emphasizes practical management issues. Upon completion of this course, participants will be able to discuss the state-of-the-art management of low and high-grade glial tumors and describe current concepts in glioma management including surgical techniques, adjuvant treatments, tumor biology and practical clinical management decisions.

**NEW!** Register for both PC16 and PC27 to receive a \$50 rate reduction off each course!

### PC17 Room 2004 \$450

#### Trauma Update (Part I): Traumatic Brain Injury

Course Director: *Raj K. Narayan*

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

**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 of this course, participants will be able to discuss recent developments in this field, along with current management surgical and non-surgical strategies and guidelines.

**NEW!** Register for both PC17 and PC28 to receive a \$50 rate reduction off each course!

### PC18 Room 3002 \$450

#### Implementing and Utilizing the New Degenerative Cervical Spine Clinical Practice Guidelines in Everyday Practice

Course Directors: *Mark E. Linskey, Paul G. Matz*

Faculty: *Daniel K. Resnick, Langston T. Holly, Robert F. Heary, Praveen V. Mummaneni, Michael G. Kaiser*

**Learning Objectives:** There has been a rapid evolution of evidence based medicine and guidelines for neurosurgery, including spinal disorders. This is part one of a two-part series 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 spinal disorders. These will be discussed in terms of strengths, weaknesses and limitations in applying to clinical practice. The course will review neurosurgical guidelines for spinal disorders including cervical spinal cord injury and lumbar degenerative disease. At the completion of the course, participants will be able to discuss the current state of evidence-based medicine and guidelines for spinal disorders and understand the process for accruing evidence-based medicine and guidelines, as well as potential limitations.

**NEW!** Register for both PC18 and PC29 to receive a \$50 rate reduction off each course!

### PC19 Room 3014 \$450

#### Radiosurgery Update (Part I): Cranial

Course Directors: *Andrew E. Sloan, Jason P. Sheehan*

Faculty: *Gene H. Barnett, Antonio A.F. De Salles, Jean M. Regis, Kelly D. Foote*

**Learning Objectives:** Upon completion of this course, participants will be able to describe the radiobiology of radiosurgery. Participants will be able to discuss the indications, techniques, outcomes and complications associated with radiosurgery of benign and malignant intracranial processes.

**NEW!** Register for both PC19 and PC30 to receive a \$50 rate reduction off each course!

### PC20 Room 3016 \$450

#### Update on Spinal Deformity Surgery and Principles

Course Directors: *Christopher I. Shaffrey, Praveen V. Mummaneni*

Faculty: *James S. Harrop, Robert F. Heary, Peter D. Angevine, David O. Okonkwo, Charles Kuntz, IV, Michael Y. Wang, Sigurd Berven*

**Learning Objectives:** Upon completion of this course, 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 discuss spinal deformity case management using cases provided by the audience and by faculty.

## PRACTICAL COURSES 8:00 –11:30 AM

**PC21 Room 2002 \$450**

### Emerging Technology for Spinal Disorders

Course Director: *Domagoj Coric*

Faculty: *Luiz Pimenta, Carl Laurysen, Samuel J. Chewing, Jr., Praveen V. Mummaneni*

**Learning Objectives:** After completion of this course, participants will be able to discuss the innovative technologies for treating spinal disorders including dynamic stabilization, artificial discs, nucleus repair and replacement and motion preservation applications. Specifically there will be discussions on biomechanics, new technology applications and advancements. In addition, the advantages and limitations of all technology and devices will be reviewed.

**PC22 Room 2006 \$450**

### Spine Update: A Critical Assessment of Peer-Reviewed Spine Literature for the Practicing Neurosurgeon

Course Director: *Paul C. McCormick*

Faculty: *John E. O'Toole, Peter D. Angevine, Zober Ghogawala*

**Learning Objectives:** Designed for the practicing neurosurgeon, this course will focus on the critical assessment of recent publications of importance to the clinical practice of spinal surgery. In an interactive session, the faculty will analyze and discuss recent prominent publications in the medical literature in areas including new/emerging technology (arthroplasty, biologics, interspinous spacers) and techniques (minimally invasive surgery and transpoas and transsacral procedures), and the treatment of degenerative cervical and lumbar disease, spinal tumors and spinal deformity. The course will emphasize a balanced critique of study design, conduct, analysis and interpretation and how these elements might affect the evidence-based application of a study's results to individual patients in a neurosurgical spine practice. Participants will be provided with the relevant references prior to the course, and a fundamental knowledge of the published papers will be assumed. After completion of this course, participants will be able to describe and discuss the importance of study design and how it may affect a study's validity and generalizability, discuss the strengths and weaknesses of the design and conduct of recent pivotal papers in the spinal surgery literature and explain the relevance and applicability of these studies to individual patients treated in their neurosurgical practices.

**PC23 Room 2008 \$450**

### Simulator-Based Training in Endovascular Techniques and Nuances

Course Directors: *Bernard R. Bendok, Elad I. Levy, Andrew J. Ringer*

Faculty: *Erol Veznedaroglu, J.D. Mocco, Adnan H. Siddiqui, L. Nelson Hopkins, III, Christopher S. Ogilvy*

**Learning Objectives:** At the completion of this course, participants will be able to demonstrate proficiency using realistic simulators of carotid stenting, aneurysm coiling and stroke thrombolysis. Participants will be able to describe basic concepts and techniques in endovascular neurosurgery and will be able to operate an endovascular device.

**PC24 3-D Room 3000 \$500**

### Surgical Approaches to the Ventricular System: A 3-D Practical Course

Course Directors: *Alan Cohen, Mark M. Souweidane*

Faculty: *Richard G. Ellenbogen, Albert L. Rhoton, Jr., Joseph M. Piepmeier, Erdener Timurkaynak*

**Learning Objectives:** This case-intensive course will incorporate didactic demonstrations of open surgical and endoscopic procedures that will be supplemented with three-dimensional videos demonstrating approaches to lesions in the ventricular system. The course will conclude with frank discussions of pearls, pitfalls, complication avoidance and management, and determination of when endoscopic or open surgical approaches are best utilized. At the completion of the course, participants will be able to discuss the best treatment alternatives for intraventricular tumors within the lateral, third and fourth ventricles, describe the pertinent neuroanatomy associated with each surgical procedure, discuss potential complications with various surgical routes to the ventricular system, outline the limitations of endoscopic approaches, and describe when to consider an alternative surgical option.

**PC25 3-D Room 2001 \$450**

### Open Aneurysm Surgery: A 3-D Practical Course

Course Directors: *Byron Gregory Thompson, Jr., Michael T. Lawton*

Faculty: *Paul J. Camarata, Howard A. Riina, Jacques J. Morcos, Fady T. Charbel, Ali F. Krisht, David W. Newell*

**Learning Objectives:** Participants will analyze case presentations of patients presenting with intracranial aneurysms to select the optimal (endovascular or microsurgical) approach. Participants will be able to interpret advanced preoperative imaging evaluation to maximize effectiveness of preoperative surgical planning. Participants will be able to describe skull base approaches for anterior and posterior circulation aneurysm surgery in order to optimize exposure for complex aneurysms and will discuss adjunctive intraoperative imaging techniques to optimize obliteration of cerebral aneurysms with preservation of parent and branch vasculature.



## PRACTICAL COURSES 12:30 – 4:00 PM

**PC26 Room 2003 \$450**

### **Cranial Complications Prevention and Management**

Course Director: *William T. Couldwell*

Faculty: *Ossama Al-Mefty, Robert F. Spetzler, Mitchel S. Berger, Alim-Louis Benabid, Raj K. Narayan*

**Learning Objectives:** At the conclusion of this course, participants will be able to list common complications associated with a variety of cranial procedures, and will be able to describe strategies to avoid and manage them. 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.

**PC27 Room 2011 \$450**

### **Brain Tumor Update (Part II): Non-Glial Tumors**

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

Faculty: *Franco DeMonte, Johnny B. Delashaw, Charles Teo, Philip V. Theodosopoulos, Ganesh Rao, Jeffrey N. Bruce*

**Learning Objectives:** This course will provide an up-to-date overview of current management strategies for major types of benign and malignant brain tumors of non-glial origin. The seminar includes current research topics but emphasizes practical management issues. Upon completion of this course, participants will be able to discuss the state-of-the-art management of benign and malignant brain tumors including meningiomas, acoustic neuromas, skull base tumors, pediatric tumors and metastases.

*Register for both PC16 and PC27 to receive a \$50 rate reduction off each course!*

**PC28 Room 2004 \$450**

### **Trauma Update (Part II): Spinal Cord and Column Injury**

Course Director: *Michael G. Fehlings*

Faculty: *James S. Harrop, Steven Casha, Bizhan Aarabi, Christopher I. Shaffrey, Richard G. Ellenbogen*

**Learning Objectives:** At the conclusion of the course, participants will be able to describe the principles of management of spinal cord injury in pediatrics and adults, emerging clinical trials in acute spinal cord injury and the classification of spinal trauma.

*NEW! Register for both PC17 and PC28 to receive a \$50 rate reduction off each course!*

**PC29 Room 3002 \$450**

### **Implementing and Utilizing the New Metastatic Brain Tumor Clinical Practice Guidelines in Everyday Practice**

Course Directors: *Mark E. Linskey, Steven L. Kalkanis*

Faculty: *Timothy C. Ryken, Douglas Kondziolka, Jeffrey J. Olson, David W. Andrews, Anthony L. Asher*

**Learning Objectives:** There has been a rapid evolution of evidence based medicine and guidelines for neurosurgery, including cranial disorders. This is part two of a two-part series 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. At the completion of the course, participants will be able to discuss the current state of evidence-based medicine and guidelines for cranial disorders and understand the process for accruing evidence-based medicine and guidelines, as well as potential limitations.

*NEW! Register for both PC18 and PC29 to receive a \$50 rate reduction off each course!*

**PC30 Room 3014 \$450**

### **Spinal Oncology Update (Part II): Radiosurgery and Adjuvant Therapies**

Course Director: *Peter C. Gerszten*

Faculty: *Mark H. Bilsky, Steven D. Chang, Lilyana Angelov, Jason P. Sheehan, Jack P. Rock*

**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. Upon completion of this course, participants will be able to describe 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 discuss the potential risks and complications of spine radiosurgery. This will be a true practical course, with all participants having the opportunity for hands-on experience by planning actual cases.

*NEW! Register for both PC19 and PC30 to receive a \$50 rate reduction off each course!*



## PRACTICAL COURSES 12:30 – 4:00 PM

**PC31**  **Room 3000** **\$450**

### 3-D Anatomy (Infratentorial)

Course Director: *Albert L. Rhoton, Jr.*

**Learning Objectives:** This course will provide detailed instruction on the three-dimensional microsurgical anatomy of the temporal bone, cerebellum and fourth ventricle. The three-dimensional anatomy and exposure provided by the far lateral and transcondylar approaches will be described, as well as approaches to the cerebellopontine angle and the jugular foramen. Upon completion of this course, participants will be able to describe the anatomy of these areas and discuss the three-dimensional neurovascular relationships of each region.

**PC32** **Room 2005** **\$450**

### Update on Spinal Surgery Indications and Technique

Course Director: *Michael Y. Wang*

Faculty: *Roger Hartl, Juan S. Uribe, Joseph S. Cheng, Gregory R. Trost, Richard P. Schlenk, Praveen V. Mummaneni*

**Learning Objectives:** At the conclusion of this course, participants will be able to discuss new developments in the treatment of spinal cord injuries, review the latest techniques for minimally invasive spinal surgery, explain the evidence for and against cervical arthroplasty and describe the recent literature on the treatment of lumbar spondylosis.

**PC33** **Room 2009** **\$450**

### Peripheral Nerve Surgery: The Basics and Beyond

Course Directors: *Rajiv Midha, Lynda J.S. Yang*

Faculty: *Allen H. Maniker, Robert J. Spinner, Eric L. Zager, Allan J. Belzberg*

**Learning Objectives:** At the conclusion of this course, 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; selection of patients with nerve injury for operation including timing of intervention; nerve conditions that require emergency and urgent management; and the management of patients with peripheral nerve tumors or common entrapment neuropathies.

**PC34** **Room 2007** **\$500**

### Mastering Spinal Disorders: Dealing with Complexities

Course Director: *Charles Kuntz, IV*

Faculty: *Praveen V. Mummaneni, Tyler R. Koski, Christopher I. Shaffrey, Laurence D. Rhines, Brian R. Subach, Robert F. Heary*

**Learning Objectives:** Using lectures as well as Q&A and practical sessions, this unique course will provide participants insight into the mastery of complex spinal disorders, including the evaluation and treatment of spinal tumors and deformity plus complex adult and geriatric degenerative problems. The role of minimal access techniques and motion preservation technology will be reviewed. Upon completion of this course, participants will be able to describe novel and useful surgical techniques from occipitocervical fusion to spinopelvic fusion and artificial disc placement to minimally invasive techniques, including strategies for complication avoidance and management.

**PC35** **Room 2006** **\$450**

### Neurocritical Care and Neurosurgical Emergencies Update

Course Director: *Jack Jallo*

Faculty: *David O. Okonkwo, Christopher J. Madden, Pascal Jabbour, Douglas Laske, Lori Anne Shutter*

**Learning Objectives:** This course is designed to promote rapid identification and a better understanding of the management of neurosurgical emergencies. At the conclusion of the course, the participants will be able to discuss key management strategies for emergencies involving the brain, spine and peripheral nerves. Participants will be able to evaluate the current evidence for patient specific therapies, apply the latest modalities in the management and understanding of neurosurgical emergencies, identify controversies in management of these emergencies, discuss the role of the surgeon in emergency neurosurgery and understand the physiology of a variety of neurosurgical emergencies.

**PC36** **Room 2002** **\$450**

### Operative Indications, Options and Technique for Epilepsy

Course Director: *Gordon H. Baltuch*

Faculty: *David W. Roberts, Guy M. McKhann, II, Robert E. Wharen, Rees Cosgrove, Nicholas M. Barbaro*

**Learning Objectives:** The course is designed to cover the current thinking of the indications, various options and surgical management of medically intractable epilepsy patients. At the conclusion of this course, participants will be able to discuss the indications, surgical techniques, results and complications of epilepsy surgery.

SAN FRANCISCO MARRIOTT MARQUIS 8:00 AM – 4:00 PM

**SYM1**

**NEW**

**GOLDEN GATE BALLROOM**

## Neuromodulation: 2010 and Beyond

*Directors: Alim-Louis Benabid, Ashwini Dayal Sharan*

**Learning Objectives:** This Symposium will provide a detailed review of the state-of-the-art neuromodulation therapies including spinal cord stimulation, peripheral nerve stimulation, deep brain stimulation and intrathecal infusion. Techniques, technology and its applications for chronic back and extremity pain, headaches, facial pain, movement disorders, epilepsy and psychiatric disorders will be covered. Participants will be able to discuss the indications, scientific rationale, outcome and complications avoidance in neuromodulation.

### SPINAL CORD STIMULATION (SCS) FOR THE SPINE SURGEON

8:00 – 8:10 AM

#### Scientific Rationale and Mechanisms of Spinal Cord Stimulation

*Jaimie M. Henderson*

8:10 – 8:25 AM

#### Indications and Patient Selection

*Joshua M. Rosenow*

8:25 – 8:35 AM

#### Surgical Procedure

*Jeffrey E. Arle*

8:35 – 8:50 AM

#### Complications and Avoidance

*Jaimie M. Henderson*

8:50 – 9:05 AM

#### Outcomes

*Krishna Kumar*

9:05 – 9:25 AM

#### Spinal Cord Stimulation (SCS): Challenges and Opportunities for the Next Decade

*Richard B. North*

9:30 – 10:45 AM

### BREAK AND TECHNOLOGY DEMONSTRATION

#### Interactive Technology Session

### PERIPHERAL NERVE STIMULATION

10:45 – 11:00 AM

#### Occipital Nerve Stimulation: Surgical Technique, Complication and Avoidance

*Ashwini Dayal Sharan*

11:00 – 11:15 AM

#### Neurostimulation for Facial Pain

*Konstantin V. Slavin*

11:15 – 11:35 AM

#### Peripheral Field Stimulation for Extremity and Axial Pain

*Giancarlo Barolat*

### INTRATHECAL INFUSION THERAPIES

11:35 – 11:50 AM

#### Intrathecal Therapy for Spasticity and Dystonia

*Brian H. Kopell*

11:50 AM – 12:05 PM

#### Intrathecal Therapy: Complication and Avoidance

*Robert M. Levy*

### LUNCH WITH THE MASTERS

12:10 – 12:25 PM

#### Building a Neurosurgical Pain Program

*Alon Y. Mogilner*

12:25 – 1:30 PM

#### Case Presentations with the Masters

*Giancarlo Barolat, Robert M. Levy, Jaimie M. Henderson*

### BRAIN STIMULATION

1:30 – 1:50 PM

#### DBS for Parkinson's Disease, Essential Tremor, and Dystonia:

#### Indications and Outcomes

*Roy A. Bakay*

1:50 – 2:05 PM

#### DBS Surgical Procedure

*Robert E. Gross*

2:05 – 2:15 PM

#### MRI Guided DBS

*Paul S. Larson*

2:15 – 2:30 PM

#### DBS: Complication and Avoidance

*Ron L. Alterman*

2:30 – 3:00 PM

### BREAK AND TECHNOLOGY DEMONSTRATION

#### Interactive Technology Session

3:00 – 3:15 PM

#### Neurostimulation for Epilepsy

*Guy M. McKhann, II*

3:15 – 3:30 PM

#### DBS for Psychiatric Disorders

*Emad N. Eskandar*

3:30 – 3:40 PM

#### Motor Cortex Stimulation

*Robert M. Levy*

3:40 – 4:00 PM

#### DBS: Challenges and Opportunities for the Next Decade

*Alim-Louis Benabid*

*The Congress of Neurological Surgeons  
gratefully acknowledges*



*CNS Annual Meeting Leader*

*For providing an educational grant in support  
of the 2010 CNS Annual Meeting.*

## CNS Resident SANS Challenge



Cheer on your colleagues as they compete in the live rounds of the  
CNS Resident SANS Challenge.



See which program will be crowned  
the 2010 CNS Resident SANS  
Challenge Champion!



**Preliminary Rounds**  
**Championship Round**

Room 3018 (Moscone West)  
Yerba Buena Salon 8  
(Marriott Marquis)

Sunday, October 17  
Tuesday, October 19

1:00 – 4:00 PM  
5:00 – 6:00 PM





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**4:30 – 6:00 PM – San Francisco Marriott Marquis Yerba Buena Salon 1-7**  
**Challenging Neurosurgical Environments: Obstacles and Opportunities**

Presiding Officer: *Christopher E. Wolfla*

Moderators: *Richard W. Byrne, Elad I. Levy*

**Learning Objectives:** At the conclusion of this session, participants will be able to discuss emerging paradigms in telemedicine and wireless medicine, including their specific impact on neurological surgery. Participants will be able to discuss and describe the role of neurosurgery in the ongoing conflict in Iraq and Afghanistan and current management strategies for soldiers with traumatic nervous system injuries.

4:30 – 4:32 PM

**Introduction**

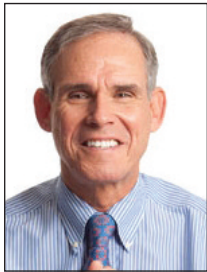
*Christopher E. Wolfla*

4:32 – 4:35 PM

**Introduction of Special Lecture**

**Eric J. Topol**

*Ali R. Rezai*



4:35 – 4:55 PM  
Special Lecture  
**The Wireless Health Revolution**  
*Eric J. Topol*

4:55 – 4:57 PM

**Introduction of Colonel Ronald K. Poropatich**

*Richard G. Ellenbogen*



4:57 – 5:15 PM  
**Improving Healthcare Delivery to Our Soldiers through Telemedicine**  
*Colonel Ronald K. Poropatich*

5:15 – 5:20 PM

**Introduction of John Thompson History of Medicine Lecture**  
**Captain James Lovell**

*Richard W. Byrne*



5:20 – 5:45 PM  
John Thompson  
History of Medicine  
Lecture  
**Apollo 13:  
Overcoming  
Obstacles and  
Challenges**  
*Captain  
James Lovell*



5:45 – 6:00 PM  
**Neurosurgery on the Front Lines:  
Conflict in Iraq and  
Afghanistan**  
*Colonel  
Rocco A. Armonda*

## CNS Opening Reception

**Sunday, October 17, 2010  
6:00 – 8:00 PM**

*Hosted by the  
Congress of Neurological Surgeons  
San Francisco Marriott Marquis  
Yerba Buena Salon 8-15*

Enjoy an evening of camaraderie in “Everybody’s Favorite City” – San Francisco! Keith Jeanminette, Executive Chef at the San Francisco Marriott Marquis, has designed a decadent menu that will tantalize your taste buds. Join your CNS colleagues and friends for an evening of fun and conversation as you taste and sip the fresh California cuisine.

Each registered attendee will receive one complimentary ticket to the Opening Reception.





# MONDAY OVERVIEW

9:00 AM – 3:00 PM  
**EXHIBITS OPEN**

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10:05 – 10:35 AM  
**WALTER E. DANDY ORATION**  
Condoleezza Rice

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10:55 – 11:30 AM  
**PRESIDENTIAL ADDRESS**  
Gerald E. Rodts, Jr.

---

11:10 AM  
**BOOK SIGNING WITH CONDOLEEZZA RICE**

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12:00 – 1:30 PM  
**LUNCHEON SEMINARS**

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1:30 – 3:00 PM  
**SPECIAL COURSE I**  
Guidelines for the Performance of Fusion Procedures for Degenerative Disease of the Lumbar Spine

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1:30 – 3:00 PM  
**CONSENSUS SESSION I**  
The Carotid Revascularization Endarterectomy Versus Stenting Trial (CREST) and Modern Management of Carotid Stenosis

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1:30 – 4:30 PM  
**CNS ORIGINAL SCIENCE PROGRAM**

- 1:30 – 3:00 PM Top Ten Abstracts
- 3:00 – 4:30 PM Neurosurgical Forum

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### GENERAL SCIENTIFIC SESSION I

**7:00 – 11:30 AM – Moscone West Convention Center Ballroom, Level 3**

#### Neurosurgical Pioneers: Foundation for Future Innovation

Presiding Officer: *Christopher C. Getch*

Moderators: *Russell R. Lonser, Michael P. Steinmetz*

Learning Objectives: At the conclusion of this session, participants will be able to discuss the role of pioneering discoveries on current neurosurgical practice. Specifically, participants will be able to describe and discuss current and evolving management strategies in the fields of neuro-oncology, radiosurgery, cerebrovascular surgery and pain.

7:00 – 7:05 AM

#### Introduction

*Christopher C. Getch*

7:05 – 7:23 AM

#### Glioma Surgery: A Century of Challenge

*Mitchel S. Berger*

7:23 – 7:41 AM

#### Radiosurgery: Pioneers to Future Applications

*Douglas Kondziolka*

7:41 – 7:59 AM

#### Arteriovenous Malformations: Classification to Cure

*Robert F. Spetzler*

7:59 – 8:17 AM

#### Cushing's Disease: Characterization to Cure

*Edward H. Oldfield*

8:17 – 8:35 AM

#### Trigeminal Neuralgia: From Dandy to Today

*Kim J. Burchiel*

8:35 – 8:40 AM

#### Introduction of Honored Guest

**Daniel L. Barrow**

*Gerald E. Rodts, Jr.*



8:40 – 9:00 AM  
Honored Guest Lecture

#### Cavernous Malformations: A Paradigm for Progress

*Daniel L. Barrow*

9:00 – 10:00 AM

#### Beverage Break with Exhibitors

10:00 – 10:05 AM

#### Introduction of Condoleezza Rice

*Ali R. Rezai*



10:05 – 10:35 AM  
Walter E. Dandy Oration

#### Remarks by Condoleezza Rice

*Condoleezza Rice*

10:35 – 10:38 AM

#### AMA President-Elect Report

*Peter W. Carmel*

10:38 – 10:50 AM

#### Neurosurgical Pioneers: Foundation for the Future

*Ashok R. Asthagiri*

10:50 – 10:55 AM

#### Introduction of CNS President Gerald E. Rodts, Jr.

*Regis W. Haid, Jr.*



10:55 – 11:30 AM  
Presidential Address

*Gerald E. Rodts, Jr.*

11:30 AM – 12:00 PM

#### Break with Exhibitors



**Don't Miss a Book Signing at 11:10 AM with Condoleezza Rice in the Exhibit Hall!**



## LUNCHEON SEMINARS 12:00 – 1:30 PM

All Luncheon Seminars include a plated lunch served in the seminar room. Luncheon Seminar fees are \$60 each (\$45 for Residents/Fellows/Medical Students/Nurses/Physician Extenders).

### **M01 Room 2002** *Complimentary to CNS Resident Members!*

#### **Resident/Honored Guest Luncheon**

Moderator: *Catherine A. Mazzola*

Faculty: *Daniel L. Barrow*

**Learning Objectives:** Participants and the CNS Honored Guest will review and discuss challenges and changes in neurosurgical education, career development and lifelong learning. At the conclusion of this seminar, participants will be able to identify successful career development and professional strategies, and list methods by which they can enhance their own training and lifelong learning.

### **M02 Room 2003**

#### **Craniosynostosis (Open versus Endoscopic Management)**

Moderator: *Robert F. Keating*

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

**Learning Objectives:** At the conclusion of this seminar, participants will be able to discuss various forms of syndromic and non-syndromic cranial synostosis and explain various techniques available for repair of craniosynostosis.

### **M03 Room 2004**

#### **Disk Arthroplasty of the Cervical and Lumbar Spine**

Moderator: *Regis W. Haid, Jr.*

Faculty: *Domagoj Coric, Wayne Gluf, Carl Laurysen, Eun Sang Kim*

**Learning Objectives:** At the conclusion of this seminar, participants will be able to discuss the state-of-the-art cervical and lumbar disc arthroplasty technology and be able to discuss the indications for use of this technology.

### **M04 Room 2005**

#### **Minimally Invasive Spine Surgery**

Moderator: *Richard G. Fessler*

Faculty: *Gun Choi, Luiz Pimenta, Meic H. Schmidt,*

*Jean-Paul Wolinsky*

**Learning Objectives:** At the conclusion of this seminar, participants will be able to discuss the current indications and techniques appropriate for minimally invasive spinal surgery and be able to describe the expected outcomes and complications associated with these techniques.

### **M05 Room 2006**

#### **Pseudoarthrosis of the Cervical and Lumbar Spine**

Moderator: *William Charles Welch*

Faculty: *Michael G. Kaiser, Ki-Jeong Kim, Gregory R. Trost, Christopher E. Wolfla*

**Learning Objectives:** At the conclusion of this seminar, participants will be able to discuss the appropriate imaging modalities to accurately diagnosis a pseudoarthrosis of either the cervical or lumbar spine and management strategies to increase the potential for successful clinical outcome, including the results and potential complications of current salvage techniques.

### **M06 Room 2007**

#### **Surgical, Interventional and Medical Management of Subarachnoid Hemorrhage and Vasospasm**

Moderator: *R. Loch MacDonald*

Faculty: *Murat Gunel, Jeong Eun Kim, Andrew J. Ringer, Robert H. Rosenwasser*

**Learning Objectives:** At the conclusion of this seminar, participants will be able to discuss the current surgical, interventional and medical management of subarachnoid hemorrhage and vasospasm secondary to ruptured intracranial aneurysms and vascular malformations.

### **M07 Room 2008**

#### **Hematology and Coagulation for Neurosurgeons: Pitfalls and Solutions**

Moderator: *Issam A. Awad*

Faculty: *Seung-Chyul Hong, S. Andrew Josephson, Michael T. Lawton, Maciej 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. At the conclusion of this seminar, participants will review important coagulation mechanisms, parameters, indications and clinical pearls, list important screening guidelines, and define the key points of emergency and intraoperative coagulation management.

### **M08 Room 2009**

#### **Psychosurgery**

Moderator: *Ali R. Rezai*

Faculty: *Jin-Woo Chang, Emad N. Eskandar, Kelly D. Foote, Robert E. Gross, Brian H. Kopell*

**Learning Objectives:** At the conclusion of this seminar, participants will be able to describe the latest developments in the neurosurgical treatment of psychiatric disorders, explain the indications for surgical treatment of these disorders and identify the common psychiatric disorders amenable to surgical intervention.



## LUNCHEON SEMINARS 12:00 – 1:30 PM

**M09 Room 2011****Stroke Update for Allied Health Professionals**

Moderator: *Erol Veznedaroglu*

Faculty: *Ricardo A. Hanel, Brian Lim Hob, Christopher S. Ogilvy, Adnan H. Siddiqui*

**Learning Objectives:** At the conclusion of this seminar, 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 discuss and implement 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.*

**M10 Room 2016****Surgery for Tumors in Eloquent Cortex**

Moderator: *Frederick F. Lang*

Faculty: *Mitchel S. Berger, Jong Hee Chang, Hugues Duffau, Linda M. Liaw*

**Learning Objectives:** At the conclusion of this seminar, participants will be able to describe the unique anatomic and functional considerations required for surgical resection of tumors in eloquent cortex, express the utility of adjunctive tools in preparing for surgery in eloquent cortex and identify the indications for surgery for tumors in eloquent cortex.

**M11 Room 2018****Vestibular Schwannoma Management**

Moderator: *Johnny B. Delashaw*

Faculty: *Franco DeMonte, Shin Jung, Douglas Kondziolka, Andrew T. Parsa*

**Learning Objectives:** At the conclusion of this seminar, participants will be able to identify the surgical and radiosurgical indications for managing vestibular schwannomas, recognize the anatomic considerations during surgery and discuss advantages/limitations of various treatments.

**M12 Room 2020****The Role of Endoscopy in Keyhole Approaches to the Skull Base**

Moderator: *Charles Teo*

Faculty: *Alan Coben, Costas G. Hadjipanayis, Yong Ko, Theodore H. Schwartz*

**Learning Objectives:** At the conclusion of this seminar, participants will be able to describe various approaches, current indications and risks of keyhole endoscopy for intraventricular and skull base surgery.

**M13 Room 2022****Pediatric Neurotrauma Update**

Moderator: *P. David Adelson*

Faculty: *Ann-Christine Dubaime, Shenandoah Robinson, Roland A. Torres*

**Learning Objectives:** At the conclusion of this seminar, participants will be able to discuss the latest advancements in pediatric neurotrauma research, identify the emerging technologies being developed for managing pediatric brain injury and describe the latest surgical techniques available for treating pediatric brain injury.

**M14 Room 2024****Peripheral Nerve Board Review**

Moderator: *Robert J. Spinner*

Faculty: *Allan J. Belzberg, Allen H. Maniker, Rajiv Midha, Lynda J.S. Yang*

**Learning Objectives:** At the conclusion of this seminar, participants will be able to describe the important peripheral nerve injuries frequently presented on board examinations, demonstrate the peripheral nerve physical examination and explain how to manage peripheral nerve injury/disease surgically and non-surgically.

**M15 Room 3000****Surgical, Interventional and Radiosurgical Approaches to Intracranial Arteriovenous Malformations**

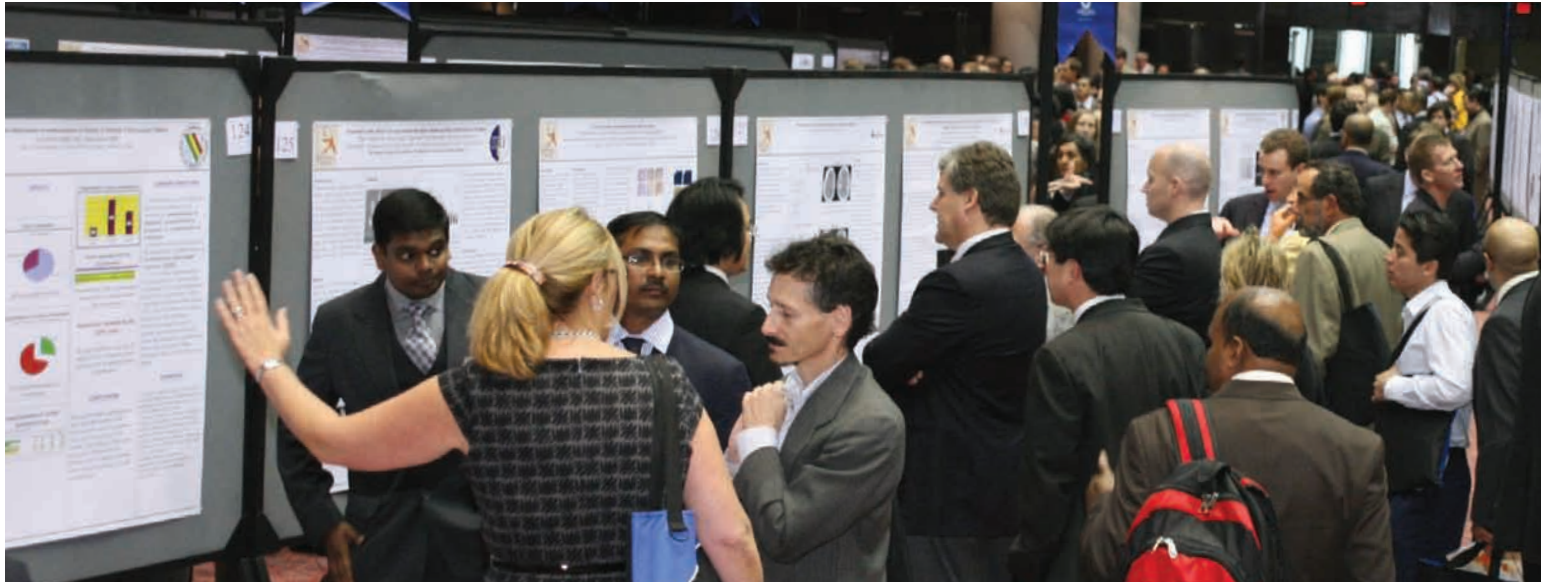
Moderator: *Bernard R. Bendok*

Faculty: *H. Hunt Batjer, Douglas Kondziolka, Do Hoon Kwon, Robert F. Spetzler*

**Learning Objectives:** At the conclusion of this seminar, participants will be able to describe the natural history of arteriovenous malformations of the brain and understand the relative merits and limitations of radiosurgery, microsurgery and embolization for treatment of this disease.



# 2010 CNS Original Science Program



**Monday, October 18 1:30 – 4:30 PM**

**T**he best clinical and basic science will again be presented during the CNS Original Science Program **featuring the Top Ten Abstracts and the Neurosurgical Forum.**

Join your colleagues to hear their latest research in each subspecialty in this neurosurgical marketplace of ideas.

- From 1:30 - 3:00 PM, the **Top Ten Abstracts** sessions will present the highest ranked abstracts from each neurosurgical subspecialty in eight-minute platform presentations followed by two minutes of expert and audience discussion.
- From 3:00 - 4:30 PM, in the **Neurosurgical Forum**, authors will make dynamic oral presentations to small groups in this interdisciplinary session with senior Section leaders facilitating discussions between audience and authors.

*All abstracts will be on display in the Digital Poster Center in the Exhibit Hall, Level 1 and on Levels 2 & 3.*

*Monday 9:00 AM - 3:00 PM*

*Tuesday 9:00 AM - 4:30 PM*

*Wednesday 9:00 AM - 2:00 PM*

## CNS Original Science Program

### Top Ten Abstracts and the Neurosurgical Forum

**Learning Objectives:** At the conclusion of this interactive educational session, 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.

1:30 – 3:00 PM **Room 3018**

#### Top Ten Abstracts – Council of State Neurosurgical Societies

**Moderators:** *Mark E. Linskey, Gary R. Simonds*

#### ★ Julius Goodman Resident Award

1:30 – 1:39 PM

**901**

#### Cost-utility Analysis of a Single Institution's Experience with Antibiotic Impregnated Shunt Catheters for Adult Hydrocephalus

*S. Harrison Farber, Scott Parker, Owoicho Adogwa, Daniele Rigamonti, Matthew J. McGirt*

1:39 – 1:48 PM

**902**

#### Identifying and Controlling Exorbitant Medication Costs in the Neuroscience Intensive Care Unit

*Joshua E. Medow, Brandon Rocque, Lee Vermulen, Benjamin Johnson, Giuditta Angelini, Cameron Zabed, Mustafa Kemal Baskaya, Jonathon Ketzler*

1:48 – 1:57 PM

**903**

#### Effect of Weekend Compared to Weekday Stroke Admission on Thrombolytic Use, In-Hospital Mortality, Discharge Disposition, Hospital Charges, and Length of Stay in the Nationwide Inpatient Sample Database: 2002-2006

*Brian Lim Hob, Yueh-Yun Chi, Michael F. Waters, J.D. Mocco, Frederick George Barker*

1:57 – 2:06 PM

**904**

#### Scan Utilization in Neuro-Oncology

*Kevin A. Walter*

#### ★ Sam Hassenbusch Young Neurosurgeon Award

2:06 – 2:15 PM

**905**

#### Does Improving Medical Record Documentation Better Reflect Severity of Illness in Neurosurgical Patients?

*Angela N. Spurgeon, Bradley Hiser, Carol Hafley, N. Scott Litofsky*

2:15 – 2:24 PM

**906**

#### National Survey of Outpatient Trials for Spinal Cord Stimulation (SCS)

*Shivanand P. Lad, Paul S.A. Kalanithi, Maxwell Boakye, Jaimie M. Henderson*

2:24 – 2:33 PM

**907**

#### Three-Year Cost Evaluation of the Treatment of Posterior Fossa Meningiomas: A Comparison of Surgical Resection with Stereotactic Radiosurgery

*Wesley Hsu, Phoebe Sharkey, Sachin Batra, Daniele Rigamonti*

2:33 – 2:42 PM

**908**

#### Comparative Analysis of Surgical Site Infection after Minimally Invasive versus Open Posterior/Transforaminal Lumbar Interbody Fusion: Analysis of Hospital Billing and Discharge Data from 5,328 Patients

*Matthew J. McGirt, Scott Parker, Jason Lerner, Luella Engelhart, Michael Y. Wang*

2:42 – 2:51 PM

**909**

#### A Cost Containment Protocol that Reduces Neurosurgical Patient Length of Stay and Is Associated with Improved Patient Outcomes

*Joshua E. Medow, Edward Stoll, Jodi Atwell, Jonathon Schnepf, Giuditta Angelini, Cameron Zabed*

2:51 – 3:00 PM

**910**

#### Relationship between Symptoms and Secondary Gain in Work-Related Mild Traumatic Brain Injury

*Christopher P. Kellner, Adam M. Sonabend, Samuel S. Bruce, Cindy Cross, Carl Valenziano, Anthony D. D'Ambrosio*

3:00 – 4:30 PM **Ballroom, Level 3**

#### Neurosurgical Forum – Council of State Neurosurgical Societies

**Moderators:** *William E. Bingaman, Gary R. Simonds*

**1**

#### Teaching Neurosurgery in the 21st Century: A New Approach to the Medical Student Curriculum

*Jonathan P. Miller; Fabd R. Khan; David J. Hart; Shakeel A. Chowdhry; Alia M. Hdeib; Charles Nelson Munyon*

**2**

Withdrawn



**3**  
**Neurosurgical Training in 48 Hours per Week: A Uniquely British Perspective**

*Matthew Crocker; Timothy L. Jones; Alexander J. Maxwell; Marios Papadopoulos; B. Anthony Bell*

**4**  
**Obesity and the Neurosurgical Patient: Investigation into Patients' Perception of Weight**

*Moises Googe; Darbi Invergo; Ann R. Stroink*

**5**  
**Clinical Trials and the Neurosurgeon: Findings on Participation, Attitudes and Barriers from Integrated Medical Learning<sup>(SM)</sup> at CNS 2007**

*Frederick George Barker; Nathan R. Selden; Michael A. Vogelbaum; E. Sander Connolly, Jr.; Michael W. Groff; Charles Kuntz, IV; Nicholas M. Boulis; Brian Lim Hob; Gerald E. Rodts, Jr.; Douglas Kondziolka; Anthony L. Asber*

**6**  
**Fundamental Skills for Neurosurgery Interns: Report of a Pacific Region 'Bootcamp' Pilot Course, 2009**

*Nathan R. Selden; Nicholas M. Barbaro; Kim J. Burchiel*

**7**  
**Surgical Capacity Building in East Africa through Twinning, Technology and Training Camps**

*Michael M. Haglund; Joel Kiryabwire; Ali R. Zomorodi; Stephen Parker; Michael Mubumuza; David MacLeod; Rebecca Schroeder; Joseph Tindimwebwa; Hussein Seyonjo; John Mukasa; Edward Ddumba; Michael Merson*

**8**  
**Trends in Laminectomy for Excision of Herniated Intervertebral Disc: Population Based Estimates from the US Nationwide Inpatient Sample**

*Brian Patrick Walcott; Brian Hanak; Navid Redjal; Brian V. Nabad; Jason L. Gerrard; Jean-Valery Coumans*

**9**  
**Defying the Odds and Confounding the Experts: A Series of Patients with Severe Neurological Injury Who Recovered Despite Attending Physician Recommendations to Withdraw Support**

*Eric S. Nussbaum; Tariq Janjua; Jody Lowary; Leslie A. Nussbaum*

**10**  
**Psychosocioeconomic History as Risk Factors in the Failure of Lumbar Facet Joint Injection in Treatment of Chronic Mechanical Lower Back Pain**

*Saeid Alemo; Ralph Petrucci; Amirali Sayadipour; Samira Dabiri*

1:30 – 3:00 PM **Room 3002**

**Top Ten Abstracts –  
Section on Cerebrovascular Surgery**

*Moderators: J.D. Mocco, Giuseppe Lanzino*

★ **Galbraith Award**

1:30 – 1:39 PM

**911**

**Gamma Knife Surgery for Pediatric Arteriovenous Malformations: Long-term Follow-up in 186 Patients**

*Stephen J. Monteith, Chun Po Yen, James Nguyen, Jessica Rainey, David Schlesinger, Jason P. Sheehan*

★ **Synthes Cerebrovascular Award**

1:39 – 1:48 PM

**912**

**Long-term Angiographic and Clinical Outcomes in Completely versus Incompletely Coiled Ruptured Intracranial Aneurysms**

*Michael K. Tso, Puneet Kochar, Mayank Goyal, Mark E. Hudon, William F. Morrish, John H. Wong*

1:48 – 1:57 PM

**913**

**Gene Expression Signature in Peripheral Blood Cells Detects Intracranial Aneurysm**

*Saliba Yilmaz, Philippe Bijlenga, Mamunur Rashid, Sophie Collot-Teixeira, Jessy Brocheton, Carole Proust, Maxime Rotival, Roelof Risselada, Paul Summers, J. Blasco, J. Singh, Alan Waterworth, Christian Ebeling, Christoph Friedrich, A.F. Frangi, J. Macho, J. Byrne, M.C.J.M. Sturkenboom, K. Schaller, Francois Cambien, Murat Gunel, John Louis McGregor*

1:57 – 2:06 PM

**914**

**Safety and Efficacy of the Remodeling Technique in the Endovascular Treatment of Ruptured and Unruptured Intracranial Aneurysms: Analysis in Two Prospective Series of Patients (CLARITY and ATENA)**

*Laurent Pierot, Christophe Cognard, Laurent Spelle, Jacques Moret*

2:06 – 2:15 PM

**915**

**Stent Flow Remodeling Causes Spontaneous Complete Occlusion of Incompletely Coiled Aneurysms**

*Matthew F. Lawson, William Newman, Yueh-Yun Chi, J.D. Mocco, Brian Lim Hob*

2:15 – 2:24 PM

**916**

**Timing of Recanalization to Guide Future Surveillance Strategies for Endovascularly Treated Intracranial Aneurysms**

*Zul Kaderali, Hubert Lee, Tom R. Marotta, Walter Montanera, R. Loch Macdonald, Julian Spears*

2:24 – 2:33 PM

917

**The Effect of Improving Cerebral Blood Flow on Cognitive Function after Carotid Endarterectomy***Zoher Ghogawala, Lauren Stabile, Michael Westerveld, Alejandro Berenstein, David J. Langer, Sepideh Amin-Hanjani*

2:33 – 2:42 PM

918

**Unruptured Intracranial Aneurysms in the Norwegian HUNT Study: Risk of Rupture Calculated from Data in a Population Based Cohort Study***Tomm Brostrup Müller, Marie Sjøfteland Sandvei, Kjell Arne Kvistad, Jana Rydland, Anne Vik, Mari Gårseth, Asta Håberg, Lars J. Stovner*

2:42 – 2:51 PM

919

**Screening for De Novo Aneurysms in Patients with a Prior History of Cerebral Aneurysm***Judy Huang, Ryan D. Smith, Rafael J. Tamargo*

2:51 – 3:00 PM

920

**Adenosine for Temporary Flow Arrest during Intracranial Aneurysm Surgery: A Single Center Retrospective Review***Bernard R. Bendok, Rudy Rabme, Dhanesh Kumar Gupta, Christopher S. Eddleman, Joseph G. Adel, Arun Sherma, Daniel L. Surdell, John Beaway, Antoun Kolt, H. Hunt Batjer*

3:00 – 4:30 PM

**Ballroom, Level 3****Neurosurgical Forum –  
Section on Cerebrovascular Surgery***Moderators: Murat Gunel, John A. Wilson, E. Sander Connolly, Jr.*

11

Withdrawn

12

**Intraoperative Neurophysiologic Monitoring in the Cerebrovascular Surgical Treatment of Moyamoya Disease***Viet Nguyen, Nadia Khan, Gary K. Steinberg, Sungbo Cho, Jaime López*

13

**Technological Advances in the Management of Unruptured Intracranial Aneurysms Fail To Improve Outcome in New York State***Brad E. Zacharia, Andrew F. Ducruet, Zachary Lee Hickman, Bartosz T. Grobelny, Mitchell Berman, Neeraj Badjatia, Stephan A. Mayer, Robert A. Solomon, E. Sander Connolly, Jr.*

14

**Blood Glucose Predicts Adverse Outcomes after Endovascular Acute Ischemic Stroke Therapy: Derivation of a Glucose-based Prognostic Scale***Sabareesh Kumar Natarajan; Paresh Dandona; Yuval Karmon; Albert Yoo; Junaid Kalia; Quing Hao; Daniel Hsu; Ajay Chaudhuri; Rocco Paluch; Hui Meng; L. Nelson Hopkins, III; Christopher S. Ogilvy; David Fiorella; Bernard R. Bendok; Thanh Binh Nguyen; Marilyn Rymer; Ashish Nanda; David S. Liebeskind; Osama O. Zaidat; Raul G. Nogueira; Adnan Hussain Siddiqui; Elad I. Levy*

15

**Clinical Outcome after Repeated Radiosurgery for Brain Arteriovenous Malformations: Radiother Oncol (2010),doi:10.1016/j.radonc.2010.03.003***Dennis R. Buis; Otto W.M. Meijer; René Van den Berg; Frank J. Lagerwaard; Joost C.J. Bot; Ben J. Slotman; William P. Vandertop*

16

**The Effect of Prehospital Aspirin Compared with Clopidogrel in the Setting of Spontaneous Intracranial Hemorrhage***Peter Campbell; Anish Sen; Sanjay Yadla; Pascal Jabbour*

17

**Treatment of Acute Ischemic Stroke in Old World Primates with the PSD95 Inhibitor NA-1***Douglas J. Cook; Lucy Teves; Michael Tymianski*

18

Withdrawn

19

**Selective Ophthalmic Artery Infusion of Chemotherapy for Advanced Intraocular Retinoblastoma: Initial Experience with 17 Tumors***Eric C. Peterson; Mohamed Samy A. Elbammady; Stacey Charlene Quintero Wolfe; Timothy Murray; Mohamad Ali Aziz-Sultan*

20

**Microsurgery for Previously Coiled Aneurysms: Experience on 81 Patients***Rossana Romani; Hanna Lehto; Angel Horcajadas; Aki Laakso; Riku Kivisaari; Mikael Fraunberg; Mika Niemelä; Jaakko Rinne; Juba Antero Hernesniemi*

21

**Simple Morphological Variables for Predicting the Rupture Risk of Middle Cerebral Artery Aneurysms***Ning Lin; Allen Ho; Bradley Andrew Gross; Steve Pieper; Isaiah Norton; Alexandra J. Golby; Arthur L. Day; Rose Du*

22

**Final Results of a Multicenter Prospective Long-term Coil Embolization Study**

*Rudy Rahme; Bernard R. Bendok*

23

**Thrombospondin-1 Modulates the Angiogenic Phenotype of Human Cerebral Arteriovenous Malformation Endothelial Cells**

*Christopher J. Stapleton; Don L. Armstrong; Charles Y. Liu; Steven L. Giannotta; Florence M. Hofman*

24

**Access-Site Complications (ASC) after 6615 Neuroendovascular Procedures: Single-center Experience**

*Yuval Karmon; Sabareesh Kumar Natarajan; Shady Jabshan; L. Nelson Hopkins, III; Adnan Hussain Siddiqui; Elad I. Levy*

25

**Telescoping Stent Technique in Coil Embolization of Giant Fusiform Dissecting Aneurysms: A Series of 25 Patients**

*Doniel Drazin; Armen Choulakian; Michael J. Alexander*

26

**Atorvastatin and Simvastatin Protect the Blood Brain Barrier after Experimental Intracerebral Hemorrhage**

*Dongmei Yang; Robert Knight; Yuxia Han; Kishor Karki; Jianfeng Zhang; Michael Chopp; Donald M. Seyfried*

27

**Prospective Acute Ischemic Stroke Outcomes after Endovascular Therapy Beyond Traditional Time-windows**

*Sabareesh Kumar Natarajan; Yuval Karmon; Kenneth V. Snyder; Hajime Ohta; Erik F. Hauck; L. Nelson Hopkins, III; Adnan Hussain Siddiqui; Elad I. Levy*

28

**Beneficial Effects of Levosimendan on Cerebral Vasospasm Induced by Subarachnoid Hemorrhage: An Experimental Study**

*Sabika Liva Cengiz; Mehmet Fatih Erdi; Murat Tosun; Esra Atalik; Mustafa Cibat Avunduk; Fatma Cavide Sonmez; Idris Mehmetoglu; Alper Baysefer*

29

**SUR1 Blockade Reduces Hippocampal Injury and Preserves Learning Ability in a Rat Model of Cortical Contusion**

*Ashish D. Patel; Volodymyr Gerzanich; Zhibua Geng; J. Marc Simard*

30

**Enhanced Axonal Transport and Plasticity in the Ischemic Brain following Stem Cell Transplantation**

*Robert H. Andres; Ke Zhan; GuoHua Sun; Erin McMillan; Bruce Schaar; Clive Svendsen; Tonya Bliss; Gary K. Steinberg*

31

**Health-related Quality of Life after Radiosurgery for Cerebral Arteriovenous Malformations Presented with Seizure**

*Seung-Yeob Yang*

32

**Trends in Intracranial Aneurysm Treatment in the US, 2000-2006: Endovascular Treatment, Centralization of Care, and Interhospital Variation in Coiling Rates**

*Frederick George Barker; Brian Lim Hob; Sepideh Amin-Hanjani; Bob S. Carter; Christopher S. Ogilvy*

33

**Cranial Dural Arteriovenous Fistula: Transarterial Onyx Embolization Experience and Technical Nuances**

*Yin C. Hu; Charles Benjamin Newman; Shervin R. Dashti; Felipe Albuquerque; Cameron G. McDougall*

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Withdrawn

35

**Multimodality Treatment of Conus Medullaris Arteriovenous Malformations: A Decade Experience of Combined Endovascular and Surgical Treatments**

*David Aaron Wilson; Adib Adnan Abla; Robert F. Spetzler*

36

**Outcome after Surgical and Endovascular Treatment of Intracranial Blister Aneurysms**

*Richard A. Lochhead; Louis J. Kim; Eric C. Peterson; Nitin R. Mariwalla; Felipe Albuquerque; Peter Nakaji; Cameron G. McDougall; Robert F. Spetzler*

37

**Radiation Exposure during Neuroendovascular Surgery: Analysis by Procedure Type, Rate of Soft Tissue Injury, and Estimated Cancer Risk**

*Eric C. Peterson; Kalpana Kanal; Brent Stewart; Renee Dickinson; Louis J. Kim*

38

**Can ISUIA Conclusions Be Applied to All Anterior Circulation Aneurysms?**

*Philippe Bijlenga; Max Jaegersberg; Vitor Mendes Pereira; Gulam Zilani; J. Blasco; Pankaj Singh; Peter Bukovics; Roelof Risselada; Paul Summers; Teresa Sola; Christian Ebeling; Christoph Friedrich; Karl O. Lovblad; Miriam Sturkenboom; Elio Vivas; Tamas P. Doczi; Daniel Rufenacht; Umang Patel; Stuart Coley; Juan Macho; James V. Byrne; Karl Schaller; A.F. Frangi*





39

**Comparing Indocyanine Green Videoangiography to the “Gold Standard”, Intra-Operative Digital Subtraction Angiography, Used in Aneurysm Surgery***Chad Washington; Gregory J. Zipfel; Michael R. Chicoine; Ralph G. Dacey, Jr.*

40

**Accelerated Onyx Embolization Technique for Treatment of Cerebral Aneurysms: Report of 20 Cases***Mobamad Ali Aziz-Sultan; Mobamed Samy Elhammady; Hamad Farbat; Stacey Charlene Quintero Wolfe; Eric C. Peterson*

41

**Impact of Endovascular Treatment for Cerebral Vasospasm on Subarachnoid Hemorrhage Patient Outcomes in a Comprehensive Stroke Program***Muhammad Zeeshan Memon; Rakesh Khatri; Gabriela Vazquez; Haralabos Zacharatos; Ramachandra P. Tummala; Adnan I. Qureshi*

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Withdrawn

43

**A Randomized Controlled Trial of Prophylactic Intra-aortic Balloon Counterpulsation in Aneurysmal Subarachnoid Hemorrhage***Diederik Olivier Bulters; Anthony Birch; Richard Spann; R. Lamb; Glen Neil-Dwyer; Dorothy Lang*

44

**50% Reduction in Aneurysm Rerupture Rates on Amicar: A Retrospective Review of 454 SAH Patients***Albert Jesse Schuette; Ferdinand Hui; Raymond R. Walkup; Owen B. Samuels; C. Michael Cawley; Daniel L. Barrow*

45

**An Analysis of Inflation and Reperfusion Times during Balloon Remodeling for Aneurysm Coil Embolization and Its Effect on Ischemic Complications***Alejandro M. Spiotta; Tarun Bhatta; Muhammad Shazam Hussain; Thinesh Sivapatham; Ferdinand Hui; Thomas J. Masaryk; Peter A. Rasmussen; Shaye I. Moskowitz*

46

**Genome-Wide Association Study Identifies Five Risk Loci for Intracranial Aneurysms***Ali Kemal Ozturk; Katsubito Yasuno; Kaya Bilguvar; Richard P. Lifton; Matthew State; The International Consortium on Intracranial Aneurysm (ICIA); Murat Gunel*

47

**Elevated Serum Taurine Predicts Poor Outcome after Aneurysmal Subarachnoid Hemorrhage***Juan Barges Coll; Ivan Perez-Neri; Diego Mendez Rosito; Juan Luis Gomez Amador; Javier Avendaño; Camilo Rios*

48

**Clinical Application of Arterial Spin Labeling MRI in Patients with Carotid Stenosis: Quantitative Comparative Study with SPECT***Yoshito Uchibashi; Kobkichi Hosoda; Ivan Zimine; Daisuke Yamamoto; Nobukazu Aoyama; Masabiko Fujii; Eiji Kobmura*

49

**Endoscopic Transventricular Surgical Evacuation of Spontaneous Hemorrhage in Thalamus***Jamsbid Muminovich Kuzibayev*

50

**Risk of Ventriculostomy Related Hemorrhage in Patients with Acutely Ruptured Aneurysms Treated With Stent-Assisted Coiling***David Kung; Bruno Policeni; James D. Rossen; Matthew A. Howard, III; David M. Hasan*

51

**Stent-assisted Coiling in the Setting of Acute Subarachnoid Hemorrhage: Complications and Outcomes in 74 Consecutive Patients***Sid Chandela; Pascal Jabbour; Richard Dalyai; Sonia Teufack; David M. Hasan; Robert H. Rosenwasser; L. Fernando Gonzalez*

52

**Therapeutic Effect of Cell Transplantation in Rats with Experimental Intracerebral Hemorrhage***Dongmei Yang; Yuxia Han; Jianfeng Zhang; Agnes Seyda; Michael Chopp; Donald M. Seyfried*

53

**The Effectiveness of Embolic Protection Devices in Carotid Artery Stenting***Jonathan Brisman; Leslie Lee; Yi-ting Chiang; Peter Shen; Jae Choi; John Pile-Spellman*

54

**Matrix Metalloproteinase 9 Plays a Causal Role in SAH-induced Neurovascular Dysfunction***Ananth K. Vellimana; Meng-Liang Zhou; Eric Milner; Gregory J. Zipfel; Byung Hee Han*

55

**The Maxillary Artery and its Anastomotic Channels within the External Carotid System: An Anatomical Study***Jorge E. Alvernia; Shelby M. Padway; Charles E. Murphy*

56

**Angiographic and Clinical Outcomes of Stent-Alone Treatment for Spontaneous Vertebrobasilar Dissecting Aneurysm**

*Min-Woo Baik*

57

**Acetazolamide Challenged CT Perfusion for Assessment of Cerebrovascular Reserve Capacity in Patients with Symptomatic Intracranial Arterial Occlusion: Comparison with Single-Photon Emission CT**

*Anupama Bedi; Oleg Bronov; Amir R. Dehdashti*

58

**Endovascular Therapy for Acute Ischemic Stroke: Importance of Pre-procedural Perfusion Studies**

*Mohamed Samy Elbammady; Asterios Tsimpas; Eric C. Peterson; Mohamad Ali Aziz-Sultan; Dileep Yavagal*

59

**Serial Magnetic Resonance Tracking of Human Bone Marrow Stromal Cells Transplanted into Infarct Brain of Rats: Validity of Cell Expansion in Animal Serum-Free Medium**

*Masaki Ito; Satoshi Kuroda; Yukari Takeda; Mitsufumi Nishio; Taku Sugiyama; Hideo Shichinobe; Masabito Kawabori; Takao Koike; Kiyohiro Houkin*

60

**An Analysis of Recurrences after Surgical Treatment of Brainstem Cavernous Malformations, and the Utility of Immediate Post-operative MRI**

*Mark P. Garrett; Adib Adnan Abla; Robert F. Spetzler*

61

**Comparison between Thrombolytic Bridging Therapy and Primary Endovascular Treatment in Acute Ischemic Stroke: A Multicenter Study**

*Muhammad Zeeshan Memon; Jefferson Miley; Gabriela Vazquez; Adnan I. Qureshi*

62

**Safety and Feasibility of Intra-arterial Eptifibatid as a Revascularization Tool in Acute Ischemic Stroke**

*Muhammad Zeeshan Memon; Sabareesh Kumar Natarajan; Jitender Sharma; Marlon S. Mathews; Kenneth V. Snyder; Adnan Hussain Siddiqui; L. Nelson Hopkins, III; Elad I. Levy*

1:30 – 3:00 PM **Room 3001**

**Top Ten Abstracts – Section on Disorders of the Spine and Peripheral Nerves**

*Moderators: Robert F. Heary, Michael W. Groff*

1:30 – 1:39 PM

**921**

**Lumbar Spinal Fusion Reduces Risk of Re-operation after Laminectomy for Lumbar Spinal Stenosis Associated with Grade I Degenerative Spondylolisthesis: Initial Results from the SLIP Trial**

*Zoher Ghogawala, Edward C. Benzel, Subu N. Magge, Jean-Valery Coumans, J. Frederick Harrington, Frederick George Barker*

1:39 – 1:48 PM

**922**

**The AOSpine North America Cervical Spondylotic Myelopathy Study: Two-Year Surgical Outcomes of a Prospective Multicenter Study in 280 Patients**

*Michael G. Fehlings, Branko Kopjar, Paul M. Arnold, Sang Wook Yoon, Alexander R. Vaccaro, Christopher I. Shaffrey, Darrel S. Brodke, Michael Janssen, Jens Chapman, Rick Sasso, Eric J. Woodard, Mark B. Dekutoski, Ziya L. Gokaslan, Christopher Bono*

1:48 – 1:57 PM

**923**

**Analysis of the Three US FDA-IDE Cervical Arthroplasty Trials**

*Cheerag D. Upadhyaya, Jau-Ching Wu, Regis W. Haid, Vincent C. Traynelis, Bobby Tay, Domagoj Coric, Gregory R. Trost, Praveen V. Mummaneni*

1:57 – 2:06 PM

**924**

**Acute Hospitalization Costs following Minimally Invasive versus Open Lumbar Interbody Fusion: Data from a U.S. National Database with 6,106 Patients**

*Michael Y. Wang, Jason Lerner, James Lesko, Matthew J. McGirt*

2:06 – 2:15 PM

**925**

**International Variations in the Clinical Presentation and Management of Cervical Spondylotic Myelopathy: One-Year Outcomes of the AOSpine Multi-Center Prospective CSM-I Study**

*Michael G. Fehlings, Branko Kopjar, Guiseppe Barbagallo, Ronald H.M.A. Bartels, Helton Defino, Paul M. Arnold, Qiang Zhou, Mehmet Zileli, Gamaliel Tan, Osmar Moraes, Shashkank Sharad Kale, Ciaran Bolger, Manuel Alvarado, Massimo Scerrati*

2:15 – 2:24 PM

926

**Morbid Obesity and Spinal Arthrodesis: Analysis of Cost and Complications in California***Paul S.A. Kalanithi, Robert Arrigo, Maxwell Boakye*

2:24 – 2:33 PM

927

**Common Mathematical Formulas Fail to Predict Postoperative Sagittal Alignment: Confirmation of a Need for More Advanced Equations***Justin S. Smith, Shay Bess, Christopher I. Shaffrey, Douglas C. Burton, Robert Hart, Richard A. Hostin, International Spine Study Group*

2:33 – 2:42 PM

928

**Late Outcome of Anterior versus Posterior Fixation for Thoracolumbar Fractures***Ahmed Mohamed Elsayaf, Luciano Mastronardi*

2:42 – 2:51 PM

929

**A Phase I/IIa Clinical Trial of a Recombinant Rho Protein Antagonist in Patients with Complete Cervical and Thoracic Spinal Cord Injuries***Michael G. Fehlings, Nicholas Theodore, James S. Harrop, Gilles Maurais, Charles Kuntz, IV, Christopher I. Shaffrey, Brian Kwon, Jens Chapman, Allyson Tighe, Lisa McKerracher*

2:51 – 3:00 PM

930

**Does Prior Short-Segment Surgery for Adult Scoliosis Impact Clinical Outcome among Patients Undergoing Scoliosis Correction?***Justin S. Smith, Christopher I. Shaffrey, Leah Y. Carreon, Steven D. Glassman, Frank Schwab, Virginie Lafage, Kai-Ming G. Fu, Sigurd Berven, Keith Bridwell*

3:00 – 4:30 PM

3:00 – 4:30 PM **Ballroom, Level 3****Neurosurgical Forum – Section on Disorders of the Spine and Peripheral Nerves***Moderators: Robert F. Heary, Christopher E. Wolfla, Michael W. Groff, Joseph T. Alexander, Edward C. Benzal, Laurence D. Rhines, Allan J. Belzberg*

63

**Clinical and Radiological Outcomes of Cervical Total Disc Replacement: Analysis of 123 Patients at 3-Years Follow-up***Pierre Bernard, Lucie Aubourg, Thierry Dufour, Jean-Marc Vital, Phong Dam-Hieu, Jean Huppert, Jean Stecken, Jacques Beaurain, Jean-Paul Steib, Istvan Hovorka, Thierry Vila*

64

**Microdiscectomy Improves Pain-associated Depression, Somatic Anxiety, and Mental Well Being in Patients with Herniated Lumbar Disc***Richard L. Lebow; Owoicho Adogwa; Scott Parker; Oran Aaronson; Joseph S. Cheng; Matthew McGirt*

65

**Disparities between Insurance Carriers of Criteria for Approval of Lumbar Surgical Procedures: ALIF, PLIF, or Arthroplasty***Timothy C. Ryken; Meleah Jensen*

66

**Dynamic Cervical Spine MRI: A New View of Cervical Stenosis***Erica Fay Bisson; Lubdba Shab; Meic H. Schmidt; Edward Quigley; Ulrich Rassner*

67

**Acute Proximal Junctional Failure following Long Posterior Fusion for Spinal Deformity: Risk Factors and Radiographic Analysis Comparing Thoracolumbar to Upper Thoracic Failures***Richard A. Hostin; Shay Bess; Robert Hart; Breton G. Line; Christopher P. Ames; Douglas C. Burton; Virginie Lafage; Michael F. O'Brien; Frank Schwab; Christopher I. Shaffrey; Justin S. Smith; Kirkham Wood; International Spine Study Group*

68

**Alignment Failures following Thoracic Pedicle Subtraction Osteotomies***Virginie Lafage; Shay Bess; Frank Schwab; Eric Klineberg; Richard A. Hostin; Douglas C. Burton; Christopher I. Shaffrey; Justin S. Smith; International Spine Study Group*

69

**Changes in Thoracic Kyphosis Negatively Impact Sagittal Alignment following Lumbar Pedicle Subtraction Osteotomy***Virginie Lafage; Eric Klineberg; Frank Schwab; Behrooz A. Akbarnia; Christopher P. Ames; Obeneba Boachie-Adjei; Douglas C. Burton; Robert Hart; Richard A. Hostin; Christopher I. Shaffrey; Kirkham Wood; Shay Bess; International Spine Study Group*

70

**Anterior Cervical Discectomy and Fusion with Stand-alone PEEK Cages without Osteogenic Filling Substance***Ehab Shiban; Heiko Pape; Bernhard Meyer; Jens Lehmberg*

71

**Human Stem Cell Transplantation: The First U.S. Clinical Trial for ALS***Nicholas M. Boulis; Jonathan Riley; Thais Federici*



72

**Effect of Patient Pain Expectations and Preoperative SF-36 Mental Component Scores on Clinical Outcomes following Anterior Cervical Discectomy and Fusion**

*Frances A. Carr; Theresa Hernandez; Kyle M. Healy; Ewell Lee Nelson; Alexander Mason; Sigita Burneikiene; Alan T. Villavicencio*

73

**Assessment of Calcium Phosphate Bone Void Fillers in a Rabbit Intertransverse Process Fusion Model**

*Joseph Smucker; Ali Al-Hilli; Douglas C. Fredericks*

74

**Clinical and Radiographic Factors that Distinguish between the Best and Worst Outcomes of Scoliosis Surgery for Adults 18-45 Years Old**

*Justin S. Smith; Christopher I. Shaffrey; Leah Y. Carreon; Steven D. Glassman; Frank Schwab; Virginia Lafage; Sigurd Berven; Keith Bridwell*

75

**Clinical and Radiographic Factors that Distinguish between the Best and Worst Outcomes of Scoliosis Surgery for Adults 46-85 Years Old**

*Justin S. Smith; Christopher I. Shaffrey; Leah Y. Carreon; Steven D. Glassman; Frank Schwab; Virginia Lafage; Sigurd Berven; Keith Bridwell*

76

**Anatomical Variations of Osteo-vascular Structures Around the Posterior Atlantal Arch and Different Surgical Strategies for C1 Screw Placement**

*Jae Taek Hong; Sang Won Lee; Chun Kun Park; Byung Chul Son*

77

**How Preop Degenerative Disc Status Affects the Clinical and Radiological Outcomes of Cervical Disc Replacement at Maximum 3-Years Follow-up**

*Jacques Beaurain; Jean Huppert; Thierry Dufour; Phong Dam-Hieu; Jean Stecken; Jean-Paul Steib; Istvan Hovorka; Jean-Marc Vital; Pierre Bernard; Lucie Aubourg; Thierry Vila*

78

**Biomechanical Comparison of Three Different Types of C7 Fixation Techniques: Lateral Mass Screw, Transpedicular Screw and Intralaminar Screw**

*Jae Taek Hong; Takigawa Tomoyuki; Alejandro A. Espinoza Orías; Nozomu Inoue; Howard An*

79

**Comparative Effectiveness of Minimally Invasive versus Open Transforaminal Lumbar Interbody Fusion: Two-Year Assessment of Pain, Disability, Quality of Life, and Return to Work**

*Owoicho Adogwa; Scott Parker; Ali Bydon; Joseph S. Cheng; Matthew McGirt*

80

**Augmentation Duraplasty in Chiari I Malformations Utilizing Suturable and Sutureless Allograft Patches: A Prospective, Randomized Study with Long-term Outcome Analysis**

*Konstantin V. Slavin; Prasad S.S.V. Vannemreddy; Karriem S. Watson; Leena Walters; Nada Mlinarevich; Marina Abramova; Anna Rozman*

81

**Preliminary Results of Schwann Cell Transplantation for Chronic Penetrating Spinal Cord Injuries**

*Hooshang Saberi*

82

**Evaluation of Occipitocervical Arthrodesis Utilizing Screw-Based Fixation and Osteoinductive Agents**

*David M. Panczykowski; Matthew J. Tormenti; Paul A. Gardner; Adam S. Kanter; Richard M. Spiro; David O. Okonkwo*

83

**Outcomes after Incidental Durotomy during Lumbar Laminectomy for Spinal Stenosis**

*Atman Desai; Perry Ball; Jon Lurie; Sobail Mirza; Anna N. A. Tosteson; Tor D. Tosteson; Weinstein N. James*

84

**Patient Comorbidity Score Predicts Incidence of Perioperative Complications: Assessing the Impact of Patient Comorbidities on Complications in Spine Surgery**

*John K. Ratliff; Sanjay Yadla; Peter Campbell; Jennifer Malone; Mitchell Gil Maltenfort*

85

**Poor Prognostic Factors on the Clinical Outcome of Instrumented Lumbar Interbody Fusion for Adult Low-grade Isthmic Spondylolisthesis: Minimum 3-Year Follow-up**

*Jun Seok Bae; Sang-Ho Lee; Jin-Sung Kim; Ho-Yeon Lee; Gun Choi*

86

**Prognostic Factors Influencing Outcome after Surgery for Spinal Metastases from Non-small Cell Lung Carcinoma (NSCLC)**

*Adam Wu; Eric G. St. Clair; Loyola V. Gressot; Dima Suki; Laurence D. Rbines*

87

**Pulsed Electromagnetic Field Bone Growth Stimulation for High Risk Fusion Patients: An Analysis of 452 Consecutive Cases**

*Naresh P. Patel; Barry D. Birch; Mark K. Lyons; Richard S. Zimmerman; Stacie DeMent; Gregg Elbert; Orland K. Boucher; Amy Theiler*

88

**Incidence of Adjacent Level Disease Is Equivalent in Cervical Spine after ACDF and Total Disc Arthroplasty: Multi-Institutional Experience from Three Prospective Randomized Trials**

*Ajay Jawabar; David A. Cavanaugh; Charles R. Gordon; Eubulus J. Kerr; Phillip A. Utter; Guy O. Danielson; Pierce D. Nunley*

89

Withdrawn

90

Withdrawn

91

**Simple Oblique Lumbar Magnetic Resonance Imaging Technique and its Diagnostic Value for Extraforaminal Disc Herniation**

*Jin Sub Yang; Dong Hua Heo*

92

**An In Vitro Biomechanical Study Evaluating a Spacer with Integrated Plate for Treating Adjacent Level Disease in the Subaxial Cervical Spine**

*Andrew Clavenna; William J. Beutler; Manasa Gudipally; Saif Kbalil; Mark Moldavsky*

93

**Treatment Parameters and Injury Mechanisms Associated with Acute Proximal Junctional Failure following Posterior Spinal Fusion for Deformity**

*Richard A. Hostin; Robert Hart; Breton G. Line; Christopher P. Ames; Virginie Lafage; Frank Schwab; Douglas C. Burton; Christopher I. Shaffrey; Justin S. Smith; Michael F. O'Brien; Kirkham Wood; Shay Bess; International Spine Study Group*

94

**Risk Factors for Major Peri-operative Complications in Adult Spinal Deformity Surgery: A Multi-center Review of 953 Consecutive Patients**

*Frank Schwab; Nicola Hawkinson; Virginie Lafage; Robert Hart; Gregory Mundis; Douglas C. Burton; Breton G. Line; Behrooz A. Akbarnia; Obeneba Boachie-Adjei; Richard A. Hostin; Christopher I. Shaffrey; Justin S. Smith; Kirkham Wood; Shay Bess; International Spine Study Group*

95

**Long-term Clinical Efficacy of Metal on Metal Total Disc Arthroplasty in Patients with 1-Level Degenerative Disc Disease**

*Erik Van de Kelft*

96

**The Effects of TWEAK, Fn14, and TGF-<sup>2</sup> 1 on Degeneration of Human Intervertebral Disc**

*Hoon Hub; Kwan-Young Song; Gun Choi*

97

**Spinal Cord Stimulation Is Effective in Management of Complex Regional Pain Syndrome (CRPS) 1: Fact or Fiction**

*Krishna Kumar*

98

**Incidence of Dysphagia in Multilevel Anterior Cervical Discectomy and Fusion**

*Yvette D. Marquez; Ali Hakim Mesiwala*

99

**Correlation of Pre-operative Depression and Somatic Perception Scales with Post-operative Disability and Quality of Life after Lumbar Discectomy**

*Kaisorn L. Chaichana; Debraj Mukherjee; Owoicho Adogwa; Oran Aaronson; Joseph S. Cheng; Matthew McGirt*

100

**Changes in Sexual Function in Older Adults following Thoracolumbar to Pelvic Instrumentation for Spinal Deformity**

*D. Kojo Hamilton; Justin S. Smith; Tanya Nguyen; Christopher I. Shaffrey*

101

**Post-operative Infection after Minimally Invasive Versus Open Transforaminal Lumbar Interbody Fusion (TLIF): Literature Review and Cost Analysis**

*Scott Parker; Owoicho Adogwa; Oran Aaronson; Joseph S. Cheng; Matthew McGirt*

102

**Usefulness of 3D-CTA Using Multidetector-row CT and Intraoperative ICG Angiography for the Spinal AVM**

*Tomohiro Murakami; Izumi Koyanagi; Takahisa Kaneko; Satoshi Iihoshi; Kei Miyata; Kiyohiro Houkin*

103

**Identification of Vertebral Artery Anatomy in Cervical Spine MRIs**

*Michelle E. Aubin; Mark S. Eskander; Jeffrey Lange; Jacob M. Drew; Julianne Marvin; Jason Eck; Patrick J. Connolly*

104

**Miniature Robot-assisted versus Free-hand Lumbar Pedicle Screw Placement: A Prospective Randomized Single-center Trial**

*Bernhard Meyer; Michael Stoffel; Carsten Stueer; Andreas Reinke; Alexander Preuss; Florian A. Ringel*

105

**A Role for Motor and Somatosensory Evoked Potentials during Anterior Cervical Discectomy and Fusion for Patients without Myelopathy: Analysis of 57 Consecutive Cases**

*Risheng Xu; Eva Ritzl; Mohammed Sait; Matthew McGirt; Daniel M. Sciubba; Jean-Paul Wolinsky; Timothy F. Witham; Ziya L. Gokaslan; Ali Bydon*

106

**Fulfilling the Chief of His or Her Duties as a Physician: Harvey Cushing, Dorsal Rhizotomy and the Foundation of Surgery for Quality of Life**

*Hormuzdiyar H. Dasenbrock; Courtney Pendleton; Matthew McGirt; Daniel M. Sciubba; Ziya L. Gokaslan; Alfredo Quinones-Hinojosa; Ali Bydon*

107

**Coccygectomy for Chronic Refractory Coccygodynia: A Clinical Case Series and Literature Review**

*Edward Kerr; Rudolph J. Schrot*

108

**Headache Relief after Anterior Cervical Discectomy: Results from a Prospective Multicenter Randomized Controlled Clinical Trial**

*Rudolph J. Schrot; Jesna Mathew; Isaac Chang; Elena Minakova; Yueju Li; Laurel Beckett; Hyun W. Bae; Kee Duk Kim*

109

**Socioeconomics of Lumbar Spinal Trauma in the United States: Analysis of a Nationwide Database over a 5-Year Period**

*Ali A. Baaq; Rafael F. Cardona; Juan S. Uribe; Fernando L. Vale*

110

**The Prevalence of Subsequent Surgeries following a Primary Lumbar Discectomy Procedure**

*Julie M. Messer; Jeffrey S. Gerdes; Dean G. Karabaliou; John Sherman*

111

**A Long-term Clinical Experience with Three Different Nucleus Replacement Devices: Lessons Learned after 9-Years Follow-up**

*Leonardo Oliveira; Luis Marchi; Etevaldo Coutinho; Luiz Pimenta*

112

Withdrawn

1:30 – 3:00 PM **Room 3016**

## **Top Ten Abstracts – Section on Neurotrauma and Critical Care**

**Moderators:** *Michael G. Fehlings, Gregory W.J. Hawryluk*

★ **Synthes Award for Resident Research on Brain and Craniofacial Injury**

1:30 – 1:39 PM

931

**Beneficial Effects of Vitamin C and Vitamin E Administration in Severe Head Injury: A Randomized Double-blind Controlled Trial**

*Ali Razmkon, Ahmad Sadidi, Ehsan Sherafat-Kazemzadeh, Ali Mebrafshan, Atefeh Bakhtazad*

★ **Synthes Award for Resident Research on Spinal Cord and Spinal Column Injury**

1:39 – 1:48 PM

932

**Fractional Anisotropy and Tractography: A Novel Technique To Improve Clinical Correlation of Motor Deficits with Spinal Cord Magnetic Resonance Imaging in Patients with Spinal Cord Injury**

*Fahad A. Alkberayf, Eve C. Tsai, Thanh Nguyen, Garth Johnson, Arturo Cardenas-Blanco*

1:48 – 1:57 PM

933

**Comparative Effectiveness of Computed Tomography Alone to Exclude Cervical Spine Injuries in Obtunded or Intubated Patients: A Meta-Analysis of 14,327 Blunt Trauma Patients**

*Nestor Denys Tomycz, David M. Panczykowski, David O. Okonkwo*

1:57 – 2:06 PM

934

**Prospective Independent Validation of IMPACT Modeling as a Prognostic Tool in Severe TBI**

*David M. Panczykowski, Ava Puccio, David O. Okonkwo*

2:06 – 2:15 PM

935

**The Importance of Remyelination by Exogenous and Endogenous Cells in a Neural Precursor Cell Transplantation Paradigm for Rodent Spinal Cord Injury Repair**

*Gregory W.J. Hawryluk, Michael G. Fehlings*

2:15 – 2:24 PM

936

**The Role of Hypoxia-Inducible Factor-1, Aquaporin-4 and Matrix Metalloproteinase-9 in Blood Brain Barrier Disruption and Brain Edema after Traumatic Brain Injury**

*Tetsubiro Higashida, Yuchuan Ding, Christian Kreipke, José Rafols, Cheney Peng, Steven Schafer, Patrick Schafer, Jamie Ding, Xiaobua Li, Harish Kinni, Murali Guthikonda, Noreen Rossi*

2:24 – 2:33 PM

937

**The AOSpine North America Geriatric Odontoid Fracture Study: A Retrospective Review of Mortality Outcomes in Surgical versus Conservative Treatment in 158 Patients with Long-term Follow-up**

*Jens Chapman, Alexander R. Vaccaro, Michael G. Fehlings, Branko Kopjar, Kledia Pollo, Zoya Bauer, Christopher I. Shaffrey, Paul M. Arnold, Ziya L. Gokaslan, Roger Hartl, Darrel S. Brodke, John France, Sang Wook Yoon, Mark B. Dekutoski, Rick Sasso, Christopher Bono*



2:33 – 2:42 PM

938

**Activated Protein C Analog with Reduced Anti-Coagulant Activity Improves Functional Recovery and Reduces Bleeding Risk following Controlled Cortical Impact**

*Corey Walker, Anthony L. Petraglia, Andrew Marky, Berislav Zlokovic*

2:42 – 2:51 PM

939

**Thymosin Beta<sub>4</sub> Treatment Improves Functional Outcome and Promotes Neurogenesis after Traumatic Brain Injury in Rats**

*Asim Mahmood, Ye Xiong, Michael Chopp*

2:51 – 3:00 PM

940

**The SILVER Trial**

*Nicole Chwee Har Keong, Diederik O. Bulters, Hugh Richards, Mark Farrington, Owen Sparrow, Peter J. Hutchinson, John Douglas Pickard, Peter J. Kirkpatrick*

3:00 – 4:30 PM

Ballroom, Level 3

**Neurosurgical Forum –  
Section on Neurotrauma and Critical Care**

*Moderators: Shelly D. Timmons, Michael G. Fehlings*

113

**Blood Transfusion Increases Brain Tissue Oxygen and Cerebral Blood Flow in Traumatic Brain Injury Patients**

*Sara C. LaHue, Guy Rosenthal, Diane Morabito, Geoffrey T. Manley, Mitchell J. Cohen*

114

**Utility of Routine Repeat Head CT Scan after Mild TBI: A Systematic Review of the Literature**

*Martina Stippler, Sarah Morley, Robb McLean, Carl Smith, Andrew Phillip Carlson, George Kennedy*

115

**Fate of Murine Neuronal Stem Cells in an Adult Mammalian Brain**

*Michael Chan, Archana Gadabar, Orly Lazarov*

116

**Helmets and Head Injury: Myth-Busting the Risk Compensation Theory**

*Amro Al Habib, Najmedden Attabib, R. John Hurlbert*

117

Withdrawn

118

**Predicted Changes in Brain Energy Metabolism Preceding Cerebral Vasospasm after Aneurysmal Subarachnoid Hemorrhage**

*R. Morgan Stuart, Raimund Helbok, Pedro Kurtz, Michael Schmidt, Luis Fernandez, Kiwon Lee, Neeraj Badjatia, Stephan A. Mayer, E. Sander Connolly, Jr., Jan Claassen*

119

Withdrawn

120

**Utilizing the Intrathoracic Pressure Regulator to Lower Intracranial Pressure in Patients with Altered Intracranial Elastance**

*Erin N. Kiehna, Julie Huffmyer, Robert H. Thiele, David Scalzo, Edward Nemergut, Mark Edwin Shaffrey*

121

**Early Parenchymal Contrast Extravasation Predicts Subsequent Hemorrhage Progression of Traumatic Cerebral Contusion**

*Abel Po-Hao Huang, Yi-Hsin Tsai, Fon-Yih Tsuang, Lu-Ting Kuo, Wei-Chen Hong, Sheng-Jean Huang, Hon-Man Liu, Yong-Kwang Tu, Jui Chang Tsai*

122

**An Update on the RESCUEicp Decompressive Craniectomy Trial [www.RESCUEicp.com](http://www.RESCUEicp.com)**

*Peter J. Hutchinson, Ivan Timofeev, Liz Corteen, Sam Grainger, Marek Czosnyka, David K. Menon, John Douglas Pickard, Peter J. Kirkpatrick*

123

**Portable Head Computerized Tomography in the Neuroscience Intensive Care Unit**

*Peter Gruen, Douglas McCallum*

124

**MRI Findings in Patients of Traumatic Brain Injury with Normal CT Scans**

*Alok Arvind Umredkar, Sunil Kumar Gupta, Sandeep Mohindra*

125

**Membrane Therapy in Experimental Spinal Cord Injury**

*Ji-Xin Cheng, Yunzhou Shi, Sungwon Kim, Terry Huff, Richard B. Borgens, Kinam Park, Riyi Shi, Scott A. Shapiro*

126

**Clinical Outcome in Traumatic Brain Injury Predicted by Diffusion-Weighted Magnetic Resonance Imaging**

*Choong Hyo Kim, Park Jae Hyo, Seoungwoo Park, Ho Jun Seol*

127

## Increased Mortality in Patients Treated without ICP Monitoring

*Arash Farabvar; Linda Gerber; Ya-lin Chiu; Roger Hartl; Jamsbid Gbajar*

128

## How To Increase Statistical Power of Clinical Trials for Traumatic Brain Injury: Strict Patient Selection or Covariate Adjustment?

*Bob Roozenbeek; Hester F. Lingsma; Ewout W. Steyerberg; Andrew Ian Ramsay Maas*

129

## Does the Lack of Microdialysis Affect the Quality of Care at the Contemporary Trauma Center?

*Stefanos D. Pichas; Christos Katsifas; Ioannis Polithodorakis*

130

## Safe Early Deep Venous Thrombosis Chemoprophylaxis in Closed Head Injury

*Joshua E. Medow; Brandon Rocque; Kurt Osterby; Timothy Kamps; Cameron Zabad; Giuditta Angelini; Mustafa Kemal Baskaya; Jonathon Ketzler*

131

## NKCC1 and WNK1: Role in Secondary Spinal Cord Injury

*Mostafa M. Ahmed; HyunKyung Lee; Namratta Manbas; Kevin King; Gurwattan Miranpuri; Dandan Sun; Daniel K. Resnick*

132

## Diffusion Tensor Imaging in Mild Traumatic Brain Injury Reveals Abnormalities in Visually Normal White Matter

*Christopher J.A. Cowie; Benjamin Aribisala; Jiabao He; Josh Wood; David Mendelow; Patrick Mitchell; Andrew Blamire*

1:30 – 3:00 PM **Room 3003**

## Top Ten Abstracts – Section on Pain

Moderators: *Christopher J. Winfree, Alon Y. Mogilner*

### ★ Ronald Tasker Award

1:30 – 1:39 PM

941

## Reorganization of Functional Topography in Post-Stroke Pain: Opportunities for Deep Brain Stimulation

*Patrick Schweder, Peter Hansen, Gerardine Quaghebeur, Alexander L. Green, Tipu Z. Aziz*

1:39 – 1:48 PM

942

## Nerve Growth Factor in the Dorsal Root Ganglia Modulates Neuropathic Pain Inhibition after Resiniferatoxin Treatment

*Gabriel Claudiu Tender, Jian Guo Cui*

1:48 – 1:57 PM

943

## High Lateral Cervical Spinal Cord Stimulation (SCS) for Neuropathic Facial Pain: Report of 10 Cases

*Peter Chang, Robert M. Levy*

1:57 – 2:06 PM

944

## Combined Spinal Cord and Subcutaneous Neurostimulation for Back and Leg Pain due to Failed Back Surgery Syndrome

*Jonathan P. Miller, Daniel Leizman*

2:06 – 2:15 PM

945

## Stereotactic Radiosurgery for Patients with Trigeminal Neuralgia Associated with Skull Base Meningiomas

*Hideyuki Kano, Nasir R. Awan, Thomas J. Flannery, John Flickinger, L. Dade Lunsford, Douglas Kondziolka*

2:15 – 2:24 PM

946

## Diffusion Tensor Imaging as a Guide to Therapy in Trigeminal Neuralgia

*Kelly Collins, Erin Conrad, Hemant Parmar, Parag Patil*

2:24 – 2:33 PM

947

## Peripheral Neurectomy as a Second Line Treatment Option for Trigeminal Neuralgia: 27 Years Experience of a “Sidelined” Procedure

*Nikolaos Haliasos, George Prezerakos, Sarin Kuruwath, Neil Garvan, Sebastiano Bavetta*

2:33 – 2:42 PM

948

## Management of Symptomatic Intrathecal Catheter-Associated Inflammatory Masses: A Single-Center Experience

*Nestor Denys Tomycz, Veronica Ortiz, Kathryn A. McFadden, Louisa Urgo, John Jefferson Moossy*

2:42 – 2:51 PM

949

## Open Thoracic Cordotomy as a Viable Treatment Option for Severe, Debilitating, Treatment-Refractory Pain

*Luke Tomycz, Jonathan Forbes, Peter Konrad*

2:51 – 3:00 PM

950

## The Use of 3D Biplane Fluoroscopy for Needle and Balloon Placement for Balloon Compression Rhizotomy for Trigeminal Neuralgia

*William C. Olivero, Huan Wang, Richard A. Rak*

3:00 – 4:30 PM **Ballroom, Level 3****Neurosurgical Forum – Section on Pain**Moderators: *Christopher J. Winfree, Alon Y. Mogilner***134****Harvey Cushing's Early Contributions to Trigeminal Neuralgia Surgery at Johns Hopkins Hospital***Katherine Latimer; Hadie Adams; Courtney Anne Pendleton; Aaron Afshin Cohen-Gadol; Benjamin S. Carson; Alfredo Quinones-Hinojosa***135****Hearing Preservation after Microvascular Decompression for Hemifacial Spasm: Elucidating the Role of Intraoperative Brainstem Auditory Evoked Responses in 94 Patients***Aalap C. Shah; Parthasarathy D. Thirumala; Michael B. Horowitz; Tara Nikonow; Maura Holmes***136****Anatomical Consideration of the Anterior and Lateral Cutaneous Nerves in the Scalp***Jeong Seong-man; Chung Yong Gu***137****New Targets for Deep Brain Stimulation for Pain: Neuroimaging Evidence of Novel Functional Abnormalities***Patrick Schweder; Alexander L. Green; Peter Hansen; Gerardine Quaghebeur; Tipu Z. Aziz***138****Peripheral Nerve/Field Stimulation for Post-intervention Trigeminal Neuropathic Pain***Amer K. Khalil; Milind S. Deogaonkar***139****Microvascular Decompression for Elderly Patients with Trigeminal Neuralgia: A Prospective Study and Systematic Review with Meta-analysis***Raymond F. Sekula, Jr.; Andrew Frederickson; Matthew Quigley; Peter J. Jannetta; Khaled M. Aziz***140****Clinico-pathological Review of Patients with and without Multiple Sclerosis Treated with Partial Sensory Rhizotomy for Medically Refractory Trigeminal Neuralgia: A 12-Year Retrospective Study***Kumar Abhinav; S. Love; G. Kalantzis; Hugh B. Coakham; Nikunj Patel***141****Test Results Showing Bench Reliability on Catheter Dislodgement for a Next-Generation Catheter***Karl Hokanson; Michael Metzler; Julie Kopp; Andrew Servi; Amy Gjoraas***142****Modulation of Brain-Mediated Pain by Spinal Cord Stimulation***Kevin Reinard; Kost Elisevich; Naveen Gandreti; Henry Kroll***143****Usefulness of Infrared Thermography for Decision Making on Permanent IPG Insertion of SCS and for Prediction of Successful Outcome***Jung Yul Park; Sang-Dae Kim; Se-Hoon Kim; Dong-Jun Lim*

1:30 – 3:00 PM

**Room 3022****Top Ten Abstracts – Section on Pediatric Neurological Surgery**Moderators: *Mark D. Krieger, Ann-Christine Dubaime***★ Sherry Apple Resident Travel Scholarship**

1:30 – 1:39 PM

**951****Phase Contrast MRI of Intracranial Shunt Tube: A Valuable Adjunct in the Diagnosis of Ventriculo-Peritoneal Shunt Malfunction***Nilesh Shaligram Kurwale, Deepak Agrawal*

1:39 – 1:48 PM

**952****Inappropriately Low-Pressure (Negative-Pressure) Hydrocephalus: Experience with 20 Patients Examining the Role for Endoscopic Third Ventriculostomy***Mark G. Hamilton, Angela V. Price*

1:48 – 1:57 PM

**953****Pediatric AVM: Associated Aneurysms and the Implications for Treatment Paradigms***Caitlin E. Hoffman, Philip E. Stieg, Howard A. Riina, Baxter Allen, Y. Pierre Gobin, Paul Christos, Mark M. Souweidane*

1:57 – 2:06 PM

**954****Long-term Follow-up of Pediatric Benign Cerebellar Astrocytomas***Hideki Ogiwara, Tadanori Tomita*

2:06 – 2:15 PM

**955****Rolandic Cortex Epilepsy Surgery in Children: A Single One-Center Experience with 48 Consecutive Cases***Ricardo Santos de Oliveira, Marcelo Santos Volpon, Vera Cristina Terra, Americo Ceiki Sakamoto, Hélio Rubens Machado*



2:15 – 2:24 PM

956

## Dystonic Hypertonia Due to Cerebral Palsy Responds to Deep Brain Stimulation of the Globus Pallidus Internus

*John H. Honeycutt, Warren Marks, Fernando Acosta*

2:24 – 2:33 PM

957

## Outcome of Selective Motor Fasciculotomy in the Treatment of Upper Limb Spasticity Due to Cerebral Palsy

*Aniruddha Kumar Purohit, Aneel Kumar Puligopu*

2:33 – 2:42 PM

958

## The Effect of Untethering on the Neurological Symptoms of Post-myelomeningocele Surgery Tethered Cord

*Farideh Nejat, Mostafa A. El Khashab*

2:42 – 2:51 PM

959

## Growth Acceleration following Tethered Cord Release in Symptomatic Children with Tight Filum Terminale Syndrome

*Kimberly A. Foster, Sandi Karen Lam, Yue-Fang Chang, Stephanie Greene*

2:51 – 3:00 PM

960

## Computed Tomography Morphometric Analysis for Translaminar Screw Fixation in the Upper Thoracic Spine of the Pediatric Population

*Akash J. Patel, Jacob Cherian, Daniel H. Fulkerson, Benjamin Davis Fox, William E. Whitehead, Daniel Curry, Thomas G. Luerssen, Andrew Jea*

3:00 – 4:30 PM

**Ballroom, Level 3**

## Neurosurgical Forum – Section on Pediatric Neurological Surgery

*Moderators: Ann-Christine Dubaime, Alan Cohen, Mark D. Krieger*

144

## Single Incision Laparoscopic Transumbilical Shunt Placement Technique

*Theodore James Spinks; Matthew Justin Tormenti; Matthew Armand Adamo; Jose M. Prince; Bradley J. Segura; R. Cartland Burns; Timothy D. Kane*

145

## Factors Influencing Shunt Malfunction in Patients with Tuberculous Meningitis

*Sudbeer Ambekar*

146

## Hemorrhagic Complications following Ventriculosubgaleal Shunt Insertion in VLBW Infants with Post-Hemorrhagic Hydrocephalus: Incidence and Associated Clinical Factors

*Gavin T. Reed; Chevis N. Shannon; W. J. Oakes; Jeffrey P. Blount; John Wellons, III; Curtis J. Rozzelle*

147

## Skull-Fixated Fiducial Markers Improve Accuracy in Two-Stage Frameless Stereotactic Epilepsy Surgery

*Eric M. Thompson; Gregory J. Anderson; Colin Roberts; Nathan R. Selden*

148

## Meta-Analysis of Surgical Resection of Pediatric Craniopharyngiomas: Is It Valid to Compare Transcranial and Transsphenoidal Approaches?

*Robert E. Elliott; John Jane, Jr; Jeffrey H. Wisoff*

149

## Preliminary Safety and Efficacy of Ferumoxylol as an MRI Blood Pool Agent in Pediatric Brain Tumor Imaging

*Eric M. Thompson; Daniel James Guillaume; Edit Dosa; Kellie Nazemi; Edward A. Neuwelt*

150

## Modified Orbitozygomatic Craniotomy for Resection of Craniopharyngiomas in Pediatric Patients

*Nathan R. Selden; Kiarash Golsbani*

151

## Morbidity and Mortality Associated with the Operative Treatment of Disorders of the Pediatric Spine: A Report from the SRS M&M Committee

*Kai-Ming G. Fu; Justin S. Smith; Joseph Perra; David W. Polly, Jr.; Christopher P. Ames; Sigurd Berven; D. Raymond Knapp; Christopher I. Shaffrey*

152

## Tuberculosis of the Thoracic Spine: An Analysis of 22 Surgically Treated Children

*Rabi N. Sabu; Sanjay Behari; Awadhesh K. Jaiswal; Raj Kumar*

153

## Surgical Outcome of Extratemporal Epilepsy

*Ihm Eun Hyun; Dong Seok Kim; Kyu Won Shim; Jong Hee Chang; Heung Dong Kim; Jin Woo Chang; Joong Uhn Choi*

154

## Intracerebral Aneurysms in Children

*Alexandru V. Ciurea; Iliescu Adrian; Tascu Alexandru; Ples Horia; Rizea Radu Eugen; Ples Stanca*

155

**Eucephaly in One Stage for Coronal Synostosis: A Ten-Year Review of a Novel Surgical-External Distractor Approach**

*McKay McKinnon*

156

**Blocking Early GABA Depolarization with Bumetanide Results in Permanent Alterations in Cortical Circuits and Sensorimotor Gating Deficits**

*Doris D. Wang*

157

**Posterior Fossa Decompression with Dural Splitting Versus Duraplasty for the Treatment of Chiari I Malformations in Pediatric Patients**

*David Weintraub; Jonathan H. Sherman; John Anthony Jane, Jr.*

158

Withdrawn

159

**Impact of Tethered Cord Release on Symptoms of Chiari II Malformation in Children Born with a Myelomeningocele**

*Vivek Mehta; Chetan Bettegowda; Edward Sangboon Abn; George I. Jallo; Anubhav Amin; Mahmood El-Gasim*

160

**Management of Syndromic Craniosynostosis: Analysis of 62 Consecutive Cases**

*Ricardo Santos de Oliveira; Marcelo Santos Volpon; Antonio Augusto Velasco-Cruz; André Andó; Nivaldo Alonso; Francisco Veríssimo; Gustavo Eichenberg; Helio Rubens Machado*

161

**Endoscopic Hemispherotomy in a Cadaveric Model**

*Alan Cohen; Sunil V. Manjila; Shenandoah Robinson; Biji Babuleyan*

1:30 – 3:00 PM **Room 3020**

## Top Ten Abstracts – Section on Stereotactic and Functional Neurosurgery

Moderators: *Brian H. Kopell, Konstantin V. Slavin*

1:30 – 1:39 PM

961

**Treatment of Medically Intractable Mesial Temporal Epilepsy with Responsive Brain Stimulation: Results of a Subset Analysis from the RNS® System Pivotal Investigation**

*Robert R. Goodman, Peter B. Weber, Thomas C. Witt, Robert M. Worth, Ryder Gwinn, Louis A. Whitworth, Joseph R. Smith, David W. Roberts, Charles Y. Liu, Steven S. Glazier, Ashwini Dayal Sbaran, James W. Leiphart, George I. Jallo, Kost Elisevich, Richard W. Byrne, Karl A. Sillay, William E. Bingaman, Robert E. Wharen, Daniel Yosbor, Robert E. Gross, W. Jeffrey Elias, Jason M. Schwalb, Emad N. Eskandar, Richard S. Zimmerman, W. R. Marsh, Werner Doyle, Kenneth P. Vives, Martha J. Morrell*

1:39 – 1:48 PM

962

**Correspondence between Neuronal Activity and Functional MRI in the Human Dorsal Anterior Midcingulate Cortex**

*Sameer A. Sheth, Sydney Cash, Matthew Kamal Mian, Shaun Patel, George Bush, Emad N. Eskandar*

1:48 – 1:57 PM

963

**Neuromodulation of the Striatum for Treatment Refractory Tinnitus**

*Paul Larson, Steven W. Cheung*

### ★ Stereotactic and Functional Neurosurgery Resident Award

1:57 – 2:06 PM

964

**Study of the Circuitry of Nucleus Accumbens and its Effect on Addiction by Optogenetic Methods**

*Sbih-Chun Lin, Ilana Witten, Karl Deisseroth*

2:06 – 2:15 PM

965

**Deep Brain Stimulation of the Pedunculopontine Nucleus and Subthalamic Region: Clinical and PET Outcome Data**

*Sadaquate Khan, Nicola Pavese, Lucy Mooney, Shazia Javed, Puneet Plaha, David Brooks, Steven Gill*

2:15 – 2:24 PM

966

**Brain Computer Interface Driven Neuroprosthesis for Tetraplegic Patients: Preliminary Steps in Rats and Primates**

*Alim-Louis Benabid, Cecile Moro, Tetiana Aksenova, Napoleon Rafael Torres, Andryi Yelisyeyev, Thomas Costecalde, Sadok Gharbi, Jean Porcherot, Fabien Sauter, Guillaume Charvet, Corinne Mestais*

2:24 – 2:33 PM

967

## **Bilateral Globus Pallidus Internus Stimulation for Intractable Gilles de la Tourette Syndrome: Hitting the Right Target?**

*Jan H. Mebrkens, Sandra Dehning, Anja Cerovecki, Norbert Mueller, Berend Feddersen, Kai Boetzel*

2:33 – 2:42 PM

968

## **Long-term Outcome of Deep Brain Stimulation on Bilateral Anterior Thalamic Nuclei in Patients with Intractable Epilepsy**

*Lee Kyung Jin*

2:42 – 2:51 PM

969

## **Anatomo-clinical Correlations of Pedunculo-Pontine Nucleus/Cuneiform Nucleus Deep-Brain-Stimulation in Advanced Parkinson's Disease with Gait Disorders**

*Stéphan Chabardès, Laurent Goetz, Valerie Fraix, Murielle Ferraye, Brigitte Piallat, Romain Carron, Bettina Debu, Eric Seigneuret, Claire Ardouin, Alexandre Krainik, Paul Krack, Pierre Pollak, Alim-Louis Benabid*

2:51 – 3:00 PM

970

## **Nucleus Accumbens Lesioning Appears to Reduce Opiate Dependence: Target Location Correlates with Outcome**

*Wang Xuelian, Paul S.A. Kalanithi, John Adler, Chang Chongwang, Ge Shunnan, Li Nan, Geng Ning, Ma Jiubong, Wu Heming, Fang Wei, Gao Guodong*

3:00 – 4:30 PM

**Ballroom, Level 3**

## **Neurosurgical Forum – Section on Stereotactic and Functional Neurosurgery**

**Moderators:** *Alim-Louis Benabid, Emad N. Eskandar*

162

Withdrawn

163

Withdrawn

164

## **Toward Human Cortical Prostheses: Addressing the Performance Barrier to Clinical Reality**

*Stephen In-Sun Ryu, Vikash Gilja, Paul Nuyujukian, Cindy A. Chestek, John P. Cunningham, Byron M. Yu, Krishna V. Shenoy*

165

## **An Analysis of Anatomical Variability of the Thalamus in 220 Brains: Implications for Stereotactic Neurosurgery**

*Patrick Schweder, Peter Hansen, Alexander L. Green, Tipu Z. Aziz*

166

## **The Role of Beta-Band Activity in the Normal Primate Basal Ganglia**

*Shaun Patel, Samer Abdel-Aziz, Sameer A. Sheth, Emad N. Eskandar, John Gale*

167

## **Quantitative Measurement of Effect of Adenosine Kinase on Cerebral Blood Flow (CBF) in Epileptic Mice Using Optical Microangiography (OMAG)**

*Hai Sun, Zhongwei Zhi, Hrebesh Subhas, Haiying Shen, Detlev Boison, Ricky Wang*

168

## **Genetic Engineering of Multipotent Human Neural Stem Cells for Multimodal Imaging in Experimental Stroke Model**

*Marcel M. Daadi, Shijun Hu, Jill Klausner, Zongjin Li, GuoHua Sun, Joseph C. Wu, Gary K. Steinberg*

169

## **Reliability of Functional Magnetic Resonance Imaging for Brain Mapping of Language and Motor Function in Contrast to Electroconvulsive Stimulation**

*Laszlo Entz, Stephan Bickel, Miklos Argyelan, Gad Klein, Sean Hwang, Sanjay Jain, Sarah G. Schaffer, Peter B. Kingsley, Ashesh Mehta*

170

## **Mechanisms of Epileptogenesis in Tuberous Sclerosis: Effects of mTOR Modulation on the Excitability of Neocortical Neurons**

*Jason Scott Hauptman, Carlos Cepeda, Joseph Antonios, Gary W. Mathern, Michael Levine*

171

## **MRI-Guided Subthalamic Nucleus Deep Brain Stimulation without Microelectrode Recording: Accurate, Safe and Effective**

*Ludvic Zrinzo, Thomas Foltynie, Irene Martinez-Torres, Marjan Jabanshahi, Patricia Limousin, Marwan Hariz*

172

Withdrawn

173

## **Do Patients Get Angrier following STN, GPi, and Thalamic Deep Brain Stimulation**

*Adam Burdick, Kelly D. Foote, Samuel Wu, Dawn Bowers, Pamela Zeilman, Charles Jacobson, Herbert Ward, Michael S. Okun*

174

## **Middle Short Gyrus of the Insula Implicated in Speech Production: Intracerebral Electric Stimulation of Patients with Epilepsy**

*Afif Mohammad Afif, Lorella Minotti, Philippe Kabane, Dominique Hoffmann*



175

**Changes in Regional Cerebral Blood Flow by Deep Brain Stimulation on Bilateral Anterior Thalamic Nuclei in Patients with Intractable Epilepsy**

*Lee Kyung Jin*

176

**Ictal Thalamic Recordings in Humans with Focal Epilepsies**

*W. Jeffrey Elias; Edward Bertram*

177

**Temporal Pole Proton MR Spectroscopy in Patients Undergoing Surgery for Mesial Temporal Sclerosis**

*Kostas N. Fountas; Eftychia Z. Kapsalaki; Efsthios D. Gotsis; Stylianos Giannakodimos; Joseph R. Smith*

178

**An Evaluation of the Effect of Ventral Pallidal Deep Brain Stimulation of Varying Frequencies on Hedonically Desirable Food Consumption in Rats**

*Emily Marie Lebmann; Shani E. Ross; J. Wayne Aldridge*

179

**Impact of Failed Intracranial Epilepsy Surgery on Efficacy of Subsequent Vagus Nerve Stimulation**

*Robert E. Elliott; Amr Morsi; Chad Carlson; Eric Geller; Orrin Devinsky; Werner Doyle*

180

**The Impact of Ventralis Intermedius Nucleus of Thalamus plus Posterior Subthalamic Area Deep Brain Stimulation for Treating Essential Tremors**

*Joo Pyung Kim; Won Seok Chang; Young Seok Park; Eun Jung Kweon; Jin Woo Chang*

181

**Bilateral Caudal Zona Incerta Nucleus Stimulation for Essential Tremor**

*Shazia Javed; Puneet Plaha; Sadaquate Khan; David Agombar; Genevive O'Farrell; Steven Gill*

182

**Specificity of Stimulation-Enhanced Visual-Motor Learning in the Primate Striatum**

*Matthew Kamal Mian; Sameer A. Sheth; Wael Asaad; Emad N. Eskandar*

1:30 – 3:00 PM **Room 3014**

### Top Ten Abstracts – Section on Tumors

Moderators: *Costas G. Hadjipanayis, Atom Sarkar*

#### ★ Journal of Neuro-Oncology Award

1:30 – 1:39 PM

971

**Silencing Expression of Hypoxia Inducible Factor-1 Inhibits Intracranial Glioma Growth: Focus on Nanomolecular System of siRNA Delivery**

*Randy L. Jensen, David Gillespie, Zheng Rong Lu*

#### ★ National Brain Tumor Society Mahaley Clinical Research Award

1:39 – 1:48 PM

972

**Evolution of Neurosurgical Treatment for Brain Metastases over the Last 15 Years: Experience at a Large Referral Cancer Center**

*Mustafa Aziz Hatiboglu, Dima Suki, Wael Hassaneen, Ian E. McCutcheon, Frederick F. Lang, Sujit S. Prabhu, Jeffrey S. Weinberg, Laurence D. Rhines, Ganesh Rao, Eric L. Chang, Franco DeMonte, Raymond E. Sawaya*

1:48 – 1:57 PM

973

**Serum Angiogenic Profile of Patients with Glioblastoma Identifies Distinct Tumor Subtypes and Shows that TIMP-1 Is a Prognostic Factor**

*Matthew Crocker, B. Anthony Bell, Stergios Zacharoulis, Marios Papadopoulos*

1:57 – 2:06 PM

974

**TGF- $\beta$  Mediates the Tropism of Human Mesenchymal Stem Cells (hMSCs) for Malignant Gliomas**

*Naoki Shinojima, Anwar Hossain, Joy Gumin, Feng Gao, Frederick F. Lang*

#### ★ Brainlab Community Neurosurgery Award

2:06 – 2:15 PM

975

**Prospective Trial of Resected Brain Metastases Treated with Neo-adjuvant Stereotactic Radiosurgery Prior to Resection**

*Anthony L. Asher, Stuart H. Burri, Steven R. Abram, Renee Kelly, Peggy Boltes, Melissa Mehrlich, Robert W. Fraser, III*

2:15 – 2:24 PM

976

**New Therapeutic Approach for Brain Tumors: Intranasal Administration of Ras Inhibitor Perillyl Alcohol**

*Clovis O. Fonseca*

★ **Stryker Neuro-Oncology Award**

2:24 – 2:33 PM

977

**Gliomatosis Cerebri: Clinical Characteristics, Management, and Outcome**

*Selby G. Chen, Shota Tanaka, Ian F. Parney*

★ **Integra Foundation Award**

2:33 – 2:42 PM

978

**Gamma Knife Radiosurgery for Parasellar Meningiomas: Long-term Results Including Complications, Predictive Factors and Progression Free Survival**

*Brian Jeremy Williams, Chun Po Yen, Robert M. Starke, Bhuvaneshwara Basina, James Nguyen, Jessica Rainey, Jonathon H. Sherman, David Schlesinger, Jason P. Sheehan*

2:42 – 2:51 PM

979

**Preoperative Estimation of Extent of Resection of Gliomas by DTI FT**

*Lorenzo Bello, Antonella Castellano, Caterina Michelozzi, Giuseppe Casaceli, Marcello Gallucci, Mauro Pluderi, Andrea Falini*

2:51 – 3:00 PM

980

**Use of Indocyanine Green Near-infrared Laser Confocal Endomicroscopy In Vivo: Potential to Intraoperatively Detect the Boundary of Infiltrative Tumor**

*Nikolay L. Martirosyan, Daniel Dutra Cavalcanti, Jennifer M. Eschbacher, Peter Delaney, Mohammed G. Abdelwahab, Adrienne C. Scheck, Peter Nakaji, Robert F. Spetzler, Mark C. Preul*

3:00 – 4:30 PM **Ballroom, Level 3**

**Neurosurgical Forum – Section on Tumors**

*Moderators: Jeffrey N. Bruce, Frederick F. Lang, Michael William McDermott, E. Antonio Chiocca*

183

**Vestibular Schwannoma: Wait and Scan, Surgery or Radiosurgery: A Prospective Cohort of 355 Patients**

*Morten Lund-Johansen; Erling Myrseth; Jobin Varughese; Cathrine Breivik; Vassbotn Flemming*

184

Withdrawn

185

**Cranial Base Parangliomas: Gamma-Knife Radiosurgery**

*Maria Luisa Gandia González; Maria Elena Kusak Lambea; Nuria Martínez Moreno; Jorge Gutiérrez Sárraga; Germán Rey Portolés; Roberto Martínez Álvarez*

186

**Microscopic versus Endoscopic Transsphenoidal Resection of Pituitary Adenomas: Outcome and Complications**

*Ayguel Mert; Stefan Wolfsberger; Alexander Micko; Heinrich Vierhapper; Anton Luger; Andreas Reitner; Thomas Czech; Engelbert Knosp*

187

**Comprehensive Bisulfite Sequencing Reveals Promoter CpG Site Specific Methylation: Correlation with MGMT Expression and Clinical Response in GBM**

*Nameeta Shah; Brett Schroeder; Biaoyang Lin; Greg Foltz*

★ **Synthes Skull Base Surgery Award**

188

**Microsurgical Resection for Vestibular Schwannomas: Tumor Recurrence Rates and Clinical Outcomes in a Neurosurgical Series of 626 Patients**

*Douglas E. Anderson; Marc T. Pisansky; Edward C. Perry; John P. Leonetti*

189

**Perioperative Seizure Prophylaxis for Elective Supratentorial Craniotomies: A Retrospective Comparison between Phenytoin and Levetiracetam Using Electroencephalography**

*Gregory M. Helbig; Lee A. Tan; Ryan Brennan; Michael B. Pritz*

190

**Pure Endoscopic Transsphenoidal Surgery for Cushing's Disease: A Single Institution's Techniques, Results, and Outcomes**

*Robert M. Starke; Davis L. Reames; Mohamad El-Zoghy; Edward R. Laws; John A. Jane, Sr.*

191

**Radiation of Glioblastoma Induces an Early Inflammatory Response: A Microdialysis Study**

*Pedram Tabatabaei Shafiei; Edward Visse; Carl Wibom; Per Bergström; Peter Siesjö; Tommy A. Bergenheim*

192

**Safety and Efficacy of Superselective Intra-arterial Cerebral Infusion of Bevacizumab after Osmotic Blood Brain Barrier Disruption for Recurrent Malignant Glioma**

*John A. Boockvar; Christoph Hofstetter; Howard A. Riina*

193

**Contribution of Bone Marrow Derived Progenitor Cells to Neovascularization of High Grade Glioma**

*Gelareh Zadeh; Kelly Burrell; Richard Hill*

194

**Role of Sonic Hedgehog Signal for Cell Migration in Cell Lines Established from CD133 Positive Cells in Malignant Gliomas***Hiroyuki Uchida; Kazunori Arita; Shunji Yunoue; Hiroto Kawano; Hirofumi Hirano; Hiroshi Tokimura*

195

**Fourth Ventricular Tumor Surgery: Operative Outcomes in a Modern-day Series of 52 Cases***Andrew J. Tsung; Dima Suki; Wael Hassaneen; Raymond Sawaya; Nicholas Brandon Levine*

196

**Historical Perspective on Medical Errors: Harvey Cushing's Documentation of Surgical Mishaps at the Dawn of Neurological Surgery***Katherine Latimer; Courtney Anne Pendleton; Alessandro Olivi; Aaron Afshin Cohen-Gadol; Henry Brem; Alfredo Quinones-Hinojosa*

197

**Safety of Immediate Titanium Cranioplasty after Debridement and Craniectomy for Post-Craniotomy Surgical Site Infection***Varun Ksbettry*

198

**Microfluidics: A Novel Technology for Investigating Glioblastoma Multiforme Tumor Stem Cell Migration***Basheal Mohan Agrawal*

199

**Profound Th2 Bias in Patients with Malignant Glioma***Shinji Shimato; Lisa Meier; Michael Castelli; Peter D. Canoll; Jeffrey N. Bruce; David Anderson; Richard C. E. Anderson*

200

**Agony and Ecstasy in the Management of Craniopharyngioma: Experience of Three Decades***Ganesh Kumar Manoharan; Jaspreet Singh; A. Raja*

201

Withdrawn

202

**Assessment of Sub-clonal Heterogeneity in Glioblastomas Using COLD PCR***Coren A. Milbury; Pascal O. Zinn; Ekkehard Matthias Kasper; Peter C. Warnke; Mike G. Makrigiorgos; Clark C. Chen*

203

**Real-time Intraoperative Comparison of Quantitative and Qualitative Fluorescence of High Grade Gliomas: Its Value in Revealing the True Extent of Tumor Invasion***M. Sam Eljamel*

204

Withdrawn

205

Withdrawn

206

**Resumption of Ambulatory Status following Surgery for Nonambulatory Patients with Epidural Spinal Metastasis***Chi Heon Kim; Chun-kee Chung; Tae-Abn Jabng; Hyun Jib Kim; Ji Ha Kim; Soo Eun Lee*

207

**In Vivo Characterization of a Targeted, Dye-Loaded Nanodevice for Intraoperative Tumor Delineation***Daniel A. Orringer; Yong Eun Lee Koo; Tom Chen; Gwangeseong Kim; Hoejin Hab; Shouyan Wang; Richard Keep; Martin Philbert; Raoul Kopelman; Oren Sagher*

208

**Long-term Outcome after Resection of Brainstem Hemangioblastomas in von Hippel-Lindau Disease***Joshua James Wind; Kamran D. Bakhtian; Jennifer A. Sweet; Gautam U. Mehta; Jayesh P. Thawani; Ashok Rajappa Asthagiri; Edward H. Oldfield; Russell R. Lonser*

209

Withdrawn

210

Withdrawn

211

**Utility of Iron Nanoparticle for MRI Diagnosis of Pseudoprogression in Patients with GBM after Radiochemotherapy***Seymour Gabramanov; Leslie L. Muldoon; Edit Dosa; Suchita Tuladhar; Bronwyn Hamilton; William Rooney; Jeffrey Njus; Edward A. Neuwelt*

212

**Factors Involved in Maintaining Prolonged Functional Independence following Supratentorial Glioblastoma Multiforme Resection***Kaisorn L. Chaichana; Adi Halthore; Scott Parker; Alessandro Olivi; Jon D. Weingart; Henry Brem***★ American Brain Tumor Association Young Investigator Award**

213

**Bcl-2 Promotes Malignant Progression in Glioma***Ganesh Rao; Yubui Yang; Dima Suki; Wei Zhang; Gregory N. Fuller; Tiffany A. Doucette*



★ **Preuss Award**

214

**Neuronal Escape from the Pediatric Human Subventricular Zone and Discovery of a Medial Migratory Stream**

*Nader Sanai; David H. Rowitch; Mitchel S. Berger; Arturo Alvarez-Buylla*

215

**Identification of Glioblastoma Predisposing Single Nucleotide Polymorphisms(SNPs) in the TP53 Gene**

*Coren A. Milbury; Pascal O. Zinn; Ekkehard Matthias Kasper; Peter C. Warnke; Mike G. Makrigiorgos; Clark C. Chen*

216

**Predictors of Survival in Patients with Prostate Cancer and Spinal Metastasis**

*Dan M. Drzymalski; William Kyu Ob; Lillian Werner; Meredith Regan; Philip Kantoff; Sagun Tuli*

217

**Epidermal Growth Factor Receptor (EGFR) Mutation Status and Survival after Diagnosis of Brain Metastasis in Non-small Cell Lung Cancer**

*Kristopher T. Kable; Daphne Wang; Victoria A. Joshi; Jeffrey A. Engelman; Lecia V. Sequist*

218

**MGMT mRNA Transcriptional Activity Predicts Clinical Outcome in Malignant Gliomas after Radio-/Chemotherapy**

*Niklas Thon*

219

**Atypical Meningiomas: Outcome after Surgery and the Role of Adjuvant Postoperative Radiation**

*Kangmin Daniel Lee; John Joseph DePowell; Ellen L. Air; Christopher M. McPherson*

220

**The Expressions of CA9 and VEGF in Astrocytic Tumors Predict a Poor Prognosis**

*Heon Yoo; Seil Sohn; Byung Ho Nam; Hye Sook Min; Eugene Jung; Sang Hoon Shin; Ho-Shin Gwak; Seung Hoon Lee*

221

**The Role of Pten in Xenograft Glioma Mouse Models: PTEN Loss Increases Downstream Protein Synthesis and Decreases Cell Migration in Novel Cell Lines with Pten Deletion**

*Carrie R. Mul; Chengyu Prince; Jingbo Liu; Qiong Peng; Donald L. Durden*

222

**PTEN-/-PDGF+ Murine Glioma Spontaneously Develops Consistent Deletions that Are Obviated by Initial p53**

**Deletion: Modeling the Evolution of Human Glioblastomas**

*Adam M. Sonabend; Craig Soderquist; Liang Lei; Paolo Guarnieri; Richard Leung; Jonathan Yun; Julia Sisti; Mike Castelli; Samuel S. Bruce; Thomas Ludwig; Steven Rosenfeld; Jeffrey N. Bruce; Peter D. Canoll*

223

**Impact of Bevacizumab Chemotherapy on Craniotomy Wound Healing**

*Aaron J. Clark; Nicholas Butowski; Susan Chang; Michael Prados; Jennifer L. Clarke; Mei-Yin C. Polley; Michael Edward Sughrue; Michael William McDermott; Andrew T. Parsa; Mitchel S. Berger; Manish Kumar Agbi*

224

**The Human Cytomegalovirus Protein IE1 Confers Resistance to Temozolomide in the U87MG Cell Line**

*Richard A. Rovin; Justin Segula; Johnathan E. Lawrence; Robert J. Winn*

225

**Effective Treatment of Disseminated Medulloblastoma with Modified Measles Virus**

*Corey Raffel; Adam Studebaker; Brian Hutzen; Christopher Pierson*

226

Withdrawn

227

**Predominant Influence of MGMT Methylation in Non-resectable GBM after Radiotherapy plus Temozolomide**

*Niklas Thon*

228

**Post-treatment Prognosis of Esthesioneuroblastoma in 954 Patients: Unimodal Surgery and Combined**

**Surgery/Radiotherapy Appear To Be of Equivalent Efficacy**

*Ari Kane; Michael Edward Sughrue; Martin J. Rutkowski; Derick M. Aranda; Stephen Mills; Raphael Buencamino; Andrew T. Parsa*

229

**Meningioma Surgery: Outcome Comparison between Young and Elderly Patients**

*David Baruch Schul; Stefan Wolf; Alissa Brininghaus; Bernhard Ulm; Julia Landscheidt; Matthias Krammer; Christiano B. Lumenta*

230

**Meningioma Surgery in the Elderly: Clinical Radiological Grading System (CRGS), SKALE Score (Sex, Karnofsky, ASA, Location, Edema) and Outcome: A Multivariate Analysis***David Baruch Schul; Stefan Wolf; Julia Landscheidt; Matthias Kramer; Christiano B. Lumenta*

231

**Descriptive Epidemiology and Outcome for Intra-Ventricular Glioblastomas: A Surveillance, Epidemiology and End Results (SEER) Program Analyses (1973-2006)***Hadie Adams; Jose Luis Alves; Ahmed Mobyeldin; Sagar R. Shah; Shaan Mohammed Raza; Tomas Garzon-Muvdi; David Chang; Alessandro Olivi; Alfredo Quinones-Hinojosa*

232

**Hyponatremia Developing within 48 Hours following Transsphenoidal Surgery: Incidence, Risk Factors, and Clinical Management***Jordan P. Amadio; Gabriel Zada; Whitney Woodmansee; Edward R. Laws*

1:30 – 3:00 PM Room 2014

**SPECIAL COURSE I:****Guidelines for the Performance of Fusion Procedures for Degenerative Disease of the Lumbar Spine***Course Directors: Daniel K. Resnick, Michael Y. Wang**Learning Objectives:* At the conclusion of the course, participants will be able to discuss the guidelines for surgical management of lumbar degenerative disease and describe a conceptual framework for their meaningful application in a variety of clinical scenarios.

1:30 – 1:40 PM

**Methodology and Outcome Analysis***Daniel K. Resnick*

1:40 – 1:55 PM

**Role of Imaging***Regis W. Haid, Jr.*

1:55 – 2:10 PM

**Lumbar Fusion for Intractable Axial Back Pain with or without Stenosis or Spondylolisthesis***Peter D. Angevine*

2:10 – 2:25 PM

**Anterior Interbody Techniques for Lumbar Fusion***Eric J. Woodard*

2:25 – 2:40 PM

**Posterolateral and/or Posterior Interbody Fusion for Low Back Pain***Nicholas Theodore*

2:40 – 2:50 PM

**Bone Graft Extenders, Substitutes and Enhancers***Robert F. Heary*

2:50 – 3:00 PM

**Panel Discussion and Questions****Check Out the New Mobile Meeting Guide!**

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**1:30 – 3:00 PM Room 2001**

## **CONSENSUS SESSION I:**

### **The Carotid Revascularization Endarterectomy Versus Stenting Trial (CREST) and Modern Management of Carotid Stenosis**

Course Director: *Elad I. Levy*

Moderators: *Christopher S. Ogilvy, Cameron G. McDougall*

**Learning Objectives:** At the conclusion of this session, participants will be able to discuss the Carotid Revascularization Endarterectomy Versus Stenting Trial (CREST) data for symptomatic and asymptomatic carotid disease. Participants will be able to list CREST results with experience internationally and across specialties and describe the evolving device technology in carotid artery stenting. Participants will be able to apply existing Class I evidence in the management of carotid stenosis to their practice.

1:30 – 1:45 PM

#### **Introduction and Audience Polling**

*Elad I. Levy*

1:45 – 2:00 PM

#### **CREST Results for Symptomatic Carotid Stenosis**

*Robert E. Harbaugh*

2:00 – 2:15 PM

#### **CREST Results for Asymptomatic Carotid Stenosis**

*Christopher M. Loftus*

2:15 – 2:30 PM

#### **Comparative Analysis: CREST in the Context of the European Trial Data and Diverse Specialty Practitioners**

*William H. Brooks*

2:30 – 2:45 PM

#### **Evolving Stent and Embolic Protection Device Technology: Carotid Artery Stenting Efficacy as a Moving Target?**

*L. Nelson Hopkins, III*

2:45 – 2:55 PM

#### **Audience Questions and Polling**

*Elad I. Levy*

2:55 – 3:00 PM

#### **Conclusions**

*L. Nelson Hopkins, III*





# LIVE FROM THE O.R.!



The CNS is proud to present Dr. Aaron A. Cohen-Gadol delivering two live surgical presentations using telemedicine technology. Catch these cutting-edge presentations in the new CNS Product & Technology Showcase in the Level 1 Exhibit Hall.

Tuesday, October 19 9:15-10:00 AM  
**Technical Nuances in Microneurosurgery:  
Live Microvascular Decompression Surgery for  
Trigeminal Neuralgia.**

Faculty:  
Aaron A. Cohen-Gadol, Troy D. Payner, John K. Park

Wednesday, October 20 9:15-10:00 AM  
**Technical Nuances in Microneurosurgery:  
Live Microvascular Decompression Surgery for  
Hemifacial Spasm**

Faculty:  
Aaron A. Cohen-Gadol, Ganesh Rao, Jonas Sheehan

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# TUESDAY OVERVIEW

9:00 AM – 4:30 PM

## EXHIBITS OPEN

9:15 – 10:00 AM

**NEW**

## LIVE SURGICAL PRESENTATION USING TELEMEDICINE TECHNOLOGY

Technical Nuances in Microneurosurgery: Live Microvascular Decompression Surgery for Trigeminal Neuralgia

10:55 – 11:30 AM

## INTERNATIONAL LEADERSHIP ORATION

*Yoon-Woo Lee*

12:00 – 1:30 PM

## LUNCHEON SEMINARS

1:30 – 3:00 PM

## SPECIAL COURSE II

Deep Brain Stimulation: Advancing Technology and Expanding Indications

1:30 – 3:00 PM

## CONSENSUS SESSIONS II and III

Futility or Utility? Hemispherectomy for Increased Traumatic Intracranial Pressure

Is Bone Morphogenetic Protein Usage in Spinal Surgery Safe, Effective and Worth the Cost?

**3-D**

**NEW**

1:30 – 3:00 PM

## OPERATIVE TECHNIQUES WITH THE MASTERS:

**3-D Cadaveric Demonstration of Spinal Surgical Approaches**

1:30 – 3:00 PM

## SECTION SESSIONS

Council of State Neurosurgical Societies

Section on Cerebrovascular Surgery

Section on Pediatric Neurological Surgery

Section on Tumors

3:00 – 4:00 PM

## CNS ANNUAL BUSINESS MEETING

3:00 – 4:30 PM

**NEW**

## CALIFORNIA WINE & CHEESE EXPERIENCE WITH THE

**CNS EXHIBITORS**

Exhibit Hall

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

**NEW**

## DINNER SEMINAR I

Controversies in the Management of Metastatic Brain Tumors

Harris' Restaurant



### GENERAL SCIENTIFIC SESSION II

**7:00 – 11:30 AM – Moscone West Convention Center Ballroom, Level 3**

### Overcoming Obstacles through Understanding of Anatomy and Biology

Presiding Officer: *Christopher E. Wolfla*

Moderators: *Ganesh Rao, Ali R. Rezai*

**Learning Objectives:** At the conclusion of this session, participants will be able to discuss the use of anatomic and biologic principles as they relate to understanding and treatment of neurologic disease. Specifically, participants will be able to discuss current biologic and management strategies for Parkinson's disease, lesions in functional areas, hydrocephalus and sports-related head injury.

7:00 – 7:05 AM

**Introduction**

*Christopher E. Wolfla*

7:05 – 7:25 AM

**Pathobiology to Treatment: Development of Deep Brain Stimulation for Parkinson's Disease**

*Alim-Louis Benabid*

7:25 – 7:45 AM

**Epilepsy and Brain Mapping: Penfield to Present**

*Andre Olivier*

7:45 – 8:05 AM

**Management of Cerebrovascular Disease: From Clips to Catheters**

*Robert H. Rosenwasser*

8:05 – 8:08 AM

**Introduction of Korean Neurosurgical Society President Kyu-Sung Lee**

*P. David Adelson*



8:08 – 8:25 AM  
Korean Neurosurgical Society  
Presidential Address  
**Highlights from the 2010 Korean Neurosurgical Society Meeting**  
*Kyu-Sung Lee*

8:25 – 8:45 AM

**Evolution of Concussion Management at the NFL, College, High School and Youth Sport Levels: Overcoming Obstacles**

*Joseph C. Maroon*

8:45 – 9:00 AM

**CNS Resident Award**

**Association of Surgical Resection and Survival in Patients with Malignant Primary Osseous Spinal Neoplasms from the Surveillance, Epidemiology, and End Results (SEER) Database**  
*Matthew J. McGirt*

9:00 – 10:00 AM

**Beverage Break with Exhibitors**



10:00 – 10:20 AM  
Honored Guest Lecture  
**This Is Not Your Father's Medical Practice**  
*Daniel L. Barrow*

10:20 – 10:40 AM

**Cerebrospinal Fluid Physiology: Problems and Possibilities**

*Marion L. Walker*

10:40 – 10:45 AM

**Fellowship Award Presentation**

*Elad I. Levy*

10:45 – 10:50 AM

**Distinguished Service Award Presentation to Alex B. Valadka**

*Douglas Kondziolka*

10:50 – 10:55 AM

**Introduction of International Leadership Lecture Yoon-Woo Lee**

*Kyu-Sung Lee*



10:55 – 11:30 AM  
International Leadership Lecture  
**Technological Innovation and Future Society**  
*Yoon-Woo Lee*

11:30 AM – 12:00 PM

**Break with Exhibitors**

**Join us in the Exhibit Hall from 3:00 – 4:30 PM for the new California Wine & Cheese Experience with the CNS Exhibitors!**

Join your colleagues in the Exhibit Hall on Tuesday afternoon for a California Wine & Cheese Experience. Visit with vintners from select California wineries to learn about the characteristics unique to each winery. Sommeliers will also be in attendance to make personal recommendations and answer any questions about the selections available.

Don't miss this opportunity to experience California's world-class wine regions while also viewing the latest developments in neurosurgical products and services.



## LUNCHEON SEMINARS 12:00 – 1:30 PM

All Luncheon Seminars include a plated lunch served in the seminar room. Luncheon Seminar fees are \$60 each (\$45 for Residents/Fellows/Medical Students/Nurses/Physician Extenders).

### T16 Room 2002

#### **Surgical Management of Chiari and Syringomyelia**

Moderator: *Richard G. Ellenbogen*

Faculty: *Neil Feldstein, John D. Heiss, Karin M. Muraszko, Young-Shin Ra*

**Learning Objectives:** At the conclusion of this seminar, participants will be able to discuss 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 describe new research relevant to the treatment of Chiari I malformations and syringomyelia.

### T17 Room 2003

#### **Surgical Intervention for Lumbar Spine: What the Literature Supports**

Moderator: *Charles L. Branch, Jr.*

Faculty: *Iain H. Kalfas, Timothy C. Ryken, Christopher I. Shaffrey, Seung-Hwan Yoon*

**Learning Objectives:** At the conclusion of this seminar, participants will be able to discuss the current literature on surgical treatment of degenerative lumbar spine disease. Participants will also be able to discuss the indications and expected outcomes for various lumbar spine surgical procedures.

### T18 Room 2004

#### **Cervical Spondylotic Myelopathy and OPLL: Guidelines for Surgical Management**

Moderator: *Andrew T. Dailey*

Faculty: *Michael W. Groff, Jae Taek Hong, Michael G. Kaiser, Paul K. Maurer*

**Learning Objectives:** At the conclusion of this seminar, participants will be able to discuss the differential diagnosis of cervical spondylotic myelopathy and evaluate the treatment options available. Participants will also be able to discuss outcomes of treatment in patients with cervical spondylotic myelopathy.

### T19 Room 2005

#### **Intraoperative Salvage Techniques: Getting Out of Trouble in Spinal Surgery**

Moderator: *Edward C. Benzel*

Faculty: *Joseph T. Alexander, Michael W. Groff, J. Patrick Johnson, Keun Su Kim, Michael P. Steinmetz, Gregory R. Trost*

**Learning Objectives:** At the conclusion of this seminar, participants will be able to identify operative events dictating the need for intraoperative salvage techniques in spinal surgery and discuss the specific techniques necessary to rectify intraoperative difficulties.

### T20 Room 2006

#### **Unruptured Aneurysm Management Strategies**

Moderator: *Robert A. Solomon*

Faculty: *Ralph G. Dacey, Jr., Giuseppe Lanzino, Michael T. Lawton, Aman B. Patel*

**Learning Objectives:** At the conclusion of this seminar, participants will be able to discuss the epidemiology and natural history of unruptured intracranial aneurysms and will describe appropriate treatment algorithms for these lesions.

### T21 Room 2007

#### **Management of Trigeminal Neuralgia and Facial Pain**

Moderator: *Kim J. Burchiel*

Faculty: *Takanori Fukushima, Robert M. Levy, Jung-Yul Park, Konstantin V. Slavin*

**Learning Objectives:** At the conclusion of this seminar, participants will be able to describe surgical, percutaneous, radiosurgical and neuromodulation options for trigeminal neuralgia and facial pain syndromes. Participants will be able to describe complications and outcomes with these approaches.

### T22 Room 2008

#### **Surgery and Radiosurgery for Epilepsy**

Moderator: *Nicholas M. Barbaro*

Faculty: *Andre Olivier, Jean M. Regis, Ashwini Dayal Sbaran*

**Learning Objectives:** At the conclusion of this seminar, participants will be able to describe the clinical features of seizure disorders and be able to discuss various techniques in the preoperative, intraoperative and postoperative management of patients with epilepsy.

## LUNCHEON SEMINARS 12:00 – 1:30 PM

**T23 Room 2009****Emerging Technologies in the Treatment of Neurotrauma**

Moderator: *Geoffrey T. Manley*

Faculty: *Odette Harris, Roger Hartl, Alex B. Valadka, Do-Sung Yoo*

**Learning Objectives:** At the conclusion of this seminar, participants will be able to discuss the latest technological advancements in managing patients with traumatic brain injury, describe how these new technologies can improve outcomes and identify the latest surgical strategies for traumatic brain injury.

**T24 Room 2011****Skull Base Approaches**

Moderator: *William T. Couldwell*

Faculty: *Kyu-Sung Lee, Basant Kumar Misra, Jacques J. Morcos, Chandra N. Sen*

**Learning Objectives:** At the conclusion of this seminar, participants will be able to discuss the common pathologies affecting the skull base, describe the various surgical approaches available for treating skull base lesions and identify the available surgical adjuncts in managing patients with skull base lesions.

**T25 Room 2016****State-of-the-Art Management of Brain Metastases**

Moderator: *Raymond Sawaya*

Faculty: *David W. Andrews, Gene H. Barnett, Randy L. Jensen, Steven N. Kalkanis*

**Learning Objectives:** At the conclusion of this seminar, participants will be able to discuss the current status of research pertaining to the treatment of brain metastases and describe surgical and radiosurgical treatment options appropriate for treating intracranial metastases, their complications and results.

**T26 Room 2018****Pituitary Surgery**

Moderator: *Nelson M. Oyesiku*

Faculty: *Sun Ho Kim, Sandeep Kumar, Edward R. Laws, Michael P. Powell*

**Learning Objectives:** At the conclusion of this seminar, participants will identify the technical fundamentals and nuances in performing pituitary surgery, and be able to discuss new techniques and advances in treatment.

**T27 Room 2020****Management of Low Grade Gliomas: Current Strategies and Dilemmas**

Moderator: *Mitchel S. Berger*

Faculty: *Susan Chang, Hugues Duffau, John K. Park, Zvi Ram, Manfred Westphal*

**Learning Objectives:** At the conclusion of this seminar, participants will be able to describe 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.

**T28 Room 2022****Management Strategies for Normal Pressure Hydrocephalus and Pseudotumor Cerebri**

Moderator: *Jamie S. Ullman*

Faculty: *John M. McGregor, Daniele Rigamonti, Jeffrey H. Wisoff*

**Learning Objectives:** At the conclusion of this seminar, participants will be able to describe the diagnosis and treatment of patients with normal pressure hydrocephalus and pseudotumor cerebri.

**T29 Room 2024****Treatment of the Aging Spine**

Moderator: *Mark N. Hadley*

Faculty: *Peter D. Angevine, Daniel R. Fassett, Se-Hoon Kim, Frank LaMarca*

**Learning Objectives:** At the conclusion of this seminar, participants will be able to discuss the characteristics of spinal disorders unique to elderly patients and describe surgical considerations for treating spinal disorders in the aging population.

**T30 Room 3000****Sports-Related Spinal and Peripheral Nerve Injuries**

Moderator: *Joseph C. Maroon*

Faculty: *Douglas L. Brockmeyer, Langston T. Holly, Young Sul Yoon, Christopher J. Winfree*

**Learning Objectives:** At the conclusion of this seminar, 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.

**1:30 – 3:00 PM Ballroom, Level 3**



## **3-D Cadaveric Demonstration of Spinal Surgical Approaches**

### **Operative Techniques with the Masters**

*Moderators: Joseph S. Cheng, Edward C. Benzel*

**Learning Objectives:** Upon completion of this course, participants will be able to discuss the surgical principles used for treatment specific spinal disorders. Participants will be able to describe the surgical techniques used for micro-endoscopic decompression of spinal stenosis, pedicle subtraction osteotomy and placement of an artificial disc. Participants will also be able to discuss methods of avoiding complications during these surgeries. Participants will be able to identify the critical anatomical landmarks, understand technical steps and identify the potential pitfalls of each of these approaches.

1:30 – 2:00 PM

### **Micro-Endoscopic Decompression of Stenosis**

*Richard G. Fessler*

2:00 – 2:30 PM

### **Pedicle Subtraction Osteotomy**

*Christopher I. Shaffrey*

2:30 – 3:00 PM

### **En Bloc Vertebrectomy**

*Ziya L. Gokaslan*

**1:30 – 3:00 PM Room 3002**

## **SPECIAL COURSE II:**

### **Deep Brain Stimulation: Advancing Technology and Expanding Indications**

*Course Directors: Philip A. Starr, Aviva Abosch*

**Learning Objectives:** Participants will develop an appreciation for the range of deep brain stimulation, evidence supporting their current use and the rationale for emerging indications. At the conclusion of the course, participants will be able to describe emerging indications and technologies in the field of neuromodulation for a variety of neurologic disorders.

1:30 – 1:45 PM

### **Deep Brain Stimulation for Epilepsy**

*Ashwini Dayal Sharan*

1:45 – 2:00 PM

### **Deep Brain Stimulation for Depression**

*Robert E. Gross*

2:00 – 2:15 PM

### **Deep Brain Stimulation for Anxiety Disorders and Obsessive Compulsive Disorder**

*Ali R. Rezai*

2:15 – 2:30 PM

### **Deep Brain Stimulation for Movement Disorders**

*Philip A. Starr*

2:30 – 2:40 PM

### **Brain-Machine Interface**

*Peter E. Konrad*

2:40 – 2:55 PM

### **Deep Brain Stimulation: The Next Decade**

*Alim-Louis Benabid*

2:55 – 3:00 PM

### **Panel Discussion and Questions**

**1:30 – 3:00 PM Room 2001**

## **CONSENSUS SESSION II:**

### **Futility or Utility? Hemicraniectomy for Increased Traumatic Intracranial Pressure**

*Course Director: Geoffrey T. Manley*

*Moderators: Shelly D. Timmons, M. Ross Bullock*

**Learning Objectives:** At the conclusion of this session, participants will be able to discuss the clinical utility of hemicraniectomy in the setting of increased intracranial pressure secondary to traumatic brain injury. Participants will be able to assess the potential benefits, complications and indications for use of hemicraniectomy in traumatic brain injury.



1:30 – 1:40 PM

### **Introduction**

*Geoffrey T. Manley*

1:40 – 1:55 PM

### **Device Introduction and Audience Polling**

*Geoffrey T. Manley*

1:55 – 2:10 PM

### **The Utility of Hemicraniectomy**

*Peter J. Hutchinson*

2:10 – 2:25 PM

### **The Futility of Hemicraniectomy**

*Alex B. Valadka*

2:25 – 2:40 PM

### **Does One Size Fit All?**

*Geoffrey T. Manley*

2:40 – 2:55 PM

### **Audience Questions and Polling**

*Shelly D. Timmons, M. Ross Bullock*

2:55 – 3:00 PM

### **Conclusions**

*Geoffrey T. Manley*



1:30 – 3:00 PM Room 3001

**CONSENSUS SESSION III:****Is Bone Morphogenic Protein Usage in Spinal Surgery Safe, Effective and Worth the Cost?**Course Director: *Edward C. Benzel*Moderators: *Richard P. Schlenk, Zoher Gbogawala*

Learning Objectives: At the conclusion of this session, participants will be able to discuss the safety and clinical utility of the usage of bone morphogenic protein to assist with spinal fusion and assess cost effectiveness.



1:30 – 1:35 PM

**Introduction***Edward C. Benzel*

1:35 – 1:45 PM

**Audience Device Polling***Richard P. Schlenk*

1:45 – 1:55 PM

**Bone Morphogenic Protein: The Controversy***Zoher Gbogawala*

1:55 – 2:05 PM

**Bone Morphogenic Protein is Safe***Regis W. Haid, Jr.*

2:05 – 2:15 PM

**Bone Morphogenic Protein is Not Safe***Michael Y. Wang*

2:15 – 2:25 PM

**Bone Morphogenic Protein is Cost Effective***Peter D. Angevine*

2:25 – 2:35 PM

**Costs Associated with Bone Morphogenic Protein Use***Kevin S. Cabill*

2:35 – 2:50 PM

**Audience Questions and Polling**

2:50 – 3:00 PM

**Conclusions***Richard P. Schlenk*

1:30 – 3:00 PM Room 3020

**COUNCIL OF STATE NEUROSURGICAL SOCIETIES****Ancillary Services: Keeping Out of Trouble**Moderators: *William E. Bingaman, Catherine A. Mazzola*

Learning Objectives: At the conclusion of this session, participants will be able to discuss the challenges and benefits with the use of ancillary services in their practice. Participants will be able to discuss applicable laws and policies with hospitals.

1:30 – 1:50 PM

**Specialty Hospitals***Stanley Pelofsky*

1:50 – 2:10 PM

**Fee Sharing***Frederick A. Boop*

2:10 – 2:30 PM

**Ancillaries***Richard N. Wobns*

2:30 – 2:50 PM

**Stark Law***Stanley W. Fronczak*

2:50 – 3:00 PM

**Questions and Answers**

**NEW CALIFORNIA  
WINE & CHEESE  
EXPERIENCE WITH THE  
CNS EXHIBITORS**

*Don't Miss this New  
Networking Opportunity!*

Join your colleagues in the Exhibit Hall on Tuesday afternoon for a California Wine & Cheese Experience. Visit with vintners from select California wineries to learn about the characteristics unique to each winery. Sommeliers will also be in attendance to make personal recommendations and answer any questions about the selections available. Don't miss this opportunity to experience California's world-class wine regions while also viewing the latest developments in neurosurgical products and services.

**Tuesday, October 19**

**3:00 – 4:30 PM**

**Exhibit Hall**

**Moscone West Convention Center**

*Children under the age of 18 are not permitted on the Exhibit Floor at any time.*

**1:30 – 3:00 PM Room 3016**

## **SECTION ON CEREBROVASCULAR SURGERY**

### **Neurovascular Surgery:**

#### **Where We Were and Where We Are Going**

*Moderators: Andrew J. Ringer, Ketan R. Bulsara*

**Learning Objectives:** At the conclusion of this session, participants will be able to discuss the development of current management techniques for cerebrovascular disease and to critique the efficacy and the most recently available techniques and devices.

1:30 – 1:35 PM

#### **Introduction of the Drake Lecturer, Cameron G. McDougall**

*Murat Gunel*

1:35 – 2:00 PM

#### **Annual Drake Lecture**

*Cameron G. McDougall*

2:00 – 2:12 PM

#### **Aneurysm Therapy: From Suture to Stents**

*Sean D. Lavine*

2:12 – 2:24 PM

#### **Arteriovenous Malformation Management: The Swinging Pendulum**

*Kevin M. Cockroft*

2:24 – 2:36 PM

#### **Treating Arthrosclerosis Above, Below and Beyond**

*Henry H. Woo*

2:36 – 2:48 PM

#### **Why Stroke Has Become a Neurosurgical Disease**

*Elad I. Levy*

2:48 – 3:00 PM

#### **The Changing Face of the Cerebrovascular Team**

*Andrew J. Ringer*

**1:30 – 3:00 PM Room 3018**

## **SECTION ON PEDIATRIC NEUROLOGICAL SURGERY**

### **Implications for Play:**

#### **Concussion, Chiari and Arachnoid Cysts**

*Moderators: Mark D. Krieger, George I. Jallo*

**Learning Objectives:** At the conclusion of this session, participants will be able to discuss and formulate opinions regarding return to play criteria in children and adolescents with concussions, Chiari malformations and arachnoid cysts.

1:30 – 1:40 PM

#### **Concussions: Literature Review**

*David W. Pincus*

1:40 – 1:50 PM

#### **Concussions: Expert Opinion**

*Ann-Christine Dubaime*

1:50 – 2:00 PM

#### **Chiari Malformations: Literature Review**

*Richard C.E. Anderson*

2:00 – 2:10 PM

#### **Chiari Malformations: Expert Opinion**

*Rick Abbott*

2:10 – 2:20 PM

#### **Arachnoid Cysts: Literature Review**

*Jeffrey P. Blount*

2:20 – 2:30 PM

#### **Arachnoid Cysts: Expert Opinion**

*Marion L. Walker*

2:30 – 2:45 PM

#### **Case Discussions**

*Thomas G. Luerksen, Timothy B. Mapstone*

2:45 – 3:00 PM

#### **Discussion**

1:30 – 3:00 PM Room 3014

**SECTION ON TUMORS****Cancer, Neurosurgery and Nanotechnology:  
A New Triumvirate**Moderators: *Costas G. Hadjipanayis, Atom Sarkar*

Learning Objectives: At the conclusion of this session, participants will be able to describe applications of nanotechnology with regards to oncology and in particular, neuro-oncology.

1:30 – 1:40 PM

**Introduction***Atom Sarkar*

1:40 – 2:05 PM

**NCI Alliance for Nanotechnology in Cancer: An Opportunity for  
a New Class of Diagnostic and Therapeutic Oncology Tools***Piotr Grodzinski, PhD*

2:05 – 2:25 PM

**Brain Tumor Nanotechnology: New Opportunities in Image-  
guided Surgery and Targeted Therapy***Shuming Nie, PhD*

2:25 – 2:45 PM

**Cancer Nanotechnology and Neurosurgery***Ragburaman Kannan, PhD*

2:45 – 3:00 PM

**Convection-enhanced Delivery: A Promising Approach for  
Brain Tumor Nanotechnology***Costas G. Hadjipanayis*3:00 – 4:00 PM Room 2014  
**CNS Annual Business Meeting**3:00 – 4:30 PM  
**California Wine & Cheese Experience  
with the CNS Exhibitors  
Exhibit Hall**5:00 – 6:00 PM  
Yerba Buena Salon 8 (Marriott Marquis)  
**CNS Resident SANS Challenge  
Championship Round**6:00 – 7:00 PM  
Yerba Buena Salon 7 (Marriott Marquis)  
**CNS Resident Recruitment Social**

6:30 – 8:30 PM

**DINNER SEMINAR I:****NEW Controversies in the Management  
of Metastatic Brain Tumors****\$165**Moderators: *Jonas Sheehan, Michael A. Vogelbaum*Faculty: *Steven N. Kalkanis, Frederick F. Lang, Cameron Brennan,  
Raymond Sawaya*  
Harris' Restaurant

Learning Objectives: At the conclusion of this session, participants will be able to discuss the quality of the evidence supporting various treatment options for patients suffering from metastatic brain tumors. Participants will be able to describe the potential consequences of whole brain radiation for the treatment of brain metastases. Participants will be able to list therapeutic strategies for treating patients with metastatic brain tumors based on available data.

**Harris' Restaurant** – Offering San Francisco's finest dry-aged steaks and fresh seafood, see for yourself why Harris' is consistently voted #1 Steakhouse by Zagat, DiRora, Citysearch, and San Francisco Magazine's reader's poll. Dinner Seminar includes a 3-course plated dinner and wine service.

Shuttle transportation will depart the Marriott Marquis at 6:00 PM sharp.

6:30 – 7:00 PM

**Dinner Seating/Reception**

7:00 – 7:20 PM

**Surgery Versus Radiosurgery: What Does the  
Literature Support?***Steven N. Kalkanis*

7:20 – 7:40 PM

**Whole Brain Radiotherapy: Do the Positives Outweigh  
the Negatives?***Frederick F. Lang*

7:40 – 8:00 PM

**Local Control: Is There a Role for Radiosurgery to the  
Resection Cavity?***Cameron Brennan*

8:00 – 8:20 PM

**Managing Multiple Intracranial Metastases***Raymond Sawaya*

8:20 – 8:30 PM

**Discussion and Adjourn**



# WEDNESDAY OVERVIEW

9:00 AM – 2:00 PM  
**EXHIBITS OPEN**

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**NEW**

9:15 – 10:00 AM  
**LIVE SURGICAL PRESENTATION USING TELEMEDICINE TECHNOLOGY**  
Technical Nuances in Microneurosurgery: Live Microvascular Decompression Surgery for Hemifacial Spasm

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10:05 – 10:35 AM  
**FIFTH ANNUAL JULIAN T. HOFF LECTURE**  
*Michael Lewis*

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11:30 AM  
**BOOK SIGNING WITH MICHAEL LEWIS**

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12:00 – 1:30 PM  
**LUNCHEON SEMINARS**

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**3-D**

1:30 – 3:00 PM  
**OPERATIVE TECHNIQUES WITH THE MASTERS:**  
3-D Cadaveric Demonstration of Cranial Surgical Approaches

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1:30 – 3:00 PM  
**SPECIAL COURSE III**  
Impact of Healthcare Reform on Your Neurosurgical Practice

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1:30 – 3:00 PM  
**CONSENSUS SESSION IV**  
Unification of Brain Death Criteria

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1:30 – 3:00 PM  
**SECTION SESSIONS**  
Section on Disorders of the Spine and Peripheral Nerves  
Section on Neurotrauma and Critical Care  
Section on Pain  
Section on Stereotactic and Functional Neurosurgery

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**NEW**

6:30 – 8:30 PM  
**DINNER SEMINAR II**  
**Spinal Arthroplasty: Fact and Fiction**  
Boulevard Restaurant

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7:00 – 8:30 PM  
**INTERNATIONAL RECEPTION**  
Legion of Honor

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### GENERAL SCIENTIFIC SESSION III

#### 7:00 – 11:30 AM – Moscone West Convention Center Ballroom, Level 3 **Conquering Obstacles: Present and Future Neurosurgical Paradigms**

Presiding Officer: *Nathan R. Selden*

Moderators: *Alan M. Scarrow, Catherine A. Mazzola*

**Learning Objectives:** At the conclusion of this session, participants will be able to discuss present and future neurosurgical training, research and regulatory paradigms. Participants will be able to discuss emerging scientific and clinical strategies for managing peripheral nerve injury and brain tumors, as well as neurosurgical disorders from around the world.

7:00 – 7:05 AM  
**Introduction**  
*Nathan R. Selden*

7:05 – 7:20 AM  
**Emerging Paradigms for  
Neurosurgical Resident Training**  
*Ralph G. Dacey, Jr.*

7:20 – 7:35 AM  
**Performing Quality Research in an Era  
of Reform**  
*E. Antonio Chiocca*

7:35 – 7:50 AM  
**Endonasal Approach to Tumors of the  
Pituitary Fossa: A Shift in Treatment  
Paradigm**  
*Charles Teo*

7:50 – 7:52 AM  
**Introduction of Special Lecture  
Gregory A. Dumanian**  
*Christopher C. Getch*



7:52 – 8:10 AM Special  
Lecture  
**Targeted  
Peripheral Nerve  
Reinnervation in  
Arm Amputees**  
*Gregory A. Dumanian*

8:10 – 8:12 AM  
**Introduction of Special Lecture  
Eric A. Mann**  
*Alan M. Scarrow*



8:12 – 8:30 AM  
Special Lecture  
**Regulatory  
Considerations in  
Neurosurgery:  
FDA Perspective**  
*Eric A. Mann*

8:30 – 8:32 AM  
**Introduction of Special Lecture  
Bernard Lo**  
*Catherine A. Mazzola*



8:32 – 8:50 AM  
Special Lecture  
**Conflict of Interest:  
The Institute of  
Medicine  
Perspective**  
*Bernard Lo*

8:50 – 8:55 AM  
**Presentation of CNS Founders' Laurel to  
Robert F. Spetzler**  
*Anthony L. Asher*

8:55 – 9:00 AM  
**Presidential Acknowledgement**  
*Gerald E. Rodts, Jr.*

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

10:00 – 10:05 AM  
**Introduction of Julian T. Hoff Lecture  
Michael Lewis**  
*Daniel K. Resnick*



10:05 – 10:35 AM  
Fifth Annual  
Julian T. Hoff Lecture  
**A Morning with  
Michael Lewis**  
*Michael Lewis*

10:35 – 10:50 AM  
Japanese CNS Past President Lecture  
**Conquering Obstacles: Present and  
Future Neurosurgical Paradigms**  
*Hiroyuki Kinouchi*



10:50 – 11:10 AM  
Honored Guest Lecture  
**Intraoperative  
Misadventures:  
Complication  
Avoidance and  
Management in  
Aneurysm Surgery**  
*Daniel L. Barrow*

11:10 – 11:30 AM  
**Biologic Approaches to Spinal  
Instrumentation and Fusion**  
*Regis W. Haid, Jr.*

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



**Don't Miss a Book Signing with Michael Lewis at 11:30 AM in the Exhibit Hall Booth #137!**



## LUNCHEON SEMINARS 12:00 – 1:30 PM

All Luncheon Seminars include a plated lunch served in the seminar room. Luncheon Seminars fees are \$60 each (\$45 for Residents/Fellows/Medical Students/Nurses/Physician Extenders).

### W31 Room 2002

#### Metastatic Spine Disease Management Options

Moderator: *Ziya L. Gokaslan*

Faculty: *Mark H. Bilsky, Laurence D. Rhines, Moon-Jun Sohn, Narayan Sundaresan*

**Learning Objectives:** At the conclusion of this seminar, participants will be able to list current diagnostic and treatment strategies for metastatic tumors of the spine and will describe a conceptual framework for decision making about surgery, conventional radiation, radiosurgery and vertebral augmentation for these disorders.

### W32 Room 2003

#### Spine Trauma and Spinal Cord Injury

Moderator: *Nicholas Theodore*

Faculty: *Barth A. Green, Michael W. Groff, Keung Nyun Kim, Christopher E. Wolf*

**Learning Objectives:** At the conclusion of this seminar, 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 outline protocols for identifying and assessing cervical spine injury in the comatose patient.

### W33 Room 2004

#### Anterior versus Posterior Approaches for Cervical Radiculopathy

Moderator: *John A. Jane, Sr.*

Faculty: *Richard G. Fessler, Larry T. Khoo, Sang-Gu Lee, Paul K. Maurer*

**Learning Objectives:** At the conclusion of this seminar, participants will be able to identify 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.

### W34 Room 2005

#### Innovations in Open and Endovascular Management of Aneurysms

Moderator: *Arthur L. Day*

Faculty: *Bernard R. Bendok, David J. Langer, Robert A. Mericle, Akira Ogawa, Yong Sam Shin*

**Learning Objectives:** At the conclusion of this seminar, participants will be able to discuss emerging technologies and innovations in open vascular neurosurgery, list emerging technologies and innovations in endovascular neurosurgery, and describe how to apply these technologies to managing patients with neurovascular diseases.

### W35 Room 2006

#### Pediatric Brain Tumor Treatment Strategies

Moderator: *James T. Rutka*

Faculty: *Frederick A. Boop, Michael H. Handler, Dong Seok Kim, R. Michael Scott*

**Learning Objectives:** At the conclusion of this seminar, participants will be able to identify the various types of pediatric brain tumors and discuss current modalities of surgical and medical therapy for them.

### W36 Room 2007

#### Pediatric Spine Management (Traumatic and Congenital)

Moderator: *David W. Pincus*

Faculty: *Richard C.E. Anderson, Paul Klimo, Jr., Jonathan Slotkin*

**Learning Objectives:** At the conclusion of this seminar, participants will be able to identify the various traumatic spine and spinal cord injuries, as well as the various congenital spine and spinal cord diseases affecting the pediatric population. Participants will also be able to describe the various surgical and non-surgical management techniques available for managing traumatic and congenital spine and spinal cord injuries in the pediatric population.

### W37 Room 2008

#### Complications of Aneurysm Surgery: Avoidance and Management

Moderator: *Giuseppe Lanzino*

Faculty: *Evandro De Oliveira, Juba Antero Hernesniemi, Pil-Woo Hub, Michael T. Lawton, Andreas Raabe*

**Learning Objectives:** At the conclusion of this seminar, 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.

### W38 Room 2009

#### Common and Uncommon Peripheral Nerve Entrapment Syndromes

Moderator: *Eric L. Zager*

Faculty: *W. Jeffrey Elias, Line Jacques, Michel Kliot, Se-Hyuck Park*

**Learning Objectives:** At the conclusion of this seminar, 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 list strategies for augmenting peripheral nerve surgery in their practices.



## LUNCHEON SEMINARS 12:00 – 1:30 PM

**W39 Room 2011****Management of Head Injury**

Moderator: *Jamsbid Gbajar*

Faculty: *Patricia B. Raksin, Shelly D. Timmons, Eve C. Tsai, Alex B. Valadka*

**Learning Objectives:** At the conclusion of this seminar, participants will be able to discuss current practice standards for managing traumatic brain injury, describe the practical issues surrounding management of traumatic brain injury, and identify the unique challenges facing patients with traumatic brain injury.

**W40 Room 2016****Management of Complications in Skull Base Surgery**

Moderator: *Franco DeMonte*

Faculty: *Ossama Al-Mefty, Joung H. Lee, Kwan Park, Laligam N. Sekbar*

**Learning Objectives:** At the conclusion of this seminar, participants will be able to describe the common complications occurring in skull base surgery, 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.

**W41 Room 2018****Malignant Gliomas: Future Treatment Strategies**

Moderator: *E. Antonio Chiocca*

Faculty: *Jeffrey N. Bruce, Amy B. Heimberger, Yong Kil Hong, Zvi Ram*

**Learning Objectives:** At the conclusion of this seminar, participants will be able to discuss current and emerging techniques for treating patients with malignant gliomas and their impact on treatment strategies for these patients.

**W42 Room 2020****Radiosurgery in Neuro-Oncology**

Moderator: *Michael A. Vogelbaum*

Faculty: *Steven D. Chang, John G. Golfinos, Michael William McDermott*

**Learning Objectives:** At the conclusion of this seminar, participants will be able to describe the evidence in the medical literature evaluating the use of radiosurgery for neurosurgical disorders including tumors of the brain and spine.

**W43 Room 2022****Strategies for Maximizing Reimbursement**

Moderator: *Joseph S. Cheng*

Faculty: *Jeffrey W. Cozzens, Holly Gilmer, Alan M. Scarrow, Clarence B. Watridge*

**Learning Objectives:** At the conclusion of this seminar, participants will be able to discuss the pressures in the current economic environment affecting medical reimbursement, describe strategies available for maximizing reimbursement in the existing economic environment and identify approaching challenges in medical reimbursement.

**W44 Room 2024****New Evolutions and Future Trends in the Management of Intracerebral Hemorrhage**

Moderator: *Issam A. Awad*

Faculty: *Neil A. Martin, Christine Wijman, Mario Zuccarello*

**Learning Objectives:** At the conclusion of this seminar, participants will be able to discuss the 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.

**W45 Room 3000****Deep Brain Stimulation for Movement Disorders**

Moderator: *Philip A. Starr*

Faculty: *Aviva Abosch, Robert E. Gross, Michael Gordon Kaplitt, Paul S. Larson*

**Learning Objectives:** At the conclusion of this seminar, participants will be able to discuss the indications for deep brain stimulation for movement disorders and to describe outcomes and risks related to deep brain stimulation.

**1:30 – 3:00 PM Ballroom, Level 3**



## **3-D Cadaveric Demonstration of Cranial Surgical Approaches**

### **Operative Techniques with the Masters**

*Moderator: Saleem I. Abdulrauf*

**Learning Objectives:** Upon completion of this course, participants will be able to discuss the surgical principles used for treatment specific cranial disorders. Participants will be able to describe the surgical techniques used for an interhemispheric transcallosal approach to the third ventricle, a microsurgical resection of an acoustic schwannoma and a transylvian trans-cisternal selective amygdalohippocampectomy. Participants will also be able to discuss methods of avoiding complications during these surgeries. Participants will be able to identify the critical anatomical landmarks, understanding technical steps and identify the potential pitfalls of each of these approaches.

1:30 – 2:00 PM

### **Interhemispheric Transcallosal Transchoroidal Approach to the Third Ventricle**

*Robert F. Spetzler*

2:00 – 2:30 PM

### **Resection of Skull Base Tumor**

*Laligam N. Sekbar*

2:30 – 3:00 PM

### **Transylvian Trans-cisternal Selective Amygdalohippocampectomy**

*M. Gazi Yasargil*

**1:30 – 3:00 PM Room 2014**

### **SPECIAL COURSE III:**

## **Impact of Healthcare Reform on Your Neurosurgical Practice**

*Course Directors: Katie O. Orrico, JD, Matthew J. McGirt*

**Learning Objectives:** Participants will develop an appreciation for the impact of healthcare reform on neurosurgery and their practice. At the conclusion of the course, participants will be able to describe emerging challenges and opportunities that healthcare reform will place on their practice.

1:30 – 1:35 PM

### **Introduction**

*Matthew J. McGirt*

1:35 – 1:55 PM

### **Overview of Healthcare Reform Legislation: Report from the Washington Committee**

*Katie O. Orrico, JD*

1:55 – 2:15 PM

### **The New Quality Paradigm: Compliance with Healthcare Reform Requirements**

*Matthew J. McGirt*

2:15 – 2:35 PM

### **Preparing Your Practice for Healthcare Reform**

*Clarence B. Watridge*

2:35 – 2:55 PM

### **Employment or Private Practice: What is the Best Choice Now?**

*James I. Ausman*

2:55 – 3:00 PM

### **Panel Discussion and Questions**

**1:30 – 3:00 PM Room 2001**

### **CONSENSUS SESSION IV:**

## **Unification of Brain Death Criteria**

*Course Director: Catherine A. Mazzola*

*Moderators: Chaim B. Colen, Shelly D. Timmons*

**Learning Objectives:** At the conclusion of this course, participants will be able to discuss available brain death guidelines, the ethical and medico-legal issues associated with the pronouncement of brain death in children and infants and understand the confirmatory tests used for the pronouncement of brain death.



1:30 – 1:40 PM

### **Introduction and Audience Polling**

*Shelly D. Timmons*

1:40 – 1:55 PM

### **Current Status of Brain Death Guidelines**

*Catherine A. Mazzola*

1:55 – 2:10 PM

### **Problems with Pronouncement of Pediatric Brain Death**

*Derek Bruce*

2:10 – 2:30 PM

### **Update on Methods for the Pronouncement of Brain Death**

*Carlos A. David*

2:30 – 2:45 PM

### **Ethical Concerns of Neurosurgeons in the Pronouncement of Brain Death**

*Jamie S. Ullman*

2:45 – 2:55 PM

### **Audience Questions and Polling**

*Chaim B. Colen*

2:55 – 3:00 PM

### **Conclusions**

*Catherine A. Mazzola*

CNS Annual Meeting  
Booth #765

# THE *Sphere*

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**November 5-6, 2010 • Palm Beach Gardens, FL**

# **Advanced Endoscopic Skull Base and Pituitary Surgery**

## **COURSE DIRECTORS:**

Theodore H. Schwartz, MD, FACS

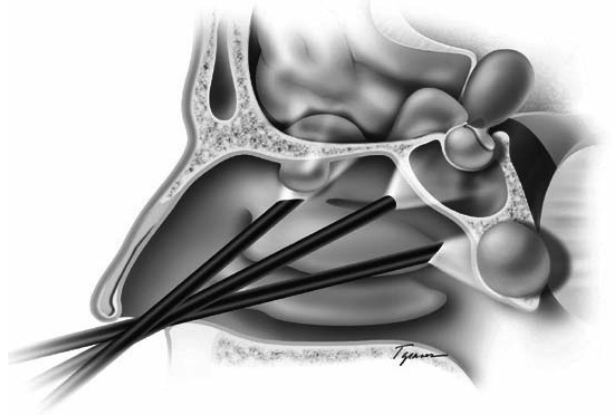
Vijay K. Anand, MD, FACS

## **GUEST FACULTY:**

Ed Laws, MD

James Evans, MD

Marc Rosen, MD



**2-DAY COURSE DESCRIPTION:** This course is a comprehensive overview of the newly emerging field of endoscopic skull base surgery combining didactic sessions with hands-on cadaver dissection. At the completion of this course, participants should be well equipped to start utilizing these approaches in their own practices. Endoscopic instruments and surgical navigation equipment will be available to participants for use on fresh cadavers during laboratory sessions. Participants will have an opportunity to discuss difficult cases with the faculty during panel discussions. Early registration is highly recommended.

## **LOCATION:** Anspach

4600 Riverside Drive, Palm Beach Gardens, FL 33410

## **INFORMATION:** Course Coordinator

Tel: 212-746-2203

email: [neurosurgery-cme@med.cornell.edu](mailto:neurosurgery-cme@med.cornell.edu)

[www.cornellneurosurgery.org](http://www.cornellneurosurgery.org)



**Weill Cornell  
Medical College**

**ANSPACH®**

**1:30 – 3:00 PM Room 3001****SECTION ON DISORDERS OF THE SPINE AND PERIPHERAL NERVES****Management of Spinal Column and Peripheral Nerve Neoplasms**Moderators: *Michael Y. Wang, Eric L. Zager*

**Learning Objectives:** At the conclusion of this session, participants will be able to discuss the management of benign and malignant neoplasms of the spine and peripheral nerves, describe the latest methods for diagnosis and surgical treatment, as well as non-surgical adjuvants.

1:30 – 1:45 PM

**Primary Spinal Cord Neoplasms***Mark H. Bilsky*

1:45 – 1:59 PM

**Surgical Treatment of Chordomas***Ziya L. Gokaslan*

1:59 – 2:13 PM

**Surgical Removal of Spinal Metastases***Daniel M. Sciubba*

2:13 – 2:27 PM

**State-of-the-Art Spinal Radiosurgery***Lilyana Angelov*

2:27 – 2:41 PM

**Tumors of Neural Origin***Barth A. Green*

2:41 – 2:55 PM

**Peripheral Nerve Neoplasms***Robert J. Spinner*

2:55 – 3:00 PM

**Questions and Answers****1:30 – 3:00 PM Room 3014****SECTION ON NEUROTRAUMA AND CRITICAL CARE****Mild Traumatic Brain Injury and Sports-Related Concussion**Moderators: *Jamshid Ghajar, Sanjay S. Dhall*

**Learning Objectives:** At the conclusion of this session, participants will be able to describe the role of neurosurgery in the evaluation and management of mild traumatic brain injury and sports-related concussion. Participants will be able to understand the neurocognitive batteries available and learn methods to develop concussion programs in their own communities and practices.

1:30 – 2:00 PM

**Development and Implementation of Neurocognitive Tests in TBI: High School to NFL***Joseph C. Maroon*

2:00 – 2:05 PM

**Introduction of Anthony B. Marmarou Lecturer, Michael Collins***Joseph C. Maroon*

2:05 – 2:35 PM

**Anthony B. Marmarou Lecture: The Future of IMPACT Testing and Treatment of Sports-Related Concussion***Michael W. Collins, MA, PhD*

2:35 – 3:00 PM

**Community-based Management of Sports-Related Concussion***Melvin Field***1:30 – 3:00 PM Room 3018****SECTION ON PAIN****Coding and Reimbursement in a Neurosurgical Pain Practice**Moderators: *Julie G. Pilitsis, Andre Machado*

**Learning Objectives:** At the conclusion of this session, participants will be able to describe 2010 codes employed in neurosurgical practice, determine the impact of hospital coding on reimbursement and develop strategies for successful reimbursement for pain procedures.

1:30 – 1:45 PM

**Physician Coding for Intrathecal Pumps***Ming L. Cheng*

1:45 – 2:05 PM

**Physician Coding for Neurostimulation***Christopher J. Winfree*

2:05 – 2:30 PM

**Hospital Coding for Pain Procedures***Alon Y. Mogilner*

2:30 – 2:50 PM

**Coding an Effective Pain Practice***Sanford Fineman*

2:50 – 3:00 PM

**Questions and Answers**

1:30 – 3:00 PM Room 3016

## SECTION ON STEREOTACTIC AND FUNCTIONAL NEUROSURGERY

### Complication Avoidance in Deep Brain Stimulation Surgery

Moderators: *W. Jeffrey Elias, Brian H. Kopell*

**Learning Objectives:** At the conclusion of this session, participants will be able to identify and describe potential complications of deep brain stimulation surgery and stimulation, and formulate strategies to avoid these complications.

1:30 – 1:55 PM

#### Neuropsychological Screening and Neuropsychological Complications of DBS

*Caroline A. Racine, PhD*

1:55 – 2:20 PM

#### Operative Complications of DBS: Avoidance and Management

*Aviva Abosch*

2:20 – 2:45 PM

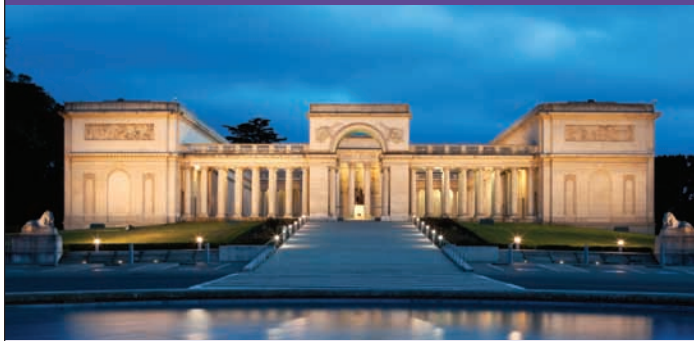
#### Stimulation-induced Adverse Effects of DBS: A Neurologist's Perspective

*Nicholas Galifianakis*

2:45 – 3:00 PM

#### Questions and Answers

## International Reception



Join your colleagues from around the globe for an evening of art and camaraderie at the Legion of Honor where you will enjoy a 4,000 year-old collection of ancient and European art, as well as access to the museum's temporary exhibitions, *Very Postmortem: Mummies and Medicine* and *Japanesque: The Japanese Print in the Era of Impressionism*.

**Wednesday, October 20 7:00 – 8:30 PM**  
**Legion of Honor**

Shuttle transportation will depart the Marriott Marquis at 6:30 PM

6:30 – 8:30 PM

## DINNER SEMINAR II:

### **NEW** Spinal Arthroplasty: Fact and Fiction \$165

Moderator: *Michael Y. Wang*

Faculty: *Praveen V. Mummaneni, Fred H. Geisler, Domagoj Coric, James S. Harrop*

Boulevard Restaurant

**Learning Objectives:** At the conclusion of this session, 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.

**Boulevard Restaurant** – Serving delectable American cuisine in an Art Nouveau setting, Boulevard has been hailed by Zagat as "Second Most Popular Restaurant in San Francisco" and a "Top 20 Restaurant for Best Food" in San Francisco. American regional flavors, French influenced style and enthralling design, form the entire experience at Boulevard. Dinner Seminars include a 3-course plated dinner and wine service.

Shuttle transportation will depart the Marriott Marquis at 6:00 PM sharp.

6:30 – 7:00 PM

#### Dinner Seating/Reception

7:00 – 7:20 PM

#### Essentials of Modern Cervical Arthroplasty

*James S. Harrop*

7:20 – 7:40 PM

#### Cervical Arthroplasty: What the Future Holds

*Praveen V. Mummaneni*

7:40 – 8:00 PM

#### Today's Lumbar Arthroplasty: Is it Viable?

*Fred H. Geisler*

8:00 – 8:20 PM

#### Lumbar Motion Preservation: Will Emerging Technologies Deliver?

*Domagoj Coric*

8:20 – 8:30 PM

#### Discussion and Adjourn



## GENERAL SCIENTIFIC SESSION IV

**8:00 – 11:30 AM – Moscone West Convention Center Ballroom, Level 3**

### **3-D Digital Masters Video Symposium and Cases and Coffee with the Masters**

Presiding Officer: *Daniel K. Resnick*

Moderators: *Brian T. Ragel, Jeffrey S. Weinberg*

Learning Objectives: At the conclusion of this session, participants will be able to identify new methods of intervention for a variety of neurosurgical disorders. Correlative anatomy and surgical treatment strategies will be emphasized via video demonstration and case discussion by subspecialty expert surgeons.

8:00 – 9:00 AM

**3-D Digital Masters  
Video Symposium**

8:00 – 8:15 AM

**High Flow Saphenous Vein Bypass and Trapping for HIV-Induced Fusiform ICA Aneurysm**

*Jacques J. Morcos*

8:15 – 8:30 AM

**Bypass for Giant Intracranial Aneurysm**

*Michael T. Lawton*

8:30 – 8:45 AM

**Cerebral Bypass for the Management of Complex Aneurysms**

*Laligam N. Sekbar*

8:45 – 9:00 AM

**Microvascular Decompression for Trigeminal Neuralgia**

*Nicholas M. Barbaro*

9:00 – 10:30 AM

**Cases and Coffee with the Masters**

Room 3002

**Vascular/Endovascular Discussants**

*Michael T. Lawton, Daniel L. Barrow,  
Robert H. Rosenwasser,  
Byron Gregory Thompson, Jr.*

Ballroom, Level 3

**Spine and Peripheral Nerve Discussants**

*Richard G. Fessler, Gregory R. Trost,  
Marie-Noëlle Hébert-Blouin,  
Ziya L. Gokaslan*

Room 3014

**Tumor Discussants**

*Jeffrey N. Bruce, Linda M. Liau,  
Jacques J. Morcos, Michael A. Vogelbaum*

Room 3018

**Stereotactic, Functional and Pain Discussants**

*Aviva Abosch, Nicholas M. Barbaro,  
Paul S. Larson, Oren Sagher*

Room 3001

**Trauma Discussants**

*Jamie S. Ullman, Randall M. Chesnut,  
Roland A. Torres, Shelly D. Timmons*

Room 3016

**Pediatric Discussants**

*Gerald A. Grant, Hugh J.L. Garton,  
James T. Rutka*

10:30 – 11:15 AM

**3-D Digital Masters  
Video Symposium**

10:30 – 10:45 AM

**High-Flow Bypass in the Management of a Giant Thrombotic ICA Aneurysm**

*Daniel L. Barrow*

10:45 – 11:00 AM

**Minimally Invasive Thoracic Discectomy**

*Richard G. Fessler*

11:00 – 11:15 AM

**Temporal Lobectomy**

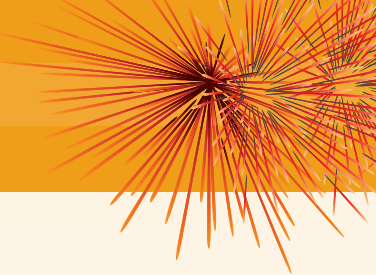
*Oren Sagher*

11:15 – 11:30 AM

**Concluding Remarks**

*Gerald E. Rodts, Jr.*





## Admission Requirements

Admission to the Scientific Sessions and the CNS Exhibits is by CNS badge only. Badges are distributed at the CNS Registration area in the Moscone West Convention Center Lobby.

## Americans with Disabilities Act

The Moscone West Convention Center provides the following services: ramps to entrances and elevated areas, an array of passenger elevators, restroom facilities for the disabled, braille instructions/directions at strategic locations throughout the building and a full bank of pay phones located at each level of the facility with (TDD) hearing-impaired functions.

## Attire

Professional attire is appropriate at the Annual Meeting and the Exhibit Hall. Some San Francisco 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 San Francisco area.

All tours will depart from the CNS headquarters hotel, the San Francisco Marriott Marquis (Convention Entrance). Please arrive 15 minutes prior to the scheduled departure time.

All registered CNS Annual Meeting spouses and guests are invited to visit the CNS Spouse Hospitality Suite, Monday through Wednesday for daily continental breakfast from 7:00 – 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 the View Lounge, 39<sup>th</sup> floor of the San Francisco Marriott Marquis.

Optional evening events are available to all registered attendees and our exhibit partners. All registered attendees will receive one complimentary ticket to the CNS Opening Reception on Sunday, October 17. See page 55 for more details.

## Badges

CNS Annual Meeting badge colors represent the registration category of the attendees:

Blue	Medical attendee including CNS Members and Non-members.
Gray	Medical Students, Allied Health, Nurses.
Clear	Guests and Spouses.
Yellow	Exhibitors.
Red	Staff.

## Book Signings

Join us for the following book signings!

### James Lovell

Sunday, October 17, 6:00 PM  
Marriott Marquis  
Yerba Buena Foyer

### Condoleezza Rice

Monday, October 18, 11:10 AM  
Moscone West Convention Center  
Exhibit Hall

### Michael Lewis

Wednesday, October 20, 11:30 AM  
Moscone West Convention Center  
CNS Member Services – Booth #137

## Business Center

The Moscone West Convention Center has a business center located on Level 1. This business center offers the following services: photocopying, faxing, computer workstations, printing services, office supplies and UPS shipping services.

## Children

Children over the age of 12 may register at the Guest Registration fee. This will allow full participation in complimentary Auxiliary Program activities. (Please note that children under the age of 18 are not allowed in the Exhibit Hall.) Should you require babysitting services, please contact the concierge desk at your hotel. The CNS has no control over and assumes no responsibility for the care that is provided through hotels or these services. This information is provided solely to assist participants in identifying possible sources for childcare.

## Course Agendas and Faculty

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

## Digital Posters

Digital Posters will be displayed electronically, Monday – Wednesday in the Exhibit Hall, and can be searched by author, topic or keyword. You may also access the Digital Posters on the Mobile Meeting Guide at <http://m.cns.org>!

## Disclaimer

The material presented at the 60<sup>th</sup> 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

### Beverage Breaks

Monday – Wednesday, 9:00 – 10:00 AM

### Live Surgical Presentations

Tuesday & Wednesday, 9:15 – 10:00 AM

### Product & Technology Showcase

See page 44 for schedule.

### Research & Development Expert Exchange

See page 44 for details.

### California Wine & Cheese Experience with the CNS Exhibitors

Tuesday, 3:00 – 4:30 PM

## Exhibit Hall Hours

Monday, October 18	9:00 AM – 3:00 PM
Tuesday, October 19	9:00 AM – 4:30 PM
Wednesday, October 20	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

Washington, DC	October 1-6, 2011
Chicago, IL	October 6-11, 2012
San Francisco, CA	October 19-24, 2013

## Hotel Information

### San Francisco Marriott Marquis

55 Fourth Street  
San Francisco, CA 94103  
415 896 1600

### Four Seasons San Francisco

757 Market Street  
San Francisco, CA 94103  
415 633 3000

### Grand Hyatt San Francisco

345 Stockton Street  
San Francisco, CA 94103  
415 398 1234

### Hilton San Francisco Union Square

333 O'Farrell Street  
San Francisco, CA 94102  
415 771 1400

### Hotel Nikko San Francisco

222 Mason Street  
San Francisco, CA 94102  
866 645 5673

### Hotel Palomar

12 Fourth Street  
San Francisco, CA 94103  
415 348 1111

### Palace Hotel

2 New Montgomery Street  
San Francisco, CA 94105  
415 512 1111

### The St. Regis San Francisco

125 3rd Street  
San Francisco, CA 94103  
415 284 4000

### W Hotel

181 Third Street  
San Francisco, CA 94103  
415 777 5300

## Member Services Booth

The CNS Member Services Booth is located in the Level 1 Exhibit Hall, Booth #137. Staff members will be available to assist you and answer any questions you may have about the CNS, *NEUROSURGERY*<sup>®</sup> or your CNS Membership and its member services. Stop here to check your e-mail, peruse the journal or view the Video Theatre presentations.





## Online Access

### E-mail Stations

You will be able to check your e-mail from the e-mail stations in the Member Services Booth. Please be sure to have your mail server URL, e-mail account username and password.

### Wireless Internet

Complimentary wireless internet is available in the lobbies of all levels of the Moscone West Convention Center.

### Online Annual Meeting Guide

For your convenience, the CNS offers an Online Annual 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 Personal Computer to visit <http://m.cns.org> and take advantage of this service throughout the CNS Annual Meeting! iPod Touch, iPad and iPhone users may also download the app at the iTunes App Store!

## Posters

The CNS Neurosurgical Forum features dynamic oral presentations supported by illustrated posters. This interdisciplinary session will be presented on Monday, 3:00 – 4:30 PM in the Ballroom, Level 3 of the Moscone West 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 Moscone West Convention Center. Press registration is available on-site with proper credentials. Please stop by the Registration area for details. Please note, some sessions prohibit press admittance.

## Registration Hours

Registration is located in the Moscone Convention Center West lobby.

Saturday, October 16	7:00 AM – 5:30 PM
Sunday, October 17	7:00 AM – 6:00 PM
Monday, October 18	6:30 AM – 4:30 PM
Tuesday, October 19	6:30 AM – 4:30 PM
Wednesday, October 20	6:30 AM – 3:00 PM
Thursday, October 21	7:30 – 11:00 AM

## Sergeant-at-Arms

If you are interested in becoming a Sergeant-at-Arms volunteer, please stop by 2022 Overlook in the Moscone West Convention Center.

## Shuttle Services

Due to the close proximity of Moscone West Convention Center, not all hotels are being shuttled. Limited shuttle will be available from the following hotels: San Francisco Hilton, Grand Hyatt, Hotel Nikko, Westin Market Street, Palace, St. Regis.

Saturday, October 16	7:00 AM – 5:30 PM
Sunday, October 17	7:00 AM – 6:30 PM
Monday, October 18	6:30 AM – 5:00 PM
Tuesday, October 19	6:30 AM – 5:00 PM
Wednesday, October 20	6:30 AM – 3:30 PM
Thursday, October 21	7:30 AM – 12:00 PM

## Speaker Ready Room

All speakers and abstract presenters should visit the Speaker Ready Room, located in Room 2000 of the Moscone West Convention Center, prior to their presentations.

Saturday, October 16	7:00 AM – 5:30 PM
Sunday, October 17	7:00 AM – 6:00 PM
Monday, October 18	6:30 AM – 3:00 PM
Tuesday, October 19	6:30 AM – 3:00 PM
Wednesday, October 20	6:30 AM – 3:00 PM
Thursday, October 21	7:30 – 11:00 AM

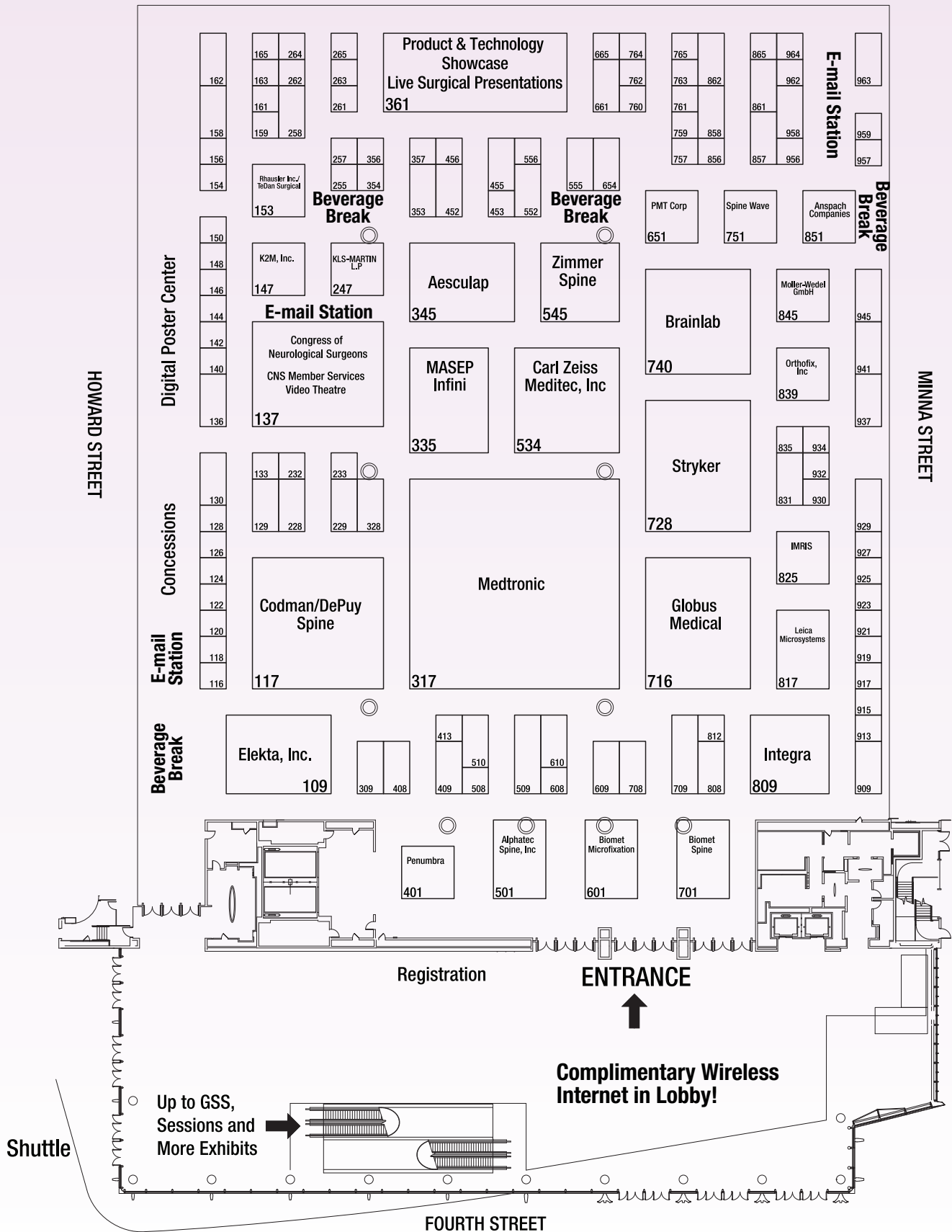
## Ticket Sales

Tickets for all courses, evening events, spouse programs and tours are available for purchase in the Registration area in the Lobby of the Moscone West Convention Center.

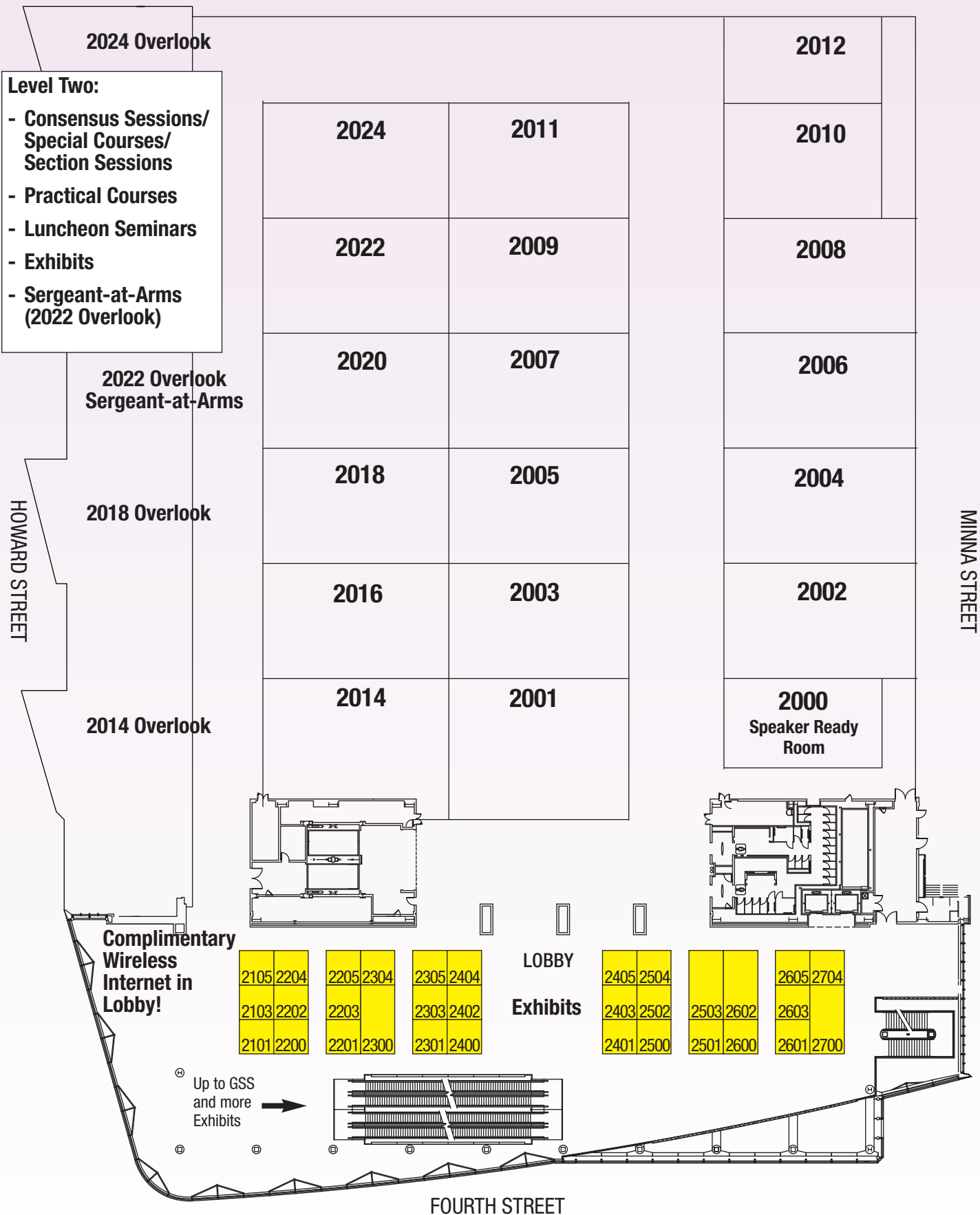
## Video Theatre

The CNS Video Theatre is located in the Exhibit Hall, Level 1, Member Services Booth #137. See and study select procedures at your leisure.

# MOSCONE WEST LEVEL ONE



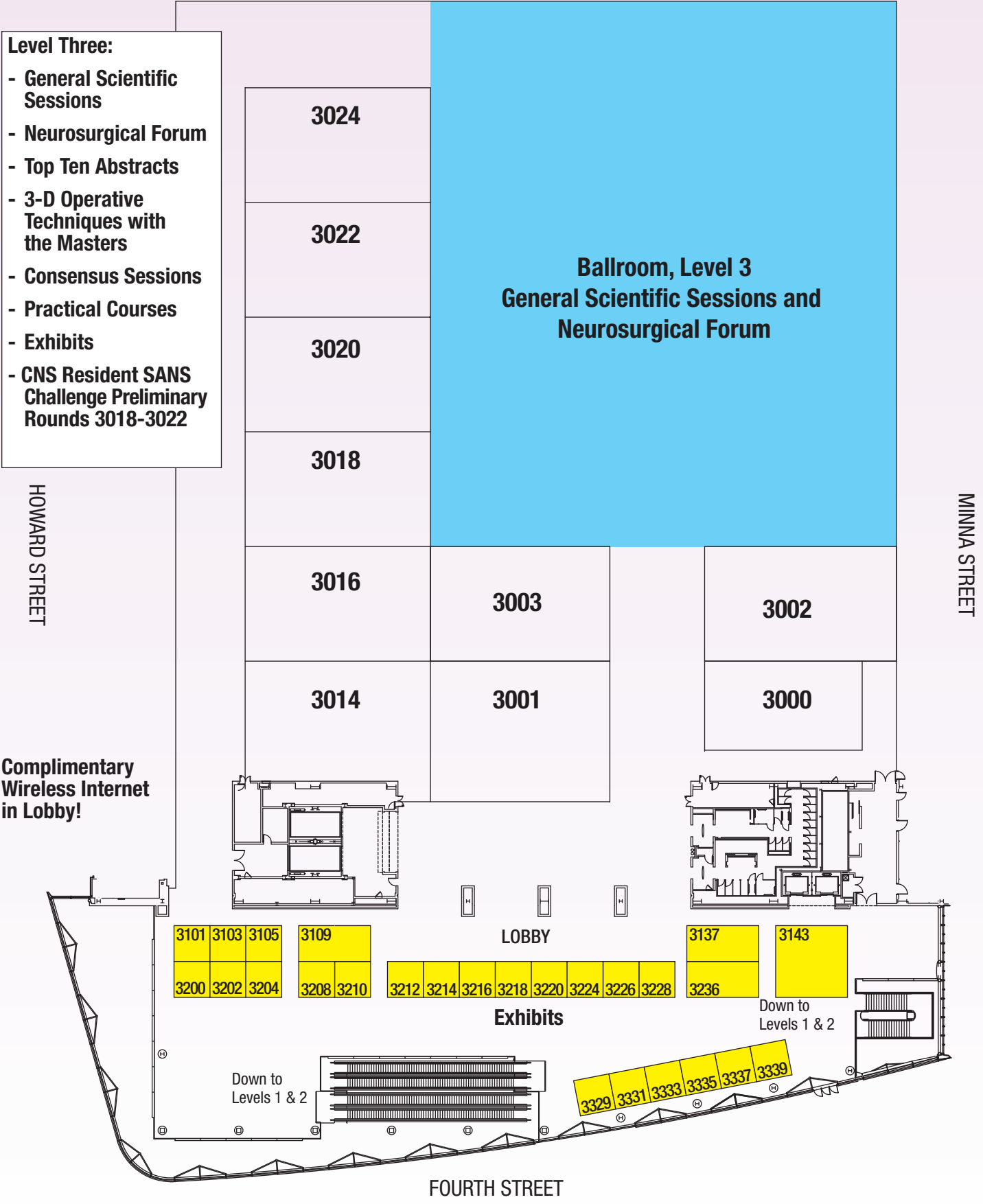
# LEVEL TWO MOSCONE WEST





# MOSCONE WEST LEVEL THREE

- Level Three:**
- General Scientific Sessions
  - Neurosurgical Forum
  - Top Ten Abstracts
  - 3-D Operative Techniques with the Masters
  - Consensus Sessions
  - Practical Courses
  - Exhibits
  - CNS Resident SANS Challenge Preliminary Rounds 3018-3022



**Complimentary Wireless Internet in Lobby!**

# SAN FRANCISCO MARRIOTT MARQUIS

## Level B2



*All Registered Marriott Guests will receive complimentary internet in their Guest Room.*

**Opening Reception**  
Yerba Buena Salon 8-15

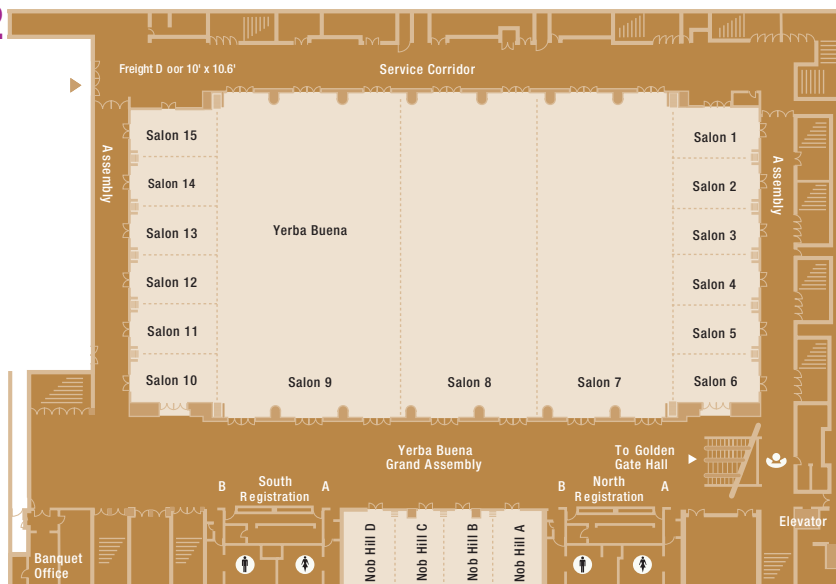
**SANS Challenge Championship Round**  
Yerba Buena Salon 8

**Opening Session**  
Yerba Buena Salon 1-7

**Resident Recruitment Social**  
Yerba Buena Salon 7

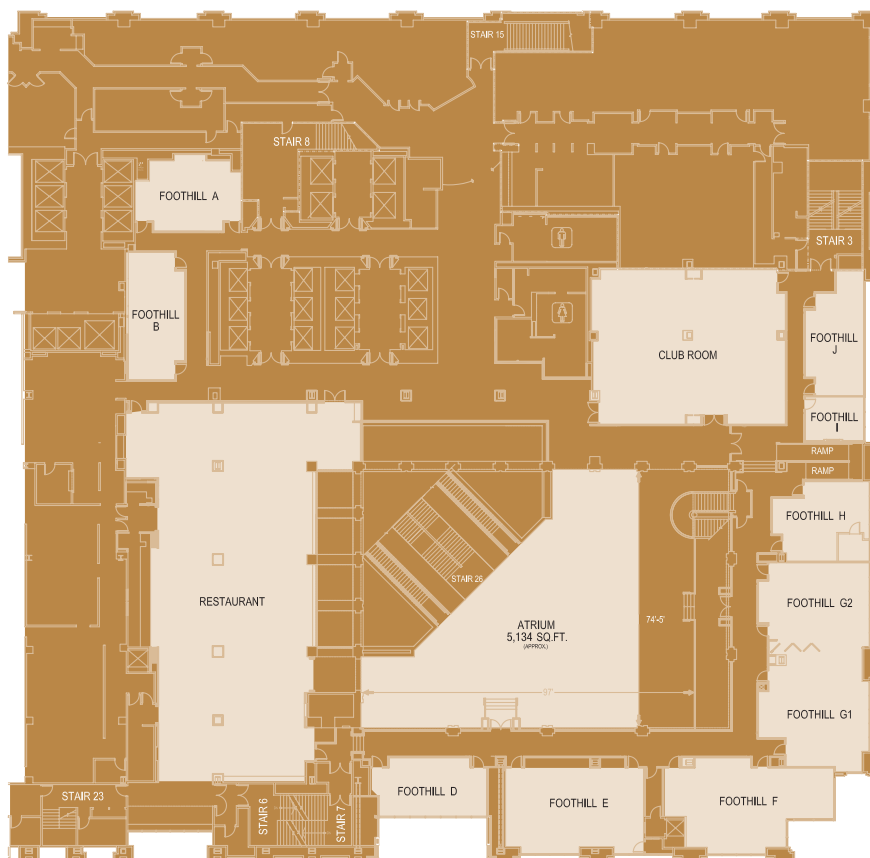
**Neuromodulation Symposium**  
Golden Gate Ballroom

## Level B2 (Lower)



# SAN FRANCISCO MARRIOTT MARQUIS

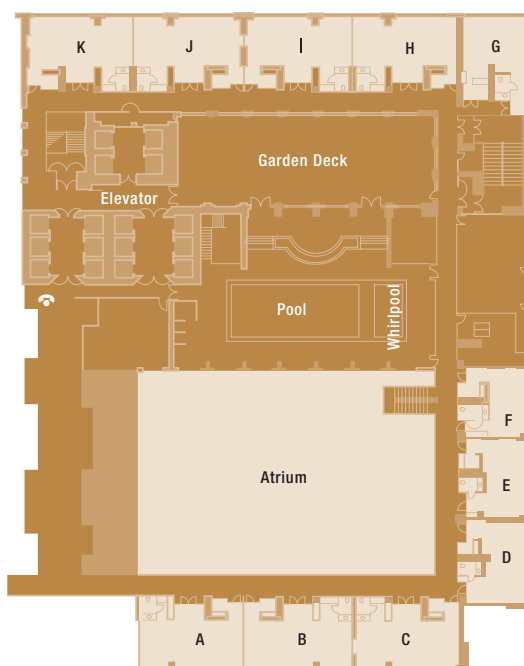
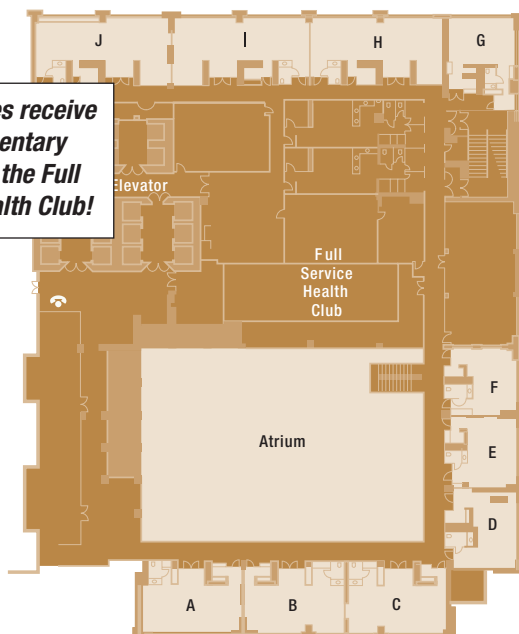
## Level 2



## Level 4 (Pacific)

## Level 5 (Sierra)

**All attendees receive Complimentary Access to the Full Service Health Club!**





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Leadership Skills.**

**Advance Your  
Education.**

**Further Your  
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Surgeons today for access to:**

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## **ACIGI Relaxation/Fujiiryoki**

**760**

4399 Ingot Street  
Fremont, CA 94538  
510-651-9088  
[www.drfuji.com](http://www.drfuji.com)

Fuji Medical Instruments Manufacturing Co. Ltd., a 56-year history company producing medical products. In USA, FDA approved Cyber Relax Chair as Physical Medicine Therapeutic Device. Dr. Fuji Pro-Dent-Med Massage Chair helps massage and squeeze away tension, pain and stress.

## **Acra-Cut Inc.**

**862**

989 Main Street  
Acton, MA 01754  
800-227-2288  
[www.acracut.com](http://www.acracut.com)

Manufacturer of reusable and disposable cranial perforators, adult and pediatric. Perforator sizes include 14/11mm, 14/9mm, 13/9mm, 11/7mm and 8/5mm. Other ACRA-CUT products include cranioblades, wire pass drills, dura separators, and distraction screws. Our Scalp Clip System features a reusable applicator and disposable pre-loaded clip cartridge for easy application.

## **Ad-Tech Medical Instrument Corporation**

**229**

1901 William Street  
Racine, WI 53404  
800-776-1555  
[www.adtechmedical.com](http://www.adtechmedical.com)

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 patients needs. Visit our booth to discover why Ad-Tech is your best choice.

## **Advanced Biologics**

**2203**

555 Corporate Drive, Suite 255  
Ladera Ranch, CA 92694  
800-272-0269  
[www.advancedbiologicscorp.com](http://www.advancedbiologicscorp.com)

Advanced Biologics (ABC) is an orthobiologics company focused on providing innovative products for surgeons and patients. Products include a novel growth factor and a shape memory scaffold.

## **Aesculap Implant Systems LLC**

**345**

3773 Corporate Parkway  
Center Valley, PA 18034  
610-984-9081  
[www.aesculapimplantsystems.com](http://www.aesculapimplantsystems.com)

Combining years of R&D along with modern technology, Aesculap Implant Systems offers a complete line of implant systems and instrumentation 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.

## **Aesculap, Inc.**

**345**

3773 Corporate Parkway  
Center Valley, PA 18034  
610-797-9300  
[www.aesculapusa.com](http://www.aesculapusa.com)

Skilled Craftsmanship, quality and innovation have been a cornerstone of Aesculap for more than 140 years. The Aesculap Neurosurgery division provides innovation and leadership in cerebrovascular, tumor and hydrocephalus treatments. Aesculap offers innovative technologies in the areas of bone removal, instrumentation, cerebrovascular clips, ultrasonic aspiration, shunts, neuroendoscopy, and cranial fixation.

## **Allen Medical Systems**

**909**

One Post Office Square  
Acton, MA 01720  
978-263-7727  
[www.allenmedical.com](http://www.allenmedical.com)

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 flexing 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.

## **Aloka Ultrasound**

**510**

10 Fairfield Boulevard  
Wallingford, CT 06492  
203-269-5088  
[www.aloka.com](http://www.aloka.com)

Aloka's commitment to ultrasound for surgeons allows us to offer a wide range of consoles and specifically designed transducers to meet the needs of every surgeon. Recognized for our superior image quality, outstanding system reliability and intuitive use of cutting edge technology, Aloka remains the standard in the field of ultrasound for surgeons.

## **Alpha Omega**

**3101**

105 Nobel Court, Suite 101  
Alpharetta, GA 30005  
877-919-6288  
[www.alphaomega-eng.com](http://www.alphaomega-eng.com)

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.

## **Alphatec Spine, Inc.**

**501**

5818 El Camino Real  
Carlsbad, CA 92008  
760-431-9286  
[www.alphatecspine.com](http://www.alphatecspine.com)

Alphatec Spine's mission is to be the leading global independent, full-line spine company, with a focus on solutions for the aging spine. Our goal is to improve the aging patient's quality of life.

# EXHIBITORS

## Amedica Corporation

2405

1885 West 2100 South  
Salt Lake City, UT 84119  
801-839-3500  
[www.amedicacorp.com](http://www.amedicacorp.com)

Amedica Corporation develops and manufactures spinal and orthopedic implants comprised of medical grade MC<sup>2</sup> silicon nitride; a material that, compared to others on the market, provides implants with excellent mechanical properties, higher wear resistance, greatly improved compatibility with MRI, fluoroscopy and CT imaging systems and hydrophilic surfaces.

## American Association of Neurological Surgeons

958

5550 Meadowbrook Drive  
Rolling Meadows, IL 60008  
847-378-0500  
[www.aans.org](http://www.aans.org)

Your AANS membership produces value by helping you in your clinical practice, maintain licensure and certification and advance your career. All the resources you need will be available to further your professional success. Our publications and products along with information on CME and practice management courses will be available.

## American Express OPEN

265

3 World Financial Center - 200 Vessey Street  
New York, NY 10285  
212-640-2000  
[www.open.com](http://www.open.com)

American Express Business Cards give you automatic access to the tools and resources that American Express OPEN has to offer, including benefits that can help you save money, gain control over your practice expenses, earn valuable rewards and much more.

## American Surgical

835

82 Sanderson Avenue  
Lynn, MA 01902  
800-343-0060  
[www.amsurisp.com](http://www.amsurisp.com)

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## Anspach Companies

851

4500 Riverside Drive  
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561-627-1080  
[www.anspach.com](http://www.anspach.com)

The ANSPACH Companies manufacture 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.

## Apex Medical, Inc.

919

100 Quaker Lane  
Malvern, PA 19355  
610-240-4905  
[www.apexmed.com](http://www.apexmed.com)

Apex works with leading neurosurgeons to make delicate, safe, sharp microsurgical dissection possible. We agree with one of the first neurosurgeons to use our arachnoid knives that, "everything before this has been micro-tearing." Find out why the leading neurosurgeons in the world are so excited about Apex Arachnoid Knives. (610) 240-4905

## ArthroCare Spine

857

7500 Rialto Boulevard, Building Two, Suite 100  
Austin, TX 78735-8532  
512-391-3900  
[www.artbrocarespine.com](http://www.artbrocarespine.com)

ArthroCare Spine is dedicated to improving patient outcomes and creating innovative products for MIS procedures. Its patented Coblation technology is the foundation for disc decompression and soft tissue removal procedures; from interventional to surgical treatments including discography, plasma disc decompression, soft tissue removal, fracture reduction, and fixation for vertebroplasty.

## Aspen Medical Products

831

6481 Oak Canyon  
Irvine, CA 92618  
949-681-0200  
[www.aspenmp.com](http://www.aspenmp.com)

Aspen Medical Products is a leader in the development of innovative spinal bracing for post-trauma stabilization, pre-and-post surgical stabilization, pain management and long-term patient care. Aspen Medical Products offers multiple orthotic options that provide unsurpassed motion restriction, superior comfort and an economic advantage, encouraging better patient compliance.

## ASSI-Accurate Surgical

964

300 Shames Drive  
Westbury, NY 11590  
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[www.accuratesurgical.com](http://www.accuratesurgical.com)

ASSI will be displaying its Noble Real Non-Stick Bipolar Forceps, ASSI's finest hand crafted microsurgical instruments and instrumentation for the neurosurgeon.

## Astor and Black Custom Clothiers

3329

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Columbus, OH 43215  
614-857-9000  
[www.astorandblack.com](http://www.astorandblack.com)

Astor & 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. Features such as hand-picked stitching, functional button holes, and Bemberg silk linings come standard on all garments. With thousands of fabrics to choose from, your satisfaction is guaranteed.

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**140**

655 River Oaks Parkway  
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[www.baxano.com](http://www.baxano.com)

BAXANO's iO-FlexT System: Designed to provide lumbar decompression from the "inside out" providing an intuitive, controlled "over the wire" system developed to target and decompress the foramen, lateral recess, and central canal while aiming to preserve facet joint integrity and stability. Thin, flexible tools may allow bilateral decompression through a single-point.

## **Baxter**

**552**

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800-423-2090  
[www.baxterbiosurgery.com](http://www.baxterbiosurgery.com)

Baxter is a global, diversified healthcare company who applies a unique combination of expertise in medical devices, pharmaceuticals and biotechnology to create products that advance patient care worldwide. Baxter is a registered trademark of Baxter International Inc.

## **Berkeley Advanced Biomaterials, Inc.**

**763**

901 Grayson Street, Suite 101  
Berkeley, CA 94710-2655  
510-883-0500  
[www.ostetic.com](http://www.ostetic.com)

Berkeley Advanced Biomaterials, Inc. manufactures high-quality, cost-effective skeletal repair resorbable biomaterials. The company offers the entire range of biologics from synthetics to allografts. Berkeley Advanced Biomaterials is a licensed Tissue Bank that has been accredited by AATB. The Ostetic products are based on hydroxyapatite (HAP) technology.

## **Biomet Microfixation**

**601**

1520 Tradeport Drive  
Jacksonville, FL 32218  
904-741-4400  
[www.biometmicrofixation.com](http://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 601 to view our latest innovations.

## **Biomet Spine**

**701**

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Parsippany, NJ 07054  
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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 booth to see how our products can help surgeons change lives for the better, one patient at a time.

## **Biotronic NeuroNetwork**

**759**

812 Avis Drive  
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800-638-7564  
[www.biotronic.com](http://www.biotronic.com)

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**2304**

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Dedicated, specialized surgical ultrasound. We've been the surgical ultrasound company for more than 30 years – a position we take seriously. Our Flex Focus 700 ultrasound system together with our dedicated neurology transducers are designed with leading edge technology and built with keen attention to quality, to provide years of unsurpassed performance.

## **Blue Chip Partners - Surgery Centers**

**255**

4760 Red Bank Expressway, Suite 222  
Cincinnati, OH 45227  
513-561-8900 x10  
[www.bluechipsurgical.com](http://www.bluechipsurgical.com)

Blue Chip Surgical develops and manages physician-led, physician-owned outpatient surgical centers. Blue Chip develops both multi-specialty and spine-focused ambulatory surgery centers. Occasionally, the joint-venture surgical centers include a hospital partner.

## **Boston Scientific Neuromodulation**

**2602\***

25155 Rye Canyon Loop  
Valencia, CA 91355  
661-949-4000  
[www.controlyourpain.com](http://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.**

**740**

3 Westbrook Corporate Center, Suite 400  
Westchester, IL 60154  
708-409-1343  
[www.brainlab.com](http://www.brainlab.com)

Brainlab develops software-driven medical technology enabling more precise and less invasive procedures. Our image-guided systems provide highly accurate, real-time information for surgical navigation. Brainlab solutions allow for expansion from one system to operating suites to digitally integrated hospitals covering neurosurgery, orthopedics, ENT, CME, spine & trauma, and oncology.



# EXHIBITORS

## **Buxton BioMedical**

**264**

15A Melanie Lane, Unit 9A  
East Hanover, NJ 07936  
973-560-4848  
[www.buxtonbio.com](http://www.buxtonbio.com)

Distraction Attraction Your jagged jaws, Your hunchbacked reach, Your clickity-clackity-ratchety lock. Ol' Inge Spreader, You grind out your tasks In such wretched staccato style. Find civilized alternatives to traditional vertebral body distraction, foraminal exposure and to the plethora of problems still plaguing product performance in everyday spinal surgery.

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**534**

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925-557-4100  
[www.meditec.zeiss.com/neuro](http://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 activities that will accelerate the future introduction of product innovations.

## **CCV**

**126**

712 South Milwaukee Avenue  
Libertyville, IL 60048  
877-272-4869  
[www.citowcv.com](http://www.citowcv.com)

The CCV Cervical Visualizer is a "Hands-Free" Table Mounted Radiolucent Positioning System designed to Optimize Intra-operative Radiography of the C-Spine while Eliminating the risk of Nerve Damage/ Brachial Plexus Injury associated with Pulling / Taping. Protect Against Wrong Site Surgery without Exposing Staff to Radiation! Contact CCV for a Free Trial.

## **Centra Medical Group**

**3212**

2010 Atherholt Road  
Lynchburg, VA 24501  
434-200-6943  
[www.connectwithcentra.com](http://www.connectwithcentra.com)

Centra Medical Group, based in Lynchburg, Virginia, consists of a skilled team of neurosurgeons and other highly skilled physicians. Both Centra and Lynchburg top the list offering superior quality of life, supportive and collaborative medical community, award-winning clinical care, and access to the latest technology. See our opportunities at [www.ConnectWithCentra.com](http://www.ConnectWithCentra.com).

## **Children's Mercy Hospital**

**3214**

2401 Gillham Road  
Kansas City, MO 64108  
816-234-3175  
[www.childrensmercy.edu](http://www.childrensmercy.edu)

Children's Mercy Hospitals and Clinics is a free-standing comprehensive pediatric medical center. We provide state-of-the-art care for children from birth to age 18. In addition to clinical expertise, we are also a leader in providing pediatric medical education to physicians and nurses and in conducting cutting-edge pediatric medical research.

## **Clinicon Corporation**

**858**

3025-A Industry Street  
Oceanside, CA 92054  
760-439-1700  
[www.clinicon.com](http://www.clinicon.com)

Clinicon Corporation manufactures innovative, high precision products for Minimally Invasive Surgery based on patented Laser, Diamond, and Fiber Technology. High precision laser instruments significantly reduce trauma during Neuro- and Spine Surgical Procedures and enhance their outcomes.

## **CMF Medicon Surgical Inc.**

**116**

11222 St. Johns Industrial Parkway North, Suite 7  
Jacksonville, FL 32246  
904-642-7500  
[www.medicon.de](http://www.medicon.de)

CMF Medicon Surgical offers high quality surgical instruments and titanium fixation systems for CMF based surgery. As the US daughter company of Medicon eG, Tuttlingen Germany founded 1941, our product range consists of over 30,000 items. All products are made in Germany using cutting edge technology with an emphasis on traditional craftsmanship.

## **Cobalt Health Inc.**

**2105**

5777 W. Century Boulevard, Suite 670  
Los Angeles, CA 90045  
877-262-2588  
[www.cobalthalth.com](http://www.cobalthalth.com)

Cobalt Health is a medical billing company with an unwavering conviction to delivering the maximum compliant return for services you performed. Cobalt enables you to make better-informed decisions, and facilitates the achievement of your goals as a provider and business manager. The solution is Cobalt Health medical billing services.

## **Codman, a Johnson & Johnson Company**

**117\***

325 Paramount Drive  
Raynham, MA 02767  
508-880-8100  
[www.codman.com](http://www.codman.com)

Codman, a Johnson & Johnson company, is a global neuroscience device company that offers a broad range of devices and therapies to treat patients with neurological diseases and conditions.

## **Concentric Medical, Inc.**

**3218**

301 East Evelyn Avenue  
Mountain View, CA 94041-1530  
650-938-2100  
[www.concentric-medical.com](http://www.concentric-medical.com)

Concentric Medical manufactures and markets the Merci Retrieval System® a minimally invasive neurovascular device used to restore blood flow in the brain by removing blood clots that cause ischemic stroke. The System is available in over 500 leading stroke centers worldwide and has been studied in multiple successful clinical trials.



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### NeuroSurgeon

Children's Mercy Hospitals and Clinics is seeking a board eligible/certified neurosurgeon with a commitment to pediatrics and proven clinical and surgical skills to join its staff. The scope of this position includes clinical and surgical responsibilities, as well as opportunities for teaching and research. Our team of specialists includes three full-time neurosurgeons, two full-time nurse practitioners, a clinic nurse manager, and a clinic nurse dedicated to neurosurgery patients.

We evaluate all phases of pediatric neurological disease and provide consultations 24 hours a day for patients with all types of neurosurgical disorders, including hydrocephalus, spina bifida, and traumatic injuries of the brain, spinal cord, and peripheral nerves. Every surgery at CMHC is attended by a pediatric anesthesiologist who has extensive experience in administering anesthesia, precisely measured for the child's age, size and condition.

Children's Mercy Hospitals & Clinics is one of the country's premiere free-standing, independent pediatric clinical, academic and research medical centers, with 317 licensed beds, more than 40 pediatric subspecialty clinics, and the region's only Level I pediatric trauma center. CMH is affiliated with the University of Missouri-Kansas City School of Medicine, a public urban institution with approximately 12,000 students. It is a Magnet™ recognized pediatric health system for excellence in nursing services. Salary and academic range are commensurate with experience. EOE/AAP

#### SECTION CHIEF

Gregory Hornig, MD

**For consideration email CV to** [physicianjobs@cmh.edu](mailto:physicianjobs@cmh.edu)

#### For more information contact:

Charlene L. Plotycia, *Physician Recruiter*  
Children's Mercy Hospitals & Clinics  
[cplotycia@cmh.edu](mailto:cplotycia@cmh.edu)

## Congress of Neurological Surgeons

**137**

10 North Martingale Road, Suite 190  
Schaumburg, IL 60173-2294  
847-240-2500  
[www.cns.org](http://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.

## ContainMed, Inc.

**2200**

1404 Main Street  
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317-487-8800  
[www.containmed.com](http://www.containmed.com)

Visit ContainMed at Booth 2200 to see our revolutionary screw caddy. Our cover-less design will retain screws in any surgical environment, provide excellent sterilization, hold screws securely, and stand them proudly for easy access. Our caddies and trays can both be delivered in 6 weeks following order.

## Corazon Inc.

**3226**

5000 McKnight Road, Suite 300  
Pittsburgh, PA 15237  
412-364-8200  
[www.corazoninc.com](http://www.corazoninc.com)

Corazon is a national leader in consulting, recruitment, and interim management solutions for the heart, vascular, and neuro specialties. Corazon brings specialized advice and progressive thinking to the full continuum of services in these areas, from strategic planning, to all aspects of program implementation and improvement, to program leader/physician search.

## Cosman Medical

**357**

76 Cambridge Street  
Burlington, MA 01803  
781-272-6561  
[www.cosmanmedical.com](http://www.cosmanmedical.com)

Cosman Medical designs radiofrequency generators and electrodes for trigeminal neuralgia, DREZ, cordotomy, spinal pain and functional stereotaxy. 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.  
[www.cosmanmedical.com](http://www.cosmanmedical.com)

## Covidien Biosurgery

**609**

15 Crosby Drive  
Bedford, MA 01730  
781-839-1700  
[www.covidien.com](http://www.covidien.com)

Covidien is a leading global healthcare products company that develops innovative medical solutions for better patient outcomes and delivers value through clinical leadership and excellence. In the United States, the BioSurgery division manufactures the DuraSeal™ sealant systems, the first and only FDA-approved dural sealants for use in cranial and spine procedures.

## Cybertech Medical

**856**

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La Verne, CA 91750  
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[www.cybertechmedical.com](http://www.cybertechmedical.com)

Cybertech pioneered abdominal compression for support of the spine with the patented 6:1 mechanical advantage pulley system. Experience the support and power of Cybertech! Introducing Cybertech Cervical Orthosis and Collar Superior spinal support, Cybertech.

## DePuy Spine

**117\***

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[www.depuysspine.com](http://www.depuysspine.com)

DePuy Spine, Inc. is the second largest spine company in the world with one of the most diverse portfolios of spinal care solutions that address key areas including cervical, aging spine, vertebral body replacement, and minimally invasive surgery and the emerging area of biologics.

## Designs For Vision, Inc.

**232**

760 Koehler Avenue  
Ronkonkoma, NY 11779  
800-345-4009  
[www.designsforvision.com](http://www.designsforvision.com)

Just See It™ with Designs for Vision's lightweight custom made Surgical Telescopes now available with Nike® frames. Our telescopes are available with 2.5x, 3.5x, and 4.5x magnifications. Custom made telescopes enhance visualization and improve posture ensuring proper ergonomics. See It Even Better™ with the L.E.D. Daylite™ providing bright, lightweight, portable illumination. The L.E.D. Daylite™ improves contrast and enhances overall visibility.

## DFine, Inc.

**3143**

3047 Orchard Parkway  
San Jose, CA 95134  
408-321-9999  
[www.dfineinc.com](http://www.dfineinc.com)

DFine Inc. is a medical device company providing treatment for vertebral compression fractures. DFine's RF Kyphoplasty procedure with the Stabilit™ Vertebral Augmentation System is the next generation kyphoplasty. It combines the benefits of cavity creation, controlled cement delivery, and potential for height restoration with ultra-high viscosity bone cement.

## DJO Incorporated

**159**

1430 Decision Street  
Vista, CA 92081-8339  
888-624-5450  
[www.djoglobal.com](http://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®, CMF™, Empi®, Saunders®, Chattanooga Group™, DJO Surgical, Cefar® Complex® and Ormed®, visit [www.DJOGlobal.com](http://www.DJOGlobal.com)



# EXHIBITORS

## Doctor's Research Group, Inc.

2501

574 Heritage Road, Suite 202  
Southbury, CT 06488  
800-371-2535  
[www.kryptoniteUSA.com](http://www.kryptoniteUSA.com)

Doctors Research Group, Inc. - "Kryptonite Bone Cement" is a porous, non-toxic, low exothermic adhesive with bone-like mechanical properties composed of naturally occurring fatty acids and calcium carbonate. The unique properties of Kryptonite make it well suited for bone void filling/cranial applications and distinguish it from PMMA and tricalcium phosphate/hydroxyapatite based products.

## Eisai Inc.

508

100 Tice Boulevard  
Woodcliff Lake, NJ 07677  
201-692-1100  
[www.eisai.com](http://www.eisai.com)

Eisai Inc. is the U.S. pharmaceutical operation of Eisai Co. Ltd., a research-based human healthcare (hbc) company that discovers, develops and markets products throughout the world. Eisai's areas of commercial focus include neurology, gastrointestinal disorders and oncology/critical care.

## Elekta Inc.

109

4775 Peachtree Industrial Boulevard  
Norcross, GA 30092  
770-300-9725  
[www.elekta.com](http://www.elekta.com)

Elekta is a human care company pioneering significant innovations and clinical solutions for treating cancer and brain disorders. The company develops sophisticated state of the art tools and treatment planning systems for radiation therapy and radiosurgery, as well as workflow enhancing software systems across the spectrum of cancer care.

## Elliquence, LLC

133

3333 Royal Avenue  
Oceanside, NY 11572  
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[www.elliquence.com](http://www.elliquence.com)

Elliquence, LLC 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. Disc-FX® represents an innovative, 4-in-1 procedure for minimally invasive discectomy. Surgi-Max® Plus and navigational Trigger-Flex® permit annulus modulation and nucleus ablation.

## Elsevier (Saunders/Mosby)

812

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Philadelphia, PA 19103  
215-239-3490  
[www.elsevierhealth.com](http://www.elsevierhealth.com)

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## Eminent Spine LLC

3109

7200 North IH 35, Building 1  
Georgetown, TX 78626  
512-868-5980  
[www.eminentspine.com](http://www.eminentspine.com)

Founded in June 2008, Eminent Spine is a privately owned company whose founders have pioneered a new era in spinal technology. Dr. Steve Courtney and David Freehill co-founded Eminent Spine with the idea of combining a spine surgeon's medical expertise with an engineers' experience of manufacturing and design. Providing cutting-edge technology to produce biomechanically sound, affordable devices that are truly Bad to the Bone!

## ev3 Inc.

150

9775 Toledo Way  
Irvine, CA 92618  
949-837-3700  
[www.ev3.net](http://www.ev3.net)

ev3 Inc. is a global leader offering a comprehensive portfolio of treatment options, including the primary interventional technologies used today - plaque excision systems, PTA balloons, stents, embolic protection, thrombectomy, embolization coils, liquid embolics, occlusion balloons and procedural support.

## Exactech, Inc.

142

2320 North West 66th Court  
Gainesville, FL 32653  
352-377-1140  
[www.exac.com](http://www.exac.com)

Based in Gainesville, Florida, Exactech develops and markets orthopaedic implant devices, related surgical instruments and biologic materials and services to hospitals and physicians. Exactech's orthopaedic products are used in the restoration of bones and joints that have deteriorated as a result of injury or diseases such as arthritis.

## FHC, Inc.

413

1201 Main Street  
Bowdoin, ME 04287  
207-666-5651  
[www.fb-co.com](http://www.fb-co.com)

microTargeting™ products advance cranial targeting worldwide: our STar™ Drive System precisely positions D.ZAP™ microelectrodes to provide exceptional, consistent recording signals. The patient-customized, frameless stereotactic Platform allows surgical planning anytime. The powerful, new Guideline 4000 LP™ provides multi-channel recording and stimulation in a portable package. Comprehensive technical support is available 24/7!

## FzioMed, Inc.

2401

231 Bonetti Drive  
San Luis Obispo, CA 93401  
805-546-0610  
[www.fziomed.com](http://www.fziomed.com)

FzioMed specializes in absorbable, surgical biomaterials based on our patented polymer science. FzioMed products include Oxiplex/SP Gel, the leading adhesion barrier for spine surgery outside the U.S. with over 160,000 patients treated worldwide. The company has filed a PMA for U.S. approval of Oxiplex.

## Globus Medical

716

2560 General Armistead Avenue  
Audubon, PA 19403  
610-930-1800  
[www.globusmedical.com](http://www.globusmedical.com)

Globus Medical is the largest privately held spinal implant manufacturer in the world with a single-minded focus on advancing spinal surgery. Globus has a full portfolio of spinal fusion products, burgeoning initiatives in biomaterials development and minimally invasive approaches, and is a leader in motion sparing technology. More at: [www.globusmedical.com](http://www.globusmedical.com)

## Gore & Associates

309

1505 North Fourth Street  
Flagstaff, AZ 86004  
928-864-2344  
[www.goremedical.com](http://www.goremedical.com)

The Gore Medical Products Division has provided creative solutions to medical problems for three decades. Over 25 million Gore Medical Devices have been implanted worldwide. Products include vascular grafts, endovascular and interventional devices, surgical materials, and sutures for use in vascular, cardiac and general surgery. For more information, visit <http://www.goremedical.com>.

## Harvest Technologies Corp.

865

40 Grissom Road, Suite 100  
Plymouth, MA 02360  
508-732-7500  
[www.harvesttech.com](http://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+® procedure packs for Concentrating Platelets—both at point-of-care in only 15 minutes, and both with small volume 30mL kits now available.

## Hemedex Inc.

161, 3228

222 Third Street, Suite 0123  
Cambridge, MA 02142  
617-577-1759  
[www.hemedex.com](http://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.

## HHW Technologies, Inc.

2101

1040 Nevada Street, Suite 301  
Redlands, CA 92374  
909-798-3023  
[www.bhwtech.com](http://www.bhwtech.com)

"The Next Generation in Surgical Headlights." HHW Technologies, Inc. offers new "FREEDOM" in the O.R. "Get Unplugged and Focus" with our portable F1 H.I.D. Headlight System. F1 maintains high intensity light output comparable to 300 watt xenon plugged in light sources up to 4 ½ hour usage on one charge with exceptional light quality.

## Holmed Corporation

2403

40 Norfolk Avenue  
South Easton, MA 02375  
508-238-3351  
[www.holmed.net](http://www.holmed.net)

We develop, manufacture, and provide general and specialized hand instrumentation. Our specialties include curettes and rod cutting devices, torque limiting and measure products, as well as a line of posterior spine MIS products. Newest featured product is our first "Disposable Torque Limit" device.

## HRA Research

913

400 Lanidex Plaza  
Parsippany, NJ 07054  
973-240-1200  
[www.braresearch.com](http://www.braresearch.com)

Our team of experienced interviewers will be distributing carefully developed questionnaires. We'll be gathering the answers to vital marketing and clinical questions - answers that can affect the introduction of new products or the continuation of existing healthcare products and services.

## IMRIS

825

100-1370 Sony Place  
Winnipeg, MB R3T 1N5 Canada  
204-480-7070  
[www.imris.com](http://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. The Company's systems serve the neurosurgical, cardiovascular and neurovascular markets.

## Inion Inc.

146

2800 Glades Circle, Suite 138  
Weston, FL 33327  
954-659-9224  
[www.inion.com](http://www.inion.com)

Inion is a surgical implants 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 orthopaedics.

## Innovasis

2202

614 East 3900 South  
Salt Lake City, UT 84107-1526  
801-261-2236  
[www.innovasis.com](http://www.innovasis.com)

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.

# EXHIBITORS

## **Integra**

**809\***

311 Enterprise Drive  
Plainsboro, NJ 08536  
609-275-0500  
[www.integra-ls.com](http://www.integra-ls.com)

Integra markets a comprehensive portfolio of cranial and spinal neurosurgical implants and devices that are used in the OR and ICU. The portfolio includes well-known brands such as DuraGen, Camino, CUSA, MAYFIELD, Radionics, Ruggles-Redmond, XKnife as well as a complete offering of brain mapping electrodes, hydrocephalus shunts, external ventricular drainage systems, and spinal fusion products.

## **InTouch Health**

**2201**

90 Castilian Drive # 100  
Goleta, CA 93117  
805-562-8686  
[www.intouchhealth.com](http://www.intouchhealth.com)

InTouch Health's Remote Presence Robotic Systems enable physicians to more easily and frequently consult and round on hospital-based patients thereby improving hospital throughput, physician efficiency and quality of care. With RP-7<sup>®</sup>, the Remote Presence Robot, physicians are available on demand across multiple areas of high acuity (ICU, ER, patient wards).

## **Investment Rarities Inc.**

**148**

7850 Metro Parkway, Suite 213  
Bloomington, MN 55425  
952-851-8821  
[www.investmentrarities.com](http://www.investmentrarities.com)

Investment Rarities deals in gold, silver and platinum. Over the past 36 years we have sold and delivered 2 ½ billion in coins and bars into the hands of our clients. We advertise on the FOX Network and CNBC. The company has an A rating with the Better Business Bureau.

## **Invivo**

**154**

12501 Research Parkway  
Orlando, FL 32826  
800-524-1476  
[www.invivocorp.com](http://www.invivocorp.com)

Invivo is presenting a full advanced neuro package for fMRI. Invivo offers ESys fMRI for paradigm delivery and DynaSuite Neuro for fMRI and DTI processing. DynaSuite Neuro can export fMRI activation and DTI fiber results to all major surgical planning systems. For more information, visit [www.invivocorp.com](http://www.invivocorp.com) or 800-331-3220.

## **Invuity, Inc.**

**2402**

39 Stillman Street  
San Francisco, CA 94107  
866-711-7768  
[www.invuity.com](http://www.invuity.com)

Invuity develops breakthrough technologies utilizing optical structures to deliver light uniformly and efficiently to even the smallest surgical fields. This proprietary technology is integrated into conventional surgical tools and retractors, providing unparalleled visualization. Invuity is focused on addressing the growing need for improved visualization during less invasive procedures.

## **IZI Medical Products**

**258**

5 Easter Court, Suite J  
Owings Mills, MD 21117  
800-231-1499  
[www.izimed.com](http://www.izimed.com)

IZI Medical Products develops, manufactures, and sells accessories for Image Guided Surgery.

## **Jeil Medical Corporation**

**3208**

#702 Kolon Science Valley 2nd 811, Guro-Dong, Guro-Gu  
Seoul, 152-050 Korea  
+82-2-850-3500  
[www.jeilmed.co.kr](http://www.jeilmed.co.kr)

Jeil Medical Corporation produces plating systems for neurosurgery, oral maxillofacial surgery, bone fixation screws, and orthodontic screws and plates.

## **Journal of Neurosurgery**

**962**

1224 Jefferson Park Avenue, Suite 450  
Charlottesville, VA 22903  
434-924-5503  
[www.thejns.org](http://www.thejns.org)

Under the aegis of the AANS, the JNS Publishing Group publishes four journals: *Journal of Neurosurgery (JNS)*, *JNS: Pediatrics*, *JNS: Spine*, and topic-based online journal *Neurosurgical Focus*. Since 1944, JNS has been widely recognized for its authoritative and cutting-edge content. Fully-edited, final articles for *JNS* are published online weekly, within 30 days acceptance.

## **K2M, Inc.**

**147**

751 Miller Drive SE, Suite F1  
Leesburg, VA 20175  
703-777-3155  
[www.k2m.com](http://www.k2m.com)

K2M, Inc. is an innovative spinal device company that develops simplified solutions for the treatment of complex spinal pathologies and procedures. K2M's complete portfolio of next generation products includes: spinal stabilization systems, minimally invasive systems, and other advancing technologies for the treatment of deformity, degenerative, trauma, and tumor spinal patients.

## **Kaiser Permanente 3202**

393 East Walnut Street  
Pasadena, CA 91188  
800-541-7946  
<http://physiciancareers.kp.org/scal>

With the Permanente Medical Groups, you'll find recognition, stability, opportunity, and independence. We can also afford you a high quality of life and a work schedule that will allow you to spend time with family and friends and to truly enjoy all that your region has to offer.



# EXHIBITORS

## **Karl Storz Endoscopy-America, Inc.**

**610**

2151 E. Grand Avenue  
El Segundo, CA 90245  
424-218-8100  
[www.karlstorz.com](http://www.karlstorz.com)

KARL STORZ Endoscopy-America, Inc., is 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.

## **Kilgore International Inc.**

**263**

36 West Pearl Street  
Coldwater, MI 49036  
517-279-9000  
[www.kilgoreinternational.com](http://www.kilgoreinternational.com)

Kilgore International specializes in anatomical models for patient and student education. We offer plastic skulls and spine models for case acceptance.

## **Kinamed, Inc.**

**556**

820 Flynn Road  
Camarillo, CA 93012  
805-384-2748  
[www.kinamed.com](http://www.kinamed.com)

Kinamed manufactures and sells the NeuroPro® Rigid Fixation System designed specifically for neurosurgical skull base and cranial applications. The system includes many unique tools for the neurosurgeon such as the Temporalis Muscle Suspension (TMS) Plate with suture eyelets for secure repositioning of the temporalis muscle, a Chiari Malformation plate and the single-use Quick Tap Power Driver

## **Kirwan Surgical Products, LLC**

**409**

180 Enterprise Drive  
Marshfield, MA 02050  
781-834-9500  
[www.ksp.com](http://www.ksp.com)

Kirwan Surgical Products, LLC manufactures superior quality electro-surgical bipolar and monopolar instruments and accessories for demanding microsurgical specialties. Products include: AURA Elite™ Non-Stick Bipolar Forceps, New Liberty Disposable Non-Stick Bipolar Forceps, the AURA 70-watt Irrigating Bipolar Generator, and Reusable and Disposable Cords. Kirwan Surgical custom manufactures forceps and offers repair/refurbishment services.

## **KLS - MARTIN, L.P.**

**247**

P.O. Box 16369  
Jacksonville, FL 32245  
904-641-7746  
[www.klsmartin.com](http://www.klsmartin.com)

KLS-Martin is dedicated to providing innovative medical devices for neurosurgery. We offer a wide variety of surgical instruments, titanium plates/mesh, custom cranial implants, and revolutionary SonicWeld Rx system for resorbable fixation. Currently based in Jacksonville, Florida, we have highly qualified representatives covering the needs of surgeons throughout North America.

## **Koros USA, Inc.**

**136**

610 Flinn Avenue  
Moorpark, CA 93021  
805-529-0825  
[www.korosusa.com](http://www.korosusa.com)

Koros USA manufactures and distributes state of the art technology including the SuperSlide, BlackBelt, ALIF Polaris Retractors, Osteopunch, Ejector Punch Plus & anterior Rongeurs. These devices provide ergonomically controlled movement & stability. Koros specializes in Cervical, spine, micro discectomy, lumbar & anterior fusion instruments.

## **Lanx LLC**

**129**

310 Interlocken Parkway, Suite 120  
Broomfield, CO 80021  
303-443-7500  
[www.lanx.com](http://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**

**959**

4030 West Braker Lane, Suite 360  
Austin, TX 78759  
512-344-3300  
[www.ldrspine.com](http://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!

## **Leica Microsystems**

**817**

2345 Waukegan Road  
Bannockburn, IL 60015  
845-634-0048  
[www.leica-microsystems.com](http://www.leica-microsystems.com)

Leica Microsystems introduces Med X Mobile®, which enables the surgeon to transfer HD video of surgical cases wirelessly from a surgical microscope to the Apple® iPhone, iPod, or iPad in a matter of seconds. Also featured will be the FL800, neurovascular fluorescence.

## **Life Instrument Corporation**

**654**

91 French Avenue  
Braintree, MA 02184  
781-849-0109  
[www.lifeinstruments.com](http://www.lifeinstruments.com)

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.

# EXHIBITORS

## **Life Spine, Inc.**

**930**

2401 W. Hassell Road, Suite 1535  
Hoffman Estates, IL 60169  
847-884-6117  
[www.lifespine.com](http://www.lifespine.com)

Life Spine is a full line spine company focused on providing innovative solutions to address spinal pathology from the occiput to the sacrum. Our comprehensive product portfolio that focuses on fusion, MIS, and motion preservation is driven by patient and surgeon needs.

## **LifeNet Health**

**455**

1864 Concert Drive  
Virginia Beach, VA 23453  
800-847-7831  
[www.lifenethealth.org](http://www.lifenethealth.org)

LifeNet Health Bio-Implants Division is a leader in the engineering and processing of dental, cardiovascular, spinal and orthopedic bio-implants and distributes more than 300,000 bio-implants every year to restore health to patients around the world.

## **LightScalpel/LuxarCare, LLC**

**921**

16932 Wood-Red Road NE, Suite A109  
Woodinville, WA 98072  
866-589-2722  
[www.luxarcare.com](http://www.luxarcare.com)

Introducing LightScalpel: affordable re-usable flexible waveguide-fibers, sterilizable hand-pieces and laser tips for Luxar CO2 surgical lasers from LuxarCare- Lumenis's exclusive service and accessories provider.

## **Lippincott Williams and Wilkins - WKH**

**661\***

Two Commerce Square, 2001 Market Street  
Philadelphia, PA 19103  
215-521-8300  
[www.lww.com](http://www.lww.com)

Lippincott Williams & Wilkins, a Wolters Kluwer Health company, is proud to publish *NEUROSURGERY*®, Official Journal of the Congress of Neurological Surgeons. Please visit booth #661 to browse *NEUROSURGERY*® and our extensive collection of medical journals, books, and electronic media for health professionals and students.

## **Lumenis**

**3204**

5302 Betsy Ross Drive  
Santa Clara, CA 95054  
408-764-3000  
[www.lumenis.com](http://www.lumenis.com)

Lumenis is the world's largest medical laser company offering an extensive line of laser systems, delivery devices and consumables for use in neurosurgery. Our advanced CO2 laser technology provides the ultimate precision, flexibility and control required in neurosurgery. Introducing the new FiberLase CO2 Fiber delivery system.

## **Market Access Partners**

**2300**

3236 Meadowview Road  
Evergreen, CO 80439  
303-526-1900  
[www.marketaccesspartners.com](http://www.marketaccesspartners.com)

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.

## **Marketech, Inc.**

**262**

19 Powder Hill Way  
Westboro, MA 01581  
508-836-2633  
[www.marketech360.com](http://www.marketech360.com)

Marketech conducts market research to assist exhibiting organizations improve their performance and understand their marketplace better to make better decisions.

## **MASEP Infini**

**335\***

17870 Castleton Street, Suite 395  
City of Industry, CA 91748  
626-965-3200  
[www.masepinfini.com](http://www.masepinfini.com)

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.

## **Mazor Surgical Technologies**

**3236**

4361 Shackelford Road  
Norcross, GA 30093  
770-564-5790  
[www.mazorst.com](http://www.mazorst.com)

Mazor develops and markets Spine Assist Surgical Guidance System for spine surgery in use in Europe and the U.S. with great safety and accuracy.

## **MedCure Surgical Training Center**

**2404**

2455 W. Horizon Ridge Parkway  
Henderson, NV 89052  
702-750-2281  
[www.medcurestc.org](http://www.medcurestc.org)

MedCure is a whole-body donation company providing cadaveric specimens for medical research and education. MedCure Surgical Training Center (MSTC), located near Las Vegas, provides hands on physician training and continuing education including new surgical procedures, techniques and devices.

# EXHIBITORS

## MediPlant Funding

925

60 B West Terra Cotta Avenue, Suite 253  
Crystal Lake, IL 60014  
815-261-9180  
[www.mediplantfunding.com](http://www.mediplantfunding.com)

MediPlant Funding is a national commercial finance company specializing in healthcare. We provide third party billing for implants, insurance A/R collections for physicians, and A/R financing for manufacturers.

## MedNet Technologies, Inc.

761

1975 Linden Boulevard, Suite 407  
Elmont, NY 11003-4004  
516-285-2200  
[www.mednet-tech.com](http://www.mednet-tech.com)

MedNet Technologies designs, hosts and manages websites for medical practices, hospitals and other healthcare organizations. Clients range in size from small medical offices to teaching hospitals to medical societies. Developing and optimizing your web presence on the Internet is our goal.

## Medtech

963

Parc Euromédecine, 1006, rue de la Croix Verte, Bât8  
Montpellier, 34090 France  
+33-467-10-77-40  
[www.medtech.fr](http://www.medtech.fr)

Medtech designs and markets innovative robotic-assisted solutions for surgery. The system ROSA™ is a new, multi-purpose platform offering valuable assistance in localizing patient anatomy and performing complex surgical interventions. ROSA™ embodies the new generation of surgical assistance technology aiming at enabling new, less-invasive surgical techniques.

## Medtronic

317\*

2600 Sofamor Danek Drive  
Memphis, TN 38132  
800-876-3133  
[www.medtronic.com](http://www.medtronic.com)

At Medtronic, [www.medtronic.com](http://www.medtronic.com), 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.

## Medweb

2400

667 Folsom Street  
San Francisco, CA 94107  
415-541-9980  
[www.medweb.com](http://www.medweb.com)

Medweb, a technology leader in the delivery of Web-enabled, secure Teleradiology and PACS solutions achieved via DICOM and HL7 standards-based gateways comprised of a scalable suite of hardware option/software applications for acquiring/reviewing images. Medweb demonstrates Meaningful Use via interoperability with EHR providers across modalities. Practice Management capabilities streamline clinician workflow. Our diagnostic abilities are currently employed by both private and public sectors worldwide.

## MicroVention, Inc.

608

1311 Valencia Avenue  
Tustin, CA 92780  
800-990-8368  
[www.microvention.com](http://www.microvention.com)

MicroVention develops devices for the treatment of vascular diseases in small vessels to include, the MicroPlex® Coil Systems, the HydroCoil® Embolic Systems, the V-Trak® Delivery System with the V-Grip™ Detachment Controller, and a full line of access products to include the new Traxcess™ hydrophilic coated guidewires, the Chaperon™ Guiding Catheter System and the Headway Microcatheter™.

## Micrus Endovascular Corporation

456

821 Fox Lane  
San Jose, CA 95131  
408-433-1400  
[www.micruscorp.com](http://www.micruscorp.com)

Micrus develops implantable and disposable medical devices used to treat cerebral vascular diseases. Micrus' product lines include Micrusphere and Presido framing coils, Cashmere complex coil, DeltaPaq, DeltaPush, and UltipaQ filling coils, Courier microcatheter, Ascent balloon catheter, Pharos intracranial stent (not for sale in USA) and the EnPower remote detachment system.

## minSURG Corporation

356

611 Druid Road East  
Clearwater, FL 33756  
727-475-4692  
[www.minSURG.com](http://www.minSURG.com)

minSURG Corporation proudly displays the TruFUSE facet fusion procedure which can be performed minimally invasive to provide for stability and promoting facet joint fusion.

## Misonix, Inc.

2301

1938 New Highway  
Farmingdale, NY 11735  
800-694-9612  
[www.misonix.com](http://www.misonix.com)

The Misonix SonaStar is an intuitive, easy to use advanced ultrasonic system for precise soft tissue aspiration and powerful removal of osseous structures. Misonix designs, develops, manufactures and markets therapeutic ultrasonic medical devices for wound debridement, cosmetic surgery, neurosurgery, laparoscopic surgery and other medical and surgical applications.

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# EXHIBITORS

## Mizuho America, Inc.

708

133 Brimbal Avenue  
Beverly, MA 01915  
800-699-2547  
[www.mizuho.com](http://www.mizuho.com)

Mizuho America, Inc. is a cerebrovascular focused instrumentation company whose main products include Sugita® T2 Aneurysm Clips; Radiolucent & Metal Head Frames; Micro-Instruments; Lawton Neurovascular Bypass Set; Kelly Endonasal Instrument Set; 7200B Neurosurgical Operating Table; Feather® Precision Cutting Tools; Surgical Dopplers; and Day-Bailes Atraumatic & Standard Suction Tubes.

## Möller-Wedel GmbH

845

Rosengarten 10  
Wedel, 22880 Germany  
+49-4103-709-333  
[www.moeller-wedel.com](http://www.moeller-wedel.com)

Founded 1864 as an optical company in Wedel (near Hamburg, Germany), MÖLLER-WEDEL is today a worldwide renowned manufacturer of surgical microscopes. The company is certified according to ISO13485 and ISO14001. MÖLLER-WEDEL offers innovative products made in Germany. A wide range of microscopes and accessories allow tailor-made configurations of high-end quality.

## Nadia International, Inc.

915

4301 West William Cannon Drive, Suite 150-B, #295  
Austin, TX 78749  
512-301-3888  
[www.ronadro.com](http://www.ronadro.com)

Educational/surgical bronze sculptures specifically created for the Neurosurgeon. These museum quality limited editions are created by the world famous sculptor, Ronadró.

## NDI

765

103 Randall Drive  
Waterloo, ON N2V 1C5  
Canada  
519-884-5142  
[www.ndigital.com](http://www.ndigital.com)

Established almost 30 years ago, NDI is the premier manufacturer of core optical and electromagnetic tracking measurement technology inside the world's leading Computer-Assisted Therapy systems. NDI is a global leader in providing sterile disposable marker spheres for use in Image-Guided Surgery.

## New World Rarities, Ltd.

122

670 Old Willets Path  
Hauppauge, NY 11788  
800-431-1018  
[www.newworldrarities.com](http://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.

941

1360 Union Hill Road, Suite 3C  
Alpharetta, GA 30004  
770-664-1000  
[www.nexstim.com](http://www.nexstim.com)

Navigated Brain Stimulation (NBS) is an accurate, non-invasive system for pre-operative planning. Using transcranial magnetic stimulation (TMS) and guided by standard MR-image data. NBS is the first direct technique for functional mapping of the motor cortex, which may help in tailoring neurosurgical treatment – potentially saving time in the OR and improving patient outcomes.

## NextGen Healthcare

927

795 Horsham Road  
Horsham, PA 19044  
215-657-7010  
[www.nextgen.com](http://www.nextgen.com)

NextGen Healthcare is a leading provider of practice management and electronic health records software for all medical specialties. Ideal for the solo practitioner or the multi-provider enterprise, our award-winning, CCHIT-certified solutions take the lead in improving the quality of patient care and increasing operational efficiencies – while delivering a healthy return on investment.

## NICO Corporation

956

9190 Priority Way Drive West, Suite 203  
Indianapolis, IN 46240  
317-660-7118  
[www.niconeuro.com](http://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

3220

209 10th Avenue South, Suite 232  
Nashville, TN 37203  
615-720-8800  
[www.noc2healthcare.com](http://www.noc2healthcare.com)

NOC2 is a network of healthcare professionals and providers focused on developing, influencing, measuring and supporting enhancements in patient care while maintaining cost efficiency in neurosurgery and orthopedic surgery. NOC2 is a scientifically rigorous, multi-company sponsored, collaborative venue in which to develop outcomes that members create and endorse.

## NovaBone Products, LLC

764

1551 Atlantic Boulevard #105  
Jacksonville, FL 32207  
904-807-0140  
[www.novabone.com](http://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.

# EXHIBITORS

## **Nutech Medical**

**934**

2641 Rocky Ridge Lane  
Birmingham, AL 35216  
205-290-2158  
[www.nutechmedical.com](http://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.**

**353**

One Kendall Square, Suite B1301  
Cambridge, MA 02139  
617-551-8444  
[www.omni-guide.com](http://www.omni-guide.com)

OmniGuide's BeamPath® flexible fiber based CO2 laser system is a clinically targeted optical scalpel optimized for Neurosurgery. The BeamPath System is a precision microsurgical instrument that is ideal for tissue cutting, delicate dissection and gentle peeling near critical structures.

## **OneMedNet Corporation**

**2103**

1037 NE 65th Street, Suite 171  
Seattle, WA 98115  
800-918-7189  
[www.goodbyeCDs.com](http://www.goodbyeCDs.com)

BEAM by OneMedNet is a medical imaging transfer solution designed to eliminate the delays, inefficiencies and incompatibilities associated with CDs. Ideal for trauma applications, BEAM securely delivers full resolution studies directly to your institution. Trust in BEAM to improve the speed and quality of critical decisions. Contact us today, and say "goodbye" to CDs.

## **Orthofix, Inc.**

**839**

3451 Plano Parkway  
Lewisville, TX 75056  
800-527-0404  
[www.orthofix.com](http://www.orthofix.com)

Orthofix's Orthopedics, Spine and Sports Medicine divisions offer innovative treatment options for adult and pediatric deformity correction, internal and external fracture fixation, biologics, bone growth stimulation, and protective and post-operative bracing.

## **Osprey Biomedical Corp.**

**158**

3701 Highland Avenue, Suite 203  
Manhattan Beach, CA 90266  
310-796-5680  
[www.ospreybiomedical.com](http://www.ospreybiomedical.com)

Osprey is an orthobiologics company specializing in developing novel Allograft Bio-Implants with the goal of improving fusions. Try our new anatomically precise and uniquely surfaced Bio-Implants for excellent fusions. Current Product Offering: ALIE, Cervical Cortical Cancellous, DBM Putty, PLIF, TLIF & Facet Bio-Implant Solutions.

## **Osseon™ Therapeutics, Inc.**

**3105**

2330 Circadian Way  
Santa Rosa, CA 95407  
503-475-3333  
[www.osseon.com](http://www.osseon.com)

Osseon™ Therapeutics develops and markets minimally invasive treatments for degenerative bone and joint disease. Our technology provides safe and effective solutions while offering significant advantages in efficiency and cost. With over 1,000 Osseoplasties™ performed worldwide, our goal is to improve the quality of life for patients and provide physicians with innovative treatment options.

## **OsteoMed**

**162**

3885 Arapaho Road  
Addison, TX 75001  
972-677-4600  
[www.osteomed.com](http://www.osteomed.com)

OsteoMed is a global innovative leader in the development and manufacturing of specialty medical and surgical implants for the neurosurgical and ENT market. Products include rigid fixation, devices for instrument-less cranial flap replacement, dynamic surgical mesh and biological bone substitutes.

## **OsteoSymbionics LLC**

**945**

1768 East 25th Street  
Cleveland, OH 44114  
216-881-8502  
[www.osteosymbionics.com](http://www.osteosymbionics.com)

OsteoSymbionics creates the only CLEAR cranial implant for patient-specific reconstruction. A clear implant allows the surgeon to visualize the dura before closure. The goal of our medical engineers and artists is to provide an individualized, optimal-fit reconstruction. Visit us to see how our process and product can improve your results.

## **Osteotech, Inc.**

**762**

51 James Way  
Eatontown, NJ 07724  
732-542-2800  
[www.osteotech.com](http://www.osteotech.com)

Osteotech is a global leader and innovator in OsteoBiologics for musculoskeletal surgery. Focusing on spinal, trauma, and total joint revision procedures, Osteotech provides a full line of innovative regeneration technologies such as Grafton® DBM, Xpanse® Bone Inserts, Graftech® Bio-Implants, FacetLinX™ Fusion Technology and MagniFuse™ Bone Grafts.

## **Penumbra, Inc.**

**401**

1351 Harbor Bay Parkway  
Alameda, CA 94502  
510-748-3228  
[www.penumbrainc.com](http://www.penumbrainc.com)

Penumbra, Inc. is a medical device company founded in 2004. Its headquarters are in Alameda, CA. Penumbra develops and manufactures innovative and minimally invasive medical devices for patients who are suffering from cerebrovascular disease.

# EXHIBITORS

## Performance Grafts, LLC

128

2106 West Pioneer Parkway  
Arlington, TX 76013  
817-226-9900  
[www.performancegrafts.com](http://www.performancegrafts.com)

Performance Grafts' bone tissue and allograft are a family of bone products scientifically engineered, processed, and sterilized to meet the varying needs of today's neurosurgeons.

## PeriOptix, Inc.

957

1001 Avenida Pico, #C620  
San Clemente, CA 92673  
949-366-3333  
[www.perioptix.com](http://www.perioptix.com)

PeriOptix introduces the lightest through the lens (TTL) design on the market. Weighing in at only 36 grams, the elegant and streamlined PeriOptix TTL loupe offers a customized angle of declination and working distance. PeriOptix provides magnification and LED light illumination designed to fit your budget and practice needs.

## Physician Owned Surgery Centers

156

2619 F Street  
Bakersfield, CA 93301  
281-558-5240

Physician Owned Surgery Center (POSC) develops and manages multispecialty, turnkey, physician-owned, physician-operated, and profitable ambulatory surgery centers.

## Physician's RX Network

165

21030 Redwood Road  
Castro Valley, CA 94546  
877-800-7796  
[www.prxnetwork.com](http://www.prxnetwork.com)

We specialize in implementation of point of care pharmaceutical dispensing. Our solution captures additional revenue and provides patients with pharmacological therapy in one visit. All of our products are bar-coded delivering accuracy and custom packaged in the regiment the physician prescribes.

## Pikeville Medical Center

163

911 Bypass Road  
Pikeville, KY 41501  
606-218-3500  
[www.pikevillehospital.org](http://www.pikevillehospital.org)

Pikeville Medical Center is a 261 bed facility that has proudly served the area for 85 years, and was named the 2009-2010 Hospital of the Year by the American Alliance of Healthcare Providers. PMC is dedicated to providing quality regional healthcare in a Christian environment.

## Pioneer Surgical Technology

118

375 River Park Circle  
Marquette, MI 49855  
906-226-9909  
[www.pioneersurgical.com](http://www.pioneersurgical.com)

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

651

1500 Park Road  
Chanhasen, MN 55317  
952-470-0866  
[www.pmtcorp.com](http://www.pmtcorp.com)

PMT® Corporation is dedicated to the research and development of medical devices, instruments and specialty products used in the medical field including Neurosurgery and Orthopedic medicine. We develop, manufacture and distribute the highest quality Cervical Traction Halo Systems, Cervical Orthosis Collars, Lumbo Sacral Orthosis, Epilepsy Electrodes and Surgical

## Porex Surgical, Inc.

709

15 Dart Road  
Newnan, GA 30265  
800-521-7321  
[www.porexurgical.com](http://www.porexurgical.com)

Porex Surgical Inc., is pleased to feature MEDPOR® Surgical Implants for reconstruction following neurosurgical procedures. Customized Implants are also available for large or irregular defects.

## Pro Med Instruments, Inc.

228

4529 SE 16th Place, Suite 101  
Cape Coral, FL 33904  
239-369-2310  
[www.headrest.de](http://www.headrest.de)

Pro Med Instruments designs and manufactures the DORO® line - the largest selection of cranial stabilization and brain retractor systems and accessories for neurosurgery. Navigation-guided accessories, FDA-cleared MRI SAFE radiolucent skull clamp with precise navigation control, Autoclavable Teflon-Coated Headrest Systems and the ADFT NON-STICK Bipolar Forceps - with revolutionary Adjustable Dissecting Force.

## ProNerve, LLC

2704

350 Interlocken Boulevard, Suite 360  
Broomfield, CO 80021  
303-339-1499  
[www.pronerve.com](http://www.pronerve.com)

ProNerve, the Clinical leader in Intraoperative Monitoring. ProNerve deploys a team based approach to monitoring the nervous system that was developed at the Barrow Neurological Institute. This approach maximizes the protection of the nervous system by deploying highly trained professionals in a redundant fashion ensuring vigilant monitoring of every case.



## **RGP, Inc.** 2305

1 Shannon Court, Suite 103  
Bristol, RI 02809  
800-522-9695  
[www.rgpergo.com](http://www.rgpergo.com)

The Swedish Seating System is an ergonomically designed operator 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 ones' movement. [www.rgpergo.com](http://www.rgpergo.com)

## **Rhausler, Inc.** 153

837 Industrial Road, Unit E  
San Carlos, CA 94070  
650-631-4515  
[www.rhausler.com](http://www.rhausler.com)

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.

## **Rose Micro Solutions LLC** 453

4105 Seneca Street  
West Seneca, NY 14224  
716-608-0009  
[www.rosemicrosolutions.com](http://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 business after our mother "Rose". Call us at (716) 608-0009 or visit us online at [www.rosemicrosolutions.com](http://www.rosemicrosolutions.com).

## **RosmanSearch, Inc.** 2601

30799 Pinetree Road #250  
Pepper Pike, OH 44124  
216-256-9020  
[www.rosmansearch.com](http://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!

## **Salient Surgical Technologies, Inc.** 452

180 International Drive  
Portsmouth, NH 03801  
603-742-1515  
[www.salientsurgical.com](http://www.salientsurgical.com)

Salient Surgical Technologies develops advanced energy devices for use in surgical procedures. Salient's AQUAMANTYS® System achieves rapid hemostasis and improves patient outcomes using proprietary TRANSCOLLATION technology to transform collagen based structures at the surgical site. To date, TRANSCOLLATION technology has been used in over 400,000 surgical procedures.

## **Sawbones** 124

10221 SW 188th Street  
Vashon, WA 98070  
206-463-5551  
[www.sawbones.com](http://www.sawbones.com)

Worldwide leaders in orthopedic and medical models.

## **Scanlan International, Inc.** 328

One Scanlan Plaza  
St. Paul, MN 55107  
651-298-0997  
[www.scanlaninternational.com](http://www.scanlaninternational.com)

Highest quality surgical products designed and manufactured by the Scanlan family since 1921. Stainless Steel and Titanium instrumentation, Loftus™ ACDF Distractor, Super Cut™ Microsurgical Knives, Abdulrauf® ECIC By-Pass instruments, Dura Closure Set, single-use Biopsy Needles, NDI Passive Spheres™, ACCU-SCAN™ Fiducial Markers, Sundt™ Graduated Suction System and Super Cut™ Scissors.

## **SeaSpine** 929

2302 La Mirada Drive  
Vista, CA 92081  
760-727-8399  
[www.seaspine.com](http://www.seaspine.com)

Based in Southern California, SeaSpine is focused on providing high quality, competitive products for the spine fusion market and developing next generation non-fusion products. From Sierra™ to Malibu™, SeaSpine offers a full line of fusion and MIS products for the entire spinal column, from occiput to sacrum.

## **Shands at the University of Florida** 3200

1600 SW Archer Road  
Gainesville, FL 32608  
352-265-0111  
[www.shands.org](http://www.shands.org)

Shands at the University of Florida is a private, not-for-profit academic health center specializing in highly complex neurosurgery cases. The affiliation of Shands at UF with the UF Health Science Center allows patients to benefit from the latest medical knowledge and technology as it evolves through research.

## **SheerVision® , Inc.** 2600

4030 Palos Verdes Drive North, Suite 104  
Rolling Hills Estates, CA 90274  
877-678-4274  
[www.sheervision.com](http://www.sheervision.com)

SheerVision manufactures surgical loupes, portable HD cameras, and portable headlights that enhance vision - through exceptional visual acuity and powerful illumination. SheerVision's SureFit TTL & Signature Flip-Up Loupes (2.5x-5.0x) offer exceptional visual quality. Infinity Ultra2 Wireless Headlights project 86,400+ Lux / 8,000+ foot candles of light, which outshine many fiber-optic lights.

# EXHIBITORS

## Siemens Healthcare

408

51 Valley Stream Parkway, Mail Stop H 33  
Malvern, PA 19355  
888-826-9702  
[www.usa.siemens.com/surgery](http://www.usa.siemens.com/surgery)

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 surgeons provide optimized patient care by offering state-of-the-art technology.

## Sophysa

923

303 South Main Street  
Crown Point, IN 46307  
219-663-7711  
[www.sophysa.com](http://www.sophysa.com)

Sophysa is a global leader in Hydrocephalus care, offering the world's most comprehensive CSF management surgical solution set, and expanding the reach of the neurosurgical community in more than 70 countries worldwide.

## Spinal Elements, Inc.

937

2744 Loker Avenue West, Suite 100  
Carlsbad, CA 92010  
760-607-1821  
[www.spinalelements.com](http://www.spinalelements.com)

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.

3216

201 San Antonio Circle, Suite 115  
Mountain View, CA 94040  
650-947-3472  
[www.spinalmotion.com](http://www.spinalmotion.com)

SpinalMotion is focused exclusively on spinal disc arthroplasty, developing innovative technology designed to further enhance options for patients suffering from degenerative disc disease. SpinalMotion was founded in June 2004. The company is located in Mountain View, California. To learn more, visit our website at [www.spinalmotion.com](http://www.spinalmotion.com).

## Spine View, Inc.

2502

48810 Kato Road, Suite 100E  
Fremont, CA 94538  
510-623-1931  
[www.spineview.com](http://www.spineview.com)

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

751

Three Enterprise Drive, Suite 210  
Shelton, CT 06484  
203-944-9494  
[www.spinewave.com](http://www.spinewave.com)

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® FX Percutaneous Vertebral Augmentation, StaXx® XD Expandable Device, CapSure® PS2 Spine System, and several additional products in development.  
[www.spinewave.com](http://www.spinewave.com)

## Spineology Inc.

130

7800 3rd Street North, Suite 600  
St. Paul, MN 55128  
651-256-8500  
[www.spineology.com](http://www.spineology.com)

Spineology's flagship product, OptiMesh®, is a deployable polyester fabric mesh designed to contain granular bone graft. By combining granular graft with a porous conformable implant, the OptiMesh system provides a minimally invasive solution for deploying osteoinductive and osteoconductive graft materials into intimate contact with a prepared grafting site.

## SpineSelect, LLC

3210

408 Council Circle/PO Box 3660  
Tupelo, MS 38801  
215-370-1276  
[www.spineselect.com](http://www.spineselect.com)

SpineSelect® LLC will display product lines designed for same-day discharge TLIF surgery. The Marquise® MIS Channel System enhances instrument access and visibility while minimizing the required operative incision. The Turbo MIST Interbody Device System maximizes anterior stability and safety of interbody implant insertion. SpineSelect: TLIF today. home tonight.

## St. Jude Medical

3224\*

6901 Preston Road  
Plano, TX 75024  
972-309-8000  
[www.sjmneuropro.com](http://www.sjmneuropro.com)

St. Jude Medical develops medical technology and services that focus on putting more control into the hands of those who treat cardiac, neurological and chronic pain patients worldwide. The company is dedicated to advancing the practice of medicine by reducing risk wherever possible and contributing to successful outcomes for every patient.

\* Denotes 2010 Corporate Supporters

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## Stryker

728\*

4100 East Milham Avenue  
Kalamazoo, MI 49001  
800-253-3210  
[www.stryker.com](http://www.stryker.com)

Stryker Corporation, one of the world's leading medical technology companies, offers a broad-based range of products in spine and micro implant systems, orthobiologics, high speed drills, surgical navigation systems, and interventional spine products.

## Surgical Acuity

261

3225 Deming Way, Suite 190  
Middleton, WI 53562  
800-369-3698  
[www.surgicalacuity.com](http://www.surgicalacuity.com)

Surgical Acuity designs and manufactures high-performance loupes for surgeons and other medical professionals. Renowned for quality craftsmanship, our loupes deliver remarkable resolution over a deep and wide viewing field. We use lightweight optics made from only the finest grade of glass. Surgical Acuity offers the best in magnification for today's surgeons.

## SurgiTel/General Scientific Corporation

555

77 Enterprise Drive  
Ann Arbor, MI 48103  
734-996-9200  
[www.surgitel.com](http://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.

## SurgiVision, Inc.

665

5 Musick  
Irvine, CA 92618  
949-900-6833  
[www.surgivision.com](http://www.surgivision.com)

SurgiVision 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, SurgiVision's FDA cleared ClearPoint™ system is designed to enable a range of minimally invasive procedures in the brain.

## Symmetry Medical Inc.

917

3724 North SR 15  
Warsaw, IN 46582  
574-267-8700  
[www.symmetrymedical.com](http://www.symmetrymedical.com)

Accelerate your time to market with Symmetry Medical. Specializing in product development, professional services, high precision manufacturing and prototyping. With Symmetry Medical Total Solutions, every detail of product development, from idea generation through quality assurance, is handled by Symmetry saving you time and money.

## Synthes CMF

808

1301 Goshen Parkway  
West Chester, PA 19380  
610-719-6500  
[www.synthes.com](http://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 CMF also supports North American AO ASIF Continuing Education courses.

## Synthes Spine

3137\*

1302 Wrights Lane East  
West Chester, PA 19380  
610-719-5000  
[www.synthes.com](http://www.synthes.com)

Synthes Spine is a leading company that develops solutions for the treatment of degenerative instabilities, fractures, tumors, and deformities of the spine. Through a comprehensive portfolio of implants, instruments, and educational services, Synthes Spine is focused on providing products and techniques that help surgeons achieve optimal surgical outcomes for patients.

## TeDan Surgical Innovations

153

11333 Chimney Rock Road, Suite 180  
Houston, TX 77035  
713-723-6900  
[www.tedansurgical.com](http://www.tedansurgical.com)

TeDan Surgical Innovations (TSI) offers surgical products and cervical and lumbar retractor systems such as our Phantom CST, Phantom TLT, Phantom LST, Phantom MCT, and our new Phantom MLT for minimally invasive Lumbar Fusion. These retractor systems have a patented ergonomically designed blade locking mechanism. Please visit us at [www.tedansurgical.com](http://www.tedansurgical.com).

## The Brain Aneurysm Foundation

2603

269 Hanover Street, Building 3  
Hanover, MA 02339  
781-826-5556  
[www.bafound.org](http://www.bafound.org)

The nation's ONLY nonprofit organization solely dedicated to providing critical awareness, education support and research funding to reduce the incidence of brain aneurysm ruptures.

## The NeuroMatrix Group

144

6250 Shiloh Road, Suite 110  
Alpharetta, GA 30005  
770-781-0800  
[www.neuromatrix.com](http://www.neuromatrix.com)

Established in 1993, NeuroMatrix is the Global healthcare leader in Intraoperative Neurophysiologic Monitoring. We provide innovative solutions for healthcare systems, facilities, surgeons, and ultimately patients on three continents. Through a portfolio of companies, NeuroMatrix delivers clinical services, consulting expertise, and clinical education that lead the industry. We make surgery safer.

# EXHIBITORS

## **The Reading Hospital and Medical Center** 2204

2561 Bernville Road  
Reading PA 19608  
610-898-5640  
[www.readinghospital.org](http://www.readinghospital.org)

The Reading Hospital and Medical Center is a regional referral center; ranked in the top 5% nationwide for patient safety; and the top 5% of hospitals nationally for financial accreditation. The hospital employed Spine and Brain Neurosurgery Center has been a highly respected neurosurgical practice for nearly six decades.

## **Thieme Publishers** 509

333 Seventh Avenue  
New York, NY 10001  
212-760-0888  
[www.thieme.com](http://www.thieme.com)

Thieme (pronounced tee-ma), an international scientific and medical publisher, has produced high-quality products for physicians, scientists, technologists, students, and residents for 120 years now. Major specialty areas include neurosurgery, radiology, otolaryngology, orthopedics, ophthalmology, audiology, speech and hearing, complementary medicine, and chemistry.

## **ThinkFirst National Injury Lobby Prevention Foundation**

1801 N. Mill Street, Suite F  
Naperville, IL 60563  
800-THINK56  
[www.thinkfirst.org](http://www.thinkfirst.org)

The ThinkFirst National Injury Prevention Foundation, recipient of the CNS 2009 Distinguished Service Award, is an independent 501(c)(3) corporation 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.

## **Thompson Surgical Instruments** 233

10170 East Cherrybend Road  
Traverse City, MI 49684  
231-922-0177  
[www.tbompsonsurgical.com](http://www.tbompsonsurgical.com)

Thompson Surgical is the original manufacturer of table-mounted retractors. In use for over thirty years, the Thompson Retractor is the only mechanical retractor to offer one frame for all exposure needs, multi-planed retraction, and unlimited customization. Stop by our booth so you can see our latest innovations that will provide you uncompromised exposure.

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## **Tomo Therapy Inc.** 2303

1240 Deming Way  
Madison, WI 53717  
608-824-2839  
[www.tomotherapy.com](http://www.tomotherapy.com)

TomoTherapy has developed a revolutionary radiotherapy platform that now offers three distinct solutions for cancer centers and their patients: The Hi.Art® treatment system for CT-guided helical IMRT; the new TomoHD® treatment system with TomoHelical® and TomoDirect® treatment delivery modalities; and TomoMobileT, the world's first relocatable radiotherapy solution for underserved markets.

## **TranS1, Inc.** 120

301 Government Center Drive  
Wilmington, NC 28403  
910-332-1700  
[www.trans1.com](http://www.trans1.com)

TranS1® offers an innovative, trans-sacral approach to lumbar surgery. A mini-open access and fusion system enables fusion to be performed with complete preservation of the annulus and all paraspinal soft tissue structures. AxiaLIF/AxiaLIF 2L+ technologies result in high fusion rates, low complication rates, and improved patient recovery time.

## **Transonic Systems Inc.** 2500

34 Dutch Mill Road  
Ithaca, NY 14850  
607-257-5300  
[www.transonic.com](http://www.transonic.com)

Flow Based Techniques (E.A.S.T) with Charbel Micro-Flowprobes® are Transonic Intraoperative flowmeters that provide quick, quantitative, on-the-spot assessments of flow preservation or flow augmentation during aneurysm clipping or cerebral revascularization surgeries. Timely perioperative measurements either confirm surgical success or alert the surgeon to flow deficiencies.

## **Trimedyne, Inc.** 2504

25901 Commercentre Drive  
Lake Forest, CA 92630  
949-951-3800  
[www.trimedyne.com](http://www.trimedyne.com)

Trimedyne is a USA based manufacturer of patented holmium lasers and patented spinal laser needles, designed for the minimally-invasive treatment of herniated or ruptured spinal discs, cervical, thoracic or lumbar, typically performed in 30-45 minute outpatient procedures.

## **TrueVision Systems, Inc.** 757

114 East Haley Street, Suite L  
Santa Barbara, CA 93101  
805-963-9700  
[www.truevisionsys.com](http://www.truevisionsys.com)

The leader in digital 3D visualization and guidance for microsurgery; TrueVision has developed and patented an intelligent, real-time 3D visualization platform for microsurgery. The company is developing a suite of specific 3D surgical guidance applications.



# EXHIBITORS

## **Ulrich Medical® USA, Inc.**

**257**

754 Spirit 40 Park Drive  
Chesterfield, MO 63005  
636-519-0268  
[www.ulrichmedicalusa.com](http://www.ulrichmedicalusa.com)

Ulrich Medical USA is privately held orthopedic company committed to providing surgeons the finest and most advanced surgical technology. Our products include: steam sterilizable tourniquet cuffs, the expandable cages-AddPlus, obelisc, VBR, small VBR, pedicle screw systems-cosmetic, tangoRS and hand-held surgical instruments.

## **Vertebral Technologies, Inc. (VTI)**

**2700**

5909 Baker Road, Suite 550  
Minnetonka, MN 55345  
952-912-5400  
[www.vti-spine.com](http://www.vti-spine.com)

Vertebral Technologies, Inc. ("VTI") is a spinal device company that develops, manufactures and markets the InterFuse® Interbody Fusion System. The InterFuse® Interbody Fusion System enables surgeons to implant a larger size device in patients while allowing for a less invasive surgical approach.

## **Visionsense**

**2205**

40 Ramland Road  
Orangeburg, NY 10962  
845-680-0233  
[www.visionsense.com](http://www.visionsense.com)

Visionsense develops proprietary stereoscopic cameras in endoscopic proportions aka "a miniature microscope". These cameras offer neurosurgeons natural 3-D vision for minimally invasive neurosurgical and spine applications.

## **Vycor Medical, Inc.**

**2503**

80 Orville Drive, Suite 100  
Bohemia, NY 11716  
631-244-1435  
[www.vycormedical.com](http://www.vycormedical.com)

Vycor Medical Inc.'s premier product line, the ViewSite Brain Access System (VBAS), provides excellent surgical access to the operative site, allows for superior binocular vision of the surgical area and distributes the brain tissue evenly allowing the surgeons a smooth entry with minimal tissue trauma to the target.

## **Weatherby Locums**

**354**

6451 North Federal Highway, Suite 800  
Fort Lauderdale, FL 33308  
800-586-5022  
[www.weatherbylocums.com](http://www.weatherbylocums.com)

Weatherby Locums is dedicated to providing superior personal service and finding the best opportunities that allow each Neurological Surgeon to focus on optimal patient care. We offer Neurological Surgeons the flexibility of working locum tenens and the ability to choose from hundreds of jobs nationwide. Contact us at 800-586-5022 or visit [www.weatherbylocums.com](http://www.weatherbylocums.com)

## **X-Spine**

**932**

452 Alexandersville Road  
Miamisburg, OH 45342  
937-847-8400  
[www.x-spine.com](http://www.x-spine.com)

X-spine is the next-generation spinal implant company. We are dedicated to advancing spinal implant technologies that improve surgery outcomes and optimize surgeon experience. X-spine's principles of Invention, Integration and Intuition guide our product philosophy.

## **Ziehm Imaging, Inc.**

**861**

4531 36th Street  
Orlando, FL 32811  
407-615-8560  
[www.ziehm.com](http://www.ziehm.com)

Ziehm Imaging is proud to present the Vision2 FD Vario 3D Mobile C-arm. Its compact design and flat detector technology provide versatility for routine surgical imaging as well as 3D axial, sagittal and coronal views for more complex spine and orthopedic procedures, all in a quick one-minute scan.

## **Zimmer Spine**

**545**

7375 Bush Lake Road  
Edina, MN 55439  
800-655-2614  
[www.zimmerspine.com](http://www.zimmerspine.com)

Zimmer Spine develops, produces and markets the highest quality spine products and services that repair, replace and regenerate spine health. Zimmer constructs superior fusion and non-fusion spine systems, instrumentation systems, cervical plates, allograft bone filler and Trabecular Metal. We value continuous surgeon education, building confidence and enhancing patient outcomes.

### **Exhibit Hall Hours:**

Monday, October 18	9:00 AM – 3:00 PM
Tuesday, October 19	9:00 AM – 4:30 PM
Wednesday, October 20	9:00 AM – 2:00 PM

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

Tuesday, October 19	3:00 – 4:30 PM
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### **Breaks with Exhibitors**

Monday – Wednesday	9:00 – 10:00 AM*, 11:30 AM – 12:00 PM
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## Check Out the New Mobile Meeting Guide!

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*Don't Miss the CNS*

## Research and Development Expert Exchange

Engineers, product developers and researchers from participating exhibit companies are available to discuss your concerns and ideas for neurosurgical technology.

Tuesday, October 19

11:30 AM – 3:00 PM

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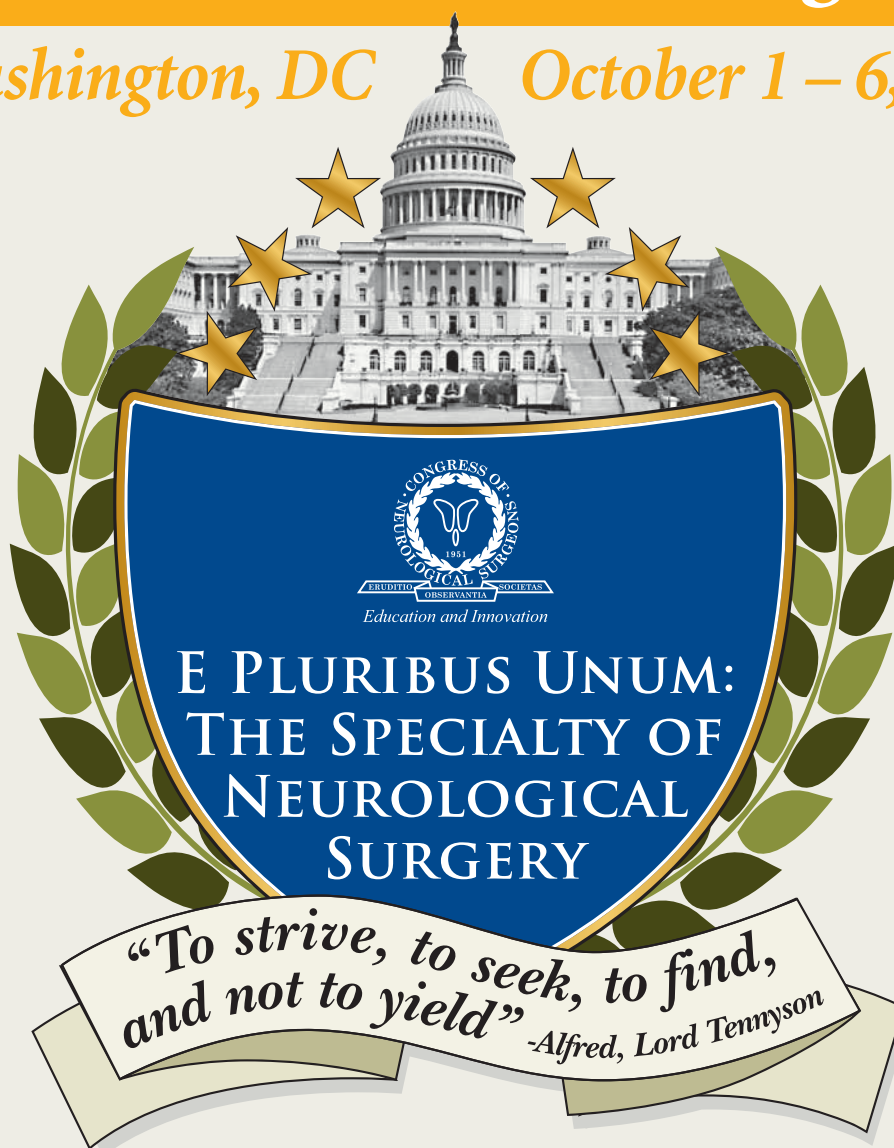
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