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# Week at a Glance

## Friday, April 4

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<th>Time</th>
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<tr>
<td>5–7 p.m.</td>
<td><strong>AANS Registration</strong> – South Lobby of The Moscone Center</td>
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## Saturday, April 5

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
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<tbody>
<tr>
<td>6:30 a.m.–5:30 p.m.</td>
<td><strong>AANS Registration</strong> – South Lobby of The Moscone Center</td>
</tr>
<tr>
<td>8 a.m.–5 p.m.</td>
<td>All-Day Practicals (#001–003)</td>
</tr>
<tr>
<td>8 a.m.–12 p.m.</td>
<td>Morning Practical Clinics (#004–009)</td>
</tr>
<tr>
<td>1–5 p.m.</td>
<td>Afternoon Practical Clinics (#010–017)</td>
</tr>
<tr>
<td>3–5 p.m.</td>
<td>Speaker Ready Room – 252–256</td>
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## Sunday, April 6

<table>
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<tr>
<th>Time</th>
<th>Event</th>
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<tbody>
<tr>
<td>6:30 a.m.–6:30 p.m.</td>
<td><strong>AANS Registration</strong> – South Lobby of The Moscone Center</td>
</tr>
<tr>
<td>7:30 a.m.–4:30 p.m.</td>
<td>All-Day Practicals (#018–021)</td>
</tr>
<tr>
<td>7:30–11:30 a.m.</td>
<td>Morning Practical Clinics (#022–029)</td>
</tr>
<tr>
<td>8:30–11:30 a.m.</td>
<td>Advanced Practice Providers Plenary Session – 305</td>
</tr>
<tr>
<td>12:30–4:30 p.m.</td>
<td>Afternoon Practical Clinics (#030–038)</td>
</tr>
<tr>
<td>2–4:30 p.m.</td>
<td>Osler Lecture for Medical Students – 132–133</td>
</tr>
<tr>
<td>2:45–4:45 p.m.</td>
<td>Hospital Employment for Neurosurgeons: Is it in Your Best Interest and How Does It Work? – 131</td>
</tr>
<tr>
<td>5–6:30 p.m.</td>
<td>AANS Opening Ceremonies – 102–104</td>
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<tr>
<td>7–9 p.m.</td>
<td>AANS Opening Reception at the Explatorium</td>
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## Monday, April 7

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
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<tbody>
<tr>
<td>6:30 a.m.–4 p.m.</td>
<td><strong>AANS Registration</strong> – South Lobby of The Moscone Center</td>
</tr>
<tr>
<td>6:30 a.m.–5 p.m.</td>
<td>Speaker Ready Room – 252–256</td>
</tr>
<tr>
<td>7–9 a.m.</td>
<td>Breakfast Seminars</td>
</tr>
<tr>
<td>9–9:45 a.m.</td>
<td>Morning Break in the AANS Exhibit Hall – Exhibit Halls ABC</td>
</tr>
<tr>
<td>9 a.m.–4 p.m.</td>
<td>AANS Exhibit Hall – Exhibit Halls ABC</td>
</tr>
<tr>
<td>9:45 a.m.–1 p.m.</td>
<td>Plenary Session I – 102–104</td>
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<tr>
<td></td>
<td>- Rhoton Family Lecture: Christopher I. Shaffrey, MD, FAANS</td>
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<td></td>
<td>- Theodore Kurze Lecture: Vinko Dolenc, MD, PhD</td>
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<td>- Presidential Address: William T. Couldwell, MD, PhD, FAANS</td>
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</table>
1–2 p.m. LUNCH IN THE AANS EXHIBIT HALL – EXHIBIT HALLS ABC

2–5:30 p.m. SCIENTIFIC SESSIONS I–VI
- Scientific Session I: Tumor – 307/309
- Scientific Session II: Spine – 301/303
- Scientific Session III: Stereotactic and Functional Surgery – 305
- Scientific Session IV: Pediatrics – 308/310
- Scientific Session V: Cerebrovascular – 302/304
- Scientific Session VI: Neurotrauma and Critical Care – 306

2–5:30 p.m. INTERNATIONAL SYMPOSIUM I: EXPANDING GLOBAL NEUROSURGERY – 236–238

2–3:30 p.m. OPERATIVE NUANCES I: TACKLING CHALLENGING CASES – 134–135

3:30–4 p.m. AFTERNOON BREAK IN THE AANS EXHIBIT HALL – EXHIBIT HALLS ABC

5:30–6:30 p.m. JOINT ANNUAL BUSINESS MEETING OF THE AANS & THE AMERICAN ASSOCIATION OF NEUROSURGEONS – 300

6:30–8 p.m. AANS INTERNATIONAL RECEPTION AT THE ASIAN ART MUSEUM

6:30–8:30 p.m. DINNER SYMPOSIUM I: CONCUSSION AT SCALA’S BISTRO

6:30–8:30 p.m. DINNER SYMPOSIUM II: SPINAL BALANCE/DEFORMITY AT MCCORMICK & KULETOS

6:30–9:30 p.m. AANS HISTORY SECTION DINNER AT MARINES’ MEMORIAL CLUB & HOTEL

8–10 p.m. NREF FUNDRAISER IN HONOR OF CHARLES B. WILSON, MD, DSc, MSHA, FAANS(L) AT THE FILLMORE

**Tuesday, April 8**

6:30 a.m.–4 p.m. AANS REGISTRATION – South Lobby of The Moscone Center

6:30 a.m. – 5 p.m. SPEAKER READY ROOM – 252–256

7–9 a.m. BREAKFAST SEMINARS

9–9:45 a.m. MORNING BREAK IN THE AANS EXHIBIT HALL – EXHIBIT HALLS ABC

9 a.m.–4 p.m. AANS EXHIBIT HALL – EXHIBIT HALLS ABC

9:45 a.m.–1 p.m. PLENARY SESSION II – 102–104
- Hunt-Wilson Lecture: Robert Gates
- Cushing Oration: Clayton Christensen

1–2 p.m. LUNCH IN THE AANS EXHIBIT HALL – EXHIBIT HALLS ABC

2–5:30 p.m. SECTION SESSIONS
- AANS/CSNS Socioeconomic – 302/304
- AANS/CNS Cerebrovascular Section – 301/303
- AANS/CNS Section on Disorders of the Spine and Peripheral Nerves: Spine Section Session – 308/310
- AANS/CNS Section on Neurotrauma and Critical Care – 306
- AANS/CNS Section on Stereotactic and Functional Surgery – 305
- AANS/CNS Section on Tumors I – 307/309
### Wednesday, April 9

<table>
<thead>
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<th>Time</th>
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<tr>
<td>6:30 a.m. – 3:30 p.m.</td>
<td><strong>AANS REGISTRATION</strong> – South Lobby of The Moscone Center</td>
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<tr>
<td>6:30 a.m. – 5 p.m.</td>
<td><strong>BREAKFAST SEMINARS</strong></td>
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<tr>
<td>7–9 a.m.</td>
<td><strong>MORNING BREAK IN THE AANS EXHIBIT HALL</strong> – <strong>EXHIBIT HALLS ABC</strong></td>
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<tr>
<td>9 a.m. – 2:15 p.m.</td>
<td><strong>AANS EXHIBIT HALL – EXHIBIT HALLS ABC</strong></td>
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<tr>
<td>9:45 a.m. – 1 p.m.</td>
<td><strong>PLENARY SESSION III – 102–104</strong></td>
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<td>- Louise Eisenhardt Lecture: <em>Anne Marie Slaughter, M.Phil, D.Phil, JD</em></td>
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<td>- Richard C. Schneider Lecture: <em>Kevin T. Foley, MD, FAANS</em></td>
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<td>- Van Wagenen Lecture: <em>Ian F. Pollack, MD, FAANS</em></td>
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<tr>
<td>1–2 p.m.</td>
<td><strong>LUNCH IN THE AANS EXHIBIT HALL – EXHIBIT HALLS ABC</strong></td>
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<tr>
<td>2–5 p.m.</td>
<td><strong>SECTION SESSIONS</strong></td>
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<td>- AANS Section on History of Neurological Surgery – 306</td>
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<td>- AANS/CNS Section on Pain – 305</td>
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<td>- AANS/CNS Section on Pediatric Neurological Surgery – 302/304</td>
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<td>- AANS/CNS Section on Disorders of the Spine and Peripheral Nerves: Peripheral Nerves Section Session – 308/310</td>
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<td>- AANS/CNS Section on Tumors II – 301/303</td>
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2013 RECOGNITION

Rhoton Family Lecture
Christopher I. Shaffrey, MD, FAANS
Plenary Session I
Monday, April 7

Theodore Kurze Lecture
Vinko Dolenc, MD, PhD
Plenary Session I
Monday, April 7

Distinguished Service Award
Sir Graham Teasdale
Plenary Session I
Monday, April 7

AANS International Lifetime Recognition Award
Nicolas de Tribolet, MD
Plenary Session I
Monday, April 7

Hunt-Wilson Lecture
Robert Gates
Plenary Session II
Tuesday, April 8

Cushing Medalist
Troy M. Tippett, MD, FAANS
Plenary Session II
Tuesday, April 8

Cushing Orator
Clayton Christensen
Plenary Session II
Tuesday, April 8

Ronald L. Bittner Lecture
Frederick F. Lang Jr., MD, FAANS
Scientific Session I: Tumor
Tuesday, April 8

Louise Eisenhardt Lecture
Anne-Marie Slaughter, M.Phil, D.Phil, JD
Plenary Session III
Wednesday, April 9

Richard C. Schneider Lecture
Kevin T. Foley, MD, FAANS
Plenary Session III
Wednesday, April 9

Van Wagenen Lecture
Ian F. Pollack, MD, FAANS
Plenary Session III
Wednesday, April 9

Humanitarian Award
Anselmo Pineda, MD, FAANS(L)
Plenary Session III
Wednesday, April 9
INVITED SPEAKERS
PLENARY SESSION I

Monday, April 7

Christopher I. Shaffrey, MD, FAANS, received his medical degree from the University of Virginia and completed both neurosurgical and orthopaedics residencies at the University of Virginia, followed by a spine fellowship in pediatric and adult reconstructive spine surgery.

After his postgraduate training, Dr. Shaffrey completed a scholarship obligation to the United States Navy at Portsmouth Navy Medical Center. In 1997, he was appointed to the senior staff in the departments of neurological surgery and orthopaedic surgery at Henry Ford Hospital. In 1999, Dr. Shaffrey was appointed associate professor of neurological surgery and adjunct associate professor of orthopaedic surgery and sports medicine at the University of Washington in Seattle, and in 2003, he returned to the University of Virginia as professor of neurological surgery and director of the neurosurgery spine division.

Dr. Shaffrey has an active research interest in spinal surgery, particularly in numerous multicenter outcome research studies of pediatric and adult scoliosis, spinal trauma and tumors involving the spinal column.

Vinko Dolenc, MD, PhD, is head of the neurosurgery department of the University Medical Center Ljubljana in Slovenia, where he also earned his medical degree in neurosurgery and his doctoral degree in science. Dr. Dolenc is an active member of 23 national and international neurosurgical associations. He organized the First International Symposium on Cavernous Sinus in Ljubljana in 1986, and since then, has organized and/or participated in numerous microanatomy hands-on skull base intensive workshops. Twenty years after the first International Symposium on Cavernous Sinus, he organized the second ISOCS in Ljubljana in 2006. Dr. Dolenc has operated on more than 3,000 patients with vascular and tumorous pathologies in the skull base. He also has published five books dealing with the topics of the skull-base pathologies.

Nicolas de Tribolet, MD, studied at the medical school of Lausanne, Switzerland, as well as in Paris. After completing medical school, he started an internship in neurosurgery, clinical electro-physiology and neuropathology in Lausanne. It was during his one-year fellowship at Massachusetts General Hospital that Dr. de Tribolet began his research on brain tumors, which, in the following years, developed into a laboratory that currently employs 12 full-time researchers. Appointed professor of neurosurgery and chairman of the department of neurosurgery of the University of Lausanne in 1984, in 1994, the government asked him to merge the two neurosurgical departments at the Universities of Geneva and Lausanne. Currently professor and chairman of the department of neurosurgery of the University of Geneva and head of the neurosurgical programme of Lausanne and Geneva, in July 1999, Dr. de Tribolet also was appointed director of the department of neurosciences of the University Hospital of Geneva.
**Distinguished Service Award**

The Distinguished Service Award is one of the highest honors bestowed by the American Association of Neurological Surgeons, recognizing exemplary service to the AANS and the field of neurosurgery. The award pays tribute to the contributions of remarkable people within their profession.

Sir Graham Teasdale has been professor and head of the department of neurosurgery, University of Glasgow, since 1981. His main surgical interests are pituitary tumors, in particular microprolactinomas and Cushing’s disease and acoustic neuromas. Research fields include intracranial pressure, the management and prognosis of head injuries, detection and treatment of traumatic intracranial hematomas, experimental cerebral ischaemia, magnetic resonance imaging and, most recently, the translation of preclinical demonstration of the efficacy of neuroprotective agents into pioneering clinical applications in severe head injuries. He is a member of the Council of The Society of British Neurological Surgeons; Neurosurgical Editor, Journal of Neurology, Neurosurgery and Psychiatry; and first president of International Neurotrauma Society. He is author of more than 300 refereed publications.

Co-authored books include the “Management of Head Injuries” and “Contemporary Neurosurgery.”
Robert Gates served as the 22nd U.S. Secretary of Defense from 2006–2011, and is the only U.S. Defense Secretary in history to be asked to remain in that office by a newly elected President. On Gates’ last day in office, President Barack Obama, the eighth president Gates had served under during his intelligence career, awarded him the Presidential Medal of Freedom, America’s Highest Civilian honor.

A native of Kansas, Gates received his bachelor’s degree from the College of William & Mary, his master’s degree in history from Indiana University, and his doctorate in Russian and Soviet history from Georgetown University. In 1967, he was commissioned a second lieutenant in the U.S. Air Force and served as an intelligence officer at Whiteman Air Force Base in Missouri.

Gates joined the Central Intelligence Agency (CIA) in 1966 and spent nearly 27 years as an intelligence professional. Gates served as director of Central Intelligence from 1991 until 1993. He is the only career officer in CIA’s history to rise from entry-level employee to director.

He served as deputy director of Central Intelligence from 1986 until 1989 and as assistant to the President and deputy national security adviser at the White House from January 20, 1989, until November 6, 1991, for President George H.W. Bush.

He has authored two memoirs – *Duty: Memoirs of a Secretary at War* (2014), a straightforward, vividly written account of his experience serving Presidents George W. Bush and Barack Obama during the wars in Iraq and Afghanistan; and *From the Shadows: The Ultimate Insider’s Story of Five Presidents and How They Won the Cold War* (1996), which details his career as a CIA officer at the center of power during a time when the threat of global annihilation informed America’s every move.

A member of the AANS since 1979, Dr. Tippett served on the AANS Board of Directors from 2004–2007, followed by one-year terms as vice president and president-elect before serving as the organization’s president in 2009–2010. From 2004–2007, Dr. Tippett also served as chair of the Neurosurgical Group in Pensacola, Fla., including a role as the practice’s medical director. He completed his undergraduate work at the University of Missouri and received his medical degree in 1969 from the University of Tennessee Center for the Health Sciences in Memphis, Tenn. He completed his internship at City of Memphis Hospitals and neurosurgery residency at the University of Tennessee Center for the Health Sciences in Memphis.
of the AANS/CNS Washington Committee. He also has served as president of the Florida Medical Association, the Neurosurgical Society of America, the Florida Neurosurgical Society and the Escambia County Medical Society. Dr. Tippett is clinical assistant professor for Florida State University and courtesy assistant professor for the University of Florida; a member of many professional organizations, including the Southern Neurosurgical Society; and is a Fellow of the American College of Surgeons. Dr. Tippett has received several awards, including the AANS Distinguished Service Award in 2003; Baptist Healthcare Foundation’s 2009 Hollinger Award for Physician of the Year; the Pensacola Bay Area Chamber of Commerce 2007 PACE Award for Professional Leadership; the Patients’ Choice Award; Five-year Honoree 2009–2013; Best Doctors in America Award 2011–2012; America’s Top Surgeons 2012; and the 2008 CNS Exceptional and Distinguished Service Award.

As a best-selling author of nine books and over one hundred articles, Christensen has been the recipient of several awards. *The Innovator’s Dilemma* (1997), Christensen’s first book, received the Global Business Book Award of the year and in 2011, it was named by *The Economist* as one of the six most significant books about business ever written. Some of his other work has been recognized with Abernathy, Newcomen, James Madison and Circle Prizes. Additionally, Christensen is a five-time recipient of the McKinsey Award, awarded each year to the two best articles published in the *Harvard Business Review*.

Currently teaching one of the most popular elective classes at the Harvard Business School, “Building and Sustaining a Successful Enterprise,” Christensen also recently published a book in 2012 entitled *How Will You Measure Your Life?* Covering topics such as career fulfillment, happiness in personal relationships and living a life full of integrity, Christensen’s *How Will You Measure Your Life?* has been widely received as a groundbreaking and inspirational contribution to those both inside and outside of the business world.
INVITED SPEAKERS
PLENARY SESSION III

Wednesday, April 9

Louise Eisenhardt Lecture
Anne-Marie Slaughter, M.Phil, D.Phil, JD, is the president and CEO of the New America Foundation, a public policy institute based in Washington, D.C., and New York. She is also the Bert G. Kerstetter ’66 University Professor Emerita of Politics and International Affairs at Princeton University. From 2009-2011, she served as director of policy planning for the United States Department of State. Upon leaving the State Department, she received the Secretary’s Distinguished Service Award for her work leading the Quadrennial Diplomacy and Development Review. Prior to her government service, Dr. Slaughter was the dean of Princeton’s Woodrow Wilson School of Public and International Affairs from 2002–2009 and the J. Sinclair Armstrong Professor of International, Foreign, and Comparative Law at Harvard Law School from 1994–2002.

Dr. Slaughter has written or edited six books, as well as more than 100 scholarly articles. In 2012, she published the article, “Why Women Still Can’t Have It All,” in The Atlantic, which helped spawn a renewed national debate on the continued obstacles to full male-female equality.

Richard C. Schneider Lecture
The Richard C. Schneider Lecture is made possible thanks to an endowment established by the University of Michigan and Julian T. “Buz” Hoff, MD.

Kevin T. Foley, MD,
FAANS, is professor of neurosurgery at the University of Tennessee Health Science Center in Memphis. He holds academic appointments at the University of Tennessee Department of Biomedical Engineering and the Uniformed Services University for the Health Sciences in Bethesda, Md. He serves as director of complex spine surgery at Semmes-Murphey Clinic, director of the spine fellowship program for the University of Tennessee department of neurosurgery, and medical director for both the Medical Education & Research Institute and the Image-Guided Surgery Research Center.

Dr. Foley received his medical degree from the University of California, Los Angeles, where he completed his neurosurgery residency, following which he served in the United States Army Medical Corps as assistant chief of neurosurgery at Brooke Army Medical Center, chief of neurosurgery at Tripler Army Medical Center, and chief of neurosurgery and residency program director at Walter Reed Army Medical Center. After he left the military, Dr. Foley entered private practice and pursued an academic career.

Van Wagenen Lecture
The Van Wagenen Lecture is made possible thanks to a bequest from Dr. William P. and Mrs. Abigail Van Wagenen to AANS.

Ian Pollack, MD, FAANS, is co-director of the Brain Tumor Program at the University of Pittsburgh Cancer Institute and chief of Pediatric Neurosurgery at Children’s Hospital of Pittsburgh. In 1992, he was awarded the 1991 Van Wagenen Traveling Fellowship, affording him subspecialty training at the department of neurosurgery at the Hospital for Sick Children in Toronto, the Neuro-Oncology Laboratory of the University of Lausanne in Switzerland, and the Laboratory of Tumor Biology of the University of Uppsala in Sweden. Dr. Pollack received his medical degree from the Johns Hopkins University School of Medicine and completed a surgical internship and neurosurgical residency at the University of Pittsburgh School of Medicine. Pollack has published more than 250 papers in peer journals, numerous book chapters and invited papers, and has edited two books on childhood brain tumors.
Anselmo Pineda, MD, FAANS(L) is a retired associate clinical professor of the department of surgery/division of neurosurgery and also the department of neurobiology from the University of California, Los Angeles (UCLA), with a faculty position since 1962 until his retirement.

Dr. Pineda was trained in neurosurgery at the University of Chicago, followed with appointments as an instructor and later as an associate in the neurosurgical department at the University of Texas in Galveston, Texas. He was awarded a fellowship for teaching and investigation by the National Institute of Health from Bethesda, Md., to study neurophysiology at Northwestern University in Chicago, where he graduated with a master’s degree. Dr. Pineda then accepted a position at the UCLA Brain Research Institute, with appointments as an assistant clinical professor in two UCLA departments, neurosurgery and neurobiology, as well as assistant chief of neurosurgery in the approved program at the Long Beach Veterans Hospital. In 1967 he began private practice at the Long Beach Memorial Hospital while remaining an associate clinical professor at UCLA in both departments and a consultant to the Long Beach Veterans Hospital.

Dr. Pineda has written numerous papers in neurosurgery and in neurobiology research. He has presented at conferences in the U.S., France, Russia, Peru, Colombia and San Salvador. He is a member of numerous national and International societies, and is a lifetime fellow of the AANS.

The founder and chairman of the Neurosurgical Peruvian American Foundation (NPAF), Dr. Pineda created the organization to participate in the neurosurgical progress in his native country. The NPAF organized the first hands-on neurosurgical training program in Peru, holding two full-year training programs for young Peruvian neurosurgeons — one on neurosurgical endovascular intervention and the other in radiosurgery. The NPAF also provided a one- to three-month scholarship program at the University of Chicago and UCLA for last-year residents.
AWARD RECIPIENTS

Versalis Award
AANS Section on History of Neurological Surgery
Shyamal C. Bir

DePuySynthes Award
ANS/CNS Cerebrovascular Section
Vernard S. Fennell, MD

William H. Sweet Award
AANS/CNS Section on Pain
Walavan Sivakumar, MD

Hydrocephalus Association Award
AANS/CNS Section on Pediatric Neurological Surgery
Jennifer Strahle, MD

Shulman Award
AANS/CNS Section on Pediatric Neurological Surgery
George M. Ibrahim, MD

DePuy Synthes Resident Craniofacial Award
AANS/CNS Section on Neurotrauma and Critical Care
Anthony Liberato Petraglia, MD

Cone Pevehouse Young Neurosurgeons Award
AANS/CSNS Socioeconomic
Yakov Gologorsky, MD

Robert Florin Resident Award
AANS/CSNS Socioeconomic
Omar Tanweer, MD

Functional Surgery Award
Philip L. Gildenberg Resident Award
AANS/CNS Section on Stereotactic and Functional Neurosurgery
Joshua Paul Aronson, MD

American Brain Tumor Association Young Investigator Award
AANS/CNS Section on Tumors
Eric M. Thompson, MD

Integra Foundation Award
AANS/CNS Section on Tumors
Jason P. Sheehan, MD, PhD, FAANS

Leksell Radiosurgery Award
AANS/CNS Section on Tumors
Isabelle M. Germano, MD, FAANS
AWARD RECIPIENTS

National Brain Tumor Society Mahaley Award
AANS/CNS Section on Tumors
Kristen A. Batich

Preuss Award
AANS/CNS Section on Tumors
Loyola V. Gressot, MD

Ronald L. Bittner Award
AANS/CNS Section on Tumors
Shawn Level Hervey-Jumper, MD

Springer Journal of Neuro-Oncology Award
AANS/CNS Section on Tumors
Manish K. Aghi, MD, FAANS

Stryker Neuro-Oncology Award & Young Neurosurgeons Medical Student Award
AANS/CNS Section on Tumors
Javier Figueroa

Synthes Skull Base Award
AANS/CNS Section on Tumors
Arman Jahangiri

Louise Eisenhardt Traveling Scholarship Award
AANS/CNS Section on Women in Neurosurgery
Sophia F. Shakur, MD

Best International Abstract Award
Jan Coburger, MD

International Travel Scholarship
Sumit Sinha, MD
# AANS AND ANCILLARY MEETINGS

## Thursday, April 3, 2014

### AANS Finance Committee

7:30–10 a.m.
Club Room
San Francisco Marriott Marquis

### AANS Finance Committee Breakfast

7–8 a.m.
Club Room
San Francisco Marriott Marquis

### AANS Strategic Planning Committee

10 a.m.–noon
Club Room
San Francisco Marriott Marquis

### AANS Executive Committee Lunch

12–1 p.m.
Club Room
San Francisco Marriott Marquis

### AANS Executive Committee

12–5 p.m.
Club Room
San Francisco Marriott Marquis

### CSNS Long Range Planning Committee Dinner

7–10 p.m.
Kuleto’s

## Friday, April 4, 2014

### CSNS Communications and Education Committee

7–8:30 a.m.
Golden Gate C1
San Francisco Marriott Marquis

### CSNS Officer Briefing

7–7:15 a.m.
Pacific F
San Francisco Marriott Marquis

### AANS Board of Directors Breakfast

7:30–8:30 a.m.
Yerba Buena Ballroom, Salon 7
San Francisco Marriott Marquis

### CSNS Young Neurosurgeons

8:30–9:30 a.m.
Golden Gate C2
San Francisco Marriott Marquis

### CSNS Executive Committee

8:45–10 a.m.
Yerba Buena Ballroom, Salons 5 and 6
San Francisco Marriott Marquis

### CSNS Membership and State Societies/State and Regional Advocacy Ad Hoc Committee

10–11 a.m.
Yerba Buena Ballroom, Salon 1
San Francisco Marriott Marquis

### CSNS Publications Sub-committee

10–11 a.m.
Pacific C
San Francisco Marriott Marquis

### AANS Board of Directors

8 a.m.–5:30 p.m.
Yerba Buena Ballroom, Salon 7
San Francisco Marriott Marquis

### CSNS Public Relations Sub-Committee

10–11 a.m.
Yerba Buena Ballroom, Salon 2
San Francisco Marriott Marquis

### CSNS Leadership Development Committee

10–11 a.m.
Pacific E
San Francisco Marriott Marquis

### CSNS Patient Safety Ad Hoc Committee

10–11 a.m.
Yerba Buena Ballroom, Salon 3
San Francisco Marriott Marquis

### CSNS Website Committee

10–11 a.m.
Yerba Buena Ballroom, Salon 4
San Francisco Marriott Marquis
AANS Annual Meeting Scientific Program:
Recorded for Attendees; Live-Streamed

Discuss oral and poster presentations online

Presentations from this scientific program are being streamed live to AANS members who could not attend. The neurosurgical community is able to discuss these presentations online, whether attending in person or watching online. To facilitate the discussion, the presentations are streamed to AANSconnect®, AANS' professional networking community for members. For the week of the meeting, non-member attendees will have access as a benefit of attending.

Top poster presentations are archived in AANSconnect®. Members can contact authors & presenters after the meeting, and keep in touch with the people they meet year round in AANSconnect®.

As a benefit of attending the meeting in San Francisco, all registered medical attendees will have access to over 250 presentations from this year’s program that are being recorded. These presentations will be posted online and made available as individual videos by May 5, 2014.

Catch sessions missed due to schedule conflicts or revisit favorite presentations. Keep up to date on advances in neurosurgery, access stellar research to check a reference and learn more about what your peer’s are doing to effectively management practices and deal with reimbursement issues.

Attendees enjoy 24/7, on-demand access for two years online; a CD option also is available for purchase. Visit the AANS Resource Center for purchase information.

AANS AND ANCILLARY MEETINGS

CSNS Coding & Reimbursement Committee and Coding & Reimbursement Committee of the AANS/CNS
11 a.m.–12:15 p.m.
Yerba Buena Ballroom, Salons 5 and 6
San Francisco Marriott Marquis

CSNS Medical Legal Committee
11 a.m.–12:15 p.m.
Golden Gate C1
San Francisco Marriott Marquis

CSNS Neurotrauma and Emergency Neurosurgery Committee
11 a.m.–12:15 p.m.
Pacific A
San Francisco Marriott Marquis

CSNS Medical Practices Committee
11 a.m.–12:15 p.m.
Golden Gate C2
San Francisco Marriott Marquis

CSNS Workforce Committee
11 a.m.–12:15 p.m.
Pacific B
San Francisco Marriott Marquis
### AANS AND ANCILLARY MEETINGS

<table>
<thead>
<tr>
<th>Event</th>
<th>Time</th>
<th>Location</th>
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<tbody>
<tr>
<td><strong>CSNS Plenary Session</strong></td>
<td>12:30–5:45 p.m.</td>
<td>Golden Gate B</td>
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<tr>
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<td>San Francisco Marriott Marquis</td>
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<tr>
<td><strong>CSNS Reference Committee</strong></td>
<td>3:30–5:30 p.m.</td>
<td>Yerba Buena Ballroom, Salon 1</td>
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<td>San Francisco Marriott Marquis</td>
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<tr>
<td><strong>CSNS Reception</strong></td>
<td>5:30–6:30 p.m.</td>
<td>Golden Gate A</td>
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<td>San Francisco Marriott Marquis</td>
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<tr>
<td><strong>CSNS Northeast Quadrant</strong></td>
<td>6:30–9 a.m.</td>
<td>Yerba Buena Ballroom, Salon 3</td>
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<td>San Francisco Marriott Marquis</td>
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<tr>
<td><strong>CSNS Northwest Quadrant</strong></td>
<td>6:30–9 a.m.</td>
<td>Yerba Buena Ballroom, Salon 4</td>
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<td>San Francisco Marriott Marquis</td>
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<tr>
<td><strong>CSNS Southeast Quadrant</strong></td>
<td>6:30–9 a.m.</td>
<td>Yerba Buena Ballroom, Salon 5</td>
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<td>San Francisco Marriott Marquis</td>
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<tr>
<td><strong>CSNS Southwest Quadrant</strong></td>
<td>6:30–9 a.m.</td>
<td>Yerba Buena Ballroom, Salon 6</td>
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<td>San Francisco Marriott Marquis</td>
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<tr>
<td><strong>CSNS Plenary Session</strong></td>
<td>9 a.m.–12:15 p.m.</td>
<td>Golden Gate B</td>
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<td>San Francisco Marriott Marquis</td>
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<tr>
<td><strong>CSNS Lunch</strong></td>
<td>12:15–1:15 p.m.</td>
<td>Golden Gate A</td>
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<td>San Francisco Marriott Marquis</td>
</tr>
<tr>
<td><strong>CSNS Executive Committee</strong></td>
<td>1:15–3 p.m.</td>
<td>Yerba Buena Ballroom, Salon 5 and 6</td>
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<td>San Francisco Marriott Marquis</td>
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<tr>
<td><strong>CSNS/CNS Joint Officers Meeting</strong></td>
<td>2–3 p.m.</td>
<td>Pacific A</td>
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<td>San Francisco Marriott Marquis</td>
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<tr>
<td><strong>AANS/CNS Communications &amp; Public Relations Committee</strong></td>
<td>3:30–4:30 p.m.</td>
<td>Pacific A</td>
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<td>San Francisco Marriott Marquis</td>
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<tr>
<td><strong>AANS/CNS Joint Officers Meeting</strong></td>
<td>8–11 a.m.</td>
<td>Sierra H</td>
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<td>San Francisco Marriott Marquis</td>
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<tr>
<td><strong>ThinkFirst Committee Meetings</strong></td>
<td>8 a.m.–4 p.m.</td>
<td>Pacific F</td>
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<td>San Francisco Marriott Marquis</td>
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<tr>
<td><strong>N2QOD Data Coordinators Meeting</strong></td>
<td>8 a.m.–4 p.m.</td>
<td>Pacific H</td>
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<td>San Francisco Marriott Marquis</td>
</tr>
<tr>
<td><strong>AANS Leadership Orientation</strong></td>
<td>8–9:30 a.m.</td>
<td>Yerba Buena Ballroom, Salons 4, 5 and 6</td>
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<td>San Francisco Marriott Marquis</td>
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<tr>
<td><strong>Neurosurgery PAC Board of Directors</strong></td>
<td>4–5:30 p.m.</td>
<td>Pacific H</td>
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<td>San Francisco Marriott Marquis</td>
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</tbody>
</table>

**Saturday, April 5, 2014**

<table>
<thead>
<tr>
<th>Event</th>
<th>Time</th>
<th>Location</th>
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</thead>
<tbody>
<tr>
<td><strong>CSNS/AANS Caucus</strong></td>
<td>6:30–9 a.m.</td>
<td>Yerba Buena Ballroom, Salon 2</td>
</tr>
<tr>
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<td>San Francisco Marriott Marquis</td>
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<tr>
<td><strong>CSNS/CNS Caucus</strong></td>
<td>6:30–9 a.m.</td>
<td>Yerba Buena Ballroom, Salon 1</td>
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<td>San Francisco Marriott Marquis</td>
</tr>
<tr>
<td><strong>ANSPA Spring 2014 Meeting CME Meeting</strong></td>
<td>7:30 a.m.–5 p.m.</td>
<td>Golden Gate C1</td>
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<td>San Francisco Marriott Marquis</td>
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<tr>
<td><strong>N2QOD Data Coordinators Meeting</strong></td>
<td>8–11 a.m.</td>
<td>Pacific C</td>
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<td>San Francisco Marriott Marquis</td>
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**Sunday, April 6, 2014**

<table>
<thead>
<tr>
<th>Event</th>
<th>Time</th>
<th>Location</th>
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<tbody>
<tr>
<td><strong>Neurosurgery PAC Board of Directors</strong></td>
<td>4–5:30 p.m.</td>
<td>Pacific H</td>
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<td>San Francisco Marriott Marquis</td>
</tr>
</tbody>
</table>
AANS AND ANCILLARY MEETINGS

Neurosurgery Summit Meeting
9 a.m.–noon
Pacific C
San Francisco Marriott Marquis

AANS Membership Committee
10–11 a.m.
Yerba Buena Ballroom, Salon 15
San Francisco Marriott Marquis

AANS Neurosurgeon Editorial Board
10–11:30 a.m.
Yerba Buena Ballroom, Salon 1
San Francisco Marriott Marquis

AANS Education and Practice Management Committee
10 a.m.–noon
Yerba Buena Ballroom, Salon 3
San Francisco Marriott Marquis

NREF Committee Meeting
10 a.m.–noon
Yerba Buena Ballroom, Salon 2
San Francisco Marriott Marquis

AANS/CNS Quality Improvement Workgroup
11 a.m.–12:30 p.m.
Yerba Buena Ballroom, Salon 4
San Francisco Marriott Marquis

AANS/CNS Section on Women in Neurosurgery Executive Committee
11 a.m.–2 p.m.
Nob Hill ABC
San Francisco Marriott Marquis

Van Wagenen Collegium and Luncheon
11:30 a.m.–1 p.m.
Nob Hill D
San Francisco Marriott Marquis

SNS Research Meeting
12–1 p.m.
Sierra E
San Francisco Marriott Marquis

AANS Information Technology Committee
12–1:30 p.m.
Yerba Buena Ballroom, Salon 2
San Francisco Marriott Marquis

SNS Web Portal Working Group Meeting
12–2 p.m.
Pacific C
San Francisco Marriott Marquis

AANS/CNS Section on Women in Neurosurgery Executive Committee
11 a.m.–2 p.m.
Nob Hill ABC
San Francisco Marriott Marquis

AANS/CNS Joint Guidelines Committee
1–2 p.m.
Yerba Buena Ballroom, Salon 5 and 6
San Francisco Marriott Marquis

Van Wagenen Fellowship Committee
1–2 p.m.
Yerba Buena Ballroom, Salon 15
San Francisco Marriott Marquis

Journal of Neurosurgery Publishing Group Editorial Board Meeting
1:15–3:30 p.m.
Club Room
San Francisco Marriott Marquis

AANS Maintenance of Certification/Continuing Medical Education Committee
12–2 p.m.
Yerba Buena Ballroom, Salon 3
San Francisco Marriott Marquis

Journal of Neurosurgery Publishing Group Finance Committee
12:30–1 p.m.
Club Room
San Francisco Marriott Marquis

AANS/CNS Quality Improvement Workgroup
12–1:30 p.m.
Yerba Buena Ballroom, Salon 4
San Francisco Marriott Marquis

ABNS Extra–Mural Subspecialty Item Writing Committee Luncheon Seminar
1:30–3 p.m.
Pacific A
San Francisco Marriott Marquis

AANS Public Relations Committee
2–3 p.m.
Yerba Buena Ballroom, Salon 1
San Francisco Marriott Marquis

SNS Resident Courses Meeting
2–3 p.m.
Pacific C
San Francisco Marriott Marquis

AANS Ethics Committee
2:30–3:30 p.m.
Pacific G
San Francisco Marriott Marquis

AANS History Section Business Meeting
2:30–4:30 p.m.
Sierra E
San Francisco Marriott Marquis
### AANS AND ANCILLARY MEETINGS

<table>
<thead>
<tr>
<th>Event</th>
<th>Time</th>
<th>Location</th>
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<tbody>
<tr>
<td><strong>AANS/CNS Section on Stereotactic &amp; Functional Neurosurgery Executive Board</strong></td>
<td>2–4:30 p.m.</td>
<td>Sierra D, San Francisco Marriott Marquis</td>
</tr>
<tr>
<td><strong>SNS Core Sub-committee Meeting</strong></td>
<td>3–4 p.m.</td>
<td>Pacific C, San Francisco Marriott Marquis</td>
</tr>
<tr>
<td><strong>AANS/CNS Section on Pain Executive Committee</strong></td>
<td>3–4:30 p.m.</td>
<td>Laurel, San Francisco Marriott Marquis</td>
</tr>
<tr>
<td><strong>N2QOD Operations Committee</strong></td>
<td>3–4:30 p.m.</td>
<td>Pacific H, San Francisco Marriott Marquis</td>
</tr>
<tr>
<td><strong>AANS/CNS Section on Tumor Executive Committee</strong></td>
<td>3–4:30 p.m.</td>
<td>Yerba Buena Ballroom, Salons 10, 11 and 12, San Francisco Marriott Marquis</td>
</tr>
<tr>
<td><strong>American Academy of Neurological Surgery Interim Executive Committee</strong></td>
<td>3–3:45 p.m.</td>
<td>Sierra I, San Francisco Marriott Marquis</td>
</tr>
<tr>
<td><strong>AANS/CNS Cerebrovascular Section Executive Committee</strong></td>
<td>3–5 p.m.</td>
<td>Golden Gate A, San Francisco Marriott Marquis</td>
</tr>
<tr>
<td><strong>FIENS Interim Meeting</strong></td>
<td>3:45–4:45 p.m.</td>
<td>Sierra G, San Francisco Marriott Marquis</td>
</tr>
<tr>
<td><strong>AANS Resident Mentoring Program Reception</strong></td>
<td>4–4:45 p.m.</td>
<td>Nob Hill D, San Francisco Marriott Marquis</td>
</tr>
<tr>
<td><strong>AANS Joint Sponsorship Council</strong></td>
<td>4–5 p.m.</td>
<td>Yerba Buena Ballroom, Salon 4, San Francisco Marriott Marquis</td>
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<tr>
<td><strong>Monday, April 7, 2014</strong></td>
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<tr>
<td><strong>Pinnacle Partners Corporate Breakfast</strong></td>
<td>7–8:30 a.m.</td>
<td>Yerba Buena Ballroom, Salons 5 and 6, San Francisco Marriott Marquis</td>
</tr>
<tr>
<td><strong>ThinkFirst Board of Directors</strong></td>
<td>7–8:30 a.m.</td>
<td>Pacific A, San Francisco Marriott Marquis</td>
</tr>
<tr>
<td><strong>AANS Bylaws Committee</strong></td>
<td>1–2 p.m.</td>
<td>Room 214, The Moscone Center South</td>
</tr>
<tr>
<td><strong>AANS/CNS Section on Neurotrauma &amp; Critical Care Executive Committee</strong></td>
<td>1–2 p.m.</td>
<td>Pacific H, San Francisco Marriott Marquis</td>
</tr>
<tr>
<td><strong>WFNS International Initiatives and Fundraising</strong></td>
<td>1–2 p.m.</td>
<td>Room 228–230, The Moscone Center South</td>
</tr>
<tr>
<td><strong>ABNS Advisory Council Luncheon</strong></td>
<td>1–2:30 p.m.</td>
<td>Pacific B, San Francisco Marriott Marquis</td>
</tr>
<tr>
<td><strong>AANS/CNS Joint Military Committee</strong></td>
<td>4:30–6:30 p.m.</td>
<td>Yerba Buena Ballroom, Salons 5 and 6, San Francisco Marriott Marquis</td>
</tr>
<tr>
<td><strong>AANS Young Neurosurgeons Committee</strong></td>
<td>5–7 p.m.</td>
<td>Yerba Buena Ballroom, Salons 1, 2 and 3, San Francisco Marriott Marquis</td>
</tr>
<tr>
<td><strong>Cleveland Clinic Alumni Reception</strong></td>
<td>6–7:30 p.m.</td>
<td>Pacific A, San Francisco Marriott Marquis</td>
</tr>
<tr>
<td><strong>Dandy Society Reception</strong></td>
<td>6–7:30 p.m.</td>
<td>Walnut, San Francisco Marriott Marquis</td>
</tr>
<tr>
<td><strong>Frazier Club Reception</strong></td>
<td>6–7:30 p.m.</td>
<td>Willow, San Francisco Marriott Marquis</td>
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</tbody>
</table>
### AANS AND ANCILLARY MEETINGS

**Urina C Neurosurgery Reception**
6–7:30 p.m.  
Club Room  
San Francisco Marriott Marquis

**NYU Neurosurgery Alumni Reception**
6–7:30 p.m.  
Four Seasons

**University of Colorado Alumni Reception**
6–8 p.m.  
Sierra I  
San Francisco Marriott Marquis

**Duke University Reception**
6–8 p.m.  
Four Seasons

**Jefferson Alumni Cocktail Reception**
6–8 p.m.  
Nob Hill D  
San Francisco Marriott Marquis

**MGH Neurosurgery Alumni Reception**
6–8 p.m.  
Pacific C  
San Francisco Marriott Marquis

**Stanford University Neurosurgery Alumni Reception**
6–8 p.m.  
Pacific B  
San Francisco Marriott Marquis

**ThinkFirst Reception**
6–8 p.m.  
Pacific H  
San Francisco Marriott Marquis

**Wayne State University Neurosurgery Alumni Reception**
6–8 p.m.  
Pacific E  
San Francisco Marriott Marquis

**University of Michigan Department of Neurosurgery Alumni Reception**
6–9 p.m.  
The View  
San Francisco Marriott Marquis

**Columbia University Medical Center Neurological Institute Alumni Reception**
6:30–7:30 p.m.  
Sierra H  
San Francisco Marriott Marquis

**Mayo Clinic Alumni Association Reception**
6:30–8 p.m.  
Sierra E  
San Francisco Marriott Marquis

**University of Iowa Friends and Alumni Reception**
6:30–8 p.m.  
Sierra A  
San Francisco Marriott Marquis

**Tuesday, April 8**

**AANS/CNS Drugs and Devices Committee**
6–7 a.m.  
Pacific D  
San Francisco Marriott Marquis

**WFNS Administrative Council**
6–7 a.m.  
Sierra H  
San Francisco Marriott Marquis

**NREF Research Symposium**
4–5 p.m.  
Yerba Buena Ballroom, Salons 5 and 6  
San Francisco Marriott Marquis

**NREF Donor and Grantee Reception**
5–6 p.m.  
Yerba Buena Ballroom, Salon 4  
San Francisco Marriott Marquis

**ACS Advisory Council for Neurological Surgery**
7–8:30 a.m.  
Sierra G  
San Francisco Marriott Marquis

**Accreditation Council for Pediatric Neurosurgical Fellowships**
1–2 p.m.  
Pacific D  
San Francisco Marriott Marquis

**CSM–S Investigator Meeting**
1–2 p.m.  
Sierra E  
San Francisco Marriott Marquis

**AANS/CNS Section on Pediatrics Matson Reception**
6–8 p.m.  
Pacific A  
San Francisco Marriott Marquis
Wednesday, April 9

AANS/CNS Section on Pediatric Neurological Surgery Executive Committee Meeting

12:30–1:30 p.m.
Pacific H
San Francisco Marriott Marquis

2014/2015 AANS Annual Meeting and Scientific Program Committees Post Convention Briefing

2–3:30 p.m.
Pacific A
San Francisco Marriott Marquis
SHUTTLE INFORMATION

Two shuttle routes will run to and from the South Building of The Moscone Center and the Official AANS Housing Partners, JW Marriott Union Square, Handlery Hotel, Villa Florence, Hilton Union Square, Grand Hyatt Union Square and Palace Hotel.

Friday, April 4
4:30–7:15 p.m.*
Every 24–30 minutes

Saturday, April 5
6:30 a.m.–5:30 p.m.*
Every 24–30 minutes

Sunday, April 6
6:30–9 a.m.
Every 12–15 minutes
9 a.m.–3:30 p.m.
Every 24–30 minutes
3:30–5:30 p.m.
Every 12–15 minutes

AANS Opening Reception
6:30–9 p.m.
Every 12–15 minutes
7–9 p.m.
Service to and from Exploratorium and Official AANS Housing Partners every 10 minutes

Monday, April 7
6:30–9 a.m.
Every 12–15 minutes
9 a.m.–3:30 p.m.
Every 24–30 minutes
3:30–7 p.m.*
Every 12–15 minutes

Tuesday, April 8
6:30–9 a.m.
Every 12–15 minutes
9 a.m.–3:30 p.m.
Every 24–30 minutes
3:30–5:45 p.m.*
Every 12–15 minutes

Wednesday, April 9
6:30–9 a.m.
Every 12–15 minutes
9 a.m.–3:30 p.m.
Every 24–30 minutes
3:30–5:45 p.m.*
Every 12–15 minutes

*Denotes last shuttle bus from the convention Center

Supported by Medtronic.

2014 AANS Annual Scientific Meeting Shuttle Routes between Official Housing Partners and The Moscone Center

Route A – Pink
JW Marriott Union Square
Handlery Hotel
Villa Florence
Hilton Union Square

Route B – Green
Grand Hyatt Union Square
Palace Hotel

Within Walking Distance to Convention Center
San Francisco Marriott Marquis
Courtyard by Marriott
Four Seasons
InterContinental
Mosser Hotel
St. Regis
W Hotel
6:30 a.m.–5:30 p.m.
AANS REGISTRATION
Location: South Lobby, The Moscone Center South

8 a.m.–5 p.m.
PRACTICAL CLINICS

001 Techniques for Adult Spinal Deformity Surgery: A Hands-on Course for Neurosurgeons
Location: 308/310, The Moscone Center South
Co-directors: Peter D. Angevine, MD, MPH, FAANS; Praveen V. Mummaneni, MD, FAANS
Faculty: Kai-Ming Fu, MD; Robert F. Heary, MD, FAANS; Tyler R. Koski, MD, FAANS; Frank La Marca, MD, FAANS; Mark A. Pichelmann, MD; Christopher I. Shaffrey, MD, FAANS; Justin S. Smith, MD, PhD, FAANS

002 Critical-care Procedures for the Neurosurgical Advanced Practice Provider
Location: 232–234, The Moscone Center South
Director: Twyila Lay, NP, MS
Faculty: Tracey Anderson, CNRN, FNP-BC, ACNP-BC; Michele Grigaitis, NP; J. Claude Hemphill III, MD; Marianne E. Langlois, PA-C; Megan Lee, PA-C; Gregory J. A. Murad, MD, FAANS, Shelly D. Timmons, MD, PhD, FAANS

003 Introduction to Cerebrovascular Neurosurgery for Residents
Location: 307/309, The Moscone Center South
Co-directors: J Mocco, MD, FAANS; Erol Veznedaroglu, MD, FAANS
Faculty: Adam S. Arthur, MD, MPH, FAANS; Bernard R. Bendok, MD, FAANS; Mandy Jo Binning, MD; Andrew F. Ducruet, MD; Andrew W. Grande, MD; Patrick P. Han, MD, FAANS; Jay U. Howington, MD, FAANS; Alexander Arash Khalesi, MD; Louis J. Kim, MD, FAANS; Elad I. Levy, MD, FAANS; William J. Mack, MD; Christopher S. Ogilvy, MD, FAANS; Aditya S. Pandey, MD; Eric C. Peterson, MD; Howard A. Riina, MD, FAANS; Andrew J. Ringer, MD, FAANS; Adnan H. Siddiqui, MD, PhD, FAANS

8 a.m.–12 p.m.
PRACTICAL CLINICS

004 Goodman Oral Board Review
Location: 202–204, The Moscone Center South
Director: Allan D. Levi, MD, PhD, FAANS
Faculty: James S. Harrop, MD, FAANS; Thomas J. Leipzig, MD, FAANS; David I. Sandberg, MD, FAANS; Robert J. Spinner, MD, FAANS

*Registered attendees will receive a ticket for the resident’s dinner.

Introduction to Cerebrovascular Neurosurgery for Residents Dinner
6:30–8:30 p.m.
Tres – 130 Townsend St.
Bussing will depart from the San Francisco Marriott Marquis, Mission Street side at 6:15 p.m.
005 Negotiating Strategies in Neurosurgery
Location: 238, The Moscone Center South
Co-directors: Kim J. Burchiel, MD, FAANS; E. Hunter Dyer, MD, FAANS; M. Sean Grady, MD, FAANS
Faculty: Dong H. Kim, MD, FAANS; Jonathan R. Slotkin, MD

006 Update on Malignant Brain Tumors for the General Neurosurgeon
Location: 228–230, The Moscone Center South
Co-directors: Andrew T. Parsa, MD, PhD, FAANS; Michael W. Weaver, MD, FAANS
Faculty: Manish K. Aghi, MD, FAANS; Richard W. Byrne, MD, FAANS; Alexandra J. Golby, MD, FAANS; Russell R. Lonser, MD, FAANS; Charles L. Rosen, MD, PhD, FAANS; Mark L. Rosenblum, MD, FAANS; L. Gerard Toussaint III, MD, FAANS; Isaac Yang, MD

007 Deep Brain Stimulation: Update and New Directions
Location: 220–226, The Moscone Center South
Co-directors: Aviva Aboch, MD, PhD, FAANS; Parag G. Patil, MD, PhD, FAANS
Faculty: Nicholas M. Boulis, MD, FAANS; Michael G. Kaplitt, MD, PhD, FAANS; Peter E. Konrad, MD, PhD, FAANS; Brian H. Kopell, MD, FAANS; Paul S. Larson, MD, FAANS; Donald M. Whiting, MD, FAANS

008 Brain Neoplasms: Updates on Diagnostics Through Therapeutics
Location: 236, The Moscone Center South
Co-directors: Christi DeLemos, RN; Nader Sanai, MD
Faculty: Clark C. Chen, MD, PhD, FAANS; Steven N. Kalkanis, MD, FAANS; Michael W. McDermott, MD, FAANS; Antonio M. Omuro, MD; Ganesh Rao, MD, FAANS; Kiarash Shahlaie, MD, PhD; Glen H. J. Stevens, DO, PhD; B. Gregory Thompson Jr., MD, FAANS

009 Incorporation of Electronic Technology to Improve Clinical Practice: Current Uses and Future Directions
Location: 302, The Moscone Center South
Co-directors: Richard C. E. Anderson, MD, FAANS; Neil A. Feldstein, MD, FAANS
Faculty: Christopher P. Kellner, MD; Bob Matsuoka; Clemens M. Schirmer, MD, PhD; Nicholas J. Szerlip, MD; A. Samy Youssef, MD, FAANS

9:45–10:15 a.m.
Beverage Break
Location: Foyers outside rooms 200, 301 & 310, The Moscone Center South

12–1 p.m.
Practical Clinic Lunch*
Location: Concessions outside 102–104, The Moscone Center South
*For attendees participating in an All Day Practical Clinic or a morning AND afternoon Practical Clinic only.

Consessions will be available for all attendees to purchase.

008 Brain Neoplasms: Updates on Diagnostics Through Therapeutics
Location: 236, The Moscone Center South
Co-directors: Christi DeLemos, RN; Nader Sanai, MD
Faculty: Clark C. Chen, MD, PhD, FAANS; Steven N. Kalkanis, MD, FAANS; Michael W. McDermott, MD, FAANS; Antonio M. Omuro, MD; Ganesh Rao, MD, FAANS; Kiarash Shahlaie, MD, PhD; Glen H. J. Stevens, DO, PhD; B. Gregory Thompson Jr., MD, FAANS

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12–1 p.m.
Practical Clinic Lunch*
Location: Concessions outside 102–104, The Moscone Center South
*For attendees participating in an All Day Practical Clinic or a morning AND afternoon Practical Clinic only.

Consessions will be available for all attendees to purchase.
1–5 p.m.
PRACTICAL CLINICS

010 Spinal Image Guidance and Advanced Intraoperative Imaging Techniques
Location: 303/305, The Moscone Center South
Co-Directors: Eric W. Nottmeier, MD, FAANS; Eric A. Potts, MD, FAANS
Faculty: Roger Hartl, MD, FAANS; Iain H. Kalfas, MD, FAANS; Dean G. Karahalios, MD, FAANS; Jean-Pierre Mobasser, MD, FAANS; Stephen M. Pirris, MD, FAANS; James M. Schuster, MD, PhD, FAANS
Supported by an educational grant provided by NeuroLogica Corporation.

011 Peripheral Nerve Injuries, Entrapments and Tumors: Examination and Evaluation
Location: 238, The Moscone Center South
Co-directors: Line Jacques, MD, FAANS; Robert J. Spinner, MD, FAANS
Faculty: Allan H. Friedman, MD, FAANS; Marie-Noelle Hebert-Blouin, MD, FAANS; Allen H. Maniker, MD, FAANS; Rajiv Midha, MD, MS, FAANS; Lynda Jun-San Yang, MD, PhD, FAANS; Eric L. Zager, MD, FAANS

012 Neurotrauma Critical Care Review and Update for the Practicing Neurosurgeon
Location: 206–210, the Moscone Center South
Directors: Patricia B. Raksin, MD, FAANS
Faculty: Perry A. Ball, MD, FAANS; William M. Coplin, MD; Joshua E. Medow, MD, MS, FAANS; David O. Okonkwo, MD, PhD; Sherry L. Taylor, MD, PhD, FAANS; Philip A. Villanueva, MD, FAANS

013 Transfacet Technology: An Alternative to Pedicle Screw Fixation with Interbody Techniques
Location: 220–226, The Moscone Center South
Co-directors: Edward C. Benzel, MD, FAANS; Neil R. Mahnstra, MD
Faculty: Marc E. Eichler, MD, FAANS; Bruce M. Frankel, MD, FAANS; Jean-Marc Voyadzis, MD, FAANS

014 3D Anatomy and Approaches to the Posterior Fossa and Posterior Skull Base
Location: 301, The Moscone Center South
Co-directors: Juan Carlos Fernandez-Miranda, MD; Jeffrey M. Sorenson, MD, FAANS

015 Cranio-cervical and C1C2 Stabilization Techniques, Surgical Approaches
Location: 200–212, The Moscone Center South
Directors: Vincent C. Traynelis, MD, FAANS
Faculty: Richard C. E. Anderson, MD, FAANS; Marc E. Eichler, MD, FAANS; Noel I. Perin, MD, FAANS; Charles Sansur, MD, MHSc; Rick C. Sasso, MD; Paul D. Sawin, MD, FAANS; Nicholas Theodore, MD, FAANS

016 Practical and Technical Aspects of Transsphenoidal Surgery
Location: 228–230, The Moscone Center South
Director: Gail L. Rosseau, MD, FAANS
Faculty: David S. Baskin, MD, FAANS; Chandrashekhar Deopujari, MSMCh; John A. Jane Jr., MD, FAANS; Daniel F. Kelly, MD, FAANS; Engelbert Knosp, MD; Edward R. Laws Jr., MD, FAANS(L); Andrew S. Little, MD, FAANS; James K. Liu, MD, FAANS; Ian E. McCutcheon, MD, FAANS; Edward H Oldfield, MD, FAANS; Nelson M. Oyesiku, MD, PhD, FAANS; Daniel Monte-Serrat Prevedello, MD; Jean Regis, MD; Theodore H. Schwartz, MD, FAANS; Jason P. Sheehan, MD, PhD, FAANS

017 Update of General Neurosurgery for the Practitioner
Location: 236, The Moscone Center South
Director: Thomas J. Leipzig, MD, FAANS
Faculty: Peter B. Letarte, MD, FAANS; Allan D. Levi, MD, PhD, FAANS; John H. Sampson, MD, PhD, FAANS
SUNDAY, APRIL 5

2:45–3:15 p.m.
Beverage Break
Location: Foyers outside rooms 200, 301 & 310,
The Moscone Center South

3–5 p.m.
SPEAKER READY ROOM
Location: 252–256, The Moscone Center
SUNDAY, APRIL 6

6:30 a.m.–6:30 p.m.
AANS REGISTRATION
Location: South Lobby, The Moscone Center South

7:30 a.m.–4:30 p.m.
PRACTICAL CLINICS

018 Head Trauma: Current Treatments and Controversies with Hands-on Practical Session in Brain Monitoring
Location: 309, The Moscone Center South
Co-directors: David O. Okonkwo, MD, PhD; Shelly D. Timmons, MD, PhD, FAANS
Faculty: M. Ross Bullock, MD, PhD; Kevin J. Gibbons, MD, FAANS; Jack I. Jalio, MD, PhD, FAANS; Joshua E. Medow, MD, MS, FAANS; Julie G. Pilitsis, MD, PhD, FAANS; Jonathan R. Slotkin, MD

019 Invention and Innovation in Neurosurgery
Location: 232–234, The Moscone Center South
Director: T Forcht Dagi, MD, MPH, MBA, DMedSc, FAANS
Faculty: Edward C. Benzel, MD, FAANS

020 Disaster Management and Emergency Preparedness (DMEP)
Location: 238, The Moscone Center South
Director: Jay Doucet, MD, MSc
Faculty: Jorie Klein, RN; Glen Tinkoff, MD; Leonard Weirer, MD

021 Neurosurgical 2014 CPT Coding Update with ICD-10
Location: 303, The Moscone Center South
Director: Joseph S. Cheng, MD, MS, FAANS
Faculty: Peter D. Angevine, MD, MPH, FAANS; R. Patrick Jacob, MD, FAANS; Robert R. Johnson II, MD, FAANS; Kim Pollock, RN, MBA; John K. Ratliff, MD, FAANS; Clemens M. Schirmer, MD, PhD; Scott D. Simon, MD

7:30 a.m.–11:30 a.m.
PRACTICAL CLINICS

022 Microsurgical Management of Intracranial Aneurysms: Site-specific Surgical Anatomy, Operation Intervention and Complication Management
Location: 302, The Moscone Center South
Director: Arthur L. Day, MD, FAANS
Faculty: H. Hunt Batjer, MD, FAANS; Ralph G. Dacey Jr., MD, FAANS; Steven L. Giannotta, MD, FAANS

023 Spinal Stabilization, Fusion and Instrumentations: Biomechanics and Techniques
Location: 307, The Moscone Center South
Co-directors: Kaushik Das, MD, FAANS; Langston T. Holly, MD, FAANS
Faculty: Virany Huynh Hillard, MD, FAANS; Saad Abul Khairi, MD, FAANS; Naresh P. Patel, MD, FAANS; Nicholas Theodore, MD, FAANS

024 Nuts and Bolts of Posterior Fossa Surgery: How I Do It
Location: 228–230, The Moscone Center South
Director: Anil Nanda, MD, MPH, FAANS
Faculty: Juan Carlos Fernandez-Miranda, MD; Michael J. Link, MD, FAANS; L. Madison Michael II, MD, FAANS; Daniel Monte-Serrat Prevedello, MD; Volker Seifert, MD, PhD

025 3D Anatomy and Approaches to the Supratentorial Area and Anterior Skull Base
Location: 301, The Moscone Center South
Co-directors: Juan Carlos Fernandez-Miranda, MD; Jeffrey M. Sorenson, MD, FAANS
026 MIS: Direct Lateral Retroperitoneal Transpsoas Fusion
Location: 308/310, The Moscone Center South
Co-Directors: Adam S. Kanter, MD; Juan Santiago Uribe, MD
Faculty: Larry T. Khoo, MD; John E. O’Toole, MD, FAANS; Luiz Pimenta, MD, PhD; William D. Smith, MD; William R. Taylor, MD, FAANS

027 The Science of Clinical Practice: Using Registries and Other Tools to Improve the Quality of Neurosurgical Care
Location: 202–204, The Moscone Center South
Co-directors: Anthony L. Asher, MD, FAANS; Matthew J. McGirt, MD
Faculty: Zoher Ghogawala, MD, FAANS; Matthew L. Hanley, MD; Katie Orrico, JD; Ted Speroff, PhD

028 Update on Spine Trauma Management
Location: 206–210, The Moscone Center South
Co-directors: Michael G. Fehlings, MD, PhD, FAANS; James S. Harrop, MD, FAANS
Faculty: Bizhan Aarabi, MD, FAANS; Bradley Jacobs, MD; Allan D. Levi, MD, PhD, FAANS; Nicholas Theodore, MD, FAANS

029 State-of-the-Art: Cranial Endoscopy
Location: 304/306, The Moscone Center South
Director: Alan R. Cohen, MD, FAANS
Faculty: Johnathan A. Engh, MD, FAANS; Michael R. Gaab, MD, PhD; Daniel J. Guillaume, MD, FAANS; Costas G. Hadjipanayis, MD, PhD, FAANS; Carl B. Heilman, MD, FAANS; Tenoch Herrada-Pineda, MD, FAANS; Ning Lin, MD; Henry W. S. Schroeder, MD, PhD; Theodore H. Schwartz, MD, FAANS; Mark M. Souweidane, MD, FAANS

8:30 a.m.–11:30 a.m.
ADVANCED PRACTICE PROVIDERS PLENARY SESSION
Location: 305, The Moscone Center South
Moderator: Twyila Lay, NP, MS
8:30–8:59 a.m.
Update on Tumor Management (Immunotherapy)
Andrew E. Sloan, MD, FAANS
9–9:29 a.m.
Update on the 2013 SCI Guidelines
Nicholas Theodore, MD, FAANS
9:30–10:29 a.m.
Malpractice
Michael Loughran and Bruce W. Dmytrow, BS, MBA
10:30–11:29 a.m.
Concussion
James Kelly, MD

9:45–10:15 a.m.
Beverage Break
Location: Foyers outside rooms 200, 301 & 310, The Moscone Center South

11:30 a.m.–12:30 p.m.
Practical Clinic Lunch*
Location: Concessions outside 102–104, The Moscone Center South
*For attendees participating in an All Day Practical Clinic or a morning AND afternoon Practical Clinic only.
Concessions will be available for all attendees to purchase.
SUNDAY, APRIL 6

12:30–4:30 p.m.

PRACTICAL CLINICS

030 Management of Incidental Imaging Findings
Location: 202–204, The Moscone Center South
Co-Directors: Cormac O. Maher, MD, FAANS; R. Michael Scott, MD, FAANS(L)
Faculty: John H. Chi, MD, FAANS; Arthur L. Day, MD, FAANS; Stephen J. Haines, MD, FAANS; Mark R. Proctor, MD, FAANS; Eric J. Woodard, MD, FAANS

031 Neurosurgeons Role in Addressing Concussion and Sports Injury
Location: 206–210, The Moscone Center South
Co-Directors: Julian E. Bailes Jr., MD, FAANS; Gail L. Rosseau, MD, FAANS
Faculty: Jeff Allen; Richard G. Ellenbogen, MD, FAANS; Kevin Guskievich, PhD, ATC; Blaine Hoshizaki, PhD; Joseph C. Maroon, MD, FAANS(L); Allen K. Sills, MD, FAANS; Nicholas Theodore, MD, FAANS

032 Update on Spinal Radiosurgery
Location: 228–230, The Moscone Center South
Co-directors: Gary M. Bloomgarden, MD, FAANS; Scott A. Butler, CMPE
Faculty: Brian Asmussen; Todd Barnes; Lisa Beebe; David F. Jimenez, MD, FAANS, FACS; Gregory B. Lanford, MD, FAANS; Hiroshi Nakano, MBA; Kristopher Michael Webb, MD, FAANS

033 Advanced Strategies for Your Neurosurgical Practice
Location: 228–230, The Moscone Center South
Co-directors: Gary M. Bloomgarden, MD, FAANS; Scott A. Butler, CMPE
Faculty: Brian Asmussen; Todd Barnes; Lisa Beebe; David F. Jimenez, MD, FAANS, FACS; Gregory B. Lanford, MD, FAANS; Hiroshi Nakano, MBA; Kristopher Michael Webb, MD, FAANS

034 Applications of Video and 3D Technology in Neurosurgery
Location: 236, The Moscone Center South
Director: Jeffrey M. Sorenson, MD, FAANS
Faculty: Juan Carlos Fernandez-Miranda, MD; Andrew W. Grande, MD; Tonya Hines, BA; James K. Liu, MD, FAANS; John M. Tew Jr., MD, FAANS(L)

035 How to Tackle Difficult Cranial Cases: A Step-by-step 3D Case-based Presentation
Location: 301, The Moscone Center South
Directors: Aaron A. Cohen-Gadol, MD, FAANS
Faculty: Michael T. Lawton, MD, FAANS, B. Gregory Thompson Jr., MD, FAANS; Harry R. van Loveren, MD, FAANS

036 Thoracic and Lumbar Stabilization and Fusion: Strategies to Improve Outcomes and Reduce Complications
Location: 200–212, The Moscone Center South
Co-directors: Regis W. Haid Jr., MD, FAANS; Christopher I. Shaffrey, MD, FAANS
Faculty: Dean Chou, MD, FAANS; Charles Kunz, MD, FAANS; Praveen V. Mummmaneni, MD, FAANS; Juan Santiago Uribe, MD; Michael Y. Wang, MD, FAANS

037 Brain Mapping and Awake Mapping Techniques
Location: 307, The Moscone Center South
Co-directors: Gerald A. Grant, MD, FAANS; Guy M. McKhann II, MD, FAANS
Faculty: Nicholas M. Barbaro, MD, FAANS; Gene H. Barnett, MD, MBA, FAANS; Mitchel S. Berger, MD, FAANS; Hugues Duffau, MD; Konstantinos N. Fountas, MD, PhD; Jorge Alvaro Gonzalez-Martinez, MD, PhD, FAANS; Fernando L. Vale, MD, FAANS

Supported by an educational grant provided by IMRIS

038 Boot Camp for the Neurosurgical Advanced Practice Provider
Location: 305, The Moscone Center South
Director: Tracey Anderson, CNRN, FNP-BC, ACNP-BC
Faculty: Cathy Cartwright, MSN, RN; Kenneth Kane; BS, CO; Felipe Villanueva, CPO
2:45–3:15 p.m.
Beverage Break
Location: Foyers outside rooms 200, 301 & 310, The Moscone Center South

2–4:30 p.m.
OSLER LECTURE FOR MEDICAL STUDENTS

Location: 132–133, The Moscone Center North

2 p.m.
Welcome Reception for Faculty and Medical Students

2:30–2:40 p.m.
Welcome and Introduction
William Couldwell, MD, PhD, FAANS, President AANS

2:40–3:20 p.m.
Osler Lecture
Mentorship in Neurosurgery
Donald O. Quest, MD, FAANS(L)

3:20-3:35 p.m.
The Neurosurgeon as Academician
Karin M. Muraszko, MD, FAANS

3:35-3:50 p.m.
The Neurosurgeon as Innovator
Charles J. Prestigiacomo, MD, FAANS

3:50-4:05 p.m.
The Neurosurgeon as Humanist
Anil Nanda, MD, FAANS

4:05-4:20 p.m.
The Neurosurgeon as Leader
William Couldwell, MD, PhD, FAANS, President AANS

4:20-4:30 p.m.
Medical Student Participation in the Family of Neurosurgery – The Path to Becoming a Neurosurgeon
Charles J. Prestigiacomo, MD, FAANS

2:45–4:45 p.m.
HOSPITAL EMPLOYMENT FOR NEUROSURGEONS: IS IT IN YOUR BEST INTEREST AND HOW DOES IT WORK?

Location: 131, The Moscone Center North

Moderator: Troy M. Tippett, MD, FAANS
Panelists: James R. Bean, MD, FAANS; Patricia S. Hofstra; Alex B. Valadka, MD, FAANS; Andrea Winslow, BS

2:45-3:14 p.m.
Andrea Winslow

3:15-3:44 p.m.
Alex B. Valadka, MD, FAANS

3:45-4:14 p.m.
James R. Bean, MD, FAANS

4:15-4:44 p.m.
Patricia S. Hofstra

Sponsored by the Neurosurgery Research and Education Foundation (NREF)
SUNDAY, APRIL 6

2:45–4:45 p.m.
NEUROSURGEON AND RETIREMENT

Location: 130, The Moscone Center North
Moderators: Volker K. H. Sonntag, MD, FAANS(L); Charles B. Wilson, MD, DSc, MSHA, FAANS(L)

2:45–3:08 p.m.
Charles B. Wilson, MD, DSc, MSHA, FAANS(L)

3:09–3:27 p.m.
David G. Piepgras, MD, FAANS(L)

3:28–3:46 p.m.
Paul B. Nelson, MD, FAANS(L)

3:47–4:05 p.m.
Volker K. H. Sonntag, MD, FAANS(L)

4:06–4:24 p.m.
Frederick A. Simeone, MD, FAANS(L)

4:25–4:45 p.m.
Question and Answer

3–5 p.m.
SPEAKER READY ROOM

Location: 252–256, The Moscone Center

Get up-to-the-minute details on:

- Registration deadlines
- New practical clinics and breakfast seminars
- Featured speakers
- Opening Ceremonies
- The Neurosurgical Top Gun competition
- Marshal opportunities for residents and fellows

Search the official event hashtag – #AANS2014 – for all things annual meeting.

Follow us! @AANSNeuro
SUNDAY, APRIL 6

5–6:30 p.m.
AANS OPENING CEREMONIES

Location: 102–104, The Moscone Center South

To begin a week of outstanding educational programming, this year’s Opening Ceremonies program features two revolutionary individuals who will speak to attendees. Sir Bob Geldof – the Band Aid founder who has used music to raise awareness about the issue of poverty, and who organized the 1985 Live Aid concert and the Live 8 concerts in 2005 – will share his experiences about international social justice and peace, how he evolved from musician to social activist, and the biggest challenges facing the world when it comes to hunger. Virtual-reality pioneer Jaron Lanier also will address the audience, discussing the importance of expanding boundaries and why innovation is a never-ending process that everyone should embrace. In addition, a plaque presentation will be made to AANS Past President Donald O. Quest, MD, FAANS(L), who earlier in the day will address medical student attendees during the inaugural Osler Lecture. We also will honor Robert H. Rosenwasser, MD, FAANS, with the AANS Cushing Award for Technical Excellence and Innovation in Neurosurgery.

5:03-5:05 p.m.
AANS Cushing Award For Technical Excellence and Innovation in Neurosurgery

Recipient: Robert H. Rosenwasser, MD, FAANS

5:06-5:09 p.m.
Plaque Presentation

Recipient: Donald O. Quest, MD, FAANS(L)

5:10-5:54 p.m.
Invited Speaker

Speaker: Sir Bob Geldof

5:55-6:34 p.m.
Invited Speaker

Speaker: Jaron Lanier

6:35-6:50 p.m.
Transport to Opening Reception at Exploratorium

7–9 p.m.
AANS OPENING RECEPTION

Location: Exploratorium

Located on the San Francisco waterfront, the Exploratorium resides on Pier 15 of the historic Embarcadero. This world-class museum of art and science, offering hundreds of hands-on exhibits, presents a treat for the senses.

The Exploratorium promises to be a spectacular venue for this year’s AANS Opening Reception.

Allow the AANS to fête you in West Coast-style on the San Francisco Bay while you connect with friends and colleagues.

One ticket to the AANS Opening Reception is included with each medical attendee and spouse/guest registration.

Additional tickets also are available for purchase.

Bussing will be provided from The Moscone Center and all Official AANS Hotels from 6:30–9:15 p.m.
<table>
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<tr>
<th>Time</th>
<th>Event</th>
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</table>
| 6:30 a.m.– 4 p.m. | **AANS REGISTRATION**  
Location: South Lobby, The Moscone Center South |
| 6:30 a.m.– 5 p.m. | **SPEAKER READY ROOM**  
Location: 252–256, The Moscone Center South |
| 7–9 a.m.   | **BREAKFAST SEMINARS**  
Ticket Required  
Fee: $100  
Breakfast will be available in the room of the session for Breakfast Seminar attendees. |
|            | **101 Update on Rx of Nerve Tumors/MPNST/Peripheral Nerve Spinal Tumors**  
Location: 238, The Moscone Center South  
**Moderator:** Rajiv Midha, MD, MS, FAANS  
**Panelists:** Michel Kliot, MD, FAANS; Paul C. McCormick, MD, FAANS; Robert J. Spinner, MD, FAANS |
|            | **102 Definition and Diagnosis of Brain Death**  
NEW!  
Location: 303, The Moscone Center South  
**Moderator:** Alex B. Valadka, MD, FAANS  
**Panelists:** Ann-Christine Duhaime, MD, FAANS; Owen B. Samuels, MD; Stacey C. Quintero Wolfe, MD, FAANS; Joseph C. Zacko, MD |
|            | **103 Skating to Where the Puck Will Be: Strategies for Neurosurgery Practices and Programs to Compete in Health Care's Future**  
NEW!  
Location: 305, The Moscone Center South  
**Moderator:** Edie E. Zusman, MD, FAANS  
**Panelists:** Robert M. Friedlander, MD, FAANS; Robert E. Harbaugh, MD, FAANS; Dong H. Kim, MD, FAANS; Karin R. Swartz, MD, FAANS |
|            | **104 So You Want to Be an Expert Witness**  
Location: 132, The Moscone Center North  
**Moderator:** James R. Bean, MD, FAANS  
**Panelists:** W. Ben Blackett, MD, JD, FAANS(L); Russell M. Pelton, JD; Susan Penney, JD |
|            | **105 Humanitarian Neurosurgery**  
Location: 304, The Moscone Center South  
**Moderator:** Merwyn Bagan, MD, MPH, FAANS(L) |
|            | **106 Surgical Approaches to the Lateral Skull Base**  
Location: 110, The Moscone Center North  
**Moderator:** Jeffrey J. Olson, MD, FAANS  
**Panelists:** Jeremy N. Ciporen, MD; John G. Golfinos, MD, FAANS; Joung H. Lee, MD, FAANS; Harry R. van Loveren, MD, FAANS |
|            | **107 Professional Issues: Challenges and Opportunities for the Neurosurgical Advanced Practice Provider**  
Location: 111, The Moscone Center North  
**Moderator:** Twyila Lay, NP, MS  
**Panelists:** Tracey Anderson, CNRN, FNP-BC, ACNP-BC; Deborah L. Benzil, MD, FAANS; Joseph S. Cheng, MD, MS, FAANS; Marianne E. Langlois, PA-C |
|            | **108 Challenging Spinal Cases: Pearls and Pitfalls**  
Location: 309, The Moscone Center South  
**Moderator:** Edward C. Benzel, MD, FAANS  
**Panelists:** Deb A. Bhowmick, MD; Stephen Duetzmann, MD; Daniel Jin Hoh, MD; R. Patrick Jacob, MD, FAANS |
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<tr>
<th>Session</th>
<th>Title</th>
<th>Location</th>
<th>Moderator</th>
<th>Panelists</th>
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<tbody>
<tr>
<td>109</td>
<td>Developing New Technology: Bringing Devices to Market</td>
<td>307, The Moscone Center South</td>
<td>Matthew A. Howard III, MD, FAANS</td>
<td>John R. Adler Jr., MD, FAANS; Richard D. Bucholz, MD, FAANS; Kevin T. Foley, MD, FAANS; Michael W. McDermott, MD, FAANS</td>
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<tr>
<td>110</td>
<td>Cervical Spondylotic Myelopathy</td>
<td>310, The Moscone Center South</td>
<td>Iain H. Kalfas, MD, FAANS</td>
<td>Michael G. Kaiser, MD, FAANS; Praveen V. Mummaneni, MD, FAANS; Hiroshi Nakagawa, MD; Eric J. Woodard, MD, FAANS</td>
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<tr>
<td>111</td>
<td>Measuring Outcomes and Safety in Neurosurgery</td>
<td>220–222, The Moscone Center South</td>
<td>Philip V. Theodosopoulos, MD, FAANS</td>
<td>Alan S. Boulos, MD, FAANS; Paul J. Camarata, MD, FAANS; James P. Chandler, MD, FAANS; Thomas C. Origitano, MD, PhD, FAANS</td>
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<td>112</td>
<td>Spondylolisthesis: Controversies in Management</td>
<td>133, The Moscone Center North</td>
<td>Philip R. Weinstein, MD, FAANS(L)</td>
<td>John M. Caridi, MD; Robert F. Heary, MD, FAANS; Juan Santiago Uribe, MD; Michael Y. Wang, MD, FAANS</td>
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<td>113</td>
<td>Anticoagulation for the Neurosurgeon and Hemostasis in Neurosurgery</td>
<td>306, The Moscone Center South</td>
<td>Christopher M. Loftus, MD, FAANS</td>
<td>Craig H. Rabb, MD, FAANS; Christopher D. Roark, MD; Bruce Tranmer, MD, FAANS</td>
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<td>114</td>
<td>Return to Play After Sports Injury II: Body Injury for Spine</td>
<td>302, The Moscone Center South</td>
<td>Michael W. Groff, MD, FAANS</td>
<td>Daniel C. Lu, MD, PhD; Christina M. Notarianni, MD; Srinivas K. Prasad, MD</td>
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<tr>
<td>115</td>
<td>Beginning Your Academic Career: Answers to Your Questions</td>
<td>131, The Moscone Center North</td>
<td>Robert J. Dempsey, MD, FAANS</td>
<td>Peter J. Jannetta, MD, DSc, FAANS(L); Jeffrey R. Leonard, MD, FAANS; Jon H. Robertson, MD, FAANS; Shenandoah Robinson, MD, FAANS</td>
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<tr>
<td>116</td>
<td>If I Could Do That Case Over Again: Discussion of Complications of Cranial Surgery</td>
<td>203, The Moscone Center South</td>
<td>John Diaz Day, MD, FAANS</td>
<td>Oliver Bozinov, MD; Giovanni Broggi, MD; Steven L. Giannotta, MD, FAANS; Peter Nakaji, MD, FAANS</td>
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<td>117</td>
<td>Contemporary Stereotactic Radiosurgery</td>
<td>308, The Moscone Center South</td>
<td>Jason P. Sheehan, MD, PhD, FAANS</td>
<td>John Buatti, MD; Douglas S. Kondziolka, MD, FAANS; Jean Regis, MD; John H. Shin, MD</td>
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<tr>
<td>118</td>
<td>Complications of Complex Spinal Surgery: Lessons Learned</td>
<td>202, The Moscone Center South</td>
<td>Ziya L. Gokaslan, MD, FAANS</td>
<td>Anthony K. Frempong-Boadu, MD, FAANS; Russ P. Nockels, MD, FAANS; Anthony H. Sin, MD, FAANS; Kevin C. Yao, MD, FAANS</td>
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<tr>
<td>119</td>
<td>Resective Strategies for Epilepsy</td>
<td>202/212, The Moscone Center South</td>
<td>Gerald A. Grant, MD, FAANS</td>
<td>Frederick A. Boop, MD, FAANS; David W. Roberts, MD, FAANS; Dennis D. Spencer, MD, FAANS; Nitin Tandon, MD, FAANS</td>
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</table>
## MONDAY, APRIL 7

### 120 Open vs. Endoscopic Approaches to the Anterior Skull Base

**Location:** 113, The Moscone Center North  
**Moderator:** Chandranath Sen, MD, FAANS  
**Panelists:** Ossama Al-Mefty, MD, FAANS; Carlos A. David, MD, FAANS; James J. Evans, MD, FAANS; Fred Gentili, MD, MSc, FAANS

### 121 Vertebral Column Tumors

**Location:** 232-234, The Moscone Center South  
**Moderator:** Mark H. Bilsky, MD, FAANS  
**Panelists:** Peter C. Gerszten, MD, MPH, FAANS; Laurence D. Rhines, MD, FAANS; Daniel M. Sciubba, MD, FAANS

### 122 Endovascular vs. Microsurgical Techniques for the Optimal Treatment of Intracranial Aneurysms

**Location:** 228-230, The Moscone Center South  
**Moderator:** Adel M. Malek, MD, PhD, FAANS  
**Panelists:** Rocco A. Armonda, MD, FAANS; C. Michael Cawley, MD, FAANS; David M. Hasan, MD, FAANS; Demetrius K. Lopes, MD

### 123 Peripheral Nerve Entrapment Syndromes

**Location:** 301, The Moscone Center South  
**Moderator:** Eric L. Zager, MD, FAANS  
**Panelists:** Allan J. Belzberg, MD, FAANS; Line Jacques, MD, FAANS; Lynda Jun-San Yang, MD, PhD, FAANS

### 124 Osteoporosis and Spinal Fusion Surgery

**Location:** 130, The Moscone Center North  
**Moderator:** Deborah L. Benzil, MD, FAANS  
**Panelists:** Marc E. Eichler, MD, FAANS; Frank La Marca, MD, FAANS; Dolores Shoback, MD; Gregory R. Trost, MD, FAANS

### 125 Low-grade Gliomas

**Location:** 300, The Moscone Center South  
**Moderator:** Linda M. Liau, MD, PhD, FAANS  
**Panelists:** Susan M. Chang, MD; Hugues Duffau, MD; Manfred Westphal, MD, PhD; Jeffrey H. Wisoff, MD, FAANS

### 126 Multidisciplinary Management of Cerebral AVMs

**Location:** 236, The Moscone Center South  
**Moderator:** Erol Veznedaroglu, MD, FAANS  
**Panelists:** Arun Paul Amar, MD, FAANS; Ajay Niranjan, MD; Gary K. Steinberg, MD, PhD, FAANS

### 127 Complication Avoidance in Vascular Neurosurgery

**Location:** 204, The Moscone Center South  
**Moderator:** Charles J. Prestigiacomo, MD, FAANS  
**Panelists:** Basant Kumar Misra, MD; Robert H. Rosenwasser, MD, FAANS; Philip E. Stieg, PhD, MD, FAANS

### 128 Fluorescence Technologies in Neurosurgery: Present and Future Directions

**Location:** 224–226, The Moscone Center South  
**Moderator:** Aaron A. Cohen-Gadol, MD, FAANS  
**Panelists:** Costas G. Hadjipanayis, MD, PhD, FAANS; David W. Roberts, MD, FAANS; Nader Sanai, MD

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Visit the AANS Exhibit Hall during unopposed times or whenever you have free time. Enhance your professional knowledge by visiting with the exhibitors.

**9 a.m.–4 p.m.**  
**AANS Exhibit Hall**

**9–9:45 a.m.**  
**Beverage Break in the AANS Exhibit Hall**

**Location:** Exhibit Halls ABC, The Moscone Center South
MONDAY, APRIL 7

9:45 a.m.–1 p.m.
PLENARY SESSION I

Please note: All abstracts are published as submitted by their authors. The AANS is unable to make any changes to abstract submissions.

Location: 102–104, The Moscone Center South
Moderators: Robert E. Harbaugh, MD, FAANS, Anil Nanda, MD, MPH, FAANS

9:45–9:48 a.m.
Welcome
P. David Adelson, MD, FAANS

9:49–9:51 a.m.
Introduction of the Rhoton Family Lecture
William T. Couldwell, MD, PhD, FAANS

9:52–10:12 a.m.
Rhoton Family Lecture
Expanding Neurosurgery: Neurosurgeon as Deformity Surgeon
Christopher I. Shaffrey, MD, FAANS

10:13–10:16 a.m.
Introduction of the International Lifetime Recognition Award
William T. Couldwell, MD, PhD, FAANS

10:17–10:18 a.m.
AANS International Lifetime Recognition Award
Nicolas de Tribolet, MD

10:19–10:39 a.m.
Expanding Neurosurgery: Neurosurgery and Science
Nicolas de Tribolet, MD

10:40–10:51 a.m.
Best International Abstract
600 5-Aminolevulinic acid fluorescence exceeds Gd-DTPA enhanced intraoperative MRI in tumor detection at the border of glioblastoma multiforme: A prospective study based on a histopathological assessment.
Authors: Jan Coburger, MD; Jens Engelke, MD; Angelika Scheuerle, MD; Dietmar Thal, MD, PhD; Michal Hlavac, MD; Thomas Kretschmer, MD, PhD; Christian Wirtz, MD, PhD; Ralph König, MD, PhD

10:52–10:55 a.m.
Discussant: David W. Roberts, MD, FAANS

10:56–10:59 a.m.
Introduction of the Distinguished Service Award
William T. Couldwell, MD, PhD, FAANS

11:00–11:01 a.m.
Distinguished Service Award
Sir Graham Teasdale

11:02–11:07 a.m.
40th Anniversary of the Glasgow Coma Score
Sir Graham Teasdale

11:08–11:19 a.m.
601 Prospective, Multicenter Assessment of Acute Neurologic Complications following Complex Adult Spinal Deformity Surgery: The Scoli-RISK-1 Study
Authors: Michael G. Fehlings, MD, PhD, FAANS, FRCS; Lawrence Lenke, MD; Christopher Shaffrey, MD; Kenneth Cheung, MD; Leah Carreon, MD; Mark Dekutoski, MD; Frank Schwab, MD; Opreneba Boachie-Ajeh, MD; Khaled Kebaish, MD; Christopher Ames, MD; Yong Qiu, MD; Yukihiro Matsuyama, MD; Benny Dahl, MD, Hossein Mehdian, MD; Ferran Pellisé-Urquiza, MD; Stephen Lewis, MD; Sigurd Berven, MD

11:20–11:23 a.m.
Discussant: Charles Kuntz, MD, FAANS

11:24–11:26 a.m.
Introduction of the Theodore Kurze Lecture
William T. Couldwell, MD, PhD, FAANS

11:27–11:47 a.m.
Theodore Kurze Lecture
The Future Role of Neurosurgery in the Skull Base Surgery
Vinko Dolenc, MD, PhD

11:48–11:59 a.m.
602 A Novel Phase 1/2A Study of Intraparenchymal Transplantation of Human Modified Bone Marrow Derived Cells in Patients with Stable Ischemic Stroke
Authors: Gary K. Steinberg, MD, PhD, FAANS; Douglas Kondziolka, MD; Neil Schwartz, MD, PhD; Lawrence Wechsler, MD; Dade Lunsford, MD; Maria Coburn, BA; Julia Billigen, RN; Hadar Keren-Gill, BS; Michael McGrogan, PhD; Casey Case, PhD; Keita Mori, MBA; Ernest Yankee, PhD

12–12:03 p.m.
Discussant: Robert J. Dempsey, MD, FAANS

12:04–12:07 p.m.
Introduction of the AANS Presidential Address
Ronald I. Apfelbaum, MD, FAANS(L)

12:08–12:53 p.m.
AANS Presidential Address
William T. Couldwell, MD, PhD, FAANS
MONDAY, APRIL 7

1–2 p.m.  
Lunch in the AANS Exhibit Hall  
Location: Exhibit Halls ABC, The Moscone Center South

2–5:30 p.m.  
SCIENTIFIC SESSION I: TUMOR

Location: 307/309, The Moscone Center South  
This session will focus on innovations in the diagnosis, management and treatment of tumor neurosurgery. Innovations developed in the last 12 months will be presented.  
Moderator: Frederick G. Barker II, MD, FAANS

2–2:29 p.m.  
Ronald L. Bittner Lecture  
Frederick F. Lang Jr., MD, FAANS

2:30–2:39 p.m.  
Stryker Neuro-Oncology and Young Neurosurgeons Abstract Award  
604 Mesenchymal stem cell exosomes enhance glioma stem cell viability and stemness via delivery of microRNA  
Authors: Javier Figueroa; Tal Shahar, MD; Anwar Hossain, PhD; Lang Frederick, MD

2:40–2:49 p.m.  
Synthes Skull Base Award  
605 Incidence of headache as a presenting complaint in over 1000 patients with sellar lesions and factors predicting postoperative improvement  
Authors: Arman Jahangiri; Jeffrey Wagner, BS; Sung Won Han; Brandon Imber, MS; Sandeep Kunwar, MD; Lewis Blevins, MD; Manish Aghi, MD, PhD

2:50–2:59 p.m.  
National Brain Tumor Society Mahaley Award  
606 Tetanus toxoid conditioning enhances migration and efficacy of dendritic cell vaccines in patients with glioblastoma  
Authors: Kristen Batich; John H. Sampson, MD, PhD, FAANS; Elizabeth Reap, PhD; Luis Sanchez-Perez, PhD; Gary Archer, PhD; David Snyder, MS; Smita Nair, PhD; Michael Gunn, MD; Duane Mitchell, MD, PhD

3–3:09 p.m.  
Springer Journal of Neuro-Oncology Award  
607 Replicating retrovirus Toca-511 delivered using convection-enhanced real-time MRI guidance for recurrent glioblastoma  
Authors: Manish K. Aghi, MD, FAANS; Michael Vogelbaum, MD; Alastair Martin, PhD; Geoffrey Bates, PhD; John Bringas; Douglas Jolly; Joan Robbins; Derek Ostertag; Carlos Ibanez; Harry Gruber; Cathy Brewer; Adrian Kells; Krystof Bankiewicz; Dan Pertschuk

3:10–3:19 p.m.  
608 Administration of Toca 511 to Subjects with Recurrent HGG Undergoing Repeat Resection- A Ph1 Study  
Authors: Dan Pertschuk; Linda Liao, MD; Timothy Cloughesy, MD; Michael Vogelbaum, MD, PhD; Santosh Kesari, MD; Tom Mikkelsen, MD; Joseph Landolfi, DO; J. Elder, MD; E. Chiocca, MD, PhD; Greg Foltz, MD; Clark Chen, MD, PhD; Steven Kalkanis, MD; Stephen Bloomfield, MD; Douglas Jolly, PhD; Joan Robbins, PhD; Derek Ostertag, PhD; Carlos Ibanez, PhD; Harry Gruber, MD; Daniel Pertschuk, MD

3:20–3:29 p.m.  
609 Delayed contrast MRI – a novel tool for decision making in neuro-oncology  
Authors: Yael Mardor, MD; Yuval Grober; Ouzi Nissim; David Quez; David Last; Dianne Daniels; Chen Hoffmann; Galia Tzarfaty; Dvora Nass; Alisa Talianki; Moshe Hadani; Roberto Spiegelmann; Leor Zach; Zvi Cohen

3:30–4 p.m.  
Beverage Break in the AANS Exhibit Hall  
Location: Exhibit Halls ABC, The Moscone Center South

4:01–4:10 p.m.  
610 Inducing Brain Function Plasticity by High Frequency Cortical Stimulation Permits to Increase the Extent of Resection in WHO Grade 2 and 3 Gliomas. A Pilot Study In 5 Cases.  
Authors: Juan A Barcia; Paola Rivera, BS; Sandra Sanchez-Casarrubios, BS; Josue Aveilllas, MD; Juan Raul Brin, MD; Fernando Rascon, MD; Mercedes Gonzalez-Hidalgo, MD; Idoya Barca, MD; Juan Alvarez Linera, MD, PhD
MONDAY, APRIL 7

4:11–4:20 p.m.
611 BRAFV600E mutated melanoma patients may have an increased rate of metastatic brain disease when compared to wild-type BRAF melanoma
Authors: Timothy Ung; Kabeer Shah, BS; Kevin Lillehei, MD; William Robinson, MD, PhD

4:11–4:20 p.m.
612 Multifunctional Bioconjugated Magnetic Nanoparticles for Radiosensitivity Enhancement of Glioblastoma
Authors: Alexandros Bouras, MD; Milota Kaluzova, PhD; Costas Hadjipanayis, MD, PhD

4:21–4:30 p.m.
613 In vivo Multiplexed Interrogation of Amplified Genes in Cancer
Authors: Gavin Peter Dunn, MD, PhD; Hiu Cheung, PhD; Pankaj Agarwalla, MD; Sapantha Thomas, BA; Yulia Zekster, BA; Alison Karst, PhD; Jesse Boehm, PhD; Barbara Weir, PhD; Aaron Berlin, MS; Lihua Zhou, PhD; Gad Getz, PhD; Joyce Liu, MD, MPH; Michelle Hirsch, MD, PhD; Francisca Vazquez, PhD; David Root, PhD; Rameen Beroukhim, MD, PhD; Ronny Drapkin, MD, PhD; William Hahn, MD, PhD

4:31–4:40 p.m.
614 Nanoparticle conjugated IL-12 RNA therapy targeting of Glioblastoma Multiforme microenvironment by Convection Enhanced Delivery mediates increased T cells at tumor site in an adoptive transfer T cell model
Authors: Joshua Y. Chua, BS; Luis Sanchez, PhD; John Sampson, MD, PhD

4:41–4:50 p.m.
615 Enhancing Nanoparticle Immunotherapeutic Treatments for Glioblastoma Utilizing Histotripsy Ultrasound Radiotherapy
Authors: Daniel Nagasawa; Matthew Rosenstein, BA; Nicole Cremer, BS;Brittany Voth, BS; Winward Choy, BS; Lawrence Chung, BS; Nolan Ung, BS; Kimberly Thill, BS; Benjamin Schmidt; Linda Liau, MD, PhD; Rob Prins, PhD; Leonard Rome, PhD; Isaac Yang, MD

4:51–5 p.m.
616 Does time until recurrence predict effect of repeat surgery in GBM patients?
Authors: Paul Andre Ronning, MD; Einar Vik-Mo, MD, PhD; Eirik Helseth, MD, PhD; Torstein Meling, MD, PhD

5:01–5:10 p.m.
617 Prognostic value of radiosurgery prescription dose on the local control of small (less than 2 cm) brain metastases
Authors: Alireza Mohammad Mohammad; Jason Schroeder, MD; Paul Elson, PhD; Lilyana Angelov, MD; Robert Weil, MD; Samuel Chao, MD; Erin Murphy, MD; Jennifer Yu, MD, PhD; John Suh, MD; Gene Barnett, MD; Michael Vogelbaum, MD, PhD

5:21–5:30 p.m.
619 Contemporary Analysis of the Risk of Neurosurgical and Anesthetic Complications Following Procedures Performed in the Sitting Position
Authors: Benjamin T. Himes, MD; Grant Mallory, MD; Jeffrey Pasternak, MD; Jamie Van Gompel, MD

2–5:30 p.m.
SCIENTIFIC SESSION II: SPINE
Location: 301/303, The Moscone Center South
This session will focus on innovations in the diagnosis, management and treatment of spinal and peripheral nerve neurosurgery. Innovations developed in the last 12 months will be presented.
Moderator: Michael W. Groff, MD, FAANS

2–2:29 p.m.
Invited Speaker: Kevin T. Foley, MD, FAANS

2:30–2:39 p.m.
620 Time to Surgery Does Not Impact Outcomes in Cauda Equina Syndrome: Analysis of 48 Cases
Authors: Mohamad Bydon, MD; Ali Bydon, MD, FAANS; Joseph Lin, BA; Mohamed Macki, BS; Rafael De la Garza-Ramos, MD; Daniel Sciubba, MD; Jean-Paul Wolinsky, MD; Timothy Witham, MD; Ziya Gokaslan, MD, Ali Bydon, MD

2:40–2:49 p.m.
621 Incremental Cost-Effectiveness of Adult Spinal Deformity Surgery: Observed QALYs with Surgery Compared to Predicted QALYs without Surgery
Authors: Christopher Pearson Ames, MD, FAANS; Ian McCarthy; Michael Obrien; Thomas Errico; Han Jo Kim; Justin Smith; Frank Schwab; Eric Klineberg; Justin
MONDAY, APRIL 7

Scheer; Christopher Shaffrey; Munish Gupta; Ricahrd Hostin; International Spine Study Group

2:50–2:59 p.m.
622 Utility of routine biopsy at vertebroplasty in the management of vertebral compression fractures
Authors: Soumya Mukherjee; Bhaskar Thakur, MBBS; Dolin Bhagawati, MBBS; Isabel Tulloch, MBBS; John Yeh, MBBS; Habib Ellamushi, MBBS

3–3:09 p.m.
623 Anterior Shift of the Lumbar Plexus within the Surgical Corridor in Scoliotic Spines: Considerations during the Transpsoas Approach
Authors: Dante Leven, DO; Robert Pivec; Ashish Patel, MD; Qais Naziri; Jason Oh, MD; Srinivas Kolla, MD; Carl Paulino; Nicholas Post, MD

3:10–3:19 p.m.
624 Outcome Comparison Between Decompression Alone Versus Decompression with Fusion in Managing Adjacent Segment Disease
Authors: Haydn Hoffman; Andrew Yew, MD; Derek Lu, BS; Langston Holly, MD; Duncan McBride, MD; Daniel Lu, MD, PhD

3:20–3:29 p.m.
625 Negative Pressure Wound Therapy Reduces Incidence of Wound Infection and Dehiscence After Long-Segment Thoracolumbar Fusion
Authors: Owoicho Adogwa, MD; Isaac Karikari, MD; Parastou Fatemi, BS; Edgar Perez, BS; Paul Thompson, BSE; Joel Martin, BS; Ranjith Babu, MS; Jessica Moreno, RN; Joseph Cheng, MD, MS; Oren Gottfried, MD; Carlos Bagley, MD

3:30–4 p.m.
3:30–4 p.m.
Beverage Break in the AANS Exhibit Hall
Location: Exhibit Halls ABC, The Moscone Center South

4:01–4:10 p.m.
626 To Operate or Not?: A Meta-Analysis of Surgical Outcomes in 95 Patients with Parkinson’s Disease Following Spinal Fusion
Authors: Christopher Ashot Sarkiss, MD; John Caridi, MD

4:11–4:20 p.m.
627 Combined Neonatal Enzyme Replacement Therapy and Simvastatin for Treatment of Cervical Spine Intervertebral Disc Disease in Mucopolysaccharidosis I Dogs
Authors: Neil R. Malhotra, MD; Joseph Chiaro, BS; Patricia O’Donnell; Katherine Ponder, MD; Mark Haskins, PhD; Lachlan Smith, PhD

4:21–4:30 p.m.
628 Electrophysiologic Monitoring as Diagnostic and Therapeutic Tools in Spinal Surgery
Authors: Curtis J. Rozzelle, MD, FAANS; Beverly Walters, MD, MSC; Mark Hadley, MD

4:31–4:40 p.m.
629 Indirect foraminal decompression following anterior lumbar interbody fusion (ALIF): a prospective study using a new Pedicle to pedicle (P-P) technique
Authors: prashanth J rao; Monish Maharaj, MBBS; Manil Abeygunasekera, MBBS; Ralph Mobbs, MD

4:41–4:50 p.m.
Authors: Kai-Ming Fu, MD, PhD; Praveen Mummaneni; Wang Michael; Virginie Lafiage; David Okonkwo; Juan Uribe; Neel Anand; Shay Bess; Adam Kanter; Christopher Shaffrey

NEUROSURGICAL FACE-OFF: LATERAL TRANSPSOA FUSION

4:51–5:05 p.m.
Christopher I. Shaffrey, MD, FAANS

5:06–5:20 p.m.
Juan Santiago Uribe, MD

5:21–5:30 p.m.
Case Discussion
MONDAY, APRIL 7

2–5:30 p.m.
SCIENTIFIC SESSION III: STEREOTACTIC AND FUNCTIONAL SURGERY

Location: 305, The Moscone Center South
This session will focus on innovations in the diagnosis, management and treatment of stereotactic and functional neurosurgery. Innovations developed in the last 12 months will be presented.
Moderator: Konstantin V. Slavin, MD, FAANS

2–2:29 p.m.
Surgical Management of Hypothalamic Hamartomas
Invited Speaker: Jean Regis, MD

2:30–2:40 p.m.
Philip L. Gildenberg Resident Award
631 Striatal Stimulation for Enhancement of Recovery in a Rodent Traumatic Brain Injury Model
Authors: Joshua Paul Aronson, MD; Husam Katnani, PhD; Jimmy Yang, BA; Matthew Thombs, BA; Ryan Margolin; Emad Eskandar, MD

2:41–2:51 p.m.
632 Functional subpopulations of neurons within the human dorsal anterior cingulate cortex
Authors: Sameer A. Sheth, MD, PhD; Emad Eskandar, MD; Guillermo Horga, PhD

2:52–3:02 p.m.
633 Intralaminar Thalamic Deep Brain Stimulation Ameliorates the Memory Deficit and the dendritic regression in β-Amyloid infusion Rats
Authors: Sheng-Tzung Tsai, MD; Li-Jin Chen, PhD; Shin-Yuan Chen, MD, MSC; Guo-Fang Tseng, PhD

3:03–3:13 p.m.
634 Sensing-enabled hippocampal deep brain stimulation in idiopathic nonhuman primate epilepsy
Authors: Mark Richardson, MD, PhD; Vincent DeStefino, BS; Scott Stanislawski, MS; Arun Antony, MD; Judy Cameron, PhD; Donald Crammond, PhD; Witold Lipski, PhD

3:14–3:24 p.m.
635 Deep Brain Stimulation (DBS) in Tourette Syndrome (TS)
Authors: Domenico Servello, MD; Giovanni Broggi, MD; Claudia Menghetti, MD; Edvin Zekaj, MD; Mauro Porta, MD

3:30–4 p.m.
Beverage Break in the AANS Exhibit Hall
Location: Exhibit Halls ABC, The Moscone Center South

4:01–4:11 p.m.
636 Clinical outcomes after anterior thalamic stimulation for medically refractory epilepsy
Authors: Vibhor Krishna, MD; Soha Alomar, MD; Arif Abdulbaki, BS; Danielle Andrade, MD; Andres Lozano, MD, PhD

4:12–4:22 p.m.
637 Comparative study of efficacy and safety between radiosurgical callosotomy and open callosotomy in a third-level neurological center
Authors: Juan de Dios Del Castillo Calcaneo, MD; Mario Alonso-Vanegas, MD; Sergio Moreno-Jimenez, MD, MSC; Daniel San Juan-Orta, MD

4:23–4:33 p.m.
638 Scanning Electron Microscopy of Chronically Implanted Silicon-Based Intracortical Microelectrode Arrays in Non-Human Primates
Authors: James Carl Barrese, MD; Juan Acero, PhD; Arto Nurmi, PhD; John Donoghue, PhD

4:34–4:44 p.m.
640 Brain Computer Interface Technology for Patients Suffering Disorder of Consciousness
Authors: Robert Prueckl; Zulay Lugo, MD; Quentin Noirhomme, PhD; Steven Laureys, MD, PhD; Rupert Ortner; Christoph Guger, PhD

4:45–4:55 p.m.
641 Potentiating Cortico-Cortical Connectivity Between Distant Cortical Locations with Activity Dependent Stimulation in the Rat
Authors: Gustaf Marshall Van Acker; Kelli Crabtree, MD; David Guggenmos, PhD; Caleb Dunham, BS; Randolph Nudo, PhD
MONDAY, APRIL 7

4:56–5:06 p.m.
642 Ten Year Hearing Outcomes Following Gamma Knife Radiosurgery for Acoustic Neuromas
Authors: Christopher Paul Deibert, MD; Matthew Scanlon, BS; L. Lunsford, MD

5:07–5:17 p.m.
643 Random Waveform Brain Stimulation for Seizure Control
Authors: James W. Leiphart, MD, PhD, FAANS; Michaela Lee, MD; Zhixing Ye, MS; Murray Loew, PhD

5:18–5:28 p.m.
644 Impact of Microelectrode Recording on Health Outcomes following Deep Brain Stimulation Surgery for Parkinson's Disease.
Authors: Terence Verla; Terence Verla, BSE; Kevin Huang, BA; Ulysses Toche, BS; Alex Firempong, MD; Steven Thomas, MS; Yulia Lokhnygina, PhD; Nandan Lad, MD, PhD

2–5:30 p.m.
SCIENTIFIC SESSION IV: PEDIATRICS

Location: 308/310, The Moscone Center South
This session will focus on innovations in the diagnosis, management and treatment of pediatric neurosurgery. Innovations developed in the last 12 months will be presented.
Moderator: Sarah J. Gaskill, MD, FAANS

2–2:29 p.m.
Invited Speaker: Ian F. Pollack, MD, FAANS

2:30–2:40 p.m.
645 Assessing memory lateralization using resting state functional connectivity MRI in pediatric epilepsy surgery patients
Authors: Joffre Olaya, MD; Andrew Poliakov, PhD; Hillary Shurtleff, PhD; Molly Warner, PhD; Russell Saneto, DO; John Kuratani, MD; Edward Novotny, MD; Jeffrey Ojemann, MD

2:41–2:50 p.m.
646 Postnatal erythropoietin mitigates impaired cerebral cortical development following subplate loss from prenatal hypoxia-ischemia
Authors: Shenandoah Robinson, MD, FAANS; Lauren Jantzie, PhD; Christopher Corbett, BA; Daniel Firl, BS

2:51–3 p.m.
647 Finite Element Analysis of the Pediatric Occipitotlandoaxial Complex
Authors: Marcus Dennis Mazur, MD; Benjamin Ellis, PhD; Douglas Brockmeyer, MD

3:01–3:10 p.m.
648 Risk factors for traumatic carotid injury diagnosed by CT Angiography in the pediatric population
Authors: Vijay Mysore Ravindra, MD; Jay Riva-Cambrin, MD, MSC; Walavan Sivakumar, MD; Robert Bollo, MD

3:11–3:20 p.m.
649 Volumetric Analysis of MRI-guided Laser Ablation for Pediatric Brain Tumors
Authors: Margaret Riordan, MD; Gentian Toshkezi, MD; Zulma Tovar-Spinoza, MD

3:21–3:30 p.m.
650 Comparing outcomes of sagittal synostosis using three different techniques: Open strip craniectomy, total cranial vault reconstruction, and endoscopic strip craniectomy: A retrospective study including cost analysis.
Authors: Sarah Tamara Garber, MD; Jay Riva-Cambrin, MD

3:30–4 p.m.
Beverage Break in the AANS Exhibit Hall
Location: Exhibit Halls ABC, The Moscone Center South

3:30–4 p.m.
NEUROSURGICAL FACE-OFF: RHIZOTOMY VS. PUMP

4:01–4:15 p.m.
Tae Sung Park, MD, FAANS

4:16–4:30 p.m.
Michael S. Turner, MD, FAANS

4:31–4:40 p.m.
Case Discussion
4:41–4:50 p.m.

**651 Low Threshold Monopolar Motor Mapping for Resection of Motor-eloquent Brain Lesions in Children and Adolescents**

*Authors:* Philippe Schucht; Kathleen Seidel, MD; Michael Murek, MD; Lennart Stieglitz, MD; Natalie Urwiler, MD; Roland Wiest, MD; Maja Stehlin, MD; Kurt Leibundgut, MD; Andreas Raabe, MD; Jürgen Beck, MD

4:51–5 p.m.

**652 Prediction of successful ETV outcome in childhood hydrocephalus: an Artificial Neural Networks analysis**

*Authors:* Parisa Azimi, MD; Hasan Mohammadi, MD

5:01–5:10 p.m.

**653 Cumulative survival analysis of spinal myxopapillary ependymomas in the first 2 decades of life: A systematic review**

*Authors:* Sunil Kukreja, MD; Sudheer Ambekar, MD; Anthony Sin, MD; Anil Nanda

5:11–5:20 p.m.

**654 Pediatric Low Grade ganglioglioma: epidemiology, treatments, and outcome analysis on 331 children from the SEER datasets.**

*Authors:* Roy William Roland Dudley, MD, PhD, FRCS(C); Michelle Torok, PhD; Danielle Gallegos, BS; Arthur Liu, MD, PhD; Michael Handler, MD; Todd Hankinson, MD

5:21–5:30 p.m.

**655 Comparison of Spinal Deformity in Children with Chiari I Malformation with and without Syringomyelia: Matched Cohort Study**

*Authors:* Jakub Godzik; Agnes Dardas, BS; Terrence Holekamp, MD, PhD; Lawrence Lenke, MD; Michael Kelly, MD; David Limbrick, MD, PhD

2–5:30 p.m.

**SCIENTIFIC SESSION V: CEREBROVASCULAR**

*Location: 302/304, The Moscone Center South*

This session will focus on innovations in the diagnosis, management and treatment of cerebrovascular neurosurgery. Innovations developed in the last twelve months will be presented.

*Moderator:* Robert M. Friedlander, MD, FAANS

2–2:29 p.m.

**Invited Speaker:** Juha Hernesniemi, MD, PhD

2:30–2:38 p.m.

**DePuy Synthes Award**

**655 Morbidity and Mortality of Endovascularly Treated Intracerebral Aneurysms: Does Specialty Matter?**

*Authors:* Vernard S. Fennell, MD; Sheri Palejwala, MD; Nikolay Martirosyan, MD; G Lemole, MD; Travis Dumont, MD

2:39–2:47 p.m.

**AANS/CNS Section on Women in Neurosurgery Louise Eisenhardt Traveling Scholarship**

**656 Effects of Extracranial Carotid Stenosis on Intracranial Blood Flow**

*Authors:* Sophia F. Shakur, MD; Tomas Hrbac, MD, PhD; Ali Alaraj, MD; Xinjian Du, MD; Victor Aletich, MD; Fady Charbel, MD; Sepideh Amin-Hanjani, MD

2:48–2:56 p.m.

**657 Development of an Aneurysm Clipping Model using 3D printing**

*Authors:* Keith K. Almefty, MD; Justin Ryan, BA; David Frakes, PhD; Peter Nakaji, MD

2:57–3:05 p.m.

**658 Emergent Revascularization of Carotid Artery Stenosis: Nationwide Analysis of Mortality, Iatrogenic Stroke, and Economic Measures**

*Authors:* Amit Singla, MBBS; Mark R Villwock, MS; David Padalino, MD; Eric Deshaies, MD

3:06–3:14 p.m.

**659 The risk and treatment of rupture of cerebral arteriovenous malformations during pregnancy and the puerperium**

*Author:* zhao jizong; liu xingju, MD

3:15–3:23 p.m.

**660 Prediction model for three-year rupture risk of unruptured cerebral aneurysms in Japanese cohorts**

*Authors:* Akio Morita, MD, PhD; Shinjiro Tominari, MD, MPH; Toshihiro Ishibashi, MD, PhD; Tomosato Yamazaki, MD, PhD; Office for UCAS Japan Investigators

3:24–3:32 p.m.

**661 3D Safe Entry Zones in the Brainstem and Cerebellum**

*Authors:* Kaan Yagmurlu, MD; Necmettin Tanriover, MD; Marcelle Altshuler, BS; Alexander Vlasak; Albert Rhoton, Jr., MD

3:30–4 p.m.

**Beverage Break in the AANS Exhibit Hall**

*Location: Exhibit Halls ABC, The Moscone Center South*
MONDAY, APRIL 7

4:01–4:30 p.m.
Yasargil Lecture
Arthur L. Day, MD, FAANS

4:31–4:36 p.m.
Question and Answer

4:37–4:45 p.m.
662 Proton beam stereotactic radiosurgery for pediatric cerebral arteriovenous malformations
Authors: Brian P. Walcott, MD; Jona Hattangadi-Gluth, MD; Christopher Stapleton, MD; Paul Chapman, MD; Jay Loeffler, MD

4:46–4:54 p.m.
663 Reversal of Vasospasm and Changes in Cerebral Blood Flow and PtiO2 in Patients with severe Vasospasm during continuous intraarterial Application of Nimodipine via Microcatheter
Authors: Sylvia Bele, MD; Gerhard Schuierer, MD, PhD; Martin Kieninger, MD; Alexander Brawanski, MD, PhD

4:55–5:03 p.m.
664 The Six Thalamic Regions: Surgical Approaches to Thalamic Cavernous Malformations, Operative Reports, and Clinical Outcome
Authors: Leonardo Rangel-Castilla, MD; Robert Spetzler, MD

5–5:12 p.m.
665 Surgeon specialty and outcome of carotid endarterectomy
Authors: Andreea Seicean; Nima Alan, BS; Sinziana Seicean, MD, PhD; Duncan Neuhauser, PhD; Robert Weil, MD

5:13–5:21 p.m.
666 Comparing Clinician and Patient Reported Outcome Measures over Time after Hemicraniectomy for Ischemic Stroke
Authors: Michael Liam Kelly, MD; Benjamin Rosenbaum, MD; Varun Kshettry, MD; Robert Weil, MD

5:22–5:30 p.m.
667 Embolic Complications Associated with the Solitaire Flow Restoration Device during Thrombectomy for Acute Ischemic Stroke
Authors: Marcus Dennis Mazur, MD; Craig Kilburg, MD; Philipp Taussky, MD

2–5:30 p.m.
SCIENTIFIC SESSION VI: NEUROTRAUMA

Location: 306, The Moscone Center South
This session will focus on innovations in the diagnosis, management and treatment of neurotrauma neurosurgery. Innovations developed in the last 12 months will be presented.
Moderator: Shelly D. Timmons, MD, PhD, FAANS

2–2:29 p.m.
Wartime Lessons applied to Civilian Neurotrauma
Invited Speaker: Rocco A. Armona, MD, FAANS

2:30–2:44 p.m.
Geoffrey T. Manley, MD, PhD, FAANS

2:45–2:59 p.m.
Randall M. Chesnut, MD

3–3:09 p.m.
Case Discussion

3:10–3:19 p.m.
668 FasL modulates disruption of the blood-spinal cord barrier, glial scarring and inflammation after spinal cord injury: Evidence from human tissue and mouse models
Authors: Wenru Yu, MD; Michael Fehlings, MD, PhD

3:20–3:29 p.m.
669 Creation and Utilization of a Neurotrauma Dashboard for Quality Improvement
Authors: Shelly D. Timmons, MD, PhD, FACS, FAANS; Megan Brosious, BA; Jennifer Hunt, RN; Loren Gorgol, MS; Authors: Nathaniel Stark, MS; C. Hanson, MS

3:30–4 p.m.
Beverage Break in the AANS Exhibit Hall
Location: Exhibit Halls ABC, The Moscone Center South
MONDAY, APRIL 7

4:01–4:10 p.m.
670 The Brain at Altitude - Rewriting the pathogenesis of High Altitude Headache and its translation into trauma care - results of the Caudwell Xtreme Everest Expedition
Authors: Mark H. Wilson, FRCS (SN) MBChir

4:11–4:20 p.m.
671 Decreased Mortality in Traumatic Brain Injury following Regionalization of Trauma across Hospital Systems
Authors: Michael Liam Kelly, MD; Aman Banerjee, MD; Michael Nowak, PhD; Michael Steinmetz, MD; Jeffrey Claridge, MD

4:21–4:30 p.m.
672 Incidence and risk factors for suicidal ideation after mild traumatic brain injury.
Authors: Leo da Costa, MD; Allison Bethune; Scott McCullagh, MD; Elizabeth Waknine, BS; Wei Xiong, PhD; Anthony Feinstein, MD

4:31–4:40 p.m.
International Travel Scholarship
673 Effect of IL-6-174 G/C polymorphism in predicting disability and functional outcome in patients with severe Traumatic Brain Injury (STBI).
Authors: Sumit Sinha, MD; Naseem Mansoori, PhD; Mukhopadhyay, MD; Bhawani Sharma, MD

4:41–4:50 p.m.
674 The Head Injury Transportation Straight to Neurosurgery (HITS-NS) Trial
Authors: Damian Holliman, PhD MRCS; Wanda Russell, PhD; Fiona Lecky, MD, PhD

4:51–5 p.m.
675 Expression of mitogen-activated protein kinases in the outer membranes of chronic subdural hematomas
Authors: Masahiro Aoyama; Koji Osuka, MD, PhD; Masakazu Takayasu, MD, PhD

5:01–5:10 p.m.
676 Complications in Cranioplasty: A Retrospective Analysis of 212 Patients
Authors: Ullrich Meier, MD PhD; Johannes Lemcke, MD; Christian van der Breels, MD; Igor Stojanowski, MD; Leonie Götz

5:11–5:20 p.m.
677 Eye Movement Tracking Detects Subclinical Disconjugate Gaze in Structural and Concussive Brain Injury
Authors: Uzma Samadani, MD, PhD, FAANS; Robert Ritlop, BS; Marleen Reyes, BA; Elena Nehrbass, BS; Floyd Warren, MD; Elizabeth Lamm, BS; Julia Schneider; Radek Kolecki, MS; Sameer Farooq; Michael Jureller; Anastasia Alex; Rebecca Tran; David Shiumonov; Paige Burris; Chen Shi; Neil Mendhiratta; Meng Qian; Jason Huang; Christopher McStay; Paul Huang, MD; S. Rob Todd; Rob Ferguson; R. Theodore Smith; Douglas Kondziolka, MD

2–3:30 p.m.
3D SESSION
Operative Nuances I: Tackling Challenging Cases
Location: 134–135, The Moscone Center South
Moderator: Aaron A. Cohen-Gadol, MD, MSc, FAANS
Panels: Frederick A. Boop, MD, FAANS; William T. Couldwell, MD, PhD, FAANS; Robert F. Spetzler, MD, FAANS

2–5:30 p.m.
INTERNATIONAL SYMPOSIUM I: EXPANDING GLOBAL NEUROSURGERY
Location: 236–238, The Moscone Center South
Moderator: Yong-Kwang Tu, MD

2–2:17 p.m.
Volker Seifert, MD, PhD

2:18–2:35 p.m.
Michael K. Morgan, MD

2:36–2:53 p.m.
M. Necmettin Pamir, MD

2:54–3:11 p.m.
Deepu Banerji, MD

3:12–3:29 p.m.
Chandrashekhar Deopujari, MSMCh
MONDAY, APRIL 7

3:30–4 p.m.
Beverage Break in the AANS Exhibit Hall
Location: Exhibit Halls ABC, The Moscone Center South

4:01–4:18 p.m.
Franco Servadei, MD

4:19–4:36 p.m.
Ying Mao, MD

4:37–4:54 p.m.
Hildo R.C. Azevedo-Filho

4:55–5:12 p.m.
George Samandouras, MD

5:13–5:30 p.m.
Kyu-Sung Lee, MD, PhD

5:30–7 p.m.
JOINT ANNUAL BUSINESS MEETING OF THE AMERICAN ASSOCIATION OF NEUROLOGICAL SURGEONS AND THE AMERICAN ASSOCIATION OF NEUROSURGEONS
Location: 300, The Moscone Center South

6:30–8:30 p.m.
DINNER SYMPOSIUM I: CONCUSSION
Ticket Required
Location: Scala's Bistro
Moderator: Michael L. Levy, MD, PhD, FAANS
Panelists: Samuel R. Browd, MD, PhD, FAANS; Allen K. Sills, MD, FAANS

6:30–8:30 p.m.
DINNER SYMPOSIUM II: SPINAL BALANCE/DEFORMITY
Ticket Required
Location: McCormick & Kuletos Seafood & Steaks
Moderator: Udaya Kumar Kakarla, MD
Panelists: Christopher P. Ames, MD, FAANS; Brian A. O'Shaughnessy, MD; Daniel M. Sciubba, MD, FAANS

6:30–8 p.m.
AANS INTERNATIONAL RECEPTION
Ticket Required
Location: Asian Art Museum
Join leaders from the AANS, international neurosurgical organizations and special dignitaries during the 2014 AANS International Reception at San Francisco's Asian Art Museum.

Just a few blocks from The Moscone Center, the Asian Art Museum is well-situated in the heart of San Francisco’s Civic Center. The museum’s galleries house more than 2,500 works of ancient and contemporary Asian art that span 6,000 years of history.

Come mingle among the art. There is no fee to attend; however, a ticket is required, which may be obtained at AANS Registration at The Moscone Center South. The AANS welcomes all AANS Annual Scientific Meeting registered attendees – especially our colleagues from outside the United States.
MONDAY, APRIL 7

6:30–9:30 p.m.
AANS History Section Dinner

Ticket Required
Location: Marines’ Memorial Club & Hotel

For its annual dinner, the AANS History Section is pleased to have as its featured speaker, John A. Martini, a historical consultant and established author, who will share his knowledge of Alcatraz Island: 200 Years on the Rock. Martini will present an illustrated history of Alcatraz from Spanish “discovery” through its establishment as a National Park, including the 1934–1963 era when “the Rock” was an infamous federal penitentiary. His presentation also will discuss the nearly unknown early history of Alcatraz when it served as a harbor defense fort during the Civil War and a dreaded military prison for U.S. Army convicts. Highlights will include rare historic photographs of the fort and prisons on Alcatraz, its notorious residents and views showing the rumored (and real) underground dungeons and tunnels beneath the prison buildings.

Enjoy cocktails and dinner with your colleagues, followed by an engrossing lecture. A ticket is required and can be purchased at AANS Registration, The Moscone Center South.

8–10 p.m.
NREF Fundraiser

Ticket Required
Location: The Fillmore

Step into a world of living music history for the Neurosurgery Research and Education Foundation (NREF) Fundraiser. A former dance hall turned into a creative music-making space, the Fillmore boasts a storied past. In the late 1960s, many bands jumpstarted their careers on the stage of this legendary venue, and its innovative culture attracted the top artists of the age. The two decades following saw the space employed as a private club and later as another music club, but returning to its roots, the Fillmore reopened in the mid-1990s. In the decade since its reopening, other entertainment greats have graced its stage and continue to perform today. With its rich history, the Fillmore stands as a unique space in which to honor a neurosurgeon who has made substantial contributions to the field of neurosurgery.

Charles B. Wilson, MD, DSc, MSHA, FAANS(L) is professor emeritus at the University of California San Francisco’s (UCSF) department of neurosurgery; he was chairman of neurological surgery at UCSF for 28 years. The first professor to hold the Tong-Po Kan Chair of Neurological Surgery at UCSF, Dr. Wilson is responsible for developing UCSF’s integrally related, translational program of basic science and clinical research into the biology and therapy of brain tumors. He is the founding director of the Brain Tumor Research Center (BTRC), a national cancer research center that treats more than 500 brain tumor patients each year.

A senior member of the Institute of Medicine, Dr. Wilson has served on the National Cancer Advisory Board of the National Cancer Institute. He has performed more than 3,300 operations for the removal of pituitary adenomas. Recently, he was awarded the “Gentle Giant Award” by the Pituitary Network Association, recognizing his dedication and contributions to pituitary and endocrinologic medicine. Dr. Wilson has also served as senior associate on medical affairs to the president of the University of California.

Join in honoring Dr. Wilson and his accomplished legacy. The evening’s festivities will include hors d’oeuvres, an open bar, dancing and musical entertainment. The NREF Fundraiser costs $500 per ticket, and can be purchased at AANS Registration, The Moscone Center South.

The Neurosurgery Research and Education Foundation (NREF) is a not-for-profit 501(c)(3) organization created in 1980 by the American Association of Neurological Surgeons (AANS) to support research and education efforts that enhance and confirm the critical role neurosurgeons play in improving lives.
TUESDAY, APRIL 8

6:30 a.m.–4 p.m.
AANS REGISTRATION
Location: South Lobby, The Moscone Center South

6:30 a.m.–5 p.m.
SPEAKER READY ROOM
Location: 252–256, The Moscone Center South

7–9 a.m.
BREAKFAST SEMINARS
Ticket Required
Fee: $100
Breakfast will be available in the room of the session for Breakfast Seminar attendees.

201 How to Write and Publish a Successful Neurosurgical Manuscript
Location: 304, The Moscone Center South
Moderator: Anil Nanda, MD, MPH, FAANS
Panelists: Michael L. J. Apuzzo, MD, FAANS(L); Ennio Antonio Chiocca, MD, PhD, FAANS; Michael Glantz, MD; James T. Rutka, MD, PhD, FAANS

202 Chiari Malformations: Diagnosis, Treatments and Failures
Location: 113, The Moscone Center North
Moderator: Timothy B. Mapstone, MD, FAANS
Panelists: Ulrich Batzdorf, MD, FAANS(L); Karin M. Muraszko, MD, FAANS; W. Jerry Oakes, MD, FAANS

203 Update on Lumbar Stenosis
Location: 200/212, The Moscone Center South
Moderator: Robert E. Isaacs, MD, FAANS
Panelists: Christopher H. Comey, MD, FAANS; John E. O’Toole, MD, FAANS; Claudius Thome, MD

204 Intracranial Endoscopy
Location: 308, The Moscone Center South
Moderator: Alan R. Cohen, MD, FAANS
Panelists: James M. Drake, MD, MSc, FAANS; Michael W. McDermott, MD, FAANS; Henry W. S. Schroeder, MD, PhD

205 Management of Acute Spinal Cord Injury
Location: 305, The Moscone Center South
Moderator: Michael G. Fehlings, MD, PhD, FAANS
Panelists: Richard C. E. Anderson, MD, FAANS; Barth A. Green, MD, FAANS(L); Ann M. Parr, MD, FAANS; Andrea L. Strayer, MS, NP, CNRN

206 Pituitary Tumors
Location: 303, The Moscone Center South
Moderator: Daniel F. Kelly, MD, FAANS
Panelists: Manish K. Aghi, MD, FAANS; John A. Jane Jr., MD, FAANS; Nelson M. Oyesiku, MD, PhD, FAANS; Daniel Monte-Serrat Prevedello, MD

207 New Innovations in Epilepsy Surgery
Location: 110, The Moscone Center North
Moderator: Nicholas M. Barbaro, MD, FAANS
Panelists: P. David Adelson, MD, FAANS; Jean Regis, MD; Ashwini D. Sharan, MD, FAANS; Matthew D. Smyth, MD, FAANS

208 Principles and Techniques of Deformity Correction in Adolescents and Young Adults
Location: 131, The Moscone Center North
Moderator: David W. Pincus, MD, PhD, FAANS
Panelists: Peter D. Angevine, MD, MPH, FAANS; Steven W. Hwang, MD; Amer F. Samdani, MD, FAANS; Anthony H. Sin, MD, FAANS
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<tr>
<th>Session</th>
<th>Title</th>
<th>Location</th>
<th>Moderator</th>
<th>Panelists</th>
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<td>209</td>
<td>Accountable Care Organizations and the Affordability of Patient Care Act</td>
<td>309, The Moscone Center South</td>
<td>Monica C. Wehby, MD, FAANS</td>
<td>Peter W. Carmel, MD, FAANS; Fernando G. Diaz, MD, PhD, FAANS; Kevin J. Gibbons, MD, FAANS; Mick J. Perez-Cruet, MD, FAANS</td>
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<td>210</td>
<td>Minimally Invasive Spinal Neurosurgery: Indications, Techniques and Complications</td>
<td>310, The Moscone Center South</td>
<td>Charles L. Branch Jr., MD, FAANS</td>
<td>Kevin T. Foley, MD, FAANS; William R. Taylor, MD, FAANS; Luis Manuel Tumialan, MD, FAANS; Juan Santiago Uribe, MD</td>
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<td>211</td>
<td>Comparative Effectiveness Research: Why You Need to Care About This Topic</td>
<td>111, The Moscone Center North</td>
<td>Daniel K. Resnick, MD, FAANS</td>
<td>Zoher Ghogawala, MD, FAANS;</td>
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<td>212</td>
<td>Controversies in the Management of Intracerebral Hematomas</td>
<td>306, The Moscone Center South</td>
<td>David W. Newell, MD, FAANS</td>
<td>E. Sander Connolly Jr., MD, FAANS; Stephen J. Monteith, MD; Reid C. Thompson, MD, FAANS</td>
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<td>213</td>
<td>Spinal Motion Preservation Using the Posterior Column Implants</td>
<td>228–230, The Moscone Center South</td>
<td>M. Samy Abdou, MD, FAANS</td>
<td>Jean-Valery C. E. Coumans, MD, FAANS; Carl Laeyssen, MD, FAANS; Gabriel C. Tender, MD, FAANS; William C. Welch, MD, FAANS</td>
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<td>214</td>
<td>Contemporary Management for Adult Hydrocephalus</td>
<td>224–226, The Moscone Center South</td>
<td>Guy M. McKhann II, MD, FAANS</td>
<td>Feridun Acar, MD; Petra Margarete Klinge, MD, PhD; Daniele Rigamonti, MD, FAANS</td>
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<td>215</td>
<td>Employment or Not: What Are the Options?</td>
<td>220–222, The Moscone Center South</td>
<td>Fernando G. Diaz, MD, PhD, FAANS</td>
<td>Gregory B. Lanford, MD, FAANS; Richard N. Wohns, MD, JD, MBA, FAANS</td>
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<td>216</td>
<td>Current Use of Biologic Graft Extenders for Spinal Fusion</td>
<td>132, The Moscone Center North</td>
<td>Nicholas Theodore, MD, FAANS</td>
<td>Allan D. Levi, MD, PhD, FAANS; Srinivas K. Prasad, MD</td>
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<td>217</td>
<td>Lumbar Spine Fusion Indications and Complications</td>
<td>301, The Moscone Center South</td>
<td>Joan F. O’Shea, MD, FAANS</td>
<td>Joseph S. Cheng, MD, MS, FAANS; Andrew T. Dailey, MD, FAANS; Eric M. Massicotte, MD, MSc, FAANS; Russ P. Nockels, MD, FAANS</td>
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<td>218</td>
<td>Business of Neurosurgery I: Billing and Accounts Receivable</td>
<td>232–234, The Moscone Center South</td>
<td>R. Patrick Jacob, MD, FAANS</td>
<td>John K. Ratliff, MD, FAANS; Craig A. Van Der Veer, MD, FAANS</td>
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<td>219</td>
<td>Malignant Brain Tumors: State-of-the-art Treatment</td>
<td>133, The Moscone Center North</td>
<td>Joseph M. Piepmeier, MD, FAANS</td>
<td>Ian F. Dunn, MD, FAANS; Linda M. Liu, MD, PhD, FAANS; John H. Sampson, MD, PhD, FAANS; Graeme Woodworth, MD</td>
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<td>220</td>
<td>Cerebral Venous System: Surgical Considerations</td>
<td>307, The Moscone Center South</td>
<td>Jeffrey M. Sorenson, MD, FAANS</td>
<td>Ossama Al-Mefty, MD, FAANS; Ashok R. Ashtagiri, MD, FAANS; Turker Kilic, MD, PhD; Chandranath Sen, MD, FAANS</td>
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TUESDAY, APRIL 8

221 Functional Mapping of the Cerebral Cortex: Advantages and Limitations
Location: 300, The Moscone Center South
Moderator: Richard W. Byrne, MD, FAANS
Panelists: Edward F. Chang, MD; Isabelle M. Germano, MD, FAANS; Hiroto Kawasaki, MD; Daniel L. Silbergeld, MD, FAANS

222 Getting the Most Out of Your Residency
Location: 130, The Moscone Center North
Moderator: Lawrence S. Chin, MD, FAANS
Panelists: John R. Adler Jr., MD, FAANS; Mark D. Krieger, MD, FAANS; N. Scott Litofsky, MD, FAANS; Jon H. Robertson, MD, FAANS

223 Management of Spinal Axis Trauma
Location: 302, The Moscone Center South
Moderator: Gregory R. Trost, MD, FAANS
Panelists: Steven Casha, MD, PhD; Charles Sansur, MD, MHSc

224 How I Do It: Acoustic Tumors
Location: 204, The Moscone Center South
Moderator: Frederick G. Barker II, MD, FAANS
Panelists: Michael J. Link, MD, FAANS; Daniel R. Pieper, MD, FAANS; Marc S. Schwartz, MD, FAANS

225 Cavernous Malformation: Current Controversies in Management
Location: 236, The Moscone Center South
Moderator: Murat Gunel, MD, FAANS
Panelists: Michael T. Lawton, MD, FAANS; R. Michael Scott, MD, FAANS(L); Robert F. Spetzler, MD, FAANS; Gary K. Steinberg, MD, PhD, FAANS

226 Bypass Graft Indications and Techniques
Location: 202, The Moscone Center South
Moderator: Gregory J. Zipfel, MD, FAANS
Panelists: Fady T. Charbel, MD, FAANS; Jacques J. Morcos, MD, FAANS; Edward R. Smith, MD, FAANS

227 Complication Avoidance in Functional Surgery
Location: 203, The Moscone Center South
Moderator: Charles Y. Liu, MD, PhD, FAANS
Panelists: Kenneth A. Follett, MD, PhD, FAANS; Michael Y. Oh, MD, FAANS; Erich O. Richter, MD, FAANS; Daniel Yoshor, MD, FAANS

228 (In)Famous Neurological Injuries: Major Historical, Political, Cultural and Scientific Impacts
Location: 238, The Moscone Center South
Moderator: James T. Goodrich, MD, PhD, FAANS
Faculty: Charles Prestigiacomo, MD, FAANS; Mark C. Preul, MD; Chris Slofier, MD, MBA, FAANS

Visit the AANS Exhibit Hall during unopposed times or whenever you have free time. Enhance your professional knowledge by visiting with the exhibitors.

9 a.m.–4 p.m.
AANS Exhibit Hall
Location: Exhibit Halls ABC, The Moscone Center South

9–9:45 a.m.
Beverage Break in the AANS Exhibit Hall
Location: Exhibit Halls ABC, The Moscone Center South

The morning Beverage break is supported by Aurora Spine.
9:45 a.m.–1 p.m.
PLENARY SESSION II

Please note: All abstracts are published as submitted by their authors. The AANS is unable to make any changes to abstract submissions.

Location: 102–104, The Moscone Center South
Moderators: P. David Adelson, MD, FAANS; William T. Couldwell, MD, PhD, FAANS

9:45–9:47 a.m.
Introduction of the Hunt-Wilson Lecture
William T. Couldwell, MD, PhD, FAANS

9:48–10:29 a.m.
Hunt-Wilson Lecture
Robert Gates

10:30–10:41 a.m.
Ronald L. Bittner Award
700 Awake craniotomy to maximize glioma resection: methods and technical nuances with 561 patients.
Authors: Shawn Level Hervey-Jumper, MD; Mitchel Berger, MD; Darryl Lau, MD

10:42–10:45 a.m.
Discussant: Raymond Sawaya, MD, FAANS

10:46–10:51 a.m.
The New Rhoton Collection
Jeffrey M. Sorenson, MD, FAANS

10:52–11:03 a.m.
701 Increasing Rate of Publication Misrepresentation Among Neurosurgery Residency Applicants
Authors: Heather M Kistka; Arash Nayeri, BA; Jamie Dow; Lola Chambless, MD

11:04–11:07 a.m.
Discussant: Donald O. Quest, MD, FAANS(L)

11:08–11:13 a.m.
Neurosurgery Research and Education Foundation (NREF) Special Presentation
Troy M. Tippett, MD, FAANS

11:14–11:25 a.m.
702 Abnormal white matter integrity related to head impact exposure in a season of high school varsity football
Authors: Alexander K. Powers, MD; Elizabeth Davenport, MS; Jillian Urban, MS; Christopher Whitlow, MD, PhD; Mark Espeland, PhD; Joseph Maldjian, MD; Youngkyoo Jung, PhD; Joel Stitzel, PhD

11:26–11:29 a.m.
Discussant: Julian E. Bailes Jr., MD, FAANS

11:30–11:41 a.m.
American Brain Tumor Association Young Investigator Award
703 The Clinical Importance of Extent of Resection in Medulloblastoma is Dependent on Molecular Subgroup
Authors: Eric M. Thompson, MD; Michael Taylor, MD, PhD

11:42–11:45 a.m.
Discussant: Jeffrey H. Wisoff, MD, FAANS

11:46–11:57 a.m.
704 Deep Brain Stimulation for Moderate and Severe Disability Due to Traumatic Brain Injury (TBI)
Authors: Ali R. Rezai, MD, FAANS; W Mysiw, MD; Michael Knopp, MD; Per Sederberg, PhD; Jennifer Bogner, PhD; Dylan Nielsen, MD, PhD; John Corrigan, PhD

11:58 a.m.–12:01 p.m.
Discussant: Philip A. Starr, MD, PhD, FAANS

12:02–12:05 p.m.
Introduction of the Cushing Medalist
William T. Couldwell, MD, PhD, FAANS

12:06–12:07 p.m.
Cushing Medalist
Troy M. Tippett, MD, FAANS

12:08–12:10 p.m.
Introduction of the Cushing Orator
William T. Couldwell, MD, PhD, FAANS

12:11–1 p.m.
Cushing Orator
Clayton Christiansen

1–2 p.m.
Lunch in the AANS Exhibit Hall
Location: Exhibit Halls ABC, The Moscone Center South
TUESDAY, APRIL 8

2–5:30 p.m.
AANS/CSNS SOCIOECONOMIC

Location: 302/304, The Moscone Center South
Moderator: Mark E. Linskey, MD, FAANS

NEUROSURGICAL FACE-OFF:
HOSPITAL EMPLOYMENT VS.
INDEPENDENT EMPLOYMENT

2–2:14 p.m.
John H. McVicker, MD, FAANS

2:15–2:29 p.m.
Troy M. Tippett, MD, FAANS

2:30–2:39 p.m.
Case Discussion

2:40–2:49 p.m.
Cone Pevehouse Young Neurosurgeons Award
705 The role of large administrative ICD-9 databases in evaluating surgical practice
Authors: Yakov Gologorsky, MD; John Knightly, MD; John Chi, MD, MPH; Michael Groff, MD

2:50–2:59 p.m.
Robert Florin Resident Award
706 Neurosurgical Decision Making: Personal and Professional Preferences
Authors: Omar Tanweer, MD; Taylor Wilson, BS; Stephen Kalhorn, MD; John Golfinos, MD; Paul Huang, MD; Douglas Kondziolk, MD

3–3:09 p.m.
707 The national chronic subdural hematoma audit of the United Kingdom and Ireland
Authors: Ian Craig Coulter; Angelos Koliadis; Alexis Joannides; Barbara Gregson; Peter Hutchinison; Paul Brennan

3:10–3:19 p.m.
708 Attrition Rates in Neurosurgery Residency: Analysis of 1361
Authors: Uzma Samadani, MD, PhD, FAANS; Gabrielle Lynch; Karina Nieto, BA; Saumya Puthvenveetil, MS; Marieen Reyes, BA; Michael Jureller, BS; Jason Huang, MD; Sean Grady, MD; Odette Harris, MD; Aruna Ganju, MD; Isabelle Germano, MD; Julie Pilitsis, MD, PhD; Susan Pannullo, MD; Deborah Benzil, MD; Aviva Abosch, MD

3:20–3:29 p.m.
709 Spine Care and the CERTAIN Learning Healthcare System: The Spine Surgical Care and Outcomes Assessment Program
Authors: Michael J Lee; SCOAP Collaborative The; Neal Shonnard, MD; Rafael Alfonso, MD, PhD; Dean Martz, MD; Farrokh Farrokhi, MD; S. Golish, MD; Jens Chapman, MD; David Flum, MD

3:30–4 p.m.
Beverage Break in the AANS Exhibit Hall

Location: Exhibit Halls ABC, The Moscone Center South

4:01–4:10 p.m.
710 Readmission Rates for Cranial Neurosurgical Patients by Surgical Indication
Authors: Nuriel Moghavem; Doug Morrison, MS; John Ratliff, MD; Tina Hernandez-Boussard, PhD

4:11–4:20 p.m.
711 Disparities in patient population with different type of insurance: Does it affect outcomes
Authors: Saniya Siraj Godil; Scott Zuckerman, MD; Matthew McGirt

4:21–4:30 p.m.
712 A socioeconomic analysis of intraoperative neurophysiologic monitoring in spine surgery: National utilization, regional variation, costs and outcomes
Authors: Whitney Allison Sheen, MD; Anand Rughani, MD; John Golfinos, MD; Travis Dumont, MD

4:31–4:40 p.m.
713 Assessing comorbidities that contribute to patient satisfaction and hospital cost following lumbar spine surgery
Authors: Timothy C. Ryken, MD, FAANS; Laura Chapin, PhD; Kelly Ward, BS; Sara Narigon, BS; Jennifer Bruning, BS; Linda Turner, BS; Timothy Huber, BS; Leslie Bechthold

4:41–4:50 p.m.
714 The association of unfavorable outcomes with the intensity of neurosurgical care in the United States
Authors: Kimon Bekelis, MD; David Roberts, MD; Symeon Missios, MD

4:51–5 p.m.
715 Neurosurgery Jury Verdicts and Settlements: 2012 Prevalence by Case Type
Authors: Christopher L. Taylor, MD, MBA, FAANS
5:01–5:10 p.m.
716 Intraoperative Application of Topical Vancomycin Powder is Safe and Reduces Infection Rate in Craniotomies
Authors: Mark A. Attiah, BA; Andrew Olsen, BA; Andrew Richardson, PhD; Timothy Lucas, MD, PhD

5:11–5:20 p.m.
717 National Socioeconomic Indicators are associated with Neurological Outcomes Following Aneurysmal Subarachnoid Hemorrhage: A Mixed-Effects Analysis
Authors: Daipayan Guha, MD; George Ibrahim, MD; Joshua Kertzer, PhD; R Macdonald, MD, PhD

5:21–5:30 p.m.
718 Laminectomy with Fusion is cost-effective versus laminectomy alone for Grade I Degenerative Lumbar Spondylolisthesis with Spinal Stenosis: Cost-Utility Analysis over a 5 year time horizon
Authors: Robert Gray Whitmore, MD; Ryan Din, BS; Edward Benzel; Eylln Wasserberger, RN; Sepideh Amin-Hanjani; Frederick Barker; JF Harrington; Subu Magge; Jean-Valery Coumans; William Butler; J. Schwartz, MD; Zoher Ghogawala, MD

2:05–2:35 p.m.
Donaghy Lecture
Last Mohicanes?
Juha Hernesniemi, MD, PhD

2:36–2:51 p.m.
Management of Endovascular Complications: How to get out of trouble
Felipe C. Albuquerque, MD, FAANS

2:52–2:56 p.m.
719 Familial Occurrence of Brain Arteriovenous Malformation: A Novel ACVRL1 Mutation Detected by Whole Exome Sequencing
Authors: Murat Sakir Eksi; Baran Yilmaz, MD; Zafer Toktas, MD; Deniz Konya; Kaya Bilguvar, MD; Murat Günel, MD; Turker Kilic

2:57–3:01 p.m.
720 Epidemiology of a Large Telestroke Cohort in the Delaware Valley
Authors: Pascal Marcel Jabbour, MD, FAANS; Mario Zanaty, MD; Noah Chalouhi; Robert Starke, MD, MSC; Stavropoula Tjoumarkis, MD; L. Fernando Gonzalez, MD; Maureen Deprince; Saurabh Singhal, MBBS; Robert Rosenwasser, MD

3:02–3:06 p.m.
721 Pipeline Embolization Device for Internal Carotid Artery Aneurysms: Does Size and Location Affect Occlusion Rates?
Authors: Leonardo B. C. Brasiliense, MD; Melina More, MD; Paolo Souto Maior, MD; Ramon Navarro, MD; David Miller, MD; Rabih Tawk, MD; Ricardo Hanel, MD, PhD

3:11–3:15 p.m.
722 Aquaporin-4 Gene Variant Independently Predicts Combined Edema Volume After Intracerebral Hemorrhage
Authors: Geoffrey Appelboom, MD; Geoff Appelboom, MD, PhD; Sam Bruce, MS; Matt Piazza, MD; Aimee Monahan, BA; Eliza Bruce, BA; Stephan Mayer, MD; E Sander Connolly, Jr, MD

3:16–3:20 p.m.
723 BMP signaling modulation inhibits cerebral arteriovenous malformations in a vertebrate model
Authors: Brian P. Walcott, MD; Randall Peterson, PhD

3:21–3:25 p.m.
724 The fate of cranial neuropathy after flow diverter treatment of carotid aneurysms
Authors: Ben Brown; Demetrius Lopes, MD; Andrew Ringer, MD; Ciaran Powers, MD, PhD; Eric Sauvageau, MD; Adam Arthur, MD, MPH; Daniel Hoit, MD; Hugo Cuellar Saenz, MD; Elad Levy, MD; Adnan Siddiqui, MD, PhD; Kenneth Snyder, MD, PhD; L. Nelson Hopkins, MD; Erol Veznedaroglu, MD; Mandy Binning, MD; J Mocco, MD, MS; Leonardo Brasilienese, MD; David Miller, MD; Rabih Tawk, MD; Ricardo Hanel, MD, PhD (Ponte Vedra, FL)

3:26–3:29 p.m.
Discussion

3:30–4 p.m.
Beverage Break in the AANS Exhibit Hall
Location: Exhibit Halls ABC, The Moscone Center South
Moderators: Andrew W. Grande, MD; Raymond D. Turner IV, MD, FAANS

4:01–4:21 p.m.
Simulation and the Future of Open Cerebrovascular Training
Adam S. Arthur, MD, MPH, FAANS

4:22–4:26 p.m.
725 A Critical Assessment of Complications Associated with Use of the Pipeline Embolization Device
Authors: Min S Park, MD FAANS; Felipe Albuquerque, MD; Matthew Sanborn, MD; Karam Moon, MD; Adib Abla, MD; Cameron McDougall, MD

4:27–4:31 p.m.
726 Treatment of Intracranial Atherosclerosis with Stenting: A Review of Outcomes in the Post-SAMMPRIS Era
Authors: Dale Ding, MD; Robert Starke, MD, MSC; R. Webster Crowley, MD; Kenneth Liu, MD

4:32–4:36 p.m.
727 Patient phenotypes associated with outcomes following aneurysmal subarachnoid hemorrhage: A principal component analysis
Authors: George M. Ibrahim, MD; Benjamin Morgan, MS; R. Loch Macdonald, MD, PhD

4:37–4:41 p.m.
728 Extracellular RNAs as biomarkers for the cerebral vasospasm after aneurysmal subarachnoid hemorrhage
Authors: M. Yashar S. Kalani, MD; Kendall Jensen; Peter Nakaji, MD; Matt Huentleman; Robert Spetzler

4:42–4:46 p.m.
Discussion

2:30–2:44 p.m.
Treatment of Spinal Column Metastatic Disease
Dean Chou, MD, FAANS

2:45–2:59 p.m.
MIS Approaches to Spinal Neoplastic Disease
Michael Y. Wang, MD, FAANS

3–3:14 p.m.
When to Resort to Radiation Therapy vs. Surgical Excision in Spinal Metastatic Disease
Mark H. Bilsky, MD, FAANS

3:15–3:29 p.m.
Problems in Complex Spinal Surgical Reconstruction in Spinal Metastatic Disease
Frank La Marca, MD, FAANS

4:01–4:08 p.m.
729 Clinical and Radiographic Analysis of an Artificial Cervical Disc: Seven Year Clinical and Radiographic Outcomes from a Prospective Randomized Controlled Clinical Trial
Authors: Praveen V. Mummaneni, MD, FAANS; Vincent C. Traynelis, MD, FAANS; Regis W. Haid Jr., MD, FAANS; J. Kenneth Burkus, MD
4:09–4:16 p.m.
730 No Difference in Postoperative Complications, Pain and Functional Outcomes Up to 2 Years After Incidental Durotomy in Lumbar Spinal Fusion: A Prospective, Multi-Institutional, Propensity Matched Analysis of 1741 Patients
Authors: Owoicho Adogwa, MD; Mary Huang, MD, MS; Paul Paul Thompson, BSE; Timothy Darlington, BS; Parastou Fatemi, BS; Terence Verla, BSE; Joel Martin, BS; Oren Gottfried, MD (Durham, NC); Greg Anderson, MD (Philadelphia, PA); Robert Isaacs, MD (Durham, NC)

4:17–4:24 p.m.
731 Improvement in Pain After Lumbar Surgery in Cancer Patients with Mechanical Radiculopathy
Authors: Ilya Laufer, MD; Jennifer Moliterno, MD; Clinton Veselis, BS; Joshua Marcus, MD; David Rubin, MD; Mark Bilsky, MD

4:25–4:32 p.m.
732 Prevalence and Type of Cervical Deformity Among 470 Adults with Thoracolumbar Deformity
Authors: Justin S. Smith, MD, PhD, FAANS; Chistopher Shaffrey; Virginie Lafage; Frank Schwab; Themistocles Protopsaltis; Eric Klineberg; Justin Scheer; Kai-Ming Fu; Richard Hostin; Vedat Deviren; Robert Hart; Douglas Burton; Shay Bess; Christopher Ames; International Spine Study Group

4:33–4:40 p.m.
733 Defining Substantial Clinical Benefit (SCB) in Patients Undergoing Decompression Surgery for Cervical Myelopathy
Authors: John W. German, MD, FAANS; Benjamin Yim, BS; Dasun Peramunage, BS

4:41–4:48 p.m.
734 Motor and neural deficit following lateral transpsoas access
Authors: Luiz Pimenta, MD, PhD; Luis Marchi, MS; Thiago Coutinho, MD; Rubens Jensen, MD; Rafael Aquaroli; Rodrigo Amaral, MD

4:49–4:56 p.m.
735 Outcomes of surgical management of cervical spondylotic myelopathy: Results of the Prospective, Multicentre, AOSpine International Study in 479 Patients
Authors: Michael G. Fehlings, MD, PhD, FAANS, FRCS; Branko Kopjar, MD, PhD; Paul Arnold, MD; Ahmed Ibrahim; Lindsay Tetreault

4:57–5:04 p.m.
736 Postoperative Cervical Sagittal Imbalance Affects Outcome and Outpatient Costs Following Surgery for Cervical Spondylotic Myelopathy
Authors: Zohar Ghogawala, MD, FAANS; Robert Whitmore; Subu Magge; Jill Curran; Erica Bisson; Ajit Krishnaney; Michael Steinmetz; Jean-Valery Coumans; Laura Rapraeger; Robert Heary; Edward Benzel

5:05–5:12 p.m.
737 Preoperative Predictors of 3-Month/1-Year Change in Quality-of-Life (EQ-5D) Following Multilevel Lumbar Laminectomy and Fusion
Authors: Stephen Kyle Mendenhall; Jesse Bible, MD; Patrick Kelly, BS; Priya Sivasubramaniam, BS; David Shau, BS; Matthew McGirt, MD; Clinton Devin, MD

5:13–5:20 p.m.
738 Survival and recurrence following resection of chordoma in the mobile spine: Results of 171 patients from the AOSpine Primary Tumor Knowledge Forum

2–5:30 p.m.
AANS/CNS SECTION ON NEUROTRAUMA AND CRITICAL CARE

Location: 306, The Moscone Center South
Moderator: Shelly D. Timmons, MD, PhD, FACS, FAANS

2:00–2:33 p.m.
Inaugural Charles Tator Lecture
Tarlov to Tator to Fehlings: Decompression for SCI
Charles H. Tator, MD, PhD, MA, FAANS(L)

2:34–2:42 p.m.
DePuy Synthes Resident Craniofacial Award
740 The Spectrum of Neuro-behavioral Sequelae Following Repetitive Mild Traumatic Brain Injury: A Novel Mouse Model of Chronic Traumatic Encephalopathy (CTE)
TUESDAY, APRIL 8

Authors: Anthony Liberato Petraglia, MD; Benjamin Plog, BA; Samantha Dayawansa, MD, PhD; Michael Chen, BS; Matthew Dashnaw, MD; Katarzyna Czerniecka, MD; Corey Walker, BS; Jeffrey Iliff, PhD; Rashid Deane, PhD; Maiken Nedergaard, MD, PhD; Jason Huang, MD

2:43–2:51 p.m.
741 Thromboembolic Complications Associated with a Transfusion Threshold of 10 g/dl in TBI Patients
Authors: Shankar P. Gopinath, MD, FAANS; Julia Hannay, PhD; Jose-Miguel Yamal; J Clay Goodman, MD; Barbara Tilley, PhD; Claudia Robertson, MD

2:52–3 p.m.
742 Gender and the Effects of TBI/Polytrauma: Comparative Analysis of Female TBI/Polytrauma Cohort Characteristics and Outcomes
Authors: Odette Althea Harris, MD, MPH, FAANS; David Horton, BA; Joyce Chung, PhD; Jennifer Zahm, BS; Carmelinda Mann, PhD; Odette Harris, MD, MPH

3:01–3:09 p.m.
743 Impaired functional networks characterize coma after hemorrhagic stroke
Authors: Chuck Mikell, MD; Garrett Banks, BSE; Brett Youngerman, MD; Patrick Karas, BS; Andrew Chan, BS; Henning Voss, PhD; E. Connolly, MD; Jan Claassen, MD, PhD

3:10–3:18 p.m.
744 Venous Sinus Thrombosis with occipital skull fractures – 2 years experience at a London Major Trauma Centre
Authors: Srinivas Murahari, MS; Susan Hendrickson, MBBS; Leonardo Monzon, MD; Neil Kitchen; Bryn Jones, MD; Erika Kashef, MD; Mark Wilson, MBBS

3:19–3:27 p.m.
745 Functional and structural correlates of persistent postconcussive syndrome
Authors: James Harvey Hedges; Yushi Wang, BS; Brett Yarusi, BA; Daniel Graham, BS; Julia Owen, PhD; Jun Maruta, PhD; Lisa Spielman, PhD; Pratik Mukherjee, MD, PhD; Jamshid Ghajar, MD, PhD

3:30–4 p.m.
Beverage Break in the AANS Exhibit Hall
Location: Exhibit Halls ABC, The Moscone Center South

4:01–4:34 p.m.
J. Douglas Miller Lecture
The GCS – Then and Now
Sir Graham Teasdale

4:35–4:39 p.m.
2014 Codman Announcement

4:44–4:55 p.m.
Codman Presentation

4:56–5:04 p.m.
746 Predicted Poor Neurological Outcome is Overestimated by the IMPACT Prognosis Calculator in Severe TBI Patients After Early Decompressive Craniectomy in Latin America.
Authors: Andres Mariano Rubiano, MD; Jose Chary, MS; Nancy Carney, PhD; Juan Puyana, MD; P. David Adelson, MD

5:05–5:13 p.m.
747 Luteolin provides neuroprotection in the models of traumatic brain injury through Nrf2-ARE pathway
Authors: Jianguo Xu; Handong Wang, MD, PhD; Ke Ding; Xinyu Lu

5:14–5:22 p.m.
748 The Rapid Deployment Neuro Team: A Specialized Neurotrauma Team for Combat Casualty Care
Authors: Anthony Peter Trenga, BA; Geoffrey Ling, MD, PhD; Beverly Walters, MD; Leon Moores, MD, MS; James Ecklund, MD

5:23–5:31 p.m.
Medical Student Summer Research Foundation Award

749 A dose-dependent response of neuroinflammation after repetitive mild traumatic brain injury
Authors: Stephen Miranda; Benjamin Plog, Matthew Dashnaw, MD

2–5:30 p.m.
AANS/CNS SECTION ON STEREOTACTIC AND FUNCTIONAL SURGERY

Location: 305, The Moscone Center South
Moderator: Parag G. Patil, MD, PhD

Clinical Trials in Stereotactic and Functional Neurosurgery

2–2:14 p.m.
Stimulation for Movement Disorders
Paul S. Larson, MD, FAANS
TUESDAY, APRIL 8

2:15–2:29 p.m.
Stimulation for Epilepsy (VNS, DBS, RNS)
Robert E. Gross, MD, PhD, FAANS

2:30–2:44 p.m.
Stimulation for Depression
Brian H. Kopell, MD, FAANS

2:45–2:59 p.m.
Biological Therapies (Gene-Therapy/Stem Cells)
Michael G. Kaplitt, MD, PhD, FAANS

3–3:29 p.m.
Critical Review and Panel Discussion: The Role of Randomized Trials in Stereotactic and Functional Neurosurgery
Clement Hamani, MD

3:30–4 p.m.
Beverage Break in the AANS Exhibit Hall
Location: Exhibit Halls ABC, The Moscone Center South

4:01–4:15 p.m.
Kris A. Smith, MD, FAANS

4:16–4:30 p.m.
Dennis D. Spencer, MD, FAANS

4:31–4:40 p.m.
Case Discussion
Joseph S. Neimat, MD, MSc, FAANS

4:41–4:47 p.m.
750 Human subthalamic nucleuses recordings during high conflict decisions reveal increased spike-LFP interactions in the beta and theta bands
Authors: Baltazar Zavala, BS; Srikanth Damera, BS; Jian Dong, BS; Codrin Lungu, MD; Peter Brown, PhD; Kareem Zaghloul, MD PhD

4:48–4:54 p.m.
751 Brain computer interface (BCI) controlled prosthetic arm movement is possible in the absence of visual input with proprioceptive feedback
Authors: Elizabeth C. Tyler-Kabara, MD, PhD, FAANS; Jenifer Collinger, PhD; Brian Wodlinger, PhD; Douglas Weber, PhD; Andrew Schwartz, PhD; Michael Boninger, MD, PhD; Robert Gaunt, PhD

4:55–5:01 p.m.
752 Beta Oscillations Modulate High-Frequency Oscillations and Neuronal Firing in the Parkinsonian Subthalamic Nucleus
Authors: Andrew Il Yang; Shervin Rahimpour, BA; Codrin Lungu, MD; Kareem Zaghloul, MD, PhD

5:02–5:08 p.m.
753 Robust transient dynamics for lexical selection in Broca's Area
Authors: Christopher Richard Conner; Nitin Tandon, MD

5:09–5:15 p.m.
754 Ventrolateral prefrontal cortical neuronal activity during intertemporal choice
Authors: David Barrett Weintraub, MD; Barry Richmond, MD

5:16–5:22 p.m.
755 Safety and Efficacy of using stereotactic laser ablation (SLA) for MR negative epileptic foci
Authors: Samuel F. Ciricillo, MD, FAANS, FACS; Michael Chez, MD; Azad Ghassemi, MD

5:23–5:29 p.m.
756 Anatomical predictors of response to dorsal anterior cingulotomy for obsessive-compulsive disorder
Authors: Garrett P. Banks; Charles Mikell, MD; Brett Youngerman, MD; Andrew Chan; Christopher Filippi, MD; Emad Eskandar, MD; Darin Dougherty, MD; Sameer Sheth, MD, PhD
TUESDAY, APRIL 8

2–5:30 p.m.
AANS/CNS SECTION ON TUMORS I

Location: 307/309, The Moscone Center South
Moderators: Jennifer Moliterno Gunel, MD, Andrew T. Parsa, MD, PhD, FAANS

Endoscopic Surgery – State of the Art

2–2:05 p.m.
Introduction
Jennifer Moliterno Gunel, MD

2:06–2:19 p.m.
Anterior Skull Base
Michael E. Sughrue, MD

2:20–2:33 p.m.
Sella
John A. Jane Jr., MD, FAANS

2:34–2:47 p.m.
Clivus/Petrous Apex
Juan Carlos Fernandez-Miranda, MD

2:48–3:01 p.m.
CSF Leak Avoidance and Reconstruction
Paul A. Gardner, MD

3:02–3:15 p.m.
CP Angle
Daniel R. Pieper, MD, FAANS

3:16–3:29 p.m.
Spine
Richard G. Fessler, MD, PhD, FAANS

3:30–4 p.m.
Beverage Break in the AANS Exhibit Hall
Location: Exhibit Halls ABC, The Moscone Center South

Moderators: Jennifer Moliterno Gunel, MD; Andrew E. Sloan, MD, FAANS

4:01–4:10 p.m.
Integra Foundation Award
757 Gamma Knife Radiosurgery for Sellar and Parasellar Meningiomas: A Multicenter Study of 763 Patients
Authors: Jason P. Sheehan, MD, PhD, FAANS; Robert Starke; Hideyuki Kano; Anthony Kaufmann; David Mathieu; Fred Zeiler; Michael West; Samuel Chao; Gandhi Varma; Veronica Chang; James Yu; Heyyoung McBride; Peter Nakaji; Emad Yousef; Norissa Honea; Stephen Rush; Douglas Kondziolka; John Lee; Robert Bailey; Sandeep Kunwar; Paula Petti; Lawrence Lunsford

4:11–4:20 p.m.
Preuss Research Award
758 Signal Transducer and Activator of Transcription 5b Promotes Malignant Progression In Glioma
Authors: Loyola Veronique Gressot, MD; Tiffany Doucette, PhD; Yuhui Yang, MS; Gregory Fuller, MD, PhD; Khatri Latha, PhD; Ganesh Rao, MD

4:21–4:30 p.m.
Leksell Radiosurgery Award
759 Clinical Outcome and Risk of spine deformity and vertebral compression fracture after Spine radiosurgery
Authors: Isabelle M. Germano, MD, FAANS, FACS; Andrea Carai, MD, PhD; Sheryl Green, MD; Puneet Pawha, MD; Seth Blackburg, MD; Isabelle Germano, MD

4:31–4:40 p.m.
760 An analysis for the role of telomerase (hTERT) promoter mutations in gliomagenesis
Authors: Koray Ozduman, MD, Assoc. Prof of Neurosurgery; Cemaliye Akyerli, PhD; Sirin Yuksel, BS; Ozge Can, PhD; Yavuz Oktay, PhD; Paolo Nanni, PhD; Nathalie Selevsek, PhD; Jonas Grossmann, PhD; Aysel Ozpinar, PhD; Aydin Sav, MD; Cengiz Yakicier, MD, PhD; M Necmettin Pamir, MD

4:41–4:50 p.m.
761 Intraoperative mass spectrometry imaging of an onco-metabolite to guide brain tumor surgery
Authors: Nathalie Y. Agar, PhD; Sandro Santagata, MD, PhD; Livia Eberlin, PhD; Isaiah Norton, BS; David Calligaris, PhD; Daniel Feldman, BS; Jennifer Ide, BS; Xiaohui Liu, PhD; Joshua Wiley, BS; Matthew Vestal, MD; Shakti Ramkissoon, MD; Dunn Ian, MD; Dora Dias-Santagata, PhD; Keith Ligon, MD, PhD; Ferenc Jolesz, MD; Alexandria Golby, MD; Graham Cooks, PhD

4:51–5 p.m.
762 The utility and predictability of immediate postoperative prolactin levels in patients undergoing surgery for prolactinomas
Authors: Michael Edward Ivan, MD; Michael Ivan, MD, MS; Jason Cheng; Manish Aghi; Sandeep Kunwar; Lewis Blevins
TUESDAY, APRIL 8

5:01–5:10 p.m.
763 Surgery, stereotactic radiosurgery and observation provide comparable long-term quality of life for patients with small to medium sized vestibular schwannomas: An international, multi-center, cross-sectional, observational study

Authors: Michael J. Link, MD, FAANS; Morten Lund-Johansen, MD, PhD; Matthew Carlson, MD; Oystein Tveiten, MD; Colin Driscoll, MD; Frederik Goplen, MD; Bruce Pollock, MD; Jay Mandrekar, PhD

5:11–5:20 p.m.
764 mTOR And Its Interacting Signaling Pathways As A Therapeutic Target For Medulloblastoma

Authors: Michael LaBagnara, MD; Paul Lee, BA; Avinash Mohan, MD; Raj Murali, MD; Meena Jhanwar-Uniyal

5:21–5:30 p.m.
765 Dose-Volume Analysis of Radiation-Induced Optic Neuropathy after Single-Fraction Pituitary Adenoma Radiosurgery

Authors: Bruce E. Pollock, MD, FAANS; Michael Link, MD; Jacqueline Leavitt, MD; Scott Stafford, MD

2–5:30 p.m.
INTERNATIONAL SYMPOSIUM II: AUSTRALIA-ASIA NEUROSURGICAL SUMMIT

Location: 236–238, The Moscone Center South
Moderator: Charles Teo, MD

2–2:17 p.m.
Eka Julianta Wahjoepramono, MD, PhD

2:18–2:35 p.m.
William Sears, MD

2:36–2:53 p.m.
Chul-Woo Lee, MD

2:54–3:11 p.m.
Charles Teo, MD

3:12–3:29 p.m.
Chandrashekhar Deopujari, MSMCh

3:30–4 p.m.
Beverage Break in the AANS Exhibit Hall

Location: Exhibit Halls ABC, The Moscone Center South

6:30–8:30 p.m.
DINNER SYMPOSIUM III: LOW-GRADE GLIOMA

Ticket Required
Location: EPIC Roasthouse
Moderator: Nader Sanai, MD
Panelists: Ennio Antonio Chiocca, MD, PhD, FAANS; Hugues Duffau, MD; Frederick F. Lang Jr., MD, FAANS

6:30–8:30 p.m.
DINNER SYMPOSIUM IV: MINIMALLY INVASIVE SURGERY

Ticket Required
Location: Farallon
Moderator: Michael Y. Wang, MD, FAANS
Panelists: William R. Taylor, MD, FAANS; Juan Santiago Uribe, MD, FAANS
WEDNESDAY, APRIL 9

6:30 a.m.–3:30 p.m.
AANS REGISTRATION
Location: South Lobby, The Moscone Center South

6:30 a.m.–5 p.m.
SPEAKER READY ROOM
Location: 252–256, The Moscone Center South

7–9 a.m.
BREAKFAST SEMINARS
Ticket Required
Fee: $100
Breakfast will be available in the room of the session for Breakfast Seminar attendees.

301 ABNS Board Preparation: What You Must Know
Location: 220–222, The Moscone Center South
Moderator: Daniel L. Barrow, MD, FAANS
Panelists: Alan R. Cohen, MD, FAANS; Mark N. Hadley, MD, FAANS; Nelson M. Oyesiku, MD, PhD, FAANS; Craig A. Van Der Veer, MD, FAANS

302 Return to Play After Sports Injury II: Concussion
Location: 304, The Moscone Center South
Moderator: Mark D. Krieger, MD, FAANS
Panelists: H. Hunt Batjer, MD, FAANS; Michael Lee Levy, MD, PhD, FAANS; Mark R. Proctor, MD, FAANS; Allen K. Sills, MD, FAANS

303 Building a Comprehensive Spine Center
Location: 300, The Moscone Center South
Moderator: E. Hunter Dyer, MD, FAANS
Panelists: Juan C. Bartolomei, MD, FAANS; Mark D. D’Alise, MD, FAANS; H. Francis Farhadi, MD, FAANS

304 Surgical Treatment of Parkinson’s Disease
Location: 202, The Moscone Center South
Moderator: Robert R. Goodman, MD, PhD, FAANS
Panelists: Paul A. House, MD, FAANS; Andre Guelman Machado, MD, PhD; Julie G. Pilitsis, MD, PhD, FAANS

305 Shoulder vs. Spine – Differentiating Shoulder and Cervical Spine Pathology
Location: 306, The Moscone Center South
Moderator: Paul Kraemer, MD
Panelists: Nathaniel P. Brooks, MD; Michael L. Smith, MD, FAANS

306 If I Could Do That Case Over Again: Discussion of Complications of Spine Surgery
Location: 200/212, The Moscone Center South
Moderator: Michael G. Kaiser, MD, FAANS
Panelists: Iain H. Kalfas, MD, FAANS; Howard Morgan, MD, FAANS; Sergey Neckrysh, MD, FAANS

307 Intramedullary Spinal Cord Tumors
Location: 301, The Moscone Center South
Moderator: George I. Jallo, MD, FAANS
Panelists: Lawrence F. Borges, MD, FAANS; Jacques Brotchi, MD, PhD; Russell R. Lonser, MD, FAANS

308 Management of Vasospasm
Location: 308, The Moscone Center South
Moderator: Peter D. Le Roux, MD, FAANS
Panelists: Rose Du, MD, PhD, FAANS; Aaron S. Dumont, MD, FAANS; R. Loch Macdonald, MD, PhD, FAANS; Jonathan A. White, MD, FAANS
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<th>Event</th>
<th>Location</th>
<th>Moderator</th>
<th>Panelists</th>
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<tbody>
<tr>
<td>309 Lumbar Interbody Fusion: Direct Lateral Retroperitoneal Transpsoas Fusion</td>
<td>232–234, The Moscone Center South</td>
<td>Regis W. Haid Jr., MD, FAANS</td>
<td>John C. Liu, MD, FAANS; John E. O’Toole, MD, FAANS; Chad J. Prusmack, MD, FAANS; Juan Santiago Uribe, MD</td>
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<tr>
<td>310 Business of Neurosurgery II – Growth and Management of Neurosurgical Practices</td>
<td>238, The Moscone Center South</td>
<td>Troy M. Tippett, MD, FAANS</td>
<td>Perry A. Ball, MD, FAANS; Mark E. Linskey, MD, FAANS; Steven A. Toms, MD, MPH, FAANS; Clarence B. Watridge, MD, FAANS</td>
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<tr>
<td>311 Neurosurgical Management of Intractable Pain</td>
<td>203, The Moscone Center South</td>
<td>Robert M. Levy, MD, PhD, FAANS</td>
<td>Kim J. Burchiel, MD, FAANS; Konstantin V. Slavin, MD, FAANS; Christopher J. Winfree, MD, FAANS</td>
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<td>312 Stem Cell Therapeutics in Neurosurgery</td>
<td>307, The Moscone Center South</td>
<td>Nathan R. Selden, MD, PhD, FAANS</td>
<td>John A. Boockvar, MD, FAANS; Nicholas M. Boulis, MD, FAANS; Douglas S. Kondziolka, MD, FAANS</td>
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<tr>
<td>313 Controversies in Cerebrovascular and Endovascular Neurosurgery</td>
<td>236, The Moscone Center South</td>
<td>Erol Vezenedaroglu, MD, FAANS</td>
<td>Adam S. Arthur, MD, MPH, FAANS; Michael T. Lawton, MD, FAANS; Elad I. Levy, MD, FAANS; Christopher S. Ogilvy, MD, FAANS</td>
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<tr>
<td>314 Physician Autonomy in Business Enterprises: Profits &amp; Pitfalls</td>
<td>302, The Moscone Center South</td>
<td>James R. Bean, MD, FAANS</td>
<td>Gregory B. Lanford, MD, FAANS; Richard Arthur Roski, MD, FAANS; Richard N. Wohns, MD, JD, MBA, FAANS; Edie E. Zusman, MD, FAANS, FACS</td>
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<td>315 The Spectrum of Adjuvant Therapy for Brain Tumors</td>
<td>224–226, The Moscone Center South</td>
<td>Frederick F. Lang Jr., MD, FAANS</td>
<td>Jeffrey N. Bruce, MD, FAANS; Randy Lynn Jensen, MD, PhD, FAANS; James M. Markert Jr., MD, FAANS; John H. Sampson, MD, PhD, FAANS</td>
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<td>316 Suprasellar and Juxtasellar Tumors: Complications and Avoidance</td>
<td>303, The Moscone Center South</td>
<td>Harry R. van Loveren, MD, FAANS</td>
<td>Khaled M. A. Aziz, MD, PhD, FAANS; Griffith R. Harsh IV, MD, FAANS; Philip V. Theodosopoulos, MD, FAANS</td>
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<td>317 Management of Adult Scoliosis</td>
<td>228–230, The Moscone Center South</td>
<td>Christopher I. Shaffrey, MD, FAANS</td>
<td>Panelists: Peter D. Angevine, MD, MPH, FAANS; Tyler R. Koski, MD, FAANS; David O. Okonkwo, MD, PhD, FAANS; Daniel M. Scibubba, MD, FAANS</td>
</tr>
<tr>
<td>318 New and Evolving Technologies for Minimally Invasive Lumbar Disc Surgery</td>
<td>309, The Moscone Center South</td>
<td>Richard G. Fessler, MD, PhD, FAANS</td>
<td>Charles L. Branch Jr., MD, FAANS; Dean Chou, MD, FAANS; Larry T. Khoo, MD; Jean-Pierre Mobassser, MD, FAANS</td>
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<td>319 Cerebral Trauma State-of-the-art Treatment</td>
<td>310, The Moscone Center South</td>
<td>Alex B. Valadka, MD, FAANS</td>
<td>Austin R. Colohan, MD, FAANS; Geoffrey T. Manley, MD, PhD, FAANS; Joshua Eric Medow, MD, MS, FAANS; Jeffrey V. Rosenfeld, MD, MS</td>
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<td>320 Tumor-related Epilepsy</td>
<td>305, The Moscone Center South</td>
<td>Edward F. Chang, MD</td>
<td>Hugues Duffau, MD; Jeffrey M. Politsky, MD; Theodore H. Schwartz, MD, FAANS; Jeffrey S. Weinberg, MD, FAANS</td>
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</table>
Visit the AANS Exhibit Hall during unopposed times or whenever you have free time. Enhance your professional knowledge by visiting with the exhibitors.

9 a.m.–2:15 p.m.
AANS Exhibit Hall
Location: Exhibit Halls ABC, The Moscone Center South

9–9:45 a.m.
Beverage Break in the AANS Exhibit Hall
Location: Exhibit Halls ABC, The Moscone Center South

9:45 a.m.–1 p.m.
PLENARY SESSION III
Please note: All abstracts are published as submitted by their authors. The AANS is unable to make any changes to abstract submissions.

Location: 102–104, The Moscone Center South
Moderators: Douglas L. Brockmeyer, MD, FAANS; Michael T. Lawton, MD FAANS

9:45–9:47 a.m.
Introduction of the Louise Eisenhardt Lecture
Julie G. Piliitis, MD, PhD, FAANS

9:48–10:08 a.m.
Louise Eisenhardt Lecture
Solutions for America
Anne-Marie Slaughter, M.Phil, D.Phil, JD

10:09–10:29 a.m.
Expanding Neurosurgery: Neurosurgery and Pain Treatment
Kim J. Burchiel, MD, FAANS

10:30–10:41 a.m.
800 The National Neurosurgery Quality and Outcomes Database (N2QOD): Predictors of Persistent 12 month Disability Following Lumbar Surgery
Authors: Anthony L. Asher, MD, FAANS, FACS; Steve Glassman, MD; John Knightly, MD; Praveen Mummaneni, MD; Gregory Oetting, MD; Nicholas Theodore, MD; Oren Gottfried, MD; Saad Khairi, MD; Meic Schmidt, MD; Maxwell Boakye, MD; Steve Kalkanis, MD; Doron Rabin, MD; Timothy Ryken, MD; Greg Balturshot, MD; James Chadduck, MD; Daniel Fasset; Ralph Reeder; Clinton Miller; Thomas Briggs, MD; Dang Zhang, MD; Nicholas Bambakidis, MD; Mark Shaffrey, MD; Mark Hadley, MD; Dean Karahalios, MD; Peter Angevine, MD; Michael Martin, MD; Matthew Ewend, MD; Jason Blatt, MD; Ali Bydon, MD; Adam Kremer, MD; Langston Holly, MD; Jonathan Slotkin, MD; Wayel Kaakaji, MD; Alexander Powers, MD; Wesley Griffitt, MD; Troy Tippett; Jeffrey Cozzens, MD; Lana Christiano, MD; Thomas Grahm, MD; Barton Guthrie, MD; James Harrington, MD; Chris Shaffrey, MD; Eric Elowitz, MD; Kevin Foley, MD; Clarence Watridge, MD; Matthew McGirt, MD

10:42–10:45 a.m.
Discussant: Daniel K. Resnick, MD, FAANS

10:46–10:57 a.m.
801 The Barrow Ruptured Aneurysm Trial: 6-year results
Authors: Robert F. Spetzler, MD, FAANS; Cameron McDougall, MD; Joe Zabramski, MD; Felipe Albuquerque, MD; Peter Nakaji, MD; Nancy Hills, PhD; Robert Wallace, MD

10:58–11:01 a.m.
Discussant: Richard S.C.Kerr, MD

11:02–11:04 a.m.
Introduction of the Richard C. Schneider Lecture
William T. Couldwell, MD, PhD, FAANS

11:05–11:25 a.m.
Richard C. Schneider Lecture
Expanding Neurosurgery: Innovation and the Neurosurgeon
Kevin T. Foley, MD, FAANS

11:26–11:29 a.m.
Special Award Presentation
William T. Couldwell, MD, PhD, FAANS

11:30–11:31 a.m.
Outstanding Contributions to Education for Advanced Practice Providers
Recipient: Twyila Lay, NP, MS

11:32–11:43 a.m.
802 Black Holes, White Dwarfs, and Supernovas: The Complications of Radiosurgery
Authors: Douglas S. Kondziolka, MD, FAANS; L. Lunsford, MD

11:44–11:47 a.m.
Discussant: Bruce E. Pollock, MD, FAANS
WEDNESDAY, APRIL 9

11:48–11:59 a.m.
803 Endoscopic Third Ventriculostomy with Choroid Plexus Cauterization in Hydrocephalic Infants: A Prospective North American Series
Authors: Scellig S. D. Stone, MD, PhD; Benjamin Warf, MD

12–12:03 a.m.
Discussant: TBD

12:04–12:15 a.m.
William H. Sweet Award

804 Intravenous Acetaminophen for Postoperative Supratentorial Craniotomy Pain – A Randomized, Double-Blinded, Placebo-Controlled Trial
Authors: Walavan Sivakumar, MD; Paul House, MD; Robert Hoesch, MD, PhD; Julie Martinez, RN; Nancy Duncan, NP; Safdar Ansari, MD; Craig Kilburg, MD

12:16–12:19 a.m.
Discussant: Kim J. Burchiel, MD, FAANS

12:20–12:22 p.m.
Introduction of the Van Wagenen Lecture
William T. Couldwell, MD, PhD, FAANS

12:23–12:43 p.m.
Van Wagenen Lecture
Vaccine Therapy for Childhood Gliomas: Initial Experience, Future Opportunities and Challenges
Ian F. Pollack, MD, FAANS

12:44–12:47 p.m.
Introduction of the Humanitarian
William T. Couldwell, MD, PhD, FAANS

12:48–12:49 p.m.
Humanitarian Award
Anselmo Pineda, MD, FAANS(L)

12:50–1:10 p.m.
Expanding Neurosurgery: Stroke and the Neurosurgeon
Robert H. Rosenwasser, MD, FAANS

1:10–1:12 p.m.
Introduction of the Incoming AANS President
William T. Couldwell, MD, PhD, FAANS

1:13–1:15 p.m.
2014–2015 AANS President
Robert E. Harbaugh, MD, FAANS

1–2 p.m.
Lunch in the AANS Exhibit Hall
Location: Exhibit Halls ABC, The Moscone Center South

2–5 p.m.
AANS SECTION ON HISTORY OF NEUROLOGICAL SURGERY
Location: 306, The Moscone Center South
Moderators: Mark Preul, MD; Chris A. Sloffer, MD, MBA, FAANS

2–2:40 p.m.
American Icon: The Golden Gate Bridge
John A. Martini

2:41–2:46 p.m.
Question and Answer

2:47–3:01 p.m.
NEUROSURGICAL FACE-OFF: VICTOR HORSLEY EXPANDING NEUROSURGERY VS. HARVEY CUSHING
Michael Powell, MD

3:02–3:16 p.m.
James T. Goodrich, MD, PhD, FAANS

3:17–3:26 p.m.
Case Discussion

3:27–3:35 p.m.
Vesalius Award
805 Julius Caesar Arantius (Giulio Cesare Aranzi, 1530–1589) and the hippocampus of the human brain; history behind discovery
Authors: Shyamal C Bir; Sudheer Ambekar, MD; Sunil Kukreja; Papireddy Bollam, MD; Anil Nanda, MD, MPH

3:36–3:44 p.m.
806 The Story of John F. Kennedy's Spine Surgeries
Authors: Justin T. Dowdy, MD; T. Glenn Pait, MD

3:45–3:53 p.m.
807 Cushing at His Prime - Brigham Surgical Records from 1922
Authors: Edward R. Laws, Jr., MD, FAANS(L); E. Chiocca, MD, PhD
2–5 p.m.
AANS/CNS SECTION ON PAIN

Location: 305, The Moscone Center South
Moderator: Jason M. Schwalb, MD, FAANS

2–2:30 p.m.
John Loeser Lecture
Neuromodulation for the Future: Competing or Complementary Interests?
Elliot Krames, MD

2:31–2:40 p.m.
814 Peripheral Hypersensitivity to Subthreshold Stimuli Persists after Resolution of Acute Experimental Disc-Herniation Neuropathy and is Mediated by Heightened TRPV1 Receptor Expression and Activity
Authors: Mohammed Farid Shamji, MD, PhD, FAANS; Yu Shan Tu; Michael Salter

2:41–2:50 p.m.
815 Percutaneous C1-C2 cordotomy for refractory cancer pain: a multicenter experience
Authors: Ashwin Viswanathan, MD; Ahmed Raslan, MD; Parag Patil, MD, PhD; Erich Richter, MD; William Rosenberg, MD

2:51–3 p.m.
816 A National Survey of Spinal Cord Stimulation Trial to Permanent Conversion Rates
Authors: Kevin Huang; Gustavo Chagoya; Jeffrey Hatef; Andrew Marky, MD; Steven Thomas; Yulia Lokhnygina, PhD; Shivanand Lad, MD, PhD

3:01–3:10 p.m.
817 Dual occipital and supraorbital nerve stimulation for chronic migraine
Authors: Shannon Wang Hann, MD; Sharan Sharan, MD

3:11–3:20 p.m.
818 Efficacy of Spinal Cord Stimulation for Neuropathic Pain due to Spinal Cord Lesions
Authors: Toru Sasamori, MD; Shunsuke Yano, MD, PhD; Kazutoshi Hida, MD, PhD; Yasuhiro Chiba, MD, PhD; Dajiho Morimoto, MD, PhD; Toshitaka Seki, MD, PhD; Toyohiko Isu, MD, PhD; Hisatoshi Saito, MD, PhD; Kiyohiro Houkin, MD, PhD

3:21–3:30 p.m.
819 Impact Of Target Location On The Response Of Trigeminal Neuralgia To Stereotactic Radiosurgery
Authors: Zhiyuan Xu, MD; David Schlesinger, PhD; Krisztina Moldovan, MD; Colin Przybylewski; Xingwen Sun; Cheng-Chia Lee, MD; Chun-Po Yen; Jason Sheehan, MD
2–5 p.m.

AANS/CNS SECTION ON PEDIATRIC NEUROLOGICAL SURGERY

Location: 302/304, The Moscone Center South
Moderator: Bruce A. Kaufman, MD, FAANS

2–3 p.m.

Matson Lecture
Just the Facts: An Evidence-Based Approach to the Youth Concussion Crisis
Christopher C. Giza, MD

3:01–3:10 p.m.

825 Natural History of Idiopathic Syrinx
Authors: Jennifer Strahle, MD; Brandon Smith, MD; Jordan Starr, BS; Karim Muraszko, MD; Hugh Garton, MD; Cormac Maher, MD

3:11–3:20 p.m.

826 Indwelling intrathecal baclofen trial: Assessment of efficacy and safety in 124 pediatric patients with cerebral palsy and dystonic overlay
Authors: Robert F. Keating, MD, FAANS; Seth Butler; Tiffani DeFreitas; Chima Oluigbo, MD; Jeffrey Rabin, DO; Bennett Lavenstein, MD; Suresh Magge, MD; John Myseros, MD

3:21–3:30 p.m.

827 Predictors of shunt revision: should the shunt revision rate be used as a quality metric?
Authors: Paul Klimo Jr., MD, FAANS; Nickalus Khan, MD; Nick Rossi, MD; Frederick Boop, MD

3:31–3:40 p.m.

828 Diagnostic and Therapeutic Interventions in Children with Cerebral Venous Sinus Thrombosis: A National Study
Authors: Michael Schiraldi, MD PhD; Doniel Drazin, MD, MS; Faris Shweikeh, BS; Miriam Nuno, PhD; Moise Danielpour, MD; Michael Alexander, MD

3:41–3:50 p.m.

829 Bone Morphogenetic Protein-Associated Complications in Pediatric Spinal Fusion: an analysis of 4658 patients and systematic review of the literature
Authors: Brandon G. Rocque, MD, MS; Mick Kelly, BS; Joseph Miller, MD; Yiping Li, MD; Paul Anderson, MD

3:51–4 p.m.

830 Health Disparities Impact Outcomes in Children with CNS Malignancies
Authors: David I. Sandberg, MD, FAANS; Mary Austin, MD, MPH; Hoang Nguyen, MD, PhD; Jan Eberth; Andras Heczey; Dennis Hughes, MD, PhD; Linda Elting, PhD

4:01–4:10 p.m.

831 Pial Synangiosis for Moyamoya Syndrome in Children with Sickle Cell Anemia: A Comprehensive Review of Reported Cases
Authors: Benjamin Kennedy, MD; Michael McDowell, BS; Peter Yang, BS; Sida Li; Caroline Wilson; Todd Hankinson, MD; Neil Feldstein, MD; Richard Anderson, MD

4:11–4:20 p.m.

832 Pediatric Survivors of Traumatic Atlanto-occipital Dislocation and their Neurosurgical Management: the Loma Linda University Children’s Hospital Experience
Authors: Joseph Ryan Keen, DO; Joseph Keen, DO; Robert Ayer, MD; Alexander Zouros, MD
2–5 p.m.

AANS/CNS SECTION ON DISORDERS OF THE SPINE AND PERIPHERAL NERVES – PERIPHERAL NERVES SESSION

Location: 308/310, The Moscone Center South
Moderator: Line Jacques, MD, FAANS

2:04–2:49 p.m.
Integra Foundation David G. Kline Lecture
Nerve Surgery: Improving Outcome Using Clinical and Neurobiological Techniques
Martijn J.A. Malessy, MD, PhD

What to do for: Recurrent Carpal Tunnel Syndrome and CRPS: Operate/Re-operate vs. Pain Management Alone
2:56–3 p.m.
Case Presentation
Jason H. Huang, MD, FAANS

3:01–3:10 p.m.
Operate/Re-operate
Nicholas M. Boulis, MD, FAANS

3:11–3:20 p.m.
Pain Management Alone
Christopher J. Winfree, MD, FAANS

What to do for: Foot Drop/Peroneal Nerve Injury: Nerve Decompression Plus Tendon Transfer Versus Nerve Decompression/Repair Alone?
3:21–3:25 p.m.
Case Presentation
Marie-Noelle Hebert-Blouin, MD

3:26–3:35 p.m.
Nerve Decompression Plus Tendon Transfer
Robert J. Spinner, MD, FAANS

3:36–3:45 p.m.
Nerve Decompression/Repair Alone
Allan J. Belzberg, MD, FAANS

What to do for: Radial Neuropathy with Humeral Fracture?
3:46–3:50 p.m.
Case Presentation
Amgad Saddik Hanna, MD, FAANS

3:51–4 p.m.
Neurolyse and Observe with Potential Flexor to Extensor Transfer Later
Allen H. Maniker, MD, FAANS

4:01–4:10 p.m.
Nerve Repair Acutely
Allan H. Friedman, MD, FAANS

Moderators: Holly S. Gilmer, MD, FAANS; Vikram C. Prabhu, MD, FAANS
4:11–4:20 p.m.
837 Sustained Local Release of Methylprednisolone from a thiol-acrylate poly (ethylene glycol) Hydrogel for Treating Chronic Compressive Radicular Pain
Authors: Jonathan R. Slotkin, MD; Jennifer Ness, PhD; Kristin Snyder, BS; Amanda Skiles, BS; Eric Woodward, MD; Timothy O'Shea, BS; Frank Reynolds, MBA; Rick Layer, PhD; Alex Aimetti, PhD; Steven Toms, MD, MPH; Robert Langer ScD; Nikos Tapinos, MD, PhD

4:21–4:30 p.m.
838 Comparison of graft repair vs nerve transfer for reconstitution of elbow flexion
Authors: Julia Oberhoffer, MD; Gregor Antoniadis, MD, PhD; Ralph König, MD, PhD; Christian Wirtz, MD, PhD; Thomas Kretschmer, MD, PhD; Christian Heinen, MD; Maria Pedro, MD

4:31–4:40 p.m.
839 A Review of Postoperative Delayed Cervical Palsies: Understanding the Etiology
Authors: Grant William Mallory, MD; William Clifton, MS; Ross Puffer, MD; Ahmad Nassr, MD; Michelle Clarke, MD

4:41–4:50 p.m.
840 Peripheral Nerve Stimulation for Chronic Lower Extremity Pain – A Retrospective Case Series Analysis
Authors: Sukreet Raju; Jonathan Riley, MD, MS; Nicholas Boulis, MD

4:51–5 p.m.
841 Long term results of DREZ operation for brachial plexus avulsion. An institutional case series, and patient reported outcome
Authors: Ahmed Raslan, MD; Alp Ozpinar; Jeffrey Raskin, MD, MS; Kim Burchiel, MD

2–5 p.m.
AANS/CNS SECTION ON TUMORS II

Location: 301/303, The Moscone Center South
Moderators: Frederick G. Barker II, MD, FAANS; Jennifer Moliterno Gunel, MD

The Tumor Surgeon and the New Pathology: Clinical Applications
2–2:05 p.m.
Introduction
Jennifer Moliterno Gunel, MD

2:06–2:19 p.m.
Biopsy: Tumor vs Non-neoplastic
Randy Lynn Jensen, MD, PhD, FAANS

2:20–2:33 p.m.
HGG – Focusing on MGMT, Recent Elderly Trials
Susan M. Chang, MD

2:34–2:47 p.m.
LGG – IDH vs. 1p/19q
Linda M. Liau, MD, PhD, FAANS

2:48–3:01 p.m.
Pilocytics (BRAF) and Medulloblastoma
Ian F. Pollack, MD, FAANS

3:02–3:15 p.m.
Meningiomas
Arie Perry, MD

3:16–3:29 p.m.
What to do When my Patient Just Wants Genomics?
Daniel P. Cahill, MD, PhD, FAANS

3:30–3:39 p.m.
842 Re-operation After Progression: Safety/Efficacy from AVAglio, a Phase III Study in Newly Diagnosed Glioblastoma
Authors: Ryo Nishikawa, MD; Warren Mason, MD; Olivier Chinot, MD; Timothy Cloughesy, MD; Roger Henriksson, MD; Frank Saran, MD; Sunita Dhar, MD; Cedric Revil; Josep Garcia, PhD; Wolfgang Wick, MD

3:40–3:49 p.m.
843 The Capacity of Glioblastoma-Released Exosomes to Stimulate Peripheral Immune Effectors
Authors: J. Bryan Iorgulescu; Orin Bloch, MD; Rajwant Kaur, BS; Michael Safaee, BS; Michael Ivan, MD; Andrew Parsa, MD, PhD

3:50–3:59 p.m.
844 Recurrence in Atypical Meningiomas: Analysis of Predictive Factors and the Role of Adjuvant Radiation Therapy
Authors: Sam Sun; Rory Murphy, MD; Chunyu Cai, MD; Peter Sylvester, BS; Ralph Dacey, MD; Robert Grubb, MD; Keith Rich, MD; Gregory Zipfel, MD; Joshua Dowling; Eric Leuthardt, MD; Jeffrey Leonard, MD; John Evans, RN; Joseph Simpson, MD; Clifford Robinson, MD; Jiayi Huang, MD; Michael Chicoine, MD; Albert Kim, MD, PhD

4–4:09 p.m.
845 Extent of resection as a predictor of survival in a modern series of low-grade gliomas: a volumetric analysis
Authors: Josiah N. Orina, MD; Fredric Meyer, MD; Ian Parney, MD, PhD

4:10–4:19 p.m.
846 Characterization of brain tumor mutations from cell-free DNA in cerebrospinal fluid
Authors: Melanie Hayden Gehart, MD; Stephen Quake, PhD; Wenying Pan, BS
AANS RESOURCE CENTER

The One-Stop Shop for Your Clinical, Professional and Membership Needs

Exhibit Hall, Booth #1931

The AANS Resource Center, located in The Moscone Center Exhibit Hall, is the one-stop destination for Annual Scientific Meeting attendees looking for the latest in practice management tools, discounted products and publications, guidance on continuing education and member service assistance.

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AANS Publications and Products

Browse the latest online edition of AANS Neurosurgeon, the association’s socioeconomic magazine written by and for neurosurgeons. Review and purchase the best-selling 2014 AANS Guide to Coding: Mastering the Global Service Package for Neurological Surgery Services as well as a number of clinical and business texts.

Journals of Neurosurgery

As the specialty’s most highly-acclaimed scientific publication, the Journals of Neurosurgery (JNS) offer the latest in clinical and scientific innovations every month. Highlighting general neurosurgery, spine and pediatrics, the Journals of Neurosurgery and its online video supplement provide added value to your practice. Visit the JNS representatives at the AANS Resource Center, stock up on the latest JNS issues, and learn how you can become a contributor.

Member Services

No need to make a call to the AANS offices; take care of your membership needs while you’re attending the Annual Scientific Meeting. Update your contact information and membership status, or join the AANS at the Resource Center.

NeuroPoint Alliance

Meet with a representative from the NeuroPoint Alliance (NPA), the web-based national platform for the collection, analysis and reporting of neurosurgical clinical data. The NPA is designed to meet the quality care and research needs of neurosurgeons and neurosurgical practices, national organizations, healthcare plans, biomedical industry and government agencies. Learn how you can gain valuable data and/or contribute to NPA’s unprecedented projects.

AANS Annual Scientific Meeting Presentations: Online and On-demand

As a benefit of attending the meeting in San Francisco, all registered medical attendees will have access to over 250 presentations from this year’s program that are being recorded. These presentations will be posted online and made available as individual videos by May 5, 2014.

Catch sessions missed due to schedule conflicts or revisit favorite presentations. Keep up to date on advances in neurosurgery, access stellar research to check a reference and learn more about what your peer’s are doing to effectively management practices and deal with reimbursement issues.

Attendees enjoy 24/7, on-demand access for two years online; a CD option also is available for purchase. Visit the AANS Resource Center for purchase information.
AANS EXHIBIT HALL

The exhibits will be located in Exhibit Halls ABC of The Moscone Center South. The AANS Resource Center, new technologies, education and meals are all part of the AANS Exhibit Hall.

Compare relevant products and services in one convenient place. Learn about the newest innovations in the neurosurgery field and gain first-hand knowledge of how these devices work. You will be able to attend product demonstrations and have questions answered by representatives from over 200 companies from around the world.

Exhibit Hours

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<td>Monday, April 7</td>
<td>9 a.m.– 4 p.m.</td>
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<tr>
<td>Tuesday, April 8</td>
<td>9 a.m.– 4 p.m.</td>
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<tr>
<td>Wednesday, April 9</td>
<td>9 a.m.–2:15 p.m.</td>
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Beverage Breaks in the AANS Exhibit Hall

Enjoy the complimentary beverages while visiting with the exhibitors in the AANS Exhibit Hall.

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<td>Monday, April 7</td>
<td>9–9:45 a.m. &amp; 3:30–4 p.m.</td>
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<tr>
<td>Tuesday, April 8</td>
<td>9–9:45 a.m. &amp; 3:30–4 p.m.</td>
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<tr>
<td>Wednesday, April 9</td>
<td>9–9:45 a.m.</td>
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Lunch in the AANS Exhibit Hall

We will be serving a hot lunch each day in the AANS Exhibit Hall. Each medical attendee will be provided with a ticket for a complimentary lunch. Make time in your schedule to join us in the AANS Exhibit Hall for lunch and to visit the exhibitors.

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Check email and view scientific posters in electronic format. Available Monday through Wednesday during exhibit hours.

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For your convenience, the AANS will once again provide an online interactive exhibition tool. This software provides real-time viewing of the exhibit floor and denotes locations of the exhibitors. Busy attendees can pre-plan their valuable time by searching exhibitor locations by company name and booth number. To view the floor plan, please visit, http://www.aans.org/floorplans/AANS14/default.html.

Acknowledgement

The AANS would like to thank our members for their continued support and interest in patronizing 2014 AANS Annual Scientific Meeting exhibitors. There is added value to the meeting experience when companies present quality products and services addressing the needs of the neurosurgical professionals. The partnership is equally beneficial. Registration fees at the annual meeting would be considerably higher without the income generated from exhibitor participation. In return, exhibitors gain increased exposure to a highly targeted market. Please set aside dedicated time to visit with exhibitors and let them know you value the partnership.
The AANS wishes to thank the following companies for their support of this year’s Annual Scientific Meeting.

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Medyssey designs, develops, manufactures and markets products for the surgical treatment of spine disorders through novel instrumentation and advanced orthobiologic solutions designed to improve spinal fusion rates, preservation of mobility and clinical outcomes.

**Merrill Lynch**
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Phone: 310.858.4669
Fax: 310.256.2051
[www.fa.ml.com/bob](http://www.fa.ml.com/bob)
**Booth #2214**
Robert Levin is a former Wall Street pharmaceuticals analyst and board-certified physician. He directs a wealth management advisory practice at Merrill Lynch, focusing on the financial needs of physicians and health care executives. His clients trust him as their primary resource to navigate through the complexities of the financial world.

**MicroAire Surgical Instruments**
3590 Grand Forks Boulevard
Charlottesville, VA 22911
Phone: 434.975.8000
Fax: 434.975.4144
[www.microaire.com](http://www.microaire.com)
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MicroAire’s SmartRelease™ECTR is a minimally invasive, endoscopic treatment for carpal tunnel syndrome, providing a clear alternative to open-hand surgery. SmartRelease™ECTR has been used to treat thousands of patients since 1992. Its benefits, reliability, safety and efficacy are supported by an impressive body of clinical data.

**MicroVention, Inc.**
1311 Valencia Avenue
Tustin, CA 92780-6447
Phone: 714.247.8140
Fax: 714.247.8019
[www.microvention.com](http://www.microvention.com)
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MicroVention is focused on proprietary technologies that provide therapeutic advantages for cerebral aneurysm treatment in a minimally invasive platform. The company currently markets and develops innovative neuroendovascular technologies for the treatment of vascular diseases in small vessels and is committed to developing and manufacturing the highest quality products for its customers and patients.

**M.I.H. International LLC/M-Brace**
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Newark, DE 19711
Phone: 866.374.4050
Fax: 866.374.4051
[www.m-brace.com](http://www.m-brace.com)
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2337 Lucky John Drive
Park City, UT 84060-6914
Phone: 435.649.2236
Fax: 435.608.6397
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EXHIBITOR LISTING

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www.mizuho.com
Booth #1330
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Union City, CA 94587-1234
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www.moeller-medical.com
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www.monteris.com
Booth #516
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Memphis, TN 38103
Phone: 901.522.9300
Fax: 901.522.9400
www.mriinterventions.com
Booth #1036
MRI Interventions Inc. is a leader in the field of MRI-guided interventions, creating innovative platforms for performing the next generation of interventional procedures in the brain. Utilizing a hospital’s existing MRI suite, MRI Interventions’ FDA cleared ClearPoint™ system is designed to enable a range of minimally invasive procedures in the brain.

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Chicago, IL 60657
Phone: 312.859.6889
www.neuroenterprises.com
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www.NeuroDx.com
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ShuntCheck is a non-invasive diagnostic device which detects flow in CSF shunts via thermal dilution. CSF is cooled transcutaneously with an ice pack and ShuntCheck detects a temperature drop “downstream” of the ice.

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NeuroPoint Alliance (NPA) was developed to collect, analyze, and report on nationwide neurosurgical clinical data; NPA meets quality and research needs of neurosurgical practices as well as industry, government agencies, third party payers, and national organizations. NPA’s largest initiative, National Neurosurgery Quality and Outcomes Database (N2QOD), is a continuous national clinical registry where participating hospitals and practice groups can analyze and report on the quality of their neurosurgical care, and target areas where quality improvement is needed.

Neurosurgery Research and Education Foundation (NREF) is a not-for-profit 501 (C)(3) organization created in 1980 by the American Association of Neurological Surgeons (AANS) to support research and education efforts that enhance and confirm the critical role neurosurgeons play in improving lives.

NeurosurgeryPAC
725 15th Street N.W.
Suite 500
Washington, DC 20005
Phone: 202.628.2072
Fax: 202.628.5264
www.aans.org/en/Legislative%20Activities/NeurosurgeryPAC.aspx

Booth #2225
Federal policymakers have a huge impact on neurosurgical practice. In order to maximize effective advocacy, the AANS established a political action committee called NeurosurgeryPAC. NeurosurgeryPAC is nonpartisan and supports candidates for federal office who are supportive of the issues important to neurosurgery. Stop by the NeurosurgeryPAC booths to learn more about the PAC and neurosurgery’s advocacy efforts or visit the website at: http://www.aans.org/en/Legislative%20Activities/NeurosurgeryPAC.aspx

Neurosurgical Top Gun Competition
5550 Meadowbrook Drive
Rolling Meadows, IL 60008
Phone: 847.378.0500
Fax: 847.378.0600
www.aans.org

Booth #2241
For the ninth consecutive year, the Young Neurosurgeons Committee will host a competition for neurosurgical residents and fellows. This three-day event will include stations such as an image-guided lumbar pedicle screw, virtual ventriculostomy, endovascular aneurysm embolization. Each participant has one opportunity at each intricate and demanding surgical station, and is scored on their performance. The resident or fellow with the best combined score will earn the distinct honor of being named the Neurosurgical Top Gun as well as a prize of $1,000, plus $1,500 for his or her residency program. Top scorers at individual stations also will win a prize of $200 each. The first 50 participants will receive a Top Gun t-shirt!

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Alpharetta, GA 30004
Phone: 770.664.1000
Fax: 770.664.1217
www.nexstim.com

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Nexstim’s Navigated Brain Stimulation (NBS) System integrates TMS, EMG, and MRI guided navigation to non-invasively map the motor cortex with the accuracy of DCS. Nexstim holds FDA clearances for (NBS) pre-procedural planning and (NexSpeech) for mapping speech function. Future FDA applications currently in clinical trials are: Stroke Rehabilitation and Depression.

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Phone: 888.632.7071
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www.niconeuro.com

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Burr Ridge, IL 60527-5614
Phone: 630.230.3600
Fax: 630.230.3700
www.spine.org

Booth #2112
The North American Spine Society (NASS) is a multidisciplinary medical organization representing over 8,000 members dedicated to fostering the highest quality, evidence-based, ethical spine care by promoting education, research, and advocacy. With members from multiple specialties worldwide, NASS is your link to health care professionals invested in advancing spine care.
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Phone: 303.860.0261
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www.nsi-healthsystems.com
Booth #2115
NSI specializes in the development, manufacturing and distribution of innovative medical devices and technologies.

NSII
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www.nutechspine.com
Booth #1805
NuTech is a leading biologics and medical device company that provides an integrated portfolio of innovative products. They offer a wide range of allograft tissue products, a full line of spinal implants, and a complete line of innovative products taking advantage of the unique properties of the amniotic tissues and fluids. NuTech is dedicated to providing new technologies that will benefit surgeons, hospitals, and most importantly, patients.

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Phone: 858.909.1800
Fax: 858.909.2000
www.nuvasive.com
Booth #1807
NuVasive® is an innovative medical device company focused on developing minimally disruptive surgical products and procedures for the spine. Our mission is to improve the lives of patients who suffer from debilitating back, neck, or leg pain by creating cutting-edge products and procedures that revolutionize spine surgery.

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Phone: 866.315.1447
www.omtmedical.com
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Phone: 510.748.3228
Fax: 510.217.9202
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Penumbra, Inc. is a medical device company that strives to create and maintain a culture of innovation and independence to develop products that continuously challenge the status quo and improve patient outcomes. We deliver clinically beneficial devices to patients suffering from stroke and vascular disease.

Pictures at the Exhibition
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www.aans.org
Booth #630
The American Association of Neurological Surgeons (AANS) is proud to announce that in conjunction with the 82nd AANS Annual Scientific Meeting in San Francisco, the organization will present “Pictures at the Exhibition” – a unique art gallery exhibition of various works submitted to help raise funds for the Neurosurgery Research and Education Foundation (NREF).

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Sophysa is focused on the design and manufacture of innovative CSF Management technologies and solutions. Sophysa’s pioneering research and development continues to expand the reach of the global neurosurgical community, focusing on Hydrocephalus, and related disorders of CSF dynamics.
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Phone: 760.607.0121
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www.spinalelements.com
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Spinal Elements develops innovative technologies for traditional and MIS procedures. The portfolio includes: Lucent® Ti-Bond® (Titanium Coated PEEK Interbody Devices) in PLIF, TLIF, and ALIF; Hero® Allograft (proceeds donated to charities benefiting children with life-threatening medical conditions); Mosaic® Cervical Implant; Magnum+® Stand-Alone ALIF; Sapphire® Anterior Cervical Plate; Mercury® Classic Pedicle Screw and Mercury MIS System; and Lotus® Posterior Cervical/Thoracic System.

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500 Cummings Center
Suite 3500
Beverly, MA 01915-6516
Phone: 978.232.3990
Fax: 978.232.3991
www.spinefrontier.com
Booth #916
Harvard-trained spine surgeon and CEO, Dr. Kingsley R. Chin and a group of spine surgeons who formed the Strategic Advisory Board (SAB), founded Spine Frontier, Inc. to focus on satisfying the needs of surgeons and their patients. Spine Frontier Inc., has grown organically since releasing its FacetFuse screws in 2008 to generate a disruptive portfolio of Less Exposure Surgery (LES) technologies for less invasive and tissue-sparing surgeries. Coupled with a focus on partnering with one surgeon at a time, the Company is growing at a controlled annual double-digit rate and is gaining market share in the $10 billion global spine market.

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Booth #2408
SPINE SURGERY TODAY is the only newspaper dedicated to spine surgery. Published 6 times a year, the tabloid-style newspaper strives to be the global, definitive information source for spine surgeons, neurosurgeons and other health care professionals who treat or conduct research related to spine. Visit Healio.com/Spine – the online home of SPINE SURGERY TODAY.

Spine Wave Inc.
3 Enterprise Drive
Suite 210
Shelton, CT 06484-4696
Phone: 203.944.9494
Fax: 203.944.9493
www.spinewave.com
Booth #1914
Spine Wave develops and markets clinical solutions for several market segments, including nuclear augmentation, tumor, trauma, and spinal fusion. The company’s product portfolio includes NuCore® Injectable Nucleus, StaXx® XD and XDL (Lateral) Expandable Devices, CapSure® PS3 Spine System, Sniper® Spine System, Cervical Plate and Spacer, and additional products.

SpineGuard, Inc.
1388 Sutter Street
Suite 510
San Francisco, CA 94109
Phone: 415.512.2500
Fax: 415.512.8004
www.spineguard.com
Booth #2213
Hear and feel what you cannot see! PediGuard® is the first wireless device that can detect possible vertebral cortex perforations during pedicle preparation by accurately analyzing the electrical conductivity of the surrounding tissues in real-time. PediGuard has assisted both neuro-spine surgeons and orthopedic surgeons in over 25,000 surgeries worldwide.

Spineology Inc
7800 3rd Street North
Suite 600
Saint Paul, MN 55128-5455
Phone: 888.377.4633
Fax: 651.256.8506
www.spineology.com
Booth #2108
Spineology, the innovator in anatomy-conserving™ spine surgery, develops spinal implants and instruments. Spineology surgical techniques conserve spinal bone, ligament and muscle tissue. Spineology is committed to increasing procedural efficiency, reducing surgical morbidity and accelerating patient recovery. Learn more at spineology.com.
SpineVision Inc.
225 Franklin Street
26th Floor
Boston, MA 02110
Phone: 415.494.8150
Fax: 888.770.4119
www.spinevision.net

Booth #1821
SpineVision® is an integrated spinal technology company founded in 1999. We focus on the development and marketing of spinal implants and instrumentation. SpineVision® offers solutions for lumbar degenerative disc diseases, deformities, cervical disorders, trauma and tumors. With Flex+2 and LUMIS, SpineVision® is the only manufacturer offering a dynamic percutaneous stabilization system. Flex+2 is not available for sale in the USA.

St. Jude Medical
6300 Bee Cave Road
Building 2 Suite 1
Austin, TX 78746-5832
Phone: 512.732.7400
Fax: 877.506.8295
www.sjm.com

Booth #2318
St. Jude Medical is dedicated to transforming the treatment of some of the world’s most expensive, epidemic diseases by creating cost-effective medical technologies that save and improve lives of patients around the world. For more information, please visit sjm.com.

Stellar Technologies
9200 Xylon Avenue North
Brooklyn Park, MN 55445
Phone: 763.493.8556
www.stellar-technologies.com

Booth #2331

Stryker
4100 East Milham Avenue
Portage, MI 49002-9704
Phone: 800.253.3210
Fax: 269.324.5484
www.stryker.com

Booth #1621
Stryker is one of the world’s leading medical technology companies and is dedicated to helping healthcare professionals perform their jobs more efficiently while enhancing patient care. The Company offers a diverse array of innovative medical technologies, including reconstructive, medical and surgical, and neurotechnology and spine products.

Surgical Theater, LLC
6717 Metropark Drive
Mayfield Village, OH 44143
Phone: 216.496.7884
Fax: 216.916.3806
www.surgicaltheater.net

Booth #524
The Surgery Rehearsal Platform (SRP) is a one-of-a-kind FDA cleared patient specific pre-surgery platform for cerebral cases. The SRP reconstructs patients’ CT /MRI scans into dynamic, interactive 3D models with life-like tissue reaction and accurate modeling of instruments. Available modules include: aneurysm, pituitary tumor and meningioma. Additional modules and Spine SRP soon to be released.

SurgiTel/General Scientific Corporation
77 Enterprise Drive
Ann Arbor, MI 48103-9503
Phone: 800.959.0153
Fax: 734.662.0520
www.surgitel.com

Booth #2104

Taiwan Biomaterial Company, Ltd.
6F 26-1 Sec 2 Sheng Yi Road
Hsinschu County
Zhubei City 30261
Taiwan
Phone: 886.3.6683088
Fax: 886.3.6683099

Booth #705
Taiwan Biomaterial Company is a professional medical device product development company, which is located at Hsin-chu Biomedical Science Park, Taiwan. Taiwan Biomaterial Company is developing a new substitute for dura that it hopes will make doctors’ jobs easier when they perform brain surgery.

TeDan Surgical Innovations
12615 West Airport Boulevard
Suite 200
Sugar Land, TX 77478
Phone: 713.726.0886
Fax: 713.726.0846
www.tedansurgical.com

Booth #723
TeDan Surgical Innovations (TSI) designs and manufactures specialty surgical products for use in Neuro and Spine surgery. TSI
offers cervical and lumbar retractor systems such as our Phantom CS™, Phantom TL™, Phantom LS™, Phantom LT™, Phantom MC™, and our new Phantom ML™ for minimally invasive Lumbar Fusion. All of our Retractor Systems have patented ergonomically designed blade locking mechanism which simplifies their use in surgery.

The Brain Aneurysm Foundation
269 Hanover Street
Suite 3
Hanover, MA 02339-2245
Phone: 781.825.5556
Fax: 781.826.5566
www.bafound.org
Booth #608
The nation’s ONLY non-profit organization solely dedicated to providing critical awareness, education, support and research funding to reduce the incidence of brain aneurysm ruptures.

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New York, NY 10001-5004
Phone: 800.782.3488
Fax: 212.947.1112
www.thieme.com
Booth #922
Thieme is an award-winning international medical and science publisher serving health professionals and students for over 125 years. Thieme promotes the latest advancements in clinical practice and is known for the high quality of its neurosurgery books, journals, and the clinical platform THIEME eNeurosurgery.

ThinkFirst National Injury Prevention Foundation
1801 North Mill Street
Suite F
Naperville, IL 60563-4869
Phone: 630.961.1400
Fax: 630.961.1401
www.thinkfirst.org
Booth #1140
ThinkFirst chapters worldwide provide community injury prevention presentations. Healthcare educators, and speakers who have experienced a brain or spinal cord injury, help students learn the importance of making safe choices—when in a vehicle, on a bicycle or playing sports. Helmet fitting demonstrations and patient handouts at our booth.

Thompson Surgical Instruments, Inc.
10170 E Cherry Bend Road
Traverse City, MI 49684-6843
Phone: 231.319.2251
Fax: 231.922.0174
www.thompsonsurgical.com
Booth #1531
Thompson Surgical celebrates 50 years as a leader in spine exposure and the original manufacturer of the table-mounted retractor. We are dedicated to providing innovative, high quality systems that deliver safe, versatile, and low-profile retraction. From MIS to open, we offer unlimited customization and safe, independent, retraction.

UF Health
Dept of Neurosurgery
1329 SW 16th Street/Suite 3120
Gainesville, FL 32608
Phone: 352.258.4079
Fax: 352.733.0016
www.ufhealth.org
Booth #709
The faculty from the UF Health College of Medicine, Department of Neurosurgery includes nationally and internationally recognized physicians whose expertise is supported by intensive research activities and comprehensive high-quality patient care. Shands’ affiliation with the UF Health Science Center allows patients to benefit from the latest medical knowledge and technology.

UFSK-International OSYS GmbH
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Regensburg 93055
Germany
Phone: 499.417.886215
Fax: 499.417.886235
www.ufsk-osys.com
Booth #2319
Innovative operating room equipment for performing microsurgery.

Varian Medical Systems
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Palo Alto, CA 94304
Phone: 650.493.4000
Fax: 650.493.5637
www.varian.com
Booth #2124
Varian Medical Systems is a world-leading manufacturer of medical devices and software for treating cancer and other medical conditions. Varian will feature the EDGE Radiosurgery Suite, a dedicated system equipped with RapidArc Radiosurgery with innovative patient positioning, motion management and real-time tumor tracking technologies, that allow clinicians to “reimagine radiosurgery”.

Vertebral Technologies, Inc.
5909 Baker Road
Suite 550
Minnetonka, MN 55345-5976
Phone: 952.912.5400
www.vti-spine.com
Booth #625
Headquartered in Minneapolis, Vertebral Technologies, Inc. (VTI) is the leading developer of intra-operative assembly™ technology. Founded in 2008, VTI is committed to addressing painful conditions in the spine by its continued advancement in designing, developing and manufacturing medical devices that provide full end plate coverage with less invasive surgical approaches.
Visionsense Corp.
1270 Avenue of the Americas
Suite 302
New York, NY 10020
Phone: 845.680.0233
Fax: 845.503.2256
www.visionsense.com

Booth #815
Visionsense develops novel visualization solutions that bring natural stereoscopic sight to minimally invasive surgery (MIS). With advanced sensor technology and proprietary software, the Visionsense system delivers depth perception, high resolution images and maneuvering flexibility through the smallest access diameters. Existing Minimally Invasive Surgery (MIS) vision solutions provide 2D (monocular) images that lack depth perception. This restricts the surgeon’s perspective limiting the ability to perform advanced MIS procedures. With stereo vision capabilities, surgeons gain enhanced tissue understanding, improved hand eye coordination and the confidence to use advanced surgical tools.

Weatherby Healthcare
6451 North Federal Highway
Suite 800
Ft Lauderdale, FL 33308-1409
Phone: 800.586.5022
Fax: 800.463.2817
www.weatherbylocums.com

Booth #722
As part of its signature Red Ribbon Service, staffing company Weatherby Healthcare provides healthcare professionals a personal consultant whose priority is to find them the ideal locum tenens or permanent job and negotiate the best terms on their behalf. Enjoy premium service and excellent pay. Call 800.586.5022 or visit www.weatherbyhealthcare.com.

Visualase Inc.
8058 El Rio Street
Houston, TX 77054-4185
Phone: 713.275.2063
Fax: 713.741.0122
www.visualaseinc.com

Booth #2412
The Visualase Thermal Therapy System is an MRI-guided, minimally invasive laser ablation system which allows for continuous monitoring of an ablation in real-time. The system is FDA-cleared for the ablation of soft tissue including for use in neurosurgical procedures (see www.visualaseinc.com for complete indication). More than 30 US centers have performed ≥ 500 neuro procedures.

Wolters Kluwer Health
Two Commerce Square
2001 Market Street
Philadelphia, PA 19103-7044
Phone: 215.521.8300
Fax: 215.521.8902
www.lww.com

Booth #814
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Two Commerce Square
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Zyga Technology, Inc.
5600 Rowland Road
Suite 200
Minnetonka, MN 55343
Phone: 952.698.9942
www.zygatech.com
Booth #2430
Zyga is dedicated to the research, development and commercialization of solutions that provide empirical clinical and economic value in the treatment of under-served conditions of the spine. Zyga has developed the Glyder® Facet Restoration Device, which is currently under clinical investigation. Zyga markets the Simmetry® Sacroiliac Joint Fusion System, the only minimally invasive system designed to provide true arthrodesis of the SI Joint, including joint decortication and bone graft delivery.
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<th>EXHIBITOR LISTING</th>
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EXHIBIT FLOOR PLAN

Lunch/Lounge

AANS Resource Center

Lunch/Lounge

Lunch/Lounge

Lunch & Learn Seminar

CONTINUED FROM PREVIOUS PAGE
Neurosurgery Research and Education Foundation (NREF)

For more than 30 years, the Neurosurgery Research and Education Foundation (NREF) has provided funding for neurosurgery research and education thanks to generous financial commitments from individuals, groups and corporations. Demonstrate your commitment to the NREF by donating when you register for the 2014 AANS Annual Scientific Meeting or by becoming a member of the Cushing Circle of Giving. For more information about the NREF please visit www.nref.org.

NREF Research Symposium and Reception

The NREF will again host the annual Research Symposium and Donor Reception on Tuesday April 8, 2014 from 4–6:30 p.m. at the San Francisco Marriott Marquis. This invitation-only event will showcase research from NREF-sponsored awardees, and will afford Cushing Donor-level supporters a chance to see the impact their support has made on the residents and young faculty members who received research grants.

To save your seat at the NREF Research Symposium and Donor Reception, please make your donation to the NREF through the AANS Annual Scientific Meeting registration form, or on the NREF website.

Join the Cushing Circle of Giving

In 2008, the Neurosurgery Research and Education Foundation (NREF) established a program that is a cumulative, lifetime and planned/deferred giving society for individuals who support the NREF. The goals of the NREF Cushing Circle include increasing NREF giving (annual, major and planned gifts), creating an organizational identity, and building camaraderie among philanthropists who consistently support the NREF.

To learn more about special recognition and other benefits associated with the Cushing Circle of Giving please visit NREF Booth #2231.
CANDIDATE (RESIDENT/FELLOW) AND MEDICAL STUDENT PROGRAM

Resident’s Note

Neurosurgical residents and fellows in North America receive free Candidate membership in the AANS! Visit the AANS Resource Center, Booth #1931 in the AANS Exhibit Hall to learn more about membership benefits.

International Candidate (Resident/Fellow)

This membership category offers membership to residents or fellows who are enrolled in a verifiable non-North American neurosurgical training program. International Candidate Members may request transfer to International member status with the submission of a copy of their certification documentation following training. For more information, please visit the AANS Resource Center, AANS Booth 1931 in the AANS Exhibit Hall ABC.

Marshals Program/Office

For those already signed up to marshal, please report to the AANS Office at least 30 minutes prior to your scheduled time.

Location: 203, The Moscone Center South
Phone: 415.978.3601

Monday, April 7 6 a.m. – 5 p.m.
Tuesday, April 8 6 a.m. – 5 p.m.
Wednesday, April 9 6 a.m. – 3:30 p.m.

If you are interested in volunteering to serve as a Marshal onsite, please stop by the Marshal Office in Room 203 at any time during the above hours to check availability for open sessions.

Neurosurgical Top Gun

For the ninth consecutive year, the Young Neurosurgeons Committee will host a competition for neurosurgical residents and fellows, to take place in Exhibit Halls ABC of The Moscone Center South, Booth #2241.

This three-day event will include image-guided lumbar pedicle screw, endovascular aneurysm embolization and virtual ventriculostomy. Each participant will have one opportunity at each intricate and demanding surgical station, and will be scored on their performance.

The resident or fellow with the best combined score will earn the distinct honor of being named the Neurosurgical Top Gun, as well as a prize of $1,000, plus $1,500 for his or her residency program. Top scorers at individual stations also will win a prize of $200 each, and the first 50 participants will receive a Top Gun t-shirt.

Young Neurosurgeons Luncheon

Tuesday, April 8
1:15–2:30 p.m.
Location: Yerba Buena Ballroom, Salon 8, San Francisco Marriott Marquis
Moderator: Cormac O. Maher, MD
Herding Cats: The History of “Organized” Neurosurgery
Daniel K. Resnick, MD, FAANS
## ADVANCED PRACTICE PROVIDERS

### Advanced Practice Providers Plenary Session

**Sunday, April 6**  
8:30–11:30 a.m.  
**Location:** 305, The Moscone Center South  
See [page 28](#) for more information

### Advanced Practice Providers Luncheon

**Monday, April 7**  
1:15–2:45 p.m.  
**Location:** Nob Hill, San Francisco Marriott Marquis  
**Moderator:** Twyila Lay, NP, MS  
**Speakers:** Tracey Anderson, CNRN, FNP-BC, ACNP-BC; Benjamin Liu, MD

### Advancements In Neurotrauma Care

**Tuesday, April 8**  
2–5:30 p.m.  
**Location:** 300, The Moscone Center South  
**Moderator:** Twyila Lay, NP, MS  
**Speakers:** Rocco A. Armonda, MD, FAANS; Gregory W.J. Hawryluk, MD; Joshua E. Medow, MD, MS, FAANS; David O. Okonkwo, MD, PhD, FAANS; Rajiv Saigal, MD

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### Not a Member of AANS?

**RNs, NPs, and PAs are encouraged to become AANS members in the Associate category.**

Benefits include members registration and product discounts as well as free online CME (that can be converted to CEUs for nurses). Requirements include proof of certification and letters of recommendation from three AANS voting members. For a list of member benefits and access to the online application, please go to AANS Membership at [http://www.aans.org/en/Members/Member-ship%20Requirements.aspx](http://www.aans.org/en/Members/Member-ship%20Requirements.aspx)
SECTION ACTIVITIES

AANS/CNS Cerebrovascular Section

Monday, April 7
Scientific Session V: Cerebrovascular 2–5:30 p.m.

Tuesday, April 8
Section Session 2–5:30 p.m.
Business Meeting 5:30–6 p.m.

AANS/CNS Section on Disorders of the Spine and Peripheral Nerves

Monday, April 7
Scientific Session II: Spine 2–5:30 p.m.

Tuesday, April 8
Section Session: Spine 2–5:30 p.m.

Wednesday, April 9
Section Session: Peripheral Nerves 2–5 p.m.

AANS/CNS Section on Neurotrauma and Critical Care

Monday, April 7
Scientific Session VI: Neurotrauma and Critical Care 2–5:30 p.m.

Tuesday, April 8
Section Session 2–5:30 p.m.

AANS/CNS Section on Pain

Wednesday, April 9
Section Session 2–5 p.m.

AANS/CNS Section on Pediatric Neurological Surgery

Monday, April 7
Scientific Session IV: Pediatrics 2–5:30 p.m.

Wednesday, April 9
Section Session 2–5 p.m.

AANS/CNS Section on Stereotactic and Functional Surgery

Monday, April 7
Scientific Session III: Stereotactic and Functional Surgery 2–5:30 p.m.

Tuesday, April 8
Section Session 2–5:30 p.m.

AANS/CNS Section on Tumors

Monday, April 7
Scientific Session: Tumor 2–5:30 p.m.

Tuesday, April 8
Section Session (Tumor I) 2–5:30 p.m.

Wednesday, April 9
Section Session (Tumor II) 2–5 p.m.

AANS Section on History of Neurological Surgery

Sunday, April 6
Business Meeting 2:30–4:30 p.m.
Location: Sierra E, San Francisco Marriott Marquis

Monday, April 7
AANS History Section Annual Dinner 6:30–9:30 p.m.
Location: Marines’ Memorial Club & Hotel
Additional Fee Required

Wednesday, April 9
Section Session 2–5 p.m.

AANS/CSNS Socioeconomic Section

Tuesday, April 8
Section Session 2–5 p.m.

AANS/CNS Section on Women in Neurosurgery

Breakfast 7:30–9 a.m.
Location: Club Room, San Francisco Marriott Marquis
Additional Fee Required

AANS/CNS Section on Pediatric Neurological Surgery

Monday, April 7
Scientific Session IV: Pediatrics 2–5:30 p.m.

Wednesday, April 9
Section Session 2–5 p.m.

AANS/CNS Section on Tumors

Monday, April 7
Scientific Session: Tumor 2–5:30 p.m.

Tuesday, April 8
Section Session (Tumor I) 2–5:30 p.m.

Wednesday, April 9
Section Session (Tumor II) 2–5 p.m.
GENERAL INFORMATION

AANS Management Office

Location: 272–274, The Moscone Center South
Phone: 415.978.3600
Saturday, April 5 ............................ 8 a.m.–5 p.m.
Sunday, April 6 .............................. 8 a.m.–5 p.m.
Monday, April 7 ............................ 8 a.m.–5 p.m.
Tuesday, April 8 ............................ 8 a.m.–5 p.m.
Wednesday, April 9 ........................ 8 a.m.–5 p.m.

AANS Press Room

Location: 270, The Moscone Center South
Phone: 415.978.3603
No outside materials for distribution and no sharing of lists will be allowed.
Monday, April 7 ............................ 8:30 a.m.–5 p.m.
Tuesday, April 8 ............................ 8:30 a.m.–5 p.m.
Wednesday, April 9 ........................ 8:30 a.m.–5 p.m.

Speaker Ready Room

Location: 252–256, The Moscone Center South
Saturday, April 5 ............................ 3–5 p.m.
Sunday, April 6 .............................. 3–5 p.m.
Monday, April 7 ............................ 6:30 a.m.–5 p.m.
Tuesday, April 8 ............................ 6:30 a.m.–5 p.m.
Wednesday, April 9 ........................ 6:30 a.m.–5 p.m.

Accessibility

It is The Moscone Center’s intention to provide all reasonable accommodation for persons with disabilities to assist them in attending events held at the center and are in accordance with the American Disability Act (ADA) regulations. For a detailed list please visit http://www.moscone.com/site/do/mtgplanner/guideline/list and select Accessibility from the menu.

The Moscone Center does not have an inventory of wheelchairs however, there are several vendors in the San Francisco area. There is a designated area for handicapped pickup and drop-off in the driveway during events.

American with Disabilities Act

The AANS wishes to take those steps to ensure that no individual with a disability is excluded, denied services, segregated or otherwise treated differently than other individuals because of the absence of auxiliary aids and services. If you require any of the auxiliary aids or services identified in the Americans with Disabilities Act in order to attend any AANS program, please contact the AANS Management Office at The Moscone Center South, Room 272/274

Admission to Sessions/Exhibits

Badges are required to enter all scientific sessions and the AANS Exhibit Hall. Badges are distributed at the time of registration. Badges must be worn at all times.

Participants of the 82nd AANS Annual Scientific Meeting are identified by the following badge colors:

- Physician Attendees: Green
- Candidates/Medical Student: Brown
- Advanced Practice Providers (RNs, PAs and Allied): Purple
- Exhibitors: Blue
- Spouse/Guests: Orange
- Media: Yellow
- AANS Management: Red

Attendee Onsite Registration

Location: South Lobby, The Moscone Center South
Friday, April 4 .............................. 5–7 p.m.
Saturday, April 5 ............................ 6:30 a.m.–5:30 p.m.
Sunday, April 6 .............................. 6:30 a.m.–6:30 p.m.
Monday, April 7 ............................. 6:30 a.m.–4 p.m.
Tuesday, April 8 ............................ 6:30 a.m.–4 p.m.
Wednesday, April 9 ........................ 6:30 a.m.–3:30 p.m.

Boarding Pass

Print your boarding pass before you leave for the airport. The Boarding Pass Kiosk will be available in the South Lobby, The Moscone Center South
Cell Phones and Pagers

As a courtesy to other attendees and speakers, the AANS asks that you silence your cell phone or pager during all sessions. If you must make a call, please step outside the meeting room.

CME Self Reporting Stations

Location: AANS Resource Center Booth #1931 and CME Self-Reporting Stations in the AANS Registration, South Lobby, The Moscone Center South.

E-mail Stations

Location: AANS Resource Center Booth #1931 and on the Lower Esplanade Lobby near AANS Registration.

First Aid

Location: South, Exhibit Level near room 106
Phone: 415.974.4090
Friday, April 4 .......................... 8 a.m.–8 p.m.
Saturday, April 5 ......................... 7 a.m.–8 p.m.
Sunday, April 6 .......................... 7 a.m.–8 p.m.
Monday, April 7 ......................... 6 a.m.–6 p.m.
Tuesday, April 8 ......................... 6 a.m.–6 p.m.
Wednesday, April 9 ..................... 6 a.m.–10 p.m.

Location: North, Exhibit Level near room 124
Phone: 415.974.4096
Sunday, April 6 .......................... 12–5 p.m.
Monday, April 7 ......................... 7 a.m.–5 p.m.
Tuesday, April 8 ......................... 6 a.m.–5 p.m.

Headquarters Hotel

San Francisco Marriott Marquis
780 Mission St.
San Francisco, California 94103
415.896.1600

AANS Management Office – Headquarters Hotel

Location: Pacific J, San Francisco Marriott Marquis
Phone: 415.284.8000
Thursday, April 3 .......................... 8 a.m.–5 p.m.
Friday, April 4 .......................... 8 a.m.–5 p.m.
Saturday, April 5 .......................... 8 a.m.–5 p.m.
Sunday, April 6 .......................... 8 a.m.–5 p.m.
Monday, April 7 .......................... 8 a.m.–5 p.m.
Tuesday, April 8 .......................... 8 a.m.–5 p.m.
Wednesday, April 9 .......................... 8 a.m.–5 p.m.

Lost and Found

Items may include luggage, keys, phones, etc. however, perishable food items will not be kept. Lost and Found is located in the AANS Management Office in 272–274, The Moscone Center South.

Coat and Luggage Check

Location: South Lobby, The Moscone Center South
Tuesday, April 8 ......................... 6:30 a.m.–5:45 p.m.
Wednesday, April 9 ..................... 6:30 a.m.–5:45 p.m.

There will be a charge of $2 for small items, $3 for larger items.

Meeting Location

The Moscone Center South and North
747 Howard St.
San Francisco, CA 94103
Phone: 415.974.4000
www.moscone.com

No Smoking Policy

Smoking is not permitted at any official AANS events, The Moscone Center, or the majority of the official AANS hotels.

Safety

For your safety, the AANS recommends removing your badge when walking outside of the convention center. In addition, please refrain from walking by yourself in the city streets at night.

Shuttle Bus Schedule

The AANS will provide shuttle service at regular intervals between The Moscone Center and select hotels. See page 22 for full schedule.

Supported by Medtronic.

Taping and Photography

Audio-taping, videotaping or photography by individuals is strictly prohibited in all scientific sessions.
Return Airport Service

The AANS will provide direct-to-airport service available from The Moscone Center South on Wednesday, April 9, 2014 from 10:15 a.m.–6:15 p.m. with continuous departures every 30 minutes. The cost for this direct service is $20 which includes luggage handling. Due to limited seating, you are strongly encouraged to make your reservation well in advance once you arrive at the convention center. Keep in mind that the San Francisco International Airport is approximately 14 miles (20–30 minutes) from the convention center, so allow yourself an ample amount of time before your flight. All reservations must be paid in cash onsite in San Francisco at the AANS Shuttle Information Center located on the sidewalk just outside AANS Registration, The Moscone Center South.
Among the most important issues that concern neurosurgeons are economic matters such as the escalating malpractice liability costs and practice expenses at a time when reimbursement is declining. AANS membership can help you by giving you access to the many services available to members-only.

Member Benefits

- Substantial savings through discounts on annual meeting and course registration, practice management seminars and on AANS products and services created by renowned expert instructors, authors and educators.
- Participation in programs such as personalized online CME tracking, malpractice insurance program and AANS online case studies.
- Earning up to 18 Category 1 CME credits, per year through Neurosurgical Focus.
- Searchable Online AANS Membership Directory (in MyAANS.org).

Plus, as the spokes-organization for neurosurgery, the AANS is committed to raising awareness of the specialty by:
- Aggressively advocating for medical liability reform.
- Actively campaigning to maximize Medicare and other physician reimbursement and achieve Medicare reform.
- Working to implement beneficial CPT coding changes and policies.
- Educating the general public and other medical specialists about neurosurgery.

Categories of Membership

- **Fellow of the American Association of Neurological Surgeons (FAANS)** category is for neurosurgeons who are American Board of Neurological Surgery (ABNS), Royal College of Physicians and Surgeons of Canada (RCPSC), or Mexican Council of Neurological Surgeons (MCNS) certified and residing in North America.
- **Provisional** category is for the neurosurgeon who has completed a neurosurgery residency training program approved by the ABNS, RCPSC, or MCNS within the past five years and has not yet met the certification requirements.
- **Affiliate** membership is for neurosurgeons who are practicing in North America who were trained outside of North America.
- **International** membership is for those who practice outside of North America and do not qualify as a Fellow member by virtue of their residency or training and who have completed a formal neurosurgical training program as determined by, and suitable to, the Board of Directors.
- **Honorary** members shall be chosen from recognized leaders in the field of neurological sciences. Honorary Membership is bestowed upon the recipient by the AANS as described in “The Rules and Regulations of the Board of Directors of the American Association of Neurological Surgeons (AANS).”
- **Lifetime membership** is for individuals who are retired from the practice of neurosurgery and who have been an AANS member for at least 20 years.
- **Candidate (Resident/Fellow)** status is for individuals enrolled in a neurosurgery residency training program approved by ABNS, RCPSC, or MCNS, or in an accredited neurosurgical fellowship. No application is necessary, residents and fellows in Canada and Mexico are encouraged to register with AANS member services to insure their inclusion.
- **International Candidate (Resident/Fellow)** category is for residents or fellows who are enrolled in a verifiable non-North American neurosurgical training program upon recommendation from their training program director or chairman. Each International Resident Member must be recommended for AANS membership by the applicant’s Program Director, certifying that the applicant is in a training program.
- **Associate** category includes doctors in related medical disciplines who are non-neurosurgeons as well as neuroscience nurses, nurse practitioners, and physician assistants who reside in North America.
AANS MEMBERSHIP

- Allied membership is for individuals who are certified surgical technologists and are certified by the Liaison Council on Certification for the Surgical Technologist with advanced certification in neurological surgery or who are office staff of a member neurosurgeon.
- Medical students interested in a career in neurosurgery are encouraged to join when they are enrolled in an accredited *allopathic* medical school in the United States, Canada, or Mexico.
The main goals of the American Association of Neurological Surgeons’ (AANS) Annual Scientific Meeting are to serve as a primary source of continuing medical education tailored specifically to our specialty; to advance neuroscience research; and to promote a climate conducive to excellence in clinical practice. The AANS Annual Scientific Meeting Committee is dedicated to meeting these goals. The AANS Annual Scientific Meeting is the principal mechanism for the transfer of scientific, technical and intellectual information to the neurosurgical community. Feedback obtained from the online attendee evaluation survey is one important factor in determining the program content of this meeting. Special recognition is extended to those individuals of the 82nd Annual Scientific Meeting Committee and the committees they represent for their perseverance and commitment to making the AANS Annual Scientific Meeting a success.

Continuing Medical Education (CME)

The AANS is accredited by the Accreditation Council for Continuing Medical Education to provide continuing medical education for physicians.

The AANS designates this live activity for a maximum of 49.75 AMA PRA Category 1 Credits™. Physicians should claim only the credit commensurate with the extent of their participation in the activity.

A maximum of 21 AMA PRA Category 1 Credits™ can be claimed for general sessions and a maximum of 28.75 AMA PRA Category 1 Credits™ can be claimed for the ticketed sessions.

CME Credit for Breakfast Seminars

Attendees will receive a maximum of two AMA PRA Category 1 Credits™ for each breakfast seminar they attend. Physicians should only claim credit commensurate with the extent of their participation in the activity.

CME Credit for Practical Clinics

Attendees will receive a maximum of four AMA PRA Category 1 Credits™ for all eligible half-day clinics and eight AMA PRA Category 1 Credits™ for all eligible full-day clinics. Physicians should only claim credit commensurate with the extent of their participation in the activity.

AAPC CEU Credit

The Neurosurgical 2014 CPT Coding Update with ICD-10 program has the prior approval of AAPC for up to 8 continuing education house. Granting of prior approval in no way constitutes endorsement by AAPC of the program content or the program sponsor.

CEUs for the Neurosurgical 2014 CPT Coding Update with ICD-10 course will not be honored by AAPC after December 30, 2014.

CME Credit for Dinner Symposia

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

CME Credit for Electronic Posters

Physicians may claim AMA PRA Category 1 Credits™ directly with the AMA for preparing an electronic poster presentation, which is also included in the published abstracts. To obtain credit from the AMA for this, physicians can either claim them on their AMA PRA certificate application or apply directly to the AMA for an AMA PRA Category Credit(s)™ certificate. Physicians may claim AMA PRA Category 2 Credit(s)™ for viewing scientific posters. Physicians should self-claim credit to the AMA on their AMA PRA certificate application form.

Continuing Education for Advanced Practice Providers

This activity has been submitted to the American Association of Neuroscience Nurses for approval to award contact hours. The American Association of Neuroscience Nurses is accredited as an approver of continuing nursing education by the American Nurses Credentialing Center’s Commission on Accreditation.
Disclosures

ACCME Updated Standards for Commercial Support require that anyone in a position to control the content of this or any CME activity has disclosed all of his or her financial relationships with any commercial interest. 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. Failure or refusal to disclose will result in the withdrawal of the invitation to participate in this or any AANS CME activity. Similarly, should AANS be unable to satisfactorily resolve an identified conflict of interest, this may result in the withdrawal of the invitation to participate in this or any AANS CME activity.

Disclaimer

The material presented at the 82nd AANS Annual Scientific Meeting has been made available by AANS 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 it 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 material exhibited by the AANS, or its committees, commissions or affiliates.

The AANS makes no statements, representations or warranties (whether written or oral) regarding the Food and Drug Administration (FDA) status of any product used or referred to in conjunction with any course, seminar or other presentation being made available as part of the 82nd AANS Annual Scientific Meeting. Faculty members shall have sole responsibility to inform attendees of the FDA status of each product that is used in conjunction with any course, seminar or presentation and whether such use of the product is in compliance with FDA regulations. The AANS disclaims any and all liability for injury or damages to any individual attending the 82nd AANS Annual Scientific Meeting, and for all claims that 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. There may be, on occasion, changes in faculty and program content. AANS is not responsible for expenses incurred by an individual who is not confirmed and for whom space is not available at the meeting. Costs incurred by the registrant, such as airline or hotel fees or penalties, are the responsibility of the registrant.

AANS CME Cycle

The AANS CME cycle mirrors the American Board of Neurological Surgery (ABNS) Maintenance of Certification (MOC) cycle for those members who are participating in MOC. For all other members, the current cycle is Jan. 1, 2014, through Dec. 31, 2016. AANS FAANS, Provisional and Affiliate members are required to document receipt of the Continuing Education Award in Neurosurgery to maintain membership. This award is earned by documenting at least 60 AMA PRA Category 1 Credit(s)™ during each CME cycle.
## DISCLOSURES

The AANS controls the content and production of this CME activity and attempts to ensure the presentation of balanced, objective information. In accordance with the Standards for Commercial Support established by the Accreditation Council for Continuing Medical Education (ACCME), faculty, abstract reviewers, paper presenters/authors, planning committee members, staff and any others involved in planning the educational content and the significant others of those mentioned must disclose any relationship they or their coauthors have with commercial interests which may be related to their content. The ACCME defines “relevant financial relationships” as financial relationships in any amount occurring within the past 12 months that create a conflict of interest.

Disclosure listing as of February 12. For up-to-date information, please refer to the Mobile Meeting App.

*Denotes members of the AANS Scientific Program Committee

### Those who have disclosed relationship with commercial interest are listed below:

<table>
<thead>
<tr>
<th>Name</th>
<th>Relationship with Commercial Interest</th>
</tr>
</thead>
<tbody>
<tr>
<td>M. Samy Abdou, MD, FAANS</td>
<td>NuVasive Spine, Other Financial or Material Support</td>
</tr>
<tr>
<td>Aviva Abosch, MD, PhD, FAANS</td>
<td>Medtronic Consultants, Grant/Research Support</td>
</tr>
<tr>
<td>Feridun Acar, MD</td>
<td>Medtronic Honorarium</td>
</tr>
<tr>
<td>P. David Adelson, MD, FAANS</td>
<td>NIH, Integra Foundation Grants/Research Support, Baxter Foundation Grants/Research Support</td>
</tr>
<tr>
<td>John R. Adler, Jr., MD, FAANS</td>
<td>Varian Medical Other Financial or Material Support</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Name</th>
<th>Relationship with Commercial Interest</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nathalie Y. Agar, PhD</td>
<td>Bayesian Dx Consultants, Grant/Research Support</td>
</tr>
<tr>
<td>Kaith K. Almefty, MD</td>
<td>Aesculap Grant/Research Support</td>
</tr>
<tr>
<td>Matthew Alvin</td>
<td>Axiomed Stock Shareholder (Directly purchased)</td>
</tr>
<tr>
<td>Arun Paul Amar, MD, FAANS</td>
<td>Covidien Other Financial or Material Support</td>
</tr>
<tr>
<td>Jared D. Ament, MD</td>
<td>LDR Spine Consultants</td>
</tr>
<tr>
<td>Christopher Pearson Ames, MD</td>
<td>Stryker Consultants, Grant/Research Support</td>
</tr>
<tr>
<td>David F. Antezana, MD, FAANS</td>
<td>Integra Consultants, St. Jude Medical Consultants</td>
</tr>
<tr>
<td>Jeffrey E. Arle, MD, PhD, FAANS</td>
<td>Boston Scientific Consultants, Globus Medical Consultants, Allen Medical Consultants, Medtronic Honorarium</td>
</tr>
</tbody>
</table>
## DISCLOSURES

### Paul M. Arnold, MD, FAANS, FACS
Christopher J. Moran MD is a consultant for ev3 Neurovascular/Covidien, Inc., and receives compensation for proctoring and speaking.

- **Consultants**
- **Honorarium**

### Adam S. Arthur, MD, MPH, FAANS
Terumo Microvention

- **Consultants**
- **Grant/Research Support**

Covidien

- **Consultants**

Stryker

- **Consultants**

Johnson and Johnson

- **Consultants**

Siemens Medical Systems

- **Grant/Research Support**

### Anthony L. Asher, MD, FAANS
Hyperbranch Medical Technologies

- **Other Financial or Material Support**
- **Stock Shareholder (Directly purchased)**

Johnson and Johnson

- **Consultants**

Medtronic

- **Consultants**

### Alejandro Ayala, MD
Novartis Pharmaceuticals Corporation

- **Other Financial or Material Support**

Pfizer

- **Honorarium**

### Nicholas C. Bambakidis, MD, FAANS
Medtronic Sofamor Danek

- **Consultants**

### Nicholas M. Barbaro, MD, FAANS
NINDS

- **Grant/Research Support**

Elekta

- **Grant/Research Support**

### Todd Barnes
Marsh Consulting

- **Consultants**

Merz Pharmaceuticals

- **Consultants**

Mako Surgical

- **Stock Shareholder (Directly purchased)**

Athena Health

- **Stock Shareholder (Directly purchased)**
- **Grant/Research Support**

### Gene H. Barnett, MD, MBA, FAANS
Monteris Medical

- **Consultants**
- **Grant/Research Support**

### Juan C. Bartolomei, MD, FAANS
IDE Study for DIAM device, Medtronic

- **Grant/Research Support**

### David S. Baskin, MD, FAANS
Medtronic

- **Stock Shareholder (Directly purchased)**

### Kimon Bekelis, MD
NeuroRisk

- **Other Financial or Material Support**

### Bernard R. Bendok, MD, FAANS
MicroVention

- **Grant/Research Support**

### Edward C. Benzel, MD, FAANS
AxioMed

- **Stock Shareholder (Directly purchased)**

### OrthoMEMS
- **Stock Shareholder (Directly purchased)**

### AxioMed
- **Consultants**

### OrthoMEMS
- **Consultants**

### DePuy
- **Other Financial or Material Support**

Stryker

- **Consultants**

### Deborah L. Benzel, MD, FAANS
BrainLab

- **Consultants**

### Mitchel S. Berger, MD, FAANS
NIH – Over $100,000

- **Grant/Research Support**

Ivivi Health Sciences – $0 to $10,000

- **Consultants**

Stock Shareholder (Directly purchased)

Pharmacokinesis – $0 to $10,000

- **Consultants**

### Mark H. Bilsky, MD, FAANS
Spine wave

- **Consultants**

Stryker

- **Honorarium**

Depuy Spine

- **Honorarium**

Other Financial or Material Support

### Nicholas M. Boulis, MD, FAANS
NeuralStem

- **Consultants**

Cleveland Clinic/Neuralstem

- **Other Financial or Material Support**

### Alan S. Boulos, MD, FAANS
Microvention Terumo – Reimbursement for attending investigator meeting

- **Grants/Research Support**

### Charles L. Branch, Jr., MD, FAANS
Medtronic

- **Consultants**

### Samuel R. Browd, MD, PhD, FAANS
Aqueduct Neurosciences, Inc.

- **Stock Shareholder (Directly purchased)**

Navisonics, Inc.

- **Stock Shareholder (Directly purchased)**

Stock Shareholder (Directly purchased)

### Jeffrey N. Bruce, MD, FAANS
NIH

- **Grants/Research Support**

### Richard D. Bucholz, MD, FAANS
MONEt LLC

- **Other Financial or Material Support**

### Ali Bydon, MD, FAANS
### Richard W. Byrne, MD, FAANS
Stryker

- **Consultants**

Integra

- **Consultants**

### John Matthew Caridi, MD
Zimmer Spine

- **Consultants**

Stryker Spine

- **Consultants**

### Cathy Cartwright, MSN, RN
Codman

- **Nursing Matters**

Honorarium

### Cathy Bydon, MD, FAANS
### Richard W. Byrne, MD, FAANS
Stryker

- **Consultants**

Integra

- **Consultants**

### John Matthew Caridi, MD
Zimmer Spine

- **Consultants**

Stryker Spine

- **Consultants**

### Cathy Cartwright, MSN, RN
Codman

- **Nursing Matters**

Honorarium
DISCLOSURES

Andrew K. Chan
Doris Duke Clinical Research Foundation
Grant/Research Support

James P. Chandler, MD, FAANS
Immunocellular
Stock Shareholder (Directly purchased)

Susan M. Chang, MD
Novartis
Grant/Research Support

Fady T. Charbel, MD, FAANS
Transonic, Inc.
Consultants

Clark C. Chen, MD, PhD, FAANS
Varian
Honorarium
Medtronic
Grants/Research Support

John H. Chi, MD, FAANS
Depuy Synthes
Consultants

Ennio Antonio Chiocca, MD, PhD, FAANS
Alcyone Biosciences, Inc.
Consultants
DNAntrix
Consultants
NIH
Grants/Research Support

Dean Chou, MD, FAANS
Globus
Consultants
Depuy
Consultants
Orthofix
Honorarium

Kevin M. Cockroft, MD, FAANS
Covidien Neurovascular
Consultants
Actuated Medical, Inc
Consultants
Stock Shareholder (Directly purchased)

Aaron A. Cohen Gadol, MD, FAANS
Zeiss Meditech
Consultants

Christopher H. Comey, MD, FAANS
Spinewave, Inc.
Consultants
Other Financial or Material Support
Stock Shareholder (Directly purchased)

William M. Coplin, MD
Integra Neurosciences
Consultants
Honorarium

T Forcht Dagi, MD, MPH, MBA,
DMedSc, FAANS
Massimo, Inc.
Consultants
Honorarium
Prismic Pharma
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Andrew T. Dailey, MD, FAANS
Biomet
Consultants
AO North America
Other Financial or Material Support
Biomet
Honorarium
Grants/Research Support

Kaushik Das, MD, FAANS
Lanx
Stock Shareholder (Directly purchased)
Synergy disc
Stock Shareholder (Directly purchased)

Carlos A. David, MD, FAANS
Codman neurovascular
Consultants
Kogent Surgical
Stock Shareholder (Directly purchased)

SOLAS Degenerative Study Group
NuVasive, Inc
Consultants

Fernando G. Diaz, MD, PhD, FAANS
MICHIGAN HEAD AND SPINE
INSTITUTE
Stock Shareholder (Directly purchased)

James M. Drake, MD, FAANS
Stryker
Consultants
MDA Robotics
Grant/Research Support

L3 Communications
Grants/Research Support
Phillips Medical Imaging
Grants/Research Support

Aaron S. Dumont, MD, FAANS
ev3
Consultants

Derrick Dupre, MD
Medtronic
Other Financial or Material Support

E. Hunter Dyer, MD, FAANS
pioneer surgical
Stock Shareholder (Directly purchased)

Richard G. Ellenbogen, MD, FAANS
NIH/NCI
Grant/Research Support
Blaze Bioscience
Consultants
Stock Shareholder (Directly purchased)
Medtronic Advisor Board
Consultants

Thomas Engstrand
OssDsign
Consultants
Stock Shareholder (Directly purchased)
Vinnova, Sweden
Grants/Research Support

James J. Evans, MD, FAANS
Stryker: New technology consultant
Consultants
Mizuho: Surgical instrument development
Consultants
DISCLOSURES

Michael G. Fehlings, MD, PhD, FAANS, FRCS
DePuy Spine
Consultants
Grant/Research Support

Richard G. Fessler, MD, PhD, FAANS
DePuy Synthes
Consultants
DePuy
Other Financial or Material Support
Medtronic
Other Financial or Material Support
Stryker
Other Financial or Material Support
In Queue Innovations
Stock Shareholder (Directly purchased)

Charles G. Fisher, MD
Medtronic
Consultants
Nuvasive
Consultants
OREF
Grant/Research Support
Fellowship Program Funding
Medtronic, AO Spine
Other Financial or Material Support

Kevin T. Foley, MD, FAANS
Medtronic
Consultants
NuVasive
Consultants
Other Financial or Material Support
Stock Shareholder (Directly purchased)
ArthroCare
Consultants
Other Financial or Material Support

Discogenics
Stock Shareholder (Directly purchased)
BioD
Stock Shareholder (Directly purchased)
SpineWave
Stock Shareholder (Directly purchased)
TrueVision
Stock Shareholder (Directly purchased)

Konstantinos N. Fountas, MD, PhD
Johnson & Johnson
Consultants
University of Thessaly – Grant & Research Committee

Nicholas Franano, M.D.
NIH/FDA
Grant/Research Support
Orthofix Spine
Consultants
Other Financial or Material Support
Zimmer Spine
Other Financial or Material Support
Hitachi
Other Financial or Material Support

Patrick Peter Alexandre Fransen, MD
Medtronic
Consultants
NuVasive
Consultants
Stock Shareholder (Directly purchased)
ArthroCare
Consultants
Other Financial or Material Support

Anthony K. Frempong Boadu, MD, FAANS
Medtronic
Honorarium
Consultants

Robert M. Friedlander, MD, FAANS
Best Doctors
Consultants
NIH, HDSA, CHDI
Grants/Research Support

Kai Ming Fu, MD, PhD
DePuySynthes
Honorarium
Medtronic
Consultants
Honorarium

Michael R. Gaab, MD, PhD
Karl STORZ, Tuttingen, Germany
Consultants

Isabelle M. Germano, MD, FAANS
NIH
Consultants
Grant/Research Support
VITAL IMAGES
Grants/Research Support

Zoher Ghogawala, MD, FAANS
PCORI
Grant/Research Support
NIH
Grants/Research Support

Michael Glantz, MD
Abbott Pharmaceuticals Inc.
Consultants

SigmaTau Pharmaceuticals
Honorarium

Ziya L. Gokaslan, MD, FAANS
Spinal Kinetics and US Spine
Stock Shareholder (Directly purchased)
NREF; AO NORTH AMERICA; DEPUY
Grants/Research Support
AO FOUNDATION
Honorarium

Alexandra J. Golby, MD, FAANS
Merck
Stock Shareholder (Directly purchased)
Johnson and Johnson
Stock Shareholder (Directly purchased)

John G. Golfinos, MD, FAANS
Medtronic
Honorarium
Viewray, Inc.
Stock Shareholder (Directly purchased)

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Medtech
Consultants
Siemens
Consultants

Andrew W. Grande, MD
Integra
Consultants
Moeller Wedel Microscope
Grants/Research Support
Covidien
Consultants

Gerald A. Grant, MD, FAANS
Department of Defense and NIH
Grant/Research Support
DISCLOSURES

Michael W. Groff, MD, FAANS
Depuy Spine
Consultants
Grant/Research Support
Other Financial or Material Support
EBI Spine
Consultants
Other Financial or Material Support

Robert E. Gross, MD, PhD, FAANS
Neuropace
Grant/Research Support
Visualase
Grants/Research Support
Deep Brain Innovations
Consultants
St. Jude’s Medical Corporation
Consultants
Medtronic
Consultants
Lilly
Stock Shareholder (Directly purchased)
Duke/ISCO
Consultants

Murat Gunel, MD, FAANS
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Gregory M. Kiez and Mehmet Kutman Foundation
Grants/Research Support

Costas G. Hadjipanayis, MD, PhD, FAANS
Meditech
Consultants
NX Pharmagen
Grants/Research Support
Other Financial or Material Support

Michael M. Haglund, MD, PhD, FAANS
K2M, Inc
Other Financial or Material Support
DePuy Synthes Spine
Other Financial or Material Support

Regis W. Haid, Jr., MD, FAANS
Nuvasive
Consultants
Piedmont Healthcare
Consultants
Globus Medical
Consultants
Spinewave
Stock Shareholder (Directly purchased)
Nuvasive
Stock Shareholder (Directly purchased)
Globus
Other Financial or Material Support
Medtronic
Other Financial or Material Support
Vertical Health
Stock Shareholder (Directly purchased)

Stephen J. Haines, MD, FAANS
My department receives grant support from Medtronic for several research projects. I do not personally receive any of this support.
Grant/Research Support

Clement Hamani, MD
St Jude Medical
Consultants
CIHR
Grants/Research Support
OMHF
Grants/Research Support

Mark G. Hamilton, MD, FAANS
Medtronic Canada
Consultants
Honorarium
Codman Canada
Consultants
Honorarium

Patrick P. Han, MD, FAANS
Amendia
Consultants
Honorarium
Nuvasive
Consultants
Codman Neurovascular
Consultants
Honorarium
Penumbra
Consultants
Honorarium

Robert E. Harbaugh, MD, FAANS
Micromechatronics, Inc
Consultants
Stock Shareholder (Directly purchased)
Piezo Resonance Innovations, Inc.
Consultants
Stock Shareholder (Directly purchased)
Cortex, Inc.
Stock Shareholder (Directly purchased)
CHYNA, LLC
Consultants
NuHope, LLC
Consultants
NeuroPoint Alliance, Inc.
Consultants
National Football League
Consultants
Integra Foundation
Grants/Research Support

James S. Harrop, MD, FAANS
Depuy Spine
Consultants
ICON
Consultants

Roger Hartl, MD, FAANS
DePuy Synthes
Consultants
Spine Wave
Consultants
BrainLab
Consultants
Lanx
Consultants

Zhiming He, PhD
Orthofix, Inc.
Consultants
Grant/Research Support

Robert F. Heary, MD, FAANS
DePuy Spine
Other Financial or Material Support
Zimmer Spine
Other Financial or Material Support
Thieme Medical Publications
Other Financial or Material Support

J. Claude Hemphill III, MD
Ornim (stock and stock options)
Consultants
Cerebrotech
Grants/Research Support

Langston T. Holly, MD, FAANS
Medtronic
Consultants

Jay U. Howington, MD, FAANS
Codman Neurovascular
Consultants
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<tr>
<th>Name</th>
<th>Company/Institution</th>
<th>Role</th>
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<td>Robert E. Isaacs, MD, FAANS</td>
<td>NuVasive, Inc.</td>
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<td>Steven N. Kalkanis, MD, FAANS</td>
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<td>Saad Abul Khairi, MD, FAANS</td>
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<td>Alexander Arash Khaleessi, MD</td>
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<td>Louis J. Kim, MD, FAANS</td>
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<td>Petra Margarete Klinge, MD PhD</td>
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<td>Michel Kliot, MD, FAANS</td>
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<td>Physiosonics</td>
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<td>Stock Shareholder (Directly purchased)</td>
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</table>
DISCLOSURES

Peter E. Konrad, MD, PhD, FAANS
Medtronic Neurological
Grant/Research Support
Neurotargeting, LLC
Stock Shareholder (Directly purchased)
Neurpace
Consultants

Brian H. Kopell, MD, FAANS
Medtronic
Consultants
St. Jude Neuromodulation
Consultants

Tyler Robert Koski, MD, FAANS
Medtronic
Grant/Research Support
Globus
Consultants
Nuvasive
Consultants
spinewave
Consultants

Charles Kuntz, MD, FAANS
Mayfield Clinic, Priority Consult, The Christ Hospital Spine Center, Precision Neurosurgery
Consultants
University of Cincinnati
Stock Shareholder (Directly purchased)
Cranial Medical Systems, Inc.
Stock Shareholder (Directly purchased)
Medtronic, Inc.
Consultants
Michael J. Fox Foundation
Grants/Research Support

Paul S. Larson, MD, FAANS
MRI Interventions, Inc.
Grant/Research Support
Cranial Medical Systems, Inc.
Stock Shareholder (Directly purchased)
Medtronic, Inc.
Consultants
Michael J. Fox Foundation
Grants/Research Support

Michael T. Lawton, MD, FAANS
Mizuno America, Inc. (Royalty)
Other Financial or Material Support
Stryker
Consultants

Twyla Lay, NP, MS
Johnson & Johnson: Codman
Consultants
Integra Life Sciences
Consultants

Other Financial or Material Support
Codman
Consultants
Integra
Grants/Research Support
Scientific Advisory Board –
Edge Therapeutics
Other Financial or Material Support
Scientific Advisory Board – Cerebrotech
Other Financial or Material Support

Michael J. Lee

Elad I. Levy, MD, FAANS, MBA
Boston Scientific
Grant/Research Support
Honorarium
Devices – Wingspan stents provided
by Boston Scientific & ev3 for carotid
stent training

Robert M. Levy, MD, PhD, FAANS
Vertos, Inc.
(also awarded stock options)
Consultants
Other Financial or Material Support
Spinal Modulation, Inc.
(also awarded stock options)
Consultants
Other Financial or Material Support
Bioness, Inc.
(also awarded stock options)
Consultants
Other Financial or Material Support
DISCLOSURES

Nevro, Inc.
(also awarded stock options)
Consultants
Other Financial or Material Support
St. Jude Medical, Inc.
Consultants
Medtronic, Inc.
Consultants

Linda M. Liau, MD, PhD, FAANS
Northwest Biotherapeutics, Inc.
Grant/Research Support
NIH
Grants/Research Support

SANGTAECK LIM
Ethicon, Inc
Other Financial or Material Support
University of Pennsylvania
Consultants
S2 STATISTICAL SOLUTIONS, INC
Consultants

N. Scott Litofsky, MD, FAANS
Pharmaco kinesis
Consultants

Benjamin Liu, MD
Dannemiller educational courses
Honourarium

Charles Y. Liu, MD, PhD, FAANS
Theken/Integra Spine
Consultants
Rudi Schulte Research Institute
Grant/Research Support
DARPA
Grant/Research Support
NSF
Grant/Research Support

John C. Liu, MD, FAANS
Medtronic
Consultants

Darlene A. Lobel, MD, FAANS
St Jude Medical, St. Paul, MN
Consultants

Christopher M. Loftus, MD, FAANS
3M
Consultants
Scanlan Instruments
Other Financial or Material Support

Demetrius K. Lopes, MD, FAANS
Stryker
Consultants
Grant/Research Support
Honourarium

Siemens
Other Financial or Material Support
Penumbra
Consultants
Honourarium
Other Financial or Material Support

Michael Loughran
Nurses Service Organization
Other Financial or Material Support

R. Loch Macdonald, MD, PhD, FAANS
Actelion Pharmaceuticals
Consultants
Heart and Stroke Foundation of Canada
Grant/Research Support
Brain Aneurysm Foundation
Grant/Research Support

Physicians Services Incorporated
Foundation
Grant/Research Support
Edge Therapeutics
Grant/Research Support
Honorarium
Stock Shareholder (Directly purchased)

Canadian Institutes of Health Research
Grant/Research Support

Matthew MacEwan
Aeria Surgical, Inc.
Consultants
Grant/Research Support
Stock Shareholder (Directly purchased)

Andre Guelman Machado, MD, PhD
IntElect Medical
Consultants
Grant/Research Support
Other Financial or Material Support

ATI
Other Financial or Material Support
Cardionomics
Other Financial or Material Support
Medtronic
Other Financial or Material Support

NIH
Grant/Research Support
Enspire
Other Financial or Material Support
Functional Neuromodulation
Consultants

William J. Mack IV, MD, FAANS
Penumbra inc: I serve on the data safety monitoring board for the THERAPY (stroke) and Liberty (stent coil aneurysm) trials
Consultants

Adel M. Malek, MD, PhD, FAANS
Ansys Inc
Grant/Research Support
CD Adapco Inc
Grant/Research Support
ev3 Inc
Grant/Research Support
Microvention Inc
Grant/Research Support
Stryker Inc
Grant/Research Support

Neil R. Malhotra, MD
Neurosurgery Research and Education Foundation
Grant/Research Support
McCabe Research Fellow
Grant/Research Support
University of Pennsylvania Center for Orphan Diseases Research and Therapy: MPS I 11 007 01
Grant/Research Support
Stryker Spine
Consultants

Geoffrey T. Manley, MD, PhD, FAANS
NIH
Grant/Research Support
DOD
Grant/Research Support

Yael Mardor, MD
Zach, Guez, Last, Daniels and Mardor are authors on a pending patent titled ‘vessel function maps’
Other Financial or Material Support
DISCLOSURES

James M. Markert, Jr., MD, FAANS
Catherex, Inc
Consultants
Other Financial or Material Support
Stock Shareholder (Directly purchased)
NIH/NCI
Grants/Research Support
DOD
Grants/Research Support

Joseph Charles Maroon, MD, FAANS(L)
ImPACT Applications, Inc.
Stock Shareholder (Directly purchased)

Justin Robert Mascitelli, MD
Aman Patel – Penumbra
Consultants

Eric M. Massicotte, MD, MSc, FAANS
AOSpine North America
Honorarium
Depuy Spine, Medtronic, Stryker,
Baxter, Zimmer
Grants/Research Support
WaterMark consulting
Consultants

Erika A. Matheis, M.S.
Globus
Employee
Grants/Research Support
Other Financial or Material Support
Stryker
Grant/Research Support
Asubio
Grant/Research Support
Lanx
Grant/Research Support
LDR
Grant/Research Support

Marlon Stephen Mathews, MD
Imex Worldwide Solutions LLC
Stock Shareholder (Directly purchased)
Universal Coherence Imaging LLC.
Stock Shareholder (Directly purchased)

Michael W. McDermott, MD, FAANS
UCSF office of technology transfer
Honorarium
NIH
Grants/Research Support

Matthew Joseph McGirt, MD, FAANS
Depuy Synthes
Grants/Research Support
Stryker
Grants/Research Support

Christopher M. McPherson, MD, FAANS
Mayfield Clinic, Inc.
Stock Shareholder (Directly purchased)
The Christ Spine Surgery Center
Stock Shareholder (Directly purchased)
Priority Consult, LLC
Stock Shareholder (Directly purchased)
Precision Radiotherapy, LLC
Stock Shareholder (Directly purchased)

John H. McVicker, MD, FAANS
Colorado Health Medical Group
Other Financial or Material Support
Florida Department of Health
Other Financial or Material Support
American College of Surgeons
Consultants
Other Financial or Material Support
Honorarium

Joshua Eric Medow, MD, MS, FAANS
The Hartwell Foundation
Grant/Research Support

The Batterman Foundation
Grants/Research Support

BHR Pharma
Grants/Research Support

Ullrich Meier, MD PhD

Jonathan P. Miller, MD, FAANS
Medtronic Neuromodulation
Consultants

Basant Kumar Misra, MD
Johnson & Johnson LTD
Consultants

Jean Pierre Mobasser, MD, FAANS
Medtronic
Consultants

Innomed
Other Financial or Material Support
Stock Shareholder (Directly purchased)

J Mocco, MD, FAANS
Lazarus Effect, Inc.
Consultants

Pulsar
Consultants

Edge Therapeutics
Consultants

Blockade Therapeutics
Stock Shareholder (Directly purchased)

Reverse Medical
Consultants

Alon Y. Mogilner, MD, PhD, FAANS
Medtronic Neurological
Consultants

The Batterman Foundation
Grants/Research Support

BHR Pharma
Grants/Research Support

Reverse Medical
Consultants

Hiroshi Nakagawa, MD
Stryker Kalamazoo, MI
Consultants

Peter Nakaji, MD, FAANS
Aesculap, Inc.
Consultants

Honorarium

Carl Zeiss, Inc.
Grants/Research Support

AlloSource, Inc.
Other Financial or Material Support
Stock Shareholder (Directly purchased)
DISCLOSURES

Joseph S. Neimat, MD, MSc, FAANS
Medtronic
Consultants
Grant/Research Support
FHC Inc.
Consultants

Ryo Nishikawa, MD

Russ P. Nockels, MD, FAANS
Medtronic
Honorarium
Other Financial or Material Support

Eric W. Nottmeier, MD, FAANS
medtronic navigation Advisory board
Consultants
BrainLAB speaking fees
Consultants
Other Financial or Material Support
K2M Advisory board
Consultants
Globus royalties for anterior cervical plate
Other Financial or Material Support

David Okonkwo, MD
Medtronic
Consultants
Lanx
Consultants

David O. Okonkwo, MD, PhD, FAANS
Lanx
Other Financial or Material Support
Grants/Research Support

Jeffrey J. Olson, MD, FAANS
Millenium Pharmaceuticals, Inc.
Grant/Research Support
Genentech
Grants/Research Support
Merck
Grants/Research Support
American Cancer Society
Consultants
National Cancer Institute
Grant/Research Support

Antonio M. Omuro, MD
Roche
Consultants
Novocure
Consultants
Merck
Honorarium

Thomas C. Origitano, MD, PhD, FAANS
Stryker
Consultants

John E. O’Toole, MD, FAANS
Globus Medical, Inc.
Consultants
Pioneer Surgical
Consultants

Aysegul Ozdemir Ovalioglu, MD
TUBITAK (The Scientific and Technological Research Council of Turkey)
Grant/Research Support

Ripul Rajen Panchal, DO
Mizuo Orthopedic Systems, Inc.
Consultants
Globus Medical, Inc.
Grant/Research Support

Aditya S. Pandey, MD, FAANS
Covidien
Grant/Research Support
Microvention

Paul Park, MD FAANS
Globus Medical
Consultants
Medtronic
Consultants
Globus Medical
Other Financial or Material Support
Blue Cross Blue Shield Foundation
Grant/Research Support
NIH
Grant/Research Support
Congress of Neurological Surgeons
Grant/Research Support

Ian F. Parney, MD, PhD
Agenus Inc.
Consultants

Peter Gust Passias
Fridolin Trust
Grant/Research Support
Paradigm Spine
Grant/Research Support
Orthopedic Research and Education
Grant/Research Support
FDN (OREF)
Grant/Research Support
Orthopedic Medical Education
Grant Assoc. (OMEGA)
Grant/Research Support
AOSpine
Grant/Research Support
Fastenetix
Stock Shareholder (Directly purchased)

Naresh P. Patel, MD, FAANS
Orthofix Stimulation Consultants

Ripul Rajen Panchal, DO
Mizuo Orthopedic Systems, Inc.
Consultants
Globus Medical, Inc.
Grant/Research Support
K2M
Other Financial or Material Support

Peter Gust Passias
Fridolin Trust
Grant/Research Support
Paradigm Spine
Grant/Research Support
Orthopedic Research and Education
Grant/Research Support
FDN (OREF)
Grant/Research Support
Orthopedic Medical Education
Grant Assoc. (OMEGA)
Grant/Research Support
AOSpine
Grant/Research Support
Fastenetix
Stock Shareholder (Directly purchased)

Naresh P. Patel, MD, FAANS
Orthofix Stimulation Consultants

Stock Shareholder (Directly purchased)
Depuy
Honorarium

John E. O’Toole, MD, FAANS
St Jude Medical
Grant/Research Support
Medtronic, Inc.
Consultants
Neuralstem
Consultants

Stock Shareholder (Directly purchased)

David Okonkwo, MD
Medtronic
Consultants
Lanx
Consultants

Parag G. Patil, MD, PhD, FAANS
Medtronic, Inc.
Consultants
Neuralstem
Consultants

Stock Shareholder (Directly purchased)

Mick J. Perez Cruet, MD, FAANS
Thompson MIS
Consultants
Other Financial or Material Support
Stock Shareholder (Directly purchased)

Stock Shareholder (Directly purchased)

Stock Shareholder (Directly purchased)

Royals for anterior cervical plate
Other Financial or Material Support

Stock Shareholder (Directly purchased)

Stock Shareholder (Directly purchased)

Stock Shareholder (Directly purchased)

Stock Shareholder (Directly purchased)

Stock Shareholder (Directly purchased)

Stock Shareholder (Directly purchased)

Stock Shareholder (Directly purchased)

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Stock Shareholder (Directly purchased)

Stock Shareholder (Directly purchased)

Stock Shareholder (Directly purchased)

Stock Shareholder (Directly purchased)

Stock Shareholder (Directly purchased)

Stock Shareholder (Directly purchased)
DISCLOSURES

Julie G. Pilitsis, MD, PhD, FAANS
St. Jude
Consultants
Grant/Research Support
Medtronic
Consultants
Boston Scientific
Grant/Research Support
Nih
Grant/Research Support

Luiz Pimenta, MD, PhD
Nuvasive, Inc
Consultants
Stock Shareholder (Directly purchased)
Zyga Tech, Inc
Consultants

Randall W. Porter, MD, FAANS
The Medical Memory, LLC
Stock Shareholder (Directly purchased)

Eric A. Potts, MD, FAANS
Medtronic
Consultants
Other Financial or Material Support
Lanx
Consultants
Stock Shareholder (Directly purchased)

Nader Pouratian, MD, PhD
Medtronic Corporation
Grant/Research Support

Srinivas K. Prasad, MD
Stryker Spine
Consultants
Depuy Synthes
Honorarium

Charles J. Prestigiacomo, MD, FAANS
Stryker Neurovascular
Consultants
Edge Therapeutics
Consultants
Thermopeutics
Consultants
Aesculap
Consultants

Mark C. Preul, MD
Carl Zeiss Surgical
Grant/Research Support
Neomend
Consultants

Chad J. Prusmack, MD, FAANS
Globus Medical
Consultants
Grant/Research Support
Other Financial or Material Support
Stock Shareholder (Directly purchased)

Varun Puvanesarajah
Eli Lilly and Company
Grant/Research Support

John Kevin Ratliff, MD, FAANS
Stryker Spine
Consultants
Biomet Spine
Consultants

Jean Regis, MD
Medtronic
Grant/Research Support
Elekta
Grant/Research Support

Ali R. Rezai, MD, FAANS
Autonomic Technologies
Consultants

Other Financial or Material Support
Stock Shareholder (Directly purchased)
MRI Interventions
Stock Shareholder (Directly purchased)

Laurence D. Rhines, MD, FAANS
Stryker
Consultants
Globus
Consultants
Other Financial or Material Support

Mark Richardson, MD PhD

Erich O. Richter, MD, FAANS
St. Jude Medical, Inc
Consultants
Grant/Research Support
Stryker Spine
Consultants
Exactech Spine
Consultants
MinSurg
Grant/Research Support
Harenas, LLC
Stock Shareholder (Directly purchased)

Daniele Rigamonti, MD, FAANS
Aesculap Braun Corporation
Grant/Research Support
Honorarium
Other Financial or Material Support

Howard A. Riina, MD, FAANS
eVisio medical systems
Stock Shareholder (Directly purchased)
Reach Bionics
Grant/Research Support

Richard B. Rodgers, MD, FAANS
BHR Pharma, LLC
Honorarium

Charles L. Rosen, MD, PhD, FAANS
NIH
Grant/Research Support
NIOSH
Grant/Research Support
BHR Pharma
Grant/Research Support
Twenty/20 (receive no financial support or equity)
Consultants
## DISCLOSURES

### William S. Rosenberg, MD, FAANS
- Medtronic
  - Consultants
  - Grant/Research Support
  - Honorarium
- St. Jude Medical
  - Consultants
  - Grants/Research Support
  - Honorarium
- SI Bone
  - Consultants
  - Grants/Research Support

### Mark L. Rosenblum, MD, FAANS
- Medtronic Neuroscience
  - Advisory Board
  - Consultants
  - Honorarium

### Joshua M. Rosenow, MD, FAANS
- Boston Scientific Neuromodulation
  - Consultants

### Richard Arthur Roski, MD, FAANS
- Blue Chip Surgery Center Partners, LLC
  - Stock Shareholder (Directly purchased)
- Karen Zupko and Associates
  - Consultants

### Gail L. Rosseau, MD, FAANS
- Codman
  - Consultants

### Andres Mariano Rubiano, MD
- NATIONAL INSTITUTES OF HEALTH
  - Consultant
  - Grant/Research Support
- COLOMBIAN SCIENCES AND TECHNOLOGY INSTITUTE
  - Consultants
  - Grant/Research Support

### Timothy C. Ryken, MD, FAANS
- Arbor Pharm Inc
  - Consultants
  - Honorarium
- Medtronic Inc
  - Consultants
  - Honorarium

### Donald Sachs
- SI BONE Inc
  - Consultants

### Uzma Samadani, MD, PhD, FAANS
- Oculogica, Inc.
  - Stock Shareholder (Directly purchased)

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- Depuy Synthes Spine
  - Consultants
- Stryker Spine
  - Consultants
- Zimmer
  - Consultants
- SpineGuard
  - Consultants

### John H. Sampson, MD, PhD, FAANS
- Celldex
  - Consultants
  - Grant/Research Support

### Rahul G Samtani
- Reliant
  - Consultants
- Globus
  - Consultants
- NuVasive
  - Consultants
- Stryker
  - Consultants
- Spincity

### Charles Sansur, MD, MHSc, FAANS
- Medtronic
  - Consultants
  - Honorarium
- DepuySynthes
  - Consultants
  - Honorarium

### Rick C. Sasso, MD
- Medtronic
  - Grant/Research Support
  - Cerapedics
    - Grants/Research Support
  - Reliant
    - Grants/Research Support
- Biomet
  - Stock Shareholder (Directly purchased)

### Paul D. Sawin, MD, FAANS
- NuVasive
  - Stock Shareholder (Directly purchased)

### Stefan G Scheib, Ph.D.
- Varian Medical Systems
  - Other Financial or Material Support

### Thomas Schmidt, MD
- BrainLab AG, Germany
  - Consultants
  - Other Financial or Material Support

### Henry W. S. Schroeder, MD, PhD
- Karl Storz GmbH & Co. KG,
  - Tuutlingen, Germany
  - Consultants

### Marc S. Schwartz, MD, FAANS
- Cochlear Corporation
  - Consultants

### Theodore H. Schwartz, MD, FAANS
- Wellcome Trust
  - Integra
    - Consultants
    - VisionSense
    - Honorarium
    - Stock Shareholder (Directly purchased)
    - Karl Storz
    - Other Financial or Material Support

### Daniel M. Sciubba, MD, FAANS
- Depuy
  - Grant/Research Support
  - Honorarium
  - Globus
    - Honorarium
  - NuVasive
    - Consultants
  - Medtronic
    - Consultants
  - NuVasive
    - Consultants

### William Sears, MD
- Medtronic
  - Consultants
  - Other Financial or Material Support
- Paradigm Spine
  - Consultants
  - Other Financial or Material Support
  - NuVasive
    - Consultants
DISCLOSURES

Nathan R. Selden, MD, PhD, FAANS
Stem Cells Incorporated – Investigator for funded clinical study (Batten’s stem cells)
Grant/Research Support
Shire Pharmaceuticals
Consultants

Chandranath Sen, MD, FAANS
Penumbra, Inc
Stock Shareholder (Directly purchased)

Christopher I. Shaffrey, MD, FAANS
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Consultants
Biomet
Consultants
Nuvasive
Consultants
Globus
Consultants
Stryker
Consultants
NIH
Other Financial or Material Support
ISSG, AO, Department of Defense, NACTN – all grant support.
Grants/Research Support

Ashwini D. Sharan, MD, FAANS
Medtronic
Consultants
Zimmer Spine
Other Financial or Material Support
ICVRX, LLC
Stock Shareholder (Directly purchased)

Adnan H. Siddiqui, MD, PhD, FAANS
National Institutes of Health (co investigator: NINDS 1R01NS064592 01A1, Hemodynamic induction of pathologic remodeling leading to intracranial aneurysms) and the University at Buffalo (Research Development Award), The National Institutes of Health (co investigator: NINS 5 R01 EB002873 07, Micro Radiographic Image for Neurovascular Interventions)
Grant/Research Support
Hotspur, Intratech Medical, StimSox, Valor Medical and Blockade Medical
Consultants
Stock Shareholder (Directly purchased)
Consultants
Speakers’ Bureaus of Codman & Shurtleff, Inc. and Genentech
Other Financial or Material Support
honaria from American Association of Neurological Surgeons’ courses, Annual Peripheral Angioplasty and All That Jazz Course, Penumbra, Inc., and from Abbott Vascular and Codman & Shurtleff, Inc. for training other neurointerventionists in carotid stenting and for training physicians in endovascular stenting for aneurysms
Consultants

Advisory Board to Codman & Shurtleff and Covidien Neurovascular
Other Financial or Material Support

Scott Douglas Simon, MD
Covidien sponsored this project through a grant
Grant/Research Support

Amit Singla, MD
ev3/ covidien
Consultants
Integra
Consultants
Microvention
Consultants
McKesson Health Solutions
Consultants

Konstantin V. Slavin, MD, FAANS
St. Jude Medical
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Honorarium
Medtronic
Consultants
Grant/Research Support
Honorarium
Boston Scientific
Consultants
Grants/Research Support
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Greatbatch
Consultants
Vycor Medical
Consultants
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Surgical Theatre
Consultants
Lentigen Inc.
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Stryker Spine
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Justin S. Smith, MD, PhD, FAANS
DePuy Spine
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Consultants
Honorarium
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Consultants

Globus
Consultants
Honorarium

Kris A. Smith, MD, FAANS
Osteomed Inc.
Consultants

DISCLOSURES

Volker K. H. Sonntag, MD, FAANS(L)
Medtronic
Other Financial or Material Support

Mark M. Souweidane, MD, FAANS
Aesculap
Consultants

Robert F. Spetzler, MD, FAANS
Zeiss
Consultants
Codman and Stryker Royalties
Other Financial or Material Support
Boston Scientific, DicomGrid, EmergeMD, NeuroVasx, Inc., Synergetics, Stereotaxis, RSB Spine, iCo Therapeutics, Katalyst/Kogenet
Stock Shareholder (Directly purchased)

Robert J. Spinner, MD, FAANS
Mayo Medical Ventures
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Philip A. Starr, MD, PhD, FAANS
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Consultants
MRI Interventions, Inc.
Grants/Research Support

Gary K. Steinberg, MD, PhD, FAANS
NIH NINDS
Grant/Research Support
California Institute for Regenerative Medicine (CIRM)
Grants/Research Support

Medtronic
Grants/Research Support
Consultants

Dirk Stengel, MD
B. Braun Aesculap
Consultants
Other Financial or Material Support

Glen H. J. Stevens, DO, PhD
UCB
Consultants

Hai Sun, MD

Sam Sun
IMRIS, Inc
Grant/Research Support

Swetha Sundar
PearlDiver Technologies, Inc.
Stock Shareholder (Directly purchased)
AxioMed
Consultants
AxioMed, DePuy Synthes, OrthoMEMS, TurningPoint
Stock Shareholder (Directly purchased)

Karin R. Swartz, MD, FAANS
NASS – honorarium for teaching Coding Course, travel expenses for RUC
Honorarium
Other Financial or Material Support
AANS/CNS – honorarium for teaching Coding course, travel expenses
Honorarium
Other Financial or Material Support
ASUBIO Spinal Cord Injury Research Project – no money to me directly, money for research pts to University
Grants/Research Support

Rabih G. Tawk, MD
B. Braun/Aesculap (Dr. Grotenhuis is a member of the advisory council)
Consultants

William R. Taylor, MD, FAANS
nuvasive
Consultants
Grant/Research Support
Honorarium
Other Financial or Material Support
alpha tec
Consultants
Other Financial or Material Support
Stock Shareholder (Directly purchased)
kineflex
Consultants
depuy
Stock Shareholder (Directly purchased)
Consultants

Gabriel C. Tender, MD, FAANS
Nuvasive
Honorarium
Baxano Surgical
Honorarium
Stryker Spine
Honorarium

Charles Teo, MD
Aesculap
Consultants
Baxano Surgical
Consultants
Stryker Spine
Honorarium

Claudius Thome, MD
DePuy Synthes Inc.
Grant/Research Support
Honorarium
Signus Medical Inc.
Consultants
Grants/Research Support

Shelly D. Timmons, MD, PhD, FAANS
NIH
Grant/Research Support
Synthes Resident Neurotrauma Course
Honorarium

Glen Tinkoff, MD
CSL Behring
Honorarium

Matthew K Tobin, BS
Medtronic
Consultants
Other Financial or Material Support
DePuy
Consultants
Other Financial or Material Support
K2M
Consultants
Other Financial or Material Support
Amedica
Consultants
Other Financial or Material Support
Global Medical
Consultants
Other Financial or Material Support
Qualgenix
Consultants
Stock Shareholder (Directly purchased)
GMA
Consultants
LifeSpine
Consultants
Teraphysics
Stock Shareholder (Directly purchased)
Steven A. Toms, MD, MPH, FAANS
Medtronic
Consultants
Novocure
Consultants
Stryker
Consultants

L. Gerard Toussaint III, MD, FAANS
St. Joseph Regional Health Center,
Bryan, TX
Grant/Research Support

Vincent C. Traynelis, MD, FAANS
Medtronic
Consultants
Grant/Research Support
Other Financial or Material Support
Globus Medical
Grant/Research Support

Eve C. Tsai, MD, PhD, FAANS
Synthes/Depuy
Consultants
Honorarium

Luis Manuel Tumialan, MD, FAANS
Medtronic
Consultants
Depuy Synthes
Consultants
Honorarium

Michael S. Turner, MD, FAANS
Medtronic
Consultants
Grant/Research Support
Honorarium

Raymond Dwight Turner IV, MD, FAANS
Microvention
Consultants
Grant/Research Support
Honorarium

Erol Veznedaroglu, MD, FAANS
Cordis
Consultants
Codman
Consultants
Micrus
Consultants
Microvention
Consultants

C. M. Vickneswaran, FRCS
Centre for Biomedical and Technology Integration UM
Other Financial or Material Support
Centre of Biomedical and Technology Integration UM

Leonard I. Voronov
US Department of Veterans Affairs
Grant/Research Support
Centinel Spine
Grant/Research Support
Orthofix
Grant/Research Support

Jean Marc Voyadzis, MD, FAANS
Interventional Spine
Consultants
Spineart
Consultants
Stryker
Consultants

Harry R. van Loveren, MD, FAANS
Medtronic Midas Rex
Grant/Research Support
Biomet
Grant/Research Support
Karl Storz Endoscope
Grant/Research Support
Stryker
Grant/Research Support

Erik I. Waldorff, Ph.D.
Orthofix, Inc.
Other Financial or Material Support

Doris Du Wang, MD
Depuy Spine

Erol Veznedaroglu, MD, FAANS
Cordis
Consultants
Codman
Consultants
Micrus
Consultants
Microvention
Consultants

C. M. Vickneswaran, FRCS
Centre for Biomedical and Technology Integration UM
Other Financial or Material Support
Centre of Biomedical and Technology Integration UM

Leonard I. Voronov
US Department of Veterans Affairs
Grant/Research Support
Centinel Spine
Grant/Research Support
Orthofix
Grant/Research Support

Jean Marc Voyadzis, MD, FAANS
Interventional Spine
Consultants
Spineart
Consultants
Stryker
Consultants

Harry R. van Loveren, MD, FAANS
Medtronic Midas Rex
Grant/Research Support
Biomet
Grant/Research Support
Karl Storz Endoscope
Grant/Research Support
Stryker
Grant/Research Support

Erik I. Waldorff, Ph.D.
Orthofix, Inc.
Other Financial or Material Support

Doris Du Wang, MD
Depuy Spine

Erol Veznedaroglu, MD, FAANS
Cordis
Consultants
Codman
Consultants
Micrus
Consultants
Microvention
Consultants

C. M. Vickneswaran, FRCS
Centre for Biomedical and Technology Integration UM
Other Financial or Material Support
Centre of Biomedical and Technology Integration UM

Leonard I. Voronov
US Department of Veterans Affairs
Grant/Research Support
Centinel Spine
Grant/Research Support
Orthofix
Grant/Research Support

Jean Marc Voyadzis, MD, FAANS
Interventional Spine
Consultants
Spineart
Consultants
Stryker
Consultants

Harry R. van Loveren, MD, FAANS
Medtronic Midas Rex
Grant/Research Support
Biomet
Grant/Research Support
Karl Storz Endoscope
Grant/Research Support
Stryker
Grant/Research Support

Erik I. Waldorff, Ph.D.
Orthofix, Inc.
Other Financial or Material Support

Doris Du Wang, MD
Depuy Spine
DISCLOSURES

Babu G. Welch, MD, FAANS
Covidien
Consultants
Covidien
Honorarium
Microvention
Consultants
Honorarium

William C. Welch, MD, FAANS
ISTO Technologies data safety monitoring board
Consultants

Manfred Westphal, PhD, MD
Pharmacokinetics
Consultants
BioMarin
Consultants
Roche
Honorarium

Donald M. Whiting, MD, FAANS
Medtronic neuromodulation
Grant/Research Support

Christopher J. Winfree, MD, FAANS
Medtronic
Consultants

Andrea Winslow
RosmanSearch, Inc.
Consultants

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Nuvasive
Consultants
Thompson MIS
Consultants
Ranier Technology
Consultants
LDR
Consultants

The Orthopedic Implant Company
Consultants
Spineology
Consultants
Precision Image Analysis
Consultants
Director, Aqueduct Neurosciences
Board of Directors

Henry H. Woo, MD, FAANS
Vascular Simulations LLC
Stock Shareholder (Directly purchased)
Codman and Shurtleff
Other Financial or Material Support
Siemens Inc.
Grants/Research Support
Microvention Inc.
Grant/Research Support

Eric J. Woodard, MD, FAANS
InVivo Therapeutics
Other Financial or Material Support
Medtronic Inc.
Stock Shareholder (Directly purchased)
Medeventus Inc.
Other Financial or Material Support
Stryker spine
Consultants
K2M
Consultants
Invuity corp.
Consultants
AANS
Honorarium

Charles D Yingling, PhD, DABNM
Golden Gate Neuromonitoring, LLC
Other Financial or Material Support
Stock Shareholder (Directly purchased)

Gelareh M. Zadeh, MD
Canadian Institute Health Research,
BrainChild, Canadian Brain Tumor Foundation
Grant/Research Support

Gregory J. Zipfel, MD, FAANS
Pfizer
Consultants
Grant/Research Support

Fumio Yamaguchi, MD PhD
Ministry of Education, Culture, Sport, Science, and Technology,
Japan (MEXT)
Grant/Research Support
Those who have reported they do not have any financial relationships with any commercial interested are listed below.

<table>
<thead>
<tr>
<th>Name</th>
<th>Title</th>
<th>Organization</th>
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</thead>
<tbody>
<tr>
<td>Bizhan Aarabi, MD, FAANS</td>
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<tr>
<td>Assem Mounir Abdel Latif</td>
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<td>Ahmed Rabie Abdelfadil Mohammed, MD</td>
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<td>Mohammed I Abdulaziz, MBBS</td>
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<td>Kumar Abhinav, MBBS MRCS</td>
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<td>Adib Adnan Abla, MD</td>
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<td>Emad T. Aboud, MD</td>
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<td>Francesco Acerbi, MD, PhD</td>
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<td>Owoicho Adogwa, MD</td>
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<td>Vijay Agarwal, MD</td>
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<td>Manish K. Aghi, MD, FAANS</td>
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<td>Manish Agrawal, M.Ch.</td>
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<td>Osama Iqbal Ahmed, MD</td>
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<td>Hamed Akbari, MD, PhD</td>
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<td>Naoki Akioka</td>
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<td>Aziz Alali, MD</td>
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<td>Nima Alan</td>
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<td>Walid Albanna</td>
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<td>Felipe C. Albuquerque, MD, FAANS</td>
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<td>Phillipp R. Aldana, MD, FAANS</td>
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<td>Vincent J Alentedo</td>
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<td>Allyson Alexander, MD PhD</td>
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<td>Amro Al Habib, MD</td>
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<td>Wajid N. Al Holou, MD</td>
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<tr>
<td>Mohsin Ali, BHSc</td>
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<tr>
<td>Puya Alkhi, ND</td>
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<td>Ossama Al Metty, MD, FAANS</td>
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<td>Ibrahim Mohammed AlNaami, MD</td>
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<td>Fahad Eid Alotaibi</td>
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<td>Mohammed Hamood Alsaidi, MD</td>
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<tr>
<td>Mohammad Alshardan</td>
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FLOOR PLANS  SAN FRANCISCO MARRIOTT MARQUIS

Pacific Conference Suite – Fourth Level

Sierra Conference Suite – Fifth Level
FLOOR PLANS
SAN FRANCISCO MARRIOTT MARQUIS

Yerba Buena Ballroom – Lower B2 Level
FLOOR PLANS
SAN FRANCISCO MARRIOTT MARQUIS

Foothills Meeting Room – Second Level
Moscone Center SOUTH – Exhibit Level
Moscone Center SOUTH – Esplanade Level

FLOOR PLANS
CONVENTION CENTER

FOLSOM STREET

Loading Dock

Rooftop at Yerba Buena Gardens

SOUTH

South Lobby

Antique Carousel

SOUTH DRIVEWAY

HOWARD STREET

NORTH DRIVEWAY

THIRD STREET

FOURTH STREET
Moscone Center NORTH – Exhibit Level
NEUROSURGERY’S FOUNDING PRINCIPLES

38rd AANS ANNUAL SCIENTIFIC MEETING • MAY 2-6, 2015 • WASHINGTON, D.C.

A PHYSICIAN IS OBLIGATED TO CONSIDER MORE THAN A DISEASED ORGAN, MORE EVEN THAN THE WHOLE MAN — HE MUST VIEW THE MAN IN HIS WORLD. — HARVEY CUSHING

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