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AANS

ANNUAL SCIENTIFIC MEETING



REGISTRATION BROCHURE

www.aans.org/AANS2017

NEUROSURGERY:

A WORLD OF INNOVATION

APRIL 22–26, 2017 | LOS ANGELES



American
Association of
Neurological
Surgeons

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LETTER FROM PRESIDENT, ANNUAL SCIENTIFIC MEETING CHAIR AND SCIENTIFIC PROGRAM COMMITTEE CHAIR

Dear Colleagues,

It is our great pleasure to invite you to the 85th American Association of Neurological Surgeons (AANS) Annual Scientific Meeting, April 22-26, 2017, in Los Angeles. The meeting theme is *Neurosurgery: A World of Innovation*. Along with leading-edge presentations on the science and practice of neurosurgery, the 2017 AANS Annual Scientific Meeting features speakers who advance neuroscience and neurosurgery around the globe.

The world is an ever-shrinking place. When dealing with an area as vast and, in some ways, nascent, as neurosurgery, we are wise to look past the relative boundaries imposed by maps or multiple languages. This meeting will provide a global forum to embrace techniques, treatments and teachers, as we gather for conversation and collegiality in Los Angeles, in April 2017.

A Spotlight on Innovation

You are invited to attend the Opening Ceremonies to hear from a slate of fascinating speakers. Paul Farmer, MD, PhD, an American anthropologist and physician, who has dedicated his career to providing health care in rural areas, will speak about his life's work. Walter D. Johnson, MD, FAANS(L), head of the Emergency and Essential Surgical Care Program at the World Health Organization (WHO), will speak about his career in neurosurgery and international policy. And Sanjay K. Gupta, MD, FAANS, will lead a panel discussion on the rights and responsibilities of North American neurosurgeons, vis-à-vis the global community.

Practical Clinics and Breakfast Seminars

The 2017 AANS Annual Scientific Meeting offers the opportunity for hands-on guidance from some of the most accomplished educators in neurosurgery, today. New Practical Clinics for 2017 include workshops for emerging technologies in spine surgery, advanced use of computer-based simulation technologies for intracranial surgery, how to launch a career in tumor neurosurgery and laser thermocoagulation. New Breakfast Seminars highlight socioeconomic and tumor topics.

Access to Industry Leaders

Collaboration between industry and neurosurgery is responsible for much of the innovation throughout the history of our specialty. The 2017 AANS Annual Scientific Meeting will provide a venue to visit and engage with more than 200 exhibiting companies in the Exhibit Hall.

The 85th AANS Annual Scientific Meeting is an opportunity for professional development and growth for neurosurgeons, medical students, residents, fellows, nurse practitioners (NPs), physician assistants (PAs) and other researchers and physicians, all sharing a passion for neurosurgery. We hope you can join your peers in Los Angeles to share in this world of innovation.

Sincerely,



Frederick A. Boop

Frederick A. Boop, MD, FAANS
AANS President



Aviva Abosch

Aviva Abosch, MD, PhD, FAANS
AANS Annual Scientific Meeting Chair



Jacques J. Morcos

Jacques J. Morcos, MD, FAANS
AANS Scientific Program Committee Chair

LETTER FROM AANS PRESIDENT, AASNS PRESIDENT, EANS PRESIDENT AND AANS CHAIR OF INTERNATIONAL PROGRAMS



Dear Colleagues,

It is with great pleasure that the leaders of the American Association of Neurological Surgeons (AANS) welcome the Asian-Australasian Society of Neurological Surgeons (AASNS) and the European Association of Neurological Societies (EANS) to the 2017 AANS Annual Scientific Meeting as our collaborating continental societies.

Attendees at this year's meeting will have the opportunity to hear from some of the most renowned neurosurgeons in all of the Asian-Australasian and European regions of the globe, exchanging ideas alongside their North American colleagues during both the International Symposium and the meeting itself. Given its growing popularity, the International Symposium continues to be two full days taking place April 22-23, to incorporate more neurosurgeons and new topics from around the world.

All international attendees are also encouraged to arrive early to take advantage of the Spetzler Symposium directly preceding the International Symposium on April 20-21, which will feature more than 75 national and international neurosurgical masters and celebrate one of the most accomplished and recognizable names in neurosurgery, Robert F. Spetzler, MD, FAANS.

Please also join us for the International Reception at the GRAMMY Museum on April 24 to enjoy an evening among friends, and stay to honor Dr. Spetzler as he receives the 2017 Cushing Medal on April 25.

In addition to a wide array of international programming, the 2017 AANS Annual Scientific Meeting includes extensive educational programming and networking opportunities for neurosurgeons from all parts of the world and from each subspecialty. Members of the AASNS and EANS who choose to attend the meeting may register at the AANS member rate.

Every year, our international colleagues bring a wealth of experience and a depth of knowledge about the latest issues in the international field of neurosurgery. This year, with a meeting theme focused on the world of innovation, we continue this tradition with neurosurgeons worldwide. Please join us in Los Angeles in April and contribute to the discussion, the learning and the specialty.

Sincerely,



Frederick A. Boop

Frederick A. Boop, MD, FAANS
AANS President



Basant K. Misra

Basant K. Misra, MD
AASNS President



J. Andrew Grotenhuis

J. Andrew Grotenhuis, MD,
PhD, IFAANS
EANS President



Christopher M. Loftus

Christopher M. Loftus, MD, FAANS
AANS Chair of International Programs

WEEK AT-A-GLANCE

Thursday, April 20	
7 a.m.-6 p.m.	The Spetzler Symposium Registration
8 a.m.-6:30 p.m.	The Spetzler Symposium: State-of-the-art in Cerebrovascular, Skull Base, Craniovertebral Junction and Brain Tumor Surgery – A Scientific Tribute and Global Celebration. <i>Separate Registration Required</i>
Friday, April 21	
7 a.m.-6 p.m.	The Spetzler Symposium Registration
7:30 a.m.-6:45 p.m.	The Spetzler Symposium: State-of-the-art in Cerebrovascular, Skull Base, Craniovertebral Junction and Brain Tumor Surgery – A Scientific Tribute and Global Celebration. <i>Separate Registration Required</i>
7:30-10:30 p.m.	The Spetzler Symposium Reception/Dinner
5-7 p.m.	AANS Registration
Saturday, April 22	
6:30 a.m.-5:30 p.m.	AANS Registration
8 a.m.-5 p.m.	All-day Practical Clinics (001-003)
8 a.m.-5 p.m.	International Symposium
8 a.m.-12 p.m.	Morning Practical Clinics (004-009)
1-4 p.m.	Neurosurgeon-scientist Career Development Course
1-5 p.m.	Afternoon Practical Clinics (010-016)
1-5 p.m.	Leadership Development Course - Mid Career by Recommendation Only Non-CME Event
6-8 p.m.	Dinner Symposium: Advanced Practice Providers (APPs): Preventive Care – Planning Strategies for Your Long Term Retirement Goals Non-CME Event
Sunday, April 23	
6:30 a.m.-6:30 p.m.	AANS Registration
7 a.m.-4:30 p.m.	Society of Neurological Surgeons (SNS) Chief Resident Course
7:30 a.m.-4:30 p.m.	All-day Practical Clinics (017-019)
7:30 a.m.-4:30 p.m.	International Symposium
7:30 a.m.-4:30 p.m.	Advanced Practice Providers (APPs) Plenary Session
7:30-11:30 a.m.	Morning Practical Clinics (020-027)
12:30-4:30 p.m.	Afternoon Practical Clinics (028-035)
12:30-4:30 p.m.	Leadership Development – Senior Resident by Recommendation Only Non-CME Event
1-4:30 p.m.	Young Neurosurgeons Research Forum Osler Lecture – Roberto C. Heros, MD, FAANS(L)
5-6:30 p.m.	AANS Opening Ceremonies Walter D. Johnson, MD, FAANS(L) Paul Farmer, MD, PhD Moderator: Sanjay K. Gupta, MD, FAANS
7-9 p.m.	AANS Opening Reception at Microsoft Square at L.A. LIVE

WEEK AT-A-GLANCE

Monday, April 24	
6:30 a.m.-4 p.m.	AANS Registration
7-9 a.m.	Breakfast Seminars (101-120)
9 a.m.-4:15 p.m.	AANS Exhibit Hall and Learning Center
9-9:45 a.m.	Morning Beverage Break in the AANS Exhibit Hall
9:40-9:45 a.m.	Historical Film
9:45 a.m.-1 p.m.	Plenary Session I Hunt-Wilson Lecture – Salman Khan Theodore Kurze Lecture – David B. Agus, MD AANS Presidential Address – Frederick A. Boop, MD, FAANS
1-2 p.m.	Lunch in the AANS Exhibit Hall
1:10-1:55 p.m.	Lunch-and-learn Seminars Non-CME Events
1:10-2 p.m.	Neurosurgery “In Press”: Latest Results of Clinical Trials in Neurosurgery and Allied Fields
1:15-2:45 p.m.	Advanced Practice Providers (APPs) Luncheon
2-3:30 p.m.	Operative Nuances I: Handling Difficult Intraoperative Moments 3-D Video Presentation
2-5:30 p.m.	Scientific Sessions I-VII Scientific Session I: Tumor Scientific Session II: Spine Scientific Session III: Stereotactic and Functional Surgery Scientific Session IV: Pediatrics Scientific Session V: Cerebrovascular Scientific Session VI: Neurotrauma and Critical Care Scientific Session VII: AANS/CSNS Socioeconomic
3:30-4 p.m.	Afternoon Beverage Break in the AANS Exhibit Hall
5:30-6:30 p.m.	Joint Annual Business Meeting of the American Association of Neurological Surgeons (AANS) and the American Association of Neurosurgeons (AAN)
6:30-8:30 p.m.	Dinner Symposium: Novel Techniques and Strategies to Treat Spine Disease in the Aging Population Dinner Symposium: Surgical Microscopy: New Techniques and Technologies Dinner Symposium: Advanced Practice Providers (APPs): Advances in Wound Closure: Improving Patient Outcomes with New Products and Techniques
6:30-9:30 p.m.	AANS Section on the History of Neurological Surgery Annual Dinner at Cicada Restaurant and Club
8-9:30 p.m.	AANS International Reception at the GRAMMY Museum and Target Terrace
Tuesday, April 25	
6:30 a.m.-4 p.m.	AANS Registration
7-9 a.m.	Breakfast Seminars (201-220)
9 a.m.-4:15 p.m.	AANS Exhibit Hall and Learning Center
9-9:45 a.m.	Morning Beverage Break in the AANS Exhibit Hall

WEEK AT-A-GLANCE

Tuesday, April 25 <i>(continued)</i>	
9:40-9:45 a.m.	Historical Film
9:45 a.m.-1 p.m.	Plenary Session II Richard C. Schneider Lecture – Kevin J. Tracey, MD Cushing Medalist – Robert F. Spetzler, MD, FAANS Cushing Orator
1-2 p.m.	Lunch in the AANS Exhibit Hall
1:10-1:55 p.m.	Lunch-and-learn Seminars Non-CME Events
1:15-2:45 p.m.	Young Neurosurgeons Luncheon Non-CME Event
2-3:30 p.m.	Operative Nuances II: How to Stay Out of Trouble During Microsurgery 3-D Video Presentation
2-5:30 p.m.	Section Sessions AANS/CNS Section on Disorders of the Spine and Peripheral Nerves – Spine Section Session AANS/CNS Section on Pain AANS/CNS Section on Pediatric Neurological Surgery AANS/CNS Section on Tumors I AANS Section on the History of Neurological Surgery
2-5:30 p.m.	Advancements in Neurotrauma Care
3:30-4 p.m.	Afternoon Beverage Break in the AANS Exhibit Hall
6:30-8:30 p.m.	Dinner Symposium: Career Advancement to Health System Leadership Dinner Symposium: New Solutions for Aneurysm Treatment
Wednesday, April 26	
6:30 a.m.-3:30 p.m.	AANS Registration
7-9 a.m.	Breakfast Seminars (301-319)
7:30-9 a.m.	AANS/CNS Section on Women in Neurosurgery (WINS) Breakfast With Meg Whitman
9 a.m.-2:15p.m.	AANS Exhibit Hall and Learning Center
9-9:45 a.m.	Morning Beverage Break in the AANS Exhibit Hall
9:40-9:45 a.m.	Historical Film
9:45 a.m.-1 p.m.	Plenary Session III Louise Eisenhardt Lecture – Meg Whitman Rhoton Family Lecture – Evandro Pinto da Luz de Oliveira, MD, PhD, IFAANS Van Wageningen Lecture – Prof. Dr. Magdalena Goetz
1-2 p.m.	Lunch in the AANS Exhibit Hall
2-5 p.m.	Section Sessions AANS/CNS Cerebrovascular Section AANS/CNS Section on Disorders of the Spine and Peripheral Nerves – Peripheral Nerves Section AANS/CNS Section on Neurotrauma and Critical Care AANS/CNS Section on Stereotactic and Functional Surgery AANS/CNS Section on Tumors II

THE SPETZLER SYMPOSIUM:

State-of-the-art in Cerebrovascular, Skull Base, Craniovertebral Junction and Brain Tumor Surgery — A Scientific Tribute and Global Celebration

April 20-21, in Los Angeles,
at the Los Angeles Convention Center,
immediately preceding the 85th AANS
Annual Scientific Meeting

The Spetzler Symposium celebrates one of the most accomplished and recognizable names in neurosurgery and will contain scientific content delivered via lectures, 2-D and 3-D videos, discussion panels, debates and more. Over 75 national and international neurosurgical masters and leaders in the field have committed to present at and participate in this two-day event.

Robert F. Spetzler, MD, FAANS, is known across the globe. He has broadly impacted both neurosurgical education and its practice. To focus the symposium, we have chosen to limit presentations to the four neurosurgical themes to which he is most indelibly linked: craniovertebral junction, skull base, complex/deep brain tumors and cerebrovascular surgery.

Thursday, April 20

General Session: 8 a.m.-6:30 p.m.

Friday, April 21

General Session: 7:30 a.m.-6:45 p.m.

Reception/Dinner: 7:30-10:30 p.m.

Learning Objectives: At the end of this educational event, participants will be able to:

- Identify different pathologies at the craniovertebral junction.
- Choose the appropriate surgical approach for specific lesions of the craniovertebral junction.
- Differentiate various skull base lesions and understand the benefits and limitations of most available skull base approaches (open versus endoscopic).
- Apply the different open and endovascular methods to the treatment of intracranial aneurysms and vascular malformations.
- Review advanced techniques of brain mapping and surgical removal of gliomas.

For additional information and a list of presenters visit:

www.aans.org/SpetzlerSymposium

Registration Rates

AANS Member: \$500

Non-member: \$625

Resident/Medical Student Member: \$350

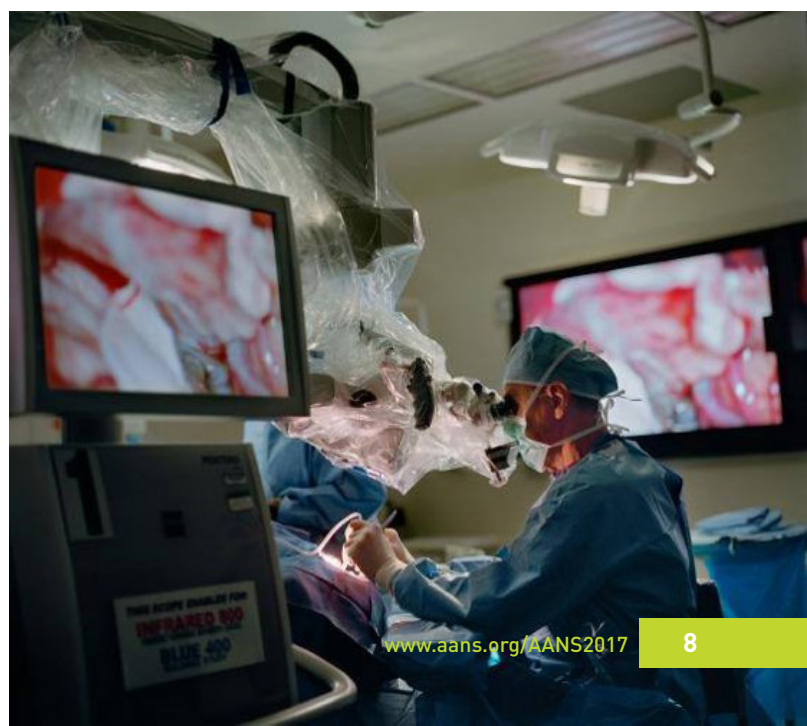
Resident/Medical Student Non-Member: \$450

Guest Tickets for Friday Night Dinner: \$155

A Friday night dinner ticket is included with medical attendee registration.

20% discount available for Barrow Neurological Institute (BNI) Alumni (former and current BNI Fellows and Residents)

Please see the Ways to Register and Cancellations/Refunds information on [page 114](#).



THE SPETZLER SYMPOSIUM:

State-of-the-art in Cerebrovascular, Skull Base, Craniovertebral Junction and Brain Tumor Surgery — A Scientific Tribute and Global Celebration

Over 75 national and international neurosurgical masters and leaders in the field have committed to present at and participate in this two-day event.

Felipe C. Albuquerque, MD, FAANS
Cargill H. Alleyne Jr., MD, FAANS
Issam A. Awad, MD, FAANS
Ossama Al-Mefty, MD, FAANS
Sepideh Amin-Hanjani, MD, FAANS
Miguel A. Arraez Sanchez, MD
Nicholas C. Bambakidis, MD, FAANS
Frederick G. Barker II, MD, FAANS
Daniel Louis Barrow, MD, FAANS
Mitchel S. Berger, MD, FAANS
Luis Alencar Borba, MD, IFAANS
Fady T. Charbel, MD, FAANS
E. Sander Connolly Jr., MD, FAANS
William T. Couldwell, MD, PhD, FAANS
Ralph G. Dacey Jr., MD, FAANS
Carlos A. David, MD, FAANS
Arthur L. Day, MD, FAANS
Evandro Pinto da Luz de Oliveira, MD, PhD, IFAANS
Vinko Dolenc, MD, PhD
Hugues Duffau, MD
Takanori Fukushima, MD
Paul A. Gardner, MD, FAANS
Fred Gentili, MD, FAANS, MSc
Steven L. Giannotta, MD, FAANS
Atul Goel, MD, IFAANS
John G. Golfinos, MD, FAANS
Francisco Gonzalez-Llanos, MD
J. Andre Grotenhuis, MD, PhD, IFAANS
Gerardo Guinto-Balazar, MD, FAANS
Mark N. Hadley, MD, FAANS
Juha Hernesniemi, MD, PhD
Roberto C. Heros, MD, FAANS(L)
Kazuhiro Hongo, MD, IFAANS

L. Nelson Hopkins III, MD, FAANS
Andrew H. Kaye, MD, IFAANS
Engelbert Knosp, MD
Alexander N. Kononov, MD
Ali F. Krisht, MD, FAANS
Jesus LaFuente, MD
David J. Langer, MD, FAANS
Giuseppe Lanzino, MD, FAANS
Michael T. Lawton, MD, FAANS
Russell R. Lonser, MD, FAANS
Ying Mao, MD
Neil A. Martin, MD
Fredric B. Meyer, MD, FAANS
Basant Kumar Misra, MD
Jacques J. Morcos, MD, FAANS
Michael K. Morgan, MD, IFAANS
Yuichi Murayama, MD
Peter Nakaji, MD, FAANS
Anil Nanda, MD, MPH, FAANS
Mika Niemela, MD, PhD, IFAANS
Edward H. Oldfield, MD, FAANS
Nelson M. Oyesiku, MD, PhD, FAANS
Randall W. Porter, MD, FAANS
Ricardo Ramina, MD
Luca Regli, MD, IFAANS
James T. Rutka, MD, PhD, FAANS
Martin Sames, MD
Madjid Samii, MD, PhD
Nader Sanai, MD, FAANS
Raymond Sawaya, MD, FAANS
Volker Seifert, MD, PhD
Laligam N. Sekhar, MD, FAANS
Chandranath Sen, MD, FAANS
Franco Servadei, MD



Kris A. Smith, MD, FAANS
Volker K. H. Sonntag, MD, FAANS(L)
Robert F. Spetzler, MD, FAANS
Marcos S. Tatagiba, MD
B. Gregory Thompson Jr., MD, FAANS
Yong-Kwang Tu, MD, PhD
Ugur Ture, MD, IFAANS
Michael Tymianski, MD, PhD
Peter Vajkoczy, MD
Claudio G. Yampolsky, MD, IFAANS
Joseph M. Zabramski, MD, FAANS

NOTE: Program speakers subject to change.

The Spetzler Symposium is directed by Jacques J. Morcos, MD, FAANS, chair of the 2017 AANS Scientific Program Committee.

THE SPETZLER SYMPOSIUM:

State-of-the-art in Cerebrovascular, Skull Base, Craniovertebral Junction and Brain Tumor Surgery — A Scientific Tribute and Global Celebration

Program Agenda

Thursday, April 20, 2017

Introduction

8-8:09 a.m.

Jacques J. Morcos, MD, FAANS

A Unique Gathering

8:10-8:19 a.m.

Volker K.H. Sonntag, MD, FAANS

The 30 Year Spetzler-Sonntag BNI Duality:
Anatomy of a Unique Alliance

8:20-8:29 a.m.

Peter Nakaji, MD, FAANS

Spetzler as Leader, Mentor, Innovator, Scholar and
Master Surgeon: In the Eyes of a Former Student and
Present Colleague

Session I: Primary Brain Tumors

Moderators: Nader Sanai, MD, FAANS;

Kris A. Smith, MD, FAANS

8:30-8:44 a.m.

Mitchel S. Berger, MD, FAANS

Maximizing Extent of Resection for Low Grade Gliomas
to Improve Survival and Reduce the Risk of Malignant
Transformation

8:45-8:59 a.m.

Raymond Sawaya, MD, FAANS

Glioblastoma Surgery: Can We Do Better than Gross Total
Resection?

9-9:14 a.m.

Hughes Duffau, MD

What Evidence is There for Plasticity in Glioma Surgery?

9:15-9:29 a.m.

Andrew H. Kaye, MD, IFAANS

Gliomas: Why the Biology Wins

9:30-9:44 a.m.

Claudio G. Yampolsky, MD, IFAANS

Insular Gliomas: Lessons and Management

9:45-9:59 a.m.

Russell R. Lonser, MD, FAANS

Hemangioblastomas: From Cyst Formation to
Tumor Growth

10-10:14 a.m.

Miguel A. Arraez-Sanchez, MD

Skull Base Approaches to Pontomesencephalic
Brainstem Tumors: Spetzler's Legacy

10:15-10:29 a.m.

Ugur Ture, MD, IFAANS

The Supracerebellar-transtentorial Approach to the
Entire Length of the Mediobasal Temporal Region:
A Better Road, Yet Less Travelled

10:30-10:44 a.m.

Discussion

Moderators and Speakers

10:45-11:14 a.m.

Break With Exhibitors

Session II: Craniovertebral Junction (CVJ)

Moderators: Mark N. Hadley, MD, FAANS; Volker K.H.

Sonntag, MD, FAANS(L)

11:15-11:29 a.m.

Mark N. Hadley, MD, FAANS

The Innovative, Artful Insight of Master Surgeon
Robert Spetzler

11:30-11:44 a.m.

Jesus LaFuente, MD

CVJ Instability: Diagnosis and Management

11:45-11:59 a.m.

Volker K.H. Sonntag, MD, FAANS(L)

C1/C2 Fusion: Past, Present and Future

12-12:14 p.m.

Paul A. Gardner, MD, FAANS

Endonasal Endoscopic Approach to the CVJ: Indications
and Technique

12:15-12:29 p.m.

Chandranathan Sen, MD, FAANS

Posterolateral Approach to the CVJ:
Indications and Technique

12:30-12:44 p.m.

Atul Goel, MD, IFAANS

Management of Chiari Malformation: Thinking Outside the Box

12:45-12:59 p.m.

Discussion

Moderators and Speakers

Session III: Lunch 3D Video Session – CVJ Vascular Lesions and Tumors

Moderator: Carlos A. David, MD, FAANS

1-1:09 p.m.

Lunch Served

1:10-1:19 p.m.

Carlos A. David, MD, FAANS

1:20-1:29 p.m.

Luis Alencar Borba, MD, IFAANS

1:30-1:59 p.m.

Robert F. Spetzler, MD, FAANS

Vascular Lesions and Tumors at the CVJ

Session IV: Skull Base I

Moderators: Frederick G. Barker II, MD, FAANS; Randal W. Porter, MD, FAANS

2-2:14 p.m.

James T. Rutka, MD, PhD, FAANS

The Spetzler Legacy at the BNI: Seminal Publications in Journal of Neurosurgery from 1986-2016

2:15-2:29 p.m.

Nelson M. Oyesiku, MD, PhD, FAANS

The Spetzler Legacy at the BNI: Seminal Publications in Neurosurgery from 1986-2016

2:30-2:44 p.m.

Engelberg Knosp, MD

Pituitary Adenomas: Evolution of Classifications, Surgical Results and Techniques

2:45-2:59 p.m.

Gerardo Guinto-Balanzar, MD, FAANS

Anterior Skull Base Meningiomas: The Transcranial Approach is Superior...Most of the Time

3-3:14 p.m.

Fred Gentili, MD, FAANS, MSc

Anterior Skull Base Meningiomas: Arguments for the Endonasal Endoscopy Approach

3:15-3:29 p.m.

J. Andres Grotenhuis, MD, PhD, IFAANS

Suprasellar Tumors: How to Select the Right Approach

3:30-3:44 p.m.

Alexander Konovalov, MD

Craniopharyngiomas: A Lifetime of Lessons, Pitfalls and Surgical Results

3:45-3:59 p.m.

Discussion

Moderators and Speakers

4-4:29 p.m.

Break With Exhibitors

Session V: Skull Base II

Moderators: Nick Bambakidis, MD, FAANS; John G. Golfinos, MD, FAANS

4:30-4:44 p.m.

Franco Servadei, MD

Indications for Decompressive Craniotomies Worldwide: What Does the Future Hold After the Rescue ICP Study?

4:45-4:59 p.m.

Volker Seifert, MD, PhD

Petroclival Meningiomas: What Have We Learned and What Does the Future Hold

5-5:14 p.m.

Marcos S. Tatagiba, MD

Approaching the Petrous Apex: When is the "Reverse" Kawase a Superior Approach

5:15-5:29 p.m.

William T. Couldwell, MD, PhD, FAANS

Approaching the Cavernous Sinus Through the Orbit: Less Familiar But More Direct

5:30-5:44 p.m.

Ricardo Ramina, MD

Trigeminal Schwannomas: Classification, Surgical Technique and Results

5:45-5:59 p.m.

Basant Kumar Misra, MD

Decision Making in Skull Base Surgery

6-6:14 p.m.

Robert F. Spetzler, MD, FAANS

My Evolution in Managing Lesions Straddling the Temporal Bone and the CVJ

6:15-6:30 p.m.

Discussion

Moderators and Speakers

Friday, April 21, 2017

Session VI: Skull Base III

Moderators: Anil Nanda, MD, MPH, FAANS and
Cargill Alleyne Jr., MD, FAANS

7:30-7:44 a.m.

Fredric B. Meyer, MD, FAANS

Extracranial Carotid Surgery for Tumors and
Vascular Lesions

7:45-7:59 a.m.

Laligam N. Sekhar, MD, FAANS

Extreme Lateral Approach to Neoplastic and
Vascular Lesions

8-8:14 a.m.

Vinko Dolenc, MD, PhD

The Cavernous Sinus: My Personal Journey

8:15-8:29 a.m.

Ali F. Krisht, MD, FAANS

The Cavernous Sinus: An Access Road and a Destination

8:30-8:44 a.m.

Takanori Fukushima, MD

Technical Innovations in Skull Base Surgery:
My Personal Journey

8:45-8:59 a.m.

Ossama Al-Mefty, MD, FAANS

Future Treatment of All Acoustic Neuromas: Hear Me!

9-9:14 a.m.

Madjid Samii, MD, PhD

Vestibular Schwannomas: What are the Best Surgical
Results and Can They Be Improved?

9:15-9:29 a.m.

Discussion

Moderators and Speakers

9:30-9:59 a.m.

Break With Exhibitors

Session VII: Cerebrovascular I

Moderators: Sepideh Amin-Hanjani, MD, FAANS;
Giuseppe Lanzino, MD, FAANS

10-10:14 a.m.

Yuichi Murayama, MD

Natural History and Management of Unruptured
Aneurysms: The Story Never Ends

10:15-10:29 a.m.

L. Nelson Hopkins III, MD, FAANS

Innovations in the Management of Cerebrovascular
Disease and Stroke

10:30-10:44 a.m.

Juha Hernesniemi, MD, PhD

The Microsurgical Revolution: Rumors of its Demise are
Grossly Exaggerated

10:45-10:59 a.m.

Michael Tymianski, MD, PhD

Outpatient Aneurysm Clipping: It is Not Fantasy

11-11:14 a.m.

Ralph G. Dacey Jr., MD, FAANS

MCA Aneurysms: Shape Analysis and Clipping Strategies

11:15-11:29 a.m.

Arthur L. Day, MD, FAANS

Aneurysms that Need a Good Clipping

11:30-11:44 a.m.

Ying Mao, MD

Surgical Management of Complex Aneurysms

11:45 a.m.-11:59 p.m.

Daniel Louis Barrow, MD, FAANS

When Intraoperative Rupture Strikes: Techniques to Lift
You From the Abyss

12-12:14 p.m.

Discussion

Moderators and Speakers

**Session VIII: Lunch 3D Video Session II –
Aneurysms and Bypasses**

Moderator: Fady T. Charbel, MD, FAANS

12:15-12:24 p.m.

Lunch Served

12:25-12:34 p.m.

Fady T. Charbel, MD, FAANS

12:35-12:44

Francisco Gonzalez-Llanos, MD

12:45-1:14 p.m.

Robert F. Spetzler, MD, FAANS

Aneurysm Clipping and Bypass Strategies

Session IX: Cerebrovascular II

Moderators: David J. Langer, MD, FAANS; E. Sander Connolly Jr., MD, FAANS

1:15-1:29 p.m.

Yong-Kwang Tu, MD, PhD

Long-term Results of High Flow EC-IC Bypass for the Treatment of Cerebrovascular Lesions and Skull Base Tumors

1:30-1:44 p.m.

Martin Sames, MD

Bypass Surgery for Ischemia After COSS

1:45-1:59 p.m.

Peter Vajkoczy, MD

Moyamoya Disease: From Pathogenesis to Surgical Management

2-2:14 p.m.

Jacques J. Morcos, MD, FAANS

Cerebrovascular Surgery: The Future is Not What it Used To Be

2:15-2:29 p.m.

Steven L. Giannotta, MD, FAANS

Training the Next Generation of Cerebrovascular Surgeons: State of the Nation

2:30-2:44 p.m.

Neil A. Martin, MD

The Next Generation in Neurovascular Imaging

2:45-2:59 p.m.

Edward H. Oldfield, MD, FAANS

Spinal Dural AV Fistulas and Other Vascular Lesions of the Spinal Cord

3-3:14 p.m.

Robert F. Spetzler, MD, FAANS

Spinal Cord Vascular Lesions: What We Have Learned

3:15-3:29 p.m.

Discussion

Moderators and Speakers

3:30-3:59 p.m.

Break With Exhibitors

Session X: Cerebrovascular III

Moderators: B. Gregory Thompson Jr., MD, FAANS; Joseph M. Zabramski, MD, FAANS

4-4:14 p.m.

Issam A. Awad, MD, FAANS

Cavernomas: Deconstructing a Neurosurgical Disease

4:15-4:29 p.m.

Kazuhiro Hongo, MD, IFAANS

Cavernomas of the Brainstem: When and How to Operate

4:30-4:44 p.m.

Luca Regli, MD, IFAANS

Cranial DAVFs: Who are the Best Surgical Candidates? Do Classification Systems Help?

4:45-4:59 p.m.

Roberto C. Heros, MD, FAANS(L)

Surgical Management of Cranial Dural AV Fistulas

5-5:14 p.m.

Felipe C. Albuquerque, MD, FAANS

Complex DAVFs: Contemporary Endovascular Management

5:15-5:29 p.m.

Mika Niemela, MD, PhD, IFAANS

Natural History of AVMs: Lessons from a Long-term Database

5:30-5:44 p.m.

Michael K. Morgan, MD, IFAANS

AVM Surgery: Proving Superiority Over Natural History

5:45-5:59 p.m.

Michael T. Lawton, MD, FAANS

AVM Surgery: Technical Subtleties

6-6:14 p.m.

Evandro Pinto da Luz de Oliveira, MD, PhD, IFAANS

The Spetzler-Martin AVM Classification Does Not Apply to Posterior Fossa AVMs

6:15-6:29 p.m.

Robert F. Spetzler, MD, FAANS

Brain AVMs: Conceptual and Technical Advances in Classification and Management

6:30-6:45 p.m.

Discussion

Moderators and Speakers

7:30-10:30 p.m.

Reception and Dinner

AANS OPENING CEREMONIES AND RECEPTION

AANS Opening Ceremonies: Global Issues in Healthcare and Innovations 5-6:30 p.m. Exhibit Hall K; Los Angeles Convention Center

Moderator: Sanjay K. Gupta, MD, FAANS

Speakers: Paul Farmer, MD, PhD; Michael M. Haglund MD, PhD, MACM, FAANS, FCS (ECSA); Walter D. Johnson, MD, FAANS(L); Vanessa Kerry, MD, MSc

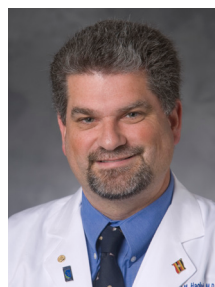


Paul Farmer, MD, PhD

Paul Farmer, MD, PhD, is an American anthropologist and physician who is best known for his humanitarian work providing suitable health care to rural and under-resourced areas in developing countries, beginning in Haiti. Co-founder of an international

social justice and health organization, Partners In Health (PIH), he is known as “the man who would cure the world.”

Farmer is currently the Kolokotronis University Professor at Harvard University and an attending physician and chief of the Division of Global Health Equity at Brigham and Women’s Hospital in Boston. He is board certified in internal medicine and infectious disease. In May 2009, he was named chair of Harvard Medical School’s Department of Global Health and Social Medicine. Dr. Farmer resides in Kigali, Rwanda, as of 2008 and is editor-in-chief of *Health and Human Rights Journal*.



Michael M. Haglund, MD, PhD, MACM, FAANS, FCS (ECSA)

Michael M. Haglund MD, PhD, MACM, FAANS, FCS (ECSA) is the division chief of Duke’s Division of Global Neurosurgery and Neurology (DGNN). Founded in October 2104, it is the first Division in the U.S. dedicated to global

neurosurgery. Over the last decade, Dr. Haglund has led 16 teams of 20-55 medical professionals to East Africa to build neurosurgical capacity and develop a neurological surgical training program while outfitting Uganda neurosurgical operating theaters with modern equipment and facilities.

The Duke Neurosurgery program has provided over 82 tons of medical equipment and supplies, valued at over \$10 million, to upgrade operating rooms and provide intensive care units and recovery rooms at two sites. Dr. Haglund is the co-director of the Uganda Neurosurgery Training Program which has successfully graduated three trainees who are now serving at the third neurosurgical unit established in Uganda. The DGNN has over 50 members working with counterparts in Uganda, and through collaborations with the Foundation for International Education in Neurological Surgery (FIENS) and Stanford University, perform research and training on a wide range of neurosurgical issues with a focus on building capacity, identifying barriers to care and improving overall health care.



Walter D. Johnson, MD, FAANS(L)

Walter D. Johnson, MD, FAANS(L), leads the Emergency and Essential Surgical Care at the World Health Organization (WHO) in Geneva, Switzerland. Dr. Johnson completed his MD at Loma Linda University in California, a neurosurgery residency

at SUNY Brooklyn, followed by a neurovascular fellowship at UCLA. He has been involved in academic neurosurgery since that time and was the vice chair of neurosurgery at Loma Linda University for a decade. He retired from active clinical practice in 2009.

He has also been involved with global surgery during the majority of his career, teaching as a visiting professor in Hangzhou, China, for several years and being directly involved in developing general surgery residency training programs throughout Africa. Dr. Johnson also holds an Executive MBA from the Peter F. Drucker and Masatoshi Ito School of Management at Claremont Graduate University, as well as a Master’s degree in Public Health from that same institution. He also serves on several non-profit boards, including the boards of the Foundation for International Education in Neurological Surgery (FIENS) and Operation Giving Back of the American College of Surgeons (ACS).

AANS OPENING CEREMONIES AND RECEPTION



Vanessa Kerry, MD, MSc

Vanessa Kerry, MD, MSc, is the co-founder and CEO of Seed Global Health, a non-profit that deploys U.S. health professionals to serve as educators and faculty in resource-limited countries to build a pipeline of future in-country providers and

educators, strengthen health care delivery capacity and provide a new type of global diplomacy. Dr. Kerry helped Seed Global Health establish the Global Health Service Partnership (GHSP), a public-private partnership with the Peace Corps, the President's Emergency Plan for AIDS Relief (PEPFAR) and the countries where the program works. Since 2013, GHSP has sent volunteers to Uganda, Malawi and Tanzania and trained over 10,000 doctors, nurses and health professionals. The program now works in Swaziland and Liberia as well.

She graduated from Yale University summa cum laude and Harvard Medical School cum laude, completing her clinical training at Massachusetts General Hospital (MGH). She earned her Master's in Health Policy, Planning and Financing from the London Schools of Economics and of Hygiene and Tropical Medicine. She is currently a physician at MGH and serves as the associate director of Partnerships and Global Initiatives at MGH Global Health. She directs the Global Public Policy and Social Change program.



Sanjay K. Gupta, MD, FAANS

The AANS Opening Ceremonies will be moderated by CNN's chief medical correspondent and Emory University assistant professor of neurological surgery, Sanjay K. Gupta, MD, FAANS.

AANS Opening Reception

7-9 p.m.

Microsoft Square at L.A. LIVE

Microsoft Square is an exciting, one acre, open-air plaza centrally located in the heart of L.A. LIVE and is locally coined as the "Times Square of the West." It is a premier destination for live entertainment in the downtown Los Angeles area, often used as a red carpet site for special events.

Join your colleagues for a chance to enjoy this vibrant entertainment venue for the evening and experience some wonderful California cuisine by the legendary Wolfgang Puck. A ticket is required for this event. One ticket to the Opening Reception is included in attendee, spouse and guest registrations. Additional tickets are available for purchase.



CUSHING ORATOR

Since 1965, the Cushing Oration has provided a platform for a wide variety of leaders to share thoughts with the AANS Annual Scientific Meeting attendees. From the first orator, Louise Eisenhardt, MD, to the most recent speaker, George W. Bush, who adapted the format of the presentation and joined then-president H. Hunt Batjer, MD, FAANS, for question-and-answer session, this presentation is generally a high point of the meeting.

Other past speakers include such diverse luminaries as television anchor Tom Brokaw, General Colin Powell, author Doris Kearns Goodwin and U.S. presidents, George Herbert Walker Bush and Jimmy Carter.

Watch www.aans.org/AANS2017 for more information about the identity of 2017 Cushing Orator and the topics that will be covered.



INVITED SPEAKERS

Sunday, April 23

Young Neurosurgeons Research Forum



Osler Lecture

Roberto C. Heros, MD, FAANS(L)

Roberto C. Heros, MD, FAANS(L), attended medical school at the University of Tennessee. Following an internship and first year general surgery residency at the Massachusetts General Hospital

(MGH), he joined the U.S. Air Force (USAF) for two years with the rank of Major, USAF. In 1995, Dr. Heros moved to the University of Miami where he was founding director of the University of Miami International Health Center.

Dr. Heros has been chair of the Editorial Board of *Neurosurgery* and co-chair of the Editorial Board of the *Journal of Neurosurgery (JNS)* and serves on the Editorial Board of seven other journals. He was the founding chair of the Brain Attack Coalition and the Neurovascular Committee of the World Federation of Neurological Societies (WFNS). He has served as vice president of the CNS and as president of the AANS, the American Academy of Neurological Surgeons and the World Congress of the WFNS. In 2007, he won the coveted Parker J. Palmer "Courage to Teach" award of the ACGME. He was the 2010 AANS Cushing Medalist.

Monday, April 24

Plenary Session I



Hunt-Wilson Lecture

Salman Khan

Salman Khan is the founder and CEO of Khan Academy, a not-for-profit organization with the mission of "providing a free, world-class education for anyone, anywhere." Khan Academy is a learning platform comprised of

instructional videos, practice exercises, dashboard analytics and teacher tools which empower learners inside and outside of the classroom. Khan Academy currently reaches over 26 million registered students in 190 countries, features a library of over 7,000 video lessons in more than 36 languages and covers a variety of subjects from math to science, history, economics, computer science and more.

Mr. Khan holds three degrees from MIT and an MBA from Harvard Business School. He has been profiled by *60 Minutes*, featured on the cover of *Forbes Magazine* and recognized as one of *TIME Magazine's* "100 Most Influential People in the World." In late 2012, Mr. Khan released his book *The One World Schoolhouse: Education Reimagined*.



INVITED SPEAKERS

Monday, April 24 Plenary Session I



Theodore Kurze Lecture David B. Agus, MD

David B. Agus, MD, is one of the world's leading doctors and pioneering biomedical researchers. Over the past 20 years, he has received acclaim for his innovations in medicine and contributions to new technologies,

which continue to change the perception of health and empower people around the world to maintain healthy lives. Dr. Agus is professor of medicine and engineering at the University of Southern California, where he leads USC's Westside Cancer Center and Center for Applied Molecular Medicine. He also serves as a CBS News contributor. An international leader in new technologies and approaches for personalized health care, he co-founded two revolutionary companies: Navigenics and Applied Proteomics. Dr. Agus' first book, *The End of Illness*, was published in 2012 and is a *New York Times* #1 and international bestseller and subject of a PBS special. His second book, *New York Times* bestselling *A Short Guide to a Long Life*, was published January 2014, and his newest book *The Lucky Years: How to Thrive in the Brave New World of Health*, was published Jan. 5, 2016.

Monday, April 24 Plenary Session I



AANS Presidential Address Frederick A. Boop, MD, FAANS

Frederick A. Boop, MD, FAANS, received his medical degree from the University of Arkansas for Medical Sciences. He completed his internship at The University of Texas Health Science Center; his residency at The University

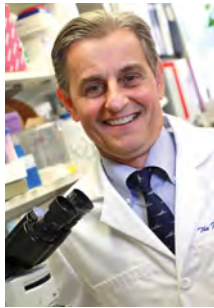
of Texas Health Science Center; his neurology rotation at the Institute of Neurology, The National Hospital, Queen's Square, in London; his pediatric neurosurgery rotation at The Hospital for Sick Children, Toronto; his epilepsy and functional neurosurgery fellowship at the University of Minnesota; and his pediatric neurosurgery fellowship at the University of Arkansas for Medical Sciences.

Dr. Boop is currently the JT Robertson professor and chair of the department of neurosurgery at the University of Tennessee Health Science Center in Memphis, Tenn. Additionally, he works as the co-director of the LeBonheur Neuroscience Institute. Aside from his leadership role within the AANS, Dr. Boop's professional memberships include the American Board of Neurological Surgery (ABNS), the American Board of Pediatric Neurological Surgery (ABPNS), the International Society of Pediatric Neurosurgeons (ISPN) and NeurosurgeryPAC, where he served as president. In 2010, he received the Endowed Chair of Pediatric Neurosurgery at St. Jude's Children's Research Hospital.



INVITED SPEAKERS

Tuesday, April 25 Plenary Session II



Richard C. Schneider Lecture Kevin J. Tracey, MD

Kevin J. Tracey, MD, is president and CEO of The Feinstein Institute for Medical Research; professor of neurosurgery and molecular medicine at the Hofstra Northwell School of Medicine; and executive vice president, research at Northwell Health in New York. His contributions to science include discovery and molecular mapping of neural circuits that control immune responses and developing this as a method for treating rheumatoid arthritis in a successful clinical trial. He discovered the molecular basis for inflammation occurring in the absence of infection by identifying HMGB1, an abundant component in cell nuclei, as a therapeutic target at the intersection of sterile and infective inflammation.

An inventor with more than 60 U.S. patents, his biotechnology experience includes co-founding three companies. He is co-founder and councilor of the Global Sepsis Alliance, a non-profit organization supporting the efforts of more than 1 million caregivers in more than 70 countries to understand and combat sepsis.

Wednesday, April 26 Plenary Session III



Louise Eisenhardt Lecture Meg Whitman

From 2011 to 2015, Meg Whitman served as president and CEO of Hewlett Packard, leading the company's turnaround and subsequent separation into two Fortune 100 companies — Hewlett Packard Enterprise and HP Inc. Whitman also served as president and CEO of eBay Inc. from 1998 to 2008, where she oversaw its growth from 30 employees and \$4 million in annual revenue to more than 15,000 employees and \$8 billion in annual revenue.

She has also held executive-level positions at Hasbro, Inc., FTD Companies, Inc., The Stride Rite Corporation, The Walt Disney Company and Bain & Company. She currently serves as chair of the Board of HP Inc. and as a director for The Procter & Gamble Company and SurveyMonkey.

Whitman holds a bachelor's degree from Princeton University and an MBA from Harvard University.



INVITED SPEAKERS

Wednesday, April 26 Plenary Session III



Rhoton Family Lecture **Evandro Pinto da Luz de Oliveira, MD, PhD, IFAANS**

Evandro de Oliveira, MD, PhD, IFAANS, is currently a professor of neurosurgery, the director of the Institute of Neurological Sciences, head of neurosurgery at Hospital São José,

chief of the medical residency program of neurosurgery at the Hospital Beneficência Portuguesa of Sao Paulo, as well as director of the microsurgery laboratory, where he works with numerous colleagues from around the world for training and for the continuing education courses.

His academic production is remarkable and includes several papers and book chapters. Honored by several prestigious lectureships and presented with honorary memberships in skull base and neurosurgical societies abroad, he has been invited to numerous presentations and visiting professorships in national and international universities.

Dr. de Oliveira's main areas of interest include, but are not limited to, microsurgical anatomy, cerebrovascular surgery and skull base surgery.

Wednesday, April 26 Plenary Session III



Van Wagenen Lecture **Prof. Dr. Magdalena Goetz**

Prof. Dr. Magdalena Goetz is the director of the Institute of Stem Cell Research at the Helmholtz Zentrum München and chair of the Department of Physiological Genomics at the Medical Faculty of the LMU, München.

She is a developmental biologist specializing in the analysis of molecular fate determinants both during development and in adult neurogenesis. One of her major contributions was the discovery that radial glial cells are a major source of neurons in the developing nervous system. She has extensive experience in the use of genetic mouse models as well as viral vectors to manipulate fate determinants in the developing and adult nervous system in vivo.

Her research aims to elucidate the key mechanisms of neurogenesis in the developing and adult brain. Neurogenesis persists only in very few regions of the adult mammalian forebrain, and neurons degenerated after acute or chronic injury are not replaced in the adult mammalian brain. To overcome this, Dr. Goetz and her team study neurogenesis when and where it works with the aim to reactivate these mechanisms and re-instruct neurogenesis after brain injury.



SCIENTIFIC SESSION LECTURES

Monday, April 24

Scientific Session I: Tumor



Ronald L. Bittner Lecture Russell R. Lonser, MD, FAANS

Russell R. Lonser, MD, FAANS, received his MD from Loma Linda University Medical School and completed his neurological surgery residency training at the University of Utah. During his residency

training, he completed a research fellowship at the Surgical Neurology Branch in the National Institute of Neurological Disorders and Stroke (NINDS) in the National Institutes of Health (NIH). He initiated the NINDS Neurological Surgery Residency Training Program in 2010 and was its inaugural program director.

Dr. Lonser is currently professor and chair of the Department of Neurological Surgery at The Ohio State University. He has authored more than 250 scientific and clinical publications. He is on the Editorial Boards of the *Journal of Neurosurgery (JNS)* and *Neurosurgery* and is consulting editor for the *Neurosurgery Clinics of North America*. He is past president of the CNS. He is head of the Research Subcommittee for the National Football League (NFL).

Monday, April 24

Scientific Session II: Spine



Sonntag Lecture Vincent C. Traynelis, MD, FAANS

Vincent C. Traynelis, MD, FAANS, received his MD from West Virginia University School of Medicine. Following residency, he was a member of the department of neurosurgery at the University of Iowa for 20 years,

rising to the rank of professor. He joined Rush University Medical Center in 2009 where he is currently the A. Watson Armour and Sarah Armour Presidential Professor, director of the Spine Service and vice chair of the department. He is also the director of both the Neurosurgery Spine Fellowship and the Neurosurgery Residency programs.

Dr. Traynelis has an active clinical practice that focuses on surgery of the cervical spine and craniovertebral junction. He specializes in complex spine surgery, spinal deformity, arthroplasty and reconstruction, spinal tumors and spinal cord tumors.

He is a past president of the CNS and the Cervical Spine Research Society, past chairperson of the Joint Section of Disorders of the Spine and Peripheral Nerves, director of the American Board of Neurological Surgery (ABNS) for six years and served as the 2014-2015 vice chair.



SCIENTIFIC SESSION LECTURES

Monday, April 24

Scientific Session IV: Pediatrics



Matson Lecture

Arthur E. Marlin, MD, FAANS

Arthur E. Marlin, MD, FAANS, is past chair of the AANS/CNS Section on Pediatric Neurological Surgery. Currently a professor of neurosurgery at the University of South Florida, he has edited seven books on pediatric neurosurgery and wrote the *Handbook of Pediatric Neurosurgery and Neurology*. Dr. Marlin trained at McGill University, University of Minnesota and New York University. His most influential mentors have been Drs. Theodore Brown Rasmussen, MD; Joseph Ransohoff, MD; and Fredrick J. Epstein, MD. He was the founding CEO at The Methodist Children's Hospital of South Texas and held that position for five years while in the active practice of pediatric neurosurgery. He is a senior member of the American Society for Pediatric Neurosurgery (ASPN). He has limited his practice to pediatric neurosurgery for nearly 40 years.

Monday, April 24

Scientific Session V: Cerebrovascular



Yasargil Lecture

L. Nelson Hopkins III, MD, FAANS

L. Nelson (Nick) Hopkins III, MD, FAANS, is a pioneer in the minimally invasive, catheter-based treatment of vascular diseases of the brain which cause stroke. After graduating cum laude from Albany Medical College, he trained in surgery at Case Western Reserve followed by neurology and neurosurgery at SUNY Buffalo.

He conceived and led the development of a new approach to minimally invasive treatment of cardiovascular disease and stroke with the \$300 million Gates Vascular Institute in Buffalo, N.Y.

Dr. Hopkins served as chair of the Department of Neurosurgery at SUNY Buffalo for nearly 25 years, has authored over 400 peer-reviewed publications and has received numerous national and international awards for his contributions to neurosurgery.

In 2012, he was named SUNY Distinguished Professor, the highest academic achievement in New York State. He and his wife, Bonnie, live in Buffalo and Jackson, Wyo., and have three children and eight grandchildren.



SECTION SESSION LECTURES

Monday, April 24

AANS Section on the History of Neurological Surgery Annual Dinner and Tuesday, April 25 | AANS Section on the History of Neurological Surgery



Setti S. Rengachary, MD
Memorial Lecture and
Horsley History Lecture
Michel Zerah, PhD

Michel Zerah, PhD, is head of the department of pediatric neurosurgery in the Hopital des Enfants Malades (Necker Hospital) in Paris, France.

He is president of the French Society for Pediatric Neurosurgery, past president of the European Society for Pediatric Neurosurgery and treasurer of the French Language Society of Neurosurgery. He is also a member of the French National Academy of Surgery.

He has been trained in Paris and has a PhD in Mathematics, Statistics and Computer Science. He has been in charge of the European course of Pediatric Neurosurgery from 2002 to 2014. He is particularly involved in pediatric neurosurgical training in developing countries, specifically in Africa and Asia, and since 1998, he has developed a special collaboration with the Pediatric Neurosurgery organization in South Vietnam. He has published 199 medical articles, more than 40 book chapters and has given more than 350 international invited lectures.

Tuesday, April 25

AANS/CNS Section on Pain



John Loeser Lecture
Konstantin V. Slavin, MD, FAANS

Konstantin V. Slavin, MD, FAANS, is professor, chief of stereotactic and functional neurosurgery section and fellowship director for stereotactic and functional neurosurgery in the department of neurosurgery at the

University of Illinois at Chicago (UIC).

Dr. Slavin graduated from medical school in Baku, the Soviet Union, and completed his neurosurgery residency in Moscow. He completed his second neurosurgery residency at UIC and a fellowship in functional and stereotactic neurosurgery at Oregon Health Sciences University.

He is an immediate past president of the American Society for Stereotactic and Functional Neurosurgery (ASSFN) and vice secretary/treasurer of the World Society for Stereotactic and Functional Neurosurgery (WSSFN). He is also the director (ex-officio) and past secretary of the North American Neuromodulation Society (NANS) and director-at-large of the International Neuromodulation Society (INS).

Dr. Slavin is published in many books and peer-reviewed journals and is an associate editor or editorial board member for a number of publications, including *Neuromodulation*, *Neurosurgery*, *Stereotactic and Functional Neurosurgery*, *Surgical Neurology International* and others.



SECTION SESSION LECTURES

Wednesday, April 26

AANS/CNS Cerebrovascular Section



Donaghy Lecture

Robert H. Rosenwasser, MD, FAANS

Robert H. Rosenwasser, MD, FAANS, attended Louisiana State University (LSU) in New Orleans and graduated with a BS from Nicholls State University. He received his MD from LSU in Shreveport, La. He is certified in

Neurocritical Care and is a founding member of the Society of Neurocritical Care.

In 1994, Dr. Rosenwasser became a professor of neurosurgery at Thomas Jefferson University and director of interventional neuroradiology at the Jefferson Hospital for Neuroscience. Dr. Rosenwasser was division chief of the division of cerebrovascular surgery and interventional neuroradiology at Thomas Jefferson University Hospital. In 2004, he was appointed as chair of the department of neurological surgery. He is also a Fellow of the American Heart Association (AHA).

He is past-president of the Society of University Neurosurgeons and past chair of the AANS/CNS Cerebrovascular (CV) Section. He has published over 300 peer-reviewed publications, abstracts and book chapters. He has co-edited five textbooks on cerebral ischemia, cerebral arteriovenous malformations (AVMs) and interventional neuroradiology/endovascular neurosurgery.

Wednesday, April 26

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



Kline Lecture

Rajiv Midha, MD, MSc, FAANS

Rajiv Midha, MD, MSc, FAANS, FCAHS, was born in India in 1962 and immigrated to North America in 1972. He received his medical degree in 1987, MSc in 1991 under Susan Mackinnon's supervision and neurosurgical training,

completed in 1995, all from the University of Toronto. He obtained clinical fellowships in peripheral nerve neurosurgery at St. Michael's Hospital in Toronto and at Louisiana State University (LSU) in New Orleans.

Dr. Midha has published over 135 peer-reviewed articles with over 300 total publications, mostly related to peripheral nerve neurobiology and surgery. Dr. Midha is internationally recognized as an authority on peripheral nerve surgery, having given over 250 lectures world-wide and serving as past president of the two foremost international societies related to this specialty: the American Society for Peripheral Nerve and the Sunderland Society. In addition, he is the current and ongoing section editor and board member for peripheral nerve for all three of the most prominent neurosurgery journals: *Journal of Neurosurgery (JNS)*, *Neurosurgery* and *World Neurosurgery*.



SECTION SESSION LECTURES

Wednesday, April 26

AANS/CNS Section on Neurotrauma and
Critical Care



Charles Tator Lecture
Marios C. Papadopoulos, MD

Marios C. Papadopoulos, MD, is the professor of neurosurgery at St. George's, University of London. He graduated from the Universities of Cambridge and Oxford and completed his neurosurgery training in London (clinical) and San Francisco (research). Dr. Papadopoulos and his co-investigator, Dr. Saadoun, have developed a novel technique to monitor intraspinal pressure and spinal cord perfusion pressure in patients with acute, severe spinal cord injury. This technique can be used to guide management and is analogous to monitoring intracranial pressure and cerebral perfusion pressure in patients with severe brain injury. Drs. Papadopoulos and Saadoun showed that intraspinal pressure monitoring is safe, and after spinal cord injury, the swollen cord becomes compressed against the surrounding dura. Therefore, in addition to bony decompression, expansion duroplasty is essential for effectively decompressing the injured spinal cord. Recently, they developed microdialysis monitoring from the injury site to define the optimum spinal cord perfusion pressure after injury.



SESSION TRACKS



New Sessions in 2017

- 009** Emerging Technologies in Spine Surgery [\(page 38\)](#)
Dinner Symposium:
Advanced Practice Providers (APPs):
Preventive Care - Planning Strategies for Your
Long Term Retirement Goals [\(page 43\)](#)
Society of Neurosurgical Surgeons (SNS)
Chief Resident Course [\(page 49\)](#)
- 018** Advanced Use of Computer-based Simulation
Technologies for Intracranial Surgery [\(page 45\)](#)
- 023** How to Launch a Career in Tumor Neurosurgery
[\(page 51\)](#)
- 025** Laser Thermocoagulation - How, When and Why
[\(page 52\)](#)
- 101** Practice Pearls for the Outpatient Neurosurgical
Advanced Practice Provider [\(page 61\)](#)
- 115** European Traditions in Neurosurgery: Origins,
Differences, Similarities, Parallels, and Interplay
with American Neurosurgery [\(page 67\)](#)
- 116** Neurosurgery Resident Wellness [\(page 67\)](#)
- 117** CSNS - Adapting Your Practice for 2017 and Beyond
[\(page 68\)](#)
- 118** Multidisciplinary Management of Brain Metastases
[\(page 68\)](#)
Dinner Symposium: Novel Techniques and
Strategies to Treat Spine Disease in the Aging
Population [\(page 74\)](#)
Dinner Symposium: Surgical Microscopy: New
Techniques and Technologies [\(page 75\)](#)
Dinner Symposium: Advanced Practice Providers
(APPs): Advances in Wound Closure: Improving
Patient Outcomes with New Products and
Techniques [\(page 75\)](#)
- 219** Global Neurosurgery [\(page 85\)](#)
Dinner Symposium: Career Advancement to Health
System Leadership [\(page 89\)](#)

Dinner Symposium: New Solutions for Aneurysm
Treatment [\(page 90\)](#)

- 318** The Use of Opioids in Neurosurgical Practice:
How to be Safe, Effective and Compliant With New
Prescribing Laws [\(page 99\)](#)
- 319** The FDA: Investigational Device Exemptions,
Regulatory Process and Moving Medical Devices to
Patients [\(page 100\)](#)



Cerebrovascular Track

- 001** Introduction to Cerebrovascular Neurosurgery for
Residents [\(page 33\)](#)
- 006** Nuts and Bolts of Posterior Fossa Surgery:
How I Do It [\(page 37\)](#)
- 012** **RHOTO LECTURE SERIES:**
3-D Anatomy and Approaches to the Supratentorial
Area and Anterior Skull Base [\(page 40\)](#)
- 016** Microsurgical Management of Intracranial
Aneurysms: Site-specific Surgical Anatomy,
Operation Intervention and Complication
Management [\(page 42\)](#)
International Symposium [\(page 47\)](#)
- 021** **RHOTO LECTURE SERIES:**
3-D Anatomy and Approaches to the Posterior Fossa
and Posterior Skull Base [\(page 50\)](#)
- 028** State-of-the-art: Cranial Endoscopy [\(page 53\)](#)
- 029** How to Tackle Difficult Cranial Cases: A Step-by-
step, 3-D, Case-based Presentation [\(page 54\)](#)
- 103** Surgical Approaches to the Lateral Skull Base
[\(page 62\)](#)
- 106** Anticoagulation for the Neurosurgeon and
Hemostasis in Neurosurgery [\(page 63\)](#)
- 108** If I Could Do That Case Over Again: Discussion of
Complications of Cranial Surgery [\(page 64\)](#)

SESSION TRACKS

- 113** Complication Management and Avoidance in Vascular Neurosurgery [\(page 66\)](#)
- Scientific Session V: Cerebrovascular [\(page 73\)](#)
- Neurosurgery "In Press": Latest Results of Clinical Trials in Neurosurgery and Allied Fields [\(page 71\)](#)
- Dinner Symposium: Surgical Microscopy: New Techniques and Technologies [\(page 75\)](#)
- 208** Endovascular vs. Microsurgical Techniques for the Optimal Treatment of Intracranial Aneurysms [\(page 82\)](#)
- 209** Cavernous Malformation: Current Controversies in Management [\(page 83\)](#)
- 213** Contemporary Management for Adult Hydrocephalus [\(page 84\)](#)
- 220** Management of Cranial Incidental Imaging Findings [\(page 86\)](#)
- Dinner Symposium: New Solutions for Aneurysm Treatment [\(page 90\)](#)
- 304** Management of Vasospasm [\(page 93\)](#)
- 309** Controversies in Cerebrovascular and Endovascular Neurosurgery [\(page 96\)](#)
- 317** Selecting Anterior Approaches for Cerebrovascular Surgery: From Eyebrow to OZ - Pros and Cons of Minimally Invasive Keyhole Approaches for Cerebrovascular Surgery [\(page 99\)](#)
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Ethics Track

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- 014** Neurosurgical Care of Athletes - Concussion, Spine, Peripheral Nerve and Return-to-play [\(page 41\)](#)
- 031** Neurotrauma and Neurocritical Care for the Practicing Neurosurgeon: MOC Review and Update [\(page 56\)](#)

- 107** Return-to-play After Sports Injury I: Concussion [\(page 63\)](#)
- 112** Adult Low-grade Gliomas [\(page 65\)](#)
- 201** So I Want to Write a Neurosurgical Manuscript and Make Sure It Gets Published [\(page 79\)](#)
- 202** Return-to-play After Sports Injury II: Spine Injury [\(page 79\)](#)
- 220** Management of Cranial Incidental Imaging Findings [\(page 86\)](#)
- 305** Management of Pediatric Epilepsy [\(page 94\)](#)
- 306** Business of Neurosurgery II: Growth and Management of Neurosurgical Practices [\(page 94\)](#)
- 308** Stem Cell Therapeutics in Neurosurgery [\(page 95\)](#)
- 312** Management of Adult Scoliosis [\(page 97\)](#)



History Track

- 115** European Traditions in Neurosurgery: Origins, Differences, Similarities, Parallels, and Interplay with American Neurosurgery [\(page 67\)](#)
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- AANS Section on the History of Neurological Surgery Section Session [\(page 88\)](#)



Neurotrauma Track

- 002** Current Treatments and Controversies in Traumatic Brain Injury [\(page 33\)](#)
- International Symposium [\(page 35\)](#)
- 008** Update on the Management of Spine and Spinal Cord Injury [\(page 38\)](#)
- 014** Neurosurgical Care of Athletes - Concussion, Spine, Peripheral Nerve and Return-to-play [\(page 41\)](#)
- 019** You Are Never Too Old for Surgery: Spine Management in an Aging Population [\(page 46\)](#)

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- 107** Return-to-play After Sports Injury I: Concussion [\(page 63\)](#)
- 110** Open vs. Endoscopic Approaches to the Anterior Skull Base [\(page 65\)](#)

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- 212** Controversies in the Management of Intracerebral Hematomas [\(page 83\)](#)
- 214** Contemporary Management of Spinal Fractures [\(page 84\)](#)

Advancements in Neurotrauma Care [\(page 88\)](#)
- 314** Cerebral Trauma: State-of-the-art Treatment [\(page 98\)](#)

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NON-CME

Non-CME

- 001** Introduction to Cerebrovascular Neurosurgery for Residents [\(page 33\)](#)

Leadership Development Course - Mid Career [\(page 43\)](#)

Dinner Symposium: Advanced Practice Providers (APPs): Preventive Care - Planning Strategies for Your Long Term Retirement Goals [\(page 43\)](#)

SNS Chief Resident Course [\(page 49\)](#)

Leadership Development Course - Senior Resident [\(page 58\)](#)

Monday Lunch-and-learn Seminars [\(page 70\)](#)

AANS Section on History of Neurological Surgery Annual Dinner [\(page 76\)](#)

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Tuesday Lunch-and-learn Seminars [\(page 87\)](#)

AANS/CNS Section on Women in Neurosurgery (WINS) Breakfast [\(page 100\)](#)



Pain Track

- 005** Integrating Pain Management Into Your Neurosurgical Practice [\(page 36\)](#)
- 011** Comprehensive Interventional Facial Pain Management [\(page 40\)](#)

AANS/CNS Section on Pain Section Session [\(page 88\)](#)
- 307** Neurosurgical Management of Intractable Pain [\(page 95\)](#)
- 318** The Use of Opioids in Neurosurgical Practice: How to be Safe, Effective and Compliant with New Prescribing Laws [\(page 99\)](#)



Pediatrics Track

- International Symposium [\(page 35\)](#)
- 002** Current Treatments and Controversies in Traumatic Brain Injury [\(page 33\)](#)
- 004** Pediatric Endoscopic Craniosynostosis Repair [\(page 36\)](#)

Scientific Session IV: Pediatrics [\(page 73\)](#)
- 204** Intracranial Endoscopy [\(page 80\)](#)
- 220** Management of Cranial Incidental Imaging Findings [\(page 86\)](#)

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- 305** Management of Pediatric Epilepsy [\(page 94\)](#)

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Peripheral Nerve

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- 034** Peripheral Nerve Injuries, Entrapments and Tumors: Examination and Evaluation [\(page 57\)](#)
- 111** Peripheral Nerve Entrapment Syndromes [\(page 65\)](#)
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Socioeconomic Track

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Neurosurgeon-scientist Career Development Course [\(page 39\)](#)
Society of Neurological Surgeons (SNS) Chief Resident Course [\(page 49\)](#)
- 017** CPT Coding Update with ICD-10 for Neurosurgeons: Coding Concepts by Case Example [\(page 45\)](#)
- 024** Negotiating Strategies in Neurosurgery [\(page 51\)](#)
- 027** Goodman Oral Board Review [\(page 53\)](#)
Leadership Development Course - Senior Residents [\(page 58\)](#)
- 102** Skating to Where the Puck Will Be: Strategies for Neurosurgery Practices and Programs to Compete in Health Care's Future [\(page 61\)](#)
- 116** Neurosurgery Resident Wellness [\(page 67\)](#)
- 117** CSNS - Adapting Your Practice for 2017 and Beyond [\(page 68\)](#)
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- 201** So I Want to Write a Neurosurgical Manuscript and Make Sure It Gets Published [\(page 79\)](#)
- 218** Measuring Outcomes and Safety in Neurosurgery [\(page 85\)](#)

- 219** Global Neurosurgery [\(page 85\)](#)
Dinner Symposium: Career Advancement to Health System Leadership [\(page 89\)](#)
- 301** ABNS Board Preparation: What You Must Know [\(page 92\)](#)
- 306** Business of Neurosurgery II: Growth and Management of Neurosurgical Practices [\(page 94\)](#)
- 318** The Use of Opioids in Neurosurgical Practice: How to be Safe, Effective and Compliant with New Prescribing Laws [\(page 99\)](#)
- 319** The FDA: Investigational Device Exemptions, Regulatory Process and Moving Medical Devices to Patients [\(page 100\)](#)



Spine Track

- 005** Integrating Pain Management Into Your Neurosurgical Practice [\(page 36\)](#)
- 007** Basics of Spinal Stabilization - Advanced Practice Providers (APPs)/Medical Students/Residents [\(page 37\)](#)
- 008** Update on the Management of Spine and Spinal Cord Injury [\(page 38\)](#)
- 009** Emerging Technologies in Spine Surgery [\(page 38\)](#)
- 010** Spinal Alignment: What Every Surgeon Needs to Know [\(page 39\)](#)
- 015** Update on Spinal Radiosurgery [\(page 42\)](#)
International Symposium [\(page 47\)](#)
- 020** Endoscopic Lumbar Spinal Surgery: Cadaveric Hands-on Course [\(page 49\)](#)
- 033** Alternatives to Transpedicular Approaches to Achieving Arthrodesis [\(page 57\)](#)
- 034** Peripheral Nerve Injuries, Entrapments and Tumors: Examination and Evaluation [\(page 57\)](#)
- 035** Cranio-cervical and C1C2 Stabilization Techniques, Surgical Approaches [\(page 58\)](#)

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- 105** Cervical Spondylotic Myelopathy [\(page 62\)](#)
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- 119** Advanced Lateral Transpsoas MIS Techniques: Expanding LLIF Indications [\(page 69\)](#)

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Scientific Session II: Spine [\(page 73\)](#)

Dinner Symposium: Novel Techniques and Strategies to Treat Spine Disease in the Aging Population [\(page 74\)](#)
- 202** Return-to-play After Sports Injury II: Spine Injury [\(page 79\)](#)
- 205** Management of Acute Spinal Cord Injury [\(page 81\)](#)
- 210** Minimally Invasive Spinal Neurosurgery: Indications, Techniques and Complications [\(page 83\)](#)
- 214** Contemporary Management of Spinal Fractures [\(page 84\)](#)
- 215** Attaining a Solid Fusion: Evidence Review and Suggestions for Success [\(page 84\)](#)

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- 303** Shoulder vs. Spine: Differentiating Shoulder and Cervical Spine Pathology [\(page 93\)](#)
- 312** Management of Adult Scoliosis [\(page 97\)](#)
- 313** New and Evolving Technologies for Minimally Invasive Lumbar Disc Surgery [\(page 97\)](#)
- 316** Lumbar Spine Fusion Indications and Complications [\(page 98\)](#)



Stereotactic and Functional Track

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- 003** Stereotactic and Functional Neurosurgery: Hands-on Workshop [\(page 34\)](#)
- 013** Brain Mapping and Awake Mapping Techniques [\(page 41\)](#)
- 025** Laser Thermocoagulation - How, When and Why [\(page 52\)](#)
- 026** Deep Brain Stimulation: Update and New Directions [\(page 52\)](#)
- 109** Resective Strategies for Epilepsy [\(page 64\)](#)
- 120** Emerging Indications in Neuromodulation Surgery [\(page 69\)](#)

Neurosurgery “In Press:” Latest Results of Clinical Trials in Neurosurgery and Allied Fields [\(page 71\)](#)

Scientific Session III: Stereotactic and Functional Surgery [\(page 73\)](#)
- 203** Chiari Malformations: Diagnosis, Treatments and Failures [\(page 80\)](#)
- 207** New Innovations in Epilepsy Surgery [\(page 82\)](#)
- 216** Functional Mapping of the Cerebral Cortex: Advantages and Limitations [\(page 85\)](#)
- 302** Surgical Treatment of Parkinson’s Disease [\(page 92\)](#)
- 308** Stem Cell Therapeutics in Neurosurgery [\(page 95\)](#)
- 315** Tumor-related Epilepsy [\(page 98\)](#)

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Tumor Track

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- 018** Advanced Use of Computer-based Simulation Technologies for Intracranial Surgery [\(page 45\)](#)
- 022** Update on Tumors for the General Neurosurgeon I: Adult Gliomas and Metastases [\(page 50\)](#)
- 023** How to Launch a Career in Tumor Neurosurgery [\(page 51\)](#)
- 030** Update on Tumors for the General Neurosurgeon II: Skull Base, Pediatric and Spine Tumors [\(page 55\)](#)
- 032** Practical and Technical Aspects of Transsphenoidal Surgery [\(page 56\)](#)
- 034** Peripheral Nerve Injuries, Entrapments and Tumors: Examination and Evaluation [\(page 57\)](#)
- 110** Open vs. Endoscopic Approaches to the Anterior Skull Base [\(page 65\)](#)
- 112** Adult Low-grade Gliomas [\(page 65\)](#)
- 114** Fluorescence Technologies in Tumor Neurosurgery: Present and Future Directions [\(page 66\)](#)
- 118** Multidisciplinary Management of Brain Metastases [\(page 68\)](#)

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Scientific Session I: Tumor [\(page 73\)](#)

Dinner Symposium: Surgical Microscopy: New Techniques and Technologies [\(page 75\)](#)

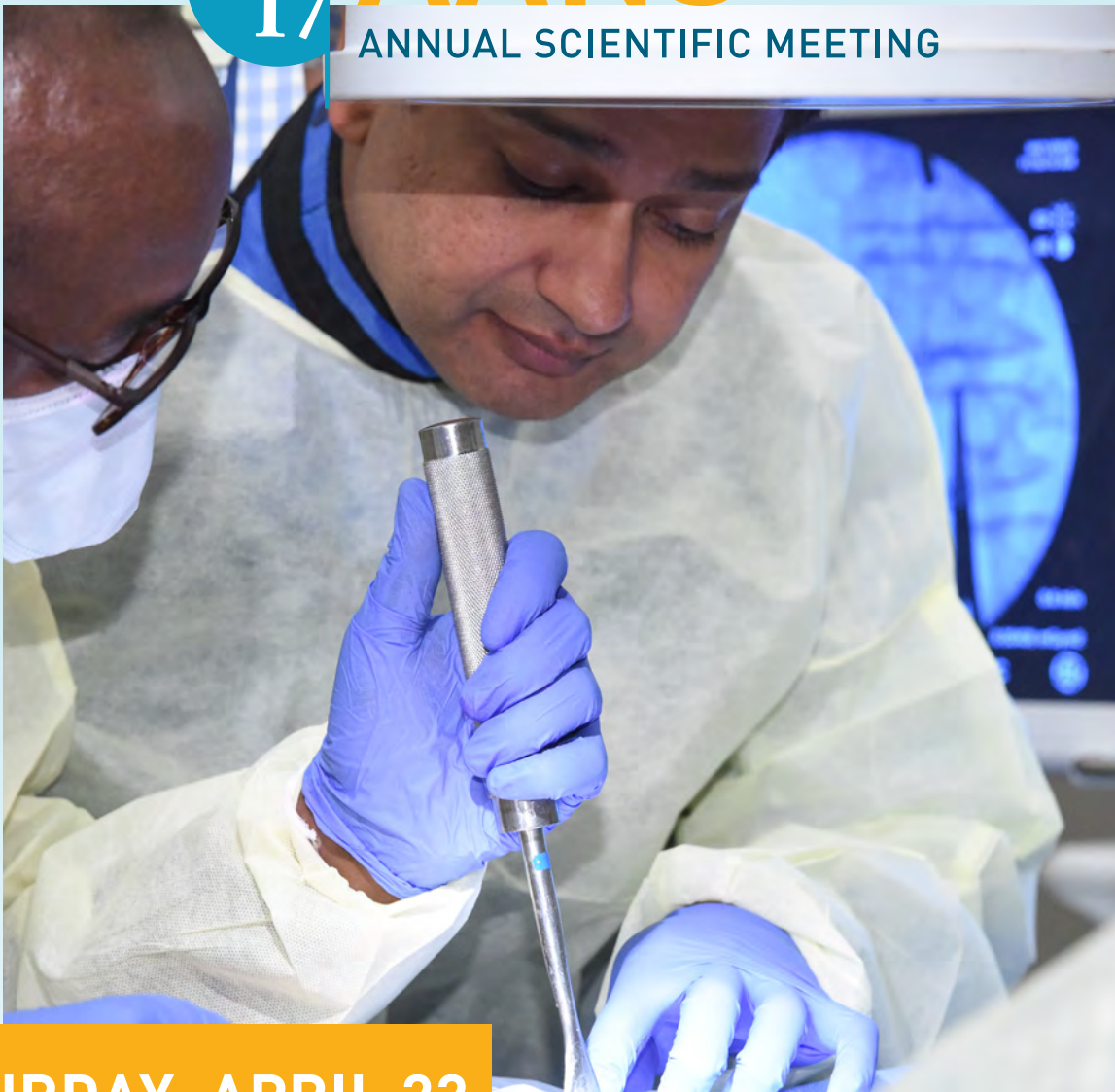
- 204** Intracranial Endoscopy [\(page 80\)](#)
- 206** Pituitary Tumors [\(page 81\)](#)
- 211** Remove, Radiate or Just Observe: Acoustic Tumors [\(page 83\)](#)
- 217** Malignant Brain Tumors: State-of-the-art Treatment [\(page 85\)](#)
- 220** Management of Cranial Incidental Imaging Findings [\(page 86\)](#)
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- 310** The Spectrum of Adjuvant Therapy for Brain Tumors [\(page 96\)](#)
- 311** Suprasellar and Juxtaseellar Tumors: Complications and Avoidance [\(page 97\)](#)
- 315** Tumor-related Epilepsy [\(page 98\)](#)

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2017 AANS

ANNUAL SCIENTIFIC MEETING



SATURDAY, APRIL 22

6:30 a.m.-5:30 p.m.	AANS Registration
8 a.m.-5 p.m.	All-day Practical Clinics 001-003
8 a.m.-5 p.m.	International Symposium
8 a.m.-12 p.m.	Morning Practical Clinics 004-009
1-4 p.m.	Neurosurgeon-scientist Career Development Course
1-5 p.m.	Afternoon Practical Clinics 010-016
1-5 p.m.	Leadership Development Course - Mid Career
6-8 p.m.	Dinner Symposium: Advanced Practice Providers (APPs): Preventive Care - Planning Strategies for Your Long Term Retirement Goals

SATURDAY, APRIL 22

All-day Practical Clinics

8 a.m.-5 p.m.

001 Introduction to Cerebrovascular Neurosurgery for Residents



Candidate and Medical Student Fee: \$65**

Director: J Mocco, MD, FAANS

Assistant Directors: Assistant Directors: Mandy Jo Binning, MD, FAANS; Christopher P Kellner; Erol Veznedaroglu, MD, FAANS

Faculty: Adam S. Arthur, MD, MPH, FAANS; Geoffrey P. Colby, MD, PhD, FAANS; Jason Michael Davies, MD; Christoph Johannes Griessenauer, MD; Bradley Gross, MD; Jay U. Howington, MD, FAANS; William J. Mack IV, MD, FAANS; Justin Robert Mascitelli, MD; Christopher S. Ogilvy, MD, FAANS; Thomas Adam Oliver, MD, FAANS; Clemens M. Schirmer, MD, PhD, FAANS; Dimitri G. Sigounas, MD; Robert M. Starke, MD; Raymond Dwight Turner IV, MD, FAANS; Stacey C. Wolfe, MD, FAANS

This comprehensive course is designed to provide neurosurgery residents who are unsure about their interest in endovascular neurosurgery an opportunity to use hands-on simulators and models to better understand the technical aspects of endovascular neurosurgery under close instruction in basic and advanced endovascular techniques. This experience will also facilitate a high degree of mentorship with acknowledged leaders in the field.

***Registered attendees will receive a ticket for a resident's dinner (limited space available).*

Learning Objectives: After completing this educational activity, participants should be able to:

- Explain the components of a dual-trained endovascular neurosurgeon's practice.
- Distinguish the basic skill set in regards to cerebrovascular (CV) anatomy and catheter manipulation on simulator and flow model training.
- Examine how dual-trained neurosurgeons use their open and endovascular skill sets to evaluate and treat CV disease.

8 a.m.-5 p.m.

002 Current Treatments and Controversies in Traumatic Brain Injury



Clinic Fee: \$600

Advanced Practice Provider Fee: \$420

Director: Shelly D. Timmons, MD, PhD, FAANS

Assistant Director: David O. Okonkwo, MD, PhD, FAANS

Faculty: Kevin J. Gibbons, MD, FAANS; Gregory W.J. Hawryluk, MD, FAANS; Jack I. Jallo, MD, PhD, FAANS; Ryan Kitagawa, MD; Wai S. Poon, CRNA; Uzma Samadani, MD, PhD, FAANS; Martina Stippler, MD, FAANS; Joseph Christopher Zacko, MD, FAANS

This clinic covers the significant breadth of the field of neurotrauma and critical care. It will emphasize practical as well as complex case management issues. Participants will have access to devices for ICP monitoring, parenchymal oxygen monitoring and cerebral blood flow monitoring.

Learning Objectives: After completing this educational activity, participants should be able to:

- Describe the ICU management of the TBI patient.
- Describe the current surgical controversies in the management of the brain-injured patient.
- Identify the current concepts in advanced neuromonitoring.

SATURDAY, APRIL 22

8 a.m.-5 p.m.

003 Stereotactic and Functional Neurosurgery: Hands-on Workshop



Clinic Fee: \$900

Director: Steven G. Ojemann, MD, FAANS

Assistant Director: Jason M. Schwalb, MD, FAANS

Faculty: Aviva Abosch, MD, PhD, FAANS; Kathryn Lois Holloway, MD, FAANS; Willard S. Kasoff, MD; Darlene A. Lobel, MD, FAANS; Francisco A. Ponce, MD, FAANS; Damianos E. Sakas, MD; Yeo Tseng Tsai, MD

This Practical Clinic is directed to neurosurgeons in practice or in training, who desire to improve their skills and knowledge of stereotactic and functional neurosurgery. The program will focus on advanced stereotactic techniques used for implantation of deep brain stimulators and for functional ablation of brain structures in the treatment of movement disorders and psychiatric disorders. The goals of the program will be accomplished through a didactic program, followed by

a hands-on laboratory program in which participants will use a wide range of stereotactic devices (frame, frameless), electrode drives and imaging techniques for radiological control. This is followed by a microelectrode-mapping training session, using microelectrode-recording equipment, as well as computer simulations.

Learning Objectives: After completing this educational activity, participants should be able to:

- Use standard stereotactic frames, new burrhole-mounted frames and other frameless stereotactic devices to deliver therapies (e.g. deep brain stimulators, radiofrequency ablations) to the target safely and effectively.
- Identify the standard targets used in functional neurosurgery in the basal ganglia using state-of-the-art neurophysiological mapping techniques.
- Use 2-D fluorography, 3-D fluorography and CT scanning intraoperatively to verify electrode position after implantation of deep brain stimulation (DBS) electrodes.



SATURDAY, APRIL 22

International Symposium

8 a.m.-5 p.m.

Cost: Included in meeting registration.



8:06-10:53 a.m.

Stereotactic and Functional Session



Moderators: Clement Hamani, MD; Nader Pouratian, MD, PhD, FAANS; Konstantin V. Slavin, MD, FAANS

Speakers: Erich Talamoni Fonoff II, MD; Denys Fontaine, MD; Konstantinos N. Fountas, MD, PhD, IFAANS; Jean Regis, MD; Andrey Rostislavovich Sitnikov Sr., MD; Takaomi Taira, MD, PhD; Hiroki Toda, MD, PhD, IFAANS; Yeo Tseng Tsai, MD

10:54 a.m.-2:11 p.m.

Pediatric Session



Moderators: Sanjiv Bhatia, MD, FAANS; Bermans J. Iskandar, MD, FAANS; Jeffrey P. Blount, MD, FAANS

Speakers: Sergio Cavalheiro, MD; Chandrashekhar Deopujari, MCh; Anthony Figaji, MD; William Harkness, MD; Marianne Juhler, MD; Dattatraya P. Muzumdar, MD; Reizo Shirane, MD, PhD; Seow Wan Tew, MD

2:12-5:00 p.m.

Neurotrauma Session



Moderators: M. Ross Bullock, MD, PhD; Daniel Bernard Michael, MD, PhD, FAANS

Speakers: Deepak K. Gupta, MSMCh; Stephen Honeybul, FDS, RCS, FRCS, FRACS; Niklas Marklund, MD; Raj K. Narayan, MD, FAANS; Andres Mariano Rubiano, MD; Franco Servadei, MD; Bruno Splavski, MD



SATURDAY, APRIL 22

Morning Practical Clinics

8 a.m.-12 p.m.

004 Pediatric Endoscopic Craniosynostosis Repair



Clinic Fee: \$650

Director: David F. Jimenez, MD, FAANS

Assistant Director: Todd Cameron Hankinson, MD, FAANS

Faculty: Mark R. Proctor, MD, FAANS; Ann M. Ritter, MD, FAANS; Matthew D. Smyth, MD, FAANS

This course presents the endoscopic-assisted management of craniosynostosis with a combination of didactic lectures and a hands-on workshop. Didactic lectures describe the patient selection process, surgical techniques for management of all synostosis types, expected short- and long-term outcomes and complications. Extensive video presentations graphically describe techniques and associated nuances. The hands-on workshop will expose participants to the OR setup, instrumentation, endoscopes and techniques for performing surgery. By the end of the course, participants will be fully informed on how to select and perform endoscopic-assisted techniques as well as to understand the importance of post-operative cranial orthosis adjunct therapy.

Learning Objectives: After completing this educational activity, participants should be able to:

- List the clinical indications for treating infants with craniosynostosis using minimally invasive endoscopic techniques.
- Summarize the instrumentation and surgical suite setup for endoscopic craniosynostosis surgery.
- Describe the surgical techniques used in endoscopic assisted craniosynostosis surgery.
- Discuss the principles, techniques and results associated with the postoperative use of cranial orthosis after endoscopic surgery.

8 a.m.-12 p.m.

005 Integrating Pain Management Into Your Neurosurgical Practice



Clinic Fee: \$1,500

Director: Jennifer A. Sweet, MD

Assistant Director: Steven M. Falowski, MD, FAANS

Faculty: Jonathan P. Miller, MD, FAANS; Julie G. Pilitsis, MD, PhD, FAANS; Jason E. Pope, MD; Joshua M. Rosenow, MD, FAANS; Ashwin Viswanathan, MD, FAANS

At least 70 percent of neurosurgeons have a predominant spine practice; one way to differentiate your practice and provide your non-surgical patients other options is to offer neuromodulation and other pain procedures. In this cadaver-based course, we will familiarize you with the nuances of spinal cord stimulation placement and discuss how pain procedures bring value to your practice. Half of this course will be dedicated to placing both paddle and percutaneous leads, as well as other minimally invasive approaches to stimulator placement.

Learning Objectives: After completing this educational activity, participants should be able to:

- Describe the benefits of incorporating pain procedures into your practice from a practice development standpoint.
- Determine which patients are candidates for these procedures.
- Apply techniques of spinal cord simulation.

SATURDAY, APRIL 22

8 a.m.-12 p.m.

006 Zen and the Art of Posterior Fossa Surgery



Clinic Fee: \$450

Candidate and Medical Student Fee: \$65

Director: Anil Nanda, MD, FAANS

Assistant Director: William T. Couldwell, MD, PhD, FAANS

Faculty: Andrew H. Kaye, MD, IFAANS; L. Madison Michael II, MD, FAANS; Mika Niemela, MD, PhD, IFAANS; Daniel Monte-Serrat Prevedello, MD; Volker Seifert, MD, PhD

The objective of this course is to review the nuances of posterior fossa surgery. The discussion includes relevant surgical anatomy and approaches to various lesions of the posterior fossa. In addition, complication avoidance and management during surgery will be discussed. The lesions and approaches to be presented include microvascular decompression for trigeminal neuralgia, approaches to vestibular schwannoma, far lateral approach to skull base tumors and aneurysms and midline approaches to pediatric posterior fossa tumors, as well as endoscopic approaches to clivus.

Learning Objectives: After completing this educational activity, participants should be able to:

- Review the relevant surgical anatomy, as well as the positioning of posterior fossa surgery with incisions and approach.
- Discuss techniques to minimize and manage complications.
- Distinguish safe approaches to brainstem lesions.

8 a.m.-12 p.m.

007 Basics of Spinal Stabilization — Advanced Practice Providers (APPs)/ Medical Students/Residents



Clinic Fee: \$650

Candidate and Medical Student Fee: \$65

Advanced Practice Provider Fee: \$455

Director: Kaushik Das, MD, FAANS

Assistant Director: Langston T. Holly, MD, FAANS

Faculty: Adrian Thomas Hickman Casey, MD, FRCS; Victor Chang, MD; Virany Huynh Hillard, MD, FAANS; Saad Abul Khairi, MD, FAANS; Naresh P. Patel, MD, FAANS; Khoi Duc Than, MD

This course will describe the biological and biomechanical principles of spinal fusion. Through the use of didactic sessions and hands-on application, it also will describe the indications, operative approaches and surgical techniques used in spinal fusion and instrumentation of the cervical and thoracolumbar spine.

Learning Objectives: After completing this educational activity, participants should be able to:

- Describe biologic basis and biomechanics of spine fusion.
- Describe indications of spinal fusion, instrumentation and arthroplasty.
- Describe operative approaches and surgical techniques for spinal fusion and instrumentation.

SATURDAY, APRIL 22

8 a.m.-12 p.m.

008 Update on the Management of Spine and Spinal Cord Injury



Clinic Fee: \$450

Advanced Practice Provider Fee: \$315

Director: James S. Harrop, MD, FAANS

Assistant Director: Daniel Jin Hoh, MD, FAANS

Faculty: Sanjay Dhall, MD, FAANS; Amr El Shawarby, MD; Michael G. Fehlings, MD, PhD, FAANS; W. Bradley Jacobs, MD, FAANS; Jesus LaFuenta, MD; Nicholas Theodore, MD, FAANS; Claudius Thome, MD, IFAANS

The objective of this course is to familiarize surgeons with the acute management of the traumatic spinal column and spinal cord-injured (SCI) patient. It will discuss the timing and treatment of the acute SCI patient with explanations for present and future treatment strategies. In addition, time will be spent focusing on pediatric and geriatric populations. The course will be presented through case presentations, and attendees are encouraged to bring interesting and difficult cases for discussion.

Learning Objectives: After completing this educational activity, participants should be able to:

- Review evidence-based guidelines for treatment of spinal cord injury.
- Detail management of spinal injuries including central cord injury and geriatric odontoid fractures.
- Discuss present SCI trials and treatment strategies.
- Review optimal treatment strategies in the care of SCI and spine trauma patients.
- Discuss various spine trauma classification systems and their role in clinical decision-making.

8 a.m.-12 p.m.

009 Emerging Technologies in Spine Surgery



Clinic Fee: \$650

Candidate and Medical Student Fee: \$65

Advanced Practice Provider Fee: \$455

Director: Joseph S. Cheng, MD, FAANS

Assistant Director: Doniel Gabriel Drazin, MD

Faculty: Jens Chapman, MD; J. Patrick Johnson, MD, FAANS; Isador Lieberman, MD, FRCS(C); Rod J. Oskouian Jr., MD, FAANS; Ben Z. Roitberg, MD, FAANS; Michael Y. Wang, MD, FAANS

This course will explore the new advances in the field of emerging technologies in spine surgery. We are hoping the course would provide the participant with insight into the current, state-of-the-art technology for treating spinal pathology. Topics include but are not limited to intraoperative imaging, navigation, robotics, integrated software and surgical planning tools, next generation microscopes and surgical instruments, patient specific instrumentation, combinatorial technologies, augmented reality, human/systems integration, workflow and learning curves.

Learning Objectives: After completing this educational activity, participants should be able to:

- Develop an understanding of the role of emerging technologies in improving the care of neurosurgical patients with spinal disorders.
- Identify the indications to use and the expected outcomes of utilizing navigation and emerging technologies in the treatment of spinal disorders.
- Develop a strategy to implement new technologies providing beneficial spinal care for patients with spinal disorders.

SATURDAY, APRIL 22

1-4 p.m.

Neurosurgeon-scientist Career Development Course



Clinic Fee: \$350

Candidate and Medical Student Fee: \$65

Director: Gregory J. Zipfel, MD, FAANS

Faculty: Sepideh Amin-Hanjani, MD, FAANS; Bob S. Carter, MD, PhD, FAANS; Ennio Antonio Chiocca, MD, PhD, FAANS; Emad N. Eskandar, MD, FAANS; David Delmar Limbrick Jr., MD, PhD, FAANS

This course is a collaboration of the AANS and the National Institute of Neurological Disorders and Stroke (NINDS). It targets junior faculty who are pursuing a career as a neurosurgeon-scientist and have recently applied for or are in the process of submitting a K-level career development award. The didactic portion of the course will provide an overview and insight into the career development funding mechanisms available through the NINDS and lessons learned from recent K-level awardees. The small group portion of the course will partner established neurosurgeon investigators with attendees to provide individual critiques and advice for attendee K-level award applications and long-term career plans.

Learning Objectives: After completing this educational activity, participants should be able to:

- Describe the career development grant mechanisms available through the NINDS.
- Decipher a summary statement so as to improve a resubmission of their K-level award application.
- Implement the recommendations from their personalized feedback on their upcoming K-level award application.

Afternoon Practical Clinics

1-5 p.m.

010 Spinal Alignment: What Every Surgeon Needs to Know



Clinic Fee: \$450

Advanced Practice Provider Fee: \$315

Director: Regis W. Haid Jr., MD, FAANS

Assistant Director: Christopher I. Shaffrey, MD, FAANS

Faculty: Domagoj Coric, MD, FAANS; Adam S. Kanter, MD, FAANS; Praveen V. Mummaneni, MD, FAANS; Paul Park, MD, FAANS; Eric A. Potts, MD, FAANS; Justin S. Smith, MD, PhD, FAANS; Juan Santiago Uribe, MD, FAANS

This course will feature a series of lectures and hands-on presentations in thoracic and lumbar fusion techniques and technology. Discussion will include treatment of degenerative disease and spinal deformity in the thoracolumbar spine. The impact of implant design, technique selection (including minimally invasive approaches) and biological agents will also be covered.

Learning Objectives: After completing this educational activity, participants should be able to:

- Review patient selection for thoracic and lumbar fusion.
- Discuss translational and rotational techniques for correction of thoracolumbar deformity.
- Review open and minimally invasive approaches for lumbar interbody fusion (ALIF, TLIF, PLIF).
- Discuss common complications and management associated with thoracic and lumbar fusion.

SATURDAY, APRIL 22

1-5 p.m.

011 Comprehensive Interventional Facial Pain Management



Clinic Fee: \$1,500

Director: Jonathan P. Miller, MD, FAANS

Assistant Director: Ashwin Viswanathan, MD, FAANS

Faculty: Kim J. Burchiel, MD, FAANS; Bruce E. Pollock, MD, FAANS; Joshua M. Rosenow, MD, FAANS; Raymond Francis Sekula Jr., MD, FAANS

This practical course provides comprehensive instruction in the neurosurgical management of various facial pain syndromes, including trigeminal neuralgia, trigeminal neuropathic pain, deafferentation pain/anesthesia dolorosa and nociceptive facial pain. Participants learn multiple interventions, including open and percutaneous surgical techniques, radiosurgical treatment and neuromodulation approaches.

Learning Objectives: After completing this educational activity, participants should be able to:

- Describe facial pain syndromes, including symptoms, signs, natural history, pathophysiology and response to surgical treatment.
- Discuss the technical aspects of surgical, radiosurgical and neuromodulation approaches for facial pain.
- Recognize expected outcomes and complication profile for surgical, radiosurgical and neuromodulation approaches.

1-5 p.m.

012 RHOTON LECTURE SERIES: 3-D Anatomy and Approaches to the Supratentorial Area and Anterior Skull Base



Clinic Fee: \$450

Candidate and Medical Student Fees: \$65

Director(s): Evandro Pinto da Luz de Oliveira, MD, PhD, IFAANS; Juan Carlos Fernandez-Miranda, MD, IFAANS; Jeffrey M. Sorenson, MD, FAANS

Faculty: Pablo Rubino, MD

This course will review relevant surgical neuroanatomy using 3-D stereoscopic projection. The areas covered will be cortical and white matter anatomy, cerebrovascular and skull base anatomy. There will be an emphasis both in intricate anatomical regions, such as insular, ventricles and cavernous sinus, and the newest techniques, such as high-definition fiber tractography (HDFT) planning for intrinsic tumor surgery and endoscopic endonasal techniques for skull base lesions. The importance of surgical neuroanatomy for clinical practice and approach selection will be illustrated with surgical cases and HD/3-D video presentations.

Learning Objectives: After completing this educational activity, participants should be able to:

- Review the complex anatomy of the fiber tracts and apply HDFT in clinical practice.
- Identify the key surgical anatomy for accessing the ventricles, basal cisterns and anterior circulation aneurysms.
- Discuss the different routes through the anterior skull base, middle fossa and cavernous sinus, including endoscopic endonasal and transcranial approaches.

SATURDAY, APRIL 22

1-5 p.m.

013 Brain Mapping and Awake Mapping Techniques



Clinic Fee: \$450

Candidate and Medical Student Fee: \$65

Director: Gerald A. Grant, MD, FAANS

Assistant Director: Guy M. McKhann II, MD, FAANS

Faculty: Nicholas M. Barbaro, MD, FAANS; Gene H. Barnett, MD, FAANS; Hugues Duffau, MD; Konstantinos N. Fountas, MD, PhD, IFAANS; Jorge Alvaro Gonzalez-Martinez, MD, PhD, FAANS; Nader Sanai, MD, FAANS; Ugur Ture, MD, IFAANS; Fernando L. Vale, MD, FAANS

This course will provide an in-depth review of techniques and technologies that can be applied to identifying and working within eloquent areas of the brain and performing successful resections of neoplasms and epilepsy foci in adult and pediatric patients. The selection of surgical approaches based on non-invasive monitoring for surgery of epilepsies and brain tumors will be discussed.

Learning Objectives: After completing this educational activity, participants should be able to:

- Identify the technologies currently available for pre- and intraoperative brain mapping for tumors and epilepsy.
- Apply brain-mapping techniques to daily practice.
- Recognize complication avoidance in epilepsy and brain-mapping techniques.

1-5 p.m.

014 Neurosurgical Care of Athletes — Concussion, Spine, Peripheral Nerve and Return-to-play



Clinic Fee: \$450

Candidate and Medical Student: \$65

Director: Allen Kent Sills, MD, FAANS

Assistant Director: Mark E. Oppenlander, MD

Faculty: Richard G. Ellenbogen, MD, FAANS; Joseph Charles Maroon, MD, FAANS(L); Alexander A. Potapov, MD; Robert J. Spinner, MD, FAANS

This course is designed for the practicing neurosurgeon who works with athletes with neurological problems or who may wish to become involved in a local sports medicine team.

Learning Objectives: After completing this educational activity, participants should be able to:

- Describe common spine injuries and treatments in athletes.
- Discuss peripheral nerve problems in athletes.
- Summarize emerging concepts in prevention and risk reduction strategies for neurologic injuries in athletes.

SATURDAY, APRIL 22

1-5 p.m.

015 Update on Spinal Radiosurgery



Clinic Fee: \$450

Candidate and Medical Student Fee: \$65

Director: Mark H. Bilsky, MD, FAANS

Assistant Director: Peter C. Gerszten, MD, FAANS

Faculty: Lilyana Angelov, MD, FAANS; Steven D. Chang, MD, FAANS; Jason P. Sheehan, MD, PhD, FAANS; Jason Andrew Weaver, MD, FAANS; Kevin C. Yao, MD, FAANS

Current state-of-the-art techniques in image-guided surgery of the spine will be reviewed. Emphasis will be placed on the current indications and preliminary outcomes after radiosurgical ablation of benign and malignant spinal lesions.

Learning Objectives: After completing this educational activity, participants should be able to:

- Discuss the most commonly used techniques for spinal radiosurgery.
- Explain the current indications for and outcomes after spine radiosurgery, as well as the relative contraindications to it.
- List the advantages and disadvantages of spinal radiosurgery techniques.

1-5 p.m.

016 Microsurgical Management of Intracranial Aneurysms: Site-specific Surgical Anatomy, Operation Intervention and Complication Management



Clinic Fee: \$450

Candidate and Medical Student Fee: \$65

Director: H. Hunt Batjer, MD, FAANS

Assistant Director: Arthur L. Day, MD, FAANS

Faculty: Daniel Louis Barrow, MD, FAANS; Ralph G. Dacey Jr., MD, FAANS; Steven L. Giannotta, MD, FAANS; Ying Mao, MD; Paritosh Pandey, MD; Robert E. Replogle, MD, FAANS; Babu G. Welch, MD, FAANS

This course is designed to teach attendees the basics of vertebrobasilar, internal carotid, middle cerebral and anterior cerebral artery aneurysms.

Learning Objectives: After completing this educational activity, participants should be able to:

- Recognize the special features of aneurysms at specific sites.
- Recognize potential pitfalls for safe lesion treatment.
- Identify new methods of intervention for cerebral aneurysms.



SATURDAY, APRIL 22

1-5 p.m.

Leadership Development Course — Mid Career (By Recommendation Only)



Clinic Fee: \$450

Directors: Aviva Abosch, MD, PhD, FAANS; William T. Couldwell, MD, PhD, FAANS

Faculty: H. Hunt Batjer, MD, FAANS; Mitchel S. Berger, MD, FAANS; Jeffrey N. Bruce, MD, FAANS; Alan R. Cohen, MD, FAANS; Richard G. Fessler, MD, PhD, FAANS; Robert E. Harbaugh, MD, FAANS; Neil A. Martin, MD; Paul C. McCormick, MD, FAANS; Fredric B. Meyer, MD, FAANS; Raj K. Narayan, MD, FAANS; Donald O. Quest, MD, FAANS(L); Jon H. Robertson, MD, FAANS; Alan M. Scarrow, MD, JD, FAANS; Dennis D. Spencer, MD, FAANS; Shelly D. Timmons, MD, PhD, FAANS; Troy M. Tippet, MD, FAANS(L)

This program is designed to provide a mentoring forum to help develop leadership skills among a group of junior or mid-career neurosurgeons, or new chairperson. Registrants will be recommended by the chairperson of their institution for the program or by senior leadership in their private group. Registrants will be outstanding clinical neurosurgeons with a good academic track record who possess significant leadership potential. Through participation in this program, the AANS would then be able to provide a list of individuals appropriate for leadership positions in academic institutions during national searches and to present potential nominees for leadership positions in other societies.

Through this leadership development course, the experienced faculty will walk attendees through four major topic areas pertinent to neurosurgical leaders:

- The Successful Department Chair
- Practice Groups
- Organizational Structure of U.S. Neurosurgery
- Personal Career Development and Growth

Learning Objectives: After completing this educational activity, participants should be able to:

- Explain the attributes of a solid neurosurgical leader within an academic institution.
- Differentiate the roles and responsibilities of the various neurosurgical leadership organizations.
- Distinguish the neurosurgical practice types and how each leads to career growth.

Recommendation letters will be sent to directors and chairs Nov. 4, 2016

If you are interested in participating in this course, contact your director or chair for a recommendation.

Recommendations will be accepted until the course is full.

6-8 p.m.

Dinner Symposium: Advanced Practice Providers (APPs): Preventive Care — Planning Strategies for Your Long Term Retirement Goals



Fee: \$75

Location: Triple 8 China Bar and Grill

Moderator: Marianne E. Langlois, MS, PA-C; Cristina Matthews, MSN, FNP-BC

Speaker: David Naftzger

Triple 8 China Bar and Grill offers a distinctive dining experience joining modern Chinese/Cantonese cuisine, signature cocktails and craft beers. Situated in the downtown L.A. LIVE events center, Triple 8 Bar and Grill greets guests with natural colors and soft ambient sounds and lighting to create a truly relaxed atmosphere.



2017 AANS

ANNUAL SCIENTIFIC MEETING



SUNDAY, APRIL 23

6:30 a.m.-6:30 p.m.	AANS Registration
7 a.m.-4:30 p.m.	Society of Neurological Surgeons (SNS) Chief Resident Course
7:30 a.m.-4:30 p.m.	All-day Practical Clinics 017-019
7:30 a.m.-4:30 p.m.	International Symposium
7:30 a.m.-4:30 p.m.	Advanced Practice Providers (APPs) Plenary Session
7:30-11:30 a.m.	Morning Practical Clinics 020-027
12:30-4:30 p.m.	Afternoon Practical Clinics 028-035
12:30-4:30 p.m.	Leadership Development – Senior Resident Nominations Only
1-4:30 p.m.	Young Neurosurgeons Research Forum
	Osler Lecture – Roberto C. Heros, MD, FAANS(L)
5-6:30 p.m.	AANS Opening Ceremonies
	Walter D. Johnson, MD, FAANS(L); Paul Farmer, MD, PhD
	Moderator: Sanjay K. Gupta, MD, FAANS
7-9 p.m.	AANS Opening Reception at Microsoft Square at L.A. LIVE

SUNDAY, APRIL 23

All-day Practical Clinics

7:30 a.m.-4:30 p.m.

017 CPT Coding Update with ICD-10 for Neurosurgeons: Coding Concepts by Case Example



Clinic Fee: \$600

Advanced Practice Provider Fee: \$420

Candidate and Medical Student: \$65

Director: John Kevin Ratliff, MD, FAANS

Assistant Director: Luis Manuel Tumialan, MD, FAANS

Faculty: Peter Douglas Angevine, MD, FAANS; Michael Joseph Caron, MD, FAANS; Joseph S. Cheng, MD, MS, FAANS; Atman Desai, MD, MA; Robert R. Johnson II, MD, FAANS; Kim Pollock, RN; Clemens M. Schirmer, MD, PhD, FAANS; Scott Douglas Simon, MD, FAANS; Karin R. Swartz, MD, FAANS

Based on the AANS *Managing Coding and Reimbursement* course, this Practical Clinic provides a summary of the 2017 CPT coding changes including the recent ICD-10 implementation. The course reviews up-to-date coding rules that affect neurosurgeons. The faculty are key figures in the development, revision and valuation of CPT codes and offer insight into current coding rules.

Learning Objectives: After completing this educational activity, participants should be able to:

- Apply new and revised 2017 neurosurgical CPT codes to key neurosurgical services.
- Discuss key concepts in reporting neurosurgical CPT codes and modifiers to effectively describe professional, surgical and E&M work.
- Explain fundamental differences between ICD-10 nomenclature and ICD-9 nomenclature in reporting neurosurgical diagnoses.

7:30 a.m.-4:30 p.m.

018 Advanced Use of Computer-based Simulation Technologies for Intracranial Surgery



Clinic Fee: \$900

Candidate and Medical Student Fee: \$65

Director: Anthony Costa

Assistant Director: Joshua B. Bederson, MD, FAANS

Faculty: Costas G. Hadjipanayis, MD, PhD, FAANS; Justin Robert Mascitelli, MD; J Mocco, MD, FAANS; Fedor Panov, MD; Leslie Schlachter

In this clinical course, attendees will learn the theory and fundamentals of these tools and examples of successful clinical practices in which they have been implemented. The morning session will be comprised of a series of lectures on the current state of the art of modeling the brain, from radiological scan acquisition best practices to automated and semi-supervised segmentation and registration tools, followed by hands-on demonstrations and interactive sessions with software that implement these tools from academia and industry. The afternoon will finish with hands-on practical sessions from cross-disciplinary neurosurgeons and related specialists, detailing how they are pushing the envelope of patient care by leveraging state-of-the-art digital tools.

Learning Objectives: After completing this educational activity, participants should be able to:

- Recognize the disparate tools and technologies necessary for successful use of computer-based simulation strategies for intracranial surgery throughout the entire patient pipeline.
- Define best practices in each category of the pipeline of tools used for computer-based modeling and simulation in neurologic surgery, including strategies for optimization of radiological scan sequences, techniques for automated and semi-automated segmentation and registration of brain structures and available visualization techniques including virtual and augmented reality tools.
- Identify how simulation and modeling are pushing the envelope of patient care by leveraging state-of-the-art digital tools.

SUNDAY, APRIL 23

7:30 a.m.-4:30 p.m.

019 You Are Never Too Old for Surgery: Spine Management in an Aging Population



Clinic Fee: \$600

Advanced Practice Provider Fee: \$420

Director: Andrea L. Strayer, NP

Assistant Director: Nathaniel P. Brooks, MD, FAANS

Faculty: Bjoern Buehring, MD; Darryl J. Dirisio, MD, FAANS; Daniel Jin Hoh, MD, FAANS; Ajit A. Krishnaney, MD, FAANS; Vincent J. Miele, MD, FAANS; Karen Petronis, NP; Laura Prado, NP; Sharad Rajpal, MD, FAANS; Shelly Schmoller; John H. Shin, MD, FAANS; Michael Patrick Steinmetz, MD, FAANS; Suzanne Audrey Tharin, MD; Gregory R. Trost, MD, FAANS; Eve C. Tsai, MD, PhD, FAANS

The population of adults age 65 and older in the U.S. is expected to grow to 19 percent of the total population by 2030. Special considerations are warranted when treating older adults with spine disorders. An understanding of osteoporosis and perioperative needs of the older adult with spinal challenges is imperative. Treatment decision-making regarding common fractures and degenerative spine disorders is presented for the registered nurse (RN) and advanced practice provider (APP) so they may gain practical knowledge to apply to their practice.

Learning Objectives: After completing this educational activity, participants should be able to:

- Analyze the aging and osteoporosis epidemic and the implications for neurosurgeons and APPs.
- Assess and evaluate nutritional status, potential perioperative complications, operative optimization, orthoses and pearls for pain management in the older spine patient population.
- Analyze diagnosis, classification and management of upper and subaxial cervical spine fractures and spinal cord injury, including central cord syndrome and thoracolumbar fractures.
- Analyze diagnosis, classification and management of degenerative challenges of the cervical and lumbar spine in the older adult patient.
- Determine when the healing endpoint is reached.



SUNDAY, APRIL 23

International Symposium

7:30 a.m.-4:30 p.m.

Cost: Included in meeting registration.



7:36-10:23 a.m.

Spine Session



Moderators: Mark N. Hadley, MD, FAANS; Patrick W. Hitchon, MD, FAANS; Nicholas Theodore, MD, FAANS

Speakers: P. Sarat Chandra, MD; Andreas K. Demetriades, MBBS, FRCS; Amr El Shawarby, MD; Jesus LaFuente, MD; Bernhard Meyer, MD; Claudius Thome, MD, IFAANS; Miroslav Vukic, MD MSc; Satoshi Yamaguchi, MD



10:24 a.m.-1:44 p.m.

Cerebrovascular Session



Moderators: Mustafa Kemal Baskaya, MD, FAANS; Fady T. Charbel, MD, FAANS; Jacques J. Morcos, MD, FAANS

Speakers: Francisco Goncalves-Llanos, MD; Kazuhiro Hongo, MD, IFAANS; Basant Kumar Misra, MD; Michael K. Morgan, MD, IFAANS; Mika Niemela, MD, PhD, IFAANS; Luca Regli, MD, IFAANS; Yong-Kwang Tu, MD, PhD; Peter Vajkoczy, MD

1:45-4:30 p.m.

Tumor Session



Moderators: Linda M. Liau, MD, PhD, FAANS; Michael W. McDermott, MD, FAANS; Anil Nanda, MD, MPH, FAANS

Speakers: Paolo Cappabianca, MD, IFAANS; Hugues Duffau, MD; Andrew H. Kaye, MD, IFAANS; Kenji Ohata, MD, DMSc, IFAANS; Ibrahim Omerhodzic, MD; Amir Samii, MD, PhD; Joerg-Christian Tonn, MD, IFAANS; Ugur Ture, MD, IFAANS; Keki E. Turel, MD



SUNDAY, APRIL 23

7:30 a.m.-4:30 p.m.

Advanced Practice Providers (APPs) Plenary Session



Moderators: Marianne E. Langlois, MS, PA-C;
Cristina Matthews, MSN, FNP-BC

7:30-7:44 a.m.

Welcome Address

Frederick A. Boop, MD, FAANS — AANS President

7:45-8:35 a.m.

Cerebrovascular Trauma

Arun Paul Amar, MD, FAANS

8:36-9:16 a.m.

Pediatric Spinal Dysraphism

Izabela Tarasiewicz, MD, FAANS

9:17-9:32 a.m.

Beverage Break

9:33-10:31 a.m.

Spinal Orthoses: Considerations and Controversies

Kristina Shultz, NP-C

10:32-11:30 a.m.

Infectious Disease Principles for the Neurosurgical Provider

Darren Wong, MD

11:31- a.m.-12:30 p.m.

Lunch Break

12:31-1:21 p.m.

Novel Innovations in Brain Tumor Surgery and Precision Medicine

Steven N. Kalkanis, MD, FAANS

1:22-2:07 p.m.

Functional Neurosurgery

Steven G. Ojemann, MD, FAANS

2:08-2:28 p.m.

Beverage Break

2:29-2:59 p.m.

Management of Cranial Post Operative Complications

Denise Lally-Goss, ANP

3:00-3:30 p.m.

Outpatient Dilemmas - Complications in the Postsurgical Spine Patient

Kent Kilbourn, PA-C

3:31-3:40 p.m.

Abstract Presentation

3:41-3:50 p.m.

Abstract Presentation

3:51-4:00 p.m.

Abstract Presentation

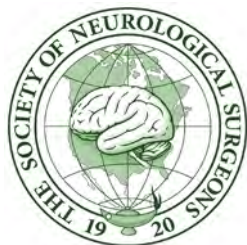


SUNDAY, APRIL 23

7 a.m.-4:30 p.m.

Society of Neurological Surgeons (SNS)

Chief Resident Course



Candidate and Medical Student Fee: \$65

Directors: Aaron A. Cohen-Gadol, MD, FAANS; William T. Couldwell, MD, PhD, FAANS

Faculty: Deborah L. Benzil, MD, FAANS; Richard W. Byrne, MD, FAANS; Stanley W. Fronczak, MD, JD, FAANS; Michael J. Link, MD; James K. Liu, MD, FAANS; John Kevin Ratliff, MD, FAANS; Jon H. Robertson, MD, FAANS; Judith Rosman, JD, FAANS; Mitesh V. Shah, MD, FAANS; Edward Robert Smith, MD, FAANS; Ann R. Stroink, MD, FAANS; Craig Andrew Van Der Veer, MD, FAANS

The Society of Neurosurgical Surgeons (SNS) Chief Resident Course is a specially designed full-day course taught by the leadership of the SNS for chief and senior residents covering the Accreditation Council for Graduate Medical Education (ACGME) milestones. The curriculum will cover two tracks: surgical and socioeconomic. For the surgical track, content will cover advanced cranial microsurgical techniques and related pathologies. For the socioeconomic track, content will cover medical billing, American Board of Neurological Surgery (ABNS) certification, Maintenance of Certification (MOC) and career options.

Learning Objectives: After completing this educational activity, participants should be able to:

- Describe the nuances of cranial approaches to complex pathology.
- Explain microsurgery of aneurysms and arteriovenous malformations (AVMs).
- Analyze career opportunities.
- Apply coding and reimbursement strategies.

Morning Practical Clinics

7:30 a.m.-11:30 a.m.

020 Endoscopic Lumbar Spinal Surgery: Cadaveric Hands-on Course



Clinic Fee: \$1,500

Director: Michael Y. Wang, MD, FAANS

Assistant Director: Peter Witt, MD, FAANS

Faculty: Christoph Paul Hofstetter, MD, PhD; Daniel T. Laich, DO; William R. Taylor, MD, FAANS; Albert E. Telfeian, MD, PhD, FAANS

In this cadaveric, hands-on course, participants explore the application of working-channel endoscopy for treating thoracolumbar spine disorders. Transforaminal and interlaminar discectomy techniques are applied in a lab setting for treating spinal stenosis and radiculopathy with an emphasis on safe and effective surgical technique. The course is taught by experienced endoscopists and will be of benefit to the beginning, intermediate or advanced surgeon.

Learning Objectives: After completing this educational activity, participants should be able to:

- Discuss the indications and contraindications of working-channel spinal endoscopy.
- Apply fluoroscopic targeting techniques to safely access the disc space using the minimal access working channel.
- Perform both transforaminal and interlaminar endoscopy for removal of lumbar disc herniations.

SUNDAY, APRIL 23

7:30 a.m.-11:30 a.m.

021 RHOTON LECTURE SERIES: 3-D Anatomy and Approaches to the Posterior Fossa and Posterior Skull Base



Clinic Fee: \$450

Candidate and Medical Student Fee: \$65

Directors: Evandro Pinto da Luz de Oliveira, MD, PhD, IFAANS; Juan Carlos Fernandez-Miranda, MD, IFAANS; Jeffrey M. Sorenson, MD, FAANS

Faculty: Paul A. Gardner, MD, FAANS; Pablo Rubino, MD

This course will review relevant surgical neuroanatomy using 3-D stereoscopic projection. The areas covered will be surgical anatomy and approaches to the cerebellum and fourth ventricle; microsurgical and endoscopic approaches to the cerebellopontine angle and beyond; posterior circulation surgical anatomy; transpetrosal approaches; surgical anatomy and approaches to the jugular foramen; far lateral and transcondylar approaches and endoscopic endonasal transclival approaches. There will be an emphasis on illustrating the importance of surgical neuroanatomy for clinical practice and approach selection with surgical cases and 3-D video case presentations.

Learning Objectives: After completing this educational activity, participants should be able to:

- Discuss surgical anatomy and approaches to the cerebellum, fourth ventricle and cerebellopontine angle.
- Review anterior and posterior transpetrosal approaches.
- Identify surgical anatomy and approaches to the jugular foramen and foramen magnum.
- Describe endoscopic endonasal approaches to the clival and petroclival regions.
- Illustrate the application of surgical neuroanatomy for selection and/or combination of surgical approaches.

7:30 a.m.-11:30 a.m.

022 Update on Tumors for the General Neurosurgeon I: Adult Gliomas and Metastases



Clinic Fee: \$450

Candidate and Medical Student Fee: \$65

Director: Mitchel S. Berger, MD, FAANS

Assistant Director: Nader Sanai, MD, FAANS

Faculty: Susan M. Chang, MD; Peter Edward Fecci, MD; Steven N. Kalkanis, MD, FAANS; Jason P. Sheehan, MD, PhD, FAANS; Andrew E. Sloan, MD, FAANS; Colin Watts, FRCS, PhD; Jeffrey S. Weinberg, MD, FAANS

This course will provide the practicing clinician with an up-to-date overview of current management strategies for all types of benign and malignant brain tumors. This seminar includes current research topics but emphasizes practical management issues.

Learning Objectives: After completing this educational activity, participants should be able to:

- Identify the state-of-the-art management of malignant brain tumors, including glial tumors, meningiomas and skull base tumors.
- Discuss current concepts in glioma management.
- Apply current updates about brain tumors to daily clinical practice decision-making.

SUNDAY, APRIL 23

7:30 a.m.-11:30 a.m.

023 How to Launch a Career in Tumor Neurosurgery



Clinic Fee: \$450

Candidate and Medical Student Fee: \$65

Director: Frederick G. Barker II, MD, FAANS

Faculty: Manish K. Aghi, MD, PhD, FAANS; Garni Barkhoudarian, MD; Chetan Bettegowda, MD; Daniel P. Cahill, MD, PhD, FAANS; Susan M. Chang, MD; William T. Curry Jr., MD, FAANS; Christopher James Farrell, MD, FAANS; Steven N. Kalkanis, MD, FAANS; Ricardo Jorge Komotar, MD, FAANS; John S. Kuo, MD, PhD; Linda M. Liau, MD, PhD, FAANS; Jennifer Moliterno Gunel, MD; Jason P. Sheehan, MD, PhD, FAANS; Michael A. Vogelbaum, MD, PhD, FAANS

This course is intended for neurosurgical residents considering a tumor career and fellows in tumor neurosurgery (glioma/mapping, skull base, endoscopy). It outlines the necessary knowledge base for a tumor neurosurgeon on day one of a new career; describes key milestones and transitions in starting a tumor neurosurgery career; and offers practical tips from tumor neurosurgeons in midcareer about “how they did it.”

Supported by the NREF Andrew T. Parsa Honor-Your-Mentor Fund.

Learning Objectives: After completing this educational activity, participants should be able to:

- Paraphrase the knowledge base of tumor neurosurgery with a focus on key studies – what they say, why they are important and their limitations.
- Summarize ongoing research in key clinical areas.
- Identify key choices and transitions early in a neurosurgical career, including decisions about fellowship, practice situation, starting a lab and becoming involved in clinical research.

7:30 a.m.-11:30 a.m.

024 Negotiating Strategies in Neurosurgery



Clinic Fee: \$450

Director: E. Hunter Dyer, MD, FAANS

Assistant Director: M. Sean Grady, MD, FAANS

Faculty: L. Madison Michael II, MD, FAANS; Troy D. Payner, MD, FAANS; Jonathan R. Slotkin, MD, FAANS

This course will provide case studies of both success and failure from neurosurgeons who negotiated with hospitals. It will allow participants important insight into how and why strategies succeeded or failed. Each case study evaluates approaches to ensure neurosurgical career satisfaction, financial stability, expansion of practice opportunities and availability for patient care, with special attention paid to the financial relationships between hospitals and neurosurgeons and how best to leverage a neurosurgeon's value to his or her hospital. All course participants will be requested to submit their own hospital negotiation case studies for discussion in the interactive and results-oriented portion of the course.

Learning Objectives: After completing this educational activity, participants should be able to:

- Assess the direct and indirect financial contribution neurosurgeons make to a hospital.
- Apply administrative “financial speak” essential to successful negotiations.
- Define alternative revenue sources for neurosurgeons in your hospital and community.
- Determine practical approaches for solving current dilemmas in neurosurgeon/hospital relationships.

SUNDAY, APRIL 23

7:30 a.m.-11:30 a.m.

025 Laser Thermocoagulation — How, When and Why



Clinic Fee: \$450

Advanced Practice Provider Fee: \$315

Candidate and Medical Student Fee: \$65

Director: Veronica L. Chiang, MD, FAANS

Assistant Director: Michael Schulder, MD, FAANS

Faculty: Jonathan R. Jagid, MD, FAANS; Stephen B. Tatter, MD, PhD, FAANS; Jon T. Willie, MD, PhD

MRI-guided Laser Thermal Ablation (MgLTA) is a developing technology with evolving indications. It is currently mostly involved in the treatment of tumors and epilepsy but with possible indications in vascular and spine. It is important for neurosurgeons to understand the advantages, limitations and costs of this new technology and what needs to be studied to further develop this technology appropriately. Most courses currently available for neurosurgeons to learn about MgLTA are industry sponsored. This Practical Clinic will allow neurosurgeons using the technology to more openly discuss their experiences using their various systems and how these systems may be advantageous and/or limit their practices.

Learning Objectives: After completing this educational activity, participants should be able to:

- Identify possible uses and limitations of LITT in the treatment of tumors.
- Recognize possible uses and limitations of LITT in the treatment of epilepsy.
- Compare and contrast the differences in available LITT systems.

7:30 a.m.-11:30 a.m.

026 Deep Brain Stimulation: Update and New Directions



Clinic Fee: \$450

Director: Aviva Abosch, MD, PhD, FAANS

Assistant Director: Sameer A. Sheth, MD, PhD

Faculty: Ellen L. Air, MD, PhD, FAANS; Casey Harrison Halpern, MD; Paul A. House, MD, FAANS; Michael G. Kaplitt, MD, PhD, FAANS; Brian H. Kopell, MD, FAANS; Paul S. Larson, MD, FAANS; Nader Pouratian, MD, PhD, FAANS; Joshua M. Rosenow, MD, FAANS; Donald M. Whiting, MD, FAANS

Practical aspects of surgery for the treatment of Parkinson's disease, tremor and dystonia will be presented. Emphasis will be on anatomical and physiological targeting strategies, intraoperative decision-making, troubleshooting, complication avoidance and management. Cases and intraoperative scenarios will be presented for interactive discussion between the audience and faculty.

Learning Objectives: After completing this educational activity, participants should be able to:

- Evaluate patients with Parkinson's disease, tremor and dystonia for surgical management.
- Apply the principles and techniques of deep brain stimulation (DBS) and lesioning surgeries.
- Discuss emerging indications for DBS, such as medically-refractory obsessive compulsive disorder.

SUNDAY, APRIL 23

7:30 a.m.-11:30 a.m.

027 Goodman Oral Board Review



Clinic Fee: \$450

Candidate and Medical Student Fee: \$65

Director: Allan D. Levi, MD, PhD, FAANS

Assistant Director: Thomas J. Leipzig, MD, FAANS

Faculty: James S. Harrop, MD, FAANS; Ricardo Jorge Komotar, MD, FAANS; Robert J. Spinner, MD, FAANS

The clinic is designed for residents, fellows and young neurosurgeons in their first five years of practice who will eventually prepare for the American Board of Neurological Surgery (ABNS) Oral Board certification exam. Course attendees who want to learn more about the ABNS certification process, including how to best prepare for oral boards and techniques on how to answer oral-format questions, are encouraged to attend. This course provides insight into the design and format of the AANS *Goodman Oral Board Preparation* course.

Learning Objectives: After completing this educational activity, participants should be able to:

- Discuss contemporary neurosurgery topics, including cerebrovascular disease, tumors, spine and peripheral nerves.
- Recognize the format of the board exam.
- Identify those areas of neurosurgery where further study would be beneficial in preparation for the board exam.

Afternoon Practical Clinics

12:30-4:30 p.m.

028 State-of-the-art: Cranial Endoscopy



Clinic Fee: \$1,500

Director: Alan R. Cohen, MD, FAANS

Assistant Director: Nicolai Hopf, MD

Faculty: Ian F. Dunn, MD, FAANS; J. Andre Grotenhuis, MD, PhD, IFAANS; Daniel James Guillaume, MD, FAANS; Tenoch Herrada-Pineda, MD, FAANS; Roberta Rehder, MD; Henry W. S. Schroeder, MD, PhD, IFAANS; Timothy W. Vogel, MD

Participants will receive didactic and hands-on instruction in intracranial endoscopy, including indications, techniques, outcomes and complications. Topics covered will include the management of hydrocephalus (including third ventriculostomy), removal of colloid cysts and other intraventricular tumors, endoscope-assisted microneurosurgery and transsphenoidal procedures.

Learning Objectives: After completing this educational activity, participants should be able to:

- Identify the indications for intracranial endoscopy.
- Evaluate specific techniques available for intracranial endoscopy.
- Discuss strategies for avoiding complications in intracranial endoscopy.



SUNDAY, APRIL 23

12:30-4:30 p.m.

029 How to Tackle Difficult Cranial Cases: A Step-by-step, 3-D, Case-based Presentation



Clinic Fee: \$450

Candidate and Medical Student Fee: \$65

Director: Michael T. Lawton, MD, FAANS

Assistant Director: Jacques J. Morcos, MD, FAANS

Faculty: Francisco Gonzalez-Llanos, MD; Kazuhiro Hongo, MD, IFAANS; B. Gregory Thompson Jr., MD, FAANS; Harry R. van Loveren, MD, FAANS

This course will offer an intense review of the technical nuances involved with cranial and skull base procedures via intraoperative, 3-D surgical video presentations. Craniotomy and intradural methods of common and more challenging procedures will be discussed. The faculty will provide the audience with pearls from their surgical

experience for variations of pterional (clinoidectomy), orbitozygomatic, suboccipital, retrosigmoid and petrosal craniotomies.

Learning Objectives: After completing this educational activity, participants should be able to:

- Explain the surgical anatomy of vascular and neoplastic lesions.
- Integrate anatomical knowledge with common and rare neurosurgical procedures performed at the skull base.
- Discuss the nuances of techniques for managing challenging cranial procedures.



SUNDAY, APRIL 23

12:30-4:30 p.m.

030 Update on Tumors for the General Neurosurgeon II: Skull Base, Pediatric and Spine Tumors



Clinic Fee: \$450

Advanced Practice Provider Fee: \$315

Candidate and Medical Student Fee: \$65

Director: Michael J. Link, MD, FAANS

Assistant Director: Manish K. Aghi, MD, PhD, FAANS

Faculty: Sanjiv Bhatia, MD, FAANS; Franco DeMonte, MD, FAANS; Ian F. Dunn, MD, FAANS; Ziya L. Gokaslan, MD, FAANS; Ian F. Pollack, MD, FAANS; Theodore H. Schwartz, MD, FAANS; John H. Shin, MD, FAANS

This course will provide the general neurosurgeon, resident neurosurgeon and neurosurgical advanced practice provider (APP) with brief overviews of modern principles and practice paradigms for brain tumor patient

management. Our global emphasis will focus on common clinical scenarios and management dilemmas that specialists and non-specialists encounter. The course will highlight surgical and medical strategies that have emerged over the past 12 months, as well as review the expanding roles for radiosurgery, functional mapping, molecular profiling and adjuvant therapy in this patient population. We will also review practical methods to manage and enhance quality-of-life among survivors.

Learning Objectives: After completing this educational activity, participants should be able to:

- Evaluate recent results of clinical trials related to the diagnosis, treatment and management of patients with brain tumors.
- Outline validated strategies to improve quality-of-life and symptom management for brain tumor patients.
- Compare and contrast targeted radiation treatment options for brain tumor patients.
- Identify the roles for molecular profiling in customizing adjuvant therapy choices in neuro-oncology.



SUNDAY, APRIL 23

12:30-4:30 p.m.

031 Neurotrauma and Neurocritical Care for the Practicing Neurosurgeon: MOC Review and Update



Clinic Fee: \$450

Advanced Practice Provider Fee: \$315

Candidate and Medical Student Fee: \$65

Director: Patricia B. Raksin, MD, FAANS

Assistant Director: Philip Andrew Villanueva, MD, FAANS

Faculty: Perry A. Ball, MD, FAANS; Peter John Hutchinson, MD; Joshua Eric Medow, MD, FAANS; Daniel Bernard Michael, MD, PhD, FAANS; David O. Okonkwo, MD, PhD, FAANS; Paul Vespa, MD, FAANS

This course offers a review and update of essential concepts in neurotrauma and neurocritical care for providers attending to patients with neurologic injury in the ICU setting. Those preparing for the Oral Board Exam or who desire a general overview of neurocritical care topics should find it informative as well. This course focuses on aspects of general critical care management, including ventilator management, blood pressure considerations, fluid resuscitation, nosocomial infection, sedation and analgesia, hematologic issues and nutrition as they pertain to neurosurgical patients. Experts present clinical case vignettes, each linked to a series of questions designed to test the provider's understanding of treatment concepts. Discussion and self-assessment will be enhanced through the use of an interactive audience response system (ARS), allowing participants to enter responses and view the range of peer answers in real-time.

Learning Objectives: After completing this educational activity, participants should be able to:

- Review the mechanics of contemporary ventilator management, fluid resuscitation and hemodynamic management in the trauma patient with neurologic injury.
- Discuss strategies for management of sedation and analgesia in the neurosurgical trauma patient.
- Describe the contemporary diagnosis and management of a broad spectrum of medical issues as they pertain to neurosurgical trauma patients, including coagulopathy,

nosocomial infections, endocrinopathy, renal function, nutrition and "never" events.

- Apply relevant evidence-based guidelines for the management of critically ill patients with neurologic injury.
- Review end-of-life and ethical considerations in the management of critically ill neurosurgical patients.

12:30-4:30 p.m.

032 Practical and Technical Aspects of Transsphenoidal Surgery



Clinic Fee: \$450

Candidate and Medical Student Fee: \$65

Director: Aaron A. Cohen-Gadol, MD, FAANS

Assistant Director: Edward R. Laws Jr., MD, FAANS(L)

Faculty: Deepu Banerji, MD, IFAANS; Garni Barkhoudarian, MD; David S. Baskin, MD, FAANS; J. Andre Grotenhuis, MD, PhD, IFAANS; John A. Jane Jr., MD, FAANS; James K. Liu, MD, FAANS; Ian E. McCutcheon, MD, FAANS

This Practical Clinic will review traditional transsphenoidal approaches and present contemporary modifications of the technique, including extended and endoscopic approaches. The application of advanced imaging technologies, including 3-D endoscopy and intraoperative MRI, will be described. In addition, this course will provide updates regarding current stereotactic radiosurgery and medical management for patients with pituitary tumors.

Learning Objectives: After completing this educational activity, participants should be able to:

- Describe the transsphenoidal approach with its contemporary modifications and outline current approaches to transsphenoidal and extended transsphenoidal surgery.
- Examine the role for advanced imaging (e.g. intraoperative MRI and 3-D endoscopy) in pituitary surgery.
- Outline the advantages and disadvantages of an endoscopic technique.
- Evaluate contemporary concepts in adjunctive therapies for patients with pituitary tumors.

SUNDAY, APRIL 23

12:30-4:30 p.m.

033 Alternatives to Transpedicular Approaches to Achieving Arthrodesis



Clinic Fee: \$650

Advanced Practice Provider Fee: \$455

Director: Neil R. Malhotra, MD, FAANS

Assistant Director: Edward C. Benzel, MD, FAANS

Faculty: Charles L. Branch Jr., MD, FAANS; Bruce M. Frankel, MD, FAANS; Jean-Marc Voyadzis, MD, FAANS

Both the biomechanical properties and clinical applications of lumbar fixation and stabilization technologies will be discussed as they relate to ALIF, TLIF and PLIF procedures. Alternatives to transpedicular approaches, such as vertebral augmentation, facet screws, cortical trajectory screws and minimally invasive approaches are emphasized, compared and contrasted with transpedicular approaches. During the hands-on portion, participants will perform procedures, using the alternative technologies discussed, on Sawbones models.

Learning Objectives: After completing this educational activity, participants should be able to:

- Identify the biomechanical properties of transpedicular and alternative lumbar fixation and stabilization technologies.
- Discuss clinical applications and indications of the alternative technologies.
- Discuss and perform the techniques presented in a hands-on, Sawbones-model setting.

12:30-4:30 p.m.

034 Peripheral Nerve Injuries, Entrapments and Tumors: Examination and Evaluation



Clinic Fee: \$450

Advanced Practice Provider Fee: \$315

Candidate and Medical Student Fee: \$65

Director: Robert J. Spinner, MD, FAANS

Assistant Director: Line Jacques, MD, FAANS

Faculty: Amgad Saddik Hanna, MD, FAANS; Marie-Noelle Hebert-Blouin, MD, FAANS; Rajiv Midha, MD, FAANS; Vikram C. Prabhu, MD, FAANS; Lukas Rasulic, MD, PhD; Lynda Jun-San Yang, MD, PhD, FAANS; Eric L. Zager, MD, FAANS

This clinic will provide an overview of the neurosurgeon's approach to patients with peripheral nerve disorders.

Learning Objectives: After completing this educational activity, participants should be able to:

- Discuss the indications, timing and the types of surgical intervention to treat peripheral nerve injuries and entrapment.
- Discuss the anatomy, clinical presentation and management of the most common entrapments in the upper and lower extremity.
- Discuss the indications and surgical management of benign and malignant peripheral nerve tumors.
- Review the management of peripheral nerve cases.

SUNDAY, APRIL 23

12:30-4:30 p.m.

035 Cranio-cervical and C1C2 Stabilization Techniques, Surgical Approaches



Clinic Fee: \$650

Advanced Practice Provider Fee: \$455

Candidate and Medical Student Fee: \$65

Director: Richard C. E. Anderson, MD, FAANS

Assistant Director: Michael G. Kaiser, MD, FAANS

Faculty: Adrian Thomas Hickman Casey, MD; Andrew T. Dailey, MD, FAANS; Harel Deutsch, MD, FAANS; Wayne M. Gluf, MD, FAANS; Atul Goel, MD, IFAANS; Todd Cameron Hankinson, MD, FAANS; Jesus LaFuente, MD; Daniel K. Resnick, MD, FAANS; Charles Sansur, MD, FAANS; Claudius Thome, MD, IFAANS

This clinic will include the evaluation of craniocervical anatomy and pathology. Formulation of a treatment for disorders and construction of physiological modes of therapy will be reviewed. The didactic program will be followed by hands-on demonstration.

Learning Objectives: After completing this educational activity, participants should be able to:

- Formulate craniovertebral junction surgical approaches.
- Classify and differentiate craniocervical lesions.
- Identify and treat fusions.

12:30-4:30 p.m.

Leadership Development – Senior Resident (By Recommendation Only)



Fee: \$450

Director: Erica F. Bisson, MD, FAANS

Assistant Director: Joseph S. Cheng, MD, MS, FAANS

Faculty: Frederick G. Barker II, MD, FAANS; Edward C. Benzel, MD, FAANS; Charles L. Branch Jr., MD, FAANS; Alfredo Quinones-Hinojosa, MD, FAANS; Ganesh Rao, MD, FAANS; Meic H. Schmidt, MD, MBA, FAANS; Nathan R. Selden, MD, PhD, FAANS; Krystal Lynne Tomei, MD, MPH

This program is designed to provide a mentoring forum to help develop leadership skills and learn strategies for developing a career trajectory among a group of senior neurosurgery residents. Registrants will be nominated by the program director or chair of their institution for the program. Registrants will be outstanding clinical residents with a good academic track record who possess significant leadership potential. We intend to use this program as a resource for registrants to identify areas of focus in leadership and academia and to partner with faculty on existing and future opportunities of engagement. Also, through participation in this program, the AANS and senior leadership would then be able to provide a list of individuals appropriate for young neurosurgeon leadership positions in academic institutions and other national societies.

Learning Objectives: After completing this educational activity, participants should be able to:

- Identify opportunities and skill set for residents to initiate engagement in organized neurosurgery.
- Recognize options for leadership roles in both the academic and private neurosurgical communities.
- Discuss how to balance an academic neurosurgical career as a scientist, clinician, scholar, teacher, leader, etc.

Recommendation letters will be sent to directors and chairs Nov. 4, 2016.

If you are interested in participating in this course, contact your director or chair for a recommendation.

Recommendations will be accepted until the course is full.

SUNDAY, APRIL 23

1-4:30 p.m.

Young Neurosurgeons Research Forum



Moderator: Michael Edward Ivan, MD

Expert Panel: Roberto C. Heros, MD, FAANS(L); Jeremiah Nicholas Johnson, MD; Khoi Duc Than, MD

Osler Lecture

Roberto C. Heros, MD, FAANS(L)

Named in honor of Sir William Osler, a pioneer in modern medical education and personal mentor to Harvey Cushing, the Osler Lecture is intended to help encourage, educate and inspire young neurosurgeons in their careers.

Abstract Presentations and Quest Awards

Resident, fellow and medical student abstract presentations will be evaluated by an expert panel, and four Donald O. Quest Science Awards will be presented to the top-scoring abstracts. A winner from each to the following categories will receive a cash prize for his or her presentation:

- Basic science abstract from a resident or fellow
- Basic science abstract from a medical student
- Clinical abstract from a resident or fellow
- Clinical abstract from a medical student

5-6:30 p.m.

AANS Opening Ceremonies

Moderator: Sanjay K. Gupta, MD, FAANS

Walter D. Johnson, MD, FAANS(L),
Paul Farmer, MD, PhD

7-9 p.m.

AANS Opening Reception at Microsoft Square at L.A. LIVE

Microsoft Square is an exciting, one acre, open-air plaza centrally located in the heart of L.A. LIVE and is locally coined as the "Times Square of the West." It is a premier destination for live entertainment in the downtown Los Angeles area, often used as a red carpet site for special events.

Join your colleagues for a chance to enjoy this vibrant entertainment venue for the evening and experience some wonderful California cuisine by the legendary Wolfgang Puck. A ticket is required for this event. One ticket to the Opening Reception is included in attendee, spouse and guest registrations. Additional tickets are available for purchase.





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AANS

ANNUAL SCIENTIFIC MEETING

MONDAY, APRIL 24

6:30 a.m.-4 p.m.	AANS Registration
7-9 a.m.	Breakfast Seminars 101-120
9 a.m.-4:15p.m.	AANS Exhibit Hall and Learning Center
9-9:45 a.m.	Morning Beverage Break in the AANS Exhibit Hall
9:40-9:45 a.m.	Historical Film
9:45 a.m.-1 p.m.	Plenary Session I Hunt-Wilson Lecture – Salman Khan Theodore Kurze Lecture– David B. Agus, MD AANS Presidential Address – Frederick A. Boop, MD, FAANS
1-2 p.m.	Lunch in the AANS Exhibit Hall
1:10-1:55 p.m.	Lunch-and-learn Seminars Non-CME Events
1:10-2 p.m.	Neurosurgery “In Press:” Latest Results of Clinical Trials in Neurosurgery and Allied Fields
1:15-2:45 p.m.	Advanced Practice Providers (APPs) Luncheon
2-3:30 p.m.	Operative Nuances I: Handling Difficult Intraoperative Moments 3-D Video Presentation
2-5:30 p.m.	Scientific Sessions I-VII Scientific Session I: Tumor Scientific Session II: Spine Scientific Session III: Stereotactic and Functional Surgery Scientific Session IV: Pediatrics Scientific Session V: Cerebrovascular Scientific Session VI: Neurotrauma and Critical Care Scientific Session VII: AANS/CSNS Socioeconomic
3:30-4 p.m.	Afternoon Beverage Break in the AANS Exhibit Hall
5:30-6:30 p.m.	Joint Annual Business Meeting of the American Association of Neurological Surgeons (AANS) and the American Association of Neurosurgeons (AAN)
6:30-8:30 p.m.	Dinner Symposium: Novel Techniques and Strategies to Treat Spine Disease in the Aging Population Dinner Symposium: Surgical Microscopy: New Techniques and Technologies Dinner Symposium: Advanced Practice Providers (APPs): Advances in Wound Closure: Improving Patient Outcomes with New Products and Techniques
6:30-9:30 p.m.	AANS Section on the History of Neurological Surgery Annual Dinner at Cicada Restaurant and Club
8-9:30 p.m.	AANS International Reception at the GRAMMY Museum and Target Terrace

MONDAY, APRIL 24

7-9 a.m.

Breakfast Seminars 101-120

Fee: \$100 each, breakfast will be served in each room.
\$65 each for Candidates and Medical Students

101 Practice Pearls for the Outpatient Neurosurgical Advanced Practice Provider (APP)



Moderator(s): Marianne E. Langlois, MS, PA-C; Cristina Matthews, MSN, FNP-BC

Panelists: Kent Kilbourn, PA-C; Donna June Purviance; Shelley Stratford, NP

Advanced practice providers (APPs) play an important role in the outpatient Neurosurgical clinic. This session will discuss issues important to the provider whose practice spans the continuum of care from outpatient clinic to the hospital setting. Topics to be discussed include: evaluation and management of non-surgical low back pain, evaluation and work up of the patient with peripheral nerve diseases, neurosurgical device management and troubleshooting and postoperative complications that present to the outpatient clinic.

Learning Objectives: After completing this educational activity, participants should be able to:

- Distinguish the physical findings that suggest radiculopathy as opposed to peripheral neuropathy.
- Utilize a detailed peripheral nerve history and physical examination.
- Discuss evaluation techniques and non-surgical treatment options available for patients with low back pain.
- Discuss the various conditions for which neurosurgical patients may have implanted devices as well as programming and troubleshooting.
- Differentiate common postoperative complications as seen in the outpatient clinic and potential life-threatening postoperative complications.

102 Skating to Where the Puck Will Be: Strategies for Neurosurgery Practices and Programs to Compete in Health Care's Future



Moderator: Dong H. Kim, MD, FAANS

Panelists: Domagoj Coric, MD, FAANS; Robert M. Friedlander, MD, FAANS; John Kevin Ratliff, MD, FAANS; Karin R. Swartz, MD, FAANS

Faculty discuss how health systems evaluate neurosurgical practices for purchase or alignment; the role of private and group practices in the hub-and-spoke model of health care delivery; how to align with accountable care organizations (ACOs) without becoming an employee; and managing the impact of publicly-available practice data and outcomes information. By predicting the future of health care, neurosurgeons should be able to position themselves strategically to lead the way using decision-driven change management.

Learning Objectives: After completing this educational activity, participants should be able to:

- Describe the financial models available for working with hospitals and health systems.
- Evaluate the neurosurgeon's financial strategy in ACO models.
- Support the reputation of neurosurgeons in the current culture of public data transparency.
- Identify practice opportunities to improve physician satisfaction and sustainability.

MONDAY, APRIL 24

103 Surgical Approaches to the Lateral Skull Base



Moderator: Ali Sultan, MD

Panelists: Jeremy N. Ciporen, MD, FAANS; John G. Golfinos, MD, FAANS; Lars Poulsen, MD; Harry R. van Loveren, MD, FAANS; William Alexander Vandergrift III, MD, FAANS

This seminar focuses on clinical indications, technical aspects, complication avoidance, management and reconstructive techniques for tumors and vascular lesions involving or approached via the lateral skull base. The emphasis is on identification of anatomic structures critical for navigating the skull base safely from a lateral approach. The applicability of adjuncts to these surgical approaches, including endoscopy, frameless-guidance, intraoperative monitoring and intraoperative imaging, is also addressed.

Learning Objectives: After completing this educational activity, participants should be able to:

- Describe the indications and contraindications for the use of individual skull base surgical approaches based on their anatomic nuances.
- Discuss the preoperative, intraoperative and postoperative management of patients undergoing lateral skull base surgery.
- Determine the appropriate use of supplementary technologies to facilitate lateral base surgery, including endoscopy, frameless-guidance, intraoperative monitoring and intraoperative imaging.

104 Challenging Spinal Cases: Pearls and Pitfalls



Moderator: Daniel Jin Hoh, MD, FAANS

Panelists: Andreas K. Demetriades, MBBS, FRCS; Amr El Shawarby, MD; Asdrubal Falavigna, MD, PhD, IFAANS; Eric J. Woodard, MD, FAANS

This seminar is designed to present challenging “real-life” spine cases that experienced faculty encountered and to allow discussion of these cases.

Learning Objectives: After completing this educational activity, participants should be able to:

- Discuss how experienced surgeons overcome decision-making obstacles.
- Explain the nuances of the clinical decision-making process.

105 Cervical Spondylotic Myelopathy



Moderator: Iain H. Kalfas, MD, FAANS

Panelists: Robert F. Heary, MD, FAANS; Michael G. Kaiser, MD, FAANS; Praveen V. Mummaneni, MD, FAANS; Hiroshi Nakagawa, MD, IFAANS

This seminar will look at how cervical myelopathy can be caused by disc herniation, hard bone spurring, congenital stenosis, OPLL and spondylolisthesis. In addition, there can be instability and deformity. Multiple cases will be presented, and the participants, followed by the panel, will review treatment options and guidelines.

Learning Objectives: After completing this educational activity, participants should be able to:

- Identify the various pathologies in myelopathy.
- Distinguish the operative treatment options for cervical spondylotic myelopathy and review those operative success/failure rates.

MONDAY, APRIL 24

106 Anticoagulation for the Neurosurgeon and Hemostasis in Neurosurgery



Moderator: Ali Sultan, MD

Panelists: Hugh J. L. Garton, MD, FAANS; Christopher Daniel Roark, MD, FAANS; Bruce Tranmer, MD, FAANS

This course will update the neurosurgeon on deep vein thrombosis (DVT) prophylaxis, reversal of coumadin, the use of Factor 7a and restitution of coagulation after neurosurgery procedures.

Learning Objectives: After completing this educational activity, participants should be able to:

- Discuss appropriate use of Factor 7a.
- Explain how to rapidly reverse the effects of and discuss when it is safe to restart coumadin after neurosurgery procedures.
- Discuss the most commonly used DVT prophylaxis measures.

107 Return-to-play After Sports Injury I: Concussion



Moderator: Mark D. Krieger, MD, FAANS

Panelists: Julian E. Bailes Jr., MD, FAANS; David Daniel Gonda, MD; Joseph Charles Maroon, MD, FAANS(L); Mark R. Proctor, MD, FAANS; Allen Kent Sills, MD, FAANS

The identification and management of sports-related injuries has received much recent attention in the press and in neurosurgical literature. This seminar will address the neurosurgeon's role in evaluating and clearing children, high school athletes, college athletes and professional athletes with concussions.

Learning Objectives: After completing this educational activity, participants should be able to:

- Explain the standard tests and techniques for evaluating the injured athlete.
- Describe the pathophysiology of sports-related injuries.
- Apply the data and expert opinion on return-to-play guidelines to their practice.



MONDAY, APRIL 24

108 If I Could Do That Case Over Again: Discussion of Complications of Cranial Surgery



Moderator: Paul Joseph Camarata, MD, FAANS

Panelists: Oliver Bozinov, MD, IFAANS; Tonn Joerg-Christian; Peter Nakaji, MD, FAANS; M. Necmettin Pamiir, MD, IFAANS

The objective of this course is to highlight the cases that had complications. The discussion includes relevant anatomy, approaches to the lesion in question (open and endoscopic) and how to choose the correct approach for a given lesion, including tumors and complex aneurysms. In addition, practical aspects of how to avoid complications during surgery will be discussed. Attendees are encouraged to bring interesting and difficult cases for discussion.

Learning Objectives: After completing this educational activity, participants should be able to:

- Review the relevant anatomy and approaches to the lesion in discussion and distinguish between various approaches.
- Identify techniques to avoid complications during surgery.
- Manage complications once they have occurred.

109 Resective Strategies for Epilepsy



Moderator: Gerald A. Grant, MD, FAANS

Panelists: Brent Randle O'Neill, MD, FAANS; David W. Roberts, MD, FAANS; Michael David Sather, MD, FAANS; Nitin Tandon, MD, FAANS

This seminar will examine the preoperative evaluation for surgery, as well as emphasize the changing description of the epileptogenic focus and how this may alter new surgical therapies.

Learning Objectives: After completing this educational activity, participants should be able to:

- Describe the common preoperative evaluations for surgery.
- Describe what each evaluation provides.
- Recognize how surgical approaches are made based on these evaluations.



MONDAY, APRIL 24

110 Open vs. Endoscopic Approaches to the Anterior Skull Base



Moderator: Chandranath Sen, MD, FAANS

Panelists: Ossama Al-Mefty, MD, FAANS; Carlos A. David, MD, FAANS; Fred Gentili, MD, FAANS; Theodore H. Schwartz, MD, FAANS

This seminar will review the pathologic conditions affecting the anterior cranial base and surgical strategies employed for extradural, intradural and combined compartment lesions. Panelists will discuss steps in avoidance and management of complications, demonstrate specialized (expert) surgical approaches and indicate the appropriate application of emerging technology to anterior cranial base problems.

Learning Objectives: After completing this educational activity, participants should be able to:

- Describe the various approaches to the anterior skull base.
- List pathologies that would indicate use of an anterior skull base approach.

111 Peripheral Nerve Entrapment Syndromes



Moderator: Eric L. Zager, MD, FAANS

Panelists: Allan J. Belzberg, MD, FAANS; Line Jacques, MD, FAANS; Lynda Jun-San Yang, MD, PhD, FAANS

This seminar will discuss the evaluation and management of peripheral nerve-entrapment syndromes.

Learning Objectives: After completing this educational activity, participants should be able to:

- Describe the clinical presentation and diagnostic evaluation of the various entrapment syndromes.
- Discuss the conservative and surgical management options of peripheral nerve-entrapment syndromes.
- Describe the options and management for recurrent nerve entrapments.

112 Adult Low-grade Gliomas



Moderator: Linda M. Liau, MD, PhD, FAANS

Panelists: Daniel P. Cahill, MD, PhD, FAANS; Susan M. Chang, MD; Andrew H. Kaye, MD, IFAANS; Ugur Ture, MD, IFAANS; Manfred Westphal, MD, PhD, IFAANS

This seminar will provide an update on current evaluation and management of low-grade gliomas. The panel will address the variety of tumors and compare outcomes from different treatment strategies.

Learning Objectives: After completing this educational activity, participants should be able to:

- Describe the range of pathologies included in low-grade gliomas and pertinent molecular markers for diagnosis and prognosis.
- Distinguish between different management strategies for low-grade gliomas.
- Discuss surgical approaches, preoperative imaging and intraoperative tools for resection of low-grade gliomas.



MONDAY, APRIL 24

113 Complication Management and Avoidance in Vascular Neurosurgery



Moderator: Louis J. Kim, MD, FAANS

Panelists: Cargill H. Alleyne Jr., MD, FAANS; Sepideh Amin-Hanjani, MD, FAANS; Christopher M. Loftus, MD, FAANS; Robert H. Rosenwasser, MD, FAANS

Participants listen to and engage in active discussions with cerebrovascular experts regarding the nuances of complication avoidance and management for aneurysms, arteriovenous malformations (AVMs) and cavernous malformations. Both microsurgical and endovascular strategies are addressed. Gain invaluable insights on how to elude trouble in the operating room and angiography suites from a distinguished panel of experts. Didactic information includes every step of the clinical process: judicious case selection and preparation, careful application of the right tools, intraoperative technical pearls and postoperative management.

Learning Objectives: After completing this educational activity, participants should be able to:

- Describe how to properly evaluate and perform workup for complex cerebrovascular problems and formulate a treatment strategy.
- Recall the angioarchitectural features that distinguish a straightforward aneurysm, AVM or cavernous malformation case from a higher-risk case.
- Apply technical pearls that can avert certain disasters in the operating room or angiography suite.

114 Fluorescence Technologies in Tumor Neurosurgery: Present and Future Directions



Moderator: Nader Sanai, MD, FAANS

Panelists: Khaled M. A. Aziz, MD, PhD, FAANS; Aaron A. Cohen-Gadol, MD, FAANS; Costas G. Hadjipanayis, MD, PhD, FAANS

This course will review the present and future technologies for intraoperative evaluation of neoplastic and vascular lesions. The participants will become familiar with fluorescence-guided resection of high-grade gliomas and management of vascular lesions. Both 5-ALA and fluorescein fluorophores will be discussed.

Learning Objectives: After completing this educational activity, participants should be able to:

- Identify the advantages and disadvantages of current fluorophores.
- Discuss the details related to current intraoperative imaging technologies available for the above fluorophores.
- Evaluate the current research aimed at advancing this field.



MONDAY, APRIL 24

115 European Traditions in Neurosurgery: Origins, Differences, Similarities, Parallels, and Interplay with American



Moderator: T Forcht Dagi, MD, MPH, MBA, DMedSc, FAANS

Panelists: Samuel H. Greenblatt, MD, FAANS(L); Charles J. Prestigiacomo, MD, FAANS; Mark C. Preul, MD; Bente Skeie, MD, PhD; Michel Zerah, PhD

An examination of the schools and traditions of neurosurgery in Europe reveals many similarities and parallels to the U.S. Just as in the U.S., it is possible to trace the heritage of almost all European neurosurgeons to a small number of pioneers. For example, in the U.S., Harvey Cushing exerted tremendous direct and indirect influence, and a Society of British Neurological Surgeons (SBNS) was established early on. There are, however, meaningful, unique and intriguing differences, illustrated most effectively, perhaps, through biography. This discussion touches upon important figures, their impact on modern neurosurgery, accomplishments and the scientific and socio-cultural differences in education, training, development and professionalization of British, French, German, Scandinavian and Russian Neurosurgery.

Learning Objectives: After completing this educational activity, participants should be able to:

- Describe the scientific environment that led to the development of neurosurgery in 19th and 20th century Europe.
- Discuss the unique origins, identities and traditions of neurosurgery in Europe.
- Review the founding, central figures in British, French, German, Scandinavian and Russian neurosurgery.

116 Neurosurgery Resident Wellness



Moderator: Raymond Dwight Turner IV, MD, FAANS

Panelists: Kyle Michael Fargen, MD; Ron Jones, MS; Benjamin C. Kennedy, MD; Alejandro M. Spiotta, MD

This course will discuss how wellness and fitness relate to learning capacity and stress management. The history of fitness and sport and how it relates to the U.S. educational system and geopolitical environment over the past century will set the basis for the understanding of our current educational environment. The process of learning what takes place inside residency training, including the unique stressors that effect the capacity of trainees to develop into neurosurgeons will be explored as we define the optimal habits required to sustain a career beyond residency.

Learning Objectives: After completing this educational activity, participants should be able to:

- Identify stressors specific to resident wellness.
- Recognize psychosocial issues that occur during residency (depression, sleep disorders, nutritional issues, anxiety, etc.).
- Discuss mechanism to optimize resident wellness.
- Discuss mechanisms to optimize resident learning.



MONDAY, APRIL 24

117 CSNS — Adapting Your Practice for 2017 and Beyond



Moderators: Brian Nahed, MD; Ann R. Stroink, MD, FAANS

Panelists: Sonia V. Eden, MD, FAANS; Eric Eskioglu, MD, FAANS; John Kevin Ratliff, MD, FAANS; Judith Rosman, JD

With the challenges of the contemporary health care environment featuring declining reimbursements, shifting payment models, burdensome regulatory demands and the role of metrics in determining quality and value: how will your practice adapt and succeed? This course will explore the advantages and disadvantages of current and emerging practice models, enhance professional communication skills with health care administrators regarding business development and necessary infrastructure, sharpen your ability to resolve and avoid conflicts regarding your compensation in an employed setting and develop efficient strategies to collect and manage metrics to augment leverage and quality.

Learning Objectives: After completing this educational activity, participants should be able to:

- Describe current and emerging practice models and the advantages and disadvantages of each.
- Discuss important elements in formulating a business plan and communicating in a corporate environment.
- Demonstrate techniques to resolve and avoid conflicts regarding your compensation in an employed setting.
- Outline the impact of quality metrics and role in value-based payment models.
- Develop an efficient plan to monitor and manage metrics.

118 Multidisciplinary Management of Brain Metastases



Moderators: Manmeet Ahluwalia, MD; Steven N. Kalkanis, MD, FAANS

Panelists: Anthony L. Asher, MD, FAANS; Paul David Brown, MD; Ichiro Nakano, MD, MSc

Brain metastases are the most common intracranial tumor and are an increasingly important aspect of cancer management in the era of targeted cancer therapies. Recent advances in the biology, surgical and multimodality management of brain metastases have brought profound and rapid changes to this field. This course addresses the new biology, surgical, radiation and medical therapy of brain metastases in the era of modern cancer genomics.

Learning Objectives: After completing this educational activity, participants should be able to:

- Discuss advances in the biology of cancer metastases and the implications for medical management.
- Differentiate the modern roles of radiosurgery and whole-brain radiation in metastasis management.
- Recognize the role of targeted therapy and immunotherapy in management of brain metastases and the most common complications of these treatments.

MONDAY, APRIL 24

119 Advanced Lateral Transposas MIS Techniques: Expanding LLIF Indications



Moderator: Adam S. Kanter, MD, FAANS

Panelists: Dean Chou, MD, FAANS; John C. Liu, MD, FAANS; John E. O'Toole, MD, FAANS; Chad J. Prusmack, MD, FAANS; Juan Santiago Uribe, MD, FAANS

This Breakfast Seminar elaborates on the advanced indications and applications of the lateral lumbar interbody fusion (LLIF) procedure and includes pearls and complication-avoidance techniques through case-based presentations.

Learning Objectives: After completing this educational activity, participants should be able to:

- Describe the advanced indications for LLIF including preoperative considerations that enable safe lateral access in the thoracic and lumbar spine.
- Discuss surgical technique when LLIF is employed in advanced corpectomy and deformity procedures.
- Explain how complications arise during advanced LLIF procedures, how to avoid them and how to manage them when they do occur.

120 Emerging Indications in Neuromodulation Surgery



Director: Andre Guelman Machado, MD, PhD

Panelists: Kelly Douglas Foote, MD, FAANS; Andres M. Lozano, MD, PhD, FAANS

The objective of this course is to discuss the culture of safety implementation in performing these minimally invasive surgeries, as well as complication avoidance with stereotactic and functional neurosurgery. This seminar also highlights the different techniques available to manage these complications.

Learning Objectives: After completing this educational activity, participants should be able to:

- Discuss safety measures while performing stereotactic and functional neurosurgery.
- Identify complications associated with these surgeries.
- Design strategies to manage these complications occurring during these surgeries.

9 a.m.-4:15 p.m.

AANS Exhibit Hall and Learning Center

9-9:45 a.m.

Morning Beverage Break in the AANS Exhibit Hall



MONDAY, APRIL 24

9:40-9:45 a.m.

Historical Film

Presented immediately prior to Plenary Sessions, these video vignettes examine the History of Hollywood, Los Angeles History of Neurosurgery and Neurosurgeons in the Movies and TV. Written, recorded and edited by fellow neurosurgeons, these short videos are meant to expound the 2017 AANS Annual Scientific Meeting theme: *A World of Innovation*.



9:45 a.m.-1 p.m.

Plenary Session I

Hunt-Wilson Lecture

Salman Khan

Theodore Kurze Lecture

David B. Agus, MD

AANS Presidential Address

Frederick A. Boop, MD, FAANS

1-2 p.m.

Lunch in the AANS Exhibit Hall



Lunch-and-learn Seminars

1:10-1:55 p.m.

Endoscopic vs. Transcranial Approaches in Electrosurgery

Presented by Codman Neuro



1:10-1:55 p.m.

How Expandable Technology Has Changed My Practice

Presented by Globus Medical



Expandable implants have made a profound impact on surgeons looking to minimize impaction and restore disc height. Learn from surgeons who have experienced the benefits of expandable technology.

1:10-1:55 p.m.

PRESTIGE LP™ Cervical Disc Adjacent Two-Level Arthroplasty: Design Rationale, Surgical Technique and 7-year Data Demonstrating Clinical Superiority

Presented by Medtronic



Attendees of this workshop will gain a full appreciation of the PRESTIGE LP™ 2-level indications, including the clinical data that supported this approval. Additionally, our distinguished faculty will review the PRESTIGE LP™ implant design and surgical technique, including patient selection, anatomical considerations and appropriate strategies to avoid and manage surgical complications.

MONDAY, APRIL 24

1:10-1:55 p.m.

Advanced Techniques in Achieving Integrated Spinal Alignment

Presented by NuVasive, Inc.



Speakers: Regis W. Haid Jr., MD, FAANS; Christopher I. Shaffrey, MD, FAANS; Juan Uribe, MD, FAANS

1:10-1:55 p.m.

Tritanium®: A Novel Highly Porous Titanium Alloy for Interbody Fusion Procedures

Presented by Stryker



Speaker: Matthew J. McGirt, MD, FAANS

Stryker's proprietary Tritanium In-Growth Technology is inspired by the microstructure of cancellous bone and enabled by Stryker's patent-protected 3-D additive manufacturing process. This material is designed to promote long-term stability through bone in-growth and biological fixation.¹ While the Tritanium PL Cage was the first spinal implant manufactured using this unique technology, Stryker's Spine division is excited to expand the use of Tritanium across its interbody device portfolio over the next few years.

¹Tritanium technology claim support memo, PROJ 43909

1:10-2 p.m.

Neurosurgery "In Press": Latest Results of Clinical Trials in Neurosurgery and Allied Fields



Director: Frederick G. Barker II, MD, FAANS

Co-Director: Aviva Abosch, MD, PhD, FAANS

Faculty: Sepideh Amin-Hanjani, MD, FAANS; Daniel P. Cahill, MD, PhD, FAANS; Zoher Ghogawala, MD, FAANS; Uzma Samadani, MD, PhD, FAANS

As neurosurgeons increasingly practice as part of multidisciplinary teams, major clinical advances are sometimes reported first at meetings other than the AANS Annual Scientific Meeting. Vital information for daily neurosurgical practice might be reported at a general oncology meeting, a stroke meeting in Europe or an orthopaedic spine meeting. Few neurosurgeons can attend every important allied meeting even within one narrow subspecialty, and none can keep abreast of all of the fields that make up modern neurosurgery. Yet these new advances can be central to neurosurgical practice. In this session, section experts have combed the previous year's allied-specialty meetings across the globe for important clinical trial advances every neurosurgeon should know – brain tumors, interventional vascular techniques, spine techniques and more. Key findings are placed in context for both practicing neurosurgeons and residents in this lunchtime session.

Learning Objectives: After completing this educational activity, participants should be able to:

- Review important advances relevant to neurosurgical clinical practice that were reported at major medical meetings (other than the AANS and CNS) during the last year.
- Apply these findings in the context of existing practice.
- Highlight ongoing trials in allied clinical fields – where neurosurgery is headed in the future.



MONDAY, APRIL 24

Advanced Practice Providers (APPs) Luncheon

1:15-2:45 p.m.

More Than Self-care: Strategies for Understanding and Addressing the Impact of Compassion Fatigue on Neurosurgical Practice



Fee: \$25

Moderators: Marianne E. Langlois, MS, PA-C; Cristina Matthews, MSN, FNP-BC

Speaker: Ellen J. Godena, EdM, MSW, LICSW, MGH

Location: JW Marriott Los Angeles L.A. LIVE

Learning Objectives: After completing this educational activity, participants should be able to:

- Define compassion fatigue (CF) and secondary traumatic stress (STS) as occupational hazards within the field of neurosurgical practice.
- Introduce a method for reflective practice to highlight the present impact of CF and STS on individual attendees.
- Acquire specific skills and develop strategies for minimizing the impact of CF and STS in personal organizational practice.

2-3:30 p.m.

Operative Nuances I: Handling Difficult Intraoperative Moments 3-D Video Presentation

Director: Aaron A. Cohen-Gadol, MD, FAANS

Faculty: William T. Couldwell, MD, PhD, FAANS; Juan Carlos Fernandez-Miranda, MD, IFAANS

This 90-minute session will review important technical nuances for improving patient outcomes during complex cranial cases. Detailed surgical videos of different procedures for tumorous and vascular lesions by the surgical masters will be reviewed using 3-D, high-definition videos to maximize the learning experience for the viewers.

This session will be interactive, and the audience will be able to ask questions.

Learning Objectives: After completing this educational activity, participants should be able to:

- Review indications for surgical treatment of complex deep-seated neoplastic and vascular lesions.
- Identify general techniques for resection of complex lesions.
- Recognize operative nuances to advance patient safety during challenging intraoperative moments.



MONDAY, APRIL 24

2-5:30 p.m.

Scientific Sessions I-VII

Scientific Session I: Tumor



Ronald L. Bittner Lecture

Russell R. Lonser, MD, FAANS

Scientific Session II: Spine



Sonntag Lecture

Vincent C. Traynelis, MD, FAANS

Scientific Session III: Stereotactic and Functional Surgery



Scientific Session IV: Pediatrics



Donald D. Matson Lecture

Arthur E. Marlin, MD, FAANS

Speaker: W. Jerry Oakes, MD, FAANS

Neurosurgical Face-off

Lissa Catherine Baird, MD

Daniel H. Fulkerson, MD, FAANS

Scientific Session V: Cerebrovascular



Yasargil Lecture

L. Nelson Hopkins III, MD, FAANS

Speaker: Fady T. Charbel, MD, FAANS

Scientific Session VI: Neurotrauma and Critical Care



Scientific Session VII: AANS/CSNS Socioeconomic Section



Speaker: Beth Ann Haynes, MD

3:30-4 p.m.

Afternoon Beverage Break in the AANS Exhibit Hall



MONDAY, APRIL 24

5:30-6:30 p.m.

Joint Annual Business Meeting of the American Association of Neurological Surgeons (AANS) and the American Association of Neurosurgeons (AAN)

6:30-8:30 p.m.

Dinner Symposium: Novel Techniques and Strategies to Treat Spine Disease in the Aging Population



Fee: \$195

Moderator: Praveen V. Mummaneni, MD, FAANS

Panelists: Dean Chou, MD, FAANS; Daniel Jin Hoh, MD, FAANS; David O. Okonkwo, MD, PhD, FAANS; Paul Park, MD, FAANS; Michael Y. Wang, MD, FAANS

Location: Drago Centro

This symposium features a comprehensive series of didactic lectures with internationally-recognized faculty illustrating the state-of-the-art management of cervical, thoracic and lumbar spine disease in the elderly. This CME activity emphasizes treatment of traumatic disorders, degenerative disease, spinal tumors and spinal deformity the salient aspects of perioperative management, MIS and open surgical techniques, spinal navigation and other technological advances that limit complications will be discussed.

Learning Objectives: After completing this educational activity, participants should be able to:

- Identify the fundamentals of the surgical decision-making process involving disorders of the cervical, thoracic and lumbar spine (including spinal tumor, trauma, degenerative, deformity).
- Identify MIS and open options for anterior and posterior surgical approaches to the cervical, thoracic and lumbosacral spine.
- Discuss the potential complications for various decompression and fixation techniques and how to limit complications by using technology (MIS, navigation, robotics).

Chef Celestino Drago's contemporary Italian masterpiece, Drago Centro offers innovative twists and contemporary flairs to authentic Italian dishes. Drago Centro, has become one of the foremost dining establishments in downtown Los Angeles, featuring stunning contemporary design and a demonstration kitchen housed in what was once the vault of City National Bank.



MONDAY, APRIL 24

6:30-8:30 p.m.

Dinner Symposium: Surgical Microscopy: New Techniques and Technologies



Fee: \$195

Moderator: Carlos David, MD

Panelists: Cleopatra Charalampaki, MD, PhD; Jacques J. Morcos, MD, FAANS; William T. Couldwell, MD, PhD, FAANS; Winfield S. Fisher III, MD, FAANS

Location: Flemings

This symposium will include didactic lectures from experienced faculty on the usage of surgical microscopy and new technological features. This CME activity will provide an evidence-based review and update on the latest microscope technologies.

Learning Objectives: After completing this educational activity, participants should be able to:

- Describe how best to use the operating microscope in the treatment of cerebral aneurysms.
- Describe the usage of dye fluorescence in evaluating blood flow.
- Describe advantages and limitations of the surgical microscope in the treatment of complex tumors.

Founded in 1998 by restaurateurs Paul Fleming and Bill Allen, the first Fleming's opened in Newport Beach, Ca. The vision was to create a unique steakhouse experience with an emphasis on generous hospitality and an inviting atmosphere with the finest aged USDA Prime beef. In addition to inspired service and expertly prepared Prime Steak, the founders focused on an exceptional selection of wines for guests to explore.



6:30-8:30 p.m.

Dinner Symposium: Advanced Practice Providers (APPs): Advances in Wound Closure: Improving Patient Outcomes with New Products and Techniques



Fee: \$85

Moderators: Marianne E. Langlois, MS, PA-C; Cristina Matthews, MSN, FNP-BC

Panelist: Virginia Capasso, PhD, ANP-BC, CWS

Location: Rosa Mexicana

This course will provide an overview of interventions to improve wound healing and management including wound bed assessment and preparation for optimal healing. Advancements in wound healing methods and innovative products will also be discussed with a focus on non-healing wounds.

Learning Objectives: After completing this educational activity, participants should be able to:

- Review patient outcomes related to wound closure and breakdown.
- Discuss advances in wound closure techniques and products.
- Provide an overview of advances in wound closure including suture and suture-less products.

Rosa Mexicano opened in 1984 and serves traditional, authentic Mexican cuisine. With its bright colors, Mexican artwork and homemade food, all are sure to enjoy the relaxed, stylish setting in the heart of L.A. LIVE. Rosa Mexicano is a perfect combination of festive atmosphere and delicious cuisine.





MONDAY, APRIL 24

6:30-9:30 p.m.

AANS Section on the History of Neurological Surgery Annual Dinner at Cicada Restaurant and Club

All attendees/guests must reserve a ticket in advance.



Michel Zerah, PhD

Setti S. Rengachary, MD Memorial Lecture:
Neurosurgeons in Cinema and TV

Fee: \$150

Location: Cicada Restaurant and Club

Michel Zerah, PhD, is head of the department of pediatric neurosurgery in the Hopital des Enfants Malades (Necker Hospital) in Paris, France. He is president of the French Society for Pediatric Neurosurgery, past president of the European society of Pediatric Neurosurgery and treasurer of the French Language Society of Neurosurgery. He is also a member of the French National Academy of Surgery.

He has been trained in Paris and has a PhD in Mathematics, Statistics and Computer Science. He has been in charge of the European course of Pediatric Neurosurgery from 2002

to 2014. He is particularly involved in pediatric neurosurgical training in developing countries, specifically in Africa and Asia, and since 1998, he has developed a special collaboration with the Pediatric Neurosurgery organization in South Vietnam. He has published 199 medical articles, more than 40 book chapters and has given more than 350 international invited lectures. For this lecture, Dr. Zerah will be discussing how neurosurgery and neurosurgeons have always occupied a special position in society. This presentation will try to present the evolution of this image through movies and television series from Dr. Viktor Frankenstein to Dr. Derek Shepherd.

Nestled among French marble reaching to the 30-foot ceiling, elaborate English oak trim and a custom-designed bar and lounge, diners will be immersed in the 1920s Art Deco atmosphere of the Cicada Restaurant and Club located in The Oviatt Building. Labeled a cultural and historical monument, The Oviatt Building is rich with Hollywood history and continues to serve as a local entertainment hot-spot playing host to various lavish events including Emmy parties for *Frasier*, *Will & Grace* and Warner Bros as well as a featured film location for movies and television series such as *Pretty Woman*, *Indecent Proposal* and *Wallstreet* and *Scandal*, *Mad Men* and *The West Wing*.



MONDAY, APRIL 24

8-9:30 p.m.

AANS International Reception at the GRAMMY Museum and Target Terrace

All attendees/guests must reserve a ticket in advance.

Join leaders from the AANS, international neurosurgical organizations and special dignitaries during the 2017 AANS International Reception at the GRAMMY Museum and Target Terrace for an evening of conversation, refreshments and hors d'oeuvres. Located on the fifth floor

of the GRAMMY Museum, the Target Terrace is a modern, outdoor mezzanine with phenomenal views of downtown Los Angeles and the world famous Hollywood sign. The GRAMMY Museum features a rich collection of historical music artifacts from Grammy-Award-winning musicians, including costumes and instruments, hand-written lyrics, records and audio/video recordings. While there is no cost to the International Attendees and a modest cost of \$25 for U.S. and Canadian physicians, a ticket is required for this event: make sure to reserve yours today.





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AANS

ANNUAL SCIENTIFIC MEETING

6:30 a.m.-4 p.m.	AANS Registration
7-9 a.m.	Breakfast Seminars 201-220
9 a.m.-4:15 p.m.	AANS Exhibit Hall and Learning Center
9-9:45 a.m.	Morning Beverage Break in the AANS Exhibit Hall
9:40-9:45 a.m.	Historical Film
9:45 a.m.-1 p.m.	Plenary Session II Richard C. Schneider Lecture – Kevin J. Tracey, MD Cushing Medalist – Robert F. Spetzler, MD, FAANS Cushing Orator
1-2 p.m.	Lunch in the AANS Exhibit Hall
1:10-1:55 p.m.	Lunch-and-learn Seminars Non-CME Event
1:15-2:45 p.m.	Young Neurosurgeons Luncheon
2-3:30 p.m.	Operative Nuances II: How to Stay out of Trouble During Microsurgery 3-D Video Presentation
2-5:30 p.m.	Section Sessions AANS/CNS Section on Disorders of the Spine and Peripheral Nerves — Spine Section Session AANS/CNS Section on Pain AANS/CNS Section on Pediatric Neurological Surgery AANS/CNS Section on Tumors I AANS Section on the History of Neurological Surgery
2-5:30 p.m.	Advancements in Neurotrauma Care
3:30-4 p.m.	Afternoon Beverage Break in the AANS Exhibit Hall
6:30-8:30 p.m.	Dinner Symposium: Career Advancement to Health System Leadership Dinner Symposium: New Solutions for Aneurysm Treatment

TUESDAY, APRIL 25

TUESDAY, APRIL 25

7-9 a.m.

Breakfast Seminars 201-220

Fee: \$100 each, breakfast will be served in each room.
\$65 each for Candidates and Medical Students

201 So I Want to Write a Neurosurgical Manuscript and Make Sure It Gets Published



Moderator: Anil Nanda, MD, FAANS

Panelists: Edward C. Benzel, MD, FAANS; Tiit I. Mathiesen, MD; Nelson M. Oyesiku, MD, PhD, FAANS; James T. Rutka, MD, PhD, FAANS

This course will familiarize neurosurgeons, residents and fellows with the art of translating scientific work into a meaningful and scientifically robust language. It will discuss the various formats of an article, as well as the ways of illustrating work in the form of graphs, tables, figures and artistic drawings. In addition, time will be spent on how to read an article scientifically and understand its strengths and weaknesses.

Learning Objectives: After completing this educational activity, participants should be able to:

- Review various types of articles, including original research, review articles and case reports.
- Recognize the various forms of plagiarism and how to avoid them.
- Identify how to use appropriate illustrations and statistical tests.

202 Return-to-play After Sports Injury II: Spine Injury



Moderator: Michael W. Groff, MD, FAANS

Panelists: Douglas L. Brockmeyer, MD, FAANS; Daniel C. Lu, MD, PhD, FAANS; Christina Marie Notarianni, MD, FAANS; Srinivas K. Prasad, MD, FAANS

The identification and management of sports-related injuries has received much recent attention in the press and in neurosurgical literature. This seminar will address the neurosurgeon's role in evaluating and clearing children, high school athletes, college athletes and professional athletes who have spine injuries.

Learning Objectives: After completing this educational activity, participants should be able to:

- Explain the standard tests and techniques for evaluating the injured athlete.
- Describe the pathophysiology of sports-related injuries of the spine.
- Apply the data and expert opinion on return-to-play guidelines to their practice.



TUESDAY, APRIL 25

203 Chiari Malformations: Diagnosis, Treatments and Failures



Moderator: David Delmar Limbrick Jr., MD, PhD, FAANS

Panelists: Ulrich Batzdorf, MD, FAANS(L); Douglas L. Brockmeyer, MD, FAANS; Gerardo Guinto-Balanzar, MD, FAANS; Mark R. Iantosca, MD, FAANS; Karin M. Muraszko, MD, FAANS

This seminar will focus on the pathophysiology of Chiari malformations, the indications for treatment, therapeutic options and the basis of their success and failure.

Learning Objectives: After completing this educational activity, participants should be able to:

- Describe the current concepts of the pathophysiology of Chiari malformations.
- Discuss the options and recognize the indications for treatment of Chiari malformations.

204 Intracranial Endoscopy



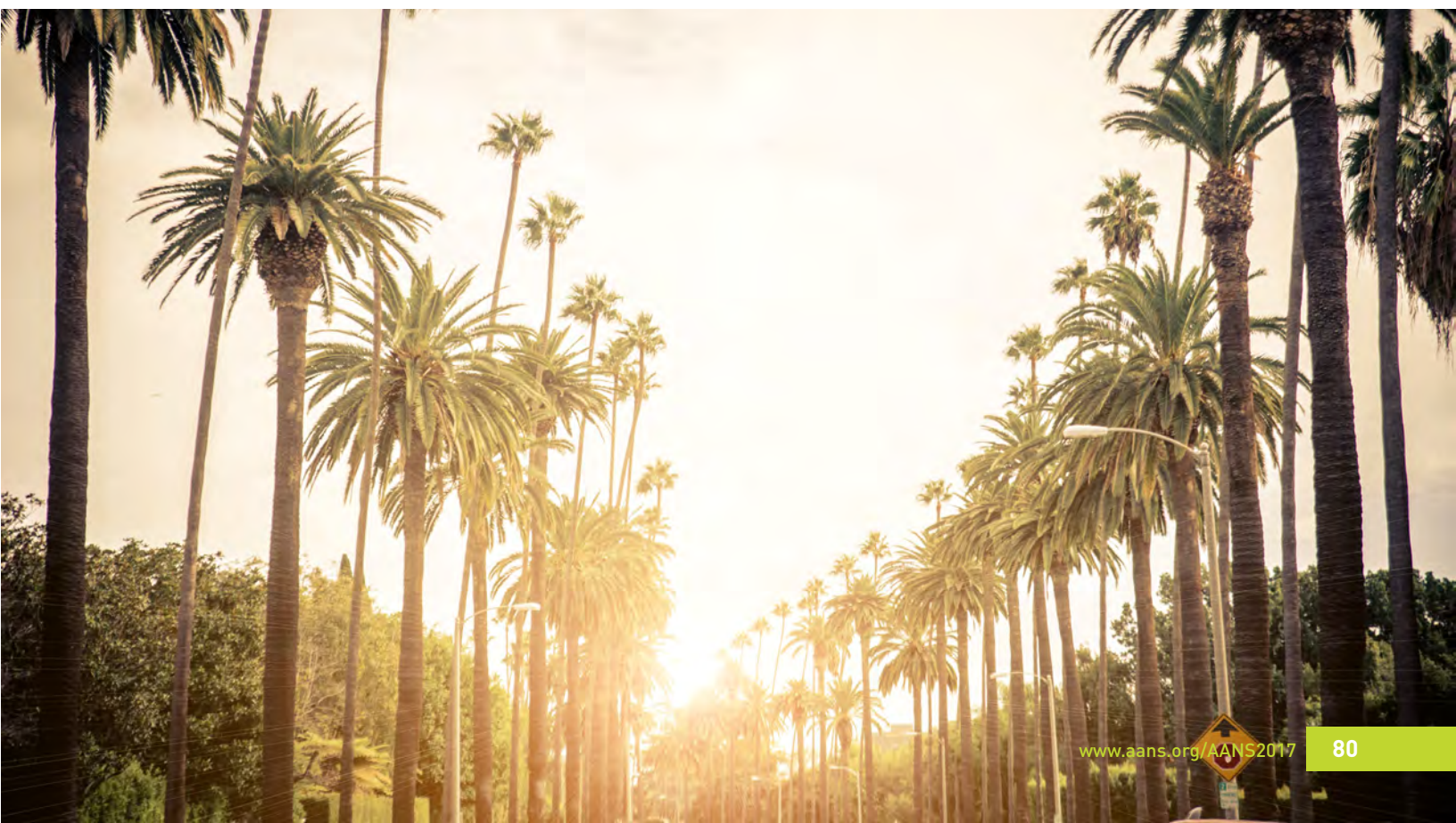
Moderator: Alan R. Cohen, MD, FAANS

Panelists: James M. Drake, MD, FAANS; David F. Jimenez, MD, FAANS; Henry W. S. Schroeder, MD, PhD, IFAANS

This seminar focuses on the state-of-the-art of intracranial endoscopic neurosurgery, including ventriculoscopic surgery, endoscope-assisted microsurgery and endoscope-assisted craniostomy surgery.

Learning Objectives: After completing this educational activity, participants should be able to:

- Explain the endoscopic treatment of hydrocephalus, cysts and tumors.
- Describe the indications for endoscopic skull base surgery.
- Evaluate the efficacy of endoscope-assisted craniostomy surgery.



TUESDAY, APRIL 25

205 Management of Acute Spinal Cord Injury



Moderator: Michael G. Fehlings, MD, PhD, FAANS

Panelists: Richard C. E. Anderson, MD, FAANS; Gregory W.J. Hawryluk, MD, FAANS; Eve C. Tsai, MD, PhD, FAANS; Joseph Christopher Zacko, MD, FAANS

This Breakfast Seminar will provide an up-to-date review of the pathophysiology, medical management, surgical options and recent clinical trials related to spinal cord injury.

Learning Objectives: After completing this educational activity, participants should be able to:

- Discuss clinically relevant aspects of the pathophysiology of spinal cord injury, as well as the current concepts in the medical management of spinal cord injury.
- Explain the role and timing of surgical treatment for acute spinal cord injury.
- Discuss recent developments in clinical trials for spinal cord injury.

206 Pituitary Tumors



Moderator: Daniel Monte-Serrat Prevedello, MD

Panelists: Manish K. Aghi, MD, PhD, FAANS; William T. Couldwell, MD, PhD, FAANS; Bhawani S. Sharma, MD; Ashish Suri, MD; Nicholas Thomas, FRCS

Participants will obtain a state-of-the-art update on endonasal surgical management of pituitary tumors, as well as medical and radiosurgical adjunctive therapies.

Learning Objectives: After completing this educational activity, participants should be able to:

- Discuss surgical strategies for maximizing chances of remission in patients with acromegaly and Cushing's disease.
- Describe utility and technical nuances of endonasal endoscopic removal of pituitary adenomas.
- Provide current treatment algorithms for patients with atypical and/or invasive pituitary adenomas.



TUESDAY, APRIL 25

207 New Innovations in Epilepsy Surgery



Moderator: Nicholas M. Barbaro, MD, FAANS

Panelists: P. David Adelson, MD, FAANS; Sarat P. Chandra II, MD; Robert E. Gross, MD, PhD, FAANS; Karl Lothar Schaller, MD, PhD, IFAANS; Johan JL van Loon, MD, PhD, IFAANS

This seminar will focus on the surgical approaches to epilepsy that do not involve removal of tissue. Various electrical stimulation techniques will be discussed, as well as procedures currently under investigation, such as radiosurgery and cerebral cooling. More traditional non-resective techniques, such as corpus callosotomy and multiple sub-pial transection, will also be included in this comprehensive discussion. Neurosurgical leaders in the respective fields will present the latest information on these topics.

Learning Objectives: After completing this educational activity, participants should be able to:

- Describe the indications and approaches to electrical stimulation in the surgical treatment of epilepsy.
- Discuss the current experimental therapies being developed as non-resective strategies.
- Review the currently approved non-resective surgical treatments of epilepsy.

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



Moderator: Adam S. Arthur, MD, FAANS

Panelists: Rocco A. Armonda, MD, FAANS; Michael Bruneau, MD; C. Michael Cawley, MD, FAANS; Ling Feng, MD, PhD; John David Laidlaw, MD, IFAANS, FRACS

This seminar will highlight the current controversies surrounding the optimal treatment of ruptured and unruptured intracranial aneurysms using the latest advances and developments in both modalities. Experts in the field will present their perspectives, experience and ideas for future study.

Learning Objectives: After completing this educational activity, participants should be able to:

- Evaluate latest advances and available outcomes data to determine their significance for ruptured and unruptured intracranial aneurysms.
- Assess treatment failures in intracranial aneurysms treated with either modality.
- Assemble strategies for treatment and salvage of recurrent and difficult intracranial aneurysms.



TUESDAY, APRIL 25

209 Cavernous Malformation: Current Controversies in Management



Moderator: Murat Gunel, MD, FAANS

Panelists: Kazuhiro Hongo, MD, IFAANS; Ali F. Krisht, MD, FAANS; Michael T. Lawton, MD, FAANS; R. Michael Scott, MD, FAANS(L); Gary K. Steinberg, MD, PhD, FAANS

This seminar will use didactic and case-based discussion to explain the clinical diagnosis and management of patients with intracranial cavernous malformations.

Learning Objectives: After completing this educational activity, participants should be able to:

- Discuss the presentation, diagnosis and natural history of intracranial cavernous malformations.
- Review the expectant, surgical and radiosurgical treatment options for patients with cavernous malformations.
- Review familiar cavernous malformation syndromes.

210 Minimally Invasive Spinal Neurosurgery: Indications, Techniques and Complications



Moderator: Charles L. Branch Jr., MD, FAANS

Panelists: Richard G. Fessler, MD, PhD, FAANS; Kevin T. Foley, MD, FAANS; David J. Hart, MD, FAANS; Paul Park, MD, FAANS; Luis Manuel Tumialan, MD, FAANS

This seminar will focus on endoscopic and minimally invasive techniques for cervical, thoracic and lumbar spine surgery. Techniques for decompression and fusion will be discussed.

Learning Objectives: After completing this educational activity, participants should be able to:

- Describe various endoscopic and minimally invasive techniques for spinal surgery.
- Discuss the indications, results and potential complications for these techniques.

211 Remove, Radiate or Just Observe: Acoustic Tumors



Moderator: Michael J. Link, MD, FAANS

Panelists: Suresh Nair Narayanan Nair, MBBS; Marc S. Schwartz, MD, FAANS

The principles of selecting suitable approaches, techniques and tactics of multimodality treatment of acoustic neuromas will be described.

Learning Objectives: After completing this educational activity, participants should be able to:

- Identify the indications for operative treatment, radiation treatment, drug treatment and observation.
- Apply technical details of acoustic tumor surgery.
- Discuss how to avoid complications and study the outcome of surgery, radiation treatment and observation.

212 Controversies in the Management of Intracerebral Hematomas



Moderator: E. Sander Connolly Jr., MD, FAANS

Panelists: Neil A. Martin, MD; Ivan Ng, MD; Reid C. Thompson, MD, FAANS

The pathophysiology of spontaneous intracerebral hemorrhage (ICH) will be described, as well as current treatment options. Recent ongoing clinical trials for treatment of ICH patients will be discussed.

Learning Objectives: After completing this educational activity, participants should be able to:

- Discuss the management of intracerebral hemorrhage, according to current clinical evidence.
- Discuss rationale for current clinical studies.
- Discuss evidence-based medicine in the management of a patient with intracerebral hemorrhage.

TUESDAY, APRIL 25

213 Contemporary Management for Adult Hydrocephalus



Moderators: Guy M. McKhann II, MD, FAANS

Panelists: Mark D. Johnson, MD, PhD, FAANS; Marianne Juhler, MD; Petra Margarete Klinge, MD, PhD; Mark G. Luciano, MD, PhD, FAANS; Miroslav Vukic, MD, MSc; Jonathan A. White, MD, FAANS

This seminar will review the current management and controversies in the evaluation and treatment of adult (normal pressure) hydrocephalus.

Learning Objectives: After completing this educational activity, participants should be able to:

- Discuss current pathophysiology of adult hydrocephalus.
- Describe preoperative evaluation strategies to determine surgical candidacy in adult hydrocephalus.
- Evaluate the pros and cons of shunt surgery versus ETV in the management of adult hydrocephalus.

214 Contemporary Management of Spinal Fractures



Moderator: Gregory R. Trost, MD, FAANS

Panelists: Steven Casha, MD, PhD; Sanjay Dhall, MD, FAANS; Daniel C. Lu, MD, PhD, FAANS; Charles Sansur, MD, FAANS

A variety of commonly encountered spine injuries/fractures will be discussed. The controversies and rationale for treatment strategies will be reviewed.

Learning Objectives: After completing this educational activity, participants should be able to:

- Discuss the pertinent issues and alternatives of surgery for spine injuries.
- Review rationale for various spine trauma treatments.



215 Attaining a Solid Fusion: Evidence Review and Suggestions for Success



Moderator: Mark E. Oppenlander, MD

Panelists: Joseph S. Cheng, MD, FAANS; Kai-Ming Fu, MD, PhD, FAANS; Mark N. Hadley, MD, FAANS; Allan D. Levi, MD, PhD, FAANS

This seminar will focus on cutting-edge strategies for spine stabilization, specifically focusing on bone-graft extenders and substitutes and biological adjuncts for fusion.

Learning Objectives: After completing this educational activity, participants should be able to:

- Discuss the use of biologics and graft extenders for use in spinal fusion.
- Discuss the current use of BMP for spinal arthrodesis.
- Discuss current and future use of biologics in treatments for spinal cord injury.
- Discuss current and future use of biologics for disc disease.

TUESDAY, APRIL 25

216 Functional Mapping of the Cerebral Cortex: Advantages and Limitations



Moderator: Richard W. Byrne, MD, FAANS

Panelists: Warren W. Boling, MD, FAANS; Edward F. Chang, MD; Isabelle M. Germano, MD, FAANS; Daniel L. Silbergeld, MD, FAANS

All aspects and methods of functional mapping for neurosurgery will be discussed, including removal of brain tumors, vascular lesions and epilepsy for awake and asleep patients.

Learning Objectives: After completing this educational activity, participants should be able to:

- Identify and work within eloquent areas of the brain.
- Discuss the technologies available to localize eloquent cortex, how this can enhance the safety of the surgery and what their limitations are.
- Describe common technical errors made in functional mapping.

217 Malignant Brain Tumors: State-of-the-art Treatment



Moderator: Linda M. Liao, MD, PhD, FAANS

Panelists: Gavin Peter Dunn, MD, PhD; Peter Edward Fecci, MD; Colin Watts, PhD; Graeme Woodworth, MD, FAANS

This seminar discusses new advances in the management of malignant gliomas, including gene therapy, convection-enhanced drug delivery and immunotherapy. These advances are discussed in the context of tumors managed by the neurosurgeon.

Learning Objectives: After completing this educational activity, participants should be able to:

- Examine innovative techniques for surgery.
- Review tumor biology, novel delivery techniques and vaccine therapy.
- Explain the role of tumor genetics in determining treatment options and outcomes.

218 Measuring Outcomes and Safety in Neurosurgery



Moderator: Anthony L. Asher, MD, FAANS

Panelists: Alan S. Boulos, MD, FAANS; Mohamad Bydon, MD; John Joseph Knightly, MD, FAANS; Jonathan R. Slotkin, MD, FAANS

This course will discuss the various safety protocols and outcome measures that are used in evaluating neurosurgery patients. This seminar will also identify the outcome measure that is best suited for neurosurgical patients in routine clinical practice.

Learning Objectives: After completing this educational activity, participants should be able to:

- Identify various safety protocols and apply them in routine neurosurgical practice.
- Determine the various outcome measures utilized to evaluate neurosurgical patients.
- Identify the differences between outcome measures and select the one which is suited for most of the neurosurgical patients.

219 Global Neurosurgery



Moderator: Michael M. Haglund, MD, PhD, FAANS

Panelists: Robert J. Dempsey, MD, FAANS; Kevin O. Lillehei, MD, FAANS; Peter Nakaji, MD, FAANS; Jack P. Rock, MD, FAANS

The objective of this course is to describe the role and opportunities for neurosurgery in the developing world. It focuses on working in parts of the world that have limited resources and access to neurosurgical expertise.

Learning Objectives: After completing this educational activity, participants should be able to:

- Apply humanitarian medicine to neurosurgery in the developing world.
- Identify the role of neurosurgical mentorship in the developing world.

TUESDAY, APRIL 25

220 Management of Cranial Incidental Imaging Findings



Moderator: Cormac O. Maher, MD, FAANS

Panelists: Sepideh Amin-Hanjani, MD, FAANS; Stephen J. Haines, MD, FAANS; Tonn Joerg-Christian; Satoshi Kuroda, MD, PhD; Mika Niemela, MD, PhD, IFAANS

The current management strategy for the majority of incidental findings on cranial and spinal imaging studies will be discussed. Incidental findings, such as arachnoid cysts, pineal cysts, pituitary gland cysts, developmental venous anomalies, fibrous dysplasia, fibro-osseous clival lesions, mild ventriculomegaly, asymmetric ventricles, intracranial lipomas, borderline low cerebellar tonsils, a mildly dilated central canal of the spinal cord, T2 weighted bright white matter lesions and others, will be presented. The appropriate management will be reviewed and emphasized with case illustrations.

Learning Objectives: After completing this educational activity, participants should be able to:

- Determine the appropriate management of a multitude of incidental imaging findings on brain and spine MRI studies.
- Recognize when further follow-up imaging is necessary, as well as when no further follow-up is needed.
- Discuss the reasons why a particular incidental finding needs intervention.

9 a.m.-4:15 p.m.

AANS Exhibit Hall and Learning Center

9-9:45 a.m.

Morning Beverage Break in the AANS Exhibit Hall

9:40-9:45 a.m.

Historical Film

Presented immediately prior to Plenary Sessions, these video vignettes examine the History of Hollywood, Los Angeles History of Neurosurgery and Neurosurgeons in the Movies and TV. Written, recorded and edited by fellow neurosurgeons, these short videos are meant to expound the 2017 AANS Annual Scientific Meeting theme: *A World of Innovation*.



9:45 a.m.-1 p.m.

Plenary Session II

Richard C. Schneider Lecture
Kevin J. Tracey, MD

Cushing Medalist
Robert F. Spetzler, MD, FAANS

Cushing Orator

1-2 p.m.

Lunch in the AANS Exhibit Hall

TUESDAY, APRIL 25

Lunch-and-learn Seminars

1:10-1:55 p.m.

A Discussion on the Evolution of Neurosurgery: Multi-modality Imaging Technology and Its Impact on the Future of Tumor and Cerebrovascular Neurosurgery

Presented by Carl Zeiss Meditec, Inc.



What is the evolution of neurosurgical multi-modal imaging and its role in surgical workflows? This symposium will address how the advent of multimodality imaging technology, including advanced neuro-exploration tools* and visualization methods may impact neurosurgical outcomes.

*The discussion may include information on products and features that are a work in progress, may require FDA 510(k) clearance and are subject to change. Future availability cannot be guaranteed.

1:10-1:55 p.m.

Spinal Cord Stimulation - High Dose? Low Dose? Apply the Right Dose for the Right Patient

Presented by Medtronic



Spinal cord stimulation (SCS) has seen an influx of high energy options. Join us for lunch and insight into SCS systems – what they offer and how they differ. This symposium will provide insight into high dose and sensor driven low dose stimulation. In addition, you will hear the latest on MRIs of patients with implanted SCS systems.

1:10-1:55 p.m.

Directional Lead Technology in Deep Brain Stimulation (DBS): Where the Opportunities Exist

Presented by St. Jude Medical



This workshop will discuss the advantage and disadvantages of directional and traditional lead technology for the treatment of Parkinson's Disease and Essential Tremor.

Participants will compare scenarios where directional lead can offset sub-optimally placed electrodes and determine the effect directional lead can have on optimally-placed electrodes. Distinguished faculty will review recent evidence for constant current in patients on either stable or waning therapy.

1:15-2:45 p.m.

Young Neurosurgeons Luncheon

Concussion: Perfect Storm



Fee: \$10

Speaker: Richard G. Ellenbogen, MD, FAANS

2-3:30 p.m.

Operative Nuances II: How to Stay out of Trouble During Microsurgery 3-D Video Presentation

Director: Cormac O. Maher, MD, FAANS

Faculty: Aaron A. Cohen-Gadol, MD, FAANS; Michael T. Lawton, MD, FAANS; Robert F. Spetzler, MD, FAANS

This 90-minute session will review important technical nuances for complication avoidance during complex cranial cases. Detailed surgical videos of different procedures by the surgical masters will be reviewed using 3-D, high-definition videos to maximize the learning experience for the viewers.

This session will be interactive, and the audience will be able to ask questions.

Learning Objectives: After completing this educational activity, participants should be able to:

- Review alternative approaches for resection of complex lesions to avoid complications.
- Identify general techniques to handle complex vascular/neoplastic lesions.
- Recognize operative nuances to avoid complications.

TUESDAY, APRIL 25

2-5:30 p.m.

Section Sessions

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



Moderators: John Joseph Knightly, MD, FAANS; Frank La Marca, MD, FAANS

Speakers: Domagoj Coric, MD, FAANS; John Joseph Knightly, MD, FAANS; Tyler Robert Koski, MD, FAANS; Praveen V. Mummaneni, MD, FAANS; Juan Santiago Uribe, MD, FAANS; Michael Y. Wang, MD, FAANS; William C. Welch, MD, FAANS

AANS/CNS Section on Pain



Moderator: Jason M. Schwalb, MD, FAANS

Speakers: Clement Hamani, MD; Andre Guelman Machado, MD, PhD; Sean Jeremy Nagel, MD, FAANS; Erika Anne Petersen, MD, FAANS; Konstantin V. Slavin, MD, FAANS

AANS/CNS Section on Pediatric Neurological Surgery



Moderators: Joshua J. Chern, MD, PhD, FAANS; Lance Shane Governale, MD, FAANS; Jodi L. Smith, MD, PhD, FAANS

Speakers: Robert C. Dauser, MD, FAANS; Neil A. Martin, MD; Marvin Nelson, MD; Gary K. Steinberg, MD, PhD, FAANS; Benita Tamrazi, MD; John C. Wellons III, MD, FAANS

AANS/CNS Section on Tumors I



Moderators: Shawn Level Hervey-Jumper, MD; Steven N. Kalkanis, MD, FAANS

Speakers: Terri Armstrong, MD; Anthony L. Asher, MD, FAANS; Richard W. Byrne, MD, FAANS; Edwin M. Chang, MD, FAANS; Steven N. Kalkanis, MD, FAANS; Cameron Piron, MD

AANS Section on the History of Neurological Surgery



Moderators: Charles J. Prestigiacomo, MD, FAANS; Mark C. Preul, MD

Horsley History Lecture

Michel Zerah, PhD

2-5:30 p.m.

Advancements in Neurotrauma Care



Fee: \$100

Directors: Marianne E. Langlois, MS, PA-C; Cristina Matthews, MSN, FNP-BC

Faculty: Erin Kiehna, MD; Clemens M. Schirmer, MD, PhD, FAANS; John H. Shin, MD, FAANS; Jamie S. Ullman, MD, FAANS

This course focuses on specific decision-making challenges that the neurotrauma clinician faces in caring for the traumatically injured patient. The case-based instruction explores the pathophysiologic changes and the significance of goal directed therapy. The course allows participants to gain important insight into how and why various management strategies are instituted.

Learning Objectives: After completing this educational activity, participants should be able to:

- Identify the unique challenges associated with caring for the neurotrauma patient in critical care.
- Describe the contemporary diagnosis and management of a broad spectrum of medical issues as they pertain to neurotrauma patient.
- Identify the complexity and controversies of surgical management of traumatically injured patients.

TUESDAY, APRIL 25

3:30-4 p.m.

Afternoon Beverage Break in the AANS Exhibit Hall

6:30-8:30 p.m.

Dinner Symposium: Career Advancement to Health System Leadership



Fee: \$195

Moderator: Edie E. Zusman, MD, FAANS

Panelists: Nicholas M. Barbaro, MD, FAANS; Gene H. Barnett, MD, MBA, FAANS; Reinel A. Junco Martin, MD; Mark C. Lester, MD, FAANS; Karin M. Muraszko, MD, FAANS

Location: The Palm

This Dinner Symposium will focus on the career steps and pathways to becoming a health care executive and hospital administrator. Education, mentorship and experience necessary to advance one's career beyond neurosurgery to help influence and lead your hospital and health care system from the C Suite will be emphasized. Speakers will discuss how they obtained their advanced degrees, such as MBA and MHA, and the value it had for them as well as mentorship and networking. American College of Healthcare Executives and CSNS Medical Director Ad Hoc Committee members can discuss their start on the journey by heading neurosurgery and neuroscience programs, their roles on finance and strategy committees and serving on their hospital board of directors.

Learning Objectives: After completing this educational activity, participants should be able to:

- Review the career trajectory from being a top neurosurgeon to leading their health system.
- Explain profit and loss, financial and HR management from the perspective of hospital CEOs.
- Determine if health system leadership is the right next step in their career.

In 15 years, The Palm has built a loyal following of locals, patrons, performers and stars. While dining on dishes influenced by Italian-American heritage of the Bozzi and Ganzi families, guests will be surrounded by a living museum of cartoons and caricatures created by artists who would often draw their creations on the walls in exchange for their meals. The Palm continues to serve as a place to not only catch up with old friends but also enjoy a delicious meal. To this day, The Palm continues to embrace its philosophy: Treat guests like family, serve great food and always exceed expectations.



TUESDAY, APRIL 25

6:30–8:30 p.m.

Dinner Symposium: New Solutions for Aneurysm Treatment



Fee: \$195

Moderator: Adam S. Arthur, MD, MPH, FAANS

Panelists: Daniel A. Hoit, MD, FAANS; Cameron G. McDougall, MD, FAANS; Ali Sultan, MD; Henry H. Woo, MD, FAANS

Location: Faith & Flower

This Dinner Symposium will include didactic lectures from experienced faculty on new management strategies for the treatment of unruptured and ruptured cerebral aneurysms. This CME activity will provide an evidence-based review and update on the latest endovascular technologies.

Learning Objectives: After completing this educational activity, participants should be able to:

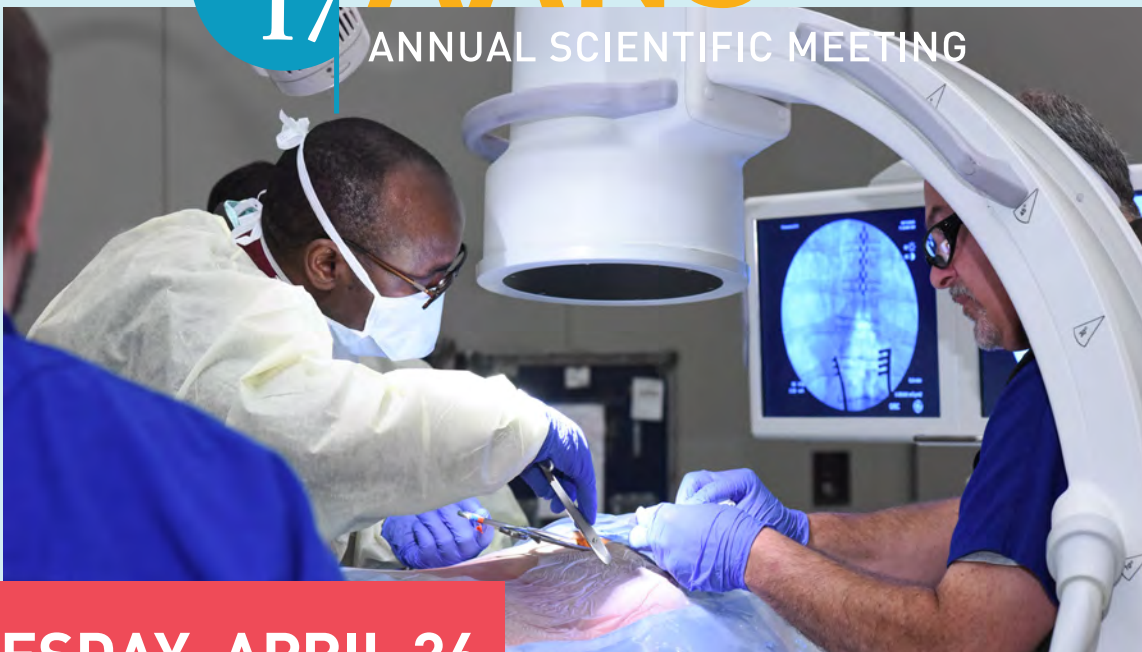
- Review and describe advantages and limitations of stent and balloon assisted coiling for the treatment of ruptured and unruptured aneurysms.
- Review and describe advantages and limitations of flow diversion for the treatment of unruptured aneurysms.
- Review and describe advantages and limitations of endovascular flow disruption for the treatment of unruptured and ruptured aneurysms.

Faith & Flower is a contemporary restaurant located in the WaterMarke Tower in downtown Los Angeles' South Park district. The restaurant's name pays homage to the two major renaissance periods—the 1920s and modern day—that have fundamentally shaped the downtown Los Angeles community, with “Flower” referring to the street on which the restaurant lies today and “Faith” for the street's alleged name during the early 1920s. Inspired by a global influence of flavors and techniques, complemented by the use of a wood-fired oven and a pristine raw bar, the menu redefines Californian rustic cuisine.



2017 AANS

ANNUAL SCIENTIFIC MEETING



WEDNESDAY, APRIL 26

6:30 a.m.-3:30 p.m.	AANS Registration
7-9 a.m.	Breakfast Seminars 301-319
7:30-9 a.m.	AANS/CNS Section on Women in Neurosurgery (WINS) Breakfast With Meg Whitman
9 a.m.-2:15 p.m.	AANS Exhibit Hall and Learning Center
9-9:45 a.m.	Morning Beverage Break in the AANS Exhibit Hall
9:40-9:45 a.m.	Historical Film
9:45 a.m.-1 p.m.	Plenary Session III Louise Eisenhardt Lecture — Meg Whitman Rhoton Family Lecture — Evandro Pinto da Luz de Oliveira, MD, PhD, IFAANS Van Wagenen Lecture — Prof. Dr. Magdalena Goetz
1-2 p.m.	Lunch in the AANS Exhibit Hall
2-5 p.m.	Section Sessions AANS/CNS Cerebrovascular Section AANS/CNS Section on Disorders of the Spine and Peripheral Nerves — Peripheral Nerves Section Session AANS/CNS Section on Neurotrauma and Critical Care AANS/CNS Section on Stereotactic and Functional Surgery AANS/CNS Section on Tumors II

WEDNESDAY, APRIL 26

7-9 a.m.

Breakfast Seminars 301-319

Fee: \$100 each, breakfast will be served in each room.
\$65 each for Candidates and Medical Students

301 ABNS Board Preparation: What You Must Know



Moderator: Jeffrey N. Bruce, MD, FAANS

Panelists: Alan R. Cohen, MD, FAANS; Douglas S. Kondziolka, MD, FAANS; B. Gregory Thompson Jr, MD, FAANS

The panelists will describe the certification process from residency to American Board of Neurological Surgery (ABNS) certification. Emphasis will be placed on strategies to prepare for the ABNS Oral Board Exam.

Learning Objectives: After completing this educational activity, participants should be able to:

- Discuss requirements for board certification.
- Prepare for the ABNS Oral Board Exam.

302 Surgical Treatment of Parkinson's Disease



Moderator: Julie G. Pilitsis, MD, PhD, FAANS

Panelists: Ellen L. Air, MD, PhD, FAANS; Paul A. House, MD, FAANS; Jonathan R. Jagid, MD, FAANS

Participants will discuss current surgical targets for Parkinson's disease, including a variety of technical approaches and complications.

Learning Objectives: After completing this educational activity, participants should be able to:

- Identify potential brain targets for deep brain stimulation (DBS) in movement disorders.
- Discuss technical alternatives in placement of DBS electrodes.
- Review complications of DBS.



WEDNESDAY, APRIL 26

303 Shoulder vs. Spine: Differentiating Shoulder and Cervical Spine Pathology



Moderator: Brian R. Subach, MD, FAANS

Panelists: Nathaniel P. Brooks, MD, FAANS; James P. Burke, MD, PhD, FAANS; Michael Louis Smith, MD, FAANS; Timothy F. Witham, MD, FAANS

Differentiation between shoulder or spinal pathology, or a combination of the two, is critical for optimal patient care. This course will familiarize neurosurgeons with intrinsic shoulder pathology that may mimic radiculopathy or other cervical spine disorders and review uncommon radiculopathies, facet syndromes and other spinal pathology presenting as shoulder pain. Faculty will include a neurosurgical spine surgeon, an orthopaedic spine surgeon and an orthopaedic shoulder specialist.

Learning Objectives: After completing this educational activity, participants should be able to:

- Review shoulder anatomy, exam and common disorders that may mimic spinal pathology.
- Review upper cervical radicular patterns, facet dynamome maps and other spinal disorders.
- Review pain syndromes that may mimic shoulder or spinal pathology.
- Discuss diagnostic strategies to recognize and differentiate between the shoulder and spine.

304 Management of Vasospasm



Moderator: Peter David Le Roux, MD, FAANS

Panelists: Rose Du, MD, PhD, FAANS; Aaron S. Dumont, MD, FAANS; Brian L. Hoh, MD, FAANS; R. Loch Macdonald, MD, PhD, FAANS; Martin Sames, MD

This seminar will present the current status of treatment measures for vasospasm. There will be presentations of cases that highlight difficulties in the treatment of cerebral vasospasm.

Learning Objectives: After completing this educational activity, participants should be able to:

- Cite the treatments available for cerebral vasospasm and describe common indications for their use.
- Cite levels of evidence upon which treatments for vasospasm are based.
- Recognize experimental, clinical and laboratory assessments of treatments for vasospasm.

WEDNESDAY, APRIL 26

305 Management of Pediatric Epilepsy



Moderator: Jeffrey P. Blount, MD, FAANS

Panelists: Sanjiv Bhatia, MD, FAANS; Daniel J. Curry, MD, FAANS; A. Graham Fieggen, MD, IFAANS; Erin Kiehna, MD; Jeffrey G. Ojemann, MD, FAANS

Surgical treatment for pediatric epilepsy can be a highly effective intervention in the appropriate candidate. The identification of a medically intractable patient and the timing of interventions may influence outcome. Surgical options range from very focal lesion treatment (resection or ablation) to hemispheric surgeries. The approach for a given patient will depend on many factors that, in turn, inform the pre-surgical work-up. This course will address these issues, focusing on the spectrum of surgical approaches and the identification of appropriate candidates. Additionally, cognitive and seizure outcome data for each approach will be reviewed in the context of both patient and surgical factors.

Learning Objectives: After completing this educational activity, participants should be able to:

- Describe algorithms for the identification and evaluation of candidates for surgical intervention.
- Summarize the efficacy of different surgical procedures for treating pediatric epilepsy.
- Identify common surgical morbidities and mitigation strategies.

306 Business of Neurosurgery II: Growth and Management of Neurosurgical Practices



Moderator: Troy D. Payner, MD, FAANS

Panelists: Moustapha Abou-Samra, MD, FAANS; Mitesh V. Shah, MD, FAANS; Edie E. Zusman, MD, FAANS

The objective of this course is to highlight the role of various business models in the practice of neurosurgery so neurosurgeons can adapt to changes taking place in practices, hospitals, health care systems, liability reform, insurances and government agencies. This course will discuss the various applications of business principles in order to protect and preserve patient care, while expanding the neurosurgical practice.

Learning Objectives: After completing this educational activity, participants should be able to:

- Explain how changes in health-care practice have imposed administrative demands on neurosurgeons.
- Assess lessons learned from various business models, liability reform and steps to decision-driven change management for health care.
- Analyze the process of decision-making and optimize our role in evaluating future changes, including liability reform, and how these changes should be implemented.



WEDNESDAY, APRIL 26

307 Neurosurgical Management of Intractable Pain



Moderator: Konstantin V. Slavin, MD, FAANS

Panelists: Amr El Shawarby, MD; Ahmed M. Raslan, MD

This seminar will review indications, techniques and outcomes of contemporary neurosurgical procedures for the treatment of intractable pain. Attention will be directed toward practical applications of therapies that can be used in a general neurosurgical practice.

Learning Objectives: After completing this educational activity, participants should be able to:

- Compare the relative roles of noninvasive and invasive therapies for pain treatment.
- Contrast the common indications for stimulation and drug-delivery therapies for pain management.
- Describe outcomes of neuromodulation therapies for pain management.

308 Stem Cell Therapeutics in Neurosurgery



Moderator: Nathan R. Selden, MD, PhD, FAANS

Panelists: John A. Boockvar, MD, FAANS; Nicholas M. Boulis, MD, FAANS; Peter B. Dirks, MD; Ann M. Parr, MD, PhD, FAANS; Gary K. Steinberg, MD, PhD, FAANS

Stem-cell transplantation offers a new potentially revolutionary approach to currently untreatable central nervous system diseases. Speakers will report on the scientific underpinnings, delivery mechanisms and early use of stem-cell CNS transplantation to treat human disease, as well as pragmatic and societal challenges to progress.

Learning Objectives: After completing this educational activity, participants should be able to:

- Identify the scientific rationale for CNS stem-cell therapy and list various transplantation delivery mechanisms.
- Describe the design and results of early clinical trials.



WEDNESDAY, APRIL 26

309 Controversies in Cerebrovascular and Endovascular Neurosurgery



Moderator: Erol Veznedaroglu, MD, FAANS

Panelists: Kevin M. Cockroft, MD, FAANS; Francisco Gonzalez-Llanos, MD; David J. Langer, MD, FAANS; Volker Seifert, MD, PhD

The introduction and acceptance of endovascular therapies for cerebrovascular disorders has revolutionized the treatment for cerebrovascular disease. With more cerebrovascular neurosurgeons becoming trained in both techniques, the treatment paradigms are changing and are often controversial. This seminar will examine the different treatment modalities for carotid artery disease, intracerebral aneurysms and arteriovenous malformations (AVMs).

Learning Objectives: After completing this educational activity, participants should be able to:

- Define the indications of either carotid endarterectomy or carotid angioplasty and stenting for extracranial carotid artery stenosis.
- Describe the indications and the most effective treatment of small AVMs and the role of preoperative embolization.
- Use evidence-based medicine in conjunction with current practice to determine which patients will benefit most from endovascular therapies or traditional open surgeries.

310 The Spectrum of Adjuvant Therapy for Brain Tumors



Moderator: Frederick F. Lang Jr., MD, FAANS

Panelists: Susan M. Chang, MD; Randy Lynn Jensen, MD, PhD, FAANS; James M. Markert Jr., MD, FAANS; John H. Sampson, MD, PhD, FAANS

This seminar will provide a state-of-the-art review of the different adjuvant treatment options available for patients with malignant brain tumors. It will review current standards of care and then explore newer treatment options, including targeted therapies, intratumoral strategies, immunotherapeutic approaches and viral therapies.

Learning Objectives: After completing this educational activity, participants should be able to:

- Describe current standards of care for adjuvant therapy of malignant gliomas, as well as current scientific advances and newly developed adjuvant therapies for them.
- Discuss current problems with the design of effective therapies and recommend appropriate treatment options for patients with brain tumors.
- Design the best treatment programs based on current data.



WEDNESDAY, APRIL 26

311 Suprasellar and Juxtapellar Tumors: Complications and Avoidance



Moderator: Khaled M. A. Aziz, MD, PhD, FAANS

Panelists: Kenan Arnautovic, MD, PhD, FAANS; Paolo Cappabianca, MD, IFAANS; Luigi M. Cavallo, MD; Amir R. Dehdashti, MD, IFAANS; Philip V. Theodosopoulos, MD, FAANS

This seminar will concentrate on explaining the approaches and indications for surgical therapy of lesions in the suprasellar region in adults and children. Appropriate preoperative evaluation and surgical decision-making will be discussed. Innovative surgical techniques will be presented. Management of the most common lesions arising in this area will be discussed.

Learning Objectives: After completing this educational activity, participants should be able to:

- Review the options for surgical approaches to suprasellar and juxtapellar tumors.
- Explain the options for cranial approaches to this region.
- Describe the anatomy of the endoscopic transsphenoidal approach.

312 Management of Adult Scoliosis



Moderator: Justin S. Smith, MD, PhD, FAANS

Panelists: Peter Douglas Angevine, MD, FAANS; Tyler Robert Koski, MD, FAANS; Frank La Marca, MD, FAANS; David O. Okonkwo, MD, PhD, FAANS

This seminar will discuss the strategies, evaluation and management of adult spinal deformities. Special emphasis will be placed on the association of spinal deformities with conditions commonly treated by neurosurgeons.

Learning Objectives: After completing this educational activity, participants should be able to:

- Discuss natural, clinical and radiographic history of idiopathic and degenerative scoliosis in adults.
- Detail appropriate clinical and radiographic evaluation of, and determine non-operative and operative treatment options for adult spinal deformity.
- Identify patient-related factors that compromise surgical treatment outcomes and increase complications and discuss treatment strategies.

313 New and Evolving Technologies for Minimally Invasive Lumbar Disc Surgery



Moderator: Charles L. Branch Jr., MD, FAANS

Panelists: Jean-Pierre Mobasser, MD, FAANS; William D. Tobler, MD, FAANS; Luis Manuel Tumialan, MD, FAANS; Michael Y. Wang, MD, FAANS

This seminar will present and evaluate new technologies for treating pathologies of the lumbar disc.

Learning Objectives: After completing this educational activity, participants should be able to:

- Evaluate the safety and effectiveness of new lumbar disc technologies.
- Describe current indications for use of new lumbar disc technologies.



WEDNESDAY, APRIL 26

314 Cerebral Trauma: State-of-the-art Treatment



Moderator: M. Ross Bullock, MD, PhD

Panelists: Wai S. Poon, CRNA; Franco Servadei, MD;
Jamie S. Ullman, MD, FAANS

This seminar will review current and future treatment options for patients with traumatic brain injury (TBI).

Learning Objectives: After completing this educational activity, participants should be able to:

- Discuss optimal management strategies for patients with TBI.
- Describe therapies that may become clinically available in the near future.

315 Tumor-related Epilepsy



Moderator: Mitchel S. Berger, MD, FAANS

Panelists: Edward F. Chang, MD; Rees Cosgrove, MD, FAANS; Jeffrey M. Politsky, MD

This seminar will provide an overview of the management of tumor-related seizures and refractory epilepsy. We will discuss how to optimize seizure control during surgical resections, including the use of pre- and intraoperative electrophysiological approaches, as well as decision-making resection strategies, such as when to perform an amygdalohippocampectomy. The use and efficacy of preoperative and postoperative anti-epileptic medications also will be discussed.

Learning Objectives: After completing this educational activity, participants should be able to:

- Review the surgical outcomes for seizure control for patients with tumor-related epilepsy.
- Describe important technical considerations in surgical resection to optimize both tumor and seizure control, including the use of awake mapping, electrocorticography and hippocampectomy.
- Recognize the utility of preoperative and postoperative anti-epileptic medication in controlling seizures.



316 Lumbar Spine Fusion Indications and Complications



Moderator: Joan Frances O'Shea, MD, FAANS

Panelists: Andrew T. Dailey, MD, FAANS; Robert F. Heary, MD, FAANS; Keunghyun Kim, MD; Eric M. Massicotte, MD, FAANS; Bernhard Meyer, MD

This seminar describes and discusses the issues of patient selection, surgical indication and surgical techniques as they pertain to lumbar fusion. A global approach will be provided.

Learning Objectives: After completing this educational activity, participants should be able to:

- Identify the fundamentals of the surgical decision-making process.
- Discuss factors involved with patient selection for lumbar spine fusion.
- Distinguish between the surgical strategies for lumbar spine fusion and their relative indications, as well as their pros and cons.

WEDNESDAY, APRIL 26

317 Selecting Anterior Approaches for Cerebrovascular Surgery: From Eyebrow to OZ – Pros and Cons of Minimally Invasive Keyhole Approaches for Cerebrovascular Surgery



Moderator: Peter Nakaji, MD, FAANS

Panelists: Khaled M. A. Aziz, MD, PhD, FAANS; Johnny B. Delashaw Jr., MD; Laligam N. Sekhar, MD, FAANS

A variety of craniotomies have been employed for anterior circulation aneurysm clipping. In this course, participants will become familiar with the various options, including the pterional, full and modified orbitozygomatic, mini-pterional and supraorbital craniotomies. Participants will learn how to choose among the various options, the advantages and limitations of each and the technical nuances of performing each type of craniotomy.

Learning Objectives: After completing this educational activity, participants should be able to:

- Describe the major types of craniotomies that allow access to the common sites of anterior circulation aneurysms.
- Select a specific craniotomy from among the various craniotomy options based on the particular type of aneurysm to be clipped.
- Identify the advantages and limitations of minimally invasive craniotomies for aneurysm surgery.
- Demonstrate the key technical steps in performing each type of craniotomy safely and efficiently.

318 The Use of Opioids in Neurosurgical Practice: How to be Safe, Effective and Compliant With New Prescribing Laws



Moderator: Christopher J. Winfree, MD, FAANS

Panelists: Joshua P. Prager, MD, MS; Joshua M. Rosenow, MD, FAANS; Jason M. Schwalb, MD, FAANS

This course provides an update for any neurosurgeon, resident, fellow, nurse practitioner (NP) or physician assistant (PA) who utilizes opioids in neurosurgical practice. It includes information on the pharmacology and clinical evidence supporting opioids and related medications in neurosurgery patients, how to provide these medications safely to neurosurgical patients, even in those who are chronic opioid users, and how new health care legislation affects the use of opioids in neurosurgical practice.

Learning Objectives: After completing this educational activity, participants should be able to:

- Discuss the pharmacology and pharmacokinetics of opioids used in neurosurgical practice, including related medications used in these patients such as naloxone and buprenorphine.
- Recognize the clinical evidence and guidelines for the use of these medications in neurosurgical patients.
- Apply the perioperative management of neuropathic and nociceptive pain in neurosurgical patients, including in patients who are chronic opioid users.
- Describe recent opioid legislation and the implications of these new laws on opioid prescribing in neurosurgical practice.

WEDNESDAY, APRIL 26

319 The FDA: Investigational Device Exemptions, Regulatory Process and Moving Medical Devices to Patients



Moderators: Aviva Abosch, MD, PhD, FAANS; Robert F. Heary, MD, FAANS

Panelists: Mohamad Bydon, MD; Carlos Pena, PhD, MS

This breakfast seminar focuses on current issues in the FDA regulatory landscape for medical devices. Faculty is derived from the agency and the AANS/CNS Drugs and Devices Committee. Lectures are followed by a panel discussion.

Learning Objectives: After completing this educational activity, participants should be able to:

- Describe current issues in FDA medical device regulation.
- Highlight FDA activity and neurosurgery's role in off-label device regulation, registry data and FDA issues, such as traumatic brain injury.
- Identify resources and opportunities for communication between neurosurgeons and the agency.

7:30-9 a.m.

AANS/CNS Section on Women in Neurosurgery (WINS) Breakfast Featuring Louise Eisenhart Lecturer Meg Whitman



Fee: \$100

Location: JW Marriott Los Angeles, L.A. LIVE

Network with your colleagues, and join Louise Eisenhart Lecturer, Meg Whitman, at the AANS/CNS Section on Women in Neurosurgery (WINS) Breakfast for an intimate discussion and presentation. Don't miss out on this opportunity to meet with a key industry leader. All 2017 AANS Annual Scientific Meeting attendees are invited to join. A ticket is required for this event.

9 a.m.-2:15 p.m.

AANS Exhibit Hall and Learning Center

9-9:45 a.m.

Morning Beverage Break in the AANS Exhibit Hall

9:40-9:45 a.m.

Historical Film

Presented immediately prior to Plenary Sessions, these video vignettes examine the History of Hollywood, Los Angeles History of Neurosurgery and Neurosurgeons in the Movies and TV. Written, recorded and edited by fellow neurosurgeons, these short videos are meant to expound the 2017 AANS Annual Scientific Meeting theme: *A World of Innovation*.



9:45 a.m.-1 p.m.

Plenary Session III

Louise Eisenhardt Lecture
Meg Whitman

Rhoton Family Lecture
Evandro Pinto da Luz de Oliveira, MD, PhD, IFAANS

Van Wageningen Lecture
Prof. Dr. Magdalena Goetz

1-2 p.m.

Lunch in the AANS Exhibit Hall

WEDNESDAY, APRIL 26

2-5 p.m.

Section Sessions

AANS/CNS Cerebrovascular Section



Raymond M. Donaghy Lecture

Robert H. Rosenwasser, MD, FAANS

Moderators: Michael T. Lawton, MD, FAANS; Ajith J. Thomas, MD, FAANS; Richard Wiley Williamson Jr., MD

Panelists: Felipe C. Albuquerque, MD, FAANS; Arthur L. Day, MD, FAANS; Robert E. Harbaugh, MD, FAANS

Business Meeting: 4:30-5 p.m.

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



Kline Lecture

Rajiv Midha, MD, MS, FAANS

Moderators: Holly S. Gilmer, MD, FAANS; Line Jacques, MD, FAANS; Mark Alexander Mahan, MD; Lynda Jun-San Yang, MD, PhD, FAANS

Speakers: Allan J. Belzberg, MD, FAANS; Stepan Capek, MD; Annie Dubuisson, MD, IFAANS; Rajiv Midha, MD, MS, FAANS; Wilson Zachray Ray, MD, FAANS; Robert J. Spinner, MD, FAANS; Eric L. Zager, MD, FAANS

AANS/CNS Section on Neurotrauma and Critical Care



Charles Tator Lecture

Marios C. Papadopoulos, MD

Speaker: Peter John Hutchinson, MD, FRCS

AANS/CNS Section on Stereotactic and Functional Surgery



Moderators: Jonathan P. Miller, MD, FAANS; Nader Pouratian, MD, PhD, FAANS

Speakers: Aviva Abosch, MD, PhD, FAANS; Jorge Alvaro Gonzalez-Martinez, MD, PhD, FAANS; Robert E. Gross, MD, PhD, FAANS; Peter E. Konrad, MD, PhD, FAANS; Andrew Leuchter, MD; Jonathan P. Miller, MD, FAANS; Nader Pouratian, MD, PhD, FAANS; Philip A. Starr, MD, PhD, FAANS

AANS/CNS Section on Tumors II



Moderator: Manish K. Aghi, MD, PhD, FAANS

Speakers: Thomas Davis, MD; Gavin Peter Dunn, MD, PhD; Peter Edward Fecci, MD; Amy B. Heimberger, MD, FAANS; Eric Claude Leuthardt, MD, FAANS; John H. Sampson, MD, PhD, FAANS



SECTION ACTIVITIES

AANS/CNS Cerebrovascular Section



Monday, April 24

2–5:30 p.m.

Scientific Session V: Cerebrovascular

Wednesday, April 26

2–5 p.m.

Section Session

4:30–5 p.m.

Business Meeting

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



Monday, April 24

2–5:30 p.m.

Scientific Session II: Spine

Tuesday, April 25

2–5:30 p.m.

Spine Section Session

Wednesday, April 26

2–5 p.m.

Peripheral Nerves Section Session

AANS/CNS Section on Neurotrauma and Critical Care



Monday, April 24

2–5:30 p.m.

Scientific Session VI: Neurotrauma and Critical Care

Wednesday, April 26

2–5 p.m.

Section Session

AANS/CNS Section on Pain



Tuesday, April 25

2–5:30 p.m.

Section Session

AANS/CNS Section on Pediatric Neurological Surgery



Monday, April 24

2–5:30 p.m.

Scientific Session IV: Pediatrics

Tuesday, April 25

2–5:30 p.m.

Section Session

AANS/CNS Section on Stereotactic and Functional Surgery



Monday, April 24

2–5:30 p.m.

Scientific Session III: Stereotactic and Functional Surgery

Wednesday, April 26

2–5 p.m.

Section Session

AANS/CNS Section on Tumors



Monday, April 24

2–5:30 p.m.

Scientific Session I: Tumor

Tuesday, April 25

2–5:30 p.m.

Section Session: Tumor I

Wednesday, April 26

2–5 p.m.

Section Session: Tumor II

SECTION ACTIVITIES

AANS/CSNS Socioeconomic



Monday, April 24

2-5:30 p.m.

Scientific Session VII: Socioeconomic

AANS Section on the History of Neurological Surgery



Monday, April 24

6:30-9:30 p.m.

AANS Section on the History of Neurological Surgery
Annual Dinner

Location: Cicada Restaurant and Club

Tuesday, April 25

2-5:30 p.m.

Section Session

AANS/CNS Section on Women in Neurosurgery (WINS)



Wednesday, April 26

7:30-9 a.m.

Breakfast With Meg Whitman

Location: JW Marriott Los Angeles L.A. LIVE

RELATED ORGANIZATIONS

2017 Neurosurgery Executives' Resource Value & Education Society (NERVES) Annual Meeting

April 20-22, 2017

Location: Loews Hollywood Hotel

Registration information at:

http://www.nervesadmin.com/portal_boxes/annual-meeting-2/



Council of State Neurosurgical Societies (CSNS)

April 21-22, 2017

Location: JW Marriott Los Angeles L.A. LIVE

Registration information at:

https://csnsonline.org/meeting_registration.php



CANDIDATE (Resident/Fellow) AND MEDICAL STUDENT ACTIVITIES

In 2017, volunteers can again participate in another innovative AANS Annual Scientific Meeting that will feature the delivery and accessibility of all meeting content via the AANS Meeting App.

The Annual Scientific Meeting Marshals Subcommittee has long depended on volunteers to ensure the quality and success of the Practical Clinics, Breakfast Seminars and the Joint Annual Business Meeting of the AANS and the American Association of Neurosurgeons (AAN).

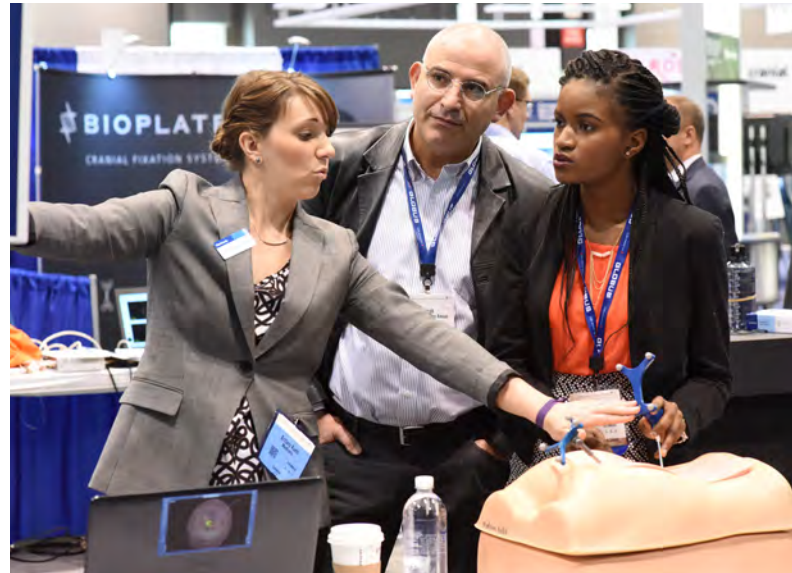
As a volunteer, you can:

- Attend Practical Clinics or Breakfast Seminars, free of charge.
- Meet senior members of the organization while serving in a leadership capacity within the AANS.

Responsibilities include:

- Answering questions related to the AANS Meeting App.
- Marshaling the Practical Clinic or Breakfast Seminar you attend (instructions will be provided).
- Assisting in session operation during Practical Clinics or Breakfast Seminars as directed.
- Assisting with the Joint Annual Business Meeting of the AANS and the AAN.

For those interested in volunteering to serve as a Marshal, please contact the AANS Department of Education and Meetings at aansam@aans.org, or check off the appropriate box on the registration form. Priority will be given to medical students and residents, especially those who have marshaled in the past. Early in 2017, you will receive a form to complete and submit, indicating your session preferences.



April 24-26, 2017

Exhibit Hall and Learning Center

Represent your residency program and face off against your colleagues in a challenging competition of neurosurgical skills, hosted by the Young Neurosurgeons Committee at the 2017 AANS Annual Scientific Meeting.

Along with bragging rights, prizes are awarded for the top-performing residency team and top individual scores during the competition.

CANDIDATE (Resident/Fellow) AND MEDICAL STUDENT ACTIVITIES

Saturday, April 22

1-4 p.m.

Neurosurgeon-scientist Career Development Course

Fee: \$65

Director: Gregory J. Zipfel, MD, FAANS

[\[see page 39\]](#)

Sunday, April 23

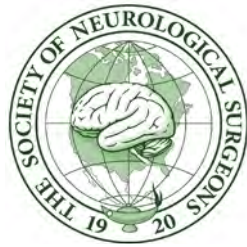
7 a.m.-4:30 p.m.

Society of Neurological Surgeons (SNS) Chief Resident Course

Fee: \$450

Directors: Aaron A. Cohen-Gadol, MD, FAANS;
William T. Couldwell, MD, PhD, FAANS

[\[see page 49\]](#)



1-4:30 p.m.

Young Neurosurgeons Research Forum

Osler Lecture – Roberto C. Heros, MD, FAANS(L)

[\[see page 59\]](#)

1-5 p.m.

Leadership Development Course – Senior Resident (By Recommendation Only)

Clinic Fee: \$450

Director: Erica F. Bisson, MD, FAANS

Assistant Director: Joseph S. Cheng, MD, MS, FAANS

[\[see page 58\]](#)

Tuesday, April 25

1:15-2:45 p.m.

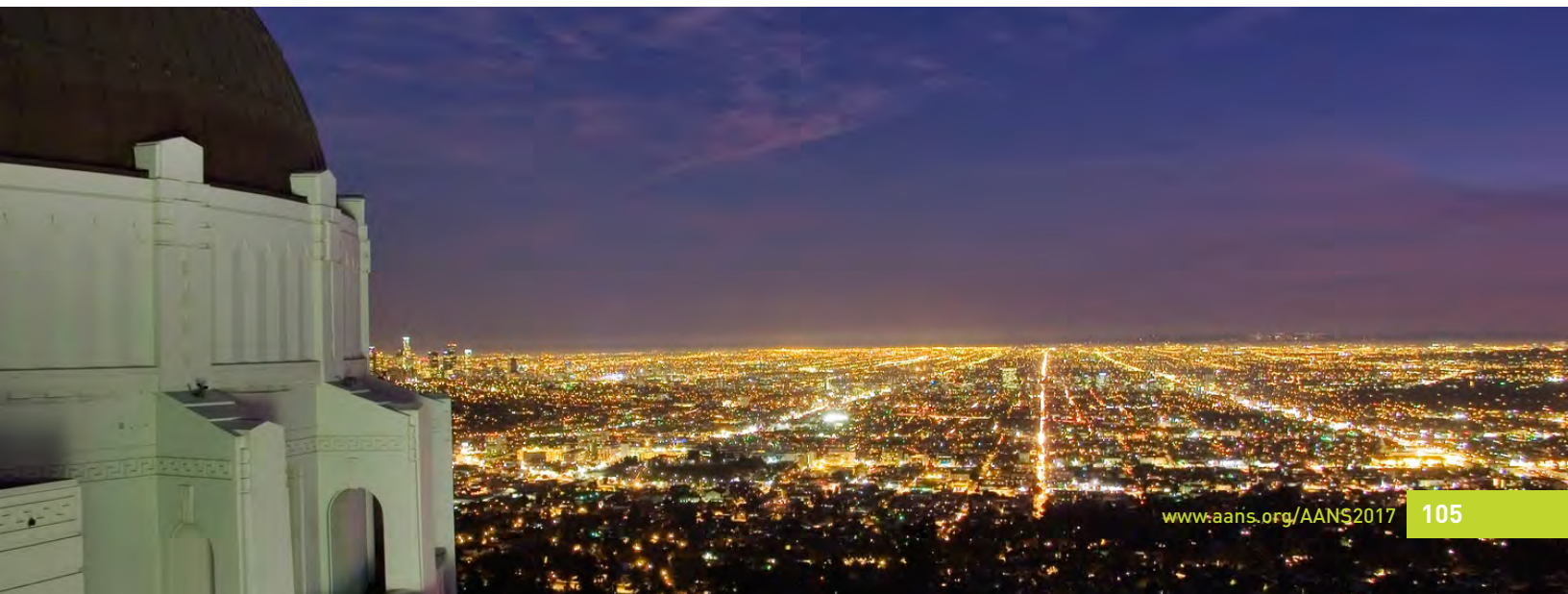
Young Neurosurgeons Luncheon

Fee: \$10

Location: JW Marriott Los Angeles L.A. LIVE

Speaker: Richard G. Ellenbogen, MD, FAANS

[\[see page 87\]](#)



CANDIDATE (Resident/Fellow) AND MEDICAL STUDENT ACTIVITIES

Sessions for Candidates and Medical Students



Twenty-one exclusive Practical Clinics and all Breakfast Seminars are being offered at a discounted rate to residents, fellows and medical students.

A limited number of seats are available based on a first-come, first-served basis.

- 001** Introduction to Cerebrovascular Neurosurgery for Residents [\(page 33\)](#)
- 006** Nuts and Bolts of Posterior Fossa Surgery: How I Do It [\(page 37\)](#)
- 007** Basics of Spinal Stabilization - Advanced Practice Providers (APPs)/Medical Students/Residents [\(page 37\)](#)
- 009** Emerging Technologies in Spine Surgery [\(page 38\)](#)
- 012** **RHOTON LECTURE SERIES:** 3-D Anatomy and Approaches to the Supratentorial Area and Anterior Skull Base [\(page 40\)](#)
- 013** Brain Mapping and Awake Mapping Techniques [\(page 41\)](#)
- 014** Neurosurgical Care of Athletes - Concussion, Spine, Peripheral Nerve and Return-to-play [\(page 41\)](#)
- 015** Update on Spinal Radiosurgery [\(page 42\)](#)
- 016** Microsurgical Management of Intracranial Aneurysms: Site-specific Surgical Anatomy, Operation Intervention and Complication Management [\(page 42\)](#)
- 017** CPT Coding Update with ICD-10 for Neurosurgeons: Coding Concepts by Case Example [\(page 45\)](#)
- 018** Advanced Use of Computer-based Simulation Technologies for Intracranial Surgery [\(page 45\)](#)
- 021** **RHOTON LECTURE SERIES:** 3-D Anatomy and Approaches to the Posterior Fossa and Posterior Skull Base [\(page 50\)](#)
- 022** Update on Tumors for the General Neurosurgeon I: Adult Gliomas and Metastases [\(page 50\)](#)
- 023** How to Launch a Career in Tumor Neurosurgery [\(page 51\)](#)
- 025** Laser Thermocoagulation - How, When and Why [\(page 52\)](#)
- 027** Goodman Oral Board Review [\(page 53\)](#)
- 029** How to Tackle Difficult Cranial Cases: A Step-by-step, 3-D, Case-based Presentation [\(page 54\)](#)
- 030** Update on Tumors for the General Neurosurgeon II: Skull Base, Pediatric and Spine Tumors [\(page 55\)](#)
- 031** Neurotrauma and Neurocritical Care for the Practicing Neurosurgeon: MOC Review and Update [\(page 56\)](#)
- 032** Practical and Technical Aspects of Transsphenoidal Surgery [\(page 56\)](#)
- 034** Peripheral Nerve Injuries, Entrapments and Tumors: Examination and Evaluation [\(page 57\)](#)
- 035** Cranio-cervical and C1C2 Stabilization Techniques, Surgical Approaches [\(page 58\)](#)

ADVANCED PRACTICE PROVIDERS (APPs)

Saturday, April 22

6-8 p.m.

Dinner Symposium: Advanced Practice Providers (APPs): Preventive Care – Planning Strategies for Your Long Term Retirement Goals [\(see page 43\)](#)

Fee: \$75

Sunday, April 23

7:30 a.m.-4:30 p.m.

Advanced Practice Providers (APPs)
Plenary Session [\(see page 48\)](#)

Monday, April 24

7-9 a.m.

Breakfast Seminar: 101 Practice Pearls for the Outpatient Neurosurgical Advance Practice Providers (APPs)

[\(see page 61\)](#)

Fee: \$100

1:15-2:45 p.m.

Advanced Practice Providers (APPs)
Luncheon [\(see page 72\)](#)

Fee: \$25

Speaker: Ellen J. Godena, EdM, MSW, LICSW, MGH

6:30-8:30 p.m.

Dinner Symposium: Advanced Practice Provider (APPs): Advances in Wound Closure: Improving Patient Outcomes with New Products and Techniques

[\(see page 75\)](#)

Fee: \$85

Tuesday, April 25

2-5:30 p.m.

Advancements in Neurotrauma Care
[\(see page 88\)](#)

Fee: \$100

Wednesday, April 26

7-9 a.m.

Breakfast Seminar: 318 The Use of Opioids in Neurosurgical Practice: How to be Safe, Effective and Compliant with New Prescribing Laws [\(see page 99\)](#)

Fee: \$100



ADVANCED PRACTICE PROVIDERS (APPs)

Sessions for Advanced Practice Providers (APPs)

APP

Thirteen Practical Clinics are being offered at a 30-percent discount.

- 002** Current Treatments and Controversies in Traumatic Brain Injury [\[page 33\]](#)
- 007** Basics of Spinal Stabilization – Advanced Practice Providers (APPs)/Medical Students/Residents [\[page 37\]](#)
- 008** Update on the Management of Spine and Spinal Cord Injury [\[page 38\]](#)
- 009** Emerging Technologies in Spine Surgery [\[page 38\]](#)
- 010** Spinal Alignment: What Every Surgeon Needs to Know [\[page 39\]](#)
- 017** CPT Coding Update with ICD-10 for Neurosurgeons: Coding Concepts by Case Example [\[page 45\]](#)
- 019** You Are Never Too Old for Surgery: Spine Management in an Aging Population [\[page 46\]](#)
- 025** Laser Thermocoagulation - How, When and Why [\[page 52\]](#)
- 030** Update on Tumors for the General Neurosurgeon II: Skull Base, Pediatric and Spine Tumors [\[page 55\]](#)
- 031** Neurotrauma and Neurocritical Care for the Practicing Neurosurgeon: MOC Review and Update [\[page 56\]](#)
- 033** Alternatives to Transpedicular Approaches to Achieving Arthrodesis [\[page 57\]](#)
- 034** Peripheral Nerve Injuries, Entrapments and Tumors: Examination and Evaluation [\[page 57\]](#)
- 035** Cranio-cervical and C1C2 Stabilization Techniques, Surgical Approaches [\[page 58\]](#)



EXHIBIT HALL AND LEARNING CENTER

This year, more than 200 companies will showcase their products and services at the 2017 AANS Annual Scientific Meeting. The health care industry is changing rapidly; visit the exhibit hall to learn about new technology available and evaluate the most up-to-date devices and services all in one convenient place. Registration fees at the meeting would be considerably higher without the income generated from exhibitor participation. Please set aside dedicated time to visit with exhibitors, and let them know you value their participation at the meeting.

Exhibit and Learning Center Hours

Monday, April 24 9 a.m.-4:15 p.m.

Tuesday, April 25 9 a.m.-4:15 p.m.

Wednesday, April 26 9 a.m.-2:15 p.m.

Lunch in the AANS Exhibit Hall

We will offer a lunch on Monday, Tuesday and Wednesday in the Exhibit Hall. Each medical attendee will be provided with a ticket for a complimentary lunch. Please be sure to join us in the Exhibit Hall to have lunch and interact with your colleagues and exhibitors.

Beverage Breaks in the AANS Exhibit Hall

Monday, April 24 9-9:45 a.m. and 3:30-4 p.m.

Tuesday, April 25 9 a.m. and 3:30-4 p.m.

Wednesday, April 26 9-9:45 a.m.

Learning Center

New this year, the Learning Center has been created to provide an educational area for attendees on the exhibit floor that will include:

Electronic Abstract Presentations

Original abstracts and presentations will be available to view at computer kiosks within the Learning Center. These presentations will give you a first-hand look at new, unpublished science.

Practical Clinics

Several of the AANS's Practical Clinics will be held in the Learning Center on Saturday, April 22, and Sunday, April 23.

Industry Surgical Suites

Exhibit companies will hold hands-on learning sessions on the AANS Exhibit Hall floor within the Learning Center. Within the confines of the surgical suite, surgeons will be able to practice specialized skills, master new surgical techniques or learn how to properly use new equipment. These industry sessions will be by invitation of the presenting company.



CONTINUING MEDICAL EDUCATION (CME)

The main goals of the 2017 AANS Annual Scientific Meeting are to serve as a primary source of continuing medical education tailored specifically to the specialty, to advance neuroscience research and to promote a climate conducive to excellence in clinical practice. The 2017 Annual Scientific Meeting Committee is dedicated to meeting these goals. The 2017 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 an important factor in determining the program content of this meeting. Special recognition is extended to the individuals of the 85th Annual Scientific Meeting Committee and the committees they represent for their perseverance and commitment to making the 85th AANS Annual Scientific Meeting a success.

Continuing Medical Education (CME)

The AANS is accredited by the Accreditation Council for Continuing Medical Education (ACCME) to provide continuing medical education for physicians.

The AANS designates this live activity for a maximum of 43.5 *AMA PRA Category 1 Credits™*. Physicians should claim only the credit commensurate with the extent of their participation in the activity.

*A maximum of 32.5 *AMA PRA Category 1 Credits™* can be claimed for general sessions.

CME Credit for Practical Clinics

Attendees will receive a maximum of 4 *AMA PRA Category 1 Credits™* for all eligible half-day clinics and 8 *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.



CME Credit for Breakfast Seminars

Attendees will receive a maximum of 2 *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 Dinner Symposia

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

CME Credit for Electronic Presentation

Physicians may claim *AMA PRA Category 1 Credits™* directly with the American Medical Association (AMA) for preparing an electronic 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 electronic presentations. Physicians should self-claim credit to the AMA on their AMA PRA certificate application form.

Continuing Education for Advanced Practice Providers (APPs)

Practical clinics, breakfast seminars and afternoon sessions listed on [pages 107-108](#) are designed with the APP in mind.

Nurse practitioners (NPs) and physician assistants (PAs) must self-report their credit on [MyAANS.org](#) after completion of the meeting. PAs may print a certificate of attendance that can be submitted to the American Academy of Physician Assistants (AAPA) for acceptance toward the Physician Assistant Category I (pre-approved) CME requirement.

CONTINUING MEDICAL EDUCATION (CME)

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 health-care 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 2017 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 2017 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 2017 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 new cycle is Jan. 1, 2017, through Dec. 31, 2019. 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 Credits™ during each CME cycle.

GENERAL INFORMATION

Age Restrictions

Children under the age of 18 will not be admitted in the AANS Exhibit Hall and Learning Center. Please make necessary arrangements for your child's supervision prior to visiting the AANS Exhibit Hall and Learning Center. For all other official AANS activities, children under the age of 18 must be accompanied by an adult.

American with Disabilities Act

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 or services. If you require any of the auxiliary aids or services identified in the Americans with Disabilities Act in order to attend any program, please include this information with your advance registration.

Attendee Onsite Registration Hours

Friday, April 21 5-7 p.m.
Saturday, April 22 6:30 a.m.-5:30 p.m.
Sunday, April 23 6:30 a.m.-6:30 p.m.
Monday, April 24 6:30 a.m.-4 p.m.
Tuesday, April 25 6:30 a.m.-4 p.m.
Wednesday, April 26 6:30 a.m.-3:30 p.m.

Attire

Attire for the 2017 AANS Annual Scientific Meeting is business or business casual, depending on the nature of the event or unless otherwise indicated.

No Smoking Policy

Smoking is not permitted at any official AANS events, the Los Angeles Convention Center or any of the official AANS hotels.

Climate/Time Zone

Los Angeles is located in the Pacific Time Zone. The city's average high temperature for the Los Angeles metropolitan area is 69 degrees Fahrenheit, and the low average temperature is 53 degrees Fahrenheit. Los Angeles is in what is classified as a Mediterranean climate that is characterized by seasonal changes in rainfall with a dry summer and rainy winter with small changes in temperature from season to season. All-weather clothing

that can be layered and removed if necessary, such as jackets, is recommended. Please consider checking www.weather.com two days before your flight for the latest on the weather and temperature outlook.

Meeting Location

Los Angeles Convention Center
1201 S. Figueroa St.
Los Angeles, CA 90015
213.741.1151

Headquarters Hotel

JW Marriott Los Angeles L.A. LIVE
900 W. Olympic Boulevard
Los Angeles, CA 90015
213.765.8600



GENERAL INFORMATION

International Travel Information

International attendees traveling to the U.S. from countries in the Visa Waiver Program must apply for entry online as part of the Electronic System for Travel Authorization. The program does not apply to travelers entering by land from Canada or Mexico. The authorization is valid for two years or until your passport expires, whichever comes first. Note: Authorization does not guarantee entry into the U.S.; that decision rests with the immigration official at the port of entry. Visit the Electronic System for Travel Authorization to apply for entry, and plan ahead to permit plenty of time to process your travel information before the meeting

International attendees traveling to the U.S. from other countries that require a visa need to make the necessary arrangements through their local U.S. Consulate or Embassy. Please plan ahead to permit plenty of time to process your visa before the meeting.

To request a visa letter of invitation, you must register for the 2017 AANS Annual Scientific Meeting. During the registration process, you will be asked if a visa letter is

needed. Select yes to complete the required fields, and at the end on your ConnectMe dashboard, you will be able to print the letter. If you have questions, contact aansannual@compusystems.com.

Developing Countries Registration Information

The AANS is committed to the international neurosurgical community and strengthening the specialty around the world. One area of particular emphasis for the AANS in its international efforts is the furthering of educational opportunities for neurosurgical practitioners in developing countries. A new initiative developed by the AANS Scientific Program Committee offers neurosurgeons from 83 countries the opportunity to attend the 2017 AANS Annual Scientific Meeting at a reduced rate of just \$100 (U.S.). For more information on what countries are included in this new initiative, please visit http://www.aans.org/pdf/International_Activities/Developing%20Country%20Status%20Membership%20FY2017.pdf, and click on the Developing Countries category for a complete list.



REGISTRATION

Ways to Register

Complete the [2017 AANS Annual Scientific Meeting Online Advance Registration Form](#) using a major credit card for payment. This is the most immediate and secure method of registration.

Or, download and complete the [Advance Registration Form](#) with credit card information, and send by one of the following methods:

- **Fax:** 708.344.4444
- **Email:** aansannual@compusystems.com
- **Mail with check or credit card information to:**
AANS Registrations Department
c/o CompuSystems
2651 Warrenville Rd, Suite 400
Downers Grove, IL 60515

For wire transfers or questions regarding the 2017 AANS Annual Scientific Meeting, call 708.450.5882.

A letter of confirmation will be sent to you via email or fax (if no email address is supplied) or via mail (if no email or fax number is supplied) within 48 hours of receipt of your registration.

You will receive a separate confirmation for your hotel reservation.

Cancellations/Refunds

Requests for registration cancellation must be made in writing and sent to:

AANS Registrations Department
c/o CompuSystems
2651 Warrenville Rd, Suite 400
Downers Grove, IL 60515

Fax: 708.344.4444

Email: aansannual@compusystems.com

All refunds will be processed and mailed following the 2017 AANS Annual Scientific Meeting. Refunds for meeting registrations and all ticketed events will be made in accordance with the following schedule:

- Cancellations received on or before March 27, 2017, will receive a full refund less a \$50 processing fee.
- Cancellations received between March 28, 2017, and April 14, 2017, will receive a full refund less a \$100 processing fee.
- No refunds will be granted if received on or after April 15, 2017, or no-shows.



REGISTRATION

Registration Fees

Members of the Societies of the Asian Australasian Society of Neurological Surgeons (AASNS) and the European Association of Neurological Societies (EANS) will be registered at the discounted AANS member rate thanks to a collaboration with the AANS for the 2017 AANS Annual Scientific Meeting.

	On or Before March 22, 2017	After March 22, 2017
AANS Neurosurgeon Member [901]	\$799	\$899
AANS Neurosurgeon Retired or Lifetime Member [927]	\$495	\$595
Non-member Neurosurgeon [902]	\$999	\$1099
Non-member Physician — Other [903]	\$999	\$1099
Non-member/Non-physician [904]	\$999	\$1099
Military AANS Neurosurgeon Member ⁷ [905]	\$0	\$0
Non-member U.S. Armed Forces Neurosurgeon [974]	\$570	\$670
Resident/Candidate Member [906]	\$200	\$200
Resident/Candidate Non-member ¹ [908]	\$440	\$540
International Resident/ Candidate Member [907]	\$250	\$350
International Resident/ Candidate Non-member ¹ [909]	\$440	\$540
Developing Countries ⁶	\$100	\$100
Medical Student Member [929]	\$0	\$0
Medical Student Non-member ³ [971]	\$100	\$100
Advanced Practice Provider (APP) Member [978]	\$455	\$555
Advanced Practice Provider (APP) Non-member ⁵ [979]	\$555	\$655
Commercial Press ⁴ [915]	\$475	\$575
Spouse ² [950]	\$250	\$250
Guest ² [951]	\$250	\$250

¹ Letter of recommendation from program director required. Details will be provided in registration form.

² Spouse/Guests cannot earn CME credits nor attend any Practical Clinics or Breakfast Seminars. Presenters of any kind are not eligible to register as a guest or spouse.

³ Every medical student must include a photocopy of his/her current medical student ID card.

⁴ The commercial press category encompasses those writers and editors who represent for-profit publications that are circulated among the medical device industry and the business community. Their attendance at the 2017 AANS Annual Scientific Meeting is to network and highlight the activities of device or pharmaceutical companies. Business, medical device and manufacturing publications that do not contain editorial content related to the scientific program (research) presented at the meeting fall into the category of "commercial press" publications. In addition, to qualify for this registration category, you must be on the editorial staff of the publication you represent. Sales or marketing personnel do not qualify for this reduced-fee registration category.

⁵ Physician Assistants (PAs) and nurses must provide a copy of his/her medical credentials.

⁶ Every individual applying for the developing countries registration rate must provide a photocopy of his/her passport.

⁷ AANS Military Members also receive complimentary housing at one of the official AANS hotels. Please contact the AANS Meetings Department at 847.378.0500 to reserve your complimentary housing after registering for the 2017 AANS Annual Scientific Meeting or email jmj@aans.org.

REGISTRATION

AANS Online Meeting Recordings

2017 AANS Annual Scientific Meeting registration includes free online access to the full compilation of recorded meeting content. Recorded sessions will be made available to medical attendees once they are edited and uploaded following the conclusion of the 2017 AANS Annual Scientific Meeting.

Audio/Video Capture at the 2017 AANS Annual Scientific Meeting

AANS plans to capture video, live stream video and/or take photographs at the 2017 AANS Annual Scientific Meeting. By registering/attending the meeting, you grant the AANS the right to use image, video and biography in print, electronic or other media. All postings become the property of the AANS and may be displayed, distributed or used by the AANS for any purpose. Attendees are prohibited from live streaming, photography and video capture without the consent of the AANS. The AANS is not responsible for unauthorized media capture performed by meeting attendees.

Your NPI at the 2017 AANS Annual Scientific Meeting

As part of the health care reform legislation signed into law in March 2010, the Physician Payment Sunshine Act requires medical device, biologic and drug companies to publicly disclose gifts and payments made to physicians beginning in 2013. For U.S. health care providers, companies must also report any payment or other transfer of items with a minimum value of \$10/payment or \$100/year to the Department of Health & Human Services (HHS). The National Provider Identifier (NPI) number, a unique identification number assigned to each U.S. health care provider, will be used to record and track these transactions.

To facilitate a quick and accurate record of any transactions during the 2017 AANS Annual Scientific Meeting that may need to be tracked and recorded under the law, the AANS is requesting that U.S. health care providers supply their NPI number as part of their registration for the meeting. This information will not be printed on your badge but will be included in your barcode-encoded data so that exhibitors can record and track any reportable transactions.

U.S. health care providers should understand that although supplying your NPI number as part of your 2017 AANS Annual Scientific Meeting registration is voluntary, the reporting of transactions with companies under the Physician Payment Sunshine Act is mandatory. Your NPI number is public; you may search the [NPI Registry](#).



HOUSING



The AANS Housing Bureau will process hotel reservations based on choice and availability. All reservation requests should be made through the AANS Housing Bureau: onPeak.

Rooms will be assigned on a first-come, first-serve and space-available basis. These hotels have been selected because they are well-situated, provide a variety of rates and have consistently shown a high level of service. When you book through the AANS Housing Bureau, you receive a room at the lowest negotiated rate, convenient locations and complimentary shuttle service to and from the convention center where available.

By making your reservation within the official housing block, you are supporting the AANS and ensuring lower overall costs such as registration and convention center fees and ensuring that we are able to contract for the space that we need for future AANS Annual Scientific Meetings. Personally, you benefit by receiving the lowest rate for your room(s) as well as added services and incentives only available to those who book through onPeak.

Headquarters Hotel

JW Marriott Los Angeles L.A. LIVE
900 W. Olympic Boulevard
Los Angeles, CA 90015
213.765.8600

This stunning, 54-story masterpiece hotel is just steps from the Los Angeles Convention Center in the heart of downtown Los Angeles. It is the focal point of L.A. LIVE, offering guests a front-row seat to this emerging world-class entertainment, sports and dining epicenter.

The hotel offers a lavish Ritz Carlton Spa; a rooftop pool and bar; dining options such as WP24 and LA Market by Kerry Simon; luxurious guest rooms and expansive suites. Entertain your senses at the JW Marriott Los Angeles L.A. LIVE.

To book your reservation, go to our [Housing page](#).



HOUSING

The AANS has partnered with the following hotels and rooms can be reserved through the AANS Housing Bureau, onPeak. To book your reservation, go to our [Housing page](#).

Courtyard Los Angeles L.A. LIVE

901 W. Olympic Boulevard
Los Angeles, CA 90015
213.443.9222

Doubletree by Hilton Hotel Los Angeles Downtown

120 S. Los Angeles Street
Los Angeles, CA 90012
213.629.1200

Hilton Checkers Los Angeles

535 S. Grand Avenue
Los Angeles, CA 90071
213.624.0000

Hotel Indigo Los Angeles Downtown

899 Francisco Street
Los Angeles, CA 90017
213.784.7694

Luxe City Center Hotel

1020 S. Figueroa Street
Los Angeles, CA 90015
213.748.1291

Millennium Biltmore Hotel Los Angeles

506 S. Grand Avenue
Los Angeles, CA 90071
213.624.1011

Omni Los Angeles Hotel at California Plaza

251 S. Olive Street
Los Angeles, CA 90012
213.748.1291

Residence Inn Los Angeles L.A. LIVE

901 W. Olympic Boulevard
Los Angeles, CA 90015
213.443.9222

Ritz-Carlton Los Angeles

900 W Olympic Boulevard
Los Angeles, CA 90015
213.743.8800

Sheraton Grand Los Angeles

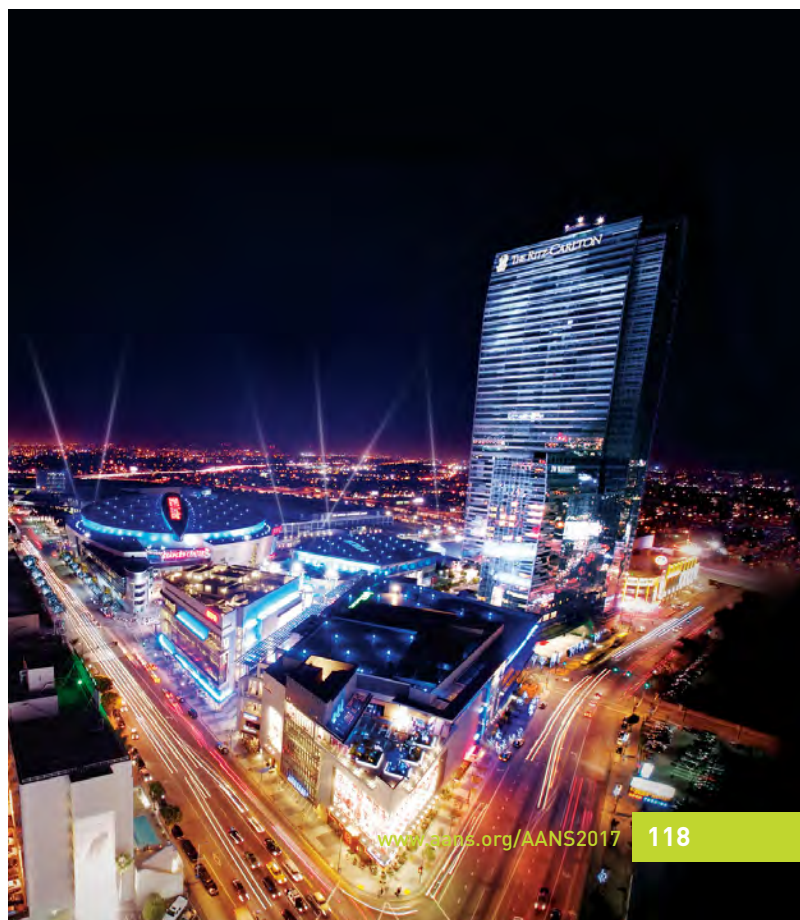
711 S Hope Street
Los Angeles, CA 90017
213.488.3500

The L.A. Hotel Downtown

333 S. Figueroa Street
Los Angeles, CA 90071
213.617.1133

The Westin Bonaventure Hotel & Suites, Los Angeles

404 S Figueroa Street
Los Angeles, CA 90071
213.624.1000



2017 **AANS**
ANNUAL SCIENTIFIC MEETING



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American
Association of
Neurological
Surgeons