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Together, we confront the challenges of neurological disorders and diseases:

- **Stroke**: Ischemic and Hemorrhagic
- **Brain tumors and lesions**
- **Chronic and Cancer Pain**
- **Cranial trauma**
- **Dystonia**
- **Epilepsy**
- **Essential tremor**
- **Hydrocephalus**
- **Obsessive-compulsive disorder**
- **Parkinson’s disease**
- **Spine**: Degenerative and Deformity

*Approved as a Humanitarian Device in the US: the effectiveness of DBS for the treatment of Dystonia and OCD has not been demonstrated.
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All room numbers refer to the San Diego Convention Center unless otherwise noted.
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@thejns Official Twitter feed of the Journal of Neurosurgery (JNS)
@neurosurgery Legislative, advocacy and policy-related news from the Washington Office
#AANS2019
FRIDAY, APRIL 12

7 a.m.–5 p.m. Speaker Ready Room
Location: 22

8 a.m.–5 p.m. AANS Exhibitor Registration
Location: Hall D Lobby

10 a.m.–6 p.m. AANS Badge Pick-up
Location: Del Mar Foyer, Level 3 Marriott Marquis

5–7 p.m. AANS Medical Attendee Registration
Location: Hall D Lobby

SATURDAY, APRIL 13

6:30 a.m.–5:30 p.m. AANS Registration
Location: Hall D Lobby

7 a.m.–4 p.m. Speaker Ready Room
Location: 22

8 a.m.–6 p.m. AANS Badge Pick-up
Location: Del Mar Foyer, Level 3 Marriott Marquis

8 a.m.–5 p.m. All-day Practical Clinics
(002, 003, 006)

8 a.m.–5 p.m. International Symposium
Spine, Cerebrovascular and Tumor
Location: 20A

8 a.m.–12 p.m. Morning Practical Clinics
(001, 007–013)

1–5 p.m. Afternoon Practical Clinics
(014, 016–021)
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| 6:30 a.m.–7 p.m. | AANS Registration  
Location: Hall D Lobby |
| 7 a.m.–4 p.m.   | Speaker Ready Room  
Location: 22 |
| 8 a.m.–8 p.m.   | AANS Badge Pick-up  
Location: Del Mar Foyer, Level 3 Marriott Marquis |
| 7:30 a.m.–4:30 p.m. | All-Day Practical Clinic (024, 025, 027, 028) |
| 7:30 a.m.–4:30 p.m. | The NeuroPoint Alliance and Your Practice: Using Registries to Enhance Quality, Reimbursement, Certification and Clinical Research  
Location: 28DE |
| 7:30 a.m.–4:30 p.m. | International Symposium Stereotactic and Functional, Pediatrics and Neurotrauma  
Location: 20A |
| 7:30 a.m.–4:30 p.m. | Advanced Practice Providers Plenary Session  
Location: 29B |
| 7:30–11:30 a.m. | Morning Practical Clinics (030–034) |
| 9 a.m.–4:45 p.m. | AANS Exhibit Hall  
Location: Halls EFG  
**NEW** |
| 9 a.m.–4:45 p.m. | AANS Learning Center  
Location: Hall D |
| 9:15–10:15 a.m. | Morning Beverage Break in the AANS Exhibit Hall  
Location: Halls EFG |
| 11:30 a.m.–12:30 p.m. | Lunch in the AANS Exhibit Hall  
Location: Halls EFG |
11:40 a.m.–12:25 p.m.  Lunch-and-learn Seminars  
Non-CME Event  
Location: Hall D

12–5 p.m.  NREF Cushing Circle Donor Lounge  
Location: 33A

12:30–4:30 p.m.  Afternoon Practical Clinics  
(035-040)

1–4:30 p.m.  Young Neurosurgeons Research Forum  
Location: 30CDE  
Osler Lecture  
Howard M. Eisenberg, MD, FAANS

1:30–3:30 p.m.  Surgical Suite Demo  
Non-CME Event  
Location: Hall D

2–3 p.m.  Afternoon Beverage Break in the AANS Exhibit Hall  
Location: Halls EFG

4:45–6:30 p.m.  AANS Opening Ceremonies  
Location: Hall H  
Historical Film: History of San Diego Neurosurgery presented by Alexander Arash Khalessi, MD, FAANS  
Speakers: Wayne M. Sotile, PhD; Zubin Damania, MD (ZDogMD)

7–9 p.m.  AANS Opening Reception  
Location: USS Midway Museum

Monday, April 15

6:30 a.m.–4 p.m.  AANS Registration  
Location: Hall D Lobby

7–9 a.m.  Breakfast Seminars (100-117)

7–9 a.m.  Sunrise Sessions (118, 119)  
Location: Hall D
7:30–9 a.m. AANS/CNS Section on Women in Neurosurgery (WINS) Breakfast
Non-CME Event
Location: Marina Ballroom G, Level 3; Marriott Marquis

7 a.m.–5 p.m. NREF Cushing Circle Donor Lounge
Location: 33A

8:30 a.m.–5 p.m. Speaker Ready Room
Location: 22

9 a.m.–4:45 p.m. AANS Exhibit Hall
Location: Halls EFG

9 a.m.–6 p.m. AANS Learning Center
Location: Hall D

9–9:45 a.m. Morning Beverage Break in the AANS Exhibit Hall
Location: Halls EFG

9:30 a.m.–1:26 p.m. Plenary Session I
Location: Hall H

Historical Film: History of Neurotrauma in Southern California presented by John A. Kusske, MD, FAANS(L) and Shelly D. Timmons, MD, PhD, FAANS, FACS

Louise Eisenhardt Lecture
Maria Konnikova

Rhoton Family Lecture
Robert E. Harbaugh, MD, FAANS

Theodore Kurze Lecture
Jaimie M. Henderson, MD, FAANS

AANS Presidential Address
Shelly D. Timmons, MD, PhD, FAANS, FACS

11 a.m.–1 p.m. Surgical Suite Demo
Non-CME Event
Location: Hall D
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<td>1:30–2:30 p.m.</td>
<td>Lunch in the AANS Exhibit Hall&lt;br&gt;Location: Halls EFG</td>
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<td>1:40–2:25 p.m.</td>
<td>Lunch-and-learn Seminars in the AANS Learning Center&lt;br&gt;Non-CME Event&lt;br&gt;Location: Hall D</td>
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<td>1:40–2:30 p.m.</td>
<td>Neurosurgery In Press: Latest Results of Clinical Trials in Neurosurgery and Allied Fields&lt;br&gt;Location: 24BC</td>
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<td>1:45–3:15 p.m.</td>
<td>Advanced Practice Providers (APPs) Luncheon: The Science of Practice — Gaining the Trust of the Pediatric Neurosurgical Patient and Family — How to Dance Your Way Into Their Hearts!&lt;br&gt;Location: Cardiff/Carlsbad, Level 3; Marriott Marquis&lt;br&gt;Maurice Anthony Adkins, PA-C</td>
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<td>2–4 p.m.</td>
<td>Surgical Suite Demo&lt;br&gt;Non-CME Event&lt;br&gt;Location: Hall D</td>
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<td>2:30–4 p.m.</td>
<td>Operative Nuances I: Difficult Cases: What Have We Learned? — 3-D Presentation&lt;br&gt;Location: 20D</td>
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<td>2:30–6 p.m.</td>
<td>Scientific Sessions I-VII&lt;br&gt;Scientific Session I: Tumor&lt;br&gt;Location: 30CDE&lt;br&gt;Scientific Session II: Spine&lt;br&gt;Location: 20A&lt;br&gt;Scientific Session III: Stereotactic and Functional Surgery&lt;br&gt;Location: 29CD&lt;br&gt;Scientific Session IV: Pediatrics&lt;br&gt;Location: 32AB&lt;br&gt;Scientific Session V: Cerebrovascular&lt;br&gt;Location: 31ABC</td>
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WEEK AT A GLANCE

Scientific Session VI: Neurotrauma and Critical Care  
Location: 30AB

Scientific Session VII: AANS/CSNS Socioeconomic  
Location: 33BC

3–5 p.m.  
Interventional Pain Management: Technological Advancements in Spinal Cord Stimulation  
Non-CME Event  
Location: Booth 340, Hall D

4–4:30 p.m.  
Afternoon Beverage Break in the AANS Exhibit Hall  
Location: Halls EFG

5–8 p.m.  
Surgical Suite Workshop  
Non-CME Event  
Location: Hall D

6–7 p.m.  
Joint Annual Business Meeting of the American Association of Neurological Surgeons (AANS) and the American Association of Neurosurgeons (AAN)  
Location: 24BC

7–8:30 p.m.  
NREF Donor Reception  
Location: Bayside Room, Lobby Level; Marriott Marquis  
By Invitation Only

6:30–9:30 p.m.  
AANS Section on the History of Neurological Surgery Section Dinner  
Setti S. Rengachary, MD Memorial Lecture  
Non-CME Event  
Vice Adm. Harold M. Koenig, MD (USN-Ret)  
Location: The Prado at Balboa Park
6:30–9 p.m.  Young Neurosurgeons Evening at the San Diego Zoo  
Location: Elephant Odyssey  
San Diego Zoo

7–9 p.m.  Dinner Symposium: Novel Techniques and Strategies to Treat Spine Disease in the Aging Population  
Location: Lionfish at the Pendry, San Diego  
Dinner Symposium: New Strategies for Endovascular Aneurysm Treatment  
Location: Water Grill

8–9:30 p.m.  AANS International Reception  
Location: The Oxford Social Club

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TUESDAY, APRIL 16

6:30 a.m.–4 p.m.  AANS Registration  
Location: Hall D Lobby

6:30 a.m.–6:30 p.m.  Luggage and Coat Check  
Location: Hall D Lobby

7 a.m.–5 p.m.  NREF Cushing Circle Donor Lounge  
Location: 33A

7–9 a.m.  Breakfast Seminars (200–217)

7–9 a.m.  Sunrise Sessions (218, 219)  
Location: Hall D

8:30 a.m.–5 p.m.  Speaker Ready Room  
Location: 22

9 a.m.–4:45 p.m.  AANS Exhibit Hall  
Location: Halls EFG

9 a.m.–6 p.m.  AANS Learning Center  
Location: Hall D
WEEK AT A GLANCE

9–9:45 a.m.  Morning Beverage Break in the AANS Exhibit Hall
Location: Halls EFG

9:30 a.m.–1:26 p.m.  Plenary Session II
Location: Hall H

- Historical Film: Neurosurgery and the Military presented by Gerald A. Grant, MD, FAANS, and Captain Jeffrey M. Tomlin, MD, FAANS
- Richard C. Schneider Lecture
  Robert J. Dempsey, MD, FAANS
- Van Wagenen Lecture
  Stephen J. Haines, MD, FAANS
- Hunt-Wilson Lecture
  David Ferrucci, PhD
- Cushing Orator
  Jim Yong Kim, MD, PhD

11 a.m.–1 p.m.  Surgical Suite Demo
Non-CME Event
Location: Hall D

1:30–2:30 p.m.  Lunch in the AANS Exhibit Hall
Location: Halls EFG

1:40–2:25 p.m.  Lunch-and-learn Seminars
Non-CME Event
Location: Hall D

1:45–3:15 p.m.  Young Neurosurgeons Luncheon
Non-CME Event
Location: Marina Ballroom G, Lobby Level, Marriott Marquis

- The Redemptive Strenuosities of a Neurosurgical Life
  Anil Nanda, MD, MPH, FAANS

1:45–3:30 p.m.  Mentorship: Lessons in Resiliency
Location: Mission Hills, Level 3; Marriott Marquis
2:30–4 p.m.  Operative Nuances II: Operative Nuances II: Challenging Operative Moments During Microsurgery 3-D Video Presentation  Location: 20D

2:30–6 p.m.  Section Sessions  AANS Section on the History of Neurological Surgery  Location: 30AB  AANS/CNS Section on Disorders of the Spine and Peripheral Nerves — Spine Section  Location: 20A  AANS/CNS Section on Pain  Location: 31ABC  AANS/CNS Section on Pediatric Neurological Surgery  Location: 32AB  AANS/CNS Section on Tumors I  Location: 30CDE

2:30–6 p.m.  Advancements in Neurotrauma Care  Location: 33BC

4–4:30 p.m.  Afternoon Beverage Break in the AANS Exhibit Hall  Location: Halls EFG

7–9 p.m.  Dinner Symposium: Ripped from the Headlines- Doctors in Medico-legal Crosshairs: Lessons Learned to Keep Lawyers and Regulators Away  Location: The Prado at Balboa Park  Dinner Symposium: Time For Change: The Future of Neurosciences Delivery and Integration  Location: Eddie V’s Prime Seafood
WEDNESDAY, APRIL 17

6:30 a.m.–3:30 p.m.  
AANS Registration  
Location: Hall D Lobby

6:30 a.m.–5:30 p.m.  
Luggage and Coat Check  
Location: Hall D Lobby

7–9 a.m.  
Breakfast Seminars (300-305)

7–9 a.m.  
Sunrise Sessions (306, 307)  
Location: Hall D

8:30 a.m.–4 p.m.  
Speaker Ready Room  
Location: 22

12:30–5 p.m.  
AANS Learning Center  
Location: Hall D

9–10 a.m.  
Morning Beverage Break  
Location: 20A Foyer

9:35 a.m.–1 p.m.  
Plenary Session III  
Location: 20A

1–2 p.m.  
Rapid Fire Abstracts: Cerebrovascular-Tumor  
Location: Booth 614, Hall D

1–2 p.m.  
Rapid Fire Abstracts: Pediatrics-Stereotactic and Functional  
Location: Booth 414, Hall D
2–5 p.m. Section Sessions
AANS/CNS Section on Disorders of the Spine and Peripheral Nerves — Peripheral Nerves Section
Location: 32AB

AANS/CNS Cerebrovascular Section
Location: 31ABC

AANS/CNS Section on Neurotrauma and Critical Care
Location: 30AB

AANS/CNS Section on Tumors II
Location: 30CDE

AANS Section on Stereotactic and Functional Surgery
Location: 29CD

3–4 p.m. Afternoon Beverage Break
Location: 31A Foyer

Please Note: All abstracts are published as submitted by authors. The AANS is unable to make any changes to the abstracts.

The following are available for the duration of the meeting
First Aid Station: Hall E Lobby
Mother’s Room: Hall E Lobby, behind Starbucks
Quiet/Prayer Room: Hall H Show Office, Mezzanine Level
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Saturdays, April 13

Speakers listed are as of Monday, March 11, 2019

6:30 a.m.–5:30 p.m.
AANS Registration
Location: Hall D Lobby

7 a.m.–4 p.m.
Speaker Ready Room
Location: 22

8 a.m.–6 p.m.
AANS Badge Pick-up
Location: Del Mar, Level 3; Marriott Marquis

8 a.m.–5 p.m.
All-day Practical Clinics

002 Bedside Biostatistics: How to Find and Use Evidences to Take Care of Patients
Location: 28DE
F. Barker; N. Brandmeir; E. Church; M. Glantz; R. Harbaugh; A. Patel; E. Rizk; S. Toms; B. Zacharia

003 You Are Never Too Old for Surgery: Spine Management in an Aging Population
Location: 30CDE
P. Anderson; N. Brooks; D. Dirisio; D. Josiah; A. Krishnaney; V. Miele; K. Petronis; L. Prado; S. Rajpal; D. Resnick; S. Schmoller; J. Shin; M. Steinmetz; A. Strayer; S. Tharin; E. Tsa; E. Woodard

006 The Art and Science of Leadership: How to Maximize Personal and Team Success
Location: 26AB
L. Chin; A. Ganju; C. Neal; A. Parr; R. Rodriguez; N. Selden; C. Shaffrey; M. Stewart; R. Thompson; S. Wolfe
It is with great pleasure that the leaders of the AANS welcome the Federacion Latinoamericana de Sociedades de Neurocirugia (FLANC) and the Asian Australasian Society of Neurological Surgeons (AASNS) to the 2019 AANS Annual Scientific Meeting as collaborating continental societies.

7:45 a.m.–5 p.m.  
**International Symposium**  
Location: 20A

7:45–7:48 a.m.  
**International Opening Ceremony**  
Speaker: Co Chair, AANS International Symposium  
K. Arnautovic

7:49–7:52 a.m.  
**International Opening Ceremony**  
Speaker: Co Chair, AANS International Symposium  
J. Morcos

7:53–7:56 a.m.  
**International Opening Ceremony**  
Speaker: President, AASNS  
B. Misra (India)

7:57–8 a.m.  
**International Opening Ceremony**  
Speaker: President, FLANC  
C. Yampolsky (Argentina)

**Session I: Spine**  
Moderator(s): Y. Lu; J. Uribe; M. Wang

8–8:05 a.m.  
**Session Introduction**

8:06–8:21 a.m.  
**Craniocervical Junction Instability: Evolving Concepts**  
A. Goel (India)
8:22–8:37 a.m.
Simplifying Atlantoaxial Fixation and Fusion with Anterior Retropharyngeal Plate Screw Fixation of Atlantoaxial Joints
S. Patkar (India)

8:38–8:53 a.m.
Cervical Arthroplasty in a Military Population
P. de Melo (Brazil)

8:54–9:09 a.m.
Retrospective Study of 1000 Cases of Anterior Cervical Spine Surgery: A Comparison of Clinical Outcome Parameters and Complication Rates
R. Burgos (Colombia)

9:10–9:25 a.m.
Predicting Prognosis in Spine Metastasis
S. Sharif (Pakistan)

9:26–9:41 a.m.
Adjacent Segment Disease: Is Dynamic Stabilization Useful?
B. Fernandez (Mexico)

9:42–9:57 a.m.
Microsurgical Treatment of Lumbar Degenerative Spondylolysis and Spondylolisthesis
M. Masini (Brazil)

9:58–10:13 a.m.
Minimally Invasive Treatment for Multilevel Lumbar Canal Stenosis in the Geriatric Population
S. Sinha (India)

10:14–10:34 a.m.
Spine Panel/Case Discussions

10:35–10:50 a.m.
Beverage Break
Session II: Cerebrovascular
Moderator(s): A. Arthur; M. Aziz-Sultan; J. Morcos

10:51–11:06 a.m.
Institutional Protocol for Treatment of Incidental Aneurysms: Decision Making, Application and Results
M. Baccanelli (Argentina)

11:07–11:22 a.m.
Safe Surgical Treatment for Complex Intracranial Aneurysms
R. Tanikawa (Japan)

11:23–11:38 a.m.
Microsurgery for Giant Intracranial Aneurysms
B. Misra (India)

11:39–11:54 a.m.
Microsurgical Treatment of Paraclinoid Aneurysms
F. Chaddad Neto (Brazil)

11:55 a.m.–12:10 p.m.
Surgery of Brainstem Cavernous Angioma
E. Wahjoepramono (Indonesia)

12:11–12:26 p.m.
Microsurgery in the Core of Management of Brain AVMs
J. de Oliveira (Brazil)

12:27–12:42 p.m.
Lessons Learned in the Microsurgery of Cerebral AVMs
Y. Tu (Taiwan)

12:43–12:58 p.m.
Third Generation Cerebral Revascularization: Intracranial — Intracranial Bypass
J. Mura (Chile)

12:59–1:14 p.m.
Cerebrovascular Panel / Case Discussions
1:15–2:15 p.m.
Lunch Break
Concessions are available for purchase in the Hall D Lobby near AANS Registration

Session III: Tumor
Moderator(s): O. Al-Mefty; K. Arnautovic; S. Kalkanis

2:16–2:31 p.m.
Surgery of Cavernous Sinus Meningiomas
K. Ohata (Japan)

2:32–2:47 p.m.
Unlocking the Middle Fossa: A 360 Degree View
D. Mendez-Rosito (Mexico)

2:48–3:03 p.m.
Determinants of Quality of Life in Benign and Low-Grade Brain Tumors and What We Can Do About Them
K. Drummond (Australia)

3:04–3:19 p.m.
Gliomas — New Frontiers
J. Rotta (Brazil)

3:20–3:35 p.m.
Gliomas in Eloquent Regions: Do’s and Don’ts
K. Turel (India)

3:36–3:51 p.m.
Invasive Anterior Fossa Tumors: the Rationality of the Subcranial Approach
A. Aversa do Souto (Brazil)

3:52–4:07 p.m.
Acoustic Neuromas: Microsurgical Techniques, Pitfalls and Results
P. Ajler (Argentina)

4:08–4:23 p.m.
Giant Glomus Jugulare Tumor: A Surgical Entity
L. Borba (Brazil)

4:24–4:44 p.m.
Tumor Panel/Case Discussions
SATURDAY, APRIL 13

4:45–5 p.m.
Beverage Break

8 a.m.–12 p.m.
Morning Practical Clinics

001 AANS/SNS Transition to Practice Course for Senior Residents
Non-CME Event
Location: 25C
J. Bean; D. Benzil; W. Couldwell; A. Dehdashti; K. Kimmell; A. Krishnaney; J. Rosman; A. Scarrow; M. Stippler; L. Tumialan; R. Whitmore; C. Winfree

007 Endovascular Neurosurgery:
Understanding the Procedure — Pre and Post Care Management
Location: 29CD
R. Ballard; C. DeLemos; M. Harrigan; M. Kole; M. Langlois; H. Marin; R. Tahir

008 Neurotrauma and Neurocritical Care for the Practicing Neurosurgeon: MOC Review and Update
Location: 24BC
P. Ball; T. Bleck; P. Hutchinson; J. Medow; D. Michael; D. Okonkwo; P. Raksin; P. Villanueva

009 Update on Techniques and Equipment for Neurosurgical Patient Positioning
Location: 33BC
A. Arthur; M. DeCuypere; D. Hoit; C. Nickele; J. Sorenson
Supported by an educational grant from Codman Specialty Surgical, a Division of Integra LifeSciences

010 Laser Thermocoagulation (LITT) — How, When and Why
Location: 30AB
V. Chiang; M. Schulder; C. Tatsui; S. Tatter; J. Wilden
Supported by an educational grant from MRI Interventions
011 Fundamentals in Spinal Stabilization
Advanced Practice Providers/Medical Students/Residents
Location: 31ABC
V. Chang; K. Das; A. Demetriades; V. Hillard; L. Holly;
S. Khairi; N. Patel; K. Than
Supported by an educational grant from Bioventus, LLC

012 Spinal Cord Stimulation Integrating Pain Management into Your Neurosurgical Practice
Location: 32AB
J. Arle; S. Falowski; A. Raslan; J. Schwalb; J. Sweet;
A. Viswanathan
Supported by an educational grant from Boston Scientific Neuromodulation and Medtronic

013 Emerging Technologies in Spine Surgery
Location: 20D
J. Cheng; D. Drazin; P. Grunert; J. Johnson; T. Kim; N. Malhotra;
A. Parajon; E. Shiban; N. Theodore; C. Thome; M. Wang
Supported by an educational grant from Globus Medical

9:45–10:45 a.m.
Morning Beverage Break
Location: 20A Foyer, 25C Foyer, 28C Foyer and 31A Foyer

12–1 p.m.
Practical Clinic Lunch*
Location: Center Terrace
* For medical attendees participating in an all-day Practical Clinic or in a morning AND afternoon Practical Clinic only.
Concessions are available for purchase in the Hall D Lobby near AANS Registration

1–5 p.m.
Afternoon Practical Clinics

014 Neurosurgical Care of Athletes: Concussion, Spine, Peripheral Nerve and Return to play
Location: 24BC
T. Adamson; J. Maroon; M. McCrea; M. Oppenlander;
A. Sills; R. Spinner
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016 Update on the Management of Spine and Spinal Cord Injury
Location: 25AB
P. Arnold; J. Chi; S. Dhall; M. Fehlings; D. Hoh; W. Jacobs; J. Lafuente; D. Lu; C. Thome

017 Complex Wound Management
Location: 29CD
E. Butler; M. Langlois; S. Radhakrishnan; I. Tarasiewicz

018 Cranio cervical and C1C2 Stabilization Techniques, Surgical Approaches
Location: 31ABC
R. Anderson; D. Brockmeyer; S. Chatterjee; A. Dailey; A. Goel; T. Hankinson; N. Theodore

019 Deep Brain Stimulation (DBS): Update and New Directions
Location: 30AB
A. Abosch; E. Air; S. Ben-Haim; C. Halpern; P. Larson; C. Mikell; J. Rolston; T. Sankar; S. Sheth; J. Sweet; D. Whiting
Supported by an educational grant from Boston Scientific Neuromodulation

020 Robotics in Neurosurgery: Neurmodulatory Surgeries for Epilepsy and Beyond
Location: 32AB
J. Gonzalez-Martinez; A. Grande; G. Grant; R. Gross; S. Ojemann; J. Willie
Supported by an educational grant from Medtronic, Monteris Medical, Neuropace and Zimmer Biomet

021 Latest Breakthroughs for Meningiomas: Surgery vs Radiosurgery
Location: 25C
A. Cohen-Gadol; W. Couldwell; I. Dunn; P. Gardner; J. Liu; M. McDermott; B. Misra; B. Pollock; D. Raleigh; P. Theodosopoulos; J. Villanueva-Meyer; A. Youssef; G. Zadeh

2:30–3:30 p.m.
Practical Clinic Afternoon Beverage Break
Location: 20A Foyer, 25C Foyer, 28C Foyer and 31A Foyer
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2020 AANS ANNUAL SCIENTIFIC MEETING
April 25–29, 2020 | Boston Convention & Exhibition Center

SLEEP BETTER WHEN YOU BOOK IN THE BLOCK

IN-PERSON

onPeak Desk
Hall D Lobby of the
San Diego Convention Center

Friday, 4/12: 8 a.m. – 5 p.m.
Saturday, 4/13: 8 a.m. – 5 p.m.
Sunday, 4/14: 8 a.m. – 6 p.m.
Monday, 4/15: 8 a.m. – 4 p.m.
Tuesday, 4/16: 8 a.m. – 4 p.m.

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SUNDAY, APRIL 14

6:30 a.m.–7 p.m.
AANS Registration
Location: Hall D Lobby

7 a.m.–4 p.m.
Speaker Ready Room
Location: 22

8 a.m.–8 p.m.
AANS Badge Pick-up
Location: Del Mar Foyer, Level 3; Marriott Marquis

9 a.m.–4:45 p.m.
Location: Halls EFG

The AANS Exhibit Hall brings together over 200 companies that offer innovative products and services to the neurosurgical field. This is an opportunity to interact with exhibitors and witness unique advancements in the field of neurosurgery. New this year, the exhibit hall will be open Sunday–Tuesday.

9 a.m.–4:45 p.m.
Location: Hall D

The AANS Learning Center is an interactive area comprised of the AANS Resource Center, Live Stream Sessions area, Lunch-and-learn Seminars, Rapid Fire Abstracts, Sunrise Sessions, and Surgical Suites. This area opens on Sunday and will remain open through Wednesday.
SUNDAY, APRIL 14

7:30 a.m.–4:30 p.m.

All-day Practical Clinics

024 CPT Coding Update with ICD 10 for Neurosurgeons: Coding Concepts by Case Example
Location: 28AB
P. Angevine; R. Johnson; K. Pollock; J. Ratliff; C. Schirmer; S. Simon; L. Tumialan

025 Introduction to Cerebrovascular Neurosurgery for Residents
Non-CME Event
Location: 20BC
A. Arthur; M. Binning; G. Colby; J. Davies; A. Dehdashti; C. Griessenauer; B. Gross; J. Howington; P. Kan; J. Mascitelli; J Mocco; C. Ogilvy; P. Pandey; R. Replogle; D. Sigounas; R. Starke; R. Turner; E. Veznedaroglu; B. Walcott
Supported by Cerenovus, Medtronic and MicroVention

027 Global Neurosurgical Practice
Location: 20D
J. Blount; R. Dempsey; J. Drake; A. Figaji; M. Fisher; G. Grant; M. Haglund; W. Harkness; R. Hartt; P. Hutchinson; J. Johnston; A. Kulkarni; M. Mahmud; V. Moll; P. Nakaji; J. Piquer Belloch; J. Ragheb; S. Robertson; J. Rock; B. Rocque; G. Rosseau; D. Sandberg; F. Servadei; S. Woodrow; S. Wren; E. Zager
Supported by an educational grant from SeaSpine Orthopedic Company

028 Case-based Management of Traumatic Brain Injury
Location: 32AB
G. Hawryluk; J. Jallo; R. Kitagawa; D. Okonkwo; W. Paiva; H. Park; U. Samadani; E. Sieg; M. Stippler
This is supported by an educational grant from Codman Speciality Surgical, a Division of Integra LifeSciences

7:30 a.m.–4:30 p.m.

Special Session

The NeuroPoint Alliance, Inc. (NPA) and Your Practice: Using Registries to Enhance Quality, Reimbursement, Certification and Clinical Research
Location: 28DE
M. Amann; M. Bydon; M. Cloninger; K. Cockroft; C. Devin; K. Foley; R. Haid; R. Harbaugh; J. Knightly; J. McInerney; P. Mummaneni; R. Reeder; S. Rundell; J. Sheehan; B. Zacharia
Session IV: Pediatric
Moderator(s): P. Adelson; F. Boop; G. Grant

7:30–7:35 a.m.
Session Introduction

7:36–7:51 a.m.
Treatment of pediatric Craniopharyngiomas: Multiple Strategies
C. Barros-Juca

7:52–8:07 a.m.
Contemporary Techniques in Management of Suprasellar Tumors in Adolescents: Microsurgical vs Endoscopic Approach
K. Rotim (Croatia)

8:08–8:23 a.m.
Occult Spinal Dysraphism
W. Seow (Singapore)

8:24–8:39 a.m.
Split Cord Syndrome in Myelomeningocele Patients
S. Portillo Medina (Argentina)

8:40–8:55 a.m.
Surgical Management of Delayed Craniocervical Instability in Children
A. Al-Habib (Saudi Arabia)

8:56–9:11 a.m.
Endoscopic hemispherotomy: Surgery, Outcome and Complications as Compared to Open Technique
P. Chandra (India)

9:12–9:27 a.m.
Ablative Neurosurgery in Cerebral Palsy
A. Purohit (India)
9:28–9:43 a.m.
Beverage Break in the Exhibit Hall
Location: Halls EFG

9:44–9:59 a.m.
Peripheral Nerve Surgery in Pediatric Population; Neurosurgeon Practice or Not
L. Rasulic (Serbia)

10–10:23 a.m.
Pediatric Panel/Case Discussions

Session V: Stereotactic and Functional
Moderator(s): A. Machado; G. McKhann; K. Slavin

10:24–10:39 a.m.
Microsurgical Robotics and Engineering for Neurosurgery
A. Morita (Japan)

10:40–10:55 a.m.
Microsurgical Anatomy in Functional Neurosurgery
V. Holanda (Brazil)

10:56–11:11 a.m.
Neuromodulative Manipulation of Pain in FBSS
C. Yampolsky (Argentina)

11:12–11:27 a.m.
The Role of SEEG in Evaluating Patients with Refractory Seizures Despite Previous Subdural Grid Electrode Evaluation
M. Dexter (Australia)

11:28–11:43 a.m.
Epilepsy Surgery
M. Abraham (India)

11:44 a.m.–12:29 p.m.
Lunch in the AANS Exhibit Hall
Location: Halls EFG
12:30–12:45 p.m.
Epilepsy Surgery for Malformations of Cortical Development
M. Bhaskara Rao (India)

12:46–1:01 p.m.
Deep Brain Stimulation for Epilepsy
A. Cukiert (Brazil)

1:02–1:17 p.m.
Is there a Role for Intracranial Ablative Procedures in the Treatment of Parkinson’s Disease?
A. Francisco (Brazil)

1:18–1:41 p.m.
Stereotactic and Functional Panel/Case Discussions

Session VI: Neurotrauma
Moderator(s): R. Armonda; D. Michael; D. Okonkwo

1:42–1:57 p.m.
Which part of Clinical Research in TBI is Relevant to the Whole World?
F. Servadei (Italy)

1:58–2:13 p.m.
Non-invasive ICP Monitoring
R. de Amorim (Brazil)

2:14–2:29 p.m.
Traumatic Brain Injury by Firearm Projectile: Experience at a Neurosurgical Service in a Developing Country
N. Saade (Brazil)

2:30–2:45 p.m.
Beverage Break in the Exhibit Hall
Location: Halls EFG
SUNDAY, APRIL 14

2:46–3:01 p.m.
Penetrating Brain Trauma
R. Mishra (India)

3:02–3:17 p.m.
Decompressive Craniectomy: Current Status
N. Ciarrocchi (Argentina)

3:18–3:33 p.m.
Management of TBI in the Elderly
W. Poon (China)

3:34–3:49 p.m.
Medical Management of Severe Traumatic Brain Injury (TBI)
F. Goldenberg

3:50–4:05 p.m.
Cranioplasty Using Three dimensional Printer and Polymethyl-methacrylate Implant
V. Sinha (India)

4:06–4:30 p.m.
Neurotrauma Panel / Case Discussions

AANS International Lounge
Booth 2511
Stop by the International Lounge to socialize with colleagues representing 76 countries. The AANS welcomes over 500 international members to San Diego this year.
7:30 a.m.–4:30 p.m.
Advanced Practice Providers Plenary Session
Location: 29B
Moderator(s): C. DeLemos; M. Langlois

7:30–7:40 a.m.
Welcome
M. Langlois

7:41–8:26 a.m.
Brain Tumor Support and Survivorship Session
M. Lovely

8:27–8:39 a.m.
Question and Answer Session

8:40–9:20 a.m.
Craniofacial Anomalies
I. Tarasiewicz

9:21–9:41 a.m.
Beverage Break in the Exhibit Hall
Location: Halls EFG

9:42–10:37 a.m.
Cerebrovascular Zebras
S. Skukalek

10:38–11:33 a.m.
Adolescent Scoliosis
A. Jea; N. Virjee

11:34 a.m.–12:33 p.m.
Lunch in the AANS Exhibit Hall
Location: Halls EFG

12:34–12:42 p.m.
100 A Multidisciplinary Approach to Improve Communication Between Pediatric Neurosurgery and Pediatric Nurses: A Team Communication Tool Pilot
E. Peregino

12:43–12:51 p.m.
101 Neuroscience Patient Readmissions: Evaluating Prediction Models for Neurosurgical Patients
E. Rogers
SUNDAY, APRIL 14

2:52–1:35 p.m.
Baclofen Pumps
E. Mora

1:36–2:16 p.m.
Hip vs. Spine — Where is your Patient’s Back Pain From?
A. Ganju

2:17–2:32 p.m.
Beverage Break in the Exhibit Hall
Location: Halls EFG

2:33–3:13 p.m.
End of Life Discussions
J. MacMillian

3:14–3:54 p.m.
Cardiovascular Changes in the Setting of SAH
B. Waldau

3:55–4:03 p.m.
103 Impact of Bracing after Thoracolumbar Spinal Fusion: A Systematic Review
E. Howell

4:04–4:12 p.m.
102 Impact of Patient-Controlled Analgesia on Clinical Outcomes after Posterior Lumbar Spinal Fusion Surgery
A. Patel

4:13–4:21 p.m.
104 Multiple Intracranial Aneurysms: Incidence and Risk Factors
A. Santos (Brazil)

4:22–4:30 p.m.
105 Patient Protection and Affordable Care Act and Neurosurgery: Neutralizing Bias in Trauma Care?
R. Bina
7:30–11:30 a.m.
**Morning Practical Clinics**

**030 How to Apply to Residency**  
Location: 25AB  
O. Adogwa; N. Agarwal; M. Aghi; N. Barbaro; J. Beckett; S. Chowdhry; D. Dornbos; S. Han; M. Ivan; P. Jones; B. Kennedy; K. Kicielinski; R. Komotar; D. Mukherjee; E. Nduom; J. Pace; K. Than; S. Wolfe

**031 Complication Avoidance in Intracranial Surgery**  
Location: 26AB  
Y. Caglar; P. Gardner; C. Heilman; S. Kuroda; E. Levy; M. Link; A. Morita; A. Nanda; N. Oyesiku; G. Zipfel

**032 Cerebral Bypass Surgery: Indications, Techniques, New Directions**  
Location: 29CD  
S. Amin-Hanjani; M. Bain; G. Britz; W. Ho; M. Lawton; J. Russin; B. Welch

**033 Controversies, Complications, Indications and Advances in MIS Spine Surgery**  
Location: 33BC  
K. Fu; A. Kanter; P. Mummaneni; P. Park; K. Than; M. Virk; M. Wang

**034 Update on Tumors for the General Neurosurgeon I: Adult Gliomas and Metastases**  
Location: 24BC  
M. Berger; P. Fecci; S. Kalkanis; R. Ramakrishna; N. Sanai; J. Sheehan; A. Sloan; C. Watts; J. Weinberg

9:15–10:15 a.m.  
**Beverage Break in the AANS Exhibit Hall**  
Location: Halls EFG

11:30 a.m.–12:30 p.m.  
**Lunch in the AANS Exhibit Hall**  
Location: Halls EFG
SUNDAY, APRIL 14

11:40 a.m.–12:25 p.m.
Lunch-and-learn Seminars
Non-CME Events

Stop by the AANS Learning Center in Hall D and attend one of our exhibitors’ Lunch-and-learn Seminars

Augmented Reality: A New Landscape in Neurosurgery
Location: Booth 614, Hall D
B. Bendok, J. Morcos
Presented by Leica Microsystems

Developments in Neurosurgery
Using New Techniques with Advanced Visualization Technology
Location: Booth 314, Hall D
A. Dehdashti; P. Gardner; D Hänggi (Germany)
Presented by Carl Zeiss Meditec, Inc.

Evidence Based Biometrics in Spine
Location: Booth 328, Hall D
C. Devin
Presented by Stryker

The Evolution of Single Position Surgery:
Navigated OLIF and Posterior Fixation Without the Flip
Location: Booth 414, Hall D
L. Kibuule; R. Porter
Presented by Medtronic

Practical Applications of Fluorescence-Guided Surgery
Location: Booth 340, Hall D
S. Kalkanis; N. Sanai
Presented by NX Development Corp.

12–5 p.m.
NREF Cushing Circle Donor Lounge
Location: 33A

The Cushing Circle Donor Lounge is a quiet haven open to members of the NREF Cushing Circle of Giving, the Young Neurosurgeons Circle of Giving and invited guests. Access to this lounge is by invitation only.
12:30–4:30 p.m.
Afternoon Practical Clinics

035 Neurosurgery Around the World: Education and Other Opportunities
Location: 24AB, 25AB
M. Arraez Sanchez; R. Byrne; R. Dempsey; N. El Abbadi; H. Emmez; I. Germano; M. Haglund; W. Harkness; J. Lafuente; C. Matula; B. Misra; A. Rubiano; F. Servadei

036 Pearls and Pitfalls of Open vs. Endoscopic Transsphenoidal Surgery
Location: 26AB
J. Evans; J. Fernandez-Miranda; J. Jane; D. Kelly; J. Landeiro; E. Laws; J. Liu; R. Lonser; D. Prevedello; C. Snyderman; G. Zada

037 Brain Mapping and Awake Mapping Techniques
Location: 29CD
N. Barbaro; M. Berger; H. Duffau; J. Gonzalez-Martinez; G. McKhann; F. Sala; N. Sanai
Supported by an educational grant from PMT Corporation

038 Spinal Alignment: Cervical to Pelvis...What EVERY Surgeon Needs to Know; With Case Discussions
Location: 30AB
D. Coric; R. Haid; A. Kanter; P. Park; C. Shaffrey; J. Uribe

039 Peripheral Nerve Injuries, Entrapments and Tumors: Examination and Evaluation
Location: 33BC
J. Brown; K. Harbaugh; M. Hebert-Blouin; L. Jacques; M. Mahan; R. Midha; L. Rasulic; ; R. Spinner; T. Wilson; E. Zager

040 Update on Tumors for the General Neurosurgeon II: Skull Base, Pediatric and Spine Tumors
Location: 24BC
M. Aghi; J. Bruce; F. DeMonte; I. Dunn; F. Gentili; Z. Gokaslan; M. Link; I. Pollack
1–4:30 p.m.
Young Neurosurgeons Research Forum
Location: 30CDE
Moderator(s): S. Chowdhry, D. Hardesty; M. Ivan

1–1:02 p.m.
Introduction to the Osler Lecture
S. Chowdhry

1:03–1:30 p.m.
Osler Lecture
William-Harvey—and My Accidental Career
H. Eisenberg

1:31–1:40 p.m.
NREF Medical Student Summer Research Fellowship
Targeted C3 Transferase Gene Delivery for Dopaminergic-Specific Expression
R. Gupta

1:41–1:49 p.m.
106 Natural History of Unilateral Moyamoya Progressing to Contralateral Moyamoya
E. Church

1:50–1:58 p.m.
107 MR Imaging is Not Reliable for Tumor Presence in Post-Treatment Recurrent High-Grade Glioma
D. Boyett

1:59–2:07 p.m.
108 Rear Admiral (Astronaut) Alan Shepard—Ménière’s Disease and the Race to the Moon
P. Kelly

2:08–2:16 p.m.
109 How do CRASH and IMPACT Compare to a Machine Learning-Based Prognostic Model from Tanzania?
C. Elahi
<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
<th>Speaker</th>
</tr>
</thead>
<tbody>
<tr>
<td>2:17–2:25 p.m.</td>
<td>110 The role of lidocaine infusions in cranial surgery</td>
<td>V. Ban</td>
</tr>
<tr>
<td>2:26–2:34 p.m.</td>
<td>111 (Re)Defining Success: Relative Seizure Frequency Reduction rather than Absolute Seizure Frequency is a Better Predictor of Patient Reported Quality of Life after Epilepsy Surgery</td>
<td>S. Sheikh</td>
</tr>
<tr>
<td>2:35–2:43 p.m.</td>
<td>112 Using the Neutrophil to Lymphocyte Ratio to Predict Outcomes in Pediatric Patients with Traumatic Brain Injury</td>
<td>R. Kimball</td>
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<tr>
<td>2:44–2:53 p.m.</td>
<td>Beverage Break in the AANS Exhibit Hall</td>
<td></td>
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<tr>
<td>2:54–3:02 p.m.</td>
<td>113 Posterior Vertebral Column Subtraction Osteotomy for the Treatment of Recurrent Tethered Cord Syndrome in Adults: A Prospective Outcome Study</td>
<td>E. Cottrill</td>
</tr>
<tr>
<td>3:03–3:11 p.m.</td>
<td>114 The Affordable Care Act and Reimbursement Patterns in Neurosurgery: Analysis of the NERVES survey results</td>
<td>S. Vaziri</td>
</tr>
<tr>
<td>3:12–3:22 p.m.</td>
<td>115 Al-Augmented Diagnosis of Brain Aneurysms from CTA: A Retrospective Study</td>
<td>R. Jabarkheel</td>
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</tbody>
</table>
3:30–3:38 p.m.
117 Pathological hijacking of the AMPK/HIF1α hypoxia pathway leads to neuronal anaerobic respiration in epilepsy
A. Ksendzovsky

3:39–3:47 p.m.
118 Association Between Neurosurgical Volume and Hospital Costs in the United States
J. Yoon

3:48–3:56 p.m.
119 Intracranial Gunshot Wounds: Assessment of Morbidity, Mortality, and Surgical Outcomes
Y. Chen

3:57–4:05 p.m.
120 3D Ventricular Volume Analysis to Detect Shunt Failure
S. Khalsa

4:06–4:14 p.m.
121 Correlation of Language-Eloquent White Matter Pathways with the Course of Language Function in Glioma Patients
S. Ille (Germany)
4:15–4:23 p.m.
122 Pain Management Matters: Demographic Differences in Patient Reported Outcomes
E. Howell

4:24–4:30 p.m.
Presentation of the Four Quest Award Winners

2–3 p.m.
Beverage Break in the AANS Exhibit Hall
Location: Halls EFG

1:30–3:30 p.m.
Surgical Suite Demo
Non-CME Event
Booth 547, Hall D

Skull Base Approach Using Synaptive’s Robotic Digital Microscope Modus V™
Presented by Synaptive Medical

April 14–16
14th Annual Neurosurgical Top Gun Competition, hosted by the Young Neurosurgeons Committee (YNC)
Booth 1705
Participants compete at different surgical stations, and will be scored on their performance. Prizes are awarded to each station winner. The first 50 participants will receive a Neurosurgical Top Gun t-shirt.

www.aans.org/AANS2019
SUNDAY, APRIL 14

4:45–6:37 p.m.
**AANS Opening Ceremonies**
Location: Hall H
Moderator(s): S. Timmons; G. Simonds

4:45–4:51 p.m.
**Historical Film: History of San Diego Neurosurgery**
*Presented by A. Khalessi*

4:52–4:53 p.m.
**Introduction**
G. Simonds

4:54–5:39 p.m.
**The Thriving Neurosurgeon**
W. Sotile

5:40–5:41 p.m.
**Introduction**
S. Timmons

5:42–6:37 p.m.
**Healthcare, Remixed**
Z. Damania (ZDogMD)
7–9 p.m.

**AANS Opening Reception**

Location: USS Midway Museum

Ticket Required: $250

One ticket is included with medical attendee, spouse and guest registrations

Our Opening Reception on board the USS Midway is an adventure you do not want to miss! Come aboard this historical aircraft carrier for an evening of great food, exhibits and attractions. Docents will be on hand to answer questions about the ship, missions undertaken by the Midway and the extensive collection of aircraft on exhibit. Enjoy a live musical performance by AANS neurosurgeons, Dr. Jon Robertson and Dr. Jeffrey Sorenson’s band Memphis Blues Remedy.

Experience a chance to live the life of an aviator aboard the USS Midway. Launch off the flight deck, engage the enemy and then return safely. Midway features flight simulators for most ages. The evening will end with a spectacular firework display at 8:45 p.m.

All visitors are subject to a bag check prior to boarding the Midway. Prohibited items include, but are not limited to: outside food/beverage, glass containers of any kind and weapons of any kind. For your safety, please do not wear heels.

Shuttle service provided from the convention center until 7:15 p.m. and from 6:30–9:30 p.m. from the following official AANS Hotels:

- Andaz San Diego
- Courtyard San Diego Downtown
- Embassy Suites by Hilton San Diego Bay Downtown
- Grand Hyatt San Diego
- Hilton San Diego Bayfront
- Hilton San Diego Gaslamp Quarter
- Marriott Marquis San Diego Marina
- Omni San Diego Hotel
- Pendry San Diego
- Residence Inn San Diego Downtown/Bayfront
- San Diego Marriott Gaslamp Quarter
- SpringHill Suites San Diego Downtown/Bayfront
- THE US GRANT, a luxury Collection Hotel, San Diego
- The Westin Gaslamp Quarter
Did you know that your headshot is the new handshake?

Stop by Booth 2542 to get an updated professional headshot for all of your online networking, social media and CV enhancement needs.

**HOURS**
Sun/Mon/Tues
1–3 p.m.
No appointment necessary

**COST**
$20.00
Payment accepted at the time of your sitting or in the AANS Resource Center.
MONDAY, APRIL 15

6:30 a.m.–4 p.m.
AANS Registration
Location: Hall D Lobby

7–9 a.m.
Breakfast Seminars

Ticket Required: $150
Candidate and Medical Student Ticket: $65
Breakfast will be available in the foyer for Breakfast Seminar attendees.

100 Enhancing Neurosurgeons Productivity
Location: 29CD
D. Benzil; M. Grady; M. Steinmetz

101 Spinal Cord Tumors
Location: 30AB
K. Arnautovic; F. Boop; Z. Gokaslan; G. Jallo; S. Narayanan Nair

102 New Neurons: The Future of Regenerative Therapy
Location: 25A
G. Chen; K. Lee; S. Simon; G. Steinberg

104 ICH Trial Update
Location: 32AB
A. Arthur; R. James; G. Pradilla

105 3D Simulation and Navigation for Advanced Practice Providers: A Team Based Approach
Location: 25C
J. Bederson; H. Oemke; M. Pain; L. Schlachter

106 Sherrington’s Influence on Neurosurgery and the Incorporation of Neurophysiology into the Neurosurgical Research Paradigm: A Seminar
Location: 26A
T Dagi; C. Prestigiacomo; M. Preul; C. Sloffer

107 Brain Metastases 2.0: Expert Management Strategies and Challenging Cases
Location: 26B
A. Fabiano; S. Kalkanis; B. Nahed; J. Olson; C. Yampolsky

www.aans.org/AANS2019 47
108 My Worst Mistakes in my First Year of Practice — Lessons Learned for Senior Residents and Recent Graduates
Location: 28A
P. Fecci; S. Lad; J. Lee; J. Shin; K. Than; M. Van Poppel; A. Wang; C. Washington

109 Pediatric Neurosurgery for General Neurosurgeons
Location: 33BC
R. Anderson; A. Figaji; G. Grant; T. Hankinson; M. Krieger

110 Management of Adult Scoliosis
Location: 28B
P. Angevine; R. Heary; T. Koski; F. La Marca; P. Mummaneni; D. Okonkwo

111 Return-to-play After Sports Injury I: Spine Injury
Location: 28C
D. Brockmeyer; M. Groff; D. Lu; C. Notarianni; S. Prasad

112 Cerebral Trauma: State-of-the-art Treatment
Location: 28D
F. Colmena; R. Jensen; D. Michael; A. Rubiano; U. Samadani

113 Adult Low-grade Gliomas
Location: 28E
D. Cahill; H. Duffau; L. Liau; D. Panikar; M. Westphal

114 Surgical Treatment of Movement Disorders
Location: 30CDE
E. Air; J. Jagid; D. Lee

115 New and Evolving Technologies for Minimally Invasive Lumbar Disc Surgery
Location: 29B
C. Branch; R. Fessler; J. Mobasser; L. Tumialan; M. Wang

116 Anticoagulation for the Neurosurgeon and Hemostasis in Neurosurgery
Location: 24BC
M. Baskaya; S. Nimjee; N. Patel; M. Stippler; E. Tsai
117 Challenging Spinal Cases: Pearls and Pitfalls
Location: 25B
M. Bydon; A. Demetriades; D. Hoh; A. Ropper; J. Shin; E. Woodard
7–9 a.m.
Sunrise Sessions
Ticket Required: $105
Candidate and Medical Student Ticket: $20
Coffee will be available in the booth for the Sunrise Sessions

118 Global Neurosurgery
Location: Booth 614, Hall D
R. Dempsey; M. Haglund; K. Lillehei; J. Ragheb; J. Rock; F. Servadei

119 Attaining a Solid Fusion: Evidence Review and Suggestions for Success
Location: Booth 414, Hall D
R. Fessler; K. Fu; M. Oppenlander; N. Szerlip; C. Upadhyaya
7:30–9 a.m.
AANS/CNS Section on Women in Neurosurgery (WINS) Breakfast
Non-CME Event
Location: Marina Ballroom G, Level 3; Marriott Marquis
Supported by DePuy Synthes, Medtronic and Sophysa USA Inc.
Louise Eisenhardt Lecturer
M. Konnikova
Ticket Required: $100
Candidate and Medical Student Ticket: $65
8:30 a.m.–5 p.m.
Speaker Ready Room
Location: 22

9 a.m.–4:45 p.m.
AANS Exhibit Hall
Location: Halls EFG

9 a.m.–8 p.m.
AANS Learning Center
Location: Hall D
MONDAY, APRIL 15

9–9:45 a.m.
Beverage Break in the AANS Exhibit Hall
Location: Halls EFG

9:30 a.m.–1:26 p.m.
Plenary Session I
Location: Hall H
Moderator(s): F. Barker; A. Valadka

9:30–9:36 a.m.
Historical Film: History of Neurotrauma in Southern California
Presented by J. Kusske; S. Timmons

9:37–9:39 a.m.
Welcome
F. Barker

9:40–9:43 a.m.
NPA Update
R. Harbaugh

9:44–9:46 a.m.
Introduction to the Louise Eisenhardt Lecture
J. Sweet

9:47–10:17 a.m.
Louise Eisenhardt Lecture
M. Konnikova

10:18–10:20 a.m.
Introduction to the AANS Cushing Award for Technical Excellence and Innovation in Neurosurgery

10:21–10:24 a.m.
AANS Cushing Award for Technical Excellence and Innovation in Neurosurgery
K. Foley
10:25–10:35 a.m.
200 Final Results of the HEAT (Hydrogel Endovascular Aneurysm Treatment Trial)
B. Bendok

10:36–10:37 a.m.
Assessment of the Trial Design/Level of Evidence
F. Barker

10:38–10:40 a.m.
Discussant
A. Arthur

10:41–10:51 a.m.
William H. Sweet Young Investigator Award
201 Novel Kilohertz Frequency Neuromodulation For Fiber Selective Blockade Of Sciatic Pain In A Rat Model
A. Dru

10:52–10:54 a.m.
Discussant
J. Pilitsis

10:55–10:58 a.m.
JNS Update
J. Rutka (Canada)

10:59–11:01 a.m.
Introduction to the Rhoton Family Lecture

11:02–11:32 a.m.
Rhoton Family Lecture
The Science of Practice
R. Harbaugh

11:33–11:43 a.m.
202 Trends in Medicare Reimbursement for Neurosurgical Procedures from 2000 to 2018
K. Richter

11:44–11:45 a.m.
Assessment of the Trial Design/Level of Evidence
F. Barker
11:46–11:48 a.m.
Discussant
J. Bean

11:49–11:59 a.m.
203 The Safety And Efficacy Of Riluzole As A Neuroprotective Therapy In Patients Undergoing Surgical Decompression For Cervical Spondylotic Myelopathy: Results Of The CSM-Protect Trial
M. Fehlings (Canada)

12–12:01 p.m.
Assessment of the Trial Design/Level of Evidence
F. Barker

12:02–12:04 p.m.
Discussant
R. Heary

12:05–12:07 p.m.
Introduction to the Theodore Kurze Lecture

12:08–12:38 p.m.
Theodore Kurze Lecture
Jaimie M. Henderson, MD, FAANS

12:39–12:41 p.m.
Introduction to the International Lifetime Recognition Award

12:42–12:45 p.m.
International Lifetime Recognition Award
F. Servadei (Italy)
12:46–12:49 p.m.
Introduction to the AANS
Presidential Address

12:50–1:20 p.m.
AANS Presidential Address:
The Power of Discernment
S. Timmons

1:21–1:26 p.m.
Announcement of Lunch-and-learn Seminars
F. Barker

11 a.m.-1 p.m.
Surgical Suite Demo
Non-CME Event

Skull Based Cranial Nerve Dissection Instruments
Location: Booth 449, Hall D
Presented by Mizuho America, Inc.

Carpal Tunnel Release and Cubital Tunnel Release
Location: Booth 547, Hall D
Presented by MicroAire Surgical Instruments

1:30–2:30 p.m.
Lunch in the AANS Exhibit Hall
Location: Halls EFG
MONDAY, APRIL 15

1:40–2:25 p.m.
Lunch-and-learn Seminars
Non-CME Events

Stop by the AANS Learning Center in Hall D and attend one of our exhibitors’ Lunch-and-learn Seminars

Deep Brain Stimulation Designed for Accurate Targeting and Precise Control
Location: Booth 314, Hall D
S. Carcieri; C. Halpern
Presented by Boston Scientific

Distributive Treatment of Brain Mets using the Leksell Gamma Knife® Icon™ | Early Experience with the New Leksell® Vantage™ Stereotactic Headframe
Location: Booth 328, Hall D
R. Altermann; T. Patel; Z. Wardak
Presented by Elekta

Excelsius GPS® Revolutionary Robotic
Location: Booth 414, Hall D
C. Maulucci
Presented by Globus Medical

Innovation in Complex Cervical Reconstruction: What the Research Evidence Tells Us About Alignment, Deformity, Revision and Complications
Location: Booth 614, Hall D
C. Ames
Presented by DePuy Synthes Spine

SI Joint Pain: Prevalence, Diagnosis and Treatment Options
Location: Booth 340, Hall D
J. Heller
Presented by SI Bone, Inc.

1:40–2:30 p.m.
Neurosurgery in Press: Latest Results of Clinical Trials in Neurosurgery and Allied Fields
Location: 24BC
Ticket Required $65
A. Abosch; S. Amin-Hanjani; F. Barker; D. Cahill; Z. Ghogawala; U. Samadani,
1:45–3:15 p.m.
Advanced Practice Providers Luncheon: The Science of Practice: Gaining the Trust of the Pediatric Neurosurgical Patient and Family — How to Dance Your Way Into Their Hearts!
Location: Cardiff/Carlsbad, Level 3; Marriott Marquis
Ticket Required $25
Moderator(s): C. DeLemos; M. Langlois
Featured Speaker: M. Adkins

2-4 p.m.
Surgical Suite Demo
Non-CME Event

**Lateral Interbody Fusion System**
*Presented by Spineology Inc.*
Booth 547, Hall D

2:30–4 p.m.
**3D Session — Operative Nuances I: Difficult Cases: What Have We Learned?**
Location: 20D
F. Boop; A. Cohen-Gadol; W. Couldwell

2:30-6 p.m
**Scientific Session I: Tumor**
Location: 30CDE
Moderator(s): M. Ivan; D. Orringer

2:30–2:34 p.m.
Introduction to the Session
M. Aghi

2:35–3:09 p.m.
Ronald L. Bittner Lecture
Building a Career in Tumor Neurosurgery
L. Liau
3:10–3:19 p.m.
AANS/CNS Section on Tumors
Neuro-Oncology Trainee Award
204 CD200 Inhibition Enhanced the Anti-glioblastoma Effects of Autologous Tumor Vaccination for In Vivo Murine and Canine Glioblastoma models
T. Do

3:20–3:29 p.m.
American Brain Tumor Association Young Investigator Award
205 Targeted Ultra-Small Nanoparticles as a Multi-Modal Platform for Enhanced Drug Delivery to Primary and Metastatic Brain Tumors
R. Juthani

3:30–3:39 p.m.
AANS/CNS Section on Tumors
Neuro-Oncology Trainee Award
206 Anti-PD-L1 Immunotherapy Enhances Radiation-induced Abscopal Response in Glioblastoma
C. Ene

3:40–3:49 p.m.
Rosenblum-Mahaley Clinical Research Award
207 Surgically Targeted Radiation Therapy: A Prospective Trial in 79 Recurrent, Previously Irradiated Intracranial Neoplasms
P. Nakaji

3:50–3:59 p.m.
Preuss Research Award
208 Modulation of temozolomide dose differentially affects T-cell response to immune checkpoint inhibition
M. Rahman

4–4:30 p.m.
Beverage Break in the AANS Exhibit Hall
Location: Halls EFG
4:31–4:40 p.m.  
209 Single Cell Sequencing Identifies Cellular Heterogeneity in Human Microglia  
A. Young (United Kingdom)

4:41–4:50 p.m.  
210 Targeting MGMT promoter unmethylated glioblastomas through microRNA delivery  
C. Chen

4:51–5 p.m.  
211 MicroRNA Nanocells Overcome Therapeutic Resistance in Glioblastoma  
M. Khan

5:01–5:10 p.m.  
212 Circulating Tumor Cell Isolation and Analysis Reveals LDHB, NXPH1, and IMMP2L as Genes Associated with Brain Metastasis.  
M. Zachariah

5:11–5:20 p.m.  
213 Volumetric Growth Rates of Untreated Vestibular Schwannomas  
Z. Schnurman

5:21–5:30 p.m.  
214 ZEB1 Driven Mesenchymal Transition at the Single Cell Level Promotes Progression during Bevacizumab Treatment of Glioblastoma in A Targetable Manner  
A. Chandra

5:31–5:40 p.m.  
215 MP-Pt(IV): Selective Mitochondrial chemotherapy that sensitizes Glioblastoma to the Stupp Protocol.  
D. Baskin

5:41–5:50 p.m.  
Late-breaking Abstract  
Rapid Diagnosis of Adult Brain Tumors using Simulated Intraoperative Raman scattering microscopy  
A. Shah
5:51–6 p.m.
Late-breaking Abstract
A Volumetric Analysis of Radiographic and Hormonal Regression in Prolactinomas
O. Akinduro

2:30–6 p.m.
Scientific Session II: Spine
Location: 20A
Moderator(s): D. Coric; Z. Ghogawala; C. Shaffrey

2:30–2:35 p.m.
Stewart B. Dunsker, MD Award
218 Deep-Learning Artificial Intelligence Model for Automated Detection of Cervical Spine Fracture on Computed Tomography (CT) Imaging
M. Zhang

2:36–2:41 p.m.
219 Annular Closure Reduces Recurrent Herniation and Reoperation in a High-Risk Population Following Lumbar Microdiscectomy: 3-year Data from a Multicenter, Prospective, Randomized Trial
C. Thome (Austria)

2:42–2:47 p.m.
220 Two-Level Cervical Disc Arthroplasty vs. Anterior Cervical Discectomy and Fusion: 10 Year Outcomes of a Prospective, Randomized IDE Clinical Trial
T. Lanman

2:48–2:53 p.m.
221 Awake Endoscopic TLIF vs. Conventional MIS-TLIF: Comparison in Clinically High-Risk Patients
J. Yoon

2:54–2:58 p.m.
Question and Answer Session
2:59–3:04 p.m.
Brian D. Silber Award
222 Spinal Laser Interstitial Thermal Therapy: Outcomes and Lessons Learned from the First 100 Cases
R. Vega

3:05–3:10 p.m.
223 Improvement in Sexual Function Following Degenerative Lumbar Spondylolisthesis Surgery
A. Chan

3:11–3:16 p.m.
224 Surgery for Potentially Unstable Spinal Metastasis Reduces 90-Day-Admissions
S. Gandhi

3:17–3:22 p.m.
225 Use of Polyetheretherketone Interbody Devices for Multi-Level Anterior Cervical Discectomy and Fusion Results in a Three-Fold Higher Rate of Pseudarthrosis Compared to Structural Allograft
Z. Teton

3:23–3:27 p.m.
Question and Answer Session

3:28–3:33 p.m.
226 Effect of Cage Type on Immediate Post-operative Radiographic Outcomes in Single-level Minimally Invasive Transforaminal Lumbar Interbody Fusion (MI-TLIF)
A. Vaishnav

3:34–3:39 p.m.
Sanford J. Larson, MD, PhD Award
227 Use of Artificial Intelligence to Improve Surgical Referrals in Degenerative Lumbar Spine Conditions
N. Xie (Australia)
MONDAY, APRIL 15

3:40–3:45 p.m.
228 Intraoperative Mixed Reality Holographic Visualization during Spinal Fixation: Early Insights
V. Buch

3:46–3:51 p.m.
229 A Predictive Model and Nomogram for Predicting Return to Work at 3 Months After Cervical Spine Surgery: An Analysis from the Quality Outcome Database
M. Alvi

3:52–3:57 p.m.
Late-breaking Abstract
230 A Comparison of Minimally-Invasive Transforaminal Lumbar Interbody Fusion and Decompression Alone for Degenerative Lumbar Spondylolisthesis
A. Chan

3:58–4:02 p.m.
Question and Answer Session

4:03–4:30 p.m.
Beverage Break in the AANS Exhibit Hall
Location: Halls EFG

4:31–5 p.m.
Sonntag Lecture
Future Directions of Minimally Invasive Surgery
R. Fessler

5:01–5:06 p.m.
231 Assessing the Differences in Measurement of Degree of Spondylolisthesis between Supine MRI and Erect X-Ray: An Institutional Analysis of 255 Cases
Y. Yolcu
5:07–5:12 p.m.
232 Long-term Motor Recovery and Functional Outcomes in Patients with Traumatic Central Cord Syndrome
H. Joshi (Canada)

5:13–5:18 p.m.
233 Predictors of the Best Outcomes Following Minimally Invasive Surgery for Grade 1 Lumbar Spondylolisthesis
A. Chan

5:19–5:24 p.m.
234 The Impact of Osteotomy Grade and Location on Regional and Global Alignment Following Cervical Deformity Surgery
P. Passias

5:25–5:30 p.m.
Question and Answer Session

5:31–5:36 p.m.
235 Correlation between ODI, PROMIS and SF-12 in Minimally Invasive Lumbar Spinal Surgery
A. Vaishnav

5:37–5:42 p.m.
236 Preoperative Opioids & 1-Year Patient Reported Outcomes After Spine Surgery
I. Khan

5:43–5:48 p.m.
237 Predicting Outcomes after Surgical Decompression for Mild Degenerative Cervical Myelopathy: Moving Beyond the mJOA to Identify Surgical Candidates
J. Badhiwala (Canada)

5:49–5:54 p.m.
238 Long-term opioid prescription fills in patients undergoing spine surgery
Z. Sanford

5:55–6 p.m.
Question and Answer Session
2:30–6 p.m.
Scientific Session III: Stereotactic and Functional Surgery
Location: 29CD
Moderator(s): E. Air; S. Ben-Haim
Supported by an educational grant from Voyager Therapeutics

2:30–2:45 p.m.
Neurosurgical Face-off: The Future of Epilepsy
Neuromodulation is Deep Brain Stimulation
J. Gerrard

2:46–3:01 p.m.
Neurosurgical Face-off: The Future of Epilepsy
Neuromodulation is Closed-Loop Focal Stimulation
G. McKhann

3:02–3:11 p.m.
Philip L. Gildenberg MD Resident Abstract Award
239 An approach for efficient brain-wide projection specific gene transfer
X. Sun

3:12–3:21 p.m.
240 Hierarchical Feature Encoding for Speech Perception in Human Temporal Cortex
K. Forseth

3:22–3:31 p.m.
241 Early Experience with Directional DBS Leads in Parkinson’s Disease and Essential Tremor Patients
M. DiMarzid

3:32–3:41 p.m.
242 Theta Coherence Predicts Risk Taking Behavior
S. Bick

3:42–3:51 p.m.
243 Trajectory Analysis for Symptom Response Prediction in Prospective Cohort of Patients with Intractable Obsessive-Compulsive Disorder treated with Gamma Knife Radiosurgical Ventral Capsulotomy
A. Barrios-Anderson
3:52–4:01 p.m.
244 Long-term AADC activity following administration of VY-AADC01 gene therapy using novel intraoperative MRI-monitored intraparenchymal delivery
P. Larson

4:02–4:32 p.m
Beverage Break in the AANS Exhibit Hall
Location: Halls EFG

4:33–4:42 p.m.
245 Reassessing the Impact of Intraoperative Electrocnticography (ECoG) on Postoperative Outcome of Patients Undergoing Standard Temporal Lobectomy for MRI-negative Temporal Lobe Epilepsy (TLE)
S. Grewal

4:43–4:52 p.m.
246 Ultra-High Frequency Deep Brain Stimulation at 10,000 Hz Improves Motor Function
I. Harmsen (Canada)

4:53–5:02 p.m.
247 Dynamics of Synchrony in Local Cortical Circuits
N. Kharas

5:03–5:12 p.m.
248 Electrophysiological prognostication of functional cortical integrity after traumatic brain injury
S. Mofakham

5:13–5:22 p.m.
249 Theta Power Changes Differentiate Responders versus Non responders to Long-term Neural Stimulation for Drug-resistant Epilepsy
N. Sisterson
5:23–5:32 p.m.
250 Phase 1 Trial of Convection Enhanced Delivery of Adeno Associated Virus Encoding Glial Cell Line-Derived Neurotrophic Factor in Patients with Advanced Parkinson’s Disease
D. Argersinger

5:33–5:36 p.m.
251 Low Frequency Subthalamic Nucleus Stimulation for Verbal Fluency Improvement in Parkinson’s Disease
D. Lee

5:37–5:40 p.m.
252 The Effect of Skull Density Ratio on Tremor Improvement and Rates of Adverse Events of MR-Guided Focused Ultrasound Thalamotomy
M. D’Souza

5:41–5:44 p.m.
253 A systematic review and Meta-Analysis of stereo-electroencephalography vs. subdural electrodes for epilepsy surgery
H. Yan (Canada)

5:45–5:48 p.m.
254 Final Electrode Placement Changes from Planned Target Based on Microelectrode Recording Findings in Awake Deep Brain Stimulation Surgery
G. Davis

5:49–5:52 p.m.
255 Cortical Evoked Potentials Generated By Subthalamic Stimulation: Evidence in Humans for a Motor, Sensory and Auditory Cortical-STN Hyperdirect Pathway
A. Jorge
5:53–5:56 p.m.
256 Clinical Deterministic Tractography of the Dentato-Rubro-Thalamic Tract may Diverge from Intraoperative Microelectrode Recording based Deep Brain Stimulation Lead Placement for Essential Tremor
V. Buch

5:57–6 p.m.
257 Comparison of Hospital Costs of SEEG Electrodes and Subdural Grids Using the Value-Driven Outcomes Database
J. Rolston

2:30–6 p.m.
Scientific Session IV: Pediatrics
Location: 32AB
Moderator(s): D. Gonda; T. Hankinson

2:30–2:45 p.m.
Ventricular Volumes and Hydrocephalus: Updates and Controversies
S. Schiff

2:46–3:01 p.m.
Ventricular Volumes and Hydrocephalus: Updates and Controversies
J. Blount

3:02–3:07 p.m.
Question and Answer Session

3:08–3:11 p.m.
Introduction of Donald D. Matson Lecture
M. Proctor

3:12–3:57 p.m.
Donald D. Matson Lecture
Exposure to Early Adversity Can Undermine Healthy Brain Development
C. Nelson
3:58–4:28 p.m.
Beverage Break in the AANS Exhibit Hall
Location: Halls EFG

4:29–4:35 p.m.
258 Convolutional Neural Networks
Classification of Pediatric Refractory Epilepsy with RsMRI Latency Imaging
R. Nguyen

4:36–4:39 p.m.
Question and Answer Session

4:40–4:46 p.m.
259 Exome Sequencing Establishes Dysregulation of Neural Progenitor Cell Fate as a Critical Mechanism in Human Congenital Hydrocephalus
A. Allocco

4:47–4:50 p.m.
Question and Answer Session

4:51–4:54 p.m.
260 Magnetic Resonance guided Stereotactic Laser Ablation Therapy for the Treatment of Pediatric Epilepsy: A Multi-Institutional Retrospective Study
E. Arocho-Quinones

4:55–4:58 p.m.
261 Long-term survival in patients with primary intracranial germ cell tumors treated with surgery, carboplatin based chemotherapy followed by radiotherapy
K. Motomura (Japan)

4:59–5:02 p.m.
Question and Answer Session

5:03–5:06 p.m.
262 Traumatic Stress in Pediatric Hydrocephalus: An Analysis of Caregiver and Child Report
K. Zimmerman
5:07–5:10 p.m.  
**263 C1C2 Posterior Fusion for Treatment of Dynamic Compression in Vertebral Artery Dissection in Children: a Case Series**  
B. Braga

5:11–5:14 p.m.  
**Question and Answer Session**

5:15–5:18 p.m.  
**264 Frequent Subgaleal Shunt Taps Results in Improved Two-year Neuro-cognitive Outcomes in Post-Hemorrhagic Hydrocephalus**  
M. Hubbard

5:19–5:22 p.m.  
**265 Postoperative Pain Protocol for Selective Dorsal Rhizotomy**  
J. Hatef

5:23–5:26 p.m.  
**Question and Answer Session**

5:27–5:30 p.m.  
**Award Announcement: Schulman and Hydrocephalus Awards**  
M. Proctor

5:31–5:42 p.m.  
**Shunt Infections: Antibiotic prophylaxis and Treatment: Updates and Expert Opinion**  
J. Hauptman

5:43–5:54 p.m.  
**Shunt Infections: Antibiotic prophylaxis and Treatment: Updates and Expert Opinion**  
A. Moodley

5:55–6 p.m.  
**Question and Answer Session**
2:30–2:39 p.m.
**266 Newton-2: Randomized, Double Blind, Placebo-Controlled Study of EG-1962 in Aneurysmal Subarachnoid Hemorrhage**
D. Haenggi (Germany)

2:40–2:49 p.m.
**267 Extracellular RNAs Distinguish Between Stroke Subtypes**
M. Kalani

2:50–2:59 p.m.
**Cerebrovascular Section Best Basic Scientific Paper**
**268 Identification of novel somatic mutations, excluding KRAS, in adult sporadic arteriovenous malformations of the brain**
J. Weyhenmeyer

3:00 p.m.
**Introduction of Yasargil Lecture**
J. Mocco

3:02–3:29 p.m.
**M. Gazi Yasargil Lecture**
**Transformation of Cerebrovascular Surgery in the Age of Large Urban Healthcare Networks**
J. Bederson

3:30–4:01 p.m.
**Lecture**
G. Zipfel

4:02–4:32 p.m.
**Beverage Break in the AANS Exhibit Hall**
Location: Halls EFG
4:33–4:42 p.m
Late-breaking Abstract
269 Genome-wide association meta-analysis of over 30,000 subjects reveals novel intracranial aneurysm risk genes
M. Gunel

4:43–4:52 p.m
Late-breaking Abstract
270 Microenvironment of ruptured aneurysms discovered using data driven analysis of gene expression
Z. Zador (United Kingdom)

4:53–5:02 p.m.
271 Optogenetic Stimulation of Excitatory Motor Cortex Neurons Promotes Functional Recovery after Stroke
A. Pendharkar

5:03–5:12 p.m.
272 Impact of AVM Location on Language Cortex Right-hemisphere Reorganization: a Voxel-based Lesion-symptom Mapping Study
X. Deng (China)

5:13–5:22 p.m.
273 Minimally Invasive Surgeries for Hypertensive Intracerebral Hemorrhage: Preliminary Results of a Multicenter Randomized Controlled Trial
X. Xu (China)

5:23–5:32 p.m.
Cerebrovascular Section Best Clinical Scientific Paper
274 Stereotactic Radiosurgery for Pediatric versus Adult Brain Arteriovenous Malformations: A Multicenter Study
C. Chen
RAPID FIRE ABSTRACTS

5:33–5:36 p.m.
275 Seizure Outcomes Following Radiosurgery for Cerebral Arteriovenous Malformations: An Updated Systematic Review and Meta-Analysis
N. Ironside

5:37–5:40 p.m.
276 Evolution of Open Surgery for Unruptured Intracranial Aneurysms — Less Cases, Increased Difficulty, More Morbidity
M. Gaub

5:41–5:44 p.m.
277 Treatment with dimethyl fumarate reduces the formation and rupture of intracranial aneurysms in an elastase mouse model
M. Chen

5:45–5:48 p.m.
278 Craniocervical and Posterior Fossa Dimensions Can Affect Need for Decompressive Craniectomy In Posterior Fossa Hemorrhage
E. Neufeld

5:49–5:52 p.m.
279 Effects of Shorter Duration of Nimodipine Therapy after Aneurysmal Subarachnoid Hemorrhage.
J. Sokolowski

5:53–5:56 p.m.
280 Mechanical Cisternal Occlusion Causes Glymphatic Dysfunction and Increased AQP 4, Iba1 Expression Following Subarachnoid Hemorrhage
Z. Teton

5:57–6 p.m.
281 SIRT1 Activity is Critical for Hypoxic Conditioning-Induced Neurovascular Protection in Subarachnoid Hemorrhage (SAH)
J. Lee
2:30–2:32 p.m.
Introduction: Chuck Noll Lecture
J. Bailes

2:33–3:03 p.m.
Chuck Noll Lecture on Neurotrauma
Concussion and CTE — Personal Reflection and Perspective
J. Maroon

3:04–3:13 p.m.
ThinkFirst Injury Prevention Award
282 Risk Factors For Clinically Significant Vasospasm Following Traumatic Brain Injury
R. McCormack

3:14–3:23 p.m.
283 Blunt Cerebrovascular Injury in Pediatric Trauma: A National Database Study
D. Harris

3:24–3:33 p.m.
284 No Increase in Neurodegenerative Proteinopathy Following TBI in Military Services Members: A Preliminary Study Demonstrating Absence of CTE pathology
A. Tripathy

3:34–3:35 p.m.
Introduction: Point/Counterpoint: Guidelines versus Clinical Experience for the Management of Severe TBI
J. Jallo

3:36–3:49 p.m.
Point/Counterpoint: Point — The Case for Guideline-based Management
J. Ghajar
Point/Counterpoint: Counterpoint — The Case for Clinical Experience
F. Servadei (Italy)

Beverage Break in the AANS Exhibit Hall
Location: Halls EFG

Introduction: Marmarou Lecture
M. Stippler

Marmarou Lecture
ICP to BOOST3: A Play in Five Acts
T. Bleck

Late-breaking Abstract
285 Time Interval to Follow Commands in Severe Traumatic Brain Injury Survivors with Favorable Outcomes at 2 Years
T. Wilkins

286 Exosomes generated from mesenchymal stem cells cultured under 3D conditions promote recovery after traumatic brain injury in rats
A. Mahmood

287 Avoiding Antiplatelet Reversal in Non-Operative Intracranial Hemorrhages: Functional Outcomes of Guideline-Based Practice
C. Pendleton

288. Immediate Head CT Following Emergency Craniotomy or Craniectomy for Acute Trauma: Is it Beneficial?
C. Joaquin
5:51–6 p.m.
289 Early Versus Late Pharmacologic Thromboprophylaxis In Traumatic Intracranial Hemorrhage: A Systematic Review And Meta-Analysis.
M. Alvi

2:30–6 p.m.
Scientific Session VII: AANS/CSNS Socioeconomic
Location: 33BC
Moderator(s): D. Mayo; M. Steinmetz

2:30–3 p.m.
Lecture
G. Bloomgarden

3:01–3:11 p.m.
Question and Answer Session

3:12–3:20 p.m.
290 Evaluating Topical Vancomycin to Reduce Surgical-Site Infections in Craniotomies: Interim Analysis of a Randomized Controlled Trial
S. Ulene

3:21–3:29 p.m.
Louise Eisenhardt Travel Scholarship
291 Enhanced Documentation and Accurate Coding with the Introduction of a Standardized Neurosurgery History and Physical Template
L. Mohammad

3:30–3:38 p.m.
292 Opportunity for Improvement in Quality and Value: A National Analysis of First Year Post Spinal Cord Injury
R. Kessler

3:39–3:47 p.m.
293 Simulating Costs for Episode Based Bundled Payments for Cranial Neurosurgical Procedures
Z. Medress
## MONDAY, APRIL 15

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
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</table>
| 3:48–3:56 p.m. | 294 Disparities in Discharge Destination by Insurance Payer Group After Posterior Cervical Decompression and Instrumented Fusion  
               | J. Rasouli                                                           |
| 3:57–4:02 p.m. | Question and Answer Session                                           |
| 4:03–4:30 p.m. | Beverage Break in the AANS Exhibit Hall                              
               | Location: Halls EFG                                                  |
| 4:31–5:01 p.m. | 295 Cost of Hospitalization for Stroke in a Low-Middle-Income Country: Findings from a Public Tertiary Hospital in the Philippines  
               | A. Omar (Philippines)                                                |
| 5:02–5:09 p.m. | Question and Answer Session                                           |
| 5:10–5:18 p.m. | 296 Spinal Surgical Risk Calculator Utilizing Machine Learning Techniques  
               | J. Towner                                                            |
| 5:19–5:27 p.m. | 297 The Long Term Financial Impacts of a Decision to Pursue a Neurosurgical Career  
               | I. Eisenberg                                                         |
| 5:28–5:36 p.m. | Best International Abstract Award                                    |
|                | 296 Spinal Surgical Risk Calculator Utilizing Machine Learning Techniques  
               | J. Towner                                                            |
|                | 297 The Long Term Financial Impacts of a Decision to Pursue a Neurosurgical Career  
               | I. Eisenberg                                                         |
5:37–5:45 p.m.
298 Staining Functional and Non-functional Pituitary Adenomas: A Review to Establish a Clinical Trial Protocol.
M. Hulou

5:46–5:54 p.m.
Byron Cone Pevehouse Young Neurosurgeons Award
299 Annual Meeting Involvement and Research Productivity of AANS Medical Student Chapters
D. Mukherjee

5:55–6 p.m.
Question and Answer Session

3–5 p.m.
Interventional Pain Management: Technological Advancement in Spinal Cord Stimulation
Non-CME event
Booth 340, Hall D
Presented by Boston Scientific Neuromodulation, Nevro Corp and Stimwave

5–8 p.m.
Surgical Suite Workshops
Non-CME Event

Tech Advancements in Spinal Cord Stimulation
Booth 547, Hall D
Presented by Boston Scientific Neuromodulation, Nevro Corp. and Stimwave

Repairing the S-Joint
Booth 449, Hall D
Presented by SI-Bone
MONDAY, APRIL 15

6:30–9 p.m.
Young Neurosurgeons Evening at the San Diego Zoo
Location: Elephant Odyssey at the San Diego Zoo
 Supported by Medtronic and NeurosurgeryPAC

Ticket Required: $25,
$10 Medical Students
Tickets must be purchased in advance and will not be available for purchase at the venue.

This is an evening designed for the entire family at the renowned San Diego Zoo. Experience the elephant’s living quarters up close and personal, as well as interact with zoo keepers at the Lion Exhibit and Elephant Odyssey. The evening includes several fascinating exotic animal presentations, beginning at 7 p.m.

Shuttle busing from the Marriott Marquis San Diego Marina, Pacific Ballroom Entrance, Level 1 will depart at 6:15 p.m., 6:45 p.m. and 7 p.m. Return buses will depart the zoo at 8 p.m., 8:30 p.m. and 9 p.m.

The following items are prohibited:
- Any transportation device not otherwise approved as a mobility device
- E-cigarettes or vaporizers
- Suitcases or similar bags with wheels

Due to heightened awareness and restrictions concerning hoof and mouth disease, any guests who have been outside the United States up to one week prior to the program will not be permitted near the animals during the animal presentations.
6:30–9:30 p.m.
AANS Section on History of Neurological Surgery Annual Dinner
Non-CME Event
Location: The Prado at Balboa Park—1549 El Prado
Ticket Required $160

Setti S. Rengachary, MD, Memorial Lecture
Should We Have Ended the Doctor Draft?
Vice Adm. Harold M. Koenig, MD (USN-Ret)

7–8:30 p.m.
NREF Donor Reception
Bayside Room, Lobby Level, Marriott Marquis
By Invitation Only

7–9 p.m.
Dinner Symposia
Ticket Required: $195

176 Novel Techniques and Strategies to Treat Spine Disease in the Aging Population
Location: Lionfish at the Pendry, San Diego — 435 Fifth Avenue
D. Chou; D. Coric; P. Mummaneni; M. Virk; M. Wang

177 New Strategies for Endovascular Aneurysm Treatment
Location: Water Grill — 615 J Street
A. Boulos; D. Hoit; C. Schirmer; A. Sultan
8–9:30 p.m.
**AANS International Reception**
Location: The Oxford Social Club,
435 Fifth Ave, San Diego

All attendees/guests must reserve a ticket. Complimentary for International Attendees, $25 for U.S. or Canadian Attendees.

Join leaders from the AANS and international neurosurgical organizations, along with special dignitaries, at the Oxford Social Club for the 2019 AANS International Reception. Attend for an evening of conversation, refreshments and hors d’oeuvres at this avant-garde nightclub, located in the heart of the Gaslamp Quarter.

No children under 18 allowed at this event.

Shuttle bus transportation provided to and from the Marriott Marquis, Pacific Ballroom Entrance, Level 1.
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TUESDAY, APRIL 16

6:30 a.m.–4 p.m.
AANS Registration
Location: Hall D Lobby

6:30 a.m.–6:15 p.m.
Luggage and Coat Check
Location: Hall D Lobby
Fee: $5 per item

7–9 a.m.
Breakfast Seminars
Ticket Required: $150
Candidate and Medical Student Ticket: $65
Breakfast will be available in the Foyer for Breakfast Seminar attendees.

200 Transvenous AVM Embolization
Location: 25A
R. Crowley; K. Erkmen; S. Tjoumakaris; J. Yada

201 Precision Medicine for Individualized VTE Prophylaxis in the Neurosurgical Patient, Including Trauma and Critical Care
Location: 24BC
R. Armonda; G. Manley; D. Michael; J. Sorenson; J. Ullman

202 Neurocritical Care Documentation, Coding, Billing, & Practice: Pearls and Pitfalls to Maximize Revenues and Outcomes
Location: 25B
R. Chesnut; G. Kapinos; N. Karanjia; J. Zacko

203 Meet the Experts: The Business of Neurosurgery
Location: 25C
D. Benzil; N. Jenkins; J. Ratliff; E. Zusman

204 Leveraging Your Leadership Style
Location: 26A
A. Parr; M. Stewart; S. Wolfe; H. Woo
205 Skating to Where the Puck Will Be: Strategies for Neurosurgery Practices and Programs to Compete in Health Care’s Future  
Location: 29B  
J. Ecklund; R. Friedlander; J. Phelps; A. Stroink; J. Ziewacz

206 The APP and Neurosurgical On Call — When should I Call the Surgeon?  
Location: 29CD  
C. DeLemos; M. Langlois; L. Prado; S. Skukalek

207 Lumbar Fusion and Non Fusion Intra-Laminar Stabilization: Options, Indications and Considerations  
Location: 26B  
A. Dailey; R. Kritzer; E. Massicotte; J. O’Shea

208 Chiari Malformations: Diagnosis, Treatments and Failures  
Location: 28A  
K. Arnautovic; U. Batzdorf; A. Goel; D. Limbrick; K. Muraszko

209 Controversies in Cerebrovascular and Endovascular Neurosurgery  
Location: 28B  
C. Ogilvy; C. Schirmer; A. Siddiqui; B. Splavski; E. Veznedaroglu; J. Vries

210 “Seeing Inside”: Early Experiences with Diagnostic and Therapeutic X-ray in Neurosurgery  
Location: 28C  
T. Dagi; C. Prestigiacomo; M. Preul; M. Schulder; C. Sloffer

211 Pituitary Tumors  
Location: 28D  
M. Aghi; W. Couldwell; J. Grotenhuis; D. Hardesty; J. Jane; P. Jones; G. Menon

212 Peripheral Nerve Entrapment Syndromes  
Location: 28E  
A. Belzberg; J. Brown; L. Jacques; E. Zager

213 Management of Acute Spinal Cord Injury  
Location: 30CDE  
R. Anderson; G. Hawryluk; A. Levi; E. Tsai
214 Return-to-play After Sports Injury II: Concussion
Location: 32AB
J. Bailes; A. Duhaime; M. Krieger; M. Proctor; A. Sills

216 Cavernous Malformation: Current Controversies in Management
Location: 31ABC
M. Günel; A. Krisht; M. Lawton; L. Regli; R. Scott; G. Steinberg

217 The Use of Opioids in Neurosurgical Practice: How to be Safe, Effective and Compliant with New Prescribing Laws
Location: 30AB
F. Ferrante; J. Ing; J. Rosenow; J. Schwalb

7–9 a.m.
Sunrise Sessions
Ticket Required: $105
Candidate and Medical Student Ticket: $20
Coffee will be available in the booth for the Sunrise Sessions

218 Common Pitfalls and Artifacts on Brain CT and MR Imaging
Location: Booth 614, Hall D
J. Chen; R. Harbaugh; J. Karis; S. Nabavizadeh

219 ABNS Board Preparation: What You Must Know
Location: Booth 414, Hall D
J. Bruce; D. Kondziolka; A. Nanda; B. Thompson

8:30 a.m.–5 p.m.
Speaker Ready Room
Location: 22

9 a.m.–4:45 p.m.
AANS Exhibit Hall
Location: Halls EFG

9 a.m.–6 p.m.
AANS Learning Center
Location: Hall D
TUESDAY, APRIL 16

9–9:45 a.m.
Beverage Break in the AANS Exhibit Hall
Location: Halls EFG

9:35 a.m.–1 p.m.
Plenary Session II
Location: Hall H
Moderator(s): G. Grant; S. Timmons

9:30–9:36 a.m.
Historical Film: Neurosurgery and the Military
Presented by G. Grant; J. Tomlin

9:37–9:39 a.m.
Welcome
G. Grant

9:40–9:43 a.m.
NREF Update
R. Haid

9:44–9:46 a.m.
Introduction to the
Richard C. Schneider Lecture

9:47–10:17 a.m.
Richard C. Schneider Lecture
The Science of Practice in
Cerebrovascular Surgery: a Future
Directed by Patient Need
R. Dempsey

10:18–10:20 a.m.
Introduction to the Distinguished
Service Award

10:21–10:24 a.m.
Distinguished Service Award
M. Bullock
10:25–10:35 a.m.
300 Predictors of Fast Shunt Failure in Pediatric Hydrocephalus, a Hydrocephalus Clinical Research Network (HCRN) study
J. Hauptman

10:36–10:37 a.m.
Assessment of the Trial Design/Level of Evidence
M. Levy

10:38–10:40 a.m.
Discussant
M. Levy

10:41–10:51 a.m.
301 Using Resting-State Electroocorticography to Demonstrate Cortical Regions Important in Sensory-Motor Integration
A. Tong

10:52–10:54 a.m.
Discussant
E. Eskandar

10:55–10:58 a.m.
Washington Committee Update
A. Stroink

10:59–11 a.m.
Introduction of the 2020–2021 Van Wagenen Fellow
S. Kurpad

11:01–11:02 a.m.
2020-2021 Van Wagenen Fellow
E. Goldschmidt
11:03–11:05 a.m.
Introduction to the Van Wagenen Lecture
S. Kurpad

11:06–11:36 a.m.
Van Wagenen Lecture
Neurosurgery’s March to Scientific Clinical Practice
S. Haines

11:37–11:45 a.m.
Late-breaking Abstract
302 Safety and Clinical Outcomes in Traumatic Brain Injury Patients: Interim Analysis of the STEMTRA Trial
D. Okonkwo

11:46–11:54 a.m.
Late-breaking Abstract
303 Ten-Year Outcomes of One- and Two-Level Cervical Disc Arthroplasty: Results from a U.S. Multi-Center Study
K. Kim

11:55–11:59 a.m.
CNS Update
G. Rao

12–12:02 p.m.
Introduction to the Hunt-Wilson Lecture

12:03–12:33 p.m.
Hunt-Wilson Lecture
D. Ferrucci

12:34–12:36 p.m.
Introduction of the Cushing Medalist

12:37–12:40 p.m.
Cushing Medalist
J. Rutka (Canada)
12:41–12:43 p.m.
Introduction/Moderator: Cushing Oration

12:44–1:24 p.m.
Cushing Oration
J. Kim

1:21–1:26 p.m.
Announcement of Lunch-and-learn Seminars
G. Grant

11 a.m.–1 p.m.
Surgical Suite Demo
Non-CME Event

Herniated Disc Repair
Presented by Anchor Orthopedics
Booth 547, Hall D

1:30–2:30 p.m.
Lunch in the AANS Exhibit Hall
Location: Halls EFG
TUESDAY, APRIL 16

1:40–2:25 p.m.
Lunch-and-learn Seminars
Non-CME Events

Stop by the AANS Learning Center in Hall D and attend one of the Lunch-and-learn Seminars

The Art and Science of Cranioplasty: Principles and Practice for Improved Results
Location: Booth 614, Hall D
C. Gordon
Presented by DePuy Synthes CMF

Mazor X Stealth™ Edition — Transforming Spine Surgery through Navigated Robotic Guidance
Location: Booth 414, Hall D
M. Pham
Presented by Medtronic

CMF Neuroform Atlas: Changing Medical Practice Through Proven Clinical Outcomes
Location: Booth 340, Hall D
B. Jankowitz
Presented by Stryker

1:45–3:15 p.m.
Young Neurosurgeons Luncheon
Non-CME Event
Location: Marina Ballrom G, Level 3; Marriott Marquis
Ticket Required: $10
Moderator(s): M. Ivan

The Redemptive Strenuosities of a Neurosurgical Life
A. Nanda

1:45–3:30 p.m.
Mentorship: Lessons in Resiliency
Location: Mission Hills, Level 3; Marriott Marquis
Ticket Required: $150
D. Benzil; J. Huang; K. Muraszko; M. Rahman; J. Sweet; S. Wolfe; S. Woodrow
2:30–4 p.m.
**Operative Nuances II: Challenging Operative Moments During Microsurgery**
Location: 20D
A. Cohen-Gadol; W. Couldwell; J. Fernandez-Miranda; M. Lawton; C. Maher

2:30–6 p.m.
**Advancements in Neurotrauma**
Location: 33BC
Ticket Required: $100
C. DeLemos; M. Langlois; D. Okonkwo; V. Sukul; R. Zafonte

2:30–6 p.m.
**AANS Section on the History of Neurological Surgery**
Location: 30AB
Moderator(s): T Dagi; C. Prestigiacomo

2:30–2:32 p.m.
Introduction to the Victor Horsley History Lectureship
C. Prestigiacomo

2:33–3:18 p.m.
Victor Horsley History Lectureship
In The Days of The Giants, The Golden Years of the Neurological Institute of New York.
P. Carmel

3:19–3:29 p.m.
Question and Answer Session

3:30–3:32 p.m.
Introduction to the Vesalius Award
T Dagi

3:33–3:47 p.m.
Vesalius Award
317 The first chordotomy and the personal dynamics of Drs. Spiller, Martin and Frazier
C. Honey (Canada)
TUESDAY, APRIL 16

3:48–3:58 p.m.
318 Wilder Penfield and Edward Archibald: Historical Examination of Successful Mentoring Principles in Neurosurgery
E. Belykh (Russian Federation)

3:59–4:29 p.m.
Beverage Break in the AANS Exhibit Hall
Location: Halls EFG

4:30–4:40 p.m.
319 Dr. Jose-Manuel Rodriguez Delgado: Inventor, Neuroscientist, Bullfighter.
Z. Hubbard

4:41–4:51 p.m.
320 Dr. Dwight Parkinson: Neurosurgical Pioneer of the Canadian Prairies
A. Ajisebutu (Canada)

4:52–5:02 p.m.
321 The Life of Ambroise Paré Spared by Hiding in a Clothes Closet. A Historical Vignette
B. Splavski (Croatia)

5:03–5:13 p.m.
322 Hippocrates: a less known period of his life
T. Giannis (Greece)

5:14–5:24 p.m.
323 A History of the Jannetta Procedure
A. Kaufmann (Canada)

5:25–5:35 p.m.
324 Dr. John A Jane Sr. (1931–2015): A quintessential “General” Neurosurgeon who treated “Superman”
T. Maiti

5:36–5:46 p.m.
325 Watt Weems Eagle (1898-1980) and the History of Eagle Syndrome
R. Hanif Dossani

5:47–6 p.m.
Question and Answer Session
2:30–2:55 p.m.  
John Loeser Lecture

2:56–3:06 p.m.  
Question and Answer Session

3:07–3:10 p.m.  
304 Clinical and Patient Satisfaction Outcomes after Partial Sensory Rhizotomy for Refractory Trigeminal Neuralgia Among MS Patients  
A. Kaufmann (Canada)

3:11–3:14 p.m.  
305 Severity of cerebrospinal fluid obstruction is predictive of Syringogenesis in Chiari 1 malformation  
D. Taylor

3:15–3:18 p.m.  
306 Preoperative Greater Occipital Nerve Block Correlates with Improved Postoperative Outcomes in Chiari Decompressive Surgery  
A. Kundishora

3:19–3:22 p.m.  
307 What is the Impact of Spine Surgery on Opioid Use? A Systematic Review and Meta-Analysis  
J. Abdelgadir
TUESDAY, APRIL 16

3:23–3:26 p.m.
308 High-Cervical Targeted Drug Delivery for Anesthesia Dolorosa
J. Sheehy

3:27–3:30 p.m.
309 Pilot Safety Trial of Extended Release Liposomal Buvipacaine (Exparel) for Postoperative Analgesia in the Adult and Pediatric Neurosurgical Population
D. Santiago-Dieppa

3:31–3:34 p.m.
A. Wright

3:35–3:38 p.m.
311 Outcomes Using an Spinal Cord Stimulation Device Capable of Delivering Combination Therapy (Simultaneous or Sequential) and Advanced Waveforms/Field Shapes
R. Jain

3:39–3:49 p.m.
Late-breaking Abstract
312 Randomized, Double-Blind Trial of Evoked Compound Action Potential (ECAP)-Controlled Closed-Loop Spinal Cord Stimulation for Patients with Chronic Trunk and/or Limb Pain
R. Levy

3:50–3:58 p.m.
313 Clinical Outcomes Following Linac-Based Radiosurgery For Trigeminal Neuralgia
J. Kienzler (Switzerland)

3:59–4:29 p.m.
Beverage Break in the AANS Exhibit Hall
Location: Halls EFG
4:30–4:38 p.m.
314 Randomized Crossover Trial Comparing Burst and Tonic Spinal Cord Stimulation: Burst Stimulation Decreases Pain Catastrophizing
M. DiMarzio

4:39–4:47 p.m.
315 Complications associated with opioids for pain management in the post-operative period for lumbar and cervical spinal fusions: a single institution retrospective analysis
R. Dhillon

4:48–4:56 p.m.
316 Retrograde implantation of paddle lead spinal cord stimulator at C1-C2: Technique and outcome analysis in an Institutional series
T. Maiti

4:57–5:03 p.m.
Question and Answer Session

5:04–5:19 p.m.
State of Ablation
A. Viswanathan

5:20–5:35 p.m.
DBS for Pain
W. Rosenberg

5:36–5:42 p.m.
Point/Counterpoint Debate: Awake vs. Asleep SCS
S. Falowski

5:43–5:49 p.m.
Point/Counterpoint Debate: Awake vs. Asleep SCS
A. Raslan

5:50–6 p.m.
Debate with all speakers
TUESDAY, APRIL 16

2:30–6 p.m.
AANS/CNS Section on Pediatric Neurological Surgery
Location: 32AB
Moderator(s): R. Ahmed, E. Jackson

2:30–2:45 p.m.
Point/Counterpoint: Point — Prophylactic Tethered Cord Release
N. Selden

2:46–3:01 p.m.
Point/Counterpoint: Counterpoint — Prophylactic Tethered Cord Release
C. Maher

3:02–3:13 p.m.
Question and Answer Session

3:14–3:59 p.m.
Historical Perspectives in Pediatric Neurosurgery
J. Goodrich

4–4:30 p.m.
Beverage Break in the AANS Exhibit Hall
Location: Halls EFG

4:31–4:36 p.m.
Late-breaking Abstract
326 Ventriculoperitoneal Shunt Placement Outcomes in Low Weight Infants with Hydrocephalus
N. Rea

4:37–4:42 p.m.
Late-breaking Abstract
327 Intraventricular hemorrhage induces rapid calcium signaling in rodent choroid plexus epithelial cells
C. Sadegh
4:43–4:48 p.m.
328 Brain Iron Deposition After Ferumoxytol-enhanced MRI: A Study of Porcine and Pediatric Brains
L. Kim

4:49–4:54 p.m.
329 One Hundred Years of Innovation: Deep-Learning for Automatic Detection of Brain Ventricular Volume in a Multi-Institutional Study
J. Quon

4:55–5 p.m.
330 In vivo Treatment of Progressive Congenital Hydrocephalus via Drug Inhibition of mTOR
T. DeSpenza

5:01–5:06 p.m.
331 Pediatric Lumbar Puncture Pressures do not Correlate with Intracranial Pressures Measured via Intraparenchymal Wire
C. Sarris

5:07–5:12 p.m.
332 Pediatric Brain Arteriovenous Malformation Unfavorable Hemorrhage Risk: Extrapolation to a Morphologic Model
L. Ma (China)

5:13–5:18 p.m.
333 Correlation between Involvement in Specific Sports and Lifetime Risk of Developing a Traumatic Brain Injury in Young Students Athletes.
C. Koa Affana (Dominica)

5:19–5:24 p.m.
334 Topical Vancomycin for Surgical Prophylaxis in Pediatric Craniofacial Surgeries
A. Ho
TUESDAY, APRIL 16

5:25–5:30 p.m.
335 Endoscope assisted hemispherotomy: preliminary results in nine patients
K. Wagner

5:31–5:36 p.m.
336 Surveillance of Residual Pediatric Brain Arteriovenous Malformations Using Ferumoxytol based ASL and SPGR Magnetic Resonance Series
Y. Huang

5:37–5:42 p.m.
337 Risk of venous thromboembolism for a busy pediatric neurosurgical service: a retrospective 25 year institutional experience
M. Brown

5:43–5:48 p.m.
338 In-Vitro Modeling of IVH of Prematurity Mirrors the In Vivo Inflammatory Response
B. Snyder

5:49–5:54 p.m.
339 Perivascular Stasis of Intraventricularly Injected Macromolecules as a Hallmark of Hydrocephalus: Experimental Study Using POMGnT1 Knockout Mice
S. Krishnamurthy

5:55–6 p.m.
340 The Effect of Proteins and Temperature on Certas and Hakim Valves Function
R. Serra
2:30–4 p.m.
Symposium I: Point/Counterpoint Debates

2:30–2:32 p.m.
Point/Counterpoint — Case Presentation:
Adult Scoliosis, SVA=6, 30 Degree Cobb. 70 Year Old Patient
D. Lu

2:33–2:43 p.m.
Point/Counterpoint: Patient Needs the Whole Thing Fixed: T10 to Pelvis
P. Park

2:44–2:54 p.m.
Point/Counterpoint: Limited Fusion is Better: L1 to L5 Only
A. Kanter

2:55–2:57 p.m.
Point/Counterpoint — Case Presentation:
75 Year Old Female with Kyphotic Osteoporotic Compression Fracture
D. Coric

2:58–3:08 p.m.
Point/Counterpoint: Instrument and Correct the Kyphosis to Alleviate the Pain
J. Uribe

3:09–3:19 p.m.
Point/Counterpoint: Vertebroplasty Only, Surgery is a Disaster
J. Knightly
3:20–3:22 p.m.
Point/Counterpoint — Case Presentation:
Non-healed Type II Odontoid Fracture in 80 Year Old with 3mm Motion and Asymptomatic
E. Bisson

3:23–3:33 p.m.
Point/Counterpoint: Don’t Operate: This Patient is Too Old and Will Be Fine with the Collar Off
M. Groff

3:34–3:44 p.m.
Point/Counterpoint: Operate: There Will Always be a Risk of Paralysis with the Unstable C1 2 Segment
K. Than

3:45–4 p.m.
Question and Answer Session

4:01–4:30 p.m.
Beverage Break in the AANS Exhibit Hall
Location: Halls EFG

4:31–6 p.m.
Symposium II: Case Presentations and Complication Avoidance

4:31–4:43 p.m.
MIS TLIF — Is Unilateral Pedicle Screw Fixation Acceptable or Just a Set-up for Failure?
M. Wang

4:44–4:56 p.m.
The Degenerative Lumbar Spine with Stenosis: Indications to Add Fusion and Indications to Decompress Only?
Z. Ghogawala

4:57–5:09 p.m.
Cervical Stenosis: When to Do Laminoplasty Versus Laminectomy and Fusion
A. Clark
5:10–5:22 p.m.
Preventing Latrogenic Deformity and Flat Back Syndrome: Strategies to Not Turn a Degenerative Case Into a Deformity Case
D. Chou

5:23–5:35 p.m.
Osteoporosis and spinal Surgery: Work-up, Optimization Before Surgery, and Prevention of Complications
C. Miller

5:36–5:48 p.m.
Complication Management: Pseudoarthrosis and Implant Failure: Management Strategies and Principles to Decrease Pseudoarthrosis Rates
K. Fu

5:49–6 p.m.
Question and Answer Session

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2:30–6 p.m.
AANS/CNS Section on Tumors I
Location: 30CDE
Moderator(s): V. Agarwal; V. DiNapoli; M. Ivan; I. Yang

2:30–2:33 p.m.
Introduction to Session: Precision Medicine for Meningiomas
M. Ivan

2:35–2:50 p.m.
Mutational Landscape of Benign and Aggressive Meningiomas
I. Dunn

2:51–3:06 p.m.
Clinical Trial Update – Precision Medicine for Meningiomas
P. Brastianos
TUESDAY, APRIL 16

3:07–3:22 p.m.
Radiation of Atypical Meningiomas
M. McDermott

3:23–3:38 p.m.
Point/Counterpoint: Leaving Residual Meningioma: No Big Deal or Cardinal Sin
J. Morcos

3:39–3:54 p.m.
Point/Counterpoint: Leaving Residual Meningioma: No Big Deal or Cardinal Sin
W. Couldwell

3:55–4:30 p.m.
Beverage Break in the AANS Exhibit Hall
Location: Halls EFG

4:31–4:40 p.m.
AANS/CNS Section on Tumors Skull Base Award
341 Targeting The CSF1/CSF1R Axis is an Effective Treatment Strategy for Malignant Meningiomas
J. Yeung

4:41–4:50 p.m.
Integra Foundation Award
342 Genetic variation of recurrent low-grade and high-grade meningiomas is associated with clinical outcomes and progression-free survival: An analysis of 150 meningiomas with complete genomic sequencing
J. Loewenstern

4:51–5 p.m.
343 Genetic Signatures of Skull Base Chordoma Progression after Surgery and Radiation
G. Zenonos
5:01–5:10 p.m.
344 Results of a Prospective Multicenter Controlled Study Comparing Pituitary Gland Hormone Outcomes of Microscopic versus Fully Endoscopic Transsphenoidal Surgery for Nonfunctioning Pituitary Adenomas
A. Little

5:11–5:20 p.m.
345 Decreased Function of Isoprenylcysteine Carboxylmethyltransferase Function Results in Increased Sensitivity to Chemoradiation
D. Altshuler

5:21–5:30 p.m.
346 Immune Monitoring with CyTOF in Peptide Vaccine Therapy for Low-Grade Glioma
M. Shahin

5:31–5:40 p.m.
347 Development and validation of an individualized predictor of meningioma recurrence
F. Nassiri (Canada)

5:41–5:50 p.m.
348 Tumor Specific Super-Enhancers Span Multiple Novel Therapeutic Targets in Meningioma
B. King

5:51–6 p.m.
349 Cost-effectiveness of Endoscopic versus Microscopic Transsphenoidal Surgery for Pituitary Adenomas
A. Chandra

4–4:30 p.m.
Beverage Break in the AANS Exhibit Hall
Location: Halls EFG
TUESDAY, APRIL 16

7–9 p.m.
Dinner Symposia
Ticket Required $195.

276 Ripped from the Headlines — Doctors in Medico-legal Crosshairs: Lessons Learned to Keep Lawyers and Regulators Away
Location: The Prado at Balboa Park—1549 El Prado
B. Adatto; M. Sacopulos; J. Tran
Shuttle bus transportation provided to and from the Marriott Marquis

277 Time For Change: The Future of Neurosciences Delivery and Integration
Location: Eddie V’s Prime Seafood—
E. Levy; N. Martin; P. Rasmussen; E. Veznedaroglu
789 West Harbor Drive. No shuttle service.
Attendees
Visit MyAANS to self-report ALL CME credit at the AANS Annual Scientific Meeting.

Go to myaans.aans.org and select “MyCME” to get started.
6:30 a.m.–3:30 p.m.
**AANS Registration**
Location: Hall D Lobby

6:30 a.m.–5:15 p.m.
**Luggage and Coat Check**
Location: Hall D Lobby
Fee: $5 per item

7–9 a.m.
**BREAKFAST SEMINARS**

**Ticket Required: $150**
**Candidate and Medical Student Ticket: $65**
Breakfast will be available in the Foyer for Breakfast Seminar attendees.

300 Past, Present and Future of Carotid Stenosis
Location: 33BC
T. Brott; R. Dempsey; R. Harbaugh; C. Schirmer; A. Siddiqui; S. Simon

301 Contemporary Management of Spinal Fractures
Location: 30CDE
B. Meyer; C. Sansur; N. Theodore; C. Thome; G. Trost

Location: 31ABC
Z. Ali; K. Madhavan; N. Malhotra; J. Mobasser

303 Cervical Spondyloptic Myelopathy
Location: 29CD
E. Bisson; R. Heary; M. Kaiser; I. Kalfas; H. Nakagawa; M. Panigrahi

304 Management of Cranial Incidental Imaging Findings
Location: 30AB
S. Amin-Hanjani; M. Berger; S. Haines; C. Maher; M. Proctor
305 The Spectrum of Adjuvant Therapy for Brain Tumors
Location: 32AB
R. Jensen; F. Lang; I. Nakano; C. Watts

7–9 a.m.
Sunrise Sessions

Ticket Required: $105
Candidate and Medical Student Ticket: $20

306 Peri-operative Pain Management — is Narcotic Free America Possible?
Location: Booth 614, Hall D
J. Pilitsis; J. Sweet; M. Wang; J. Zacko

307 Shoulder vs. Spine: Differentiating Shoulder and Cervical Spine Pathology
Location: Booth 414, Hall D
N. Brooks; J. Burke; M. Smith; B. Subach; T. Witham

8:30 a.m.–3:30 p.m.
Speaker Ready Room
Location: 22

9–9:45 a.m.
Beverage Break
Location: 20A Foyer

9:30 a.m.–12:50 p.m.
Plenary Session III
Location: 20A
Moderator(s): R. Byrne; C. Shaffrey

9:30–9:32 a.m.
Welcome
R. Byrne

9:33–9:44 a.m.
400 Trepanation of the Outer Table as a Treatment for Scalping Injuries on the American Frontier
N. Brandmeir
9:45–9:47 a.m.  
Discussant  
C. Prestigiacomo

9:48–9:59 a.m.  
401 Spreading Depolarization as a Measure of Cerebral Autoregulation in the Neuro-ICU  
C. Fritch

10–10:02 a.m.  
Discussant  
G. Manley

10:03–10:14 a.m.  
Journal of Neuro-Oncology Award  
402 Evidence of CNS Response to Pembrolizumab for Leptomeningeal Carcinomatosis at a Single Cell Resolution  
C. Alvarez Breckenridge

10:15–10:16 a.m.  
Assessment of the Trial Design/Level of Evidence  
M. Glantz

10:17–10:19 a.m.  
Discussant  
P. Dunn

10:20–10:31 a.m.  
403 Sensory nerve action potential recordings in low frequency focused ultrasound modulation of common peroneal nerve injury in vivo  
J. Pilitsis

10:32–10:33 a.m.  
Assessment of the Trial Design/Level of Evidence  
M. Glantz

10:34–10:36 a.m.  
Discussant  
A. Belzberg
10:37–10:48 a.m.
404 Optimal Spinal Cord Stimulation Parameter Settings to Restore Volitional Movement after Motor-complete Spinal Cord Injury
D. Darrow

10:49–10:51 a.m.
Discussant
P. Patil

10:52–11:03 a.m.
Robert Florin Award
405 New Care Pathway to Decrease the Length of Stay and Costs of Single-level Lumbar Fusion
S. Zammar

11:04–11:06 a.m.
Discussant
M. Wang

11:07–11:09 a.m.
Introduction of the Humanitarian Award

11:10–11:13 a.m.
Humanitarian Award
D. Sandberg

11:14–11:25 a.m.
406 Visual improvement after carotid endarterectomy is associated with the increased chorioretinal blood flow confirmed by laser speckled flowgraphy
S. Yoshida (Japan)

11:26–11:28 a.m.
Discussant
R. Harbaugh

11:29–11:40 a.m.
407 Gender-Pay Equity in Academic Neurosurgery at United States Public Universities
K. Kearns
11:41–11:42 a.m.
Assessment of the Trial Design/Level of Evidence
M. Glantz

11:43–11:45 a.m.
Discussant
A. Abosch

11:46–11:57 a.m.
Columbia Softball Pediatric Award
408 Liquid Biopsy for Detection of Histone H3 Mutations in Pediatric Diffuse Midline Gliomas
A. Saratsis

11:58–11:59 a.m.
Assessment of the Trial Design/Level of Evidence
M. Glantz

12–12:02 p.m.
Discussant
G. Grant

12:03–12:04 p.m.
Young Neurosurgeons Medical Student Abstract Award
409 Utility of a Near-Infrared Light Device (NIRD) in Detecting Subdural (SDH) and Epidural (EDH) Hematomas: An Effectiveness Trial Toward Using a NIRD for Neurosurgical Triaging in Low and Middle-Income Countries (LMICs):
R. Gramer (Canada)

12:15–12:16 p.m.
Assessment of the Trial Design/Level of Evidence
M. Glantz

12:17–12:19 p.m.
Discussant
U. Samadani
12:20–12:29 p.m.
Late-breaking Abstract
410 The WEB-IT study: Final 12 month results of the pivotal WEB Intra-Saccular Therapy Study
A. Arthur

12:30–12:39 p.m.
Late-breaking Abstract
411 Postoperative Opioid Prescribing Practices in Decompressive Lumbar Spine Surgery Prior to and Following Implementation of State-Level Prescribing Reform
R. Winkelman

12:40–12:41 p.m.
Introduction of the Incoming AANS President
S. Timmons

12:42–12:47 p.m.
2019/2020 AANS President
C. Shaffrey

1–2 p.m.
Rapid Fire Abstract Session: Cerebrovascular and Tumor
Location: Booth 614, Hall D
Moderator(s): A. Arthur

12:48–12:50 p.m.
Announcement of the Rapid Fire Sessions
R. Byrne

12:30–5 p.m.
AANS Learning Center
Location: Hall D

12:30–2 p.m.
Lunch
Concessions will be available to purchase in the Hall D Lobby near AANS Registration
1–1:03 p.m.
410 Stereotactic Radiosurgery for Cavernous Sinus versus Non-Cavernous Sinus Dural Arteriovenous Fistulas: Outcomes and Outcome Predictors
Y. Hung

1:04–1:07 p.m.
411 Cortical Vein Opacification for Risk Stratification in Anterior Circulation Endovascular Thrombectomy
H. Hoffman

1:08–1:11 p.m.
412 Time course of metabolomics in cerebrospinal fluid after aneurysmal subarachnoid hemorrhage
O. Petr (Austria)

1:12–1:15 p.m.
413 Microsurgical Treatment of Intracranial Aneurysms after Failure of Flow Diversion: A Multicenter Case Series and Review
R. Tawk

1:16–1:19 p.m.
414 An endovascular assisted non-occlusive cerebral bypass — a technical feasibility study in a rabbit model.
J. Fandino (Switzerland)

1:20–1:23 p.m.
415 Lymphopenia and Bone Marrow T-cell Sequestration Accompanying Stroke are Mediated by T-cell S1P1 Loss
P. Chongsathidkiet

1:24–1:27 p.m.
416 FEASIBILITY OF ROBOTIC ASSISTED NEUROVASCULAR INTERVENTIONS: INITIAL EXPERIENCE IN FLOW MODEL AND PIG MODEL
G. Britz
1:28–1:31 p.m.
417 High Throughput Metabolite Profiling Identifies Plasma Taurine as a Biomarker of Functional Outcome After Aneurysmal Subarachnoid Hemorrhage
C. Stapleton

1:32–1:35 p.m.
418 Influence of Clinical Parameters on the Efficacy of Immune Checkpoint Inhibitors in Patients with Non-Small Cell Lung Cancer Brain Metastases (NSCLCBM)
A. Lauko

1:36–1:39 p.m.
419 Immunomodulating Effect of a LiverX Receptor Agonist (LXR 623) and Its Synergistic Effect With Anti-PD-1 Antibodies Against Chordomas in an NSG-SGM3-BLT Humanized Mouse Model
W. Ishida

1:40–1:43 p.m.
420 Homogenous Aggressive and Indolent Subgroups of Atypical Meningiomas Identified using Oncogenic Signatures
A. Landry (Canada)

1:44–1:47 p.m.
421 Reliability of Fluorescein-assisted Stereotactic Brain Biopsies in Predicting Conclusive Tissue Diagnosis
E. Nevzati

1:48–1:51 p.m.
422 Nanoscale Epitope Uncovering and De-crowding Using Expansion Microscopy of Normal Human and Glioma Tissues
P. Valdes Quevedo
1:52–1:55 p.m.
423 siRNA-mediated Knockdown of Multiple Enzymatic Targets for Potentiation of 5-Aminolevulinic Acid Fluorescence
A. Semonche

1:56–1:59 p.m.
424 Receptor Tyrosine Kinase Gene Amplification is Predictive of Intraoperative Seizures during Glioma Resection with Functional Mapping
B. Choi

1–2 p.m.
Rapid Fire Abstract Session: Pediatrics and Sterotactic and Functional
Location: Booth 414, Hall D
Moderator(s): M. Krieger

1–1:03 p.m.
425 Contralateral Extra-Axial Hematoma after Decompressive Hemicraniectomy: Description and Incidence in a Consecutive Trauma Series
P. Bonney

1:04–1:07 p.m.
426 The Effect of Supplementation of Vitamin D in Neurocritical Care Patients with Hypovitaminosis D: A Randomized Clinical Trial
I. Eli

1:08–1:11 p.m.
427 Secondary Analysis and Proposed Validation of a Predictive Model for MVC Outcomes
J. Kolcun

1:12–1:15 p.m.
428 Perfusion-Dependent Impairment of Cerebral Autoregulation in Malignant Hemispheric Stroke
N. Hecht (Germany)
1:16–1:19 p.m.
429 Post-operative Imaging. When We Need It And When We Don’t. A Prospective Algorithm Based Study
I. Ben Zvi (Israel)

1:20–1:23 p.m.
430 Clinical outcomes following spine surgery for traumatic injury in the octogenarian population
M. Gigliotti

1:24–1:27 p.m.
431 The Management and Outcomes of Isolated Interhemispheric Subdural Hematomas Associated with Falx Syndrome
D. Tonetti

1:28–1:31 p.m.
432 Neurosurgery Resident Surgical Experience in Pediatric Cases
N. Agarwal

1:32–1:35 p.m.
433 Rates of In-Hospital Failure for Endoscopic Third Ventriculostomy (ETV) compared to Shunting in Post-Hemorrhagic Hydrocephalus of Prematurity (PHHP)
E. Luther

1:36–1:39 p.m.
434 Experimental in-vitro shunt valve studies and computerized modeling demonstrate cerebrospinal fluid overdrainage under physiologic conditions
M. Kraemer
1:40–1:43 p.m.
435 Staged MR-Guided Laser Interstitial Thermal Therapy for Hypothalamic Hamartoma: Analysis of Ablation Volumes and Morphological Considerations
N. Gadgil

1:44–1:47 p.m.
436 Network Disconnection: An Early Predictor of Seizure Freedom After Surgery
E. Neal

1:48–1:51 p.m.
437 Comparative Study of Open Surgical Callosotomy and Laser Interstitial Thermal Therapy (LITT) in Pediatrics
M. Janjua

1:52–1:55 p.m.
438 Anterior Cingulate Electrocorticographic Activity associated with Recovery after Severe Traumatic Brain Injury
J. Adachi

1:56–1:59 p.m.
439 The Effect of Gamma Knife Radiosurgery on Large Posterior Fossa Metastases (LPFM) and the associated peritumoral edema and 4th ventricle volume
B. Muhsen (Jordan)
2–2:05 p.m.
Introduction to the
Raymond M. Donaghy Lecture
J Mocco

2:06–2:36 p.m.
Raymond M. Donaghy Lecture
J. Wilson

2:37–2:42 p.m.
463 The matrix Gla protein (MGP) rs1800801 is associated with first year recurrence of ischemic stroke in Caucasians
S. Kunaprayoon

2:43–2:48 p.m.
464 Comparison of Readmission to Index vs Non-index Hospitals after Mechanical Thrombectomy in Stroke Patients
K. Shkirkova

2:49–2:54 p.m.
465 Treatment of Cerebral Aneurysms in the Post-ISAT Era: Trends and Outcomes
D. McCarthy

2:55–3 p.m.
466 Are Nationwide Inpatient Sample database studies for Cerebral Aneurysm Over-Rated? Critical Analysis and Systematic Review
J. Thakur
3:01–3:06 p.m.
467 Magnetic Resonance Vessel Wall Imaging in Human Intracranial Aneurysms: A Histological Analysis
J. Hudson

3:07–3:12 p.m.
468 Microglia Activation in a Mouse Model of Chronic Cerebral Hypoperfusion
M. Connor

3:13–3:18 p.m.
469 Predictive Factors of Incomplete Aneurysm Occlusion after Endovascular Treatment with the Pipeline Embolization Device
G. Maragkos

3:19–3:29 p.m.
Question and Answer Session

3:30–3:47 p.m.
Point/Counterpoint: ICH: Have We Moved Beyond STICH — No Intervention
S. Simon

3:48–4:05 p.m.
Point/Counter Point: ICH: Have We Moved Beyond STICH — NICO Evacuation
M. Chicoine

4:06–4:23 p.m.
Point/Counter Point: ICH: Have We Moved Beyond STICH — Artemis
R. Turner

4:24–4:29 p.m.
Question and Answer Session

4:30–5 p.m.
Cerebrovascular Section Business Meeting
WEDNESDAY, APRIL 17

2–5 p.m.
AANS/CNS Section on Disorders of the Spine and Peripheral Nerves—Peripheral Nerves Section Session
Location: 32AB
Moderator(s): H. Gilmer; L. Jacques; M. Mahan

2–2:04 p.m.
Introduction of the David G. Kline Lectureship:
R. Midha (Canada)

2:04–2:44 p.m.
David G. Kline Lectureship
The Biology of the Human Schwann Cell — Bench to Bedside
A. Levi

2:45–3 p.m.
State of The Science: Electrodiagnostic Studies
G. Sheean

3:01–3:11 p.m.
Commentary
D. Kline

3:12–3:27 p.m.
State of The Science: Peripheral Nerve Imaging
C. Chin

3:28–3:43 p.m.
State of the Science: Update in Peripheral Nerve Tumor Treatments
A. Belzberg

3:44–3:59 p.m.
Development of Peripheral Nerve Surgery in Neurosurgery Departments
L. Jacques
4–4:20 p.m.
Report from 2017 Kline Research Awardee
Schwann Cell Delivery Via Enhanced Collagen
glycosaminoglycan Tubes to Improve Outcome
From Critical Length Nerve Gap Repairs
S. Burks; A. Levi

4:21–4:28 p.m.
AANS International Travel Scholarship
484 Can Sonography Replace
Electromyography and Nerve Conduction
Velocity in Carpal Tunnel Syndrome?
A. El Badry (Egypt, Arab Rep.)

4:29–4:36 p.m.
485 The Incremental Value of Magnetic
Resonance Neurography for the Neurosurgeon
H. Newhart

4:37–4:44 p.m.
486 Predictors of pectoralis major
functional outcomes following
intercostal nerve transfers after brachial plexus
nerve root injury: an analysis of 161 patients
M. Attiah

4:45–4:52 p.m.
487 Modern wartime peripheral nerve injury:
a review
Z. Hubbard

4:53–5 p.m.
488 Posterior Lumbar/Sacral Nerve
Root Stimulation for Treatment of
Chronic Foot and/or Ankle Pain
R. Jain
2–2:04 p.m.  
Introduction to the Session  
R. McGovern

2:05–2:20 p.m.  
New Developments in DBS Hardware: Directionality, Current Control, and MRI Compatability  
A. Viswanathan

2:21–2:36 p.m.  
Current Surgical Treatment for Obsessive-Compulsive Disorder: Lesioning vs. Neuromodulation  
T. Sankar (Canada)

2:37–2:52 p.m.  
Ablative Neurosurgical Procedures for Cancer Pain: What is the Evidence?  
A. Raslan

2:53–3:08 p.m.  
New Uses for Focused Ultrasound in Neurosurgery  
T. Tierney

3:09–3:19 p.m.  
Late-breaking Abstract  
440 Pallidal thermolesion unleashes gamma oscillations in the motor cortex in Parkinson’s Disease  
D. Wang
3:20–3:30 p.m.
**Late-breaking Abstract**
441 Intracortical Dynamics Underlying Repetitive Stimulation Predicts Changes in Network Connectivity
Y. Huang

3:31–3:40 p.m.
442. Management of Intraoperative High Impedance Levels During Placement of Deep Brain Stimulating Electrodes
N. Patel

3:41–3:50 p.m.
443 Mutant IDH-induced LDHA Expression in Peritumoral Cortex as a Mechanism for Tumor Related Epilepsy
I. Fayed

3:51–4 p.m.
444 Discrete States and Interactive Networks in the Cortical Dynamics of Speech Production
K. Forseth

4:01–4:10 p.m.
445 Convolutional Neural Networks for Detection of Parkinsonian Motor Impairment
D. Liu

4:11–4:20 p.m.
446 Efficacy and Mechanisms of Novel Patterns of Deep Brain Stimulation (DBS): Preclinical Studies in the MPTP Non-human Primate Model of Parkinson’s Disease
F. Branco de Paiva

4:21–4:30 p.m.
447 Correlation between Calcium Channel Imaging and Local Field Potential Power Increases in the Nucleus Accumbens in Mice prior to Approach to Food Reward
B. Kakusa
4:31–4:40 p.m.
448 Novel Inter-Trial Resting-State Network Analysis can Reliably Predict Learning and Performance of a Cognitive Reaction Time Task
V. Buch

4:41–4:50 p.m.
449 Neural Substrates of Audiovisual Speech Perception Measured with iEEG
P. Karas

4:51–5 p.m.
450 Magnetic Resonance guided Laser Interstitial Thermal Therapy (MRgLITT) vs Stereotactic Radiosurgery (SRS) for Medically Intractable Temporal Lobe Epilepsy (TLE): A Systematic Review and Meta-Analysis of Seizure Outcomes and Complications
M. Alvi

2–5 p.m.
AANS/CNS Section on Neurotrauma and Critical Care
Location: 30AB
Moderator(s): M. Kelly; E. Tsai
Supported by an educational grant from Codman Specialty Surgical, a Division of Integra LifeSciences

2–2:02 p.m.
Introduction to the Session
E. Tsai (Canada)

2:03–2:13 p.m.
451 Repetitive TMS does not Improve Cognition in TBI Patients: a Randomized Double-Blind Trial
I. Neville (Brazil)
2:14 – 2:23 p.m.
Late-breaking Abstract
491 Differences in Presentation and Diagnosis of Intracerebral Hemorrhage after a Ground Level Fall in Anticoagulated Geriatric Patients
A. Cocca

2:24 – 2:33 p.m.
452 Embolization of Middle Meningeal Artery for Chronic Subdural Hematomas: A Systematic Review and Meta-Analysis
L. Brasiliense

2:34 – 2:43 p.m.
453 Tau Phenotyping of Chronic Traumatic Encephalopathy Recapitulates Aging-Related Processes
J. Arena

2:44 – 2:53 p.m.
454 Impaired performance in smooth pursuit and anti saccades tasks in patients after mild traumatic brain injury
T. Chua (Singapore)

2:54 – 3:03 p.m.
Question and Answer Session

3:04 – 3:05 p.m.
Point/Counterpoint — Blood Pressure Management in Acute Spinal Cord Injury
E. Tsai (Canada)

3:06 – 3:19 p.m.
Point — The Case for MAP-Driven Management

3:20 – 3:33 p.m.
Counterpoint — The Case for Avoiding Hypotension
3:34–3:43 p.m.
455 Expressions of Eotaxin-3, Interleukin-5 and Eosinophil-Derived Neurotoxin in Chronic Subdural Hematoma Fluids
R. Kawaguchi (Japan)

3:44–3:53 p.m.
456 Summary Analysis of Patients with Cortical Spreading Depolarizations (CSD) from CSD^2 Trial (CSD in Chronic Subdural Hematoma (cSDH) Patients after evacuation)
L. Mohammad

3:54–4:03 p.m.
457 Accuracy of a wearable mixed-reality holographic computer for guiding transcranial puncture for the treatment of spontaneous intracerebral hemorrhage: a prospective, randomized, single-center study
Y. Li (China)

4:04–4:13 p.m.
458 Neurosurgical Outcomes for Traumatic Brain Injury Patients in Uganda
S. Ku

4:14–4:23 p.m.
459 Mortality Prediction for Civilian Cerebral Gunshot Wounds: A Decision-Tree Model Based on a Single Trauma Center
L. Kim

4:24–4:33 p.m.
460 Efficacy of Seizure Prophylaxis Following Complicated Mild Traumatic Brain Injury: A Retrospective Pilot Study
S. Hernandez

4:34–4:43 p.m.
461 Cerebral Blood Flow Augmentation Using a Novel Intracranial Pulsating Balloon Pump in a Swine Model of Elevated ICP
O. Doron (Israel)
4:44–4:53 p.m.
462 Leukemia Inhibitory Factor in Mouse Model for Pediatric Traumatic Brain Injury
M. Majmundar

4:54–5 p.m.
Question and Answer Session

2–5 p.m.
AANS/CNS Section on Tumors II
Location: 30CDE
Moderator(s): D. Orringer; D. Placantonakis

2–2:03 p.m.
Introduction to the Session: Safely Pushing the Limits of Glioma Surgery
D. Orringer

2:04–2:20 p.m.
Integrating Molecular Data in Surgical Decision Making
D. Cahill

2:21–2:37 p.m.
Deep Seated Tumors – When to Resect and Limits
M. Berger

2:38–2:54 p.m.
Evidence-based decision Making in Glioma Surgery: What the Literature Supports:
C. Watts (United Kingdom)

2:55–3:11 p.m.
Technology to Improve Maximal Safe Resection: 5-ALA and Raman
C. Hadjipanayis

3:12–3:28 p.m.
Case Discussion Panel
M. Berger; D. Cahill; C. Hadjipanayis; C. Watts
3:29–3:38 p.m.
470 Stereotactic Laser Ablation for Brain Tumors: Lessons Learned from 240 Cases Over the Past Decade
J. Shao

3:39–3:48 p.m.
471 Vorinostat for Hemangioblastomas in Germline Missense von Hippel Lindau Disease: A Phase 0 Clinical Trial
P. Mastorakos

3:49–3:58 p.m.
472 Sarcosine promotes trafficking of dendritic cells to draining lymph nodes and improves efficacy of a vaccine strategy for the treatment of brain tumors via CX3CL1
M. Rahman
3:59–4:08 p.m.
Brainlab Neurosurgery Award
473 Receptor discordance in breast cancer brain metastases: incidence and survival outcomes
A. Hulsbergen (Netherlands)

4:09–4:18 p.m.
Leksell Radiosurgery Award
474 Radiographic Trends in Cerebral Metastases Treated with Gamma Knife Radiosurgery: Indicators for Early Intervention for Post-Gamma Knife Failures
A. Carminucci

4:19–4:28 p.m.
475 Human Adipose-derived Mesenchymal Stem Cell Immunomodulation of Microglia in Glioblastoma
A. Bhargav

4:29–4:32 p.m.
476 Tenascin-C as a Biomarker of Tumorigenesis and Treatment Response in Pediatric Diffuse Midline Glioma
A. Saratsis

4:33–4:36 p.m.
477 A Novel Bioinformatics Approach to Estimate Hazard in Pediatric High-Grade Glioma
G. Schwing

4:37–4:40 p.m.
478 Targeting Immunostimulatory Pathways in Combination with Checkpoint Blockade Improves Survival in Murine Glioma
P. Chongathidkiet
4:41–4:44 p.m.
479 Utility of the Modified Frailty Index in the Risk Stratification of Patients Undergoing Brain Tumor Resection
N. Lakomkin

4:45–4:48 p.m.
480 Neutrophil-to-Lymphocyte Ratio Predicts Overall Survival After Laser Induced Thermal Therapy in Glioblastoma Patients
J. Figueroa

4:49–4:52 p.m.
481 Toca 511 and 5-FC in Combination with Metronomic Cyclophosphamide Reduces Treg Cells and Enhances Therapy Efficacy in a Preclinical Murine Model
D. Piccioni

4:53–4:56 p.m.
482 Super-Selective Intra-Arterial Cerebral Infusion Bevacizumab for Treatment of Newly Diagnosed Glioblastoma: Phase I/II Clinical Trial Early Results
N. Patel

4:57–5 p.m.
483 Intraoperative Near-Infrared Imaging Accurately Detects Abnormal Intracranial Tissue
S. Cho
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As of 3/8/19
## SHUTTLE SERVICES

### ROUTES

<table>
<thead>
<tr>
<th>HOTEL</th>
<th>PICKUP LOCATION</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>ROUTE-A ➤ PINK—30 Minute Roundtrip</strong></td>
<td></td>
</tr>
<tr>
<td>4 Hotels</td>
<td></td>
</tr>
<tr>
<td>Embassy Suites by Hilton San Diego Bay Downtown</td>
<td>Curbside on Pacific Highway</td>
</tr>
<tr>
<td>SpringHill Suites San Diego Downtown/Bayfront</td>
<td>Curbside on Harbor Drive (shared)</td>
</tr>
<tr>
<td>Residence Inn San Diego Downtown/Bayfront</td>
<td>Curbside on Harbor Drive (shared)</td>
</tr>
<tr>
<td>Grand Hyatt San Diego</td>
<td>Curbside on Harbor Drive</td>
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<tr>
<td><strong>ROUTE-B ➤ GREEN—30 Minute Roundtrip</strong></td>
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<tr>
<td>4 Hotels</td>
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<tr>
<td>The Westin San Diego Gaslamp Quarter</td>
<td>Curbside near front entrance</td>
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<tr>
<td>The US Grant, a Luxury Collection Hotel, San Diego</td>
<td>Curbside on 3rd Ave side of hotel</td>
</tr>
<tr>
<td>Courtyard San Diego Downtown</td>
<td>Curbside on 6th Ave</td>
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<tr>
<td>Andaz San Diego</td>
<td>Across Sixth Avenue from hotel</td>
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<tr>
<td><strong>ROUTE-C TROLLEY ➤ BLUE—24 Minute Roundtrip</strong></td>
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<tr>
<td>1 Hotel</td>
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<tr>
<td>Marriott Marquis San Diego Marina</td>
<td>Marriott waterfall</td>
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Shuttle Service provided only to and from Opening Reception at the USS Midway

<table>
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<tr>
<th>Hotel</th>
<th>Location</th>
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<tbody>
<tr>
<td>Hilton San Diego Bayfront</td>
<td>Lower Level, Shuttle bus entrance</td>
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<tr>
<td>Omni San Diego</td>
<td>Curbside near front entrance</td>
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<tr>
<td>Hilton San Diego Gaslamp Quarter</td>
<td>Curbside on &quot;K&quot; Street</td>
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<tr>
<td>The Pendry San Diego</td>
<td>Curbside on &quot;J&quot; Street</td>
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<tr>
<td>San Diego Marriott Gaslamp Quarter</td>
<td>Use Pendry stop on &quot;J&quot; Street</td>
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## Schedules

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<th>Schedule</th>
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<tr>
<td><strong>Friday April 12, 2019</strong></td>
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<tr>
<td>4:30–7:15 p.m.*</td>
<td>Every 30 minutes</td>
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<tr>
<td><strong>Saturday, April 13, 2019</strong></td>
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</tr>
<tr>
<td>6:30 a.m.–5:30 p.m.*</td>
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<tr>
<td><strong>Sunday, April 14, 2019</strong></td>
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<td>6:30–9 a.m.</td>
<td>Every 15 minutes</td>
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<tr>
<td>9 a.m.–3:30 p.m.</td>
<td>Every 30 minutes</td>
</tr>
<tr>
<td>3:30–7:15 p.m.</td>
<td>Every 15 minutes</td>
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<tr>
<td><strong>Opening Reception—USS Midway</strong></td>
<td>Service from the convention center until 7:15 p.m. Service from official AANS hotels:</td>
</tr>
<tr>
<td>6:30–8:30 p.m.</td>
<td>Every 10 minutes</td>
</tr>
<tr>
<td>8:30–9:30 p.m.*</td>
<td>Return service as needed</td>
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<tr>
<td><strong>Monday, April 15, 2019</strong></td>
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<td>6:30–9 a.m.</td>
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<td>Every 30 minutes</td>
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<tr>
<td>3:30–7:15 p.m.*</td>
<td>Every 15 minutes</td>
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<td><strong>Tuesday, April 16, 2019</strong></td>
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<tr>
<td>3:30–5:30 p.m.*</td>
<td>Every 15 minutes</td>
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* Denotes the last bus to depart from the convention center to official hotels

No shuttle service to San Diego Airport
Visit the Exhibits and Learning Center
Exhibit Halls D-G

The AANS Exhibit Hall will showcase 200 companies featuring the latest technology in neurosurgery. Join your colleagues in the exhibit hall to meet with innovative exhibitors and enjoy a refreshment.

The AANS Learning Center offers educational opportunities to neurosurgeons at every stage of their career. The Sunrise Sessions, Lunch-and-learn Seminars, Live Stream Sessions, Rapid Fire Abstract Sessions and Surgical Suites will all be in the AANS Learning Center, next to the AANS Resource Center.

AANS Exhibit Hall Hours:
Sunday, April 14, 9 a.m.–4:45 p.m.
Monday, April 15, 9 a.m.–4:45 p.m.
Tuesday, April 16, 9 a.m.–4:45 p.m.

Beverage Breaks in the AANS Exhibit Hall:
Sunday, April 14, 9:15-10:15 a.m., 2–3 p.m.
Monday, April 15, 9-9:45 a.m., 4–4:30 p.m.
Tuesday, April 16, 9-9:45 a.m., 4–4:30 p.m.

Lunch in the AANS Exhibit Hall:
Sunday, April 14, 11:30 a.m.–12:30 p.m.
Monday, April 15, 1:30–2:30 p.m.
Tuesday, April 16, 1:30–2:30 p.m.

AANS Learning Center Hall Hours:
Sunday, April 14, 9 a.m.–4:45 p.m.
Monday, April 15, 6:30 a.m.–8 p.m.
Tuesday, April 16, 6:30 a.m.–6 p.m.
Wednesday, April 17, 6:30–9 a.m.; 12:30–5 p.m.
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SIMPLY ADVANCED

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Simple and intuitive controls provide DBS programmers flexibility and options to manage patients’ therapy.*

*One touch buttons make directional programming intuitive and simple.

Indications for Use:
The Vercise™ Deep Brain Stimulation (DBS) Systems are indicated for use in bilateral stimulation of the subthalamic nucleus (STN) as adjunctive therapies in reducing some of the symptoms of moderate to advanced levodopa-responsive Parkinson’s disease (PD) that are not adequately controlled with medication.

Contraindications, warnings, precautions, side effects: Vercise DBS Systems, or any of their components, are contraindicated for: Diathermy as either a treatment for a medical condition or as part of a surgical procedure, Electroconvulsive Therapy (ECT) and Transcranial Magnetic Stimulation (TMS) as the safety of these therapies in patients implanted with Vercise DBS Systems has not been established, Magnetic Resonance Imaging (MRI), patients who are unable to operate the system, patients who are poor surgical candidates or who experience unsuccessful test stimulation. Refer to the Instructions for Use provided with Vercise DBS Systems or BostonScientific.com for potential adverse effects, warnings, and precautions prior to using this product.

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EFFICIENT.
RADIATION-FREE.

The 7D Surgical System Spine Module has FDA 510(k) clearance and Health Canada MDL approval for spine navigation.

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