Neurovascular Symposium: The Arteriovenous Connection 2024
Hyatt Regency Lake Tahoe • Incline Village, NV

Thursday – Saturday
March 13-16, 2024

COURSE CHAIRS
Daniel Raper, MD
Assistant Professor of Neurological Surgery
University of California San Francisco

Steven W. Hetts, MD, FACR
Professor of Radiology, Biomedical Imaging, and Neurological Surgery
Co-Chief, NeuroEndovascular Surgery Service Line
Chief of Interventional Neuroradiology,
Mission Bay Hospitals
University of California San Francisco
THE ARTERIOVENOUS CONNECTION
This course for neurointerventionalists, cerebrovascular and endovascular neurosurgeons, vascular neurologists, and scientists will begin with an essential anatomic unit in the central nervous system: the connection between arteries and veins. Beginning with embryology and molecular genetics, we will then broaden our view to development in normal and disease states, implications for current treatment approaches, and research directions. Eminent faculty will teach in an informal, interactive format. In addition to lectures, there will be opportunities for one-on-one and small group mentorship as well as time for recreational activities in the lovely venue of Lake Tahoe.

LECTURE SESSION FORMAT
Invited speakers will prepare talks 10-12 minutes in length. Each Session will have an Expert Panel to ask questions of the speakers and foster discussion with audience participation for 8-10 minutes after each talk. At the end of each session there will be a 15-20 minute focused case presentation and discussion highlighting a clinical correlation of one or more of the topics discussed in the session, presented by the chair of the Expert Panel.

OBJECTIVES
An attendee completing this course should be able to:
• Improve endovascular techniques and treatment of cerebral arteriovenous malformations and fistulas
• Incorporate the latest evidence in pathology, natural history, and treatment for central nervous system arteriovenous disorders
• Improve competence in applying advanced techniques in the diagnosis and treatment of arteriovenous fistulas and AVMs including transvenous approaches and novel embolic agents
• Apply updated anatomical and pathophysiologic knowledge regarding the development of intracranial vasculature and its abnormalities to the understanding of pediatric and adult cerebrovascular disease.
### Wednesday, March 13, 2024

**4:00 - 6:00 pm** 
Registration

**6:00 - 7:30 pm** 
Opening Reception

### Thursday, March 14, 2024

**7:00 am** 
Registration and Continental Breakfast

**7:50** 
Welcome and Overview / Pre-test

**SESSION I**

<table>
<thead>
<tr>
<th>Time</th>
<th>Topic</th>
<th>Speaker(s)</th>
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<tbody>
<tr>
<td>8:00</td>
<td>Arterial and Venous Development and Embryology</td>
<td>Michihiro Tanaka, MD</td>
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<tr>
<td>8:20</td>
<td>Vascular Anatomy of the Arterial-Capillary and Capillary-Venous Units</td>
<td>Serge Bracard, MD</td>
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<tr>
<td>8:40</td>
<td>AVMs as a Venous Disease</td>
<td>Georges Rodesch, MD</td>
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<tr>
<td>9:00</td>
<td>Genetics and Genomics of AVM Vessels</td>
<td>Ethan Winkler, MD, PhD</td>
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<tr>
<td>9:20</td>
<td>Role of Inflammation in AVM Development and Rupture</td>
<td>Helen Kim, PhD</td>
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<tr>
<td>9:40</td>
<td>Vessel Wall Imaging in AVMs</td>
<td>David Saloner, PhD</td>
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<tr>
<td>10:00</td>
<td>Coffee Break</td>
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#### SESSION II

<table>
<thead>
<tr>
<th>Time</th>
<th>Topic</th>
<th>Speaker(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>10:15</td>
<td>Neurological Effects of Elevated Venous Pressure</td>
<td>Serge Bracard, MD</td>
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<tr>
<td>10:35</td>
<td>Risk for Hemorrhage from an Unruptured and Untreated Brain AVM</td>
<td>Michael Soderman, MD, PhD</td>
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<tr>
<td>10:55</td>
<td>Curative Treatment Approaches for Cerebral AVMs</td>
<td>Michihiro Tanaka, MD</td>
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<tr>
<td>11:15</td>
<td>Clinical Consequences of AVM Rupture</td>
<td>Michael Soderman, MD, PhD</td>
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<tr>
<td>11:35</td>
<td>Palliative Treatments for Incurable AVMs?</td>
<td>Steven Hettis, MD and Dan Cooke, MD</td>
</tr>
<tr>
<td>11:47</td>
<td>Panel Discussion and Round Table: Multimodal Approaches to High Grade AVMs with Cases</td>
<td>Tanaka, Bracard, Rodesch, Winkler, Kim, Saloner, Hetts, Cooke</td>
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**12:15 pm** 
Adjourn

**Afternoon free – recreation time**

Optional Product Theater (Industry-Supported Presentations)

**5:30** 
Share Your Cases: Faculty and Attendee Case Presentation and Discussion Technological in AVM Embolization – Balloons, Embolic Agents, Approaches with Cases

**7:00 pm** 
Adjourn

### Friday, March 15, 2024

**SESSION III**

<table>
<thead>
<tr>
<th>Time</th>
<th>Topic</th>
<th>Speaker(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>8:00</td>
<td>Natural History of Dural Arteriovenous Fistulas</td>
<td>Michael Soderman, MD, PhD</td>
</tr>
<tr>
<td>8:20</td>
<td>Identification of Shunting Lesions on Non-invasive Imaging: Signal and Image Processing Techniques and Technology Application</td>
<td>Yi Li, MD</td>
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<tr>
<td>8:40</td>
<td>Advanced Imaging and Applications – 4D Flow and Others</td>
<td>David Saloner, PhD</td>
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<tr>
<td>9:00</td>
<td>Angio-architecture of Dural Arteriovenous Connections</td>
<td>Matthew Amans, MD, MS</td>
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<td>9:20</td>
<td>Congenital Arteriovenous Shunting Syndromes – Genetic and Phenotypic Aspects</td>
<td>Heather Fullerton, MD and Joseph Shieh, MD, PhD</td>
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<tr>
<td>9:40</td>
<td>Coffee Break</td>
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#### SESSION IV

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<tbody>
<tr>
<td>10:00</td>
<td>Pial AVMs and AVFs from a Surgical Perspective</td>
<td>Adib Abla, MD</td>
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<tr>
<td>10:20</td>
<td>Genetics of AVMs</td>
<td>Georges Rodesch, MD</td>
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<tr>
<td>10:40</td>
<td>Connections Between Cerebral Vasculature and Cerebral Tumorigenesis</td>
<td>David Raleigh, MD, PhD</td>
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<tr>
<td>11:00</td>
<td>Radiosurgery for Arteriovenous Shunting Lesions – Efficacy and Imaging Over Time</td>
<td>Nalin Gupta, MD, PhD</td>
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<tr>
<td>11:20</td>
<td>Panel Discussion and Round Table: Brainstem AVMs with Cases</td>
<td>Soderman, Li, Saloner, Amans, Fullerton/Fox, Shieh, Abla, Rodesch, Raleigh, Gupta, Raper</td>
</tr>
</tbody>
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**12:00 pm** 
Adjourn

**Afternoon free – recreation time**

Optional Product Theater (Industry-Supported Presentations)
Friday, March 15, 2024 (cont’d)

5:30  Share Your Cases: Faculty and Attendee Case Presentation and Discussion - Endovascular Approaches to Non-Vascular Pathology (Hydrocephalus, Dementia, Macular Degeneration) with Cases

7:00 pm  Adjourn

Saturday, March 16, 2024

7:00 am  Continental Breakfast

SESSION V

7:55  Hemodynamics and Physiology of Cerebral Arterial and Venous Blood Flow

8:20  Glymphatic, Lymphatic, and Subarachnoid Lymphatic-like Membrane, and Neurovascular Applications

8:40  Medical Therapies for Intracranial Vascular Lesions

9:00  Pediatric Arteriovenous Shunts

9:20  Liquid Embolic Agents – Similarities, Differences, and Application

9:40  Coffee Break

10:00  Complications of Embolization of Arteriovenous Shunts and How to Avoid Them

10:20  Fetal Treatment for Vein of Galen Malformations

10:40  Hereditary Hemorrhagic Telangiectasia: a Genetic Syndrome of Multi-Organ Arteriovenous Shunting and Non-Shunting Lesions

11:00  Panel Discussion and Round Table: Challenging Arteriovenous Fistulas with Cases

11:30  Final Wrap-Up and Course Evaluation / Post-Test

11:40 am  Adjourn

GENERAL INFORMATION

Advanced registration closes one (1) business day prior to start of course. Onsite registration fees, if applicable, will be applied after this date

HOW TO ENROLL

Early Bird

Physicians

Advanced Practice Professionals / Nurses

Resident/Fellows

12/31/23

$525

$425

$375

By

$600

$500

$450

After

$650

$550

$500

On Site Fee

3/14/24

REFUNDS

Cancellations received in writing before by March 12, 2024 will be refunded, less a $100 administrative fee. No refunds will be made on cancellations received after that date.

CONFERENCE LOCATION

Lake Tahoe is the largest alpine lake in North America with water so clear that in some places, objects can be seen in depths of over 70 feet. Nestled in the Sierra Nevada Mountains, Incline Village is named for the Great Incline Tramway built by loggers in 1878. Today, Incline is home to some of Lake Tahoe’s most stunning mountain retreats. Discover an alpine paradise at Hyatt Regency Lake Tahoe Resort, Spa, and Casino. The stunning locale of this AAA Four Diamond hotel is a luxury lakeside setting for year-round pampering. A block of guestrooms has been reserved at the special UCSF conference rate of $259/night plus $30 nightly resort fee. You are urged to make your reservations early. The cut off date is February 20, 2024, or until the group room block is filled. After this date, rooms will be provided on a space-available basis only. To make hotel reservations on-line, go to cme.ucsf.edu and click on the hotel link in the Travel & Lodging section of the course webpage.

By staying at the host hotel, you help UCSF meet its contractual obligations and keep registration fees reasonable.

UNITED AIRLINES

UCSF has negotiated special fares with United Airlines for our course attendees. Please visit the TRAVEL AND LODGING section on the course webpage at cme.ucsf.edu for more information on making reservations.
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Assistant Professor of Neurological Surgery; University of California San Francisco

Steven W. Hetts, MD, FACR
Professor of Radiology, Biomedical Imaging, and Neurological Surgery
Co-Chief, NeuroEndovascular Surgery Service Line; Chief of Interventional Neuroradiology, Mission Bay Hospitals
University of California San Francisco

COURSE FACULTY

Adib Abla, MD
Professor of Neurosurgery
University of Miami

Matthew Amans, MD, MSc
Associate Professor of Radiology, Neuro Interventional Radiology, and Diagnostic Neuroradiology
University of California San Francisco

Serge Bracard, MD
Département Pathologie Nerveuse et Musculaire, Pathologie Mentale, Handicap et Rééducation University of Lorraine, Nancy, France

Daniel Cooke, MD
Associate Professor of Neuro Interventional Radiology
University of California San Francisco

Heather Fullerton, MD, MAS
Professor of Neurology and Pediatrics; Chief, Child Neurology Medical Director; UCSF Benioff Pediatric Brain Center; Director, UCSF Pediatric Stroke Research Center; Kenneth Rainin Chair of Pediatric Stroke Care; University of California San Francisco

Nalin Gupta, MD, PhD
Professor, Departments of Neurological Surgery and Pediatrics
Chief, Division of Pediatric Neurosurgery; University of California San Francisco

Helen Kim, PhD, MPH
Professor of Anesthesia
University of California San Francisco

Seon-Kyu Lee, MD, PhD
Professor of Radiology and Neurosurgery, Albert Einstein College of Medicine
Director, Pediatric Neurointervention, Montefiore; Program Director, Endovascular Neurosurgery/Interventional Neuroradiology Fellowship Montefiore, Bronx, NY

Yi Li, MD
Assistant Professor of Clinical Radiology; University of California San Francisco

Kazim Narsinh, MD
Assistant Professor of Radiology and Biomedical Imaging
University of California San Francisco

Darren Orbach, MD, PhD
Associate Professor of Radiology, Harvard Medical School
Chief, Neurointerventional Radiology Co-Director, Cerebrovascular Surgery and Interventions Center
Sage Schermerhorn Chair in Image-Guided Therapy
Children’s Hospital Boston

David Raleigh, MD, PhD
Associate Professor of Radiation Oncology; Robert and Ruth Halperin Endowed Chair in Meningioma Research; Brain Tumor Center Principal Investigator and Preclinical Therapeutics Core Director
Departments of Radiation Oncology and Neurological Surgery
University of California San Francisco

Georges Rodesch, MD, PhD
Head of the Department of Neuroradiology
Hopital Foch, Paris, France

David Saloner, PhD
Professor of Radiology and Biomedical Imaging; Director, Vascular and Cardiac Research Group; University of California San Francisco
Director and Founder, Vascular Imaging Research Center, San Francisco Veterans Affairs Medical Center

Luis Savastano MD, PhD
Assistant Professor of Neurological Surgery; University of California San Francisco

Joseph Shieh, MD, PhD
Director, Medical Genetics Training Program
Associate Professor
Department of Pediatrics
Institute for Human Genetics
Personalize Genomics and NF/RAS Clinics; University of California San Francisco

Michael Soderman, MD, PhD
Chief Neuroangiography and Stereotaxy, Department of Neuroradiology
Karolinska Hospital, Stockholm, Sweden

Michihiro Tanaka, MD
Professor, Department of Endovascular Surgery
Kameda Medical Center, Chiba, Japan

Ethan Winkler, MD, PhD
Assistant Professor of Neurological Surgery
University of California San Francisco
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COURSE REGISTRATION FORM • MNS24004

Mail to: UCSF Office of CME • Box 0742
490 Illinois Street, Floor 8
San Francisco, CA 94143

Online registration: cme.ucsf.edu
Registration Information: (415) 476-5808
Course Information: (415) 476-4251

☐ Dr. ☐ Mr. ☐ Mrs. ☐ Ms. ☐ Mx.

LAST NAME __________ FIRST __________ M.I. __________

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Please indicate if you have any special needs: ________________________________________

REGISTRATION FEES:

Early Bird By 12/31/23 Regular Fee After 12/31/23 On Site Fee After 3/14/24
Physicians ☐ $525 ☐ $600 ☐ $650
Advanced Practice ☐ $425 ☐ $500 ☐ $550
Professionals/Nurses ☐ $375 ☐ $450 ☐ $500
Residents/Fellows ☐ $375 ☐ $450 ☐ $500

On Site Fee After 3/14/24 will be $50 additional

Make checks payable to UC Regents

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CARD # ______________________ / EXPIRATION DATE __________/________

NAME ON CARD (PLEASE PRINT) __________ AUTHORIZED SIGNATURE __________

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Please check our website for up-to-date information on the course: cme.ucsf.edu

GREENER MEETING

We’re saving paper! The syllabus will be transmitted electronically one week prior to the course.

Hyatt Regency
Lake Tahoe Resort & Spa
111 Country Club Dr.
Incline Village, NV 89451
(775) 832-1234