

Departments of Neurosurgery and Radiology  
University of California San Francisco, School of Medicine

# Neurovascular Symposium: The Arteriovenous Connection 2024

Hyatt Regency Lake Tahoe • Incline Village, NV



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Wednesday – Saturday

## March 13 -16, 2024

UCSF

### COURSE CHAIRS

**Daniel Raper, MBBS**

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



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## 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.

## ACCREDITATION

In support of improving patient care, University of California, San Francisco Office of Continuing Medical Education is jointly accredited by the Accreditation Council for Continuing Medical Education (ACCME), the Accreditation Council for Pharmacy Education (ACPE), and the American Nurses Credentialing Center (ANCC), to provide continuing education for the healthcare team.

UCSF designates this live activity for a maximum of **14.50 AMA PRA Category 1 Credits™**. Physicians should claim only the credit commensurate with the extent of their participation in the activity.

This CME activity meets the requirements under California Assembly Bill 1195, continuing education and cultural and linguistic competency.

### Nurses

For the purpose of recertification, the American Nurses Credentialing Center accepts **AMA PRA Category 1 Credit™** issued by organizations accredited by the ACCME.

### Physician Assistants

AAPA accepts category 1 credit from AOACCME, Prescribed credit from AAFP, and AMA category 1 credit™ for the PRA for organizations accredited by the ACCME.

### Pharmacy

The California Board of Pharmacy accepts as continuing professional education those courses that meet the standard of relevance to pharmacy practice and have been approved for **AMA PRA Category 1 Credit™**.

# Neurovascular Symposium: The Arteriovenous Connection 2024

## 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** Course Chairs

### SESSION I

8:00	<b>Arterial and Venous Development and Embryology</b>	Michihiro Tanaka, MD
8:20	<b>Vascular Anatomy of the Arterial-Capillary and Capillary-Venous Units</b>	Serge Bracard, MD
8:40	<b>AVMs as a Venous Disease</b>	Georges Rodesch, MD
9:00	<b>Genetics and Genomics of AVM Vessels</b>	Ethan Winkler, MD, PhD
9:20	<b>Role of Inflammation in AVM Development and Rupture</b>	Helen Kim, PhD
9:40	<b>Vessel Wall Imaging in AVMs</b>	David Saloner, PhD
10:00	<i>Coffee Break</i>	

### SESSION II

10:15	<b>Neurological Effects of Elevated Venous Pressure</b>	Serge Bracard, MD
10:35	<b>Risk for Hemorrhage from an Unruptured and Untreated Brain AVM</b>	Michael Soderman, MD, PhD
10:55	<b>Curative Treatment Approaches for Cerebral AVMs</b>	Michihiro Tanaka, MD
11:15	<b>Clinical Consequences of AVM Rupture</b>	Michael Soderman, MD, PhD
11:35	<b>Palliative Treatments for Incurable AVMs</b>	Steven Hetts, MD and Dan Cooke, MD
11:47	<b>Panel Discussion and Round Table: Multimodal Approaches to High Grade AVMs with Cases</b>	Tanaka, Bracard, Rodesch, Winkler, Kim, Saloner, Hetts, Cooke
12:15 pm	<i>Adjourn</i> <i>Afternoon free – recreation time</i> <i>Optional Product Theater (Industry-Supported Presentations)</i>	
5:30	<b>Share Your Cases: Faculty and Attendee Case Presentation and Discussion Technological in AVM Embolization – Balloons, Embolic Agents, Approaches with Cases</b>	Luis Savastano MD, PhD Dan Cooke, MD Daniel Raper, MBBS Kazim Narsinh, MD
7:00 pm	<i>Adjourn</i>	

## Friday, March 15, 2024

### SESSION III

8:00	<b>Natural History of Dural Arteriovenous Fistulas</b>	Michael Soderman, MD, PhD
8:20	<b>Identification of Shunting Lesions on Non-invasive Imaging: Signal and Image Processing Techniques and Technology Application</b>	Yi Li, MD
8:40	<b>Advanced Imaging and Applications – 4D Flow and Others</b>	David Saloner, PhD
9:00	<b>Angio-architecture of Dural Arteriovenous Connections</b>	Matthew Amans, MD, MS
9:20	<b>Congenital Arteriovenous Shunting Syndromes – Genetic and Phenotypic Aspects</b>	Heather Fullerton, MD and Joseph Shieh, MD, PhD
9:40	<i>Coffee Break</i>	

### SESSION IV

10:00	<b>Pial AVMs and AVFs from a Surgical Perspective</b>	Adib Abla, MD
10:20	<b>Genetics of AVMs</b>	Georges Rodesch, MD
10:40	<b>Connections Between Cerebral Vasculature and Cerebral Tumorigenesis</b>	David Raleigh, MD, PhD
11:00	<b> radiosurgery for Arteriovenous Shunting Lesions – Efficacy and Imaging Over Time</b>	Nalin Gupta, MD, PhD
11:20	<b>Panel Discussion and Round Table: Brainstem AVMs with Cases</b>	Soderman, Li, Saloner, Amans, Fullerton/Fox, Shieh, Abla, Rodesch, Raleigh, Gupta, Raper
12:00 pm	<i>Adjourn</i> <i>Afternoon free – recreation time</i> <i>Optional Product Theater (Industry-Supported Presentations)</i>	

## Friday, March 15, 2024 (cont'd)

5:30	<b>Share Your Cases: Faculty and Attendee Case Presentation and Discussion - Endovascular Approaches to Non-Vascular Pathology (Hydrocephalus, Dementia, Macular Degeneration) with Cases</b>	Luis Savastano MD, PhD Dan Cooke, MD Steven Hetts, MD Kazim Narsinh, MD
7:00 pm	<i>Adjourn</i>	

## Saturday, March 16, 2024

7:00 am *Continental Breakfast*

### SESSION V

7:55	<b>Hemodynamics and Physiology of Cerebral Arterial and Venous Blood Flow</b>	Luis Savastano MD, PhD
8:20	<b>Glymphatic, Lymphatic, and Subarachnoid Lymphatic-like Membrane, and Neurovascular Applications</b>	Daniel Raper, MBBS
8:40	<b>Medical Therapies for Intracranial Vascular Lesions</b>	Daniel Cooke, MD
9:00	<b>Pediatric Arteriovenous Shunts</b>	Darren Orbach, MD, PhD
9:20	<b>Liquid Embolic Agents – Similarities, Differences, and Application</b>	Kazim Narsinh, MD
9:40	<i>Coffee Break</i>	
10:00	<b>Complications of Embolization of Arteriovenous Shunts and How to Avoid Them</b>	Seon-Kyu Lee, MD, PhD
10:20	<b>Fetal Treatment for Vein of Galen Malformations</b>	Darren Orbach, MD, PhD
10:40	<b>Hereditary Hemorrhagic Telangiectasia: a Genetic Syndrome of Multi-Organ Arteriovenous Shunting and Non-Shunting Lesions</b>	Steven Hetts, MD
11:00	<b>Panel Discussion and Round Table: Challenging Arteriovenous Fistulas with Cases</b>	
11:30	<b>Final Wrap-Up and Course Evaluation / Post-Test</b>	
11:40 am	<i>Adjourn</i>	

### GENERAL INFORMATION

Advanced registration closes on March 12, 2024. Onsite registration fees will apply after this date

### HOW TO ENROLL

	Early Bird By 12/31/23	Regular Fee After 12/31/23	On Site Fee After 3/12/24
Physicians	<b>\$525</b>	<b>\$600</b>	<b>\$650</b>
Advanced Practice Professionals/ Nurses	<b>\$425</b>	<b>\$500</b>	<b>\$550</b>
Resident/Fellows	<b>\$375</b>	<b>\$450</b>	<b>\$500</b>

Payment can be made by check, Visa, MasterCard, or AmEx.

### REGISTER VIA:

**Online:** [cme.ucsf.edu](http://cme.ucsf.edu)

**Mail:** Complete course registration form and send with payment to:

**UCSF Office of Continuing Medical Education**  
Box 0742 • 490 Illinois Street, Floor 8  
San Francisco, CA 94143

**Phone:** To register by phone or to inquire about registration status, please email UCSF's CME Registration Office at [RegEmail@ucsf.edu](mailto:RegEmail@ucsf.edu)

Please check our website for up-to-date information on the course: [cme.ucsf.edu](http://cme.ucsf.edu)

**On-Site Registration:** Generally we are able to accommodate on-site registration at our courses however pre-registration is preferred to ensure that we have adequate course materials.

### SYLLABUS

We're saving paper! The syllabus will be available electronically approximately 1 week prior to the course.

### REFUND POLICY

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](http://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](http://cme.ucsf.edu) for more information the link to make reservations.

For more information or to register online visit our website at [cme.ucsf.edu](http://cme.ucsf.edu). You may also reach us by calling the Office of CME at (415) 476-4251 or email [info@ocme.ucsf.edu](mailto:info@ocme.ucsf.edu)

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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 Abl, 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 Childrens' Hospital Boston

##### **David Raleigh, MD, PhD**

Assistant 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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### REGISTRATION FEES:

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Physicians	<input type="checkbox"/> \$525	<input type="checkbox"/> \$600	<input type="checkbox"/> \$650
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Residents/Fellows	<input type="checkbox"/> \$375	<input type="checkbox"/> \$450	<input type="checkbox"/> \$500

On Site Fee After 3/12/24 will be \$50 additional

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### GREENER MEETING

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