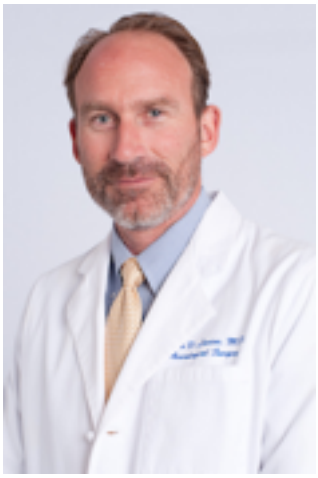
CV Section News

Chairman's Message

Editor: Ketan R. Bulsara MD
Co-Editor: Andrew Ducruet MD



Spirits are still flying high after the analysis of results presented at our Annual Joint CV Section/SNIS and the American Heart/Stroke Association Meetings in Nashville, TN this past February. We were excited to see the confirmation that endovascular intervention for large vessel occlusion in acute stroke improves patient outcome from this devastating situation. Rarely in our medical careers do we have such overwhelming evidence that our efforts truly benefit our patients. Those who have spent many hours in the angio suite, often late into the night and early into the following morning, as well as the referring physicians, can now feel justified for their decision to intervene and for their efforts. This remains an exciting time have a career in cerebrovascular surgery, and our focus on outcomes research with the explosion of neurosurgical technology will make for continued success in the frontier of CV diseases.

I am indebted to our outgoing Chair Brian Hoh and the Officers and Members of the CV Section for the strength of our organization. The membership of the section is 2295 strong (389 Active, 103 Lifetime, 57 International, 42 Adjunct, 43 Medical Student, and 1661 Resident/Fellow). The Medical Student category reflects a new addition to our membership. The goal has been to foster excitement and continued involvement in the Section throughout their careers. We also approved an International Developing Country Membership Category. The hope is to spread our involvement in countries currently under-represented in the CV Section.

The Section remains in excellent financial health with stable substantial net assets.

The current officers and members of the executive council of the section are:

Chair Elect:	Kevin Cockroft, MD
Vice Chair:	Ketan Bulsara, MD
Secretary:	J Mocco, MD
Treasurer:	Greg Zipfel, MD
Members-at large:	Adnan Siddiqui, MD; Nick Bambakidis, MD, Henry Woo, MD
Membership Chair:	William Mack, MD
Nominating Committee:	Babu Welch, MD ; Clemens Schirmer, MD

Highlights of major JCVS activities include:

NREF Drake Fund:

The CV Section committed $10,000 to the newly developed NREF Drake Fund to honor his legacy. The CV Section will decide how these funds are spent.

Annual Meeting: The Joint CV Section/SNIS Meeting and JCVS/SNIS Joint Fellows Course held in Nashville, TN February 8-10, 2015 was a great success. There were 563 attendees and the International Partner for this meeting was the European Association of Neurosurgical Societies (EANS) Section on Vascular Surgery. The 2016 meeting will be held in Los Angeles, CA in February, and our International Partner will be the Neurosurgical Society of Australasia.

N2QOD: Neuropoint Alliance and the JCVS have developed a CV module for N2QOD. Six practice groups sites are now entering data as of March 2015, and we have commitments from many others to enroll 13 additional centers are in the process of either training or completing agreements.

Acute Stroke Trials: As mentioned above, several landmark studies have recently been published clearly demonstrating the superiority of mechanical thrombectomy over the non-invasive treatment of acute stroke caused by large vessel occlusion. The JCVS has been working on three fronts to promote the results. We were heavily involved in the revision of the 2015 American Heart/Stroke Association Focused Update of the 2013 Guidelines for the Early Management of Patients with Acute Ischemic Stroke Regarding Endovascular Treatment. We have also written a letter to the major payors in alliance with the Washington Committee. Finally, we are writing an editorial to be published in the near future to discuss our position on the recently published acute stroke trials.

Fellowship Training Standards: The section has been working with a task force on the Society of Neurological Surgeons for the development of CAST (Committee on Advanced Subspecialty Training) Training Standards for endovascular neurosurgery and open cerebrovascular fellowships as well as program certification. A consensus group with representatives from JCVS, SNIS, and SVIN (Society of Vascular and Interventional Radiology) drafted a proposal that was reviewed by SNS CAST. A meeting of the SNS CAST fellowship review committee including members from SNIS and SVIN took place on Saturday, April 11 in Chicago The people at the meeting were: Art Day (SNS), Hunt Batjer (SNS), Brian Hoh (JCVS), Adnan Siddiqui (JCVS), Howard Riina (JCVS), Quill Turk (SNIS), Sam Zaidat (SVIN), Italo Linfante (SVIN), Tudor Jovin (SVIN), Colin Derdeyn (SNIS) and Phil Meyers (SNIS) joined by WebEx. The updates are: All 3 societies (JCVS, SNIS, and SVIN) signed an agreement to work together on SNS CAST accreditation of endovascular fellowships and credentialing of individual neurointerventionalists. Adnan Siddiqui has been the key critical person in getting this accomplished.

Research Awards and Lectureships: The JCVS has given out the following research awards and lectureships this past year:

1. Two $15,000 Robert Dempsey Resident Cerebrovascular Research Awards
2. Six Depuy-Synthes awards for the best resident abstracts in CV research (2 at the CNS meeting, 2 at the JCVS meeting, and 2 at the AANS Meeting).
3. The Drake Lecturer at the 2015 CNS meeting will be Dr. Neil Martin from UCLA.
4. The Luessenhop Lecturer at the 2016 JCVS Meeting will be Dr. Jean Raymond from Montreal.

5. The Donaghy Lecturer at the 2015 AANS meeting was Dr. Chris Ogilvy.
6. The Yasargil Lecturer at the 2015 AANS meeting was Dr. Robert Spetzler

Guidelines: The section continues to be very active in the development, writing, peer review, and endorsement of important guidelines in our field. The following is a brief list of our current projects:

1. AHA/ASA Guidelines for the Primary Prevention of Stroke. JCVS has a writing group representative
(John Wilson), and several reviewers. Status: AANS/CNS endorsed. Published on-line October 2014.
1. AHA/ASA Guidelines for the management of spontaneous Intracerebral Hemorrhage. JCVS has writing group representative (Bernard Bendok).
2. JGC review completed. Endorsed by AANS/CNS 12/2014.
3. AHA/ASA Guidelines for Management of Unruptured Intracranial Aneurysms. JCVS has six writing group representatives (Greg Thompson, Kevin Cockroft, Sander Connolly, Sepi Hanjani, Chris Ogilvy, Andy Ringer). JGC review completed. Endorsed by AANS/CNS 12/2014.
4. AHA/ASA Scientific Rationale for the Inclusion and Exclusion Criteria for Intravenous Thrombolysis. JCVS has a writing group representative (Babu Welch). Guidelines were published in Annals of Internal Medicine in November 2014.
5. Upcoming: AHA/ASA Guidelines for Management of Brain Arteriovenous Malformations. JCVS has a writing group representative (Jason Sheehan). Writing in progress.

Resident and Fellow Endovascular and Cerebrovascular Surgery Courses: The Section has been very active in neurosurgical education with multiple resident and fellow courses. The following is just a brief list of some of the many courses that the JCVS is involved:

1. Introduction to Cerebrovascular Neurosurgery for Junior Residents practical Clinic: to expose Jr. residents to what it means to be a combined cerebrovascular surgeon. Held at AANS meeting. Course directors: Erol Veznedaroglu, J Mocco
2. CNS 3D Anatomy for Residents (emphasis on vascular): To review anatomy with emphasis on open cerebrovascular approaches. Course director: Mike Lawton
3. AANS Endovascular and Open Cerebrovascular Course for Senior Residents: To practice endovascular and open surgical techniques with reperfused cadaver and live models. Held at MERI, November 7-9. Course directors: Erol Veznedaroglu, Adam Arthur, Mike Lawton
4. ENRG Boot Camp for Beginning Endovascular Fellows: To prepare fellows entering fellowship. Held at 3C meeting. Course director: Andy Ringer
5. CV Section/SNIS Joint Fellows Courses: To expose fellows in training to didactics and new technology, Held at CV Section and SNIS Meeting. 1 CV Section and 1 SNIS director.
6. AANS/SNIS/SVIN Endovascular Courses for Senior Fellows: To practice endovascular Techniques with live models, Held at MERI, October 4-6. Course directors: Erol Veznedaroglu and Adam Arthur

MOC: A writing committee has been convened led by Bernard Bendok and Adam Siddiqui to generate subspecialty focused questions for the MOC, in order to establish a vascular module to the MOC written examination. With the work of over 30 CVS members, they have put together a now complete textbook for MOC preparation for all Cerebrovascular topics from both open and Endo perspectives to be published through the auspices of AANS by Thieme.
Vascular SANS: Bernard Bendok and Adam Siddiqui led a group of CV section members in putting together SANS questions for Vascular SANS module that was submitted to the CNS SANS committee for editorial review.

Of the 5,686 registered hospitals in the U.S., 4640 have emergency rooms, 1,501 have been certified as primary stroke centers, and 91 as Comprehensive Stroke Centers. The recent publication of landmark stroke intervention trials solidifies our critical role in the delivery of care that will improve the quality life for an increasing population. We will continue to advocate for proper certification of physicians, hospital centers, training programs, and treatments.

The CV Section looks forward to continuing our role as the voice of our membership in collaboration with the major cerebrovascular societies for the betterment of our patients.

Sincerely,

Sean D. Lavine, MD

Chair, AANS/CNS Cerebrovascular Section

SECRETARY'S MESSAGE

The AANS/CNS Section on Cerebrovascular Surgery continues to provide strong leadership and important representation for neurosurgery to the larger cerebrovascular community. We have seen dramatic changes in the role of neurosurgery for acute stroke cases and continued steps towards new outcome efforts, such as the now launched cerebrovascular module of N2QOD. The section has continues to protect patients by remaining committed to honest interpretation of high quality research. Furthermore, we are excited for our upcoming annual meeting in Los Angeles, CA. Dr. Peter Nakaji is already hard at work, collaborating with the Society of NeuroInterventional Surgery (SNIS) to plan a truly outstanding annual meeting.

Our Executive Council continues work on policy development, education, research, and collaboration with numerous organizations and specialists focused on cerebrovascular disease. Most notably, the AHA/ASA recent update to their Acute Stroke Guidelines were extensively reviewed by the section, and with efforts led by our leadership, were able to provide some important feedback affecting the overall quality of the document.

The section continues its educational efforts, with a continuum of endovascular and cerebrovascular training in order to provide residents level-appropriate training over the breadth of their training.

If you have not visited our website recently (http://www.cvsection.org/), we highly recommend you do. Dr. Babu Welch and his team have made it an outstanding resource for our membership. Please take some time to check it out, you'll be glad you did.

The CV Section is committed to patient advocacy and improving cerebrovascular treatments worldwide. We remain a vital component of the neurosurgical community and are proud of the contributions made to our field over the past months. We encourage all neurosurgeons and cerebrovascular practitioners to become involved in our educational, research and advocacy activities.

TREASURER'S MESSAGE

I am happy to report that the Joint Cerebrovascular Section continues to be in excellent financial standing. The JCVS/SNIS Joint Annual Meeting in Nashville, TN was a tremendous success – combining an outstanding scientific program and strong discourse among speakers and participants while also being financially successful. We very much look forward to the upcoming JCVS/SNIS Joint Annual Meeting in Los Angeles, CA and hope that you will join us. The Fundraising Committee is very active in the section's efforts towards raising the funds necessary for this meeting, and is also making great progress towards funding the Robert Dempsey Resident Award in Cerebrovascular Research, the Brain Aneurysm Foundation Christopher C. Getch Chair of Research, and the DePuy-Synthes Cerebrovascular Resident Research Award for 2016. These fundraising efforts are made possible through generous sponsorship from our numerous industry partners – many of which represent new commitments established over the past year including a five-year agreement with Toshiba American Medical Systems and a two-year agreement with MicroVention.

We wish to thank each of these partners for their generosity and support. I also would like to thank the members of the Fundraising Committee for their hard work and efforts over the past year: Drs. Adnan Siddiqui, Alex Khalessi, Ray Turner, Mustafa Baskaya, J Mocco, and Brian Jankowitz. Lastly, I would like to acknowledge the section's contributions to the Washington committee ($10,000), the Neurosurgery Research and Education Foundation ($20,000), and the recently established NREF Charles Drake fund to support cerebrovascular research and education ($10,000) – contributions that demonstrate our commitment to leading the field of cerebrovascular disease at the level of advocacy, education, and research.

MEMBERSHIP UPDATE

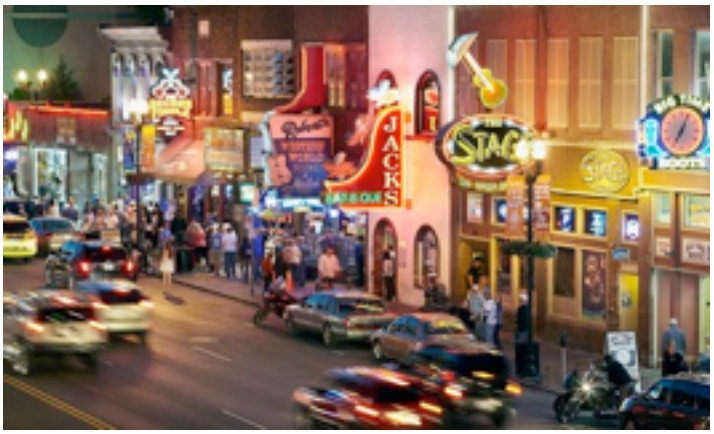
William Mack, MD

The membership of the Section remains strong at 2252 members (389 active, 103 lifetime, 57 international, 42 adjunct, 1661 resident/fellow, 43 medical students). A formal membership committee of four members has been formed. The group will continue to work with the parent organizations (AANS/CNS) and the young neurosurgeons committee to support and recruit new members. We have also encouraged adjunct membership applications from our close collaborators and high quality colleagues in other specialties. Efforts have been made to collect dues and keep the roster up to date. Membership benefits include priority access to seminars and courses at the Annual Meeting, and receipt of the Cerebrovascular Section Newsletter. We have created a student membership category in order to encourage early participation of medical students. We already have 43 new student members of the section. Further, we have created an international developing country membership category at dues rates lower than the standard international levels.

MEETING UPDATES

CV Section Annual Meeting (2015)

The AANS/CNS Joint Cerebrovascular Section Annual Meeting took place on February 9th and 10th, 2015, with collaborative programming from SNIS and the European Association of Neurosurgical Societies (EANS). The meeting was chaired by J Mocco MD, MS (CV section Program Chair), Peter Nakaji MD (CV Section Program Co-Chair), and William J. Mack MD (SNIS Program Chair). This meeting was a success. Held in advance of the International Stroke Conference in Nashville, TN, this meeting demonstrated the Section's consistent commitment to excellence in the neurosciences and patient care, and growing collaborations in cerebrovascular treatment. At this exciting time of major changes in the vascular space, including the recent completion of many major clinical trials, the AANS/CNS Joint Cerebrovascular Section Annual Meeting the meeting provided a unique opportunity for our community to discuss the changing nature of the vascular landscape. In addition to outstanding scientific sessions, specific meeting highlights included the popular annual Luessenhop Lecture, that was given by Dr. Robert Solomon.



CV Section AANS 2015

Peter Nakaji, MD, Annual Meeting Chair

Adam Arthur, MD, Annual Meeting Co-Chair

The CV section presented an exciting and interesting program at the AANS Annual Meeting in Washington DC, May 2-6. The theme of the meeting was "From Founding Principles to Future: The Making of a Neurosurgeon." In the first session, excellent abstracts bracketed Dr. Brian Ho's introduction of the Yaşargil lecturer, Robert Spetzler, who gave a talk titled "Clipping versus Coiling: Let the Data Decide," which highlighted data from the Barrow Ruptured Aneurysm Trial. Peter Rasmussen presented "Beyond the Operating Room: Neurosurgeons Role in Optimizing Systems of Care" which illustrated recent experience with a mobile CT unit for stroke care.

In the second session, the Donaghy lecturer, Chris Ogilvy, presented an excellent talk on the "Outcomes and efficacy of aneurysm treatment." Michael Lawton presented on "Shortening the learning curve for Open Cerebrovascular Surgery" in the context of the increasing shift to endovascular treatment of aneurysms. Nicholas Bambakidis presented "Aneurysm Treatment in 2015: Regional Quality, Cost, and Variability, covering variations in aneurysm care. Finally, Sander Connolly and Giuseppe Lanzino presented a thoughtful and spirited debate on the topic of a "clip first" versus "coil first" strategy for middle cerebral artery aneurysms. Attendance and audience participation at the meeting sessions was generally excellent.

Upcoming Meetings

CNS Meeting (New Orleans, LA, September 26-30th, 2015)

CV section organizers: Adam Arthur MD and Brian Jankowitz MD

Annual CV Section Meeting 2016

Peter Nakaji, MD, Annual Meeting Programming Chair

Adam Arthur, MD, Annual Meeting Programming Co-Chair

The 2016 CV Section meeting will be held at the Sheraton Universal Hotel at Universal Studios in Los Angeles, February 15-16, 2016, preceding as usual the International Stroke Conference (ISC). Planning for the meeting is already well underway. It promises to be an excellent scientific program, with time reserved for special "late-breaking" sessions in order to feature the latest developments in the field. Jean Raymond to be the 2016 Luessenhop lecturer. The meeting team will include Felipe Albuquerque who will serve as the Programming Chair for the SNIS, Sean Lavine as CV Section Chair, and Don Frei as the SNIS President.

Note that the ISC will be held downtown, necessitating a change in hotel for those attending both.

Jean Raymond, 2016 Lussenhop Lecturer

International Stroke Conference Program Committee Update (2016)

William Mack, MD, Kevin Cockroft MD, Babu Welch MD

The 2016 International Stroke Conference is planned for February 17-19, 2016 in Los Angeles, CA following the CV section meeting. Sessions and content are currently under final evaluation by the program committee. The three sessions with CV section leadership/ involvement (Vascular Malformations, SAH/ Critical Care, Aneurysms) received a total of seventeen topic submissions. Submitted abstracts are currently being graded and scored by committees that include many of the CV section members. We look forward to seeing everybody in Los Angeles for the meeting!

Technology Forum

Andrew F. Ducruet, M.D.
Assistant Professor of Neurological Surgery
and Clinical & Translational Science
University of Pittsburgh

The recognition that timely reperfusion can salvage ischemic brain tissue otherwise destined for infarction has for decades motivated efforts to develop treatment strategies for patients with ischemic stroke. Finally, a series of clinical trials have demonstrated a convincing benefit in functional outcome following mechanical thrombectomy in patients with large vessel occlusion (LVO). Despite the demonstrated efficacy of thrombectomy in improving outcome in these patients, several important issues remain unresolved.

The first and largest of the positive published trials, MR CLEAN [1], was presented in October 2014 at the World Stroke Congress. This study compared mechanical thrombectomy within 6 hours of symptom onset plus medical management against medical management alone in patients with confirmed anterior circulation occlusion and NIHSS>2. In total, 500 patients were randomized over 4 years across 16 centers in the Netherlands. A statistically significant difference was observed in the proportion of patients experiencing a good outcome (mRS 0-2; 32.6% vs. 19.1%) in the intervention arm. As patients were not randomized until 2 hours following the intravenous (iv) tPA bolus, this trial excluded patients that were early responders to tPA. The low percentage of good outcomes observed in this study may have resulted in part from delays in treatment, the lack of penumbral imaging, and relatively low rates of quality

recanalization (59% TICI 2b/3). This last finding may also reflect the fact that 145 patients with tandem co-existing extracranial occlusion were included in the trial.

EXTEND-IA [2] evaluated patients receiving iv tPA within 4.5 hours who were randomized to either Solitaire thrombectomy or medical management. All patients included in this trial had a confirmed ICA or MCA occlusion and a core infarct of <70cc on perfusion imaging. The trial was stopped due to efficacy following an interim analysis of the first 70 patients. Thrombectomy led to significant improvement in functional independence at 90 days (71% vs. 40%). This trial featured a very high percentage of TICI 2b/3 revascularization (86%), and substantially faster randomization than MR CLEAN as there was no time delay required following iv tPA administration.

The ESCAPE [3] trial enrolled 316 patients at 22 centers worldwide, of whom 238 received iv tPA. ESCAPE included patients out to 12 hours after symptom onset with a proximal anterior circulation occlusion. Patients were required to have a small infarct core, and patients with poor collaterals were excluded. ESCAPE was also stopped early following interim analysis. The rate of functional independence (90 day mRS 0-2) was significantly increased in intervention arm (53% vs 29.3%, $p<0.001$) and mortality was decreased from 19% to 10.4%. Median time from CT to reperfusion was only 84 mins. This trial emphasized selection of patients with small core infarct, rapid procedure times, efficient workflow, and the achievement of high rates of recanalization.

The fourth published study, SWIFT PRIME [4], was stopped following an interim analysis of the first 196 patients. Patients with a LVO on CTA were selected for inclusion based on a favorable CT ASPECTS or RAPID. 98% of patients received iv tPA and 100% were treated using stentrievers. High rates of successful recanalization (88% TICI 2b/3) were observed. Accordingly, good functional outcome was observed in 60% of patients randomized to intervention, compared to 36% in the medical treatment arm.

REVASCAT [5] enrolled 206 patients with a LVO who could be treated within 8 hours of symptom onset. Patients at 4 centers in Spain over a 2 year period were randomized to receive either medical therapy and solitaire thrombectomy or medical therapy alone. All patients had confirmed proximal anterior circulation occlusion and the absence of a large infarct on imaging. This trial was unique in that patients were concomitantly enrolled in a population-based registry and only 8 patients were outside the trial. Enrollment was halted early following a pre-planned interim analysis. Thrombectomy led to increased functional independence at 90 days (43.7% vs 28.2%). This study also required imaging

evidence of LVO 30 minutes after iv tPA administration, which may explain the longer time to reperfusion and lower rates of TICI 2b/3.

Finally, the THERAPY [6] trial results were presented at the European Stroke meeting in 2015 in Glasgow, Scotland. This trial randomized patients with a >8mm occlusion (ICA, M1, M2) on thin slice non-contrast head CT to thrombectomy plus medical therapy vs. medical therapy alone. The devices utilized in this trial evolved over time. The trial began with the penumbra separator, but later expanded to include the 3D separator as well as the ACE catheter. The trial was terminated early due to loss of equipoise following enrollment of only 108 of the planned 692 patients. Although underpowered to show statistically significant results, a trend towards better outcomes with intervention was observed.

The above trials were designed based on the perceived limitations of previous trials of mechanical thrombectomy. First, all patients enrolled in these recent trials had a documented LVO. This is critical for clinical success with thrombectomy, and in fact *post-hoc* analysis of IMS III [7] shows a benefit for patients with ICA and M1 occlusions who underwent successful revascularization. Second, the majority of patients in these recent trials underwent treatment using stentrievers, which likely contributed to high observed rates of reperfusion. Finally, improved techniques, operator experience, and streamlined workflow have resulted in decreased time to recanalization, which also contributes significantly to the observed improved clinical outcome.

Numerous important questions regarding endovascular stroke therapy remain unanswered. Although the majority of these trials utilized stentrievers, it remains unclear whether the same results can be achieved using aspiration alone. It is also unclear whether the use of balloon guide catheters or local aspiration is superior for the prevention of distal emboli. Furthermore, the upper limit of the therapeutic window for intervention remains unclear. Endovascular treatment of patients presenting at later time-points is currently being investigated in the ongoing DAWN and POSITIVE trials.

Ultimately, the most important challenge to the neurointerventional community involves the establishment of systems-of-care which will allow us to provide endovascular treatment to the large number of stroke patients presenting in an increasingly decentralized medical system. Similar to what has been achieved with trauma, the development of stroke systems-of-care will require widespread efforts towards hospital and community education, patient transportation, and regionalization of care. At the

center of these systems will be a triage process beginning in the field to identify patients with high suspicion of LVO. Given the emphasis on rapid reperfusion, this may in select cases trigger a direct transfer to a center equipped for thrombectomy. This triage process will be greatly enhanced through the use of telemedicine technology, and portable CT scanners may also prove to be valuable. Although these multiple recent positive trials represent the culmination of years of device development, technique refinement, and improved trial design, we have only begun to scratch the surface of the potential applications of endovascular therapy for ischemic stroke.

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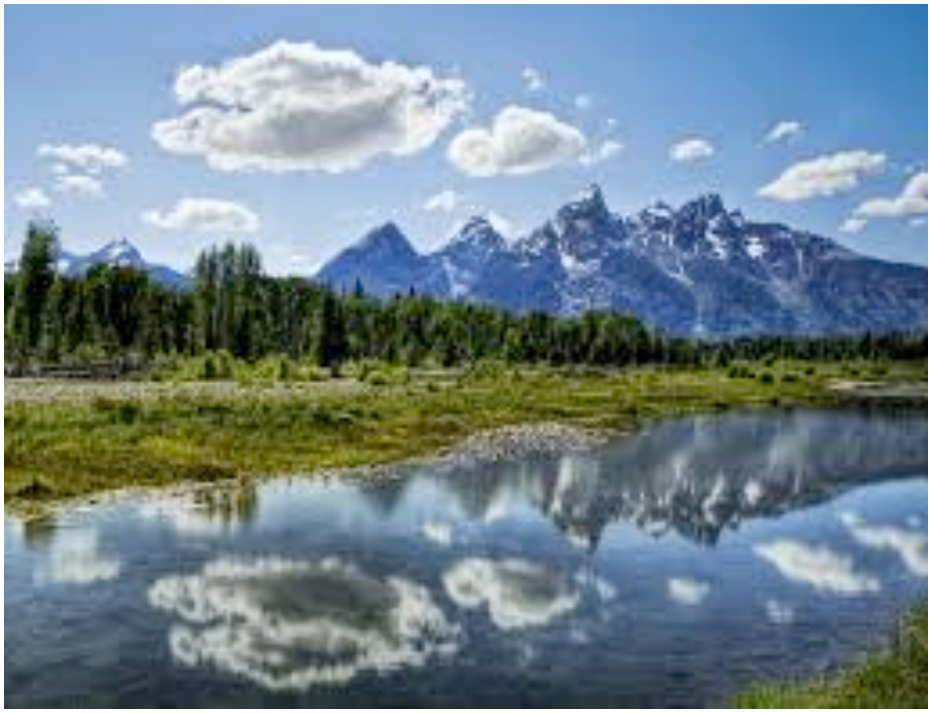

OPPORTUNITIES FOR FUNDING

AANS FELLOWSHIP/GRANTS

http://www.aans.org/Grants%20and%20Fellowships.aspx

CNS FELLOWSHIP/GRANTS

https://www.cns.org/grants-awards/grants-awards-and-fellowships

AMERICAN HEART ASSOCIATION

http://my.americanheart.org/professional/Research/FundingOpportunities/Funding-Opportunities_UCM_316909_SubHomePage.jsp

BRAIN ANEURYSM FOUNDATION

http://www.bafound.org/applying-research-grant

THE ANEURYSM AND AVM FOUNDATION

http://www.taafonline.org/pr_grants.html

Calendar

Sebtember 26-30th, 2015

CNS Annual Meeting
New Orleans, LA

February 15-16, 2016
Cerebrovascular Section Meeting
Los Angeles, CA

February 17-19, 2016
International Stroke Conference
Los Angeles, CA

April 30-May 4th, 2016
AANS Annual Meeting
Chicago, IL