

UCDAVIS
HEALTH

Department of
Neurological Surgery

2019 Year in Review



Letter from the Chair

Griffith R. Harsh IV, M.D., M.A., M.B.A.

Professor & Julian R. Youmans Endowed Chair

In 2019, the Department of Neurological Surgery at UC Davis Health continued its trajectory of growth and meaningful contributions in clinical care, education and research.

In 2019, we welcomed new faculty members, surgical oncologist Dr. Orin Bloch, pediatric neurosurgeon, Dr. Michael S.B. Edwards and cognitive neurophysiology research scientist, Dr. Ignacio Saez. We also expanded our collaborative clinical offerings in stroke, brain tumor treatment, movement disorders, epilepsy and pain.

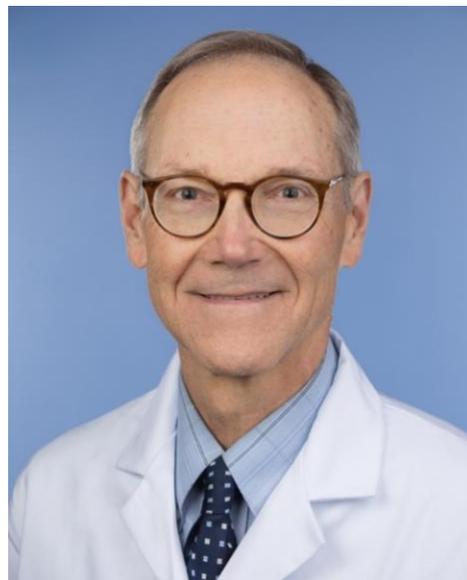
Looking ahead, I am excited to welcome four new faculty members to the department. Allan Martin, M.D., Ph.D., will be joining Dr. Kee Kim and Dr. Julius Ebinu as we expand the Comprehensive Spine Center. Jeffrey Vitt, M.D., will join Dr. Lara Zimmermann and Dr. Ryan Martin on the newly designated Neurocritical Care Service, which Dr. Zimmerman directs. Branden Cord, M.D., Ph.D., will join Dr. Ben Waldau as they grow our cerebrovascular service within the newly accredited UC Davis Comprehensive Stroke Center. And Orwa About, M.D., a neurooncologist, will partner with Dr. Orin Bloch in developing clinical trials for patients with malignant gliomas.

This year, numerous faculty members have made many notable contributions to the growth and quality of our clinical practice. But I would like to specifically commend two faculty members for their contributions to research and education. The first is Dr. Kia Shahlaie, the leader of our residency program. Under his guidance our program has expanded to 13 residents; we will achieve our full complement of 14 residents in July of 2022. Reviews by the residents express great satisfaction with the program and appreciation of Dr. Shahlaie's leadership. The second is Dr. Ryan Martin for who successfully applied for accreditation of a new fellowship in neurocritical care. Dr. Martin also was awarded funding of a major Department of Defense Congressionally Directed Medical Research Grant that will utilize Explorer PET imaging to correlate glial activation and the risk for developing post-traumatic epilepsy. I deeply appreciate every faculty member's commitment to offering superb clinical care, to providing outstanding education, and to seeking new knowledge.

Our team of talented and dedicated APPs has been expanded and reorganized under the leadership of Christine Picinich. I appreciate their superb efforts to meet our increased clinical demands with flexibility, teamwork and provision of consistent high-quality patient care.

Under the leadership of our Chief Administrative Officer, Stacy Miller, our partnership with the Department of Neurology has aggregated the administrative talent of both departments into teams that deliver excellent administrative support in strategy, finance, recruitment, education and research. I am grateful the contributions of each member of our administrative team.

These achievements in 2019 and the realization of our goals for coming years are dependent on our maintaining a culture of excellence and our dedication. I am very proud of the department's provision of outstanding patient care to our community, its superb educational offerings, and its contributions to medical discovery.





The **Faculty of the Department of Neurological Surgery** are focused on providing outstanding patient care. Our nationally recognized specialists offer state of the art treatments for the full spectrum of neurosurgical disorders in adults and children. These include tumors of the brain, pituitary and skull base, ischemic and hemorrhagic cerebrovascular disease, including strokes, aneurysms and AVMs, epilepsy and movement disorders, hydrocephalus, traumatic brain injury, and developmental, degenerative, oncologic and traumatic spinal conditions. Employing a comprehensive multidisciplinary team approach to delivery of the most effective treatments and care, we aim to provide our patients with optimal outcomes conducive to a high quality of life.

Patient Care - Cranial 2019



Dr. Kia Shahlaie performing Deep Brain Stimulation Surgery

Our cranial program offers comprehensive care in all major cranial subspecialties. **Dr. Kia Shahlaie**, the leader of our **Minimally Invasive Cranial Neurosurgery Program**, in collaboration with our colleagues in otolaryngology, preferentially uses endoscopic-assisted keyhole craniotomies, such as the eyebrow and retrosigmoid keyhole approaches, to access tumors of the skull base. **Dr. Griff Harsh** routinely uses endoscopic endonasal transsphenoidal approaches for removal of pituitary tumors.

Our **Brain Tumor Program**, led by **Dr. Orin Bloch**, offers comprehensive multidisciplinary treatment options, including complex cranial surgery, chemotherapeutic and immunotherapeutic trials of novel agents, and advanced radiotherapy techniques. Working with our colleagues in radiation oncology, **Dr. Harsh** has greatly expanded our stereotactic radiosurgery practice, employing our new Leksell Gamma Knife® Icon™ device, which allows frameless as well as frame-based radiosurgery to the head and upper cervical spine, to treat brain and skull base tumors of all types (including surgically inaccessible metastases, meningiomas, acoustic neuromas, pituitary tumors, craniopharyngiomas, chordomas, hemangioblastomas, and residual gliomas) arterio-venous malformations, and trigeminal neuralgia. **Dr. Harsh**, was one of several authors of Brain Metastasis, a focused review in Nature, which received a “Highly Cited Paper” designation by Web of Science as one of the top 1% most cited papers of similar age in the field of clinical medicine. It has been viewed on Nature’s website more than 14,000 times since publication.



Our **Functional Neurosurgery Program**, also led by **Dr. Shahlaie** and in close collaboration with our Neurology colleagues, employs advanced diagnostic and surgical techniques such as [Deep Brain Stimulation \(DBS\)](#) to treat epilepsy and movement disorders, including Parkinson’s disease, essential tremor, and dystonia.

Spine 2019

Dr. Kee Kim, Co-Director of the UC Davis Comprehensive Spine Center, was featured in **Mike's Journey**, a recent UC Davis Health news story. Mike's career as a pilot was at risk when he began experiencing pain from radiculopathy due to degenerative disc disease in his cervical spine. After realizing that medications and epidural steroid injections were no longer providing substantial relief, Mike sought neurosurgical intervention. The first surgeon he spoke with suggested spinal fusion, but he was hesitant, due to the risks that accompany fusion and a desire to preserve his range of motion. Dr. Kim was able to replace two of the discs in his neck which relieved his pain, preserved his range of motion, and his career as a pilot. Read more about [Mike's Journey](#).

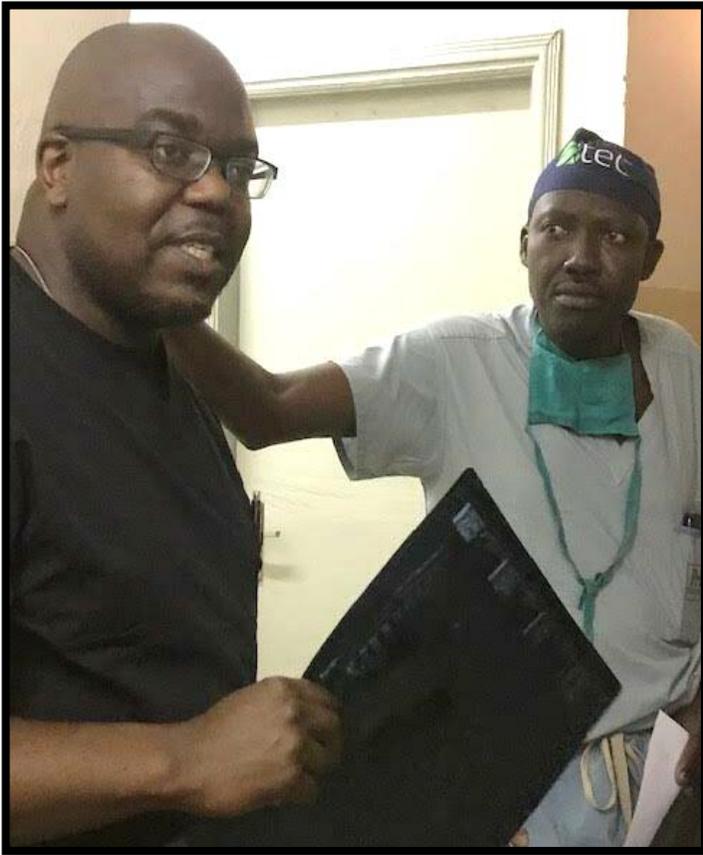


BECKER'S
SPINE REVIEW

Q&A with Dr. Kee Kim
Professor and Co-Director
UC Davis Spine Center



Dr. Kim was also featured in two separate issues of Becker's Spine Review. In August of 2019, he was interviewed by Laura Dyrda in, "[How the spine field could change in the next few years: Q&A with Dr. Kee Kim of UC Davis.](#)" In November, he was highlighted in, "[Dr. Kee Kim: the trends that will have the biggest impact on spine in 2020](#)", by Alan Condon.



Mark Slaughter, the founder/CEO of On Belay Medical wrote about **Dr. Julius Ebinu's** participation in medical missions to Uganda in [The Importance of Medical Missions and Giving, One Person to Another](#), a LinkedIn article. Dr. Ebinu was born in Mbale, Uganda and moved to Canada when he was 8. He returned to Uganda to participate in On-Belay missions twice last year. While in Uganda the team performed pediatric scoliosis, spine tumor and trauma surgeries with the support of residents. In one particularly heartwarming story, Dr. Ebinu was able to remove a tumor at the base of a woman's skull which was causing paralysis. The surgery was especially challenging to accomplish without the normal tools and surgical microscope that would typically be available. After his return to the U.S., Dr. Ebinu received a video which showed

the patient had regained her ability to walk. We are extremely proud of Dr. Ebinu's international accomplishments and contributions.

New Spine Imaging

We are pleased to offer the latest imaging solutions at the UC Davis Comprehensive Spine Center. The EOS is a stereographic imaging system that provides 2D and 3D full body images. It uses 50% less radiation than digital X-Rays, 85% less than conventional X-Rays, and 95% less radiation than computerized tomography (CT's). Images are taken in a sitting or standing position and a full body exam can be completed in less than four minutes. The EOS is particularly effective for imaging scoliosis, back pain, spondylolysis, spondylolisthesis.



Cerebrovascular 2019

Dr. Ben Waldau was featured on [The Insider](#) for his life-saving work on CHP Motorcycle Officer Mike Ericson who was seriously injured in a hit and run accident in April of 2016. Officer Ericson needed multiple operations. Dr. Waldau joined the care team when they discovered he had experienced a stroke resulting from extensive damage to his left carotid artery. Dr. Waldau, with the help of Dr. John Laird and Dr. Brian Dahlin, was able to stent the artery and prevent further damage. Officer Ericson returned to full duty in 2019.



Pediatric Neurosurgery 2019 Treating Cavernous Malformations

Dr. Marike Zwieneberg was featured both on the [UC Davis Health Blog](#) and on [ABCNews 10](#) for her successful treatment of Gianna Arredondo's multiple cavernous malformations. Cavernous malformations are very rare and can be challenging to treat when located deep in the brain.



10th Fetal Surgery for Spina Bifida

We also congratulate **Dr. Zwieneberg** on completing her 10th fetal surgery for spina bifida in utero. UC Davis is home to the first comprehensive multidisciplinary fetal diagnosis and therapy center in Northern California. Our clinical expertise is supported by a robust research program and puts UC Davis in a unique position to investigate and optimize future treatment strategies for improving the long-term outcomes of babies with spina bifida.



Neurocritical Care 2019



Dr. Ryan Martin received funding of his Department of Defense, Congressionally Directed Medical Research Program Grant, “Imaging of glial activation and risk for post-traumatic epilepsy,” which will examine neuroinflammation in the development of epilepsy in survivors of traumatic brain injury. Post-traumatic epilepsy occurs in approximately 20% of patients with severe TBI.

Dr. Lara Zimmermann was selected as the 2020-21 UC Davis Health NeuroNext Fellow. Funded by the NIH NINDS, NeuroNext conducts studies of treatments for neurological diseases through partnerships with academic, private foundations and industry.

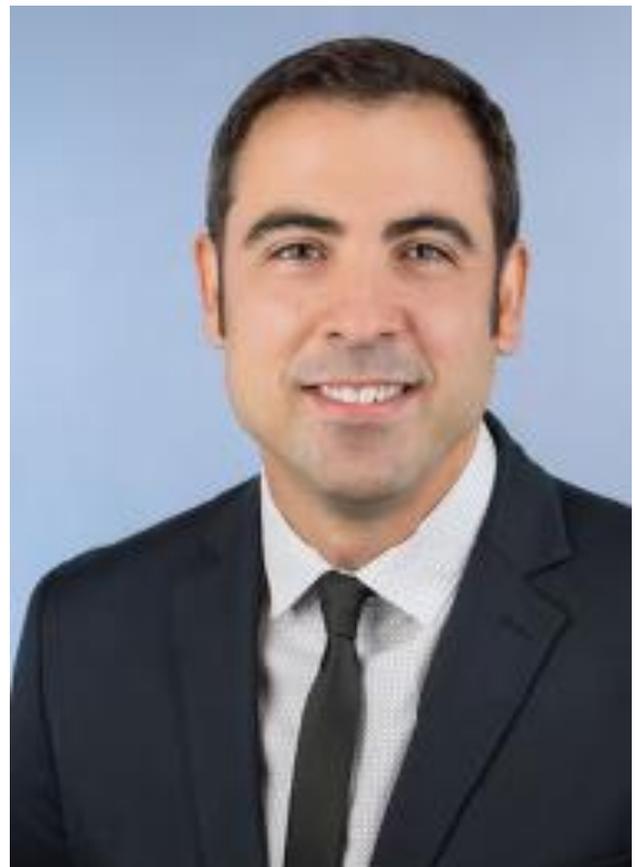


Research 2019



In November, **Dr. Robert F. Berman** was elected as a Fellow for the American Association for the Advancement of Science (AAAS) for his many research contributions in cellular mechanisms of brain injury, neurodevelopmental disorders and neurotoxicology. Dr. Berman investigates brain disorders such as fetal alcohol syndrome, autism and Fragile-X associated disorders. In addition to his role in neurological surgery, Dr. Berman is active in the Neuroscience and the Pharmacology and Toxicology Graduate Groups, the MIND Institute and the Center for Neuroscience. Dr. Berman was one of ten UC Davis faculty members elected to the AAAS in 2019.

Dr. Ignacio Saez, carried out a dual-sEEG recording experiment in October. The experiment was conducted in collaboration with UC Berkeley and the Donders Institute for Brain, Cognition and Behavior. Dr. Saez's team recorded high quality electrophysiological readings from two patients to gain insight into the basis of human thought. The team took the recordings during a communication task where both patients had to cooperate towards a common goal. The patients were in two separate rooms and were able to communicate only in writing via computer screen. This research aims to provide insight into how human brains perform the unique feat of achieving mutual understanding. UC Davis Health is the second clinical center the world to conduct such an experiment.





Referring a Patient

Patient Referrals, Transfers and Phone Consults:

Thank you for choosing UC Davis Health and the Department of Neurological Surgery.

Referring Physicians:

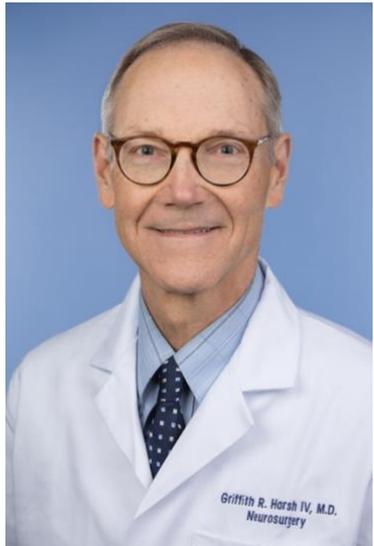
- Acute care transfers, direct admissions, urgent pediatric telemedicine 1-800-482-3284 Option #1
- Phone consultations: 1-800-482-3284 Option #2
- Outpatient referrals, 1-800-482-3284, Option #3.
You may also submit an [Electronic Referral Form](#) or use the [Referral Request Kit \(pdf\)](#)
- Visit our [Physician Referral Website](#)

Prospective Patients are encouraged to visit our [Consumer Resource Center](#) or call 1-800-282-3284 for new patient and general information.

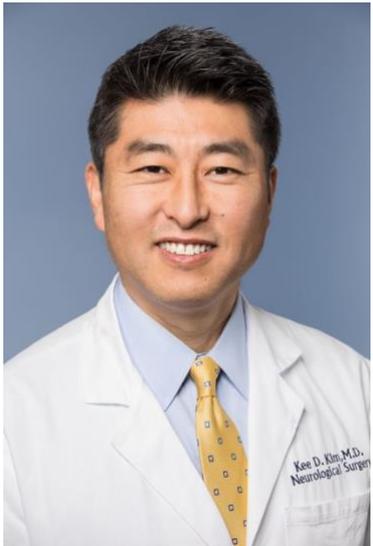


Sacramento Magazine 2019 Top Doctors

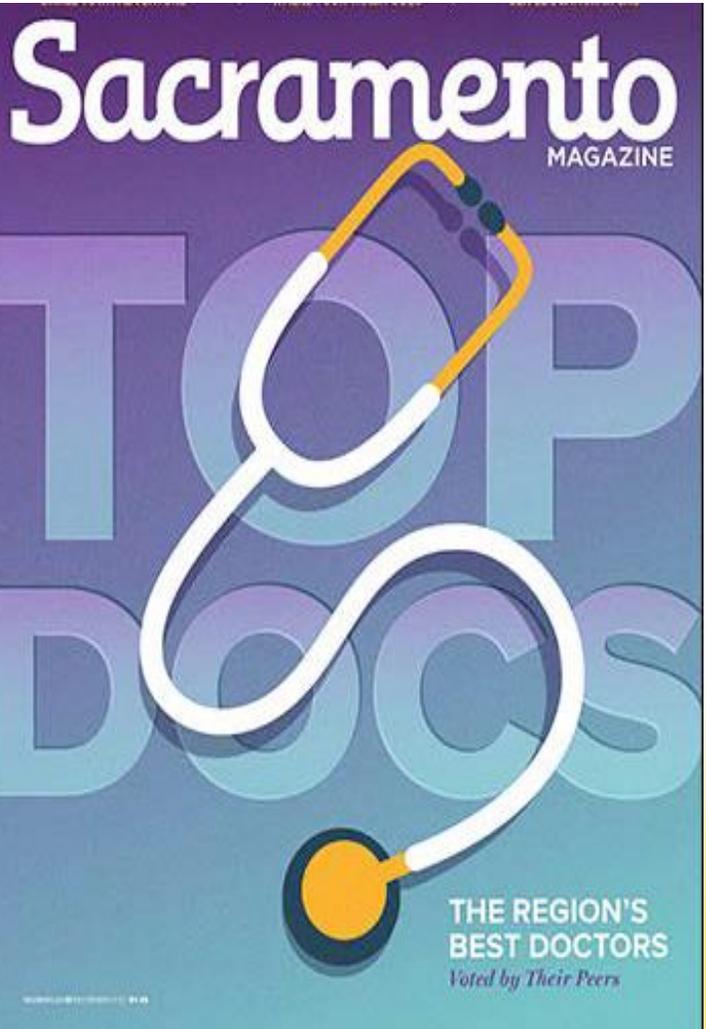
Four faculty members from the Department of Neurological Surgery were honored by Sacramento Magazine for being among the region's Top Doctors. UC Davis Health had 219 physicians listed in more than 60 specialty areas. The list is compiled by Professional Research Services, a third-party firm and is based on peer-review surveys.



*Griffith Harsh, M.D., M.B.A.
Professor and Chair
Department of Neurological Surgery*



*Kee D. Kim, M.D.
Professor and Co-Director
UC Davis Spine Center*



*Kiarash Shahlaie, M.D., Ph.D.
Professor and Program Director
Department of Neurological Surgery*



*Marike Zwieneberg, M.D.
Associate Professor
Department of Neurological Surgery*

Faculty Recruitments

Recruiting new faculty members was a top priority for Neurological Surgery in 2019. We are delighted to welcome the following new faculty members to the department:



Allan Martin, M.D., Ph.D.
Spine

Dr. Martin earned his Medical Degree in 2011 at the University of Toronto and completed his Ph.D. in 2017 at the University of Toronto, Institute of Medical Sciences Surgeon Scientist Training Program. He graduated from the neurological surgery residency program at the University of Toronto in 2019 and will complete a spinal fellowship in June of 2020. We look forward to welcoming Dr. Martin in the summer. Dr. Martin will join Drs. Kee Kim and Julius Ebinu in the Comprehensive Spine Center.



Branden Cord, M.D., Ph.D.
Cerebrovascular

Dr. Cord is currently a Neurovascular Fellow and Clinical Instructor at Yale-New Haven Hospital in New Haven, Connecticut. Dr. Cord completed his Medical Degree and Doctor of Philosophy in Medical Science in 2012 at Stanford University. He graduated from the Neurological Surgery Residency Program at Yale-New Haven Hospital in 2019 and completed an enrolled neurointerventional fellowship in 2017. Dr. Cord will join Dr. Ben Waldau in providing cerebrovascular neurosurgical services here at UC Davis.



Jeffrey Vitt, M.D.
Neurocritical Care

Joining our Neurocritical Care team is Dr. Jeffrey Vitt.

Dr. Vitt earned his Doctor of Medicine at the Georgetown University School of Medicine in Washington, DC in 2014. He graduated from the Neurology Residency Program at the University of California, San Francisco in 2018 and will complete his Clinical Fellowship in Neurocritical Care also at the University of California, San Francisco in June of 2020, after which he will join our department.

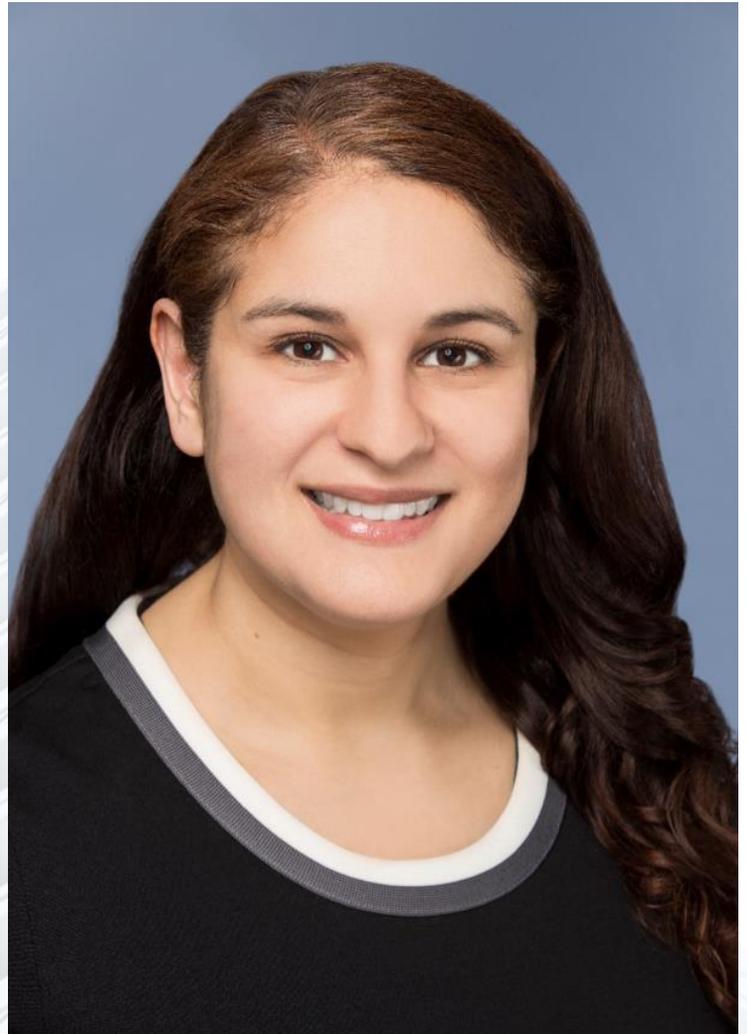


Orwa About, M.D., Ph.D.
Neuro-Oncology

Dr. About earned his medical degree at Damascus University in 2007. He completed his Ph.D. in neurobiology and neurosciences in 2013, and his residency training in neurology in 2017 at the University of Arkansas for Medical Sciences. Dr. About has completed a three-year program in clinical and research neuro-oncology training at the joint National Cancer Institute and Johns Hopkins University. His research includes designing clinical trials for glioblastoma patients. He will join the department in August.

Congratulations to our 2019 Residency Program Graduate!

Dr. Tamar Binyamin graduated from the UC Davis Department of Neurological Surgery Residency Program in June. Dr. Binyamin earned her Medical Degree at the Virginia Commonwealth University School of Medicine in 2012. She graduated from the UC Davis Neurological Surgery Residency Program in June of 2019 and served as the Chief Resident from 2018 to 2019. She is currently a Clinical Fellow in Open and Endovascular Neurosurgery at the University of Texas Southwestern Medical Center at Dallas. Dr. Binyamin experienced remarkable growth during the seven years she was with us. She was an outstanding resident who embodied leadership, professionalism and compassion, attributes which earned her the 2019 UC Davis School of Medicine Housestaff Professionalism Award. As Chief, she consistently demonstrated knowledge, dedication, efficiency and integrity. She earned the respect, admiration and affection of her colleagues, instructors, and staff members, We are all extremely proud of her numerous accomplishments. We are confident that Dr. Binyamin will make outstanding contributions to the field of neurological surgery and we wish her the very best in all her endeavors.



Residency Program News

WELCOME to Sacramento!



We've Expanded! We added two new residents in 2019, **Drs. Catherine Peterson**, PGY-4 and **Dylan Goodrich**, PGY-3.



Dylan Goodrich, M.D.



Catherine Peterson, M.D.

We also matched for two new residents in 2019, **Dr. Jared Clouse** from Indiana School of Medicine and **Dr. Matthew Kercher** from the University of Nebraska College of Medicine. They will begin their internship in July of 2019.



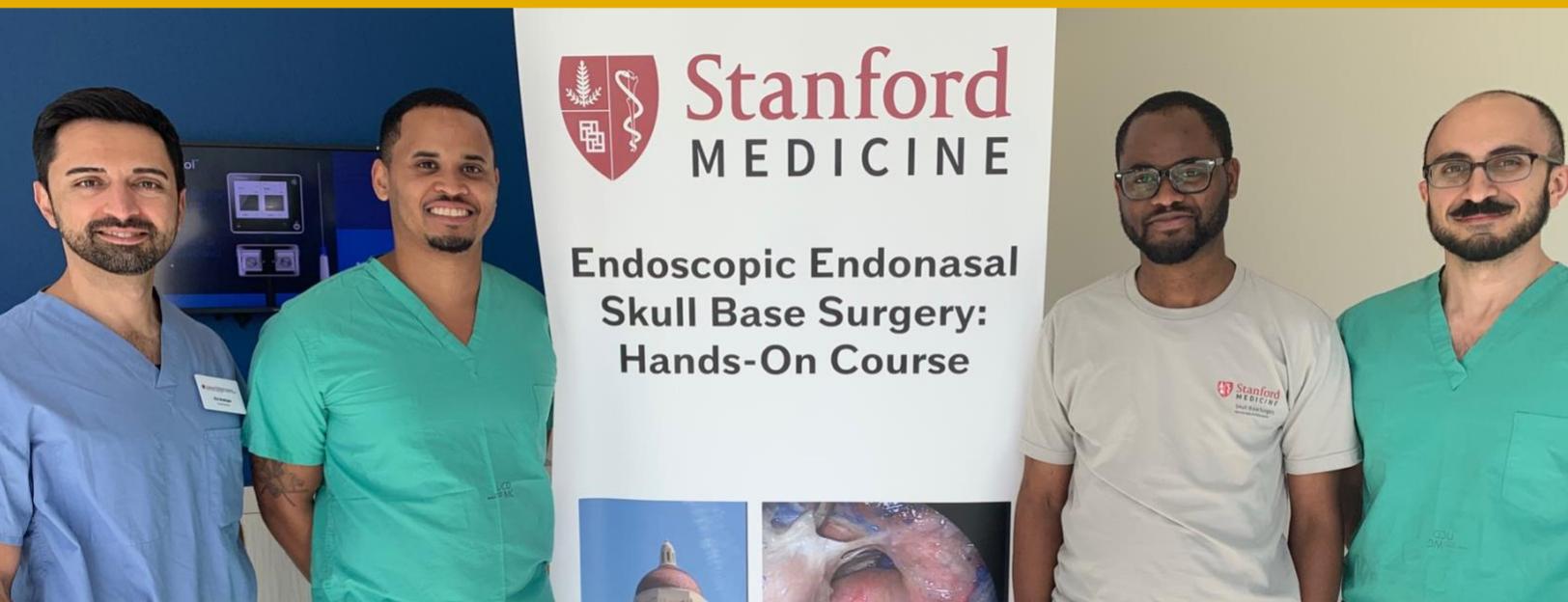
Jared Clouse, M.D.



Matthew Kercher, M.D.

Chief Resident

Seun Omofoye, M.D. took the reigns as the 2019-2020 Chief Resident. He is responsible for the administrative supervision of resident housestaff. He will make surgical and clinical assignments and participate in teaching. Dr. Omofoye was also recently honored as a winner of the Resident Scholarship Award for his outstanding leadership as a dedicated clinician and team player by the San Francisco Neurological Society. He also gave an oral presentation at the 2019 California Association of Neurological Surgeons Annual Meeting titled, “Biophotonic fluorescence lifetime spectroscopy in recurrent glioblastoma and radiation necrosis delineation.”

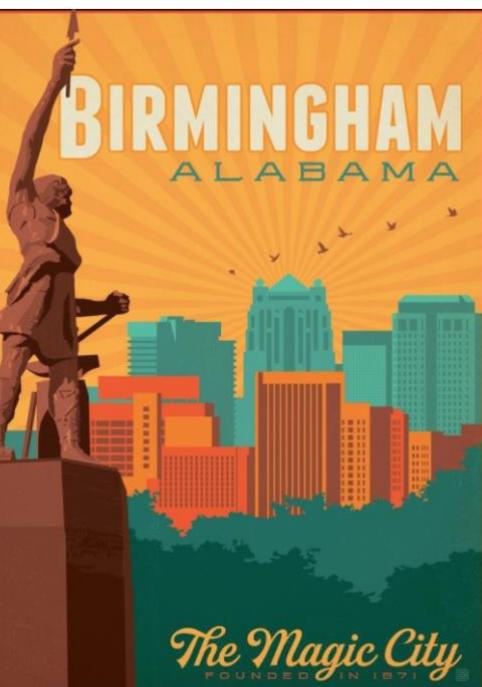


Dr. Kia Shahlaie and **Dr. Griff Harsh** were the invited speakers for the Thursday evening special lecture at Stanford’s Endoscopic Endonasal Skull Base Surgery: Hands-On Course in August, which included several sessions at the Dissection Lab in Milpitas, CA. Our residents **Dr. Edwin Kulubya**, **Amir Goodarzi** and **Seun Omofoye** were included as guest attendees.



2019 West Coast Games

Neurological Surgery Residents took time out of their hectic schedules to refine their volleyball skills in preparation for the Neurosurgery Charity Volleyball Tournament. UC Davis was one of 8 teams that participated in the event, joining OHSU, Stanford, Cedars Sinai, USC, UCLA, UCI and UCSD. We won 2 of our 3 first matches and defeated OHSU in a tiebreaker to make it to the final four. The final four teams were UC Davis, USC, Cedars Sinai and UCSD. Thank you to **Drs. Clayton Gerndt, Amir Goodarzi, Kristin Nosova, Edwin Kulubya** (2019 captain), **Jared Clouse**, and **Matthew Kercher**.



Fellowship News

Dr. Bart Thaci embarked upon a yearlong enfolded endovascular neurosurgery fellowship at the University of Alabama in Birmingham. His abstract, "Outcomes after thrombectomy for proximal and distal M1 occlusions," Thaci B, Chagoya G, Elsayed G, Salehani A, Pope B, Bernstock J and M Harrigan, was accepted at the 2020 AANS Annual Scientific Meeting. We look forward to Dr. Thaci's return in 2020.



Training in Stryker's Mobile Lab

Residents participated in the Stryker Mobile Cadaver Lab in October. The EEA Skull Base Lab training was coordinated by Dr. Amir Goodarzi and covered endoscopic endonasal approaches to the sella and both the anterior, and posterior skull base.



The Program Director's Corner

Kia Shahlaie, M.D., Ph.D.

This has been an extremely exciting year of growth and progress for our residency training program! The ACGME granted us a permanent complement increase to two residents per year, and we now have twelve incredibly talented and hard-working residents with a passion and excitement for neurosurgery. We continue to modify our educational program to ensure that each of our resident's individual career goals are fully supported, and I am particularly proud of the balanced approach we have established for resident training. In addition to didactic and interactive teaching sessions and case conferences, our residents have a peer and faculty mentorship

program, we participate in regular team-building events off campus, and we routinely discuss topics of work-life balance and personal, professional, and financial wellness. I am particularly excited about our Neurosurgery Leadership Development Program, a series of monthly meetings developed with Dr. Gene Crumley, Director of the Emotionally Intelligent Leadership Program at UC Davis. Neurosurgery residents are placed in leadership positions early in their clinical training, and our program aims to provide them with the insight and skills necessary to be effective leaders during complex and challenging situations. 2019 was a fantastic year for our training program, and we are all very excited for what 2020 will bring!

2019 Resident Academic Productivity

Publications:

Ament J, **Thaci B**, Yang Z, **Kulubya E**, Hsu W, Bouma G, Kim KD. [Cost-effectiveness of a bone-anchored annular closure device versus conventional lumbar discectomy in treating lumbar disc herniations](#). Spine (Phila Pa 1976). 2019 Jan 1;44(1):5-16. doi: 10.1097/BRS.0000000000002746.

Ament JD, **Thaci B**, Yang Z, Kursumovic A, Bostelmann R, Lanman T, Patrick Johnson J, Fröhlich S, Kim KD. [Postoperative direct health care costs of lumbar discectomy are reduced with the use of a novel annular closure device in high-risk patients](#). Spine J. 2019 Jul;19(7):1170-1179. doi: 10.1016/j.spinee.2019.02.010. Epub 2019 Feb 15.

Clouse JW, Kubal CA, Fridell JA, Mangus RS. [One-year incidence of infection in pediatric intestine transplantation](#). The Pediatric Infectious Disease Journal 38.3 (2019): 219-223.

Clouse JW, Kubal CA, Fridell JA, Pearsall EJ, Mangus RS. ["Post-intestine transplant graft-vs-host disease associated with inclusion of a liver graft and with a high mortality risk."](#) Clinical transplantation 33.1 (2019): e13409.

Goodarzi A, Garza N, Lechpammer M, Anthony R, Zwieneberg M., [The molecular oncology of bilateral high grade astrocytomas in children](#). Childs Nerv Syst. 2019 Nov; 35(11):2047-2054. doi: 10.1007/s00381-019-04372-0.

Goodarzi A, Thaci B, Toussi A, **Karnati T**, Kim K, Fragoso R. [Glioblastoma Multiforme of the Conus Medullaris - Management Strategies and Complications](#). World Neurosurg. 2019 Jan 10;S1878-8750(19)30032-4. doi: 10.1016/j.wneu.2018.12.164.

Greenan K, Taylor SL, Fulkerson D, Shahlaie K, **Gerndt C**, Krueger EM, Zwieneberg M. [Selection of children with ultra-severe traumatic brain injury for neurosurgical intervention](#). J Neurosurg Pediatr. 2019; Apr 5:1-10 doi: 10.3171/2019.1.PEDS18293.

Huang S, Kappel AD, **Peterson C**, Chamiraju P, Rajah GB, Moisi MD. [Cervical spondylodiscitis caused by Candida albicans in a non-immunocompromised patient: A case report and review of literature](#). Surg Neurol Int. 10:151. DOI: 10.25259/SNI_240_2019.

Peterson C, Garling R, Asano E, Kupsky WJ, Set K, Agarwal R, Sood S. [Successful surgical treatment of refractory status epilepticus in a 12-day-old infant](#). Pediatr Neurol. 92:73-75. DOI: 10.1016/j.pediatrneurol.2018.11.011.

Thaci B, McGirt MJ, Ammerman JM, Thomé C, Kim KD, Ament JD. [Reduction of direct costs in high-risk lumbar discectomy patients during the 90-day post-operative period through annular closure](#). Clinicoecon Outcomes Res. 2019 Feb 28; 11:191-197. doi: 10.2147/CEOR.S193603.

Thind H, Waldau B. [De novo blister aneurysm formation in 16 days associated with mucorales fungi](#). *Cureus*, 2019 Aug 1;11(8):e5301.

Sharma M, Aljuboori Z, **Clouse JW**, Rodgers R, Altstadt T. [Sacroiliac joint fusion system for high-grade spondylolisthesis using “Reverse Bohlman Technique”: a technical report and overview of the literature](#). *World Neurosurgery* 124 (2019): 331-339.

Abstracts:

Clouse IT, **Clouse JW**, Kubal CA, Mangus RS. [Impact of hyponatremia on adult post-liver transplant outcomes](#). 14th Academic Surgical Congress. Houston, TX. 2019.

Omofoye OA, Huynh TD, Jhun R, Ashfaque H, Cronk K. [Primary intraosseus meningioma of the calvarium: a systematic review and meta-analysis](#). *J Neurol Surg B Skull Base* 2019; 80 (S 01): S1-S244 DOI: 10.1055/s-0039-1679454.

Thaci B, **Nosova K**, Dahlin B and Waldau B. Using both aneurysm coil packing density and Raymond-Roy Classification increases prediction rate for aneurysm recanalization. AANS 2019.

Thaci B, Dahlin B, Waldau B et al. A multivariate logistic regression model to predict endovascular treatment failure of intracranial aneurysms. CNS 2019.

Poster and Oral Presentations:

Goodarzi A, Goshi N, Gurkoff G, Seker E, Shahlaie K. Computational modeling of an intracranial tumor treatment field. UC Davis Comprehensive Cancer Center. Sacramento, CA. September 2019. Poster presentation.

Goodarzi A, Goshi N, Gurkoff G, Seker E, Shahlaie K. Designing computational modeling and material design of an intracranial tumor treatment field system in a rodent. Congress of Neurologic Surgeons. San Francisco, CA. October 2019. Poster presentation.

Omofoye O., Overview of brain tumors and management. UC Davis Brain Tumor Support Group, Sacramento, CA, May 2019. Oral presentation.

Omofoye O, Huynh TD, Jhun R, Ashfaque H, Cronk K., Primary intraosseous meningioma of the calvarium: a systematic review and meta-analysis. 29th Annual North American Skull Base Society Meeting, Orlando, FL, February 15th 2019. Oral presentation.

Omofoye O, Alfonso-Garcia A, Bec J, Marcu L., Biophotonic fluorescence lifetime spectroscopy in recurrent glioblastoma and radiation necrosis delineation. 2019 California Association of Neurological Surgeons Annual Meeting, Los Angeles, CA, January 2019. Oral presentation.

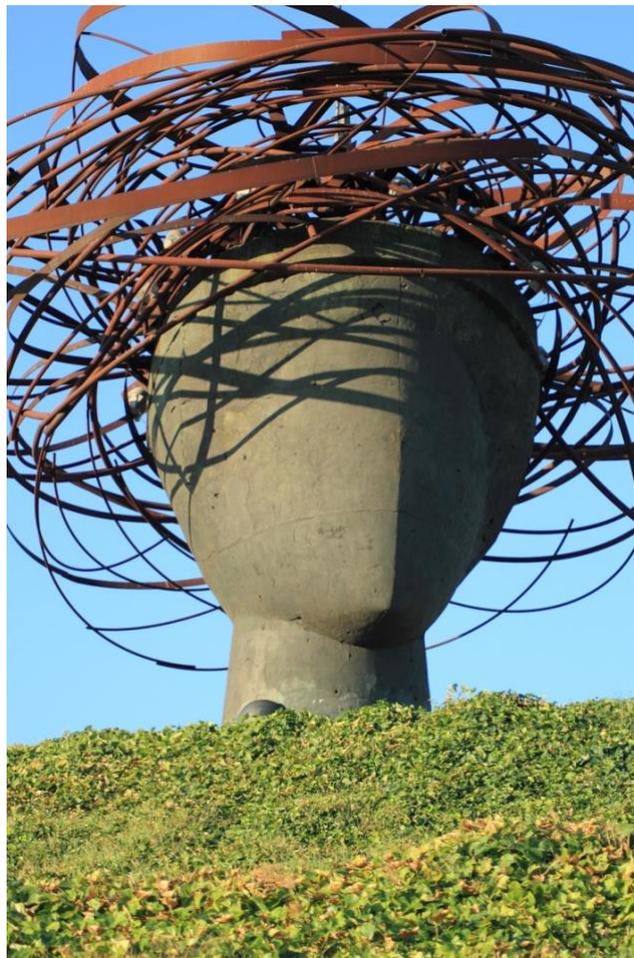
Peterson C, Marupudi N, Fadel H, Kolb B, Ham S, Sood S., Morphometric parameters associated with syringomyelia in pediatric patients with Chiari I malformation. AANS/CNS

Section on Pediatric Neurological Surgery Annual Meeting; December 7th, 2019; Scottsdale, AZ. Poster presentation.

Thind H, Ramanathan D, Ebinu J, Kim K. Headache Relief is Maintained Seven Years after Anterior Cervical Spine Surgery: Post hoc analysis from multicenter randomized clinical trial. AANS/CNS Joint Section on Disorders of the Spine and Peripheral Nerves Annual Spine Summit. Miami, FL. March 17, 2019. Oral Presentation.

Thind H, Ramanathan D, Ebinu J, Kim K. Headache relief is maintained seven years after anterior cervical spine surgery: post hoc analysis from multicenter randomized clinical trial. AANS/CNS Joint Section on Pain Biennial Meeting. Miami, FL. March 2019. Poster Presentation.

Vega CA, **Clouse JW**, Cabrales AE, Bush WJ, Kubal CA, Manbus RS. Pleural effusion at time of liver transplant associated with worse hospital outcomes and lower patient survival. American Transplant Congress. Boston, MA. 2019. Poster presentation.



Neurological Surgery Advanced Practice Providers



Neurological Surgery’s Advanced Practice Supervisor Christine Picinich took the lead in transitioning the department to a 1:1 Advanced Practice Provider model. In that model, each nurse practitioner or physician’s assistant is paired with a neurosurgeon or neuro-intensivist, practicing in both the clinic and the hospital as they follow their patients throughout their course of care. They provide patient and family treatment plan education, and ensure continuity of care and increased access to neurosurgical treatment.



Vilija Abrute, MS, ACNP-BC



**Rex Ambatali, MS, FNP-C,
AGACNP-BC**



Ary Arauz, PA-C



Claire Basco, MS, ANP-BC



Cassandra Chin, MS, FNP-C



**Christi Deliemos, MSN,
CNRN, ACNP-BC**



**Stephanie Hetrea, MS,
AGACNP-BC**



Tram James, MS, FNP-BC



Jeff Kasten, MS, ACNP-BC



Jasleen Kaur, PA-C



**Christine Picinich, MS,
AGACNP-BC, CCRN**
Advanced Practice
Supervisor for Neurological
Surgery

Patient Support

The **Brain Tumor Support Group** was formed in 1990 to provide emotional support and educational programs to tumor patients and their families and friends. The group is open to all patients with benign or malignant brain tumor disease at any stage. Patients' family members are encouraged to participate and membership is free. The group meets the first Wednesday of every month from 6:30 to 8:00 p.m. Suite 3015B, Ellison Ambulatory Care Center.

The **Brain Aneurysm Support Group** provides hospital visitation, telephone support and monthly meetings to help you connect with other people who are facing treatment, recovering, or supporting someone who has experienced aneurysm. The support group meets monthly and covers a variety of important topics for aneurysm patients and their families. Meetings are the fourth Saturday of every month, 3-5 p.m., at the UC Davis ACC. 4860 Y Street RM 3015, 3rd Floor, Sacramento, CA 95817 For more information about the aneurysm or tumor support groups, contact **Breana Sanchez** at bnsanchez@ucdavis.edu.

The **Deep Brain Stimulator Support and Education Group** is open to patients, caregivers, and family who have or are considering a deep brain stimulator for a movement disorder such as Parkinson's disease, tremor or dystonia. Monthly topics and guest speakers will help participants learn more about living with a stimulator and Parkinson's Disease. Meeting days and locations for the Deep Brain Stimulator Support Group alternate among three clinic sites. For more information, contact Karla Lindstrom at 916-734-6282 or klindstrom@ucdavis.edu.



With Gratitude:

The Department of Neurological Surgery is deeply grateful for the support our donors provide. Donors' contributions to the department have assisted us in offering additional support for the 2nd Annual Wagner Lecture, the residency program, research into the treatment of Parkinson's disease and creation of a clinical database to track all neurosurgical procedures.

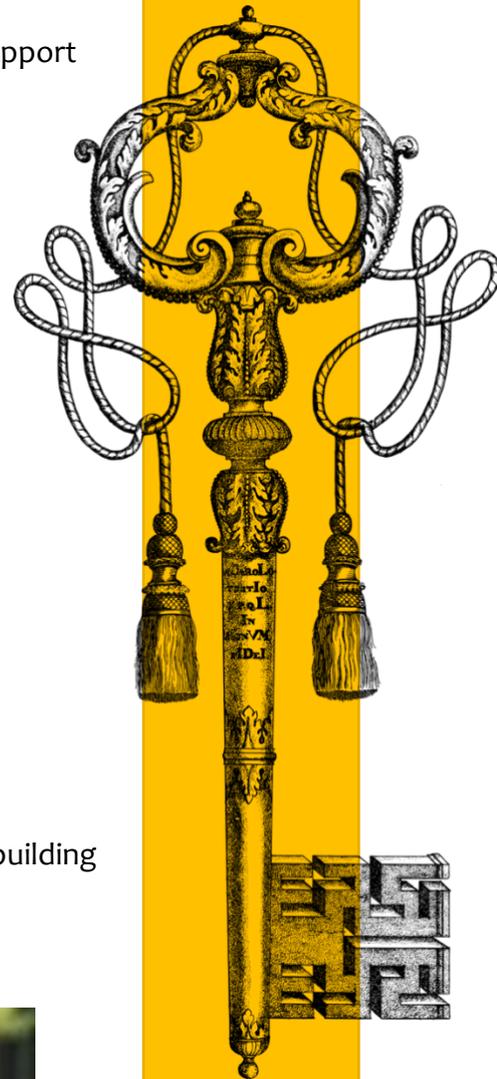
We are committed to providing the very best in neurological patient care and resident training Northern California. Donors' support helps us achieve that vision. We hope to support the following areas with your future philanthropic gifts to the Department of Neurological Surgery:

- Resident Education
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The UC Davis Department of Neurological Surgery honors the life and many wonderful contributions of **Julian Ray Youmans, M.D., Ph.D.**

Dr. Youmans founded the Department of Neurological Surgery at UC Davis Health and served as the Department Chair and Residency Training Director from 1967 to 1982. In 1991, he became a professor emeritus. He established the Julian R. Youmans Endowed Chair of Neurological Surgery in May 2012. In addition to authoring numerous publications (over 160), Dr. Youmans was the founding editor of the textbook “Neurological Surgery,” first published in 1973. It was subsequently renamed “Youmans Neurological Surgery” and is considered the foundation of guidance for nervous system surgery.

Dr. Youmans was a prominent neurosurgery leader whose work had significant impact, not only in the field of neurosurgery, but also in the evolution of national seat belt and driver safety legislation in the early 1960s and the establishment of helmet requirements for motorcyclists in the 1980s. We are deeply grateful for his numerous and distinguished contributions to this department, UC Davis and the field of neurological surgery. We celebrate his tireless dedication to furthering the careers of his trainees and mentees and his efforts to make all our lives longer and safer by supporting legislation to mandate the installation of seatbelts by automobile manufacturers. We share with his family and friends our deep appreciation of Dr. Youmans life and gratitude for his profound legacy.

2019 PUBLICATIONS

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2019 ACTIVE SPONSORED AWARDS & GRANTS

Astrocyte-synapse interactions in a rat model of Alexander disease

Berman R

NIH National Institute of Neurological Disorders and Stroke
April 2019 to March 2020

B7H1 mediated immunosuppression in glioma
Bloch O

NIH National Cancer Institute z
7R01CA16471414-07
June 2019 to June 2020

2019 NREF medical student summer
research fellowship

Bloch O
American Association of Neurological
Surgeons
April 2019 to September 2019

Representation of spatiotemporal
information in human episodic memory
and navigation
Ekstrom A, **Gurkoff G, Shahlaie K**
National Institutes of Neurological
Disorders and Stroke
NIH R01 NS 076856
July 2018 to June 2022

A concurrently controlled study of the
LimiFlex Paraspinous Tension Band in
the treatment of lumbar degenerative
spondylolisthesis with spinal stenosis
Kim K
Empirical Spine, Inc.
January 2018 to June 2027

Acute SCI study
Kim K
Mitsubishi Tanabe Pharma Corp.
July 2018 to July 2019

Hyperbranch Med Spine Dura Sealant
Study
Kim K
Hyperbranch Medical Technology, Inc.
October 2019 to October 2020

A prospective, randomized, multi-center,
open-label pilot study of infuse bone graft
with mastergraft strip and posterior
fixation for posterolateral fusion (PLF)
treatment of multi-level degenerative
lumbosacral spinal conditions
Kim K
Medtronic Sofamor Danek USA, Inc.
June 2017 to February 2020

Randomized, controlled, single-blind study
of probable benefit of the Neuro-Spinal
Scaffold™ for safety and neurologic
recovery in subjects with complete
thoracic AIA A spinal cord injury as
compared to standard of care
Kim, K

Invivo Therapeutics Corporation
August 2018 to August 2020

A multicenter, randomized, doubleblind,
sham-controlled, comparative
study of SI-6603 in subjects with lumbar
disc herniation (Phase 3)
Kim K, Copenhaver D
Seikagaku Corporation
July 2018 to May 2021

Confirmatory clinical study to support
the effectiveness and safety of Oxiplex®
for the reduction of pain and symptoms
following lumbar surgery
Kim K, Ebinu J
Fziomed, Inc.,
September 2018 to September 2021

Tools and services for designing
methodologically rigorous animal studies
Lyeth B
Stochastech Corporation
October 2018 to April 2019

Imaging of glial activation and risk for
post-traumatic epilepsy
DoD Congressional Directed Medical
Research Program
Martin R, Zimmermann L, Gurkoff G,
Badawi R, Harvey D
August 2019 to August 2022

Electrocorticography of human prefrontal
cortex during value-based decision-making
Saez, I
NIH National Institute of Mental Health
5K01MH108815-03
April 2019 to July 2020

Deep brain stimulation of the medial
septal nucleus in epilepsy
Shahlaie K
UC Davis School of Medicine Dean's
Grant 2018 to 2020

Intracranial electrode implantation to
deliver spherical tumor treatment fields
therapy for management of glioblastoma
multiforme
Shahlaie K
UC Davis Comprehensive Cancer Center
July 2018 to June of 2019

Pilot funding for investigators in
oncology

Shahlaie K
CCSG Institutional Research Grant
UC Davis Comprehensive Cancer
Center January 2018 to December 2019

Interferometric near-infrared
spectroscopy for tissue flowmetry and
oximetry
Srinivasan V, **Lyeth B**
National Institute of Neurological
Disorders and Stroke
NIH 5 R21 NS105043-02
September 2018 to August 2019

The behavioral, neuroanatomic, cellular,
and molecular impact of maternal
autoantibodies in a rat model of autism
spectrum disorder
Van de Water J, **Berman RF**
Robert Landreth Family Fund
July 2018 to June 2019

Functional vascularization of human
brain organoids
Waldau B
Cellular Therapy Training Program, CIRM
Alpha Stem Cell Clinics
October 2018 to June 2020

Mechanism of memory decline after
intraventricular hemorrhage
Waldau B
Ko8, National Institutes of Health
April 2018 to March 2020

Brain oxygen optimization in severe TBI
Phase-3 (BOOST-3)
Zimmermann L
University of Michigan
SUBK10418CSPR-002
July 2018 to June 2019

The epilepsy bioinformatics study of
antiepileptogenic therapy (EpiBioS4Rx)
NIH National Institute of Neurological
Disorders and Stroke
Zimmermann L, Martin R, Girgis F,
Shahlaie K, Seyal M, Kennedy J
January 2017 to November 2019



Thank you for inspiring us to accomplish more!

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