

UCSF Neurosurgery News

UCSF Department of Neurological Surgery



Volume 17

Training Future Leaders in Neurosurgery

The University of California, San Francisco (UCSF) was one of the earliest training grounds for neurosurgery in the United States. As early as 1913 surgical residents gained exposure via preceptorship to operations involving the brain and spinal cord, and in 1934 UCSF gained approval from the American Medical Association Council on Medical Education and Hospitals for a training program in neurosurgery.¹

What began as a three-year clinical training program is today a seven-year immersion into subspecialized care and research. The physician network Doximity ranks it as the top neurosurgical residency training program (by reputation) in the United States, and the neurology and neurosurgery services at UCSF Medical Center are ranked third in the nation by US News and World Report.^{2,3}

“The Department’s residency program has a long tradition of excellence and about 75% of our graduates go on to positions in academic neurosurgery,” says Residency Program Director Michael McDermott, MD. “Fifteen of our graduates have also gone on to serve as neurosurgery department chairs, which is an exceptional achievement.”

Broad Exposure to Difficult Cases

Neurosurgical residents at UCSF rotate through five hospitals with five unique patient populations, giving them exposure to challenging cases of every

type: neurocritical care and trauma, spinal disorders, movement disorders, epilepsy, pediatric neurosurgical disorders, cerebrovascular disorders, peripheral nerve and pain disorders, and brain tumors.

“By far the best part of training at UCSF is the chance to learn from faculty who are surgical masters and leaders in their field,” says chief resident Stephen Magill, MD, PhD. “The faculty are strong in all areas of neurosurgery, which has provided a high level of training across the breadth of neurosurgery, allowing us to be well prepared to go into any subspecialty.”

There is also an optional 2-month endovascular rotation with the neuroradiology group at Kaiser Sacramento for those interested in specializing in cerebrovascular surgery, giving them experience with both microsurgical and endovascular techniques and exposure to a different model of care.

Rich Research Opportunities

In 1969, one full year of research was added to the program – a component of training that is still emphasized today. The Department of Neurological Surgery receives more NIH funding than any other academic neurosurgery department in the country,⁴ and residents choose from a wide variety of research opportunities and scientific mentors.

cont. on page 3

Neurosurgery Residency Program at a Glance



#1

Neurosurgery residency program in the U.S.²



#1

NIH-funded academic neurosurgery program⁴



#3

Best hospitals for neurology & neurosurgery³



15

Alumni to serve as U.S. neurosurgery department chairs



5

Hospitals provide exposure to 5 unique patient populations

Looking to the Future

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In this issue we feature our top-ranked neurosurgery residency program and some of the achievements of our fantastic residents. But the Department's extensive educational programs reach much further, ranging from internships for medical students to in-depth clinical fellowships in six subspecialties.

We also offer many opportunities in the lab for pre- and postdoctoral scholars, including a training grant in translational brain tumor research funded by the NIH. In our local community we have partnered with the organization Oasis for Girls to create an internship that exposes teens to careers in health care (page 10). Farther afield, we offer an international scholars program for visiting scholars to observe in the operating room or conduct research with one of our faculty members.

I invite you to find out more about educational opportunities in the Department by visiting our website at neurosurgery.ucsf.edu.



Mitchel S. Berger, MD
Berthold and Belle N. Guggenheimer
Professor and Chair
Director,
Brain Tumor Center
Department of
Neurological Surgery, UCSF

2018-19 Resident Awards

John Andrews, MD

- 2019 Krevans Award for Excellence in Patient Care, Zuckerberg San Francisco General Hospital

John Burke, MD

- Best Junior Resident Translational Research Paper, UCSF Neurosurgery

Andrew Chan, MD

- Journalistic and Academic Neurosurgical Excellence (J.A.N.E.) Award, 2019 AANS/CNS Joint Section on Disorders of the Spine and Peripheral Nerves Meeting
- Charlie Kuntz Scholar Award, 2019 AANS/CNS Joint Section on Disorders of the Spine and Peripheral Nerves Meeting
- Harold Rosegay Award, San Francisco Neurological Society
- Top Abstract Presentation Award, 2019 AANS/CNS Joint Section on Disorders of the Spine and Peripheral Nerves Meeting
- Donald O. Quest Resident Clinical Science Award, 2018 AANS Annual Meeting

Darryl Lau, MD

- Top Poster Award, 2019 AANS Meeting
- Charlie Kuntz Scholar Award, 2018 AANS/CNS Joint Section on Disorders of the Spine and Peripheral Nerves Meeting



Stephen Magill, MD, PhD

- Tumor Paper of the Year Award, Congress of Neurological Surgeons
- Top Poster Award, 2018 AANS/CNS Joint Tumor Section Meeting
- Best Senior Resident Human Basic Science Research Paper, UCSF Neurosurgery

Kunal Raygor, MD

- William H. Sweet Young Investigator Award, Congress of Neurological Surgeons
- Best Junior Resident Clinical Research Paper, UCSF Neurosurgery

Michael Safaee, MD

- Resident Scholar Award, San Francisco Neurological Society

Jacob Young, MD

- 2018 Krevans Award for Excellence in Patient Care, Zuckerberg San Francisco General Hospital

John Yue, MD

- Top Scoring Abstract, North American Brain Injury Society

For sixth-year resident Ethan Winkler, MD, PhD, whose research has covered genetic variations in arteriovenous malformations and a blood test for concussion, access to a group of scientific collaborators across disciplines was one of the most attractive features of residency at UCSF.

“The high clinical volume at UCSF is greatly enriched by the incredible research opportunities,” he says. “The level of collaboration between clinicians and basic scientists in the Department is unparalleled and this interface between science and surgery is really where the advances are being made.”

The combination of this vast clinical and research experience allows UCSF residents to build a large body of work to advance their careers following graduation. In a 2017 study, residents in the Department of Neurological Surgery were found to have the highest collective H-index of any academic neurosurgery program in the country, reflecting the high number of articles they contribute to the scientific literature.⁵

Well-Being Initiatives

In the past several years the Department has adopted several new initiatives to ease some of the stress and challenges that come with training in one of medicine’s most rigorous disciplines.

A mentorship program was formalized that pairs junior and senior residents to build in an extra layer of support and offer hard-won advice. “I’m able to convey some of the things I’ve learned, such as building a body of work with a coherent storyline,” says Winkler, who mentors PGY2 resident John Yue, MD. “I can also help troubleshoot some of the common issues that come up in the first few years of residency.”

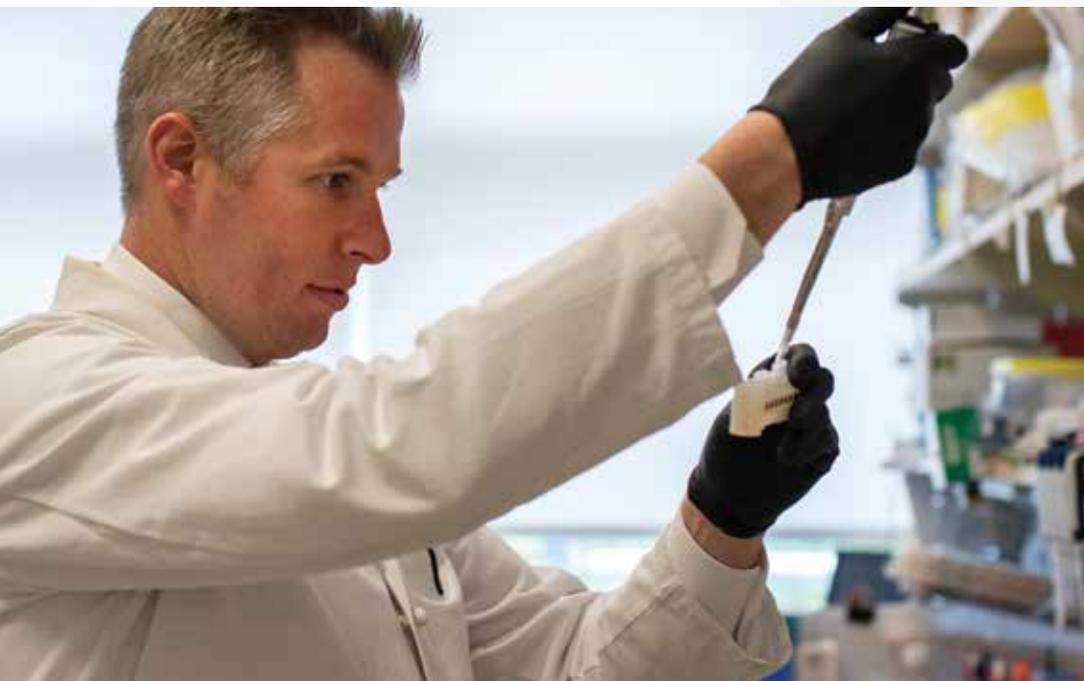
Left: Ethan Winkler, MD, PhD, in the lab studying the molecular genetics of cerebrovascular disorders. Right: Andrew Chan, MD, and Ramin Morshed, MD, hang at a resident outing to the climbing gym. Page 1: Young Lee, MD, scrubs in for a spinal deformity surgery.

The Career Development Program, led by Line Jacques, MD, associate director of the residency program and chief of peripheral nerve and pain surgery, is also designed to offer support and help current neurosurgery residents advance their careers. The program covers topics such as time management, fellowship applications, and networking.

“At UCSF it’s not only about excellence in surgical training,” says McDermott. “We also teach our residents to be researchers, administrators, and mentors, as well as thought leaders around broader issues with societal health implications, such as economic disparities.”

Beyond a well-rounded education, however, what attracts many residents to the program is the same as it was in the 1930s: tackling some of the most complex problems in medicine. For Magill, who plans to specialize in the treatment of brain tumors, it’s a privilege to be involved in helping patients who are grappling with these serious conditions. “I really enjoy taking care of patients with brain tumors because we come alongside them at such a difficult time in their lives, meet them where they are at, and care for them through their entire treatment.”

1. Council on Medical Education and Hospitals of the American Medical Association: Hospitals approved for residencies in specialties. **JAMA** 1934;103:597-608.
2. Directory of residency programs by specialty. Doximity. <https://residency.doximity.com/programs/1612-university-of-california-san-francisco-neurological-surgery>. Accessed May 20, 2019.
3. Best hospitals for neurology & neurosurgery. US News and World Report. <https://health.usnews.com/best-hospitals/rankings/neurology-and-neurosurgery>. Accessed May 20, 2019.
4. Ranking tables of NIH funding to US medical schools in 2018. Blue Ridge Institute for Medical Research. http://www.brimr.org/NIH_Awards/2018/NIH_Awards_2018.htm. Accessed May 20, 2019.
5. Sarkiss CA, Riley KJ, Hernandez CM, et al. Academic productivity of US neurosurgery residents as measured by H-index: Program ranking with correlation to faculty productivity. **Neurosurgery** 2017;80(6):975-984.



Meet the Residency Program Directors

4



Michael McDermott, MD
Professor and Vice Chair of
Neurological Surgery
Wolfe Family Endowed Professor
in Meningioma Research
Residency Program Director

What does your Role as Leadership for the Residency Program Entail?

MM: As director I am responsible for all administrative aspects of running the training program as it relates to the GME office at UCSF and with the ACGME and RRC-Neurosurgery nationally. I manage the resident research day, residency match, annual program review, and, along with the associate directors, participate in the clinical competency and resident education committees.

LJ: In my role, I am responsible for the clinical competency committee, which ensures residents are reaching certain milestones, bootcamps for PGY1 and PGY2 students, and the well-being committee. We all assist with any issues the residents have and actively participate in the recruitment of new residents. We also participate at a national level by being involved in discussions about the evolution of resident education that are taking place within organized neurosurgery.

SHJ: I co-direct the resident education committee, which is responsible for organizing the education curriculum and programs for our residents. Our job is to ensure that each resident has the proper guidance and supervision in all aspects of their medical training.



Line Jacques, MD
Professor of Neurological Surgery
Chief of Pain and
Peripheral Nerve Surgery
Residency Program
Associate Director

What are the advantages of training at UCSF?

MM: Some of the biggest advantages are case volume, depth of expertise across multiple disciplines, and graduated independence in surgical experience. Being able to associate with other strong partners in neurology, neuroradiology, pathology, and the Brain Tumor Center are huge advantages for those who are seeking to discover, create, and advance treatments.

LJ: UCSF gives residents the opportunity to become competent in any neurosurgical subspecialty through experience with a large variety of cases and training from amazing faculty.

SHJ: The multidisciplinary team-based approach to patient care and scientific research has been an integral part of UCSF neurosurgery for many years and our residents greatly benefit from working within this environment. Everyone works together including nurses, allied health professionals, physicians, social workers, and support staff to improve the lives of our patients.



Shawn Hervey-Jumper, MD
Associate Professor of
Neurological Surgery
Residency Program
Associate Director

What do you look for in applicants to the program?

MM: Honesty, a track record of hard work and success, good interpersonal skills, and a demonstrated ability to be part of a team.

LJ: Applicants need to be able to work independently and be honest and hard-working.

SHJ: Above everything else, a neurosurgery resident must be passionate about people. Our patients are going through an enormous amount of stress and anxiety due to their illness. Pain, altered sensation, weakness, and changes in one's ability to interact with the world often times results in personal, financial, and professional setbacks. This is the backdrop by which we take care of our patients, therefore it's critically important that our residents are passionate about helping to ease these burdens. It's caring about people that will often spillover into the relentless search to better understand a patient's disease and design new treatments.

What do you think will be the biggest changes in neurosurgery training over the next decade?

MM: I believe another round of transitions in training will come to focus on physician well-being. We will get to the realization of a period of "core" training followed by focused education and in many cases postgraduate training at other institutions for those interested in academics. I believe we should try to go back to a period of 6 years of residency training and that CAST fellowships should be in the first year after PGY6 and graduation. I also think we will see more changes in technology with 3D models and better surgical simulators.

LJ: There are challenges in aligning the need to deliver care in a general neurosurgery context with a training that is more subspecialized, and I think that academic training will need to prepare residents for both career courses. The shorter working hours with shifts, as a result of duty hour restrictions, instead of providing continuity of care to patients is also a challenge. It is our duty train the residents appropriately so that their safety and that of our patients is the top priority.

SHJ: The requirement that all neurosurgery residents have sufficient time off duty, outside of the hospital, is critically important and improves patient care. However, one

challenge of this system of training residents has been a lack of continuity of patient care. We know from experience that it is important for residents to follow a patient's clinical course longitudinally from the point of diagnosis, through surgical intervention, and throughout the recovery period. Given these challenges it's important that today's residents receive educational experiences designed specifically to meet the needs and learning styles of today. It's critical that we do not rely on old models and past experiences.

UCSF was the first Neurosurgery Department in the nation to make patient safety and quality improvement a formal part of residency training. Why was that important and how has it enhanced the way trainees think about patient care?

MM: It sent a message that this was the most important factor that we were taking for granted and we were not doing enough in a formal way to make residents realize how important all aspects of patient care and safety are. Now all residents must complete a quality and safety project before they graduate.

SHJ: Although many institutions seek to understand disease and offer novel treatments, the study of patient safety is not always a focus. It is very unique that our residents not only attend monthly training sessions, seminars, and lectures dedicated to patient safety, but also study a patient safety problem and contribute to the body of medical research in this arena. We also have a patient safety officer who meets with our residents regularly regarding each patient safety project to review their data as well as recently published data, and we are confident that these efforts improve the health and well-being of our patients.

Neurosurgery residents with associate program director Line Jacques, MD, at her annual peripheral nerve lab.



Residents in the UCSF Department of Neurological Surgery



Darryl Lau, MD
PGY7



Stephen Magill, MD, PhD
PGY7



Caleb Rutledge, MD
PGY7



Andrew Chan, MD
PGY6



Michael Safaee, MD
PGY6



Ethan Winkler, MD, PhD
PGY6



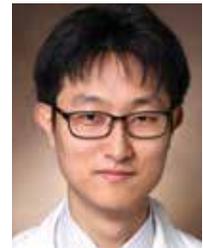
John Burke, MD, PhD
PGY5



Taemin Oh, MD
PGY5



Kunal Raygor, MD
PGY5



Young Lee, MD
PGY4



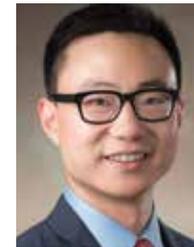
Ramin Morshed, MD
PGY4



Justin Scheer, MD
PGY4



Winward Choy, MD
PGY3



Alex Lu, MD
PGY3



Jacob Young, MD
PGY3



John Andrews, MD
PGY2



Thomas Wonzy, MD
PGY2



John Yue, MD
PGY2

2019 Match interns



Cecilia Dalle Ore, MD
PGY1



Anthony Lee, MD
PGY1



Arati Patel, MD
PGY1

PGY: Post Graduate Year

Synthetic Speech Generated from Brain Recordings

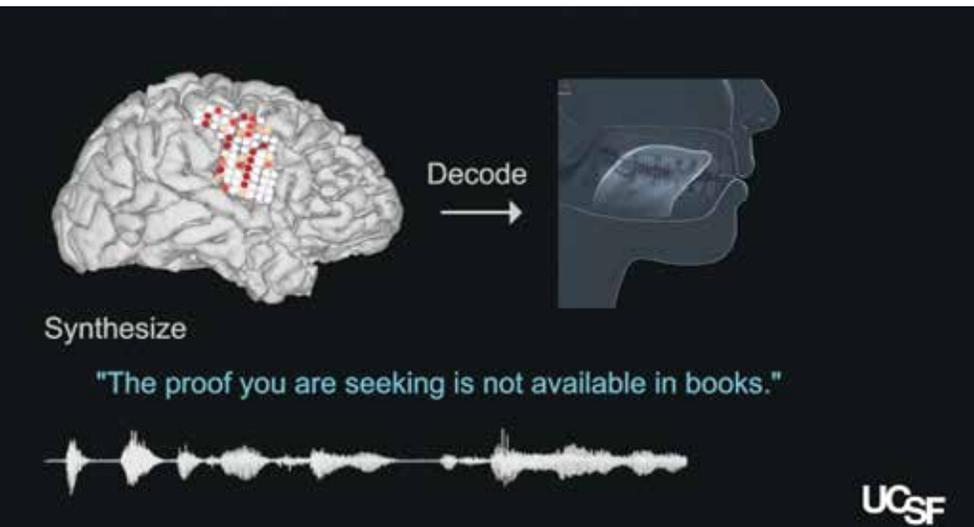
New research from the lab of neurosurgeon Edward Chang, MD, demonstrated that it is possible to generate natural-sounding synthetic speech using a brain-machine interface that decodes activity from the brain's speech centers. Speech scientist Gopala Anumanchipalli, PhD, and bioengineering graduate student Josh Chartier, are co-first authors on the article, published in *Nature*.

The article builds on the Chang lab's previous work describing how the brain's speech centers choreograph the movements of the lips, jaw, tongue, and other vocal tract components to produce fluent speech. They realized

that previous attempts to directly decode speech from brain activity might have met with limited success because these brain regions do not directly represent the acoustic properties of speech sounds, but rather the instructions needed to coordinate the movements of the mouth and throat during speech. The study was conducted in research participants with intact speech, but the technology could one day help people who have lost the ability to speak due to paralysis and other forms of neurological damage.

Anumanchipalli GK, Chartier J, Chang EF. Speech synthesis from neural decoding of spoken sentences. *Nature* 2019;568(7753):493-498.

Gopala Anumanchipalli, PhD, holding an example array of intracranial electrodes of the type used to record brain activity.



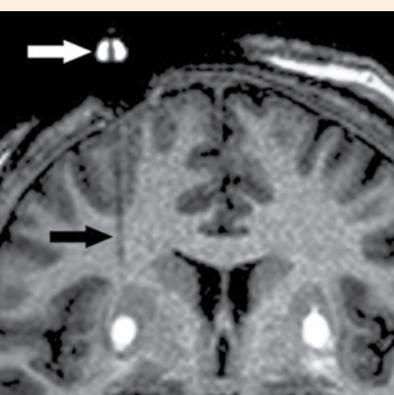
Gene Therapy Study Shows Initial Promise for Parkinson's Disease

A gene therapy trial led by UCSF showed promising results for patients with Parkinson's disease. Co-authors Paul Larson, MD, Krystof Bankiewicz, MD, PhD, and Chadwick Christine, MD, found that delivery of an adeno-associated virus encoding AADC resulted in stable expression and improvements in symptoms.

Fifteen patients were able to acquire up to three hours daily of extra "on-time" – the period in which their medication was effective without causing the involuntary muscle movements known as dyskinesia, a frequent side effect of longer-term medication use. Additionally, patients were able to decrease their Parkinson's medication by up to 42 percent, depending on the amount of the brain that was infused and the dose of therapy.

This Phase I trial is also the first gene therapy trial for Parkinson's disease, in which intraoperative MRI-guided monitoring was used to infuse treatment directly into the brain.

Christine CW, Bankiewicz KS, Van Laar AD, Richardson RM, Ravina B, Kells AP, Boot B, Martin AJ, Nutt J, Thompson ME, Larson PS. Magnetic resonance imaging-guided phase 1 trial of putaminal AADC gene therapy for Parkinson's disease. *Ann Neurol* 2019;85(5):704-714.



A catheter (black arrow) transports the gene through a small hole in the skull (white arrow) to the putamen area of the brain.

Brain and Spinal Injury Center Leads a Network of Hospitals Performing Clinical Trials for TBI Patients, Incorporates New Biomarkers of Injury into Studies



Geoffrey Manley, MD, PhD

A UCSF-led consortium has received a \$26.2 million award from the U.S. Army Medical Materiel Development Activity to develop treatments for traumatic brain injury. The Transforming Research and Clinical Knowledge in Traumatic Brain Injury Network, known as TRACK-TBI NET, will lead clinical trials of phase II drugs tested nationwide in 18 hospitals with Level 1 trauma centers. The trials will match patients with a treatment according to findings on imaging, such as hemorrhage, brain bruising or neuro-inflammation, as well as the presence of blood-based biomarkers.

“We are entering a new era of precision medicine in the research and treatment of TBI,” said Geoffrey Manley, MD, PhD, chief of neurosurgery at Zuckerberg San Francisco General Hospital and professor in the UCSF Department of Neurological Surgery. “Using novel and developing tools in the fields of imaging, biomarkers, and genomics, we are better able to diagnose patients and test treatments to relieve the substantial burden that patients carry for life.”

Imaging Biomarkers

A new software module to evaluate MRI scans for TBI patients has been qualified by the U.S. Food and Drug Administration as a medical device development tool – the third such tool to be qualified and the first of a biomarker test tool type.

The OsiriX CDE Software Module was created from the TBI Endpoints Development Initiative – a public-private partnership led by UCSF with the goal of examining data from thousands of patients with brain injury to identify and validate effective measures or “endpoints” of brain injury and recovery.

The new tool provides a standardized way to classify brain injuries using Common Data Element (CDE) criteria and to label abnormalities on MR images, increasing inter-reader reliability. Neuroradiologists can use the new tool to better stratify patients and enrich clinical trials of new therapies.

Awake Minimally Invasive Spine Surgery

UCSF neurosurgery residents Andrew Chan, MD, and Winward Choy, MD, UCSF Spine Fellow Leslie Robinson, MD, and neurosurgery faculty Catherine Miller, MD, and Praveen Mummaneni, MD, report on the successful use of a novel technique for awake, minimally invasive transforaminal lumbar interbody fusion (TLIF). One of the keys to this new approach is a long-acting, local anesthetic called liposomal bupivacaine, which was recently approved by the U.S. Food and Drug Administration. UCSF is one of the first medical centers in the U.S. to offer this option.



Chan AK, Choy W, Miller CA, Robinson LC, Mummaneni PV. A novel technique for awake, minimally invasive transforaminal lumbar interbody fusion: technical note. *Neurosurg Focus* 2019;46(4):E16.

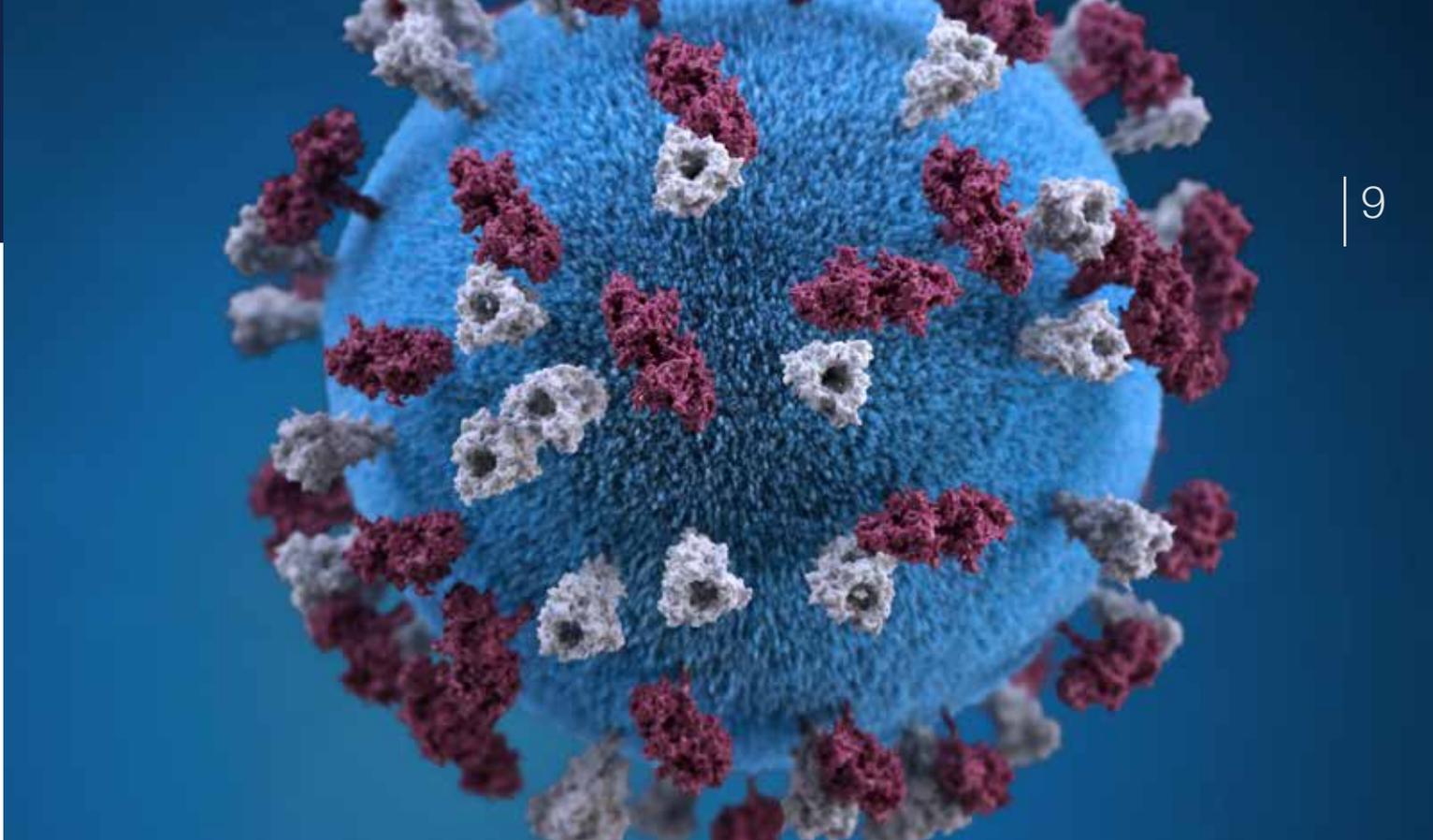


Illustration of a measles virus particle. A modified measles virus is being used to target recurrent medulloblastoma in a clinical trial at UCSF.
Image: Alissa Eckert, CDC.

New Grants Fund Projects on Immunotherapy for Brain Tumors

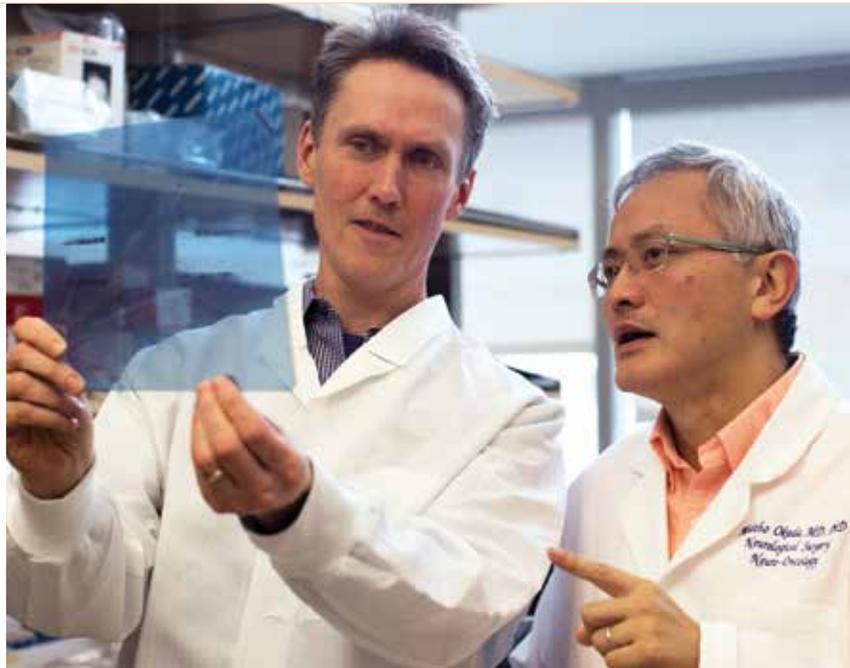
UCSF Brain Tumor Center researchers Aaron Diaz, PhD, Noriyuki Kasahara, MD, PhD, and Sabine Mueller, MD, PhD, recently received a Translational Team Science Award from the U.S. Department of Defense to support their immunotherapy studies on pediatric brain tumors. The Diaz, Kasahara, and Mueller labs will investigate interactions between oncolytic viruses and local immune cells, and also determine whether immune-checkpoint

inhibitor drugs can enhance the effects of oncolytic virus therapy in medulloblastoma. Specifically, they aim to identify combination strategies for MV-NIS and Toca 511, two oncolytic virus therapies with clinical trials underway at UCSF. Toca 511, an engineered retrovirus developed by Kasahara, recently received a Breakthrough Therapy Designation from the FDA for recurrent high-grade glioma.

Joseph Costello, PhD, and Hideho Okada, MD, PhD

UCSF researchers Joseph Costello, PhD, Hideho Okada, MD, PhD, and Aaron Diaz, PhD, were awarded Brain Tumor Funders' Collaborative (BTFC) grants for their innovative work on immunotherapy strategies. The BTFC, which includes six private funders of brain tumor research, awarded \$3 million in grants to four teams of researchers and clinicians working on immunotherapy for brain tumors. UCSF faculty are involved in two of these four projects.

The Costello and Okada Labs are focused on developing personalized neoantigen-based treatment vaccines for low-grade glioma, while the Diaz Lab, in collaboration with the Kohanbash Lab at University of Pittsburgh, is investigating T-cell receptor therapy for pediatric patients with high-grade glioma and diffuse intrinsic pontine glioma.





From left to right, ENVISION Spring 2019 Graduates: (top row) Iris Tornez, Niyasha Scott, Malialita Mateo, Jasmine Thoelecke, Dana Ott, Cheyenne Douglas, Brenda Gil, Roxanna Ramirez, Michelle Yu; (bottom row) Marisa McFarlane (UCSF Community Internship Specialist), Ah'Maya Parker, Vianey Marquez, Marielos Carmona, An Bui (Oasis for Girls, Program Manager).

Internship Program Introduces Teens to Health Care Careers

The Department of Neurological Surgery recently celebrated the graduation of our ENVISION interns. ENVISION is an internship program, in partnership with the non-profit organization Oasis for Girls, to expose young high school girls of color from under-represented communities in San Francisco to careers in health care. Since the program began in 2017, we have hosted nearly 50 interns.



Legendary NFL coach Steve Mariucci, formerly of the San Francisco 49ers, visited the neurosurgery residents to discuss concussion and player safety.

David Wu, a graduate student in UCSF's Biomedical Science Program, won first place at this year's UCSF Grad Slam. His talk was about developing a blood test for concussion – work being conducted with neurosurgery faculty Daniel Lim MD, PhD, and Geoffrey Manley, MD, PhD, and neurosurgery resident Ethan Winkler, MD, PhD.



Ann Poncelet, MD, director of the Academy of Medical Educators, Manish Aghi, MD, PhD, and Catherine Lucey, MD, vice dean for education.

Manish Aghi, MD, PhD, was elected to the UCSF Academy of Medical Educators in recognition of his educational leadership. Aghi is faculty advisor to the Neurosurgery Interest Group for UCSF medical students, and the first neurosurgery faculty to be inducted into the Academy.

The Aghi Lab also received three competitive research awards:

- Tumor cell and microenvironment changes causing antiangiogenic therapy resistance (R01 award from NINDS)
- Modeling and druggable-genome screening of glioblastoma invasion using regional biopsy-guided biomaterials systems (R01 award from the NCI's Cancer Tissue Engineering Collaborative)
- Defining targetable pro-tumor effects of neutrophils in GBM (University of California Research Coordinating Committee [CRCC] Research Grant)



Elina Kostyanovskaya, a graduate student in the UCSF Developmental and Stem Cell Biology Graduate Program, recently won two prestigious fellowships: a three-year National Defense Science and Engineering Graduate Fellowship and a National Science Foundation Research Fellowship. Kostyanovskaya received these awards for her graduate work on new DNA repair processes in the lab of Bjoern Schwer, PhD.



Philip Starr, MD, PhD, was awarded competitive renewal of an NIH R01 award studying the motor network in Parkinson's disease. Starr and his colleagues also recently performed the world's first implant of Medtronic Summit RC+S, a second-generation neural interface that can carry out chronic sensing and wireless streaming of neural signals.

Lee Tan, MD, was selected as the 2019 Cervical Spine Research Society (CSRS) traveling scholar and was sent on a 4-week international trip in India, China, Korea, and Japan to visit different medical centers and exchange ideas on cervical spine care. CSRS selects two spine surgeons from North America and South America every two years to receive this award.

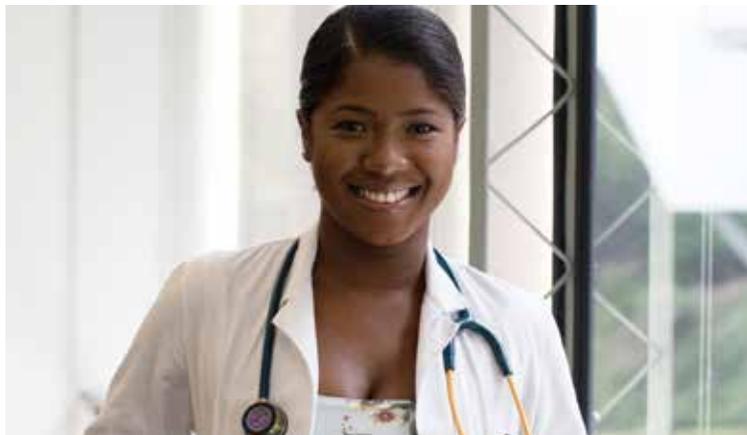
Sajad Hamid, postdoctoral scholar in the lab of Daniel Lim, MD, PhD, received a Keystone Symposia Future of Science Fund Scholarship to present his work on mapping of nuclear lamina-associated genome organization in developing mouse and human brain at the Keystone symposia: "3D Genome; Gene Regulation and Disease" in Alberta, Canada.



Doris Wang, MD, PhD, was awarded a NINDS Neurosurgeon Research Career Development Program (NRCDP) K12 award and the Burroughs Wellcome Fund Career Award for Medical Scientists. Wang's research focuses on brain network physiology and the neural basis of motor learning with the goal of improving rehabilitation strategies for Parkinson's disease and other movement disorders.

Shawn Hervey-Jumper, MD, was awarded a NIH K08 award to examine intratumoral functional connectivity in adults with astrocytic WHO II-III glioma. This study will focus on the bidirectional mechanisms by which gliomas interface with functional cognitive networks, with the goal of better predicting which patients are at greatest risk for language deficits.

Neurosurgery resident Andrew Chan, MD, was invited to give three talks at the 2019 American Association of Neurological Surgeons meeting in San Diego. Topics included sexual function following surgery for degenerative lumbar spondylolisthesis, a comparison of procedures for the same condition, and predictors of best outcomes following minimally invasive surgery for grade 1 lumbar spondylolisthesis.



UCSF medical student Sheantel Reihl received the Paul and Daisy Soros Fellowship for New Americans for her work with neurosurgeon Shawn Hervey-Jumper, MD, on health access and equity in brain tumor clinical trial enrollment.

Upcoming Neurosurgery CME Courses

Neurosurgery Update in Sonoma: August 1-3, 2019

This two-day course provides the latest updates and recent advances in the field of neurosurgery.

Spinal Surgery Lab in Las Vegas: November 8-9, 2019

This course is directed towards residents, fellows and spine surgeons to teach them advanced techniques for complex spinal disorders. Participants will review and practice surgical principles in the treatment of adult spinal deformities and tumors in a hands-on bioskills lab.

Register for CME courses at: meded.ucsf.edu



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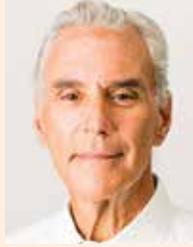
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Adult Brain Tumors



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Adult Neuro-oncology



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Napa Valley Clinic tel: 707-554-8273 / fax: 707-642-8273

Spine Center tel: 415-353-2739 / fax: 415-353-2176

Movement Disorders



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Daniel Lim, MD, PhD
daniel.lim@ucsf.edu



Philip Starr, MD, PhD
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Selected Recent Publications from the Department of Neurological Surgery

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