



Department of Neurosurgery
Residency Program



“WE HAVE A LONG HISTORY OF TRAINING THE NEXT GENERATION OF ACADEMIC NEUROSURGICAL LEADERS. The combination of our outstanding clinical and technical expertise with unmatched research training is the foundation on which academic leaders are born. OUR RESIDENCY PROGRAM IS BUILT TO DEVELOP THOSE LEADERS.”

CHAIR GREGORY J. ZIPFEL, MD

*Ralph G. Dacey Distinguished Professor of Neurosurgery
Neurosurgeon-in-Chief, Barnes-Jewish Hospital*



WashU provided me with the opportunity to grow my career, not only by teaching me how to become a strong, technical neurosurgeon, but by guiding me into developing strong research and leadership skills.

CHAD WASHINGTON, MS, MD, MPH

Professor and Chair of Neurosurgery, Director of the Stroke Center, University of Mississippi Medical Center



Every faculty member had a vested interest in my success and did their absolute best to give me all the right tools, in the operating room and out, to be a great neurosurgeon.

AMY LEE, MD, FAANS

*Professor of Neurosurgery, University of Washington in Seattle
Pediatric Division Chief, Seattle Children's Hospital*



Training was rigorous, and we learned early on that responsibility for all aspects of patient care was necessary for the best outcomes. I learned the best of technical skills, the

judgment to make wise recommendations and quickly and effectively assess the needs of a patient. These skills generalized to all aspects of leadership throughout my career.

JEFFREY OJEMANN, MD

*Vice Chair and Professor of Neurosurgery
Richard G. Ellenbogen Endowed Chair in Pediatric Neurosurgery
Chief Medical Officer and Senior Vice-President at Seattle Children's Hospital*



WashU residency was a fantastic experience. The training was both broad and deep. We were trained to be excellent operative neurosurgeons and clinicians.

Hard work, attention to detail and a holistic approach to the patient were always a part of our culture. Great people and a great place to train.

WILLIAM W. ASHLEY, JR., MD, PHD, MBA, FAANS

*Director, Cerebrovascular, Endovascular and Skull Base Neurosurgery
Chief, Neurointerventional Radiology
Sinai Hospital of Baltimore and LifeBridge Health System
Clinical Professor, Department of Neurosurgery at George Washington University*



“WashU is an incredible place to train for someone who is interested in becoming a surgeon scientist. Combining an incredibly busy

clinical service within the setting of an institution and department with a rich history of biomedical research provides a strong foundation to build my career.”

CHARISE GARBER, MD, PHD

*PGY5 Resident
MD, Washington University School of Medicine*

Neurosurgery





“AT WASHU, WE INSTILL OUR RESIDENTS WITH THE GRIT, SKILL, AND COMPASSION TO BUILD CAREERS AS EXCELLENT CLINICIANS AND LEADERS. OUR GOAL IS TO ENRICH EACH RESIDENT ALONG THEIR PERSONAL PATH OF GROWTH, PROVIDING THE BEST MENTORSHIP, OPPORTUNITIES, AND CLINICAL EXPERIENCE ALONG THE WAY.”

JOSHUA W. OSBUN, MD

*Professor of Neurosurgery, Radiology and Neurology
Vice-Chair of Education
Program Director, Neurosurgery Residency
Director, Cerebrovascular Surgery and Interventional Neuroradiology*

Outstanding Training

SUPPORTED BY ONE OF THE TOP HOSPITALS IN THE U.S., SUBSTANTIAL RESEARCH FUNDING, SOME OF THE MOST CREATIVE MINDS IN ACADEMIC MEDICINE, AND THE LATEST TECHNOLOGIES, OUR RESIDENTS LEARN HOW TO STUDY AND SOLVE NEUROSURGICAL PROBLEMS AT THE VERY HIGHEST LEVEL. All of this takes place at the top-ranked Washington University School of Medicine in St. Louis, Mo. Our culture of excellence is founded in our unique approach: a program intentionally designed to give residents one-on-one mentorship from exceptional faculty members. This personal level of training prepares residents for long, successful, and fulfilling careers in academic and clinical medicine.

Dedicated to Developing World-Class Surgeons

Our residents are exposed to high clinical volume and thorough immersion in every subspecialty including pediatrics. They learn directly from our faculty members who are all experts in their respective fields.

Continuity of Training

Our program gives residents continuity in each subspecialty in order to build their confidence, earn trust from the attending physicians, and gain autonomy. Our residents spend four-month-long rotations working with the same group of attendings within a subspecialty. This continuity instills a deep understanding of the disease processes encountered by neurosurgeons across subspecialties.

Resident Curriculum

Resident education is one of the centerpieces of the department. Surgical case conferences, grand rounds, a longitudinally designed curriculum conference, journal club, and surgical dissection experiences comprise the weekly didactic structure of the program.

RECOGNIZED AS ONE OF THE BEST IN THE WORLD, the Washington University Neurosurgery Residency training program prepares residents for careers as neurosurgeons and neurosurgeon-scientists.



“The infrastructure of our program allows residents to complement their clinical interests with their research interests. I received unparalleled support from the faculty and my co-residents, and the training more than prepared me to transition into the next phase of my academic career.”

DANIEL M. HAFEZ, MD, PHD
*WashU Neurosurgery Residency Alumnus
Assistant Professor of Neurosurgery
Associate Program Director, Neurosurgery Residency*

5,300+

NEUROSURGICAL CASES PER YEAR

16 R01 AWARDS

11 R01-FUNDED FACULTY

\$11 million

IN RESEARCH AWARDS IN FY23

R25 TRAINING GRANT TO SUPPORT NEUROSURGERY RESIDENT RESEARCH

14 FEDERALLY FUNDED LABORATORIES

#13 NEUROSURGERY RESEARCH DEPARTMENT IN THE COUNTRY BASED ON NIH FUNDING

NEUROSURGERY ALUMNI:

60%

IN ACADEMIC PRACTICE

40%

IN PRIVATE PRACTICE

85%

OF GRADUATES COMPLETE SUBSPECIALTY FELLOWSHIPS





Washington University School of Medicine has one of the MOST COMPREHENSIVE RESEARCH PROGRAMS IN THE COUNTRY.

DEDICATED RESEARCH PROGRAMS LED BY NEUROSURGERY FACULTY INCLUDE:

- ARTIFICIAL INTELLIGENCE
- BRAIN-COMPUTER INTERFACE
- BRAIN MAPPING
- BRAIN TUMOR IMMUNOTHERAPY
- BRAIN TUMOR METABOLISM
- BRAIN TUMOR MULTI-OMICS
- BRAIN TUMOR STEM CELLS
- CHIARI AND SYRINGOMYELIA
- DEVELOPMENTAL CSF DISORDERS
- DEVICE DEVELOPMENT
- ENTREPRENEURSHIP
- HUNTINGTON'S DISEASE
- LASER THERAPY FOR BRAIN TUMORS

- NANOTECHNOLOGY
- NEURAL PLASTICITY
- NEURAL NETWORKS
- NEUROGENETICS
- NEUROMODULATION (WEARABLE AND IMPLANTABLE)
- NEONATAL INTRAVENTRICULAR HEMORRHAGE/HYDROCEPHALUS
- PERIPHERAL NERVE INJURY AND NEUROPROSTHETICS
- SUBARACHNOID HEMORRHAGE, VASCULAR DEMENTIA
- SPINAL CORD INJURY
- TRANSLATION ULTRASOUND

OUR FACULTY AND RESIDENTS ARE INTEGRATED INTO MANY OF THE KEY RESEARCH AREAS AT THE MEDICAL SCHOOL, INCLUDING:

- BIOMEDICAL ENGINEERING
- CANCER BIOLOGY
- DEVELOPMENTAL BIOLOGY
- IMMUNOLOGY
- ENGINEERING
- GENETICS
- NEUROSCIENCE
- NEUROLOGY
- PEDIATRICS
- PSYCHIATRY
- RADIOLOGY

Innovative Research Opportunities

Resident research, funding, and awards

As part of our commitment to extensive research, WashU Neurosurgery residents are granted up to 24 months of protected research time. They are often awarded independent funding and fellowships including awards from the NIH, NREF, and other foundations. Residents also have the opportunity to participate in the department's prestigious R25 Resident Research Education Program Grant funded by the NIH.

WashU Neurosurgery is consistently ranked as a top training program in average H-index ranking of our residents, making it one of the most productive in the country. Recent graduates have had high-quality publications in some of the most elite scientific journals including *Science*, *Nature Medicine*, *New England Journal of Medicine*, *JAMA*, *Stroke*, and *Journal of Neuroscience* and the highest-impact neurosurgical journals including *Journal of Neurosurgery* and *Neurosurgery*.

Brain Tumor Center

Washington University's Brain Tumor Center (BTC) is a world-class multidisciplinary team of neurosurgeons, clinicians, and scientists meeting the challenge of finding cures for brain cancer by understanding fundamental aspects of brain tumor biology and creating unique and transformative treatments for patients. The BTC aims to accelerate the translation of laboratory-based discovery into the clinic to benefit patients and train the next generation of outstanding clinicians and scientists.

Stereotactic, Functional and Epilepsy Neurosurgery

The evolution of functional neurosurgery has been life-changing for patients suffering from a variety of disorders, including essential tremor, epilepsy, chronic pain, depression, obsessive compulsive disorder, and Parkinson's disease. WashU Neurosurgery residents collaborate with faculty who are actively developing novel brain stimulation strategies. They also work as part of a multidisciplinary collaboration of physicians, engineers, and neurophysiologists.

Neurotechnology

The Department of Neurosurgery's Division of Neurotechnology provides opportunities for residents to be part of the next generation of neurosurgeons deploying the most advanced neuro-technologies to care for present-day and future patients. Using technology to engage with the nervous system, residents are on the cutting edge of treating diseases such as brain tumors, chronic pain, post-traumatic stress disorder, spinal cord injury, and stroke. Additionally, the Division of Neurotechnology brings together an unparalleled diversity of expertise and leadership to meet the challenges of translating novel solutions into impactful therapies.



“The training at WashU is second to none and the attending surgeons are truly exceptional. Their operative expertise is complemented by their world-class research, while always offering their patients the best, most compassionate care. The volume and breadth of cases that we take care of at Barnes-Jewish Hospital will undoubtedly prepare me for my future career as a neurosurgeon.”

DEREK LI, MD

PGY6 Resident
MD, Northwestern University





State-of-the-Art Facilities

IN ST. LOUIS, OUR RESIDENTS TRAIN AT ONE OF THE COUNTRY'S LARGEST MEDICAL CENTERS, WHICH INCLUDES BARNES-JEWISH HOSPITAL, ALVIN J. SITEMAN CANCER CENTER, AND ST. LOUIS CHILDREN'S HOSPITAL. THESE HOSPITALS SERVE A DIVERSE REGION OF MORE THAN 3 MILLION PEOPLE AND DRAW PATIENTS FROM ALL 50 STATES AND MORE THAN 80 COUNTRIES. A NEW INPATIENT BED TOWER AT BJH IS SCHEDULED TO OPEN IN 2024 AND WILL MARKEDLY EXPAND THE NEUROSURGERY AND NEUROLOGY BED PLATFORM.

In 2023, a \$616 million, 11-story and 609,000 square-foot, state-of-the-art Neuroscience Research Building opened on the Washington University School of Medicine campus. It is one of the largest neuroscience research buildings in the country and will dramatically expand the neurosurgery research laboratory space of the Brain Tumor Center, a Department of Neurosurgery initiative. Additionally, the Division of Neurotechnology moved into a renovated space in the CORTEX Innovation Community. This research and technology hub includes a combination of wet and dry research labs and brings together investigators from multiple subspecialties.



▲ **GET A GLIMPSE OF THE WASHU NEUROSCIENCE RESEARCH BUILDING.**



Living in St. Louis

ST. LOUIS IS KNOWN AS ONE OF THE MOST LIVABLE CITIES IN THE U.S., A PLACE WHERE RESIDENTS CAN AFFORD TO BUY THEIR OWN HOME, COMMUTE TO WORK BY SHORT CAR RIDE, BIKE, OR ON FOOT, AND, AT THE SAME TIME, ENJOY ALL THE CULTURAL ACTIVITIES A GREAT CITY CAN OFFER.

Entertainment

Within five miles of Washington University School of Medicine, residents cheer on St. Louis City SC at CITYPARK, see Hamilton and other Broadway shows at the Fox Theatre, revel in Bach at the Saint Louis Symphony, deconstruct Van Gogh and Monet paintings at the Saint Louis Art Museum, and pet stingrays at the Saint Louis Zoo. Residents can also run, bike, and play golf or tennis in Forest Park directly across the street from the hospital.

Camaraderie

Neurosurgery residents enjoy many of these St. Louis venues together, during the monthly department-funded social events, at gatherings with faculty, and in outings planned on their own. Because of the camaraderie within the program, and all of the fun activities they can do together in St. Louis, residents find that they make some of their best, lifelong friends here.

Energy

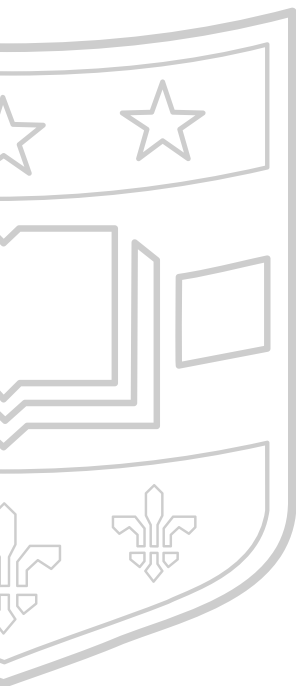
With substantial resources for startups, St. Louis has become a top destination for entrepreneurs, attracting a growing millennial population, and with them, an expansive network of craft breweries, music venues, and restaurants.



◀ **HEAR FROM WASHU RESIDENTS ABOUT LIVING IN ST. LOUIS.**

Ireland Rotation

Our residents are given the opportunity to expand their surgical skills during a six-month international elective at Beaumont Hospital in Dublin, Ireland. This rotation represents a critical point in training, when residents are able to increase their surgical independence and experience. The rotation also provides residents with exposure to a nationalized health care system that consolidates specialty medical care into designated care centers like Beaumont, which cares for neurosurgical patients from more than 90% of the country. The experience is also personally enriching, as Ireland is a jumping-off point to visit the many wonderful destinations throughout Europe.





Clinical Faculty

Our faculty hold or have held national leadership roles in important academic and clinical societies and serve as members or chair on journal editorial boards. They are leaders in innovation and clinical care. Most importantly, they serve as mentors for our trainees.



GREGORY J. ZIPFEL, MD
Chair, Department of Neurosurgery
Ralph G. Dacey Distinguished Professor of Neurosurgery
Neurosurgeon-in-Chief, Barnes-Jewish Hospital



RALPH G. DACEY, JR., MD
Professor of Neurosurgery
Former Chair of Neurosurgery
Former Neurosurgeon-in-Chief, Barnes-Jewish Hospital



BRADLEY BUDDE, MD
Assistant Professor of Neurosurgery



MAGALIE CADIEUX, MD, MMSc
Assistant Professor of Neurosurgery



IAN G. DORWARD, MD
Associate Professor, Neurosurgery and Orthopedic Surgery
Neurosurgeon-in-Chief, Barnes-Jewish St. Peters Hospital



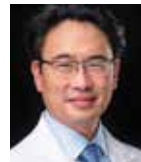
JOSHUA L. DOWLING, MD
Professor of Neurosurgery
Surgical Director of Gamma Knife Program



JACOB GREENBERG, MD, MSCI
Assistant Professor of Neurosurgery and Orthopedic Surgery
Co-Director, Patient Safety & Quality Improvement



DANIEL M. HAFEZ, MD, PHD
Assistant Professor of Neurosurgery
Associate Program Director, Neurosurgery Residency



ALBERT H. KIM, MD, PHD
August A. Busch Jr. Professor of Neurological Surgery
Senior Vice-Chair, Department of Neurosurgery
Professor of Neurosurgery, Genetics, Neurology, and Developmental Biology
Director, Brain Tumor Center
Surgical Director, Pituitary Center
Co-Leader, Neurorestorative Therapy Group, Hope Center



ERIC C. LEUTHARDT, MD
Shi H. Huang Professor of Neurological Surgery
Vice-Chair of Innovation, Department of Neurosurgery
Chief, Division of Neurotechnology
Professor of Neurosurgery, Neuroscience, Biomedical Engineering and Mechanical Engineering & Materials Science
Director, Center for Innovation in Neuroscience and Technology
Director, Brain Laser Center



DIMITRIOS MATHIOS, MD
Assistant Professor of Neurosurgery
Director, Molecular Neuro-oncology Lab



SEAN D. MCEVOY, MD
Assistant Professor, Neurosurgery and Pediatrics



CAMILO MOLINA, MD
Associate Professor of Neurosurgery and Orthopedic Surgery
Director, Spinal Deformity and Spinal Oncology
Co-Director, Patient Safety and Quality Improvement
Co-Director, Complex Spine Fellowship
Deputy Director of Spine Innovation, Center for Innovation in Neuroscience and Technology



JOHN I. OGUNLADE, DO
Assistant Professor of Neurosurgery



JOSHUA W. OSBUN, MD
Professor of Neurosurgery, Radiology and Neurology
Vice-Chair of Education, Department of Neurosurgery
Program Director, Neurosurgery Residency
Director, Cerebrovascular Surgery and Interventional Neuroradiology



BHUVIC PATEL, MD
Assistant Professor of Neurosurgery



BRENTON PENNICOOKE, MD, MS
Assistant Professor of Neurosurgery and Orthopedic Surgery and Biomedical Engineering



WILSON Z. (ZACK) RAY, MD, MBA
Henry G. & Edith R. Schwartz Professor
Executive Vice-Chair, Department of Neurosurgery
Professor of Neurosurgery, Orthopedic Surgery, and Biomedical Engineering
Chief, Division of Spine Surgery
Director, Peripheral Nerve Fellowship



JAROD L. ROLAND, MD
Assistant Professor of Neurosurgery
Director, Pediatric Epilepsy Surgery Program
Director of the Selective Dorsal Rhizotomy Program



JENNIFER M. STRAHLE, MD
Professor of Neurosurgery, Orthopedic Surgery and Pediatrics
Director, Pediatric Neuro Spine Program
Director, Pediatric Cerebrovascular Surgery



ERIC M. THOMPSON, MD
Professor of Neurosurgery and Pediatrics
Chief, Division of Pediatric Neurosurgery
Neurosurgeon-in-Chief, St. Louis Children's Hospital
Co-Director, WashU Pediatric Brain Tumor Program
Co-Director, Neuroscience Service Line at St. Louis Children's Hospital



KUMAR VASUDEVAN, MD
Assistant Professor of Neurosurgery



ANANTH K. VELLIMANA, MD
Assistant Professor of Neurosurgery, Radiology and Neurology



JON T. WILLIE, MD, PHD
Associate Professor of Neurosurgery, Biomedical Engineering, Psychiatry, Neuroscience and Neurology
Director of Stereotactic, Functional, and Epilepsy Neurosurgery



Research Faculty

Our nationally recognized neurosurgery researchers are dedicated full-time to identifying the underlying causes of neurological disease, with an eye toward translating that research into clinical trials to test the next generation of treatments.



PETER BRUNNER, PHD
Associate Professor, Neurosurgery and Biomedical Engineering



DAVID BUNDY, PHD
Assistant Professor, Neurosurgery



HONG CHEN, PHD
Associate Professor, Biomedical Engineering and Neurosurgery



DEEPTI DIWAN, PHD
Neurosurgery Research Instructor



GABRIEL HALLER, PHD
Assistant Professor, Neurosurgery, Neurology and Genetics



CAROLINE H. KO, PHD
Associate Research Professor, Neurosurgery
Associate Director, Research Strategy and Clinical Translation, Brain Tumor Center



YANG (ERIC) LI, PHD
Assistant Professor, Neurosurgery and Genetics



JOGENDER MEHLA, PHD
Assistant Professor



ISMAEL SEÁÑEZ, PHD
Assistant Professor, Biomedical Engineering and Neurosurgery



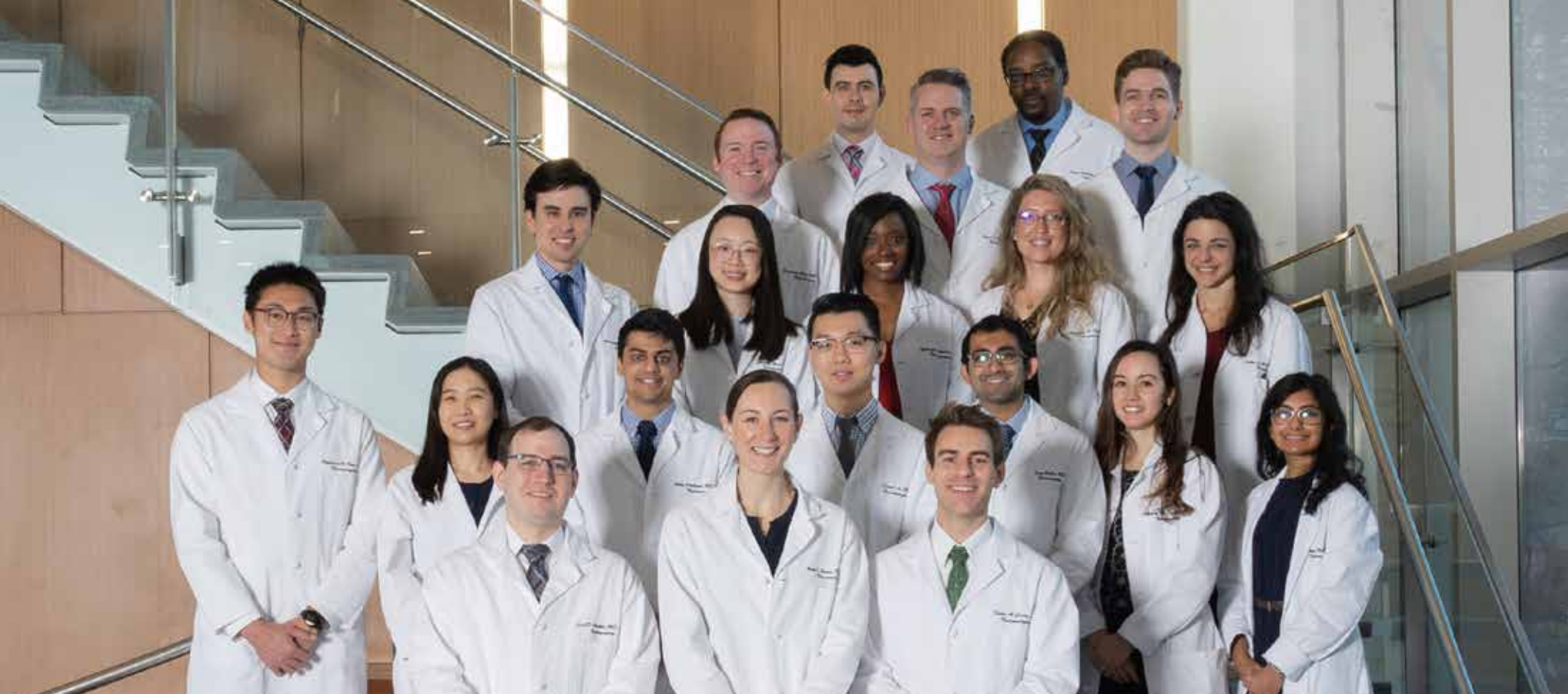
ALEXANDER H. STEGH, PHD
Professor of Neurosurgery
Vice-Chair of Research, Department of Neurosurgery
Research Director, Brain Tumor Center



RUI TANG, PHD
Assistant Professor of Neurosurgery



HIROKO YANO, PHD
Associate Professor, Neurosurgery, Neurology, and Genetics



WASHINGTON UNIVERSITY SCHOOL OF MEDICINE

Neurosurgery Residency Program

LEADERSHIP

GREGORY J. ZIPFEL, MD DEPARTMENT CHAIR

JOSHUA W. OSBUN, MD PROGRAM DIRECTOR

DANIEL M. HAFEZ, MD, PHD ASSOCIATE PROGRAM DIRECTOR

MICHELE BRIDGES SENIOR RESIDENCY/FELLOWSHIP PROGRAM COORDINATOR

CONTACT INFORMATION

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