NEUROLOGICAL SURGERY TRAINING PROGRAM
Our Mission:

At UTHealth Medical School, our aim is to be the best – locally, nationally and internationally.

To achieve this goal, we focus on:
- Providing the highest quality care and achieving the best outcomes
- Providing the best service and achieving the highest patient and referring doctor satisfaction
- Innovating and testing new ideas, advancing medicine and setting new standards of care
- Teaching the next generation to be the best

Dear prospective resident,

The Residency Program of UTHealth Medical School and the Vivian L. Smith Department of Neurosurgery is driven by extensive access to complex neurosurgical cases at the Mischer Neuroscience Institute (MNI) at Memorial Hermann-Texas Medical Center.

We are committed to providing the best neurosurgical care to the citizens of Houston, to leading the world in advancing the art and science of neurosurgery, and to producing the next generation of neurosurgical leaders. All aspects of this mission are integrated into our daily practice. Clinicians collaborate with scientists, and all are involved in teaching.

Each faculty and staff member in the department of Neurosurgery has complete commitment to the goal of being the best and training the best. Residents are individually mentored, evaluated and promoted, and are also regularly asked to evaluate the Program and participate in its continual improvement. Through this structure, UTHealth Medical School residents develop into excellent and academically oriented neurosurgeons, positioned to learn throughout their careers.

MNI has been a leader in bringing innovations to the field of neuroscience, with a long list of firsts in the treatment of stroke, multiple sclerosis, epilepsy, neurotrauma, brain aneurysms and other complex neurological conditions. We are proud of the dedication of our team of physicians and scientists and invite you to learn more about our Residency Program and our Institute.

Sincerely,

Arthur Day, M.D.

Vice Chair Education & Program Director
About the Program

Faculty
The UTHealth Medical School Residency Program is a unique, multidisciplinary, completely subspecialized arrangement. This permits resident exposure to both neurosurgical and non-neurosurgical cases. Organized into multi-specialty teams, Mischer Neuroscience Institute provides comprehensive medical and surgical care for a wide range of neurological conditions in adults and children, including cerebrovascular disease (stroke, aneurysms and arteriovenous malformations), epilepsy, movement disorders such as Parkinson’s disease and dystonia, metabolic disease, pituitary disorders, brain tumors and conditions of the spine.

Case Volume
In affiliation with Mischer Neuroscience Institute, the Program offers one of the largest neurosurgical caseloads in the United States, with more than 4,500 surgical procedures per year. This permits a significant resident operative experience, beginning at the PGY-2 level. Residents at all levels typically operate four days a week, with one day spent in a subspecialty clinic specific to the rotation.

Single Institution
All residency training is completed at a single institution, Memorial Hermann-Texas Medical Center. This allows all residents to work together on a daily basis to maintain the entire neurosurgical patient population.

Technology
UTHealth Medical School is at the cutting edge of technology, with physicians and staff continuously discovering and implementing new treatments and diagnostic tools. Advances used regularly in our Program include state-of-the-art intraoperative robotics, neuro-endovascular labs, interoperative CT, Gamma Knife® and computer-assisted surgery including navigation and neuroendoscopy.

The Largest and Most Comprehensive Neurosurgery Program in Texas
Mischer Neuroscience Institute (MNI) is built on a foundation of long-term collaboration between Memorial Hermann-Texas Medical Center and UTHealth Medical School. MNI brings together a team of world-class clinicians, researchers and educators whose insights and research findings are transforming the field of neuroscience. Patients come to MNI from around the world for treatment of rare and common diseases of the brain and spinal cord.

Through MNI, the physicians affiliated with Memorial Hermann currently perform more neurological procedures than any other health system in Houston and is nationally recognized for leading-edge medicine. The Institute is consistently ranked among quality benchmarking organizations as a leader in clinical quality and patient safety. MNI was the first center in Texas and one of only a few institutions in the country to fully integrate neurology, neurosurgery, neuroradiology and neurorehabilitation through comprehensive, specialized treatment centers and close collaboration among all involved disciplines.

In the last three years, MNI has established a range of clinical and academic programs and has recruited nearly two dozen nationally recognized specialists and subspecialists. The Institute is now home to 10 centers of excellence that are supported by a state-of-the-art neuroscience intensive care unit with 32 private rooms and several other dedicated inpatient facilities to provide a full continuum of care for neurological patients.

Neuroscience Services
Through its affiliation with Mischer Neuroscience Institute at Memorial Hermann-Texas Medical Center, the Neurosurgery Residency Program at the UTHealth Medical School is able to offer residents a wide range of experience at the forefront of medicine. From neuro-oncology to spine surgery, cerebrovascular and endovascular surgery and beyond, the next generation of surgeons has at its fingertips a wealth of opportunities for honing their expertise.

Brain Tumor Center
Led by neurosurgeon and Mischer Neuroscience Institute Director Dong Kim, M.D., the medical team at the Brain Tumor Center provides outstanding care for patients with all types of brain tumors. The multidisciplinary team, including oncologists and radiation specialists, offers patients a full range of treatment options including surgery, chemotherapy and radiation.

MNI acquired the region’s first Leksell Gamma Knife in 1993. To date, the multidisciplinary team has treated more than 2,300 patients using the stereotactic radiosurgery instrument to resolve brain tumors and other neurological disorders. MNI and UTHealth Medical School are at the forefront of advances to prolong and improve the quality of life for patients with these complex tumors.

Cerebrovascular and Skull-Base Neurosurgery
The skull-base surgical team offers a comprehensive, advanced technological and multidisciplinary approach to diagnose and treat cranial base disorders. MNI is dedicated to providing the highest level of clinical care to our patients by offering the most up-to-date diagnostic and treatment modalities.

For cerebrovascular diseases, MNI’s multidisciplinary program involves a team of neurosurgeons, interventional neuroradiologists, neurologists and radiation specialists. The program offers a complete spectrum of therapies, including the most effective state-of-the-art surgical and endovascular techniques and technologies, such as a hybrid operating room that enables advanced imaging and multiple procedures to be performed simultaneously.

The MNI Stroke Center was recently recognized as a Comprehensive Stroke Center by The Joint Commission and the American Heart Association/American Stroke Association. Comprehensive Stroke Center Certification recognizes those hospitals that have the specialized infrastructure, staff and training to receive and treat patients with the most complex strokes. They must meet stringent standards and requirements, including advanced imaging capabilities, around-the-clock availability of specialized treatments, and staff with the unique education and competencies to care for complex stroke patients.
Endovascular Surgery
MNI is a leader in endovascular surgery, performing more than 150 endovascular aneurysm repairs annually – more than any other medical center in our area. This team of experts continually develops and tests groundbreaking endovascular surgical technologies and techniques.

Pediatric Neurosurgery
The team at Children’s Memorial Hermann Hospital and UTHealth Medical School are world leaders in pediatric neurosciences. Offering minimally invasive, endoscopic brain surgery and comprehensive diagnosis, evaluation and treatment of a wide range of neurological disorders, they are at the forefront of advancing treatment for pediatric patients.

Functional and Stereotactic Neurosurgery
Specialists in functional and stereotactic neurosurgery provide comprehensive evaluation and care for patients with movement disorders, epilepsy, obsessive-compulsive disorder and certain chronic pain syndromes. Through collaboration between the Mischer Neuroscience Institute and the UT MDVE Clinic, the Movement Disorders and Neurodegenerative Diseases Program has established a track record of outstanding care and excellent outcomes.

The Program offers minimally invasive and highly effective treatment options for many difficult neurological disorders and diseases. Patients with movement disorders refractory to medication, such as Parkinson’s disease, essential tremor and dystonia, are evaluated by a multidisciplinary team of neurosurgery, neurology and neuropsychology specialists to assess whether they are appropriate candidates for a functional intervention.

Spine Center
The highly skilled spine surgeons at the Mischer Neuroscience Institute and UTHealth Medical School perform more than 1,400 surgeries annually in new, state-of-the-art facilities equipped with advanced tools and dynamic imaging systems. The Spine Center offers outstanding care of patients suffering from traumatic spine injury, including the 10 to 20 percent of admissions through Memorial Hermann-TMC’s Level I Trauma Center that involve neurological damage. The Spine Center also offers innovative procedures for relief of back pain, including transforminal lumbar interbody fusion (TLIF), minimally invasive approaches and disk replacement surgery.

Additional Services
Neuroradiology
MNI offers diagnostic imaging of the nervous system, including myelography, computed tomography (CT) and magnetic resonance imaging (MRI). Advanced diagnostic modalities include: dynamic CT angiography and MR angiography, perfusion CT and MRI, and functional magnetic MRI (fMRI). MNI’s team of experts analyzes these images closely to identify the best type of intervention for each patient.

Neuropathology
A full range of diagnostic services is available at MNI for neurosurgical specimens and autopsy brain diagnosis, providing physicians with a comprehensive level of diagnostic expertise. Complex brain tumor and neuro- oncology cases are presented in a multidisciplinary forum to discuss treatment and management during MNI’s weekly Tumor Board.

Radiosurgery
At MNI, neurosurgeons use the Leksell Gamma Knife as an effective treatment modality for abnormalities within the brain. Patients who undergo stereotactic radiosurgery have a greatly reduced incidence of potential complications associated with craniotomy and with other forms of radiation.

MNI is also one of the few facilities in the nation to offer stereotactic spinal radiosurgery, delivered using the Varian Trilogy® TX linear accelerator (LINAC).

Neurotrauma/Critical Care
The neurotrauma program at MNI is internationally recognized for treating the highest-acuity patients with brain and spinal cord injuries, with neurointensivists and experienced mid-level practitioners staffing our dedicated 32-bed Neuro ICU around the clock to provide ongoing intensive care to critically ill patients.

Patients with acute neurological injuries benefit from Memorial Hermann-Texas Medical Center’s Level I trauma center – one of only two in the area and the busiest in the nation – and from Memorial Hermann Life Flight® air ambulance service, which provides high-quality care and safe air transport for critically ill and injured patients via helicopter and fixed-wing aircraft.

The Neurotrauma/Critical Care Program is an international leader in research conducted on innovative treatments following neurotrauma, including participation in several multicenter trials.

Neuroscience Research
The UTHealth Medical School utilizes diverse approaches to research, including molecular, transgenic and electrophysiological techniques, coupled with state-of-the-art facilities and support services, allowing biomedical studies, translational research, clinical trials, technology development and assessment. Ongoing projects cover major areas of neurological diseases, including stroke, aneurysm, spinal cord injury, brain tumor, stem cells, neuroprotection, hypoxic encephalopathy, epilepsy, traumatic brain injury and Parkinson’s disease. Projects are supported by the National Institutes of Health, the Vivian L. Smith Foundation for Neurologic Disease, the American Stroke Association and other granting agencies.

Besides collaborative efforts within the department and institution, UTHealth Medical School strongly encourages faculty members to connect with scientists worldwide to exchange information and knowledge, to establish effective collaborations in a wide range of disciplines and to facilitate a concerted interdisciplinary and international effort in scientific explorations.
Neurosurgery Training Program

Residency by Year

Rotations
There are seven clinical services within our Residency Program, each covering specific clinical material and led by dedicated faculty:

1) Critical Care – Vascular and Trauma (brain and spine)
2) Spine – Trauma
3) Spine – Elective and degenerative
4) Cranial
5) Cerebrovascular (open and endovascular)
6) Pediatrics/Functional
7) CHIEF Service

PGY Levels

PGY-1
The goal of year one as a neurosurgery resident at UTHealth Medical School is to gain a comprehensive understanding of the concepts of neurocritical care. This will provide the individual neurosurgeon with the ability to take care of the basic critical care issues related to the nervous system and all of the critical care issues that arise in patients undergoing neurosurgical treatment.

The PGY-1 year is comprised of a full year learning directly from our six fully trained neurointensivists in neurosurgical critical care, with a six-month focus on cerebrovascular care and six months covering neurotrauma. Every other weekend is spent on the Neurosurgery service participating in surgical cases.

This intensive year in the Neuro-ICU will allow each resident to track toward completing an infolding fellowship in neurocritical care by the end of the residency.

PGY-2
The PGY-2 year consists of three three-month blocks in the following subspecialties: Spine – Trauma, Pediatrics/Functional and Neurology; and one three-month block as the Night Float resident.

The junior Spine – Trauma rotation provides the first of several concentrated and systematic exposures to the management of spinal disorders.

The junior Pediatrics/Functional rotation has a dual focus, combining exposure to both functional and pediatric neurosurgery. Much of the functional surgery is pediatric epilepsy.

The goal of the Neurology rotation is for the resident to develop the clinical skills, professional attitudes, and knowledge base for the practice of consultation-based neurology through exposure to neurological disorders and approach to the neurological patient. The experience prepares the resident to appreciate the full spectrum of neurological illness, especially that which is non-operative, and the role of neurosurgery within these disorders, if any.

On Night Float, the resident will have increased responsibility in the management of the emergent neurosurgical patient presenting to the ER or in transfer and the peripoperative management of in-hospital urgencies and emergencies.

PGY-3
The PGY-3 year consists of three three-month blocks rotating in Spine – Elective, Spine – Trauma and Cranial. There is an additional three-month block on Night Float.

The Cranial rotation has a primary focus in independently performing fundamental procedures in general neurosurgery. Basic principles are taught and significant portions of surgeries in subspecialty areas are performed, including vascular, epilepsy, functional and tumor neurosurgery.

The mid-level spine resident is expected to attain competency in the performance of straightforward spinal procedures at all levels of the spine. They will have exposure to spinal trauma injuries and will participate in many elective spine surgeries, gaining further understanding of degenerative spine diseases.
PGY-7
The PGY-7 year is spent exclusively pursuing a focused area or areas of clinical interest to the resident. This year provides a broad opportunity to finely tune one’s operative skills and provide oversight for the entire management of the patient population on the service. The year can be comprised of a combination of various elective rotations or can be tailored to allow the resident to pursue an infolded fellowship.

Facilities
Founded in 1925, Memorial Hermann-Texas Medical Center is a private, non-profit, non-sectarian teaching institution. It serves as the primary teaching hospital for UTHealth Medical School. It was the first hospital to open in the world-renowned Texas Medical Center.

As one of only two certified Level I trauma centers in the Greater Houston area, the hospital provides 24-hour emergency and trauma care to more than 40,000 patients a year. Memorial Hermann Life Flight air ambulance service operates a fleet of six helicopters, providing emergency rescue and air transport services to a multi-county area.

The adult neurosurgical service at Memorial Hermann-TMC is located on the 5th and 7th floors in the Jones Pavilion of the hospital.

The 5th floor contains a 48-bed patient care unit. The 7th floor is a 32-bed neurosurgical intensive care unit, which provides comprehensive critical care management around the clock for critically ill patients.

Pediatric neurology and neurosurgery patients are cared for at Children’s Memorial Hermann Hospital, at the Children’s Neuroscience Center.

Benefits
Paid Leave
• Vacation: two weeks for PGY-1 and three weeks for PGY-2 and above per contract year
• Sick Leave: 12 working days per contract year with a rollover cap of 30 working days
• Educational Leave: five working days per contract year

Insurance Programs at No Cost to Resident
• Comprehensive medical care plan
• Dental insurance
• Vision insurance
• $100,000 basic life insurance
• Disability insurance
• Accidental death and dismemberment insurance
• Professional liability insurance

Other Benefits
• Dependent medical, dental and vision insurance available at group rates
• Supplemental disability insurance
• Paid and unpaid leaves of absence
• Tax-deferred annuity plans
• Uniforms and badges at no cost
• Paid membership in Harris County Medical Society and The Texas Medical Association

Resources Provided by Program
• Start-up fund
• Pair of surgical loupes
• Lead aprons
• Spine and skull models
• $1,000 annual book stipend
• Paid conference attendance
• Other travel (as approved)

RESIDENT AND FELLOW STIPENDS
2013-2014 ACADEMIC YEAR

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*Effective date: 06/24/2013

Conferences
Grand Rounds
Neurosurgery Grand Rounds were designed with resident education as the primary focus. They are held in the Medical School Building, on Thursdays at 8 a.m. The sessions are divided into recurring topics including neuroradiology, neuro-oncology, epilepsy, neuro-ophtalmology, neuro-endocrinology and neuropathology.

Resident Curriculum Conference
In the Resident Curriculum Conference, led by Dr. Day, residents prepare and review all aspects of neurosurgical knowledge and evidence. Also in attendance are physician assistants, medical students and nurse practitioners. Each topic is reviewed once every two years, so each resident will have completed each cycle three times by graduation.

Visiting Professor Lecture Series
Throughout the year, the department hosts prominent figures in the field of neurological surgery lecturing on their areas of interest.

Visiting professor days usually consist of a pre-dinner with residents only, highlighted by a one-hour lecture, followed by a private educational session, one on one with the speaker and residents.
Neurosurgery Accreditation

Throughout the history of the Neurosurgery Residency Program, the Department of Neurosurgery has made significant accomplishments. In 2010, after just three years as a Program, the Accreditation Council for Graduate Medical Education (ACGME) granted us the maximum accreditation and also approved an additional residency position. The Program currently accepts two residents per year for seven years of training.

Board Exam Requirements

All residents are required to take the American Board of Neurological Surgery primary written examination on an annual basis. Satisfactory progress must be shown before the resident advances to the next level of training. The examination must be passed for credit prior to the chief residency year.

The Neurosurgery Residency Program also holds “mock” oral boards to assist in examination preparation for our residents.

Why Houston?

As the fourth largest city in the country, Houston is filled with great diversity. Nestled among meandering bayous, towering pines and verdant parkland, Houston is a character-rich “third coast” city that roughly 6 million people call home.

The weather in Houston is favorable. With an average winter temperature of 55 degrees, opportunities for outdoor recreation take place all year round.

Locals and visitors also converge on the Museum District for afternoons exploring the area’s 19 art- and culture-filled institutions. Houston is one of the few U.S. cities to boast resident companies in all major performance disciplines: symphony, ballet, opera and theater. For those who enjoy dining out, Houston’s culinary scene is vibrant and nationally acclaimed, with world-class chefs preparing foods hailing from all cultures and influences.

Extracurricular

UTHealth Medical School hosts numerous resident events each year to increase camaraderie and just have fun! These events include the annual Christmas Party, Post ABNS Exam Party, End-of-Year Dinner and other planned social events to let loose outside the auspices of the Program.

Each year, the neurosurgery residents and clinical faculty come together for the Annual Texas Neurosurgery Residency Training Programs Conference, a one-day educational conference created for participants to display and discuss current research projects.

Recognition for the resident who achieves the highest primary exam score is given at the end-of-year ceremony. In addition, the Program offers an award for the resident who has been the biggest team player each year.

How to Apply

Residency

Applications are submitted strictly through the Electronic Residency Application System (ERAS) using the National Residency Match Program (NRMP).

Application Requirements:

• USMLE Step 1 and a minimum passing score of 200
• Three letters of recommendation (preferably from other academic neurosurgeons)
• Research experience is preferred, but not required.

UTHealth Medical School accepts International Medical Graduates (IMG) who meet the qualifications listed, in addition to completing USMLE Step 1, 2 and 3, all with a minimum score of 200, and having a valid ECFMG Certificate.

Fellowships

UTHealth Medical School currently has fellowships in Combined Open Cerebrovascular/Endovascular Neurosurgery; Minimally Invasive and Complex Spinal Surgery; Endovascular Surgical Neuroradiology; and Epilepsy Surgery, Brain Mapping and Functional Neurosurgery.

If you are interested in applying for a fellowship, you must have completed an ACGME-accredited Residency Program in Neurological Surgery to qualify.

For more information, please contact Brooke Beasley, education coordinator, at Brooke.N.Beasley@uth.tmc.edu or 713.704.7375.

Visit our website: neuro.memorialhermann.org/residency

Neurosurgery Centers of Excellence

Cerebrovascular Disease and Stroke
Critical Care and Neurotrauma
Neuromuscular Disorders
Neuro-oncology
Neurorehabilitation
Pediatric Neurosurgery and Neurology
Restorative Neurosurgery and Neurology
Spine Surgery

MNI Facts

• The first neurosurgery center to offer all advanced modalities of treatment – expert microsurgery, interventional neuroradiology/endovascular surgery and gamma knife radiosurgery – for complex lesions.
• The first and only hospital in Texas to receive Joint Commission designation as a Comprehensive Stroke Center.
• The first center to conduct a national, multicenter trial for hypothermia in head injury.
• The first facility in Houston and one of the first in the United States to test the clot-dissolving drug tPA for acute stroke.
• The first center in Houston to test and prove the efficacy of three disparate treatments for stroke prevention: carotid surgery; administration of antplatelet drugs, including aspirin; and patent foramen ovale closure.
• The first facility in the region to do vagal nerve stimulation. We remain the No. 1 program in the United States in the number of vagal nerve stimulators implanted in epilepsy patients.
• We brought the first clinical magnetoencephalography (MEG) sensor to Houston and recently updated the technology to the new Magnes 3600 WH.
### Full-time Clinical Staff

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<thead>
<tr>
<th>Name</th>
<th>Title</th>
<th>Department</th>
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<tbody>
<tr>
<td>Dong Kim, M.D.</td>
<td>Director</td>
<td>Michel Neuroscience Institute</td>
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<tr>
<td></td>
<td></td>
<td>Professor and Chairman</td>
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<td></td>
<td></td>
<td>Vivian L. Smith Department of Neurosurgery</td>
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<tr>
<td>Arthur L. Day, M.D.</td>
<td>Director of Clinical Education</td>
<td>Michel Neuroscience Institute Institute</td>
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<td>Program Director</td>
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<td>Neurosurgery Residency</td>
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<tr>
<td>Kiwon Lee, M.D.</td>
<td>Director</td>
<td>Neurocritical Care</td>
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<td>Associate Professor</td>
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<td>Vivian L. Smith Department of Neurosurgery</td>
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<tr>
<td>David Sandberg, M.D.</td>
<td>Associate Professor and Chief</td>
<td>Division of Pediatric Neurosurgery</td>
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<td></td>
<td></td>
<td>Professor</td>
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<td>Vivian L. Smith Department of Neurosurgery</td>
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<tr>
<td>Paul Boone, M.D.</td>
<td>Clinical Assistant Professor</td>
<td>Vivian L. Smith Department of Neurosurgery</td>
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<tr>
<td>Raul J. Cardenas, M.D.</td>
<td>Clinical Assistant Professor</td>
<td>Vivian L. Smith Department of Neurosurgery</td>
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<td>P. Roc Chen, M.D.</td>
<td>Assistant Professor</td>
<td>Vivian L. Smith Department of Neurosurgery</td>
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<td>H. Alex Choi, M.D.</td>
<td>Assistant Professor</td>
<td>Vivian L. Smith Department of Neurosurgery</td>
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<td>Mark Dannenbaum, M.D.</td>
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<td>Joseph C. Hsieh, M.D.</td>
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<td>Vivian L. Smith Department of Neurosurgery</td>
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<tr>
<td>Sigmund Hsu, M.D.</td>
<td>Neuro-Oncology Assistant Professor</td>
<td>Vivian L. Smith Department of Neurosurgery</td>
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### 2013 - 2014 Residents

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<tr>
<td>2013</td>
<td>Sean Meiner, M.D.</td>
<td>UTHealth Medical School</td>
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<tr>
<td>2014</td>
<td>Sebastian Villarreal, M.D.</td>
<td>UTHealth Medical School</td>
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<tr>
<td>2013</td>
<td>Yoshua Esquenazi Levy, M.D.</td>
<td>University of Anahuac, Mexico</td>
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<tr>
<td>2013</td>
<td>Edward Hsu, Ph.D., M.D.</td>
<td>Taipei Medical University, Taiwan</td>
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<tr>
<td>2013</td>
<td>Shane Abdunnur, M.D.</td>
<td>Medical College of Virginia</td>
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<tr>
<td>2013</td>
<td>Ali Hassoun Turkmani, M.D.</td>
<td>Damascus University, Syria</td>
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<tr>
<td>2013</td>
<td>Victor Le, M.D.</td>
<td>Royal College of Surgeons of Ireland</td>
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<tr>
<td>2013</td>
<td>Wesley Jones, M.D.</td>
<td>Texas Tech University Health Science Center School of Medicine</td>
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<td>2013</td>
<td>Saint-Aaron Morris, M.D.</td>
<td>UTHealth Medical School</td>
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### Fellows

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<tr>
<td>Kadir Erkmen, M.D.</td>
<td>Neuroradiology Surgery Fellow</td>
</tr>
<tr>
<td>Karanbir Kern, M.D.</td>
<td>Neurocritical Care Fellow, 1st year</td>
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<tr>
<td>Tareq Almaghrabi, M.D.</td>
<td>Neurocritical Care Fellow, 1st year</td>
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<tr>
<td>Emselue Iunionakhambe, M.D.</td>
<td>Neurocritical Care Fellow, 2nd year</td>
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### Notes