

**2018-2019  
Neurosurgery  
Residency  
at Mount Sinai**



**Icahn School  
of Medicine at  
Mount  
Sinai**



*We are proud to introduce you to our outstanding Neurosurgery Residency Program at the Icahn School of Medicine at Mount Sinai.*

The Department of Neurosurgery is now the largest program in New York City with a comprehensive breadth of subspecialty cases. Drawing some of our nation's most highly regarded neurosurgeons, we have a proven track record in training exceptional clinical and academic neurosurgeons, but are committed to an ever improving and evolving neurosurgery curriculum.

Our Neurosurgery service ranks as a premier destination for care, with locations at The Mount Sinai Hospital, Mount Sinai West, Mount Sinai St. Luke's, Mount Sinai Beth Israel, Mount Sinai Brooklyn, Mount Sinai Queens, and other satellite practices in the tri-state area. Our multidisciplinary approach includes frequent collaboration with cerebrovascular surgery, neurology, neuroscience, otolaryngology, orthopaedics, psychiatry, radiology, critical care, oncology, endocrinology, pediatrics, neuro-oncology, and neurotrauma, and more.

Residents are vital members of our dynamic health care team, providing compassionate patient care while advancing medicine through unrivaled education, research, and outreach in the many diverse communities we serve. We are privileged to offer our residents operative volume and experience in every aspect of modern neurosurgery, including endovascular, peripheral nerve, and functional neurosurgery. Our ultimate goal is to help you explore and develop your career, while giving you the tools to face the clinical challenges of our evolving field.



**J Mocco, MD, MS**



**Raj K. Shrivastava, MD**

Sincerely,

**J Mocco, MD, MS**

*Professor and System Vice Chair  
Director, Neurosurgery Residency Program  
Department of Neurosurgery  
Mount Sinai Health System*

**Raj K. Shrivastava, MD**

*Professor and Vice Chair for Clinical Affairs  
Associate Director, Neurosurgery Residency Program  
Department of Neurosurgery  
Mount Sinai Health System*

## CONTACTS

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**@MountSinaiNeuro**

**280+**

Journal publications  
per year

**5~**

Unique journal publications  
per resident, per year

**3rd Place**

Accepted abstracts for the  
Congress of Neurological  
Surgeons Scientific Meeting

**10**

Specialty fellowships and  
masters programs completed

**\$387,000+**

Received in external Neurosurgery Resident grant funding

# The Department of Neurosurgery

More than 100 years of service



Founded in 1852 as the first Jewish hospital in the United States, the Mount Sinai Health System is now the largest private hospital system in New York City. The neurosurgery program in Mount Sinai was established in 1914 by Charles A. Elsberg, MD, and stands as an independent department. The Neurosurgery Residency Program, established in 1946, has become a nationally recognized center of excellence.

For more than a century, we have contributed to clinical and scientific research, trained generations of neurosurgeons, and held prominent positions on the national and international neurosurgery stage. With interdisciplinary centers focused on the most common and complex neurosurgical disorders, we provide patients with a unique blend of personalized care powered by our groundbreaking research and technology. This integrated approach is instrumental

## Mount Sinai Neurosurgery

- 1852** Hospital founded
- 1914** Neurosurgery service established
- 1932** Neurosurgery department established
- 1946** Neurosurgery Residency Program established

## Service Lines & Divisions

- Cerebrovascular Disorders & Stroke
- Skull & Cranial Base Surgery
- Neuromodulation (Parkinson's, Movement & Psychiatric Disorders)
- Pituitary Tumors
- Benign Brain Tumors
- Adult & Pediatric Epilepsy
- Surgical Neuro-Oncology
- Spinal Disorders
- Neurotrauma
- Neurocritical Care
- Pain Management
- Cranial Reconstruction
- Peripheral Nerve
- Pediatric Neurosurgery
- Pediatric Cerebrovascular Disorders
- General Neurosurgery

in our pursuit of improving surgical outcomes in the treatment adults and children with diseases and disorders related to the brain, spinal cord and peripheral nervous system. Subspecialization among the attending staff fosters broad patient referrals requiring a wide-range of surgery. Our expertise exists in skull base, cerebrovascular, endovascular, pituitary, acoustic, spinal reconstruction, epilepsy, radiosurgery, stereotactic, and primary brain tumor surgery.

## Procedures & Treatments

- Open Neurosurgical Procedures **3,500+**
- Endovascular Procedures **1,950+**
- Strokes Treated **210+**

## Neurosurgery Operating Rooms

- Operating Rooms per Day **11-13**
- The Mount Sinai Hospital **5-6**
- Mount Sinai West **2-3**
- Mount Sinai St. Luke's **1**
- Mount Sinai Brooklyn **1**
- Elmhurst Hospital Center **1**
- South Nassau Communities Hospital **1**

## Neurosurgery Faculty

- Academic & Clinical Faculty **48**
- Full-time Academic Faculty **3**
- Clinical Attendings **3**
- Voluntary Faculty **7**
- Scientists and Researchers **4**

## Neurosurgery Trainees

- Neurosurgery Residents **14**
- Fellows **11**

## Welcome from the Chair

*A warm welcome to Mount Sinai Neurosurgery and to New York!*



Joshua B. Bederson, MD

The Department of Neurosurgery at Mount Sinai Health System is, first and foremost, a residency training program. It is my highest priority to develop the next generation of this nation's top neurosurgeons, and just about everything we do in the department is based on that goal.

Over the past several years, our department has seen unprecedented growth, making us one of the largest programs in the country. Our 16 clinical service lines focus even the rarest neurosurgery conditions into Centers of Excellence.

We have recruited some of the nation's leading neurosurgeons who are engaging, innovative, and experienced, and who are committed to exceptional outcomes for their patients. We are globally recognized for our pioneering approaches and breakthroughs in treatments, rooted in a supportive, team-oriented environment that encourages diverse viewpoints and collaboration.

Our faculty runs high volume, research-driven, clinical programs and prioritize in training and mentoring our bright residents, and encourage all to perform at the highest level. Ultimately, our goal is to lead you towards a superb, academic neurosurgery career. Thank you so much for coming to learn about the people here and our program.

Sincerely,

Joshua B. Bederson, MD  
Professor and System Chair  
Department of Neurosurgery  
Mount Sinai Health System

Empowered by the most advanced technologies available, the Department of Neurosurgery aspires to make a lasting, global impact in patient care, research, and outcomes.



# Neurosurgery Residents

## Exceptional Neurosurgeons in the Making

We would like to introduce you to our two graduating neurosurgery chief residents, Jonathan and Meg. As the Class of 2019, they truly embody what it takes to be a neurosurgeon. Each one has their own, unique perspectives on the Neurosurgery Residency Program at Mount Sinai.



**Jonathan J. Rasouli** Chief Resident | @jrasouli

**Undergrad Medical School Fellowship** Virginia Commonwealth University, BS  
Albert Einstein College of Medicine  
Stereotactic and Functional Neurosurgery at Icahn School of Medicine at Mount Sinai  
Resident Fellowship with the Congress of Neurological Surgeons  
Neurosurgery Fellowship with Doximity

**Next Stop** Orthopedic and Neurosurgery Spine Surgery Fellowship at the Cleveland Clinic

**What drew you into neurosurgery?** I had a desire to help patients with complex neurologic disorders and was eager to work with some of the most intelligent, altruistic, hardworking, honest, and caring individuals I ever met. A neurosurgery OR is intense and methodical, but also full of education and excitement. I was (and continue to be) fascinated by the hybrid of advanced imaging, intricate equipment, and the extreme attention to detail at every point during a case. I found that neurosurgeons are the type of individuals that thrive in high-stress environments and make decisive, "on-the-spot" decisions. Taken together, I knew neurosurgery was the best specialty for me.

**Why did you choose Mount Sinai?** When applying for residency programs, I wanted to train at an institution that provided world-class, state-of-the-art care to every patient. Mount Sinai immediately stood out as a welcoming, closely-knit program that treated every patient with the utmost dignity and respect. In addition to the outstanding neurosurgical training and skill sets I would receive as a resident, I was confident that I'd be working with truly amazing people.

**What do you enjoy doing outside of work?** After a challenging day on the wards or in the OR, I like to unwind by spending time with my friends and family. In terms of my extracurricular hobbies, I enjoy playing guitar, working out at the gym, writing articles, studying economics, and on occasion, a nice Cuban cigar!

**How was your overall experience at Mount Sinai?** Completing my neurosurgical training at Mount Sinai has been an incredible experience. Some of my most gratifying moments are inspiring, educating, and watching my junior residents grow into independent and capable neurosurgeons. One of the best aspects of senior residency is being able to pass the knowledge I've gained from my attendings and prior senior residents onto my current junior residents. Instilling a sense of camaraderie and discipline in the juniors keeps a busy neurosurgery service running smoothly, safely, and efficiently. I'm always proud to see them incorporate my personal tips and tricks into their own repertoires of skill and knowledge.

**What are your plans after graduation?** I will be moving to Cleveland, Ohio to start my Combined Orthopedic and Neurosurgical Spine Fellowship at the Cleveland Clinic.

**What's your most memorable residency moment?** I have several, but the most memorable for me was travelling to Peru with Dr. John Caridi with Eagle Condor Humanitarian Society to perform brain and spine surgery on adult and pediatric patients.



**Margaret E. Pain, MD** Chief Resident

**Undergrad Medical School Meg's Next Stop** Carleton College  
University of Minnesota Medical School  
Pediatric Neurosurgery Fellowship

**What drew you into neurosurgery?** There were a lot of things that drew me to neurosurgery but ultimately, I was sold by the patients. I've had my own struggles with health and wellness but nothing compared to what the average neurosurgery patient goes through. The grace and courage that our patients have in the face of these obstacles is inspiring. I was hoping they could teach me something.

**Why did you choose Mount Sinai?** I was looking for a program with rigorous training and strong mentorship. I saw that the Department of Neurosurgery at Mount Sinai had senior female faculty members and a long history of training women in neurosurgery. I thought they might be on to something.

**What do you enjoy doing outside of work?** My hobbies outside of work are pretty simple. I enjoy cooking, running in the park, playing violin, and hanging out with my friends and family.

**How was your overall experience at Mount Sinai?** Awesome.

**What are your plans after graduation?** I was exposed to so much while at Mount Sinai besides neurosurgery. From the management of inpatients, triaging, consults, coordinating multi-disciplinary teams, to mediating communication between the neurosurgery staff and patients, nurses and families, I recognized how each area was unique and the impact of care on my patients. I carefully determined where my skills and passions would have the most impact and with my interest in such a wide range of neurosurgical topics, I plan to do a fellowship in pediatric neurosurgery.

**What's your most memorable residency moment?** It was probably the first ventriculostomy I placed. The patient was a young woman with obstructive hydrocephalus related to a colloid cyst. I performed the procedure with the chief resident and when I came in the next morning to round she was smiling and eating breakfast. My first thought was "Wow! I can't believe that worked so well," followed immediately by my second thought which was, "I did that!!!"



**Ian T. McNeill, MD**  
@ITMcNeillMD  
Harvard University, BA  
University of Virginia School of Medicine, MD

PGY-6



**Eric K. Oermann, MD**  
@ekoermann  
Georgetown University, BS  
Georgetown University School of Medicine, MD  
Verily - Google Life Sciences  
Clinical Fellowship  
The New York Academy of Sciences  
Interstellar Fellowship

PGY-6



**Ernest J. Barthélemy, MD**  
@NeuroChirGlobal  
New York University, BA  
Columbia University, MA  
Icahn School of Medicine at Mount Sinai, MD  
Harvard T.H. Chan School of Public Health, MPH  
Harvard Medical School  
Paul Farmer Global Surgery Fellowship

PGY-5



**Robert J. Rothrock, MD**  
University of Pennsylvania, BA  
Albert Einstein College of Medicine, MD  
Memorial Sloan Kettering Cancer Center  
Spinal Oncology Fellowship

PGY-5



**Kurt A. Yaeger, MD**  
@Dr\_Yaeger  
Lafayette College, BS  
Georgetown University School of Medicine, MD  
Icahn School of Medicine at Mount Sinai  
Endovascular Neurosurgery Fellowship  
Icahn School of Medicine at Mount Sinai  
BioDesign Fellowship  
Council of State Neurosurgical Societies  
Socioeconomic Fellowship

PGY-4



**Jeffrey T. Gilligan, MD**  
Brown University, BS  
Albert Einstein College of Medicine, MD

PGY-4



**Travis R. Ladner, MD**  
@travisladner  
Vanderbilt University, BS  
Vanderbilt University School of Medicine, MD

PGY-3



**Frank J. Yuk, MD**  
Johns Hopkins University, BS  
Icahn School of Medicine at Mount Sinai, MD

PGY-3



**Jeffrey Zimering, MD**  
Cornell University, BS  
University of Rochester  
School of Medicine and Dentistry, MD  
Cornell University  
Howard Hughes Medical Institute Fellowship

PGY-2



**Alejandro Carrasquilla, MD**  
@DrAlejandroCarr  
University of Alabama, BS  
Perelman School of Medicine at the University of Pennsylvania, MD

PGY-2



**Rui Feng, MD, MS**  
University of Toronto, BS  
University College London, MS  
Icahn School of Medicine at Mount Sinai, MD

PGY-1



**Trevor Hardigan, MD, PhD**  
@THardiganMDPhD  
Colby College, BA  
Medical College of Georgia at August University, MD  
Medical College of Georgia at August University, PhD

PGY-1

# The Enrichment Experience

Exploring and Supporting Individual Resident Passions

Each neurosurgery resident participates in at least one academic “enrichment” year. Whether within or outside of Mount Sinai, this tailored experience allows residents to participate and explore their unique interests with protected time, freedom, and support.

## Imagination Allows Infinite Opportunities

- Technology and innovation
- Biomedical design
- Device development
- Artificial intelligence
- Enfolded fellowships
- Clinical research
- Basic research
- Industry internships
- Policy internships
- Political internships
- Graduate programs
- Public health
- Global health
- Business
- Administration
- Health science
- Clinical science



### Impacting the World with Global and Public Health

Neurosurgery is inaccessible to those who may need it the most: a large portion of the world's poor. Published in World Neurosurgery, **Ernest J. Barthélemy, MD, Class of 2021** showcases, “Patterns of Hydrocephalus in Rural Haiti: A CT-Based Study.” In Haiti, only four neurosurgeons cover a population of 10.6 million people. As a result, hydrocephalus, commonly affecting children and in need of surgical care, remains largely untreated. Ernest is doing something about it.

Ernest dedicated his neurosurgery research year to improving neurosurgery in Haiti. He spent the year split between **Harvard Medical School** in Boston, conducting research as a **Paul Farmer Global Surgery Fellow**, bringing to light the growing health, neurosurgical, and economic disparities in Haiti, but more importantly, to work closely with local Haitian government and population, healthcare workers, NGOs, and other individuals and institutions, with an unwavering commitment to strengthen their health systems. He is also completing his **Masters in Public Health** at the **Harvard T.H. Chan School of Public Health**.



### Recognized as a Leader in Innovation for Laying the Framework in Applying Deep Learning and Computer Vision Techniques

An artificial intelligence platform designed to identify a broad range of acute neurological illnesses, such as stroke, hemorrhage, and hydrocephalus, was shown to identify disease in CT scans in 1.2 seconds, faster than human diagnosis, according to a study conducted by **Eric K. Oermann, MD, Class of 2020** and published in the journal **Nature Medicine**. This is the first study to utilize artificial intelligence for detecting a wide range of acute neurologic events and to demonstrate a direct clinical application.

Eric was recognized as a finalist for 2018 Congress of Neurological Surgeons' **Innovator of the Year** for his research in artificial intelligence.



### Honored for Minority Neuroscience Mentorship

Neurosurgery resident **Ian T. McNeill, MD, Class of 2020** was honored at the 48th annual African American Day Parade for his service in New York City at large, and at Mount Sinai. Ian is the founder and leader of **Doctors Reaching Minority Males Exploring Neuroscience (DR. MMEN)**, a summer mentorship and immersion program for black and Latino young men entering their senior year in high school. Ian was honored by Aldrin Bonilla, Deputy Manhattan Borough President, who presented the award.

### Designing New Medical Technology and Devices

Neurosurgery resident **Kurt A. Yaeger, MD, Class of 2022** has research interests which include cerebrovascular and endovascular neurosurgery, functional neurosurgery, and brain-computer interface. With a fellowship in **Sinai BioDesign**, Kurt is engaged in medical device design and development, as well as the clinical uses of blockchain technology. Through BioDesign, Kurt is developing a new catheter for the treatment of brain AVMs and expects to patent and commercialize the device for clinical use.



## Resident Publications

Our residents are actively involved in both clinical and basic science research. Many have several high impact first-author publications. A selective representation of them is listed below.

### Automated Deep-Neural-Network Surveillance of Cranial Images for Acute Neurologic Events.

Nature Medicine, 2018  
**Oermann EK**, Titano JT, Badgeley M, Schefflein J, **Pain M**, Su A, Cai M, Swinburne N, Zech J, Kim J, Bederson JB, Mocco J, Drayer B, Lehar J, Cho S, Costa AB

### Patterns of Hydrocephalus in Rural Haiti: A CT-Based Study.

World Neurosurg, 2018  
**Barthélemy EJ**, Valtis YK, Cochran MF, Martineau L, Park K, Mendel JB, Warf B, Berkowitz AL

### Treatment-Associated TP53 DNA-Binding Domain Missense Mutations in the Pathogenesis of Secondary Gliosarcoma.

Oncotarget., 2017  
**Pain M**, Wang H, Lee E, Strahl M, Hamou W, Sebra R, Zhu J, Yong RL

### Lumbar Lordosis Correction with Interbody Fusion: Systematic Literature Review and Analysis.

World Neurosurgery, 2018  
**Rothrock RJ**, **McNeill IT**, **Yaeger K**, **Oermann EK**, Cho SK, Caridi JM

### Temporary Vertebral Artery Occlusion After C3 Fracture Dislocation Injury and Spontaneous Resolution Following Reduction and Instrumented Fusion: Case Report and Literature Review.

Journal of Neurointerventional Surgery, 2016  
**Yaeger K**, Mascitelli JR, Kellner C, Hickman Z, Mocco J, Margetis K

### Using a Machine Learning Approach to Predict Outcomes After Radiosurgery for Cerebral Arteriovenous Malformations.

Nature Scientific Reports, 2016  
**Oermann EK**, Rubinsteyn A, Ding D, Mascitelli JR, Starke RM, Bederson JB, Kano H, Lunsford LD, Sheehan JP, Hammerbacher J, Kondziolka D

### Prior Infarcts, Reactivity, and Angiography in Moyamoya Disease (PIRAMD): A Scoring System for Moyamoya Severity Based on Multimodal Hemodynamic Imaging.

J Neurosurgery, 2017  
**Ladner TR**, Donahue MJ, Arteaga DF, Faraco CC, Roach BA, Davis LT, Jordan LC, Froehler MT, Strother MK

### Utilization of Quantitative Susceptibility Mapping for Direct Targeting of the Subthalamic Nucleus During Deep Brain Stimulation Surgery.

Oper Neurosurg (Hagerstown), 2017  
**Rasouli JJ**, Ramdhani R, Panov FE, Dimov A, Zhang Y, Cho C, Wang Y, Kopell BH

### The Adjunctive Use of Vancomycin Powder Appears Safe and May Reduce the Incidence of Surgical Site Infections after Deep Brain Stimulation Surgery.

World Neurosurgery, 2016  
**Rasouli JJ**, Kopell BH

### Neurosurgery and Sustainable Development Goals.

World Neurosurgery, 2018  
**Barthélemy EJ**, Park KB, Johnson W

### Synergistic Malaria Parasite Killing by Two Types of Plasmodial Surface Anion Channel Inhibitors.

PLoS One, 2016  
**Pain M**, Fuller AW, Basore K, Pillai AD, Solomon T, Bokhari AA, Desai SA

### Decompressive Craniectomy for Severe Traumatic Brain Injury: A Systematic Review.

World Neurosurg, 2016  
**Barthélemy EJ**, Melis M, Gordon E, Ullman JS, Germano IM

### The Emerging Role of Augmented Reality in Endoscopic Skull Base Surgery.

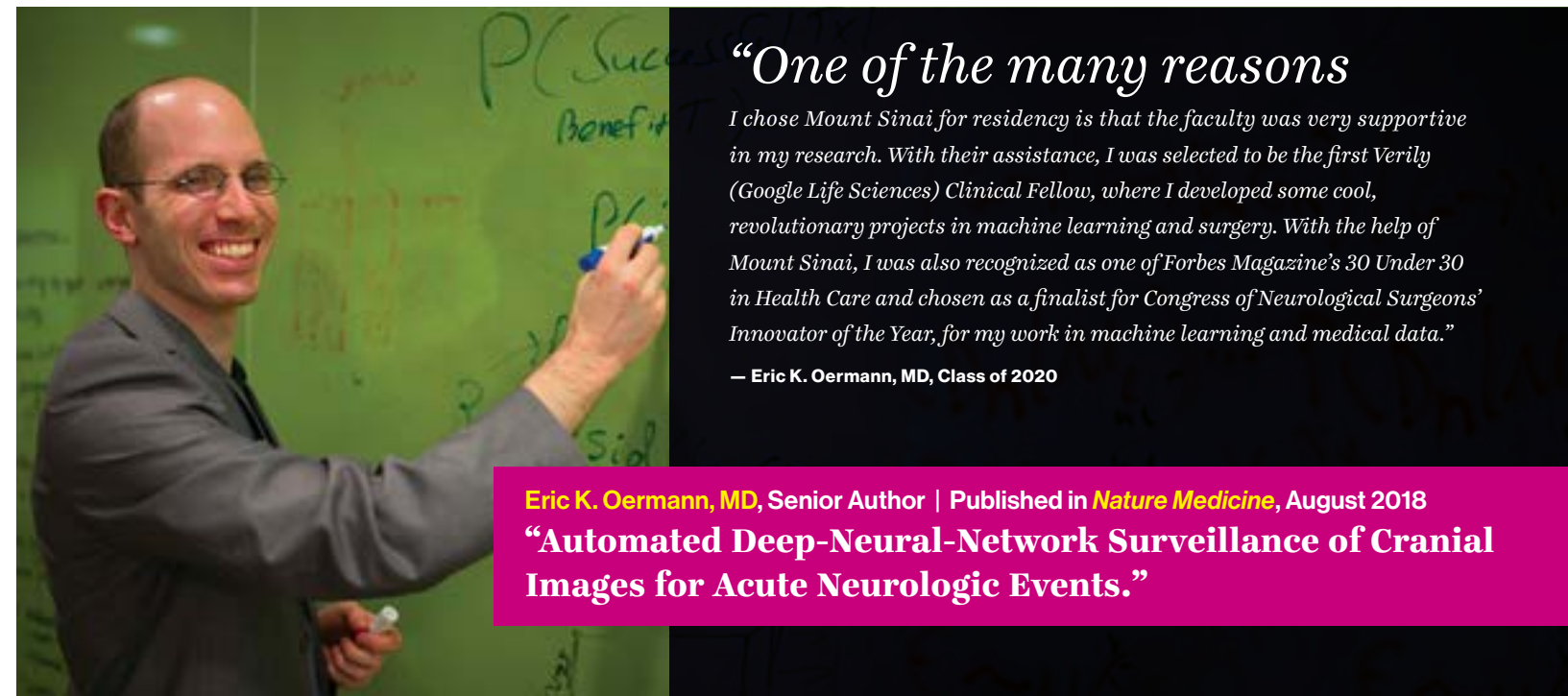
Journal of Neurological Surgery Skull-Base, 2017  
**Carrasquilla A**, Zeiger J, Oemke H, Illoreta AM, Bederson JB, Costa AB, Shrivastava R

### Exploration of Global Health Careers across the Medical Fields.

Annals of Global Health, 2017  
**Barthélemy EJ**, Mallo V, Hannaford A, Pean C, Kutua R, de Haydu C, Anandaraja N, Asgary R, Elahi E, Hexom B, Shirazian T

### Postoperative Radiculopathy Caused by a Retained Fractured Pedicle Cannulation Probe and Its Mechanism of Extraction.

World Neurosurgery, 2017  
**Yuk F**, Steinberger J, Skovrlj B, Mascitelli J, Cho SK, Caridi JM



## “One of the many reasons

I chose Mount Sinai for residency is that the faculty was very supportive in my research. With their assistance, I was selected to be the first Verily (Google Life Sciences) Clinical Fellow, where I developed some cool, revolutionary projects in machine learning and surgery. With the help of Mount Sinai, I was also recognized as one of Forbes Magazine's 30 Under 30 in Health Care and chosen as a finalist for Congress of Neurological Surgeons' Innovator of the Year, for my work in machine learning and medical data.”

— Eric K. Oermann, MD, Class of 2020

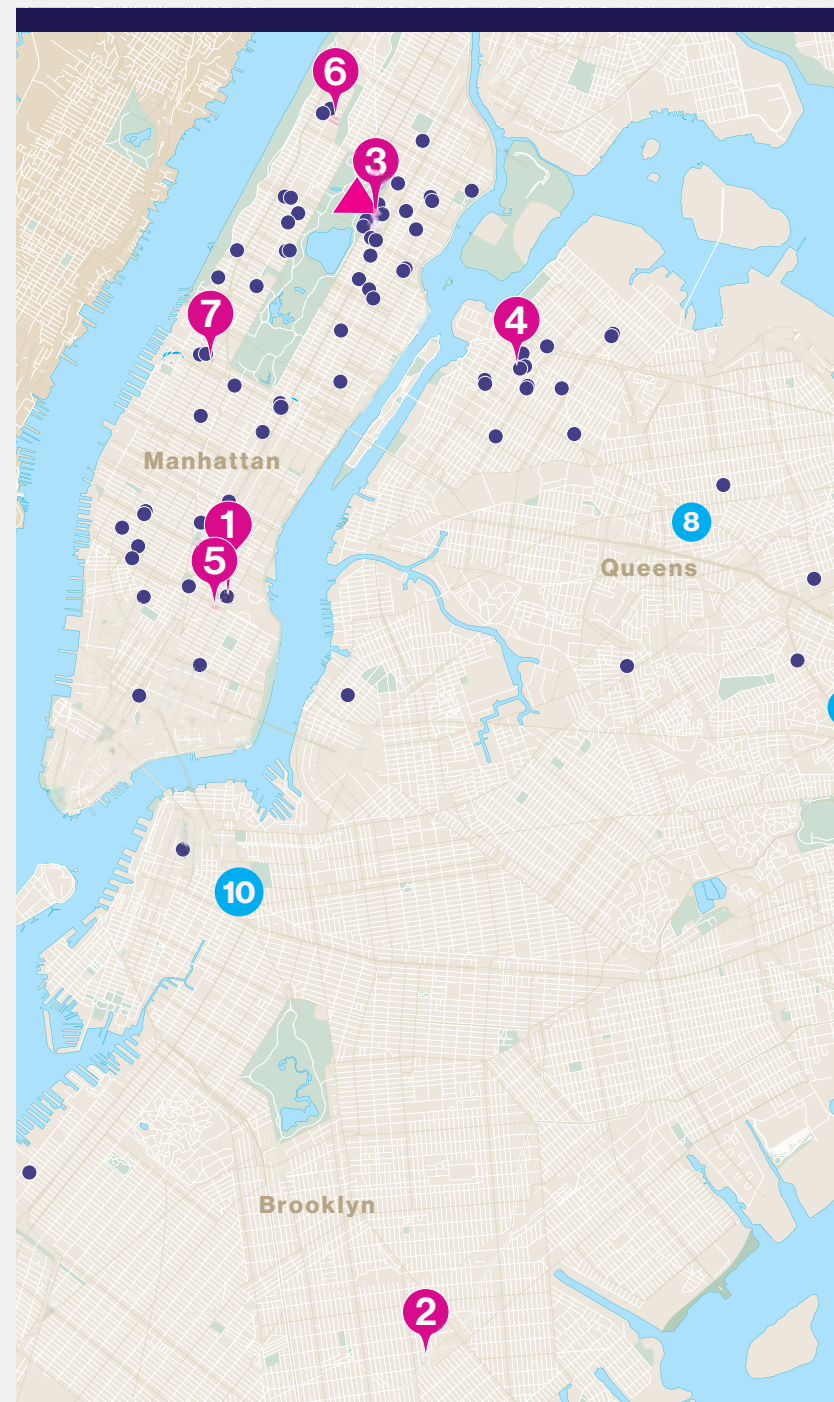
**Eric K. Oermann, MD, Senior Author | Published in Nature Medicine, August 2018**  
**“Automated Deep-Neural-Network Surveillance of Cranial Images for Acute Neurologic Events.”**

# Residency Presence Throughout New York

*The Most Diverse Population in the World*

With more than 3,500 neurosurgical procedures per year, Mount Sinai's neurosurgery program offers one of the largest neurosurgical caseloads in New York. This allows our residents to receive a significant neurosurgery operative experience. Being a large health system, we unify protocols, programs, and treatments to serve our communities with neurosurgical disorders.

Encompassing the Icahn School of Medicine at Mount Sinai and seven hospital campuses in the New York metropolitan area, as well as a large, regional ambulatory footprint, Mount Sinai is acclaimed internationally for its excellence in research, patient care, and education across a range of specialties. The large-scale ambulatory network and a range of inpatient and outpatient services—from community-based facilities to tertiary and quaternary care, provides an extensive referral base for neurosurgical care.



## Neurosurgery Presence Located in Mount Sinai Academic Centers Throughout New York City

### Mount Sinai Health System

- 1 Mount Sinai Union Square
- 2 Mount Sinai Brooklyn
- 3 The Mount Sinai Hospital
- 4 Mount Sinai Queens
- 5 New York Eye and Ear Infirmary of Mount Sinai
- 6 Mount Sinai St. Luke's
- 7 Mount Sinai West
- ▲ Icahn School of Medicine at Mount Sinai
- Ambulatory Practice Sites

### Department of Neurosurgery Member Hospitals

- 8 Elmhurst Hospital Center
- 9 Queens Hospital Center
- 10 The Brooklyn Hospital



## Resident Rotation Schedule

Residents benefit from our passion for patient care and research, ongoing contact with faculty, a diverse patient population, and the rapport among fellow residents. We really want to make a difference in people's lives.

<b>FIRST YEAR</b> PGY-1	<b>Intern</b> Elmhurst Hospital The Mount Sinai Hospital	<b>Three Months (Off Service) General Surgery, Plastic Surgery, Surgical Intensive Care Unit</b> <i>The Mount Sinai Hospital</i> <b>Six Months Clinical Neurosurgery and Neurotrauma</b> <i>Elmhurst Hospital</i> <b>Three Months Neurosurgical Intensive Care Unit</b> <i>The Mount Sinai Hospital</i>
<b>SECOND YEAR</b> PGY-2	<b>Junior Resident</b> The Mount Sinai Hospital	<b>Twelve Months Junior Resident</b> <i>The Mount Sinai Hospital</i> <b>***No Call Responsibilities (Other than Weekends)***</b>
<b>THIRD YEAR</b> PGY-3	<b>Junior Resident</b> The Mount Sinai Hospital	<b>Twelve Months</b> <i>The Mount Sinai Hospital</i> <b>***No Call Responsibilities (Other than Weekends)***</b>
<b>FOURTH YEAR</b> PGY-4	<b>Enrichment Elective</b>	<b>Twelve Months Elective and Research Time</b> <i>Academic research vs focused clinical experience</i> <b>***PROTECTED TIME***</b>
<b>FIFTH YEAR</b> PGY-5	<b>Chief Resident Elective</b> Mount Sinai West Mount Sinai St. Luke's	<b>Twelve Months Epilepsy, Endovascular Surgery, Pediatrics, and Radiosurgery</b> <i>Mount Sinai West and Mount Sinai St. Luke's</i>
<b>SIXTH YEAR</b> PGY-6	<b>Senior Resident</b> The Mount Sinai Hospital <b>Chief Resident</b> Elmhurst Hospital	<b>Six Months Senior Resident</b> <i>The Mount Sinai Hospital</i> <b>Six Months Chief Resident</b> <i>Elmhurst Hospital</i>
<b>SEVENTH YEAR</b> PGY-7	<b>Chief Resident</b> The Mount Sinai Hospital	<b>Twelve Months Chief Resident</b> <i>The Mount Sinai Hospital</i>



## Why Choose New York City?

Located in one of the most diverse and dynamic cities in the world, the Icahn School of Medicine at Mount Sinai shares an eight square block campus with The Mount Sinai Hospital, extending from 98th Street to 102nd Street, and eastward from Fifth Avenue to Park Avenue.

New York City's five boroughs are home to some of the world's most recognizable, cherished landmarks and attractions. From Times Square and Central Park to the Empire State Building and The Metropolitan Museum of Art, the island of Manhattan packs more famous icons into one compact area than any other place on earth; and that's to say nothing of the City's four other boroughs—The Bronx, Brooklyn, Queens and Staten Island—each of which contains its own roster of must see destinations.

### The City at Your Front Door

Our location in the heart of the city affords you countless ways to spend your free time — everything is just a walk, a subway, or a bus ride away. New York City is also an international hub for health care, technology, finance, the arts, and scientific industries.

### A Glimpse of what New York City has to Offer

Neurosurgery residents find it easy to balance studying and relaxation with entertainment and socializing throughout the city.

- ▶ Central Park: more than 800 acres of athletic fields, lawns and forests, with the East Meadow facing the school campus and the Reservoir running track.
- ▶ Also in the park, the serene Conservatory Garden is only blocks away, and you can enjoy picnics, ice skating, roller blading, boating, dining, impromptu and scheduled entertainment, and more.
- ▶ Mount Sinai is slightly removed from the midtown bustle of commuters and tourists, and yet is just a 15-minute subway ride from most of the downtown neighborhoods.

## Resident Life in New York City

*Living and learning in a dynamic community*

There are many opportunities available for residents at Mount Sinai. We make it our priority to provide residents with the activities, benefits, and resources needed to succeed.

### What Residents Can Expect to Receive

- Competitive stipends
- Excellent health benefits
- Affordable apartments in hospital-owned housing (subject to availability)
- Education supplements to cover costs, such as medical licensure
- Travel funds for presenting research at scholarly meetings
- Shuttle service between the Mount Sinai Health System campuses
- High-quality meals for on call or night float assignments
- Access to activity and event discounts, available through the Recreation Office
- A pair of surgical magnifying loupes
- Resident book funds to support additional education
- Yearly renewable department supported grant funding
- Monthly within-city travel funds to assist with getting around New York City

### Recently Added

- **No weekday calls during Junior year**
- Operate every day during Junior year
- Dedicated Advanced Practice Provider service line to support residents
- Service didactics
- Uber services during off hours
- Transportation stipends

### Resident Housing

Mount Sinai provides housing options for incoming families, incoming couples, and incoming singles. There are several housing options available throughout New York City.



## “Becoming a neurosurgeon

*requires years of intense training. Many of us are going through life changing, personal events during that time — dating, marriage, growing our families, and more. Mount Sinai Neurosurgery is a community that balances our personal commitments, patient care, and academic research.*

*My wife and I really enjoy the nightlife and restaurants in New York City. Since beginning my residency, we've decided to start a family. You'll often see us taking our sons Henry and newborn infant, Teddy, for a stroll in Central Park.*

*It's important to me to also spend time with my family.”*

— Robert M. Rothrock, MD, Class of 2021

# Neurosurgery Education

*Conferences, Research, Lectures, and Boards*



Led by renowned medical experts, and fed by rich conversations among medical peers facing similar challenges, the Department of Neurosurgery offers residents both the latest research on hot-button issues and emerging trends, and the best solutions for dealing with tough concerns and clinical changes.

## Grand Rounds

Held weekly, Neurosurgery Grand Rounds focuses on continuing medical education and resident education. Formal lectures are presented by faculty, visiting professors, residents, and students, with the ultimate goal of improving the quality of care in Mount Sinai Health System's Department of Neurosurgery and reviewing neurosurgical cases. Topics include neurosurgery, neurology, neuropathology, neuroradiology, spine, neurocritical care, neuro-oncology, Self-Assessment in Neurological Surgery (SANS) Lectures, M&M, Q&A, basic and translational research, and special lecture series.

## Journal Club

Journal Club is scheduled once monthly and allows Mount Sinai's neurosurgery residents to discuss recently published neurosurgery articles and their merits. The club is directed by a neurosurgery attending faculty member with a specific specialty interest and expertise, varying the articles under discussion.

## Educational Core Series

Held every Wednesday morning and directed by a neurosurgery attending faculty member with a specific specialty interest and expertise, the didactic course reviews neurosurgical anatomy surgical and approaches, basic science, and clinical research, as well as neuropathology, neuroradiology, and neurology. Content is derived from a prepared education syllabus. Monthly assessments for the formal written ABNS examination are held each year in the spring.

## Formal Oral Board Simulation Course

Mount Sinai Neurosurgery Residents perform mock examinations with a neurosurgery attending led critique. The course includes content derived from Self-Assessment in Neurological Surgery (SANS) to review neurosurgical oral board format and rotates throughout the course of the year with faculty members in a specific specialty area.

## Visiting Professors Lecture Series

Throughout the year, the Mount Sinai Health System Department of Neurosurgery hosts nationally and internationally recognized physicians and figures in the neurosurgery field to present a lecture on an area of their interest. Visiting professor days include a one-hour lecture, full day to spend with the faculty and residents, reviewing patients on service, private lunch with the residents to discuss clinical and research topics of their interest.

## Annual Memorial Lectures

- ▶ Ved P. Sachdev, MD, Memorial Lecture
- ▶ Sidney A. Hollin, MD, Memorial Lecture
- ▶ Leonard I. Malis, MD, Memorial Lecture
- ▶ Jeannette & Bernard S. Post, MD, Memorial Lecture

## Neurosurgery Research Day

Neurosurgery Research Day is an annual event that includes selected presentations of original and breakthrough research conducted by faculty, residents, fellows, and medical students. The first Research Day was held in June, 1996, and originally titled "Basic Science Research Day." The Research Day program now includes the annual Ved P. Sachdev, MD, Memorial Lecture.

## Conferences and Boards

### Multidisciplinary Cerebrovascular Board

Cerebrovascular Board is held weekly with cerebrovascular and endovascular attendings, residents, fellows, and researchers to discuss cases for the Cerebrovascular Center.

### Interdisciplinary Brain Tumor Board

Brain Tumor Board is held weekly with neurosurgeons, oncologists, neuro-oncologists, neurosurgery fellows, nurse practitioners, registered nurses, radiation oncologists, neuro-pathologists, and neuro radiologists, and researchers to discuss brain tumor cases.

### Multidisciplinary Pituitary Conference

The Multidisciplinary Pituitary Conference is a clinical conference where pituitary and neuroendocrine cases are presented and discussed in a multi-disciplinary setting with input from our endocrine, neurosurgery, and neuroradiology colleagues (among others). This interesting and educational discussion facilitates a collaboration throughout the Mount Sinai Health System on pituitary cases. Fellows and residents are strongly encouraged to attend.

### Interdisciplinary Spine Tumor Board

Interdisciplinary Spine Tumor Board is held bi-weekly with spine neurosurgeons, orthopaedic surgeons, radiation oncologists, neuroradiologists, medical oncologists, neuropathologists, nurse practitioners and fellows to discuss complex spine tumor cases for the Neurosurgery Spine Program.

### Neuroradiology Conference

Neuroradiology Conference is held weekly with neurosurgeons, neuroradiologists, neurosurgery residents, neuroradiology fellows, and researchers to discuss cases.

### Multidisciplinary Neuro-Oncology Tumor Board

Neuro-Oncology Tumor Board is held weekly with neurosurgeons, neuro-oncologists, neuropathologists, radiation oncologists, neuroradiologists, neuro-ophthalmology, neurosurgery residents, fellows, and researchers to discuss cases for Neuro-Oncology Program across the Mount Sinai Health System. The conference also serves as Mount Sinai's Cancer Registry for neurosurgery.

### Sinai BioDesign Science Series

Sinai BioDesign is a multidisciplinary hub for innovation, creation, and fabrication of novel medical technologies. Using the academic principles of biodesign, the program enables visionary physicians and surgeons with extensive clinical experience to communicate and translate medical problems and inefficiencies from concept into material solution. The Sinai BioDesign Science Series Seminar allows for the sharing of ideas and research projects through informal presentations that are relevant to the BioDesign process. These lectures are interactive and include multidisciplinary invited speakers who are experts in topic areas or innovations in bioengineering.

### Neurocritical Care Lecture Series

To cover all United Council for Neurologic Subspecialties (UCNS) recommended neurocritical care core topics, the Neurocritical Care Core Lecture series is updated every year by our senior neurocritical care fellows. This lecture series includes reviews and updates of evidence-based neurocritical care clinical protocols, morbidity-mortality conferences, system-wide neurocritical care case conferences and lectures by our core and interdisciplinary faculty.



# Neurosurgery Resident Alumni

*Continuing to Build a Legacy and Advance the Field*



Many alumni have hosted events at their homes during society meetings and conventions and invited current and past faculty members, alumni, and residents.

## Our Graduates, First Year Out of Residency

The Neurosurgery Residency Program at Mount Sinai has an established, 68-year legacy of transforming its driven and visionary resident interns into superior and compassionate clinical neurosurgeons, pioneers in advancing the field, and exceptional leaders in academia.

Neurosurgery staff collaborates with its residents, providing a comprehensive and rigorous neurosurgical training experience, encouraging growth and advancement. Most of our resident alumni have gone on to faculty positions at academic departments and private practices.

The Director of Neurosurgery, Ira S. Cohen, MD, established the formal residency program in Neurosurgery in 1946. He appointed two residents before his retirement; the first resident was Aaron J. Beller, MD, who later became the Chairman of the Department of Neurosurgery at

Hadassah Hospital in Israel. The second appointed was Leonard I. Malis, MD, who later became Chairman of the Department of Neurosurgery at The Mount Sinai Hospital.

When Leo Davidoff, MD, became Director of Neurosurgery in 1956, the AMA approved The Mount Sinai Hospital for a three-year residency training program. In 1958, he expanded the training to four years. In the early 1960s, the addition of the City Hospital Center at Elmhurst, with its busy trauma service, expanded the exposure of the residents' clinical experience.

**Jeremy M. Steinberger, MD**  
Fellowship, Spine Surgery  
Hospital for Special Surgery

**Christopher A. Sarkiss, MD**  
Fellowship, Neurosurgical Oncology  
University of Miami

**Justin R. Mascitelli, MD**  
Fellowship, Cerebrovascular  
Barrow Neurological Institute

**Asha M. Iyer, MD, PhD**  
Fellowship, Spine  
Stanford Medical Center

**Branko Skovrlj, MD**  
North Jersey Spine Group

**Farid Hamzei-Sichani, MD, PhD**  
Fellowship, Functional  
University of Toronto

**Hekmat K. Zarzour, MD**  
Thomas Jefferson University Hospitals

**Michael W. Groff, MD**  
Brigham and Women's Hospital

**Raj K. Shrivastava, MD**  
Mount Sinai Health System

**Harel Deutsch, MD**  
Rush University Medical Center

**Naresh P. Patel, MD**  
Mayo Clinic

**Marc S. Arginteanu, MD**  
Metropolitan Neurosurgery

**Daniele Rigamonti, MD, FAHA**  
Johns Hopkins Hospital

**Sharona Ben-Haim, MD**  
University of San Diego

**Fedor E. Panov, MD**  
Fellowship, Functional  
University of California San Francisco

**Soriaya Motivala, MD**  
Mount Sinai Health System

**Yakov Gologorsky, MD**  
Fellowship, Spine  
Brigham and Women's Hospital

**Emanuela Binello, MD, PhD, ScD**  
Boston University

**Zachariah M. George, MD**  
Fellowship, Spine  
Beth Israel

**Kenneth De Los Reyes, MD**  
Fellowship, Skull Base  
University of South Florida and  
Brigham and Women's Hospital

**Michael Brisman, MD**  
Neurological Surgery, P.C.

**Jamie Sue Ullman, MD**  
Northwell Health

**Chirag D. Gandhi, MD**  
Rutgers Neurological Institute of NJ

**Justin R. Mascitelli, MD**  
UT Health San San Antonio

**Asha M. Iyer, MD, PhD**  
Hackensack Meridian Health

**Erin Biro, MD**  
Ochsner Health System

## Neurosurgery Resident Alumni Network

There are over 100 resident alumni at Mount Sinai, and we are proud to update and engage them by regularly scheduling networking events throughout the year, newsletters, and updates.

- 1950 Aaron J. Beller, MD
- 1950 Leonard I. Malis, MD
- 1951 Bernard J. Sussman
- 1951 Paul Teng, MD
- 1952 A. Hyman Kirshenbaum, MD
- 1953 Yun Peng Huang, MD
- 1953 M. Bernard Winkler, MD
- 1959 Christos A. Papatheodorou, MD
- 1961 Sidney A. Hollin, MD
- 1961 Alcides C. Pomina, MD
- 1963 Melpakkam D. Kasy, MD
- 1964 William M. Cohn, MD
- 1967 Omar Espinosa, MD
- 1967 Antonio Marti, MD
- 1967 Songsant Panichavatana, MD
- 1967 Wen-Chen Wei, MD
- 1968 Richard L. Cohen, MD
- 1968 Robert E. Decker, MD
- 1969 Gerald Sherman Freifeld, MD
- 1969 Michael H. Sukoff, MD
- 1970 Martin H. Savitz, MD
- 1971 Manuel Caccdac, MD
- 1971 James B. Sarno, MD
- 1972 Jerome B. Kaufman, MD
- 1973 Hang S. Byun, MD
- 1973 Hiroshi Nakagawa, MD
- 1973 Rafael O. Quinonez, MD
- 1973 Ved P. Sachdev, MD
- 1973 Jae M. Noh, MD
- 1974 Alonso V. Correa, MD
- 1974 Pedro R. Dominguez, MD
- 1975 Marc A. Letellier, MD
- 1975 Joseph Mormino, MD
- 1976 Jaime G. Wancier, MD
- 1977 Rosario "Russ" A. Zappulla, MD, PhD
- 1978 Robert A. Brodner, MD
- 1979 Allan J. Drapkin, MD
- 1979 William L. Klempler, MD

- 1979 Allen Rothman, MD
- 1980 Luiz De Araujo, MD
- 1980 Mark S. Klein, MD
- 1981 Richard Radna, MD
- 1982 Fernando Delasotta, MD, FACS
- 1982 Hamilton C. Goulart, MD
- 1983 Mitchell Edward Levine, MD
- 1983 Melvin Prostkoff, MD
- 1984 Daniele Rigamonti, MD, FAHA
- 1985 Bruce G. Witkind, MD
- 1986 Allen Bernard Kantrowitz, MD
- 1986 Michael C. Overby, MD
- 1987 Raphael Davis, MD
- 1987 Peter Henry Hollis, MD
- 1987 Stephanie Rifkinson-Mann, MD
- 1988 Bruce R. Rosenblum, MD, PC
- 1988 Scott W. Strenger, MD, MMM, CPE
- 1989 James R. Adamson, MD
- 1989 Frank M. Moore, MD
- 1990 Rosemaria A. Gennuso, MD
- 1990 Perry B. Hoeltzell, MD, PhD
- 1991 Andrew S. Glass, MD
- 1991 Jordan Carel Grabel, MD
- 1991 Kathryn Ruth Ko, MD, MFA
- 1992 Michael J. Harrison, MD
- 1993 Richard C. Strauss, MD
- 1994 Mark Bruce Eisenberg, MD
- 1994 Jay More, MD
- 1994 Jeffrey S. Oppenheim, MD
- 1995 Alleyne B. Fraser, MD
- 1996 Jamie Sue Ullman, MD
- 1997 Joan F. O'Shea, MD
- 1997 Joseph Queenan, MD
- 1997 David H. Segal, MD
- 1997 John Shiau, MD
- 1998 Michael Brisman, MD
- 1998 Sumit Das, MD
- 1999 Marc S. Arginteanu, MD

- 1999 Michael W. Groff, MD
- 2000 Arthur L. Jenkins III, MD
- 2001 Naresh P. Patel, MD
- 2001 Amit Y. Schwartz, MD
- 2002 David Chang, MD, PhD
- 2002 Harel Deutsch, MD
- 2002 Caleb Lippman, MD
- 2003 Raj K. Shrivastava, MD
- 2003 Kevin C. Yao, MD
- 2004 Daniel Walzman, MD
- 2005 Simone Betchen, MD
- 2005 Chun S. Chen, MD
- 2006 Ronald Benveniste, MD, PhD
- 2006 Chirag D. Gandhi, MD
- 2007 Paul S. Saphier, MD
- 2007 Brian J. Snyder, MD
- 2008 Harlan Bruner, MD
- 2008 Alexander F. Post, MD
- 2009 Ronit Gilad, MD
- 2009 Arien J. Smith, MD
- 2010 Scott Meyer, MD
- 2010 Joseph Queenan, MD
- 2011 Abilash Haridas, MD
- 2012 Erin E. Biro, MD
- 2012 Kenneth De Los Reyes, MD
- 2012 Zachariah M. George, MD
- 2013 Emanuela Binello, MD, PhD, ScD
- 2013 Yakov Gologorsky, MD
- 2014 Soriaya Motivala, MD
- 2014 Fedor E. Panov, MD
- 2015 Sharona Ben-Haim, MD
- 2016 Hekmat K. Zarzour, MD
- 2016 Farid Hamzei-Sichani, MD, PhD
- 2016 Branko Skovrlj, MD
- 2017 Justin R. Mascitelli, MD
- 2017 Asha M. Iyer, MD, PhD
- 2018 Christopher A. Sarkiss, MD
- 2018 Jeremy M. Steinberger, MD

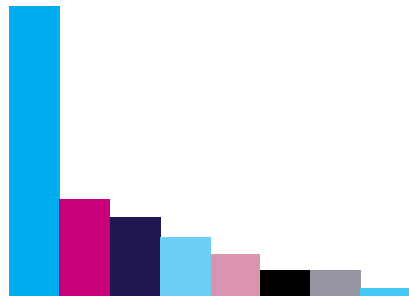
## Where are Alumni Now



# Neurosurgery Research and Milestones

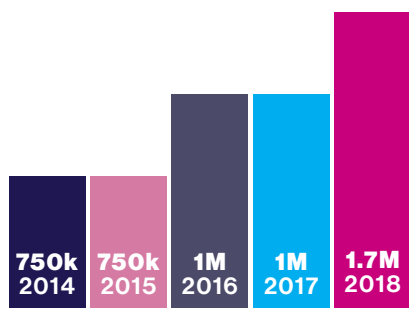


Alexandros Bouras, MD, and Constantinos Hadjipanayis, MD, PhD, perform research in the Brain Tumor Nanotechnology Lab.



## 150 Active Neurosurgery Clinical Trials and Studies Open for Accrual

- Cerebrovascular Disorders: 82
- Brain Tumors: 23
- Neurocritical Care: 19
- Neuromodulation: 3
- Spine: 16
- Epilepsy: 3
- Simulation: 3
- Pediatric Cerebrovascular Disorders: 1



## Mount Sinai Neurosurgery Trial Funding ~1.7 million

Two active IDEs held by faculty  
 One active IND held by faculty  
 Coordinating center for three active studies

Our neurosurgeons are pioneering new techniques in skull-base surgery and minimally invasive surgery to greatly reduce recovery times and to optimize the health of our patients. Our scientists conduct cutting-edge research to find novel therapies to improve clinical outcomes for patients.

### Mount Sinai Neurosurgery Historic Milestones

- ▶ First hospital in the world to perform a microneurosurgical operation.
- ▶ First hospital in the world to perform catheter based therapeutic embolization for a GI bleeder following a gastrectomy.
- ▶ First hospital in the United States to perform the GPi Deep Brain Stimulation for dystonia.
- ▶ First hospital in the United States to perform gene delivery in the mouse brain by embryonic stem cell derived astrocytes.
- ▶ First hospital in the world to use real-time, augmented reality imaging overlaid on the brain through an eyepiece, allowing surgeons to see images of a patient's original CT scans or MRIs superimposed on the patient's brain during microscopic surgery.
- ▶ Second hospital in United States, first in the Northeast, to perform a stem cell transplant for chronic spinal cord injury.
- ▶ First hospital in the world to complete a prospective randomized trial demonstrating the value of aspiration thrombectomy in treating patients suffering acute stroke from large vessel occlusion.
- ▶ One of the first hospitals in the United States to use WEB Aneurysm Embolization System to treat an aneurysm.
- ▶ First hospital team in the world to develop and begin clinical trials for the application and use of High Field 7T MRI imaging in the planning and operative guidance in complex Endoscopic Skull Base Surgery.
- ▶ The first hospital to implant a NeuroPace responsive neurostimulator for uncontrolled epilepsy in a child.
- ▶ Monitoring of the physiology of the comprised human brain in real time, allowing the detection of secondary injury before it leads to irreversible tissue damage, and create an optimized physiological environment for the injured brain.
- ▶ Pioneering studies in advanced multimodality monitoring for comatose patients, including first use of placement of intracortical EEG depth electrodes, introduction of new brain tissue oxygen monitoring and cerebral blood flow monitoring systems, and the implementation of an advanced bedside monitoring and data acquisition system.
- ▶ First hospital in New York City to use Gliolan (5-ALA) for fluorescence-guided surgery (FGS) in brain tumor surgery.
- ▶ The first hospital in the United States to implant St. Jude Medical's Infinity™ DBS System, designed to deliver enhanced patient comfort; including proprietary directional lead technology, which helps steer current toward areas that may help maximize patient outcomes and reduce side effects, as well as programming with a wireless iOS software mobile platform.
- ▶ First hospital in the borough of Queens to perform a thrombectomy.
- ▶ First hospital creates highest-volume centers in the world dedicated to the treatment and research of intracerebral hemorrhage.
- ▶ First hospital study to utilize artificial intelligence for detecting a wide range of acute neurologic events and to demonstrate a direct clinical application.





## We're One of the Top Hospitals in the Country for Neurosurgery.

Mount Sinai Neurosurgery is committed  
to mentoring our residents, so they become:

- Compassionate Clinicians
- Visionary Innovators
- Enthusiastic Teachers
- Skilled Surgeons
- Courageous Leaders



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## The Future Neurosurgeons Who'll Impact the World.



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