LETTER FROM THE CHAIR
Preparing to Usher in a New Era of Neurosurgical Care as U-M’s ‘Hospital of the Future’ Becomes Reality

We are coming to the end of another year, and as always, it has been a meaningful one in the U-M Department of Neurosurgery. Since finishing up our centennial year, we’ve had another busy twelve months, complete with many new challenges and much excitement.

Perhaps most notably, in September of this year, the Regents of the University approved the plan to build a new, state-of-the-art neuroscience-focused hospital on the University of Michigan’s medical campus. The new hospital will be located in an area of campus that previously housed the Kresge Laboratories, which were torn down years ago. I have personally referred to this area as the “grassy knoll” for a number of years. It is located right next to the Frankel Cardiovascular Center. The new hospital will have 12 floors, with 20 operating rooms, and 264 beds. These 264 beds will be housed in private rooms; each room is unique in that it can be converted from a standard room to an ICU. This ICU capability for all of the rooms will allow us to expand as necessary for critically ill patients.

Although the hospital will have a neuroscience focus, there will be sufficient beds to backfill the Frankel Cardiovascular Center, which is bursting at the seams. Faculty and staff across the health system worked together with patients and families to assist with the design of the new hospital in order to ensure its patient-centric focus, and to ensure that it meets the many different needs of those it will serve. The state-of-the art technology provided in this new hospital will include an intra-operative MRI scanner, and a hybrid OR suite, which will allow for endovascular as well as open procedures to be performed. In addition, there will be a specific staging room, which will allow for whole cell therapy to be prepared just outside the operating room. This is an important feature that will enable us to work with a variety of cellular therapies, which are becoming increasingly important in the care of our patients.

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The new hospital will be located in an area of campus that previously housed the Kresge Laboratories, which were torn down years ago.
The resident group at Michigan continues to excel clinically as well as academically. Highlights of some of the group's recent successes are listed in these pages. We especially welcome our four newest department members: PGY-1 residents Jaes Jones, Joey Linzey, and Ayobami Ward, and PGY-2 resident Whitney Muhlestein. With these new residents, it is clear that the great legacy of our training program is in good hands and the future of our specialty is very bright indeed.

Finally, I would like to thank Susie Hines for her outstanding work as Program Administrator. This year, Susie received the Graduate Medical Education Program Administrator Excellence Award. This award goes to the best program administrator in the entire medical school – quite an honor and richly deserved. Susie's dedication to the residency program has impacted Michigan Neurosurgery in so many ways. It is great to see that her work has now been recognized outside of the Department as well.

We are currently in the midst of application season, and the neurosurgery residency selection process for U-M will be as competitive as ever. This year, we will screen more than 300 applications from US medical school graduates in order to choose the three new residents who will join the Department in 2020. Those of you who follow medical education issues closely will likely be aware that the ACGME has begun to emphasize program efforts to maintain resident wellness. Thanks to the generous donations of many of our graduates and friends, our department now has the necessary resources to maintain a leadership position with the national implementation of these changes. These initiatives include visiting professor lectures and dinners, travel to courses, as well as support for team-building and networking within the resident group. Michigan has a long history of training the best and brightest individuals in our field. These initiatives and this newly created fund will position the Department well as we continue to attract outstanding individuals in the future.
2019 Chief Resident Graduation

On Saturday, June 22, Neurosurgery faculty, residents, staff, and family gathered at the U-M Museum of Art for an evening of recognition and celebration honoring graduating residents Drew Wilkinson, MD, Luis Savastano, MD, PhD, and Jacob Joseph, MD.

Since completing their residency training at the University of Michigan, all three have undertaken fellowships at various institutions throughout the country.

Dr. Wilkinson is completing an endovascular fellowship at Barrow Neurological Institute in Phoenix.

Dr. Savastano is completing an endovascular fellowship at Beth Israel Deaconess Medical Center in Boston (followed by a faculty appointment as Senior Associate Consultant in Cerebrovascular Neurosurgery at the Mayo Clinic in Rochester, Minnesota).

Dr. Joseph is completing a spine fellowship at the University of Pittsburgh.

CONGRATULATIONS
Drs. Joseph, Savastano, and Wilkinson!
We wish them the very best as they begin their neurosurgical careers.
2019 Medical Education Awards

Julian T. Hoff Teaching Award
The Julian T. Hoff Teaching Award is given each year to a junior faculty member within the Department with an exemplary record in teaching our residents.

2019 Recipient: Nicholas Szerlip, MD

Max Peet Resident Teaching Award
The Max Peet Teaching Award is given annually to a resident who has distinguished him/herself in the arena of teaching other residents and medical students.

2019 Recipient: Luis Savastano, MD, PhD

Friend of Neurosurgery Award
The Friend of Neurosurgery Teaching Award is given each year to an individual(s) outside of the Department who is instrumental in teaching our neurosurgical residents.

2019 Recipients: Mott MR OR Techs: Samual Elkins, ARRT (R)(MR); Robert F. Ladouceur, BS, ASRT (R)(CT)(MR); David J. Nagy, BS, RT (R)(CT)(MR); and Dragan Spremo, (R)(CT)(MR) (not pictured)

McGillicuddy Resident Leadership Award
The McGillicuddy Resident Leadership Award recognizes a resident who exhibits exemplary leadership in maintaining the highest standards of professionalism.

2019 Recipient: Jacob Joseph, MD
2019 Neurosurgical Residents

This year, we welcomed four new residents to our training program at the beginning of July: Drs. Jaes Jones, Joseph Linzey, and Ayobami Ward (PGY-1s) and Dr. Whitney Muhlestein, who joined our program as a PGY-2 resident.

Jaes Jones, MD, MS

Medical School: Cleveland Clinic Lerner College of Medicine of Case Western Reserve University
Graduate School: Case Western Reserve University
Undergraduate: Massachusetts Institute of Technology
Hometown: Sandy, Utah

Why Neurosurgery? It is the perfect intersection of my love for people, neuroscience, engineering, and working with my hands.

Hobbies/Interests: Wrestling, trail running, rock climbing, my wife, Hillary, and three sons (Bryson (3.5 yrs.), Pierce (21 mo.), and Vander (21 mo.)), and faith (The Church of Jesus Christ of Latter-Day Saints)

Clinical Interests: Epilepsy surgery, neuromodulation, spine, device development

Joseph Linzey, MD, MS

Medical School: University of Michigan Medical School
Graduate School: University of Michigan School of Public Health
Undergraduate: Brigham Young University
Hometown: Groton, Massachusetts

Why Neurosurgery? As an undergraduate, I fell in love with neuroscience and anatomy. During one of my first months in medical school, Dr. Pandey and TJ Wilson let me scrub into a lumbar laminectomy case. They let me make first incision and tie some of the closing stitches. At that point I was hooked. By September of my M1 year I was working on research with Dr. Pandey and never looked back. Ultimately, I decided on neurosurgery because I was fascinated by the pathologies and patient population and because I felt like I had "found my people" in medicine.

Hobbies/Interests: Spending time with family (wife, two kids), exercising, hiking, finding new places to eat, reading

Clinical Interests: Neuro-oncology, skull base, cerebrovascular

Ayobami Ward, MD, ScM

Medical School: The Medical College of Georgia
Graduate School: Johns Hopkins Bloomberg School of Public Health
Undergraduate: Johns Hopkins University
Hometown: Kennewick, WA

Why Neurosurgery? As a sophomore in college, I had a chance encounter with a neurosurgeon in order to complete a research requirement for my degree in neuroscience. At that point in my life, I had never considered medicine, let alone neurosurgery. At the time I was a budding scientist and engineer. Neurosurgery was an amalgamation of these two interests – with a spirit of innovation and imagination that I found endlessly fascinating. When I decided to change paths and enter medical school, there was no option for me other than neurosurgery.

Hobbies/Interests: Cars, cooking, tennis, travel

Clinical Interests: Spine oncology, TBI, global health

Whitney Muhlestein, MD (entered program as a PGY-2)

Medical School: Vanderbilt University School of Medicine
Undergraduate: Harvard University
Hometown: South Pasadena, California

Why Neurosurgery? I loved all things neuro in medical school, and so I gave every neuro-focused specialty a try – neuroradiology, neurology, and neurosurgery. I liked them all, but what I loved about neurosurgery was the opportunity to be a radiologist, a neurologist, and a surgeon for neurologically ill patients. I love that as the neurosurgeon, the buck stops with you.

Hobbies/Interests: Choral singing, Russian, violin, watching college football, playing with my son

Clinical Interests: Oncology, using machine learning and big data to improve predictive modeling
2019 Neurosurgical Fellows

Additionally, the Department welcomed two new fellows at the beginning of July: Drs. Lauren Ottenhoff and Kevin Swong. Dr. Ottenhoff will be completing a two-year neurocritical care fellowship and Dr. Swong will be completing a one-year spine fellowship.

Lauren Ottenhoff, DO
Residency Training: Loyola University Medical Center
Medical School: Midwestern University: College of Osteopathic Medicine
Undergraduate: Northern Michigan University

Kevin Swong, MD
Residency Training: Loyola University Medical Center
Medical School: Southern Illinois School of Medicine
Undergraduate: Brown University

6th Annual U-M Resident Research Symposium

The 6th Annual Neurosurgery Resident Research Symposium took place on May 10 this year. Dr. Robert Harbaugh, Distinguished Professor and Chair, Department of Neurosurgery, Penn State Hershey Medical Center, served as the honored guest speaker as well as the 2019 Elizabeth Crosby Visiting Professor.

As it does each year, the event provided a great opportunity for our residents to present their original work, as well as a chance to learn from a nationally distinguished colleague. Drs. Todd Hollon and Luis Savastano were chosen as co-winners of the Crosby Basic Science Research Award for having the best basic science presentations, and Dr. Siri Khalsa was the recipient of the Chandler Clinical Research Award, which is awarded for the best clinical research presentation. The 2020 Neurosurgery Residency Research Symposium will take place on May 1, 2020. Dr. Susan Chang of the University of California, San Francisco will serve as our honored guest as well as the Elizabeth Crosby Visiting Professor.

Left to right: Dr. Cormac Maher, Dr. Todd Hollon, honored guest speaker Dr. Robert Harbaugh, Dr. Siri Khalsa, and Dr. Luis Savastano
The 16th Annual Neurosurgery Charity Softball Tournament took place in NYC's Central Park on June 8 this year. A total of 40 teams competed in the tournament, which benefits the Neurosurgery Research and Education Foundation (NREF). More than $125,000 were raised for NREF neuro-oncology research fellowships.

The U-M Department of Neurosurgery’s 2019 team included several faculty members – Drs. Buckingham, Szerlip, Oppenlander, and Kashlan – as well as our former spine fellow, Dr. Elswick, and our neurocritical care fellow, Dr. Ahmad. Seven residents also competed: Jacob Joseph; Todd Hollon; Brandon Smith; Yamaan Saadeh; Tim Yee; Katherin Holste; and Sara Saleh.

The team had their most successful year to date in the tournament, making it to the playoffs and finishing as one of the top 16 teams of 40! In the end, Barrow Neurological Institute defeated UCSF in the championship game and won the tournament, now boasting seven of the last 10 championships. Congrats to all the participating teams, especially our own U-M team!

Chief Resident Brandon Smith shares a recap of this year’s exciting tournament:

The softball trip continues to be a treasured part of our program, and this year was by far our most successful. It all started back home this spring when we organized indoor and outdoor practices, scrimmages with the NICU staff, and engineered the lineup/strategy, which surely contributed to our success. Our first game was against Duke, a perennial powerhouse with hired coaching... despite the odds, and in scrappy underdog fashion, we took home the W with a lock-down defense stranding three of their players on base at the end of the game. We then took on UVA after a four-game pause. At one point we trailed by four runs. However, a strong four-run rally late in the game resulted in a tie. We secured our place in the playoffs when we upended Rutgers with big bats and diving catches. We finally fell to Florida by a single run in the playoffs despite strong batting and great defense. Overall we had an awesome trip with tons of memories. It continues to be an amazing team building experience with residents and faculty playing side-by-side.
Resident Honors & Awards

Our residents continue to receive myriad prestigious awards and honors for their academic, clinical, and leadership work; 2019 was no exception. Recent notable achievements include but are not limited to those listed below.

David Altshuler, MD
- Resident Ombudsman, U-M Department of Neurosurgery, July 2016 – present

Amy Bruzek, MD
- American Association of Neurological Surgeons/Congress of Neurological Surgeons Pediatric Section Basic Science Best Poster Award, December 2018
- Family Feud Neuroanatomy Award – Junior Resident, U-M Department of Neurosurgery, June 2019

Todd Hollon, MD
- American Association of Neurological Surgeons Technology Development Grant (4/1/2018 – 4/1/2019)
- Crosby Basic Science Research Award, Neurosurgery Resident Research Symposium, U-M Department of Neurosurgery, May 2019
- Family Feud Neuroanatomy Award – Senior Resident, U-M Department of Neurosurgery, June 2019

Jacob Joseph, MD
- John E. McGillicuddy Resident Leadership Award, U-M Department of Neurosurgery, 2019

Siri Khalsa, MD
- American Association of Neurological Surgeons Donald O. Quest Resident Clinical Science Award, 2019
- Best Neurosurgery Poster Presentation, U-M Neuroscience Day, Departments of Neurology and Neurosurgery, University of Michigan, June 2019
- Chandler Clinical Research Award, Neurosurgery Resident Research Symposium, U-M Department of Neurosurgery, May 2019

Joseph Linzey, MD
- U-M Medical School Dean’s Award for Research Excellence, May 2019
- Edgar A. Kahn Award for Excellence in Neurosurgery, May 2019

Jay Nathan, MD
- University of Michigan Healthcare Administration Scholars Program, 2017 – 2019

Yamaan Saadeh, MD
- Elected to AANS Young Neurosurgeons Committee, 2018

Luis Savastano, MD, PhD
- Crosby Basic Science Research Award, Neurosurgery Resident Research Symposium, U-M Department of Neurosurgery, May 2019
- Max Peet Teaching Award, U-M Department of Neurosurgery, June 2019

Brandon Smith, MD
- Resident Ombudsman, U-M Department of Neurosurgery, July 2018 – June 2019

Matt Willsey, MD
- Best Platform Presentation, U-M Neuroscience Day, Departments of Neurology and Neurosurgery, University of Michigan, May 2019

Tim Yee, MD
- Junior Resident Champion, Neuroanatomy Competition 2018, U-M Department of Neurosurgery
- Resident Ombudsman, U-M Department of Neurosurgery, July 2019 – present
Resident Oral Presentations at National Meetings

July 1, 2018 – June 30, 2019 Our resident trainees continue to be productive with respect to their research and scholarly activities. During the 2018-2019 academic year, the resident cadre has given an impressive 22 talks at national meetings throughout the country, as well as one international talk in India.

2018 AANS/CNS Section on Neurotrauma and Critical Care Annual Meeting Toronto, ON. Yamaan Saadeh, MD: Malpractice claims concerning traumatic spinal cord injury

2018 Society for Minimally Invasive Spine Surgery Annual Forum Las Vegas, NV. Yamaan Saadeh, MD: Comparison of segmental lordosis and global spinopelvic alignment after single-level lateral lumbar interbody fusion or transfemoral lateral interbody fusion

2018 Congress of Neurological Surgeons Annual Meeting Houston, TX. David Altschuler, MD: BDNF, COMT, and DRD2 polymorphisms and ability to return to work in adult patients with low and high-grade glioma. Jacob Joseph, MD: Pupillary changes after nonconcussive high-acceleration head impacts on high school football athletes. Yamaan Saadeh, MD: Relationship of psoas muscle volume to survival in operative metastatic spine tumor patients. Brandon Smith, MD: The correlation of ODI and the 4-question scales for pain and physical function from PROMIS. Drew Wilkinson, MD: Increased rate of subarachnoid hemorrhage in polycystic kidney disease despite screening. Matt Willsay, MD: Seizure-free outcome after corpus callosotomy using laser interstitial therapy in a pediatric patient

2018 Tumor Section Satellite Symposium/CNS Annual Meeting Houston, TX. Todd Hollon, MD: Rapid intraoperative differentiation of pseudoprogression and glioma recurrence using stimulated Raman histology

2018 American College of Surgeons Clinical Congress Boston, MA. Jay Nathan, MD: Persistent opioid prescribing in adult patients with spinal deformity undergoing operative or non-operative treatment

2018 American Academy of Neurological Surgeons Annual Meeting Palm Beach, FL. Luis Savastano, MD, PhD: Imaging structural and biological markers of carotid plaque vulnerability with new high-resolution multimodal platform: laser angiography


2019 Visiting Professors

Each year, the Department of Neurosurgery invites renowned guest speakers and lecturers to present on various, relevant neurosurgery-specific topics. These visiting lectureships are named in honor of six U-M neurosurgeons and physicians who have helped to shape the practice of neurosurgery at the University of Michigan and beyond.

Elizabeth Crosby Visiting Professor
Robert Harbaugh, MD, FAANS, FACS, FAHA, Senior Vice President, Penn State Academic Medical Group; Distinguished Professor and Chair, Department of Neurosurgery, Penn State Hershey Medical Center. Title: The future of neurosurgical education

Saeed M. Farhat Visiting Professor
Alex B. Valadka, MD, FAANS, FACS, Professor and Chair, Department of Neurosurgery, Virginia Commonwealth University School of Medicine; Director, American Board of Neurological Surgery; President-Elect, American Association of Neurological Surgeons. Titles: 1) TBI management and the VCU legacy. 2) Major League Baseball’s approach to concussion

Julian T. Hoff Visiting Professor
E. Antonio Chiocca, MD, PhD, Chairman of the Department of Neurosurgery, Brigham and Women’s Hospital; Harvey W. Cushing Professor of Neurosurgery, Harvard Medical School. Title: Gene and oncolytic virus clinical trials for GBM

Edgar A. Kahn Visiting Professor
Dean Chou, MD, Professor, Department of Neurosurgery, University of California, San Francisco. Title: Treatment strategies for adult scoliosis: Does everybody need T10 to the pelvis?

James Taren Visiting Professor
Kendall H. Lee, MD, PhD, Enterprise Chair of Research, Professor of Neurosurgery and Physiology, The Mayo Clinic. Title: Neural-engineering implantable technologies for neuro-psychiatric disorders in neurosurgery

Joan Venes Visiting Professor
Ian F. Pollack, MD, FACS, FAAP, Chief, Pediatric Neurosurgery, Children’s Hospital of Pittsburgh, Vice-Chairman for Academic Affairs, Department of Neurological Surgery, University of Pittsburgh School of Medicine. Titles: 1) The evolving role of surgery and molecular profiling in childhood brain tumors. 2) Immunotherapy for childhood gliomas

2018 AANS/CNS Section on Pediatric Neurological Surgery Annual Meeting Nashville, TN. Amy Bruzek, MD: 1) Normal morphometric changes at the cranio cervical junction; 2) CSF circulating tumor DNA copy number quantifies tumor growth and In Vitro treatment response in pediatric DIPG and high grade glioma

2018 AASAN NSI Annual Meeting Jaipur, India. Yamaan Saadeh, MD: Relationship of psoas muscle volume to survival in operative metastatic spine tumor patients

2019 International Stroke Conference Honolulu, HI. Luis Savastano, MD, PhD: Laser angiography in carotid artery disease: imaging findings and histopathological correlation

2019 North American Skull Base Society Annual Meeting Orlando, FL. Todd Hollon, MD: Rapid intraoperative diagnosis of sellar region tumors using stimulated Raman histology


2019 7th Intraoperative Imaging Society Meeting Houston, TX. Todd Hollon, MD: Fluorescence guided surgery and optical imaging techniques

2019 American Association of Neurological Surgeons Annual Meeting San Diego, CA. David Altschuler, MD: Decreased function of isoprenylcysteine carboxylmethyltransferase function results in increased sensitivity of chemoradiation session. Siri Khalsa, MD: 3D volumetric volume analysis to detect shunt failure. Yamaan Saadeh, MD: Pre-operative and post-operative opioid use in instrumented versus non-instrumented spine surgery

Does everybody need T10 to the pelvis?
U-M Neurosurgery Becomes First Program to Utilize “SIMPL” App to Evaluate and Facilitate Resident Procedural Learning in Neurosurgical Residents

At the beginning of 2019, the U-M Department of Neurosurgery became the first national neurosurgery program to join the Procedural Learning and Safety Collaborative (PLSC) – a non-profit research consortium with a mission “to improve the quality of surgical care by improving the quality of surgeons.” PLSC focuses on investigating and developing tools, curriculum, and policy to improve surgical training. Through joining the PLSC, the Department also became the first neurosurgery program to utilize the PLSC’s “SIMPL” (System for Improving and Measuring Procedural Learning) app – a smartphone-based evaluation system that enables faculty to evaluate residents in the OR in real time, thus providing residents with immediate operative feedback after every procedure they perform. Dr. Nick Szerlip, Clinical Associate Professor of Neurosurgery, is spearheading this educational initiative within the Department and is recruiting other neurosurgical sites in order to begin a national neurosurgical trial of the SIMPL app.

Background: The Need
Individualized feedback in the medical education setting allows trainees to recognize their current level of performance and make necessary adjustments for improvement. However, many surgical trainees express that feedback is not always received in an effective or timely manner. Time and cost constraints, as well as competing clinical demands, shortened work hours for residents, and new accreditation requirements all pose unique challenges to an optimally effective training feedback loop. As a result, there has been increasing concern that surgical residents are not prepared for independent practice. Additionally, there is no current standardized system for faculty to formally assess or track a trainee's ability to independently and competently complete routine neurosurgical procedures. And, though there are case logging requirements set forth by the Accreditation Council for Graduate Medical Education (ACGME), there is no consensus as to the number of times an average resident needs to perform a given procedure in order to achieve competence and independence.

A Possible Solution: SIMPL
SIMPL aims to provide a means to overcome the hurdles that impede effective and timely evaluative feedback for residents. It is a two-way tool that addresses the questions of resident performance, operative autonomy, and case complexity in a feasible and user friendly manner. It has been evaluated in General Surgery training programs and has withstood tests of feasibility, reliability, and validity.

How It Works
An evaluation within SIMPL can be initiated by either faculty or resident. Raters are asked to record ratings for three scales: autonomy (Zwisch level), performance, and relative patient-specific complexity. Faculty also have the option to record dictated feedback regarding the resident's performance in a given case, which can be played back at any time by the resident. Additionally, the app is linked to the ACGME case-logging system, allowing residents to fill out an evaluation and log the case with the ACGME concurrently.

Initial Findings at Michigan Medicine
In the first six months following the implementation of the SIMPL app within our Department, excellent resident and faculty participation led to a greater than 80% response rate to evaluations from both groups. Of those who logged into the application during this timeframe (21 residents and 18 faculty), at least 70% of both groups completed at least one evaluation. Additionally, of all the evaluations completed by faculty, 60% included dictated feedback, which residents unanimously agreed was the most helpful portion of the evaluation process.

Long-Term Possibilities: Site Recruitment
In addition to providing invaluable feedback for individual residents, the SIMPL app provides a platform to collect aggregate data that could help shape the future of neurosurgical education. Through the app, data accumulated from one institution can easily be combined with the data of others, allowing more generalizable conclusions to be drawn. Such aggregate data could help address overarching educational questions, such as the adequacy of case requirement minimums. It could also assist in the creation of standardized learning curves, which would allow residency programs to identify residents who would benefit from personalized alterations to the curriculum. Ultimately, data gained from the use of this application has the potential to foster important neurosurgical education research and programmatic improvement nationally.

Dr. Szerlip is actively inviting other neurosurgical programs to participate in a national trial of the SIMPL app. Interested sites should reach out to nszerlip@umich.edu for additional information.
Dr. Muraszko Becomes President of the SNS

U-M Neurosurgery Chair, Dr. Karin Muraszko, was elected president of the Society of Neurological Surgeons (SNS) – the oldest neurosurgical society in the world. She is the first-ever female president and is presiding over the Society in its seminal 100th year of existence. Her term began in May, 2019 when she received the presidential gavel at the SNS Annual Meeting in Seattle, and it will conclude at the 2020 Annual Meeting in Philadelphia where she will deliver the presidential address.

Dr. Muraszko is also a member of the ACGME’s Neurosurgical Residency Review Committee (RRC) and was selected as a member of the RRC’s Executive Committee. She continues to serve on the Executive Committee of Women in Neurosurgery, and was recently elected Vice Chair of the UMHS Hospital Executive Board. She was also selected as Chair of the U-M Children & Women’s Executive Committee.

Welcome New Faculty Member, Dr. Wajd Al-Holou

Dr. Wajd Al-Holou joined the U-M Neurosurgery faculty as Clinical Assistant Professor in October. Dr. Al-Holou is an alumnus of both the University of Michigan Medical School as well our Neurosurgery Residency Program. He completed his residency in 2016, after which he completed a Complex Neurosurgical Oncology Fellowship at MD Anderson Cancer Center in Houston. His training focused on the management of complex brain tumors, spinal tumors, and skull base malignancies. After completing his fellowship in 2017, Dr. Al-Holou was appointed Assistant Professor in the Department of Neurosurgery at Wayne State University School of Medicine. While at Wayne State, he also served as the Director of the Multi-Disciplinary Neuro-Oncology Team at Karmanos Cancer Institute.

Dr. Al-Holou specializes in the management of complex brain tumors, primarily focusing on gliomas and metastases to the brain, and has expertise in the use of advanced awake mapping techniques, microsurgery, and image-guidance to maximize tumor removal in the safest possible manner. He also specializes in the management of meningiomas and spinal tumors. His research interest focuses primarily on understanding the genetic mechanisms of recurrence in glioblastoma, and in identifying genomic and radiographic biomarkers for treatment resistance in GBM.

2019 Promotions  Effective Sept. 1, 2019

Martin Buckingham, MD, was promoted to Clinical Assistant Professor, Department of Neurosurgery.

Laurel Moore, MD, was promoted to Clinical Professor in the Departments of Anesthesiology and Neurosurgery.

Venkatakrishna Rajajee, MBBS, was promoted to Clinical Professor in the Departments of Neurosurgery and Neurology.
Faculty Awards & Accomplishments

Maria Castro, PhD, R.C. Schneider Collegiate Professor of Neurosurgery, received the inaugural Rogel Faculty Scholar Program Award. She was also awarded a grant from the NIH-NINDS, entitled, Immune-mediated therapies in a genetically engineered murine model of diffuse intrinsic pontine glioma. She received funding from the Pediatric Brain Tumor Foundation and Samson Research Fund for research into pediatric high-grade gliomas, and from the ChadTough Foundation and Smiles for Sophie Forever Foundation, through the U-M Pediatric Brain Tumor Initiative, for research into novel immunotherapies for diffuse intrinsic pontine glioma. She was elected to the rank of American Association for the Advancement of Science (AAAS) Fellow in 2019.

Teresa Jacobs, MD, Professor of Neurosurgery, was appointed to a 29-month term on the national board of the Association of Physician Leadership in Care Management (APLCM) in November. She is among seven board members who oversee the physician section of the American Case Management Association (ACMA), a 9000-member organization of physicians, physician advisors, care managers, and social workers striving to advance the quality of services for patients throughout the continuum of care.

Pedro Lowenstein, MD, PhD, Richard Schneider Collegiate Professor of Neurosurgery, is a Principal Investigator on awards from the Pediatric Brain Tumor Foundation and Samson Research Fund and an award from the ChadTough Foundation and Smiles for Sophie Forever Foundation through the U-M Pediatric Brain Tumor Initiative. The funding will support research into DIPG and pediatric high-grade gliomas, respectively. He was also awarded a grant from The WhatIFF Foundation for the treatment of childhood brain cancer to develop novel therapies for pediatric hemispheric high grade gliomas. He was the PI on a clinical trial “Combined Cytotoxic and Immune-Stimulatory Therapy for Glioma” (https://clinicaltrials.gov/ct2/show/NCT018111992). Though not yet mature, trial results to date support the expansion of this therapy to larger phase clinical trials and their use in the pediatric setting.

Parag Patil, MD, PhD, Associate Professor of Neurosurgery, was elected to the Executive Committee of the AANS/CNS Section on Pain. He is the current Co-Chair of the Neural Interface Conference Steering Committee, which works to advance and translate neural interface technology for human applications. Dr. Patil and his research team in the Center for Restorative Neuroengineering were recently awarded a $2.3 million NSF grant to develop novel upper-extremity neuroprosthetic devices.

Venkatakrishna Rajajee, MBBS, Professor of Neurosurgery, was appointed chair-elect of the Neurocritical Care Society’s Guidelines Committee in August, 2019. He also received Top Reviewer recognition from the journal Neurocritical Care in September.

Kyle Sheehan, MD, Assistant Professor of Neurosurgery, was appointed as the neuro-specialist on the Gift of Life Michigan Advisory Board, the state-wide organ procurement organization. The board provides guidance of the organization's clinical practice and ensures compliance with Centers for Medicare/Medicaid Services regulations.
IN MEMORIAM:  
Dr. Saeed “Sid” Farhat 1928-2019

The U-M Department of Neurosurgery lost a long-time and beloved pillar in September when Dr. Saeed “Sid” Farhat passed away at the age of 91.

Dr. Farhat was a true gentleman and consummate surgeon, well known throughout the Department for his kindness, vast neurosurgical knowledge, and dapper style. He attended Utah State for his undergraduate studies and received his medical degree in 1955 from the University of Nebraska. He did a General Surgery residency at University of Nebraska receiving Board certification in 1961. He then went on to Neurosurgery training at the University of Michigan. He had a distinguished career at St. Joseph Mercy Hospital in Ypsilanti where he was Chief of Neurosurgery for 34 years. After retiring from St. Joe’s, he returned to the University of Michigan in 1998, where he continued to provide guidance and advice as an Emeritus Professor of Neurosurgery. Generations of neurosurgeons received wisdom and support from Dr. Farhat. He was honored with a named lectureship which will continue to honor his admonition that neurosurgeons be involved in the world and their communities. The weekly neurovascular conference was also named in his honor, in recognition of his dedication to his patients and the specialty.

Below are a few words of tribute from Dr. Farhat’s colleagues and friends at Michigan Medicine and beyond.

**Dr. John McGillicuddy, Professor Emeritus of Neurosurgery**  
This is a great loss to our Michigan Neurosurgery program. Dr. Farhat was one of the pillars of the reconstituted Michigan program under Dr. Richard Schneider. When I arrived here in 1970, Dr. Farhat was in solo private practice at St. Joseph Mercy and first-year residents spent 4-6 months with him. It was an intense, one-on-one experience with a mentor of exceptional clinical judgement and superb surgical skill. Double boarded in both General Surgery and Neurosurgery, Dr. Farhat could open a chest and take out a paraspinal tumor with no difficulty. I still remember many things that he taught, especially his intense interest in patient care. He gave us a great deal of responsibility but was immediately available for help. I believe that all of us who worked with Dr. Farhat in those years strived to “be like Sid.” After he retired from St. Joe’s and came to work at the U, he saw many patients in our clinics and contributed his knowledge and experience in our conferences. Dr. Farhat had a reserved, dignified bearing but was also a warm, helpful man with a sly sense of humor. It was always a pleasure to talk with him about neurosurgery, but also about Michigan football, art, photography and many other subjects. I will miss him. He is the last of my teachers and role models.

**Dr. Bill Chandler, Professor Emeritus of Neurosurgery**  
My mentor, my friend and one of my heroes. Sid was a remarkably capable and kind person. We will all miss him so much.

**Dr. Greg Thompson, John E. McGillicuddy Professor of Neurosurgery**  
Dr. Farhat was an exemplary physician and a gentleman of unfailing kindness. What a privilege it has been to know him and to see such a model of immaculate professional and personal comportment. His legacy will live on amongst all who were fortunate to know him.

**Dr. Carol Bradford, Executive Vice Dean for Academic Affairs, U-M Medical School; Chief Academic Office, Michigan Medicine**  
Dr. Farhat will be missed but never forgotten. I first met him as an intern at St. Joe’s. He would arrive in a three-piece suit in the middle of the night on call for an emergency. A true gentleman and professional.

**U-M Neurosurgery Alumnus Dr. Steven Swanson (1985)**  
Sid was my mentor, teacher, friend, colleague, and confidant for almost 40 years. He advised me on many of my life and career decisions... I will miss him terribly.

**U-M Neurosurgery Alumnus Dr. Nathan Selden (1999)**  
Dr. Farhat was an exceptional individual of great vision, ethics, determination, and talent. He influenced us all for the better.

Dr. Farhat exemplified a life of service, led with elegance and kindness. We offer our deepest sympathies to his wife of 63 years, Dorothy, and his daughters and their families, and we thank them for sharing this wonderful man with us for so many years.
Tony Asher, MD, (1995) was named President of the Neuroscience Institute, Atrium Health, and elected Treasurer of the American Association of Neurological Surgeons (AANS) in 2019. He was also named Co-Chairman of the American Spine Registry, which is a joint AANS-AAOS (American Association of Orthopaedic Surgeons) National Spine Registry Program that is particularly notable for representing an unprecedented collaboration between two large surgical societies. Dr. Asher led the development of, and helped launch, the Practice and Outcomes of Surgical Therapies (POST) project for the American Board of Neurological Surgery (ABNS). He finished his six-year tenure on the ABNS last spring and served his final year as Vice Chairman of the ABNS. He also stepped down as Program Director of the Neurological Surgery Residency Program at Carolinas Medical Center after being in the position for the past seven years. During this time, Dr. Asher initiated and grew the program to its mature state; the first resident will be graduating from the program in the next academic year.

Robert Dempsey, MD, (1983) Manucher J. Javid Professor and Chairman of Neurological Surgery, University of Wisconsin School of Medicine and Public Health, was selected to honor Dr. Richard Schneider, former Chair of Michigan Neurosurgery, by delivering the Schneider Lecture at the American Association of Neurological Surgeons meeting. Dr. Dempsey’s lecture stressed how we stand on the shoulders of those who came before us by using the science of our time to improve the patient directed care we deliver in neurosurgery.

John Feldenzer, MD, (1989) retired from active neurosurgical practice in December, 2018 with the exception of a clinic at the Salem, Virginia Veterans Medical Center. He remains an avid fly fisherman and gave a talk at the 25th Annual Rodmakers Gathering at the Catskill Fly Fishing Center and Museum in New York in September, 2019. His topic was George H. Halstead: Tribute to a Classic Bamboo Rodmaker, which followed up his publication on the same topic, published in The American Fly Fisher (Volume 34, No. 1) in 2008.

Judy Gorelick, MD, (2001) joined the faculty at the Frank H. Netter MD School of Medicine at Quinnipiac University in June, 2019, as an Assistant Professor of Neurosurgery, Department of Surgery.

Elyne Kahn, MD, MPH, (2018) completed a spine surgery fellowship at the Cleveland Clinic and is now practicing at the Michigan Brain & Spine Institute at St. Joseph Mercy Hospital in Ann Arbor.

James Markert, MD, (1995) James Garber Galbraith Endowed Chair of Neurosurgery, University of Alabama at Birmingham, was elected Secretary of the American Academy of Neurological Surgery for the term of 2018-2019.

Nathan Selden, MD, PhD, (1999) Campagna Professor and Chair, Department of Neurological Surgery, Oregon Health & Science University, published “The Rhetoric of Medicine: Lessons on Professionalism from Ancient Greece” (Oxford University Press) with Nigel Nicholson, PhD, Dean of the Faculty at Reed College. Dr. Selden was also elected as a Director of the American Board of Neurological Surgery in May, 2019 and, in July, became Chair of the Oregon Health & Science University Professional Board (Medical Executive Committee).


Jennifer Strahle, MD, (2015) Assistant Professor of Neurosurgery, Orthopedic Surgery and Pediatrics, Washington University in St. Louis, St. Louis Children’s Hospital, passed the oral board certification exam in May, 2019, and thus is now a certified Diplomate of the American Board of Neurological Surgery.

Khoi Than, MD, (2014) was appointed Associate Professor of Neurosurgery and Orthopaedic Surgery at Duke University in August, 2019.
Welcome to U-M Neurosurgery!

Get to know our newest staff members, who joined the Department in 2019.

**Kristina Cooper, Medical Assistant**
Kristina joined the Adult Clinic staff as a Medical Assistant in February. She started at Michigan Medicine in November of 2018 as an extern in the Pediatric Neuro Plastic Surgery Clinic at Mott, where she learned about Neurosurgery and fell in love with the specialty. She spends her time outside of work with her son and is an avid sports fan.

**Vanessa David, Executive Assistant**
Vanessa joined the Department in May as Executive Assistant to the Chair and Chief Department Administrator (CDA). She has been at Michigan Medicine for more than eight years with progressive experience in administrative support. Immediately prior to joining the Department, Vanessa supported the CDA of the Department of Physical Medicine and Rehabilitation. She holds an associate degree in Business Administration and enjoys spending time with her family and camping.

**Tammy Pomorski, Medical Assistant**
Tammy joined the Adult Clinic as a Medical Assistant in July. She has been at Michigan Medicine since 2011. Immediately prior to joining the Department, Tammy worked as an MA in Orthotics and Prosthetics. Outside of work she enjoys spending time with her family, sewing and crafting, and traveling.

**Jill Russel, RN, Spine Nurse**
Jill joined the Adult Clinic staff as the spine nurse in May. Previously, she served as the Nurse Educator on the inpatient unit 4A. She has brought a wealth of knowledge to our spine patients from her inpatient experience, as well as her 25 years of service at Michigan Medicine. Jill and her husband have a lake home in northern Michigan where they enjoy spending time outdoors with family and friends.

**Reagan Spindler, Patient Services Intermediate**
Reagan joined the Department in November and provides administrative support to Drs. Heth and Sagher. She came to Michigan Medicine from Henry Ford West Bloomfield and holds a bachelor’s degree in Biology and Psychology from Hope College. Outside of work, she enjoys reading and spending time with her family, friends, and French bull dog, Beau.

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**Staff Continue to Give Back**
Department staff members continue to participate in various events and fundraisers to benefit the community. The Department’s most recent community-focused activity was the hospital-wide donation drive for the “Education Project.” This year, donations were collected in early September and distributed to three agencies: Education Project for Homeless Youth, Ozone House, and Community Action Network, all of which support families in under-resourced Washtenaw County neighborhoods. One event that has become popular in recent years is the “Souper Bowl” fundraiser, where volunteers within the Department cook different kinds of soup and taste-testers donate money to sample each one. This year, funds raised were used to purchase materials to create tie-up fleece blankets for patients admitted to our inpatient unit, 4A. Another staff fundraiser is the collection of dollars for casual jean Fridays. Each holiday season, funds raised throughout the year go toward supporting a cause that’s important to the staff. Most recently, gifts were purchased for one of Dr. Murasko’s patients, a 5-year-old girl who lost her vision due to trauma. Braille books were purchased from a local non-profit organization, Seedlings, along with sensory gifts and toys.

Other community-focused events have included an annual food drive, a book drive, and preparation of dinner at the Ronald McDonald House. Events like these are organized and supported by our Employee Engagement Workgroup. Our staff plan to continue finding new and meaningful ways to give back to the community around them.

**DEI Efforts Continue**
As we embark on the fourth year of the University’s Diversity, Equity and Inclusion (DEI) Initiative, the Department has made significant strides toward a more inclusive and diverse workplace for all. The DEI Workgroup’s spring project, the Kindness Journal, was carried out in conjunction with our MHealthy champion. The journal was given to staff who took the “Kindness Pledge,” and weekly emails were sent with a writing prompt with such topics as empathy, intentionality, stress reduction, and teamwork. This project was highlighted in a presentation to DEI Leads across the University and was recognized at the University-wide Annual Symposium in April.

In October, the University launched its first DEI Climate Survey to gauge the impact that DEI efforts have had on the organization to date. Throughout the year, the DEI Workgroup has worked with the Employee Engagement Workgroup and our community outreach coordinator to host events, volunteer time in the community, and foster an environment of inclusivity. The group looks forward to launching an educational series in the spring of 2020.
Steve Napolitan Elected Treasurer of NERVES

Neurosurgery Chief Department Administrator Steve Napolitan was elected this year to serve as Treasurer of the Neurosurgery Executives Resource Value & Education Society (NERVES) after completing a two-year term as the North/Midwest Regional Director for the Society. His term as Treasurer, which will last for two years, took effect at the 2019 NERVES Annual Meeting, which took place April 11-13 in San Diego.

Susie Hines Receives 2019 GME Program Administrator Award & Gives National Talk

Susie Hines, Neurosurgery’s Graduate Medical Education Program Administrator, received the prestigious 2019 Graduate Medical Education Program Administrator Excellence Award in April this year. Susie was nominated for this award by her colleagues; it is given to those who have made exceptional contributions to graduate medical education. “Susie’s dedication to the residency program has impacted the entire Department of Neurosurgery in so many ways. It is great to see that her work has now been recognized outside of the department as well,” said Dr. Cormac Maher, Residency Program Director.

U-M Neurosurgery Nurse Practitioners Receive Proclamation from Ann Arbor Mayor

As the American Association of Nurse Practitioners (AANP) Michigan State Representative, neurosurgery inpatient nurse practitioner Ericka Brunson-Gillespie DNP, NP, requested a proclamation for the 2019 Nurse Practitioner Week (November 10-16) from the city of Ann Arbor Mayor, Christopher Taylor. The request was granted this fall, and the proclamation was presented in September to Ericka, along with lead inpatient nurse practitioner Carina Brake, NP, and Joyce Wilson-Eder, a nurse practitioner student who works in Neurointerventional Radiology (pictured left to right below, with Ann Arbor mayor second from left).

“We appreciate the Mayor acknowledging the hard work of nurse practitioners in the city of Ann Arbor,” Ericka said.

Left to right: Sybil Biermann, MD, Designated Institutional Official of the GME office, Susie Hines, and Michelle Caird, MD, GME Education Awards Selection Committee chair

Additionally, Susie presented to a national audience at the 11th Annual Neurosurgery Program Coordinators Meeting, which was held in Seattle in May in conjunction with the annual Society of Neurological Surgeons (SNS) Meeting. Susie’s presentation focused on the recent U-M Market Title Series Project, which went into effect in January, 2019, and created a new, standalone Market Title series and career trajectory for Medical Education Program Administrators throughout the University. Susie was intimately involved in this project and played a large role in its success. In sharing U-M’s process for making the goal of a Medical Education Program Administrator Market Title a reality, the movement has been furthered nationally with other education programs in hopes that they, too, will find success in reclassifying their GME workforces, thereby creating national market data for this job role.

Susie was also selected as Program Administrator Representative on the GME Contract Collective Bargaining Team this year.
U-M Neurointerventional Radiology Team Celebrates 15 Years

This year, the U-M neurointerventional radiology team celebrated 15 years of exceptional teamwork and world-class patient care.

Neurointerventional radiology uses minimally-invasive procedures to diagnose and treat various cerebrovascular disorders involving the brain, head, neck, orbit, spine and spinal cord regions. The team consists of specialists in neuroradiology and neuroendovascular surgery who are leaders in their fields and who work collaboratively alongside nurses, nurse practitioners, physician assistants, radiology technologists, clinical engineers, administrators, schedulers, administrative assistants, and numerous other support staff to provide superior quality care to patients and their families. The past 15 years have been marked by many milestones. Here’s a closer look at some of the impressive work that has been performed.

Clinical Care
Since its inception, “Team Neurointervention” has become an integral clinical component of Michigan Medicine’s Comprehensive Stroke Center. There has also been immense growth in the volume of thrombectomy cases, from 15 in 2013 to 150 in 2018 — a 10-fold increase in just five years — and the team has sustained its clinical activity in the treatment of aneurysms. The team has also established the only intra-arterial treatment of retinoblastoma center for pediatric patients in Michigan. In collaboration with ophthalmology and pediatric hematology/oncology, this program is thriving, with 50 IA sessions now performed each year. Additionally, the Head, Neck, Face and Orbit Vascular Malformation Percutaneous Treatment Program has become well-established over the past decade.

Research
In the research realm, the neuroradiology team has authored numerous peer reviewed publications. Additionally, there are two R21 grants and an RO1 grant to the team’s credit, centered on improving outcomes in patients with intracerebral hemorrhage, as well as a Coulter innovation grant to support the development of a thrombectomy device. The group also participated in a seminal multicenter trial, DEFUSE 3, which established level one evidence for mechanical thrombectomy in late-presenting ischemic stroke patients and was published in the New England Journal of Medicine.

Education
In the last 15 years, the neurointerventional radiology team has trained a robust mix of radiologists and neurosurgeons in neurointervention. The group has also established didactic lecture sessions for the neurointerventional fellows, residents, and nurses in neurology, neurosurgery, emergency medicine, ophthalmology, radiology, vascular surgery and otorhinolaryngology. Additionally, the joint Neurointerventional Fellowship was accredited by the Society of Neurological Surgeons (SNS) Committee on Advanced Subspecialty Training (CAST) in January 2018. Training expands beyond the physicians and even includes a collaborative partnership with Metro Hospital for advancing technologist training, sharing best practices and workflow optimization. All providers across sites are certified by CAST in Neuroendovascular Surgery, a feat not many programs in the country can claim. “I feel privileged to be a part of the supertalented neurointerventional team in the country, if not the world,” said Neeraj Chaudhary, MD, Associate Professor of Radiology. “In the next 15 years, we look forward to even deeper collaboration and the prospect of becoming the beacon of the specialty to help more patients with diseases of the central and peripheral nervous system in adults and pediatrics, enhance our learning, and share the knowledge for the benefit of all.”

Foundations & Thanks
The foundations of the U-M neurointerventional radiology team were laid in 2005 by Greg Thompson, MD, John E. McGillicuddy Professor of Neurosurgery, and Joseph Gemmete, MD, Professor of Radiology. Drs. Thompson and Gemmete served as the vanguards of the specialty at U-M for several years and, in 2008, the team began to grow and take shape. Aditya Pandey, MD, Associate Professor of Neurosurgery, joined in 2008, Dr. Chaudhary in 2009, and Julius Griaudze, MD, Assistant Professor of Radiology, in 2018.

“We should take this opportunity to salute all of our NIR staff who have done so much to contribute to our team and to superb patient care. This group deserves recognition for its professionalism, reliability, work ethic and continued high level of commitment to exceptional patient care,” said Dr. Thompson. “I feel very fortunate to work with such an outstanding group.”
Wife of Detroit Lions Quarterback, Kelly Stafford, Shares Her Acoustic Neuroma Journey

After being diagnosed with an acoustic neuroma, Kelly Stafford and her husband, Matthew, visited physicians all across the country to find the right neurosurgeon to perform her brain surgery. After visiting Michigan Medicine and meeting Dr. Greg Thompson, they knew they had found exactly what they were looking for.

In April of 2019, Kelly Stafford, who is well known as the wife of Detroit Lions quarterback Matthew Stafford, underwent surgery for an acoustic neuroma by the Dr. Greg Thompson, John E. McGillicuddy Professor of Neurosurgery within the U-M Department of Neurosurgery. After undergoing a successful 12-hour surgery and since beginning her intensive road to recovery, Kelly has been using her large public platform, especially her social media following, to raise awareness about her experience with acoustic neuroma and brain surgery, as well as her experience being a patient at Michigan Medicine. Kelly shared in an Instagram post several weeks after the surgery that she and Matthew had visited doctors all over the United States after she received her initial diagnosis, but once they met with Dr. Thompson, it became an incredibly easy decision.

“Dr. Thompson had not only done about 2,000 acoustic neuroma cases and published outstanding results when attempting to preserve facial and hearing function, but when I spoke with him, he reminded me of my dad. He truly cared and was empathetic, which meant so much to me.”

Kelly has continuously praised Dr. Thompson and his clinical team, including colleagues from Otolaryngology, for their clinical expertise, compassion, and ultimately, the successful outcome of her surgery. “I will forever be in debt to this man and his team. I can’t express how grateful I am for him… his kindness, empathy, patience, knowledge and steady hands.” In addition to sharing her journey of diagnosis, surgery, and recovery on social media, Kelly has also been featured, along with Dr. Thompson, in broadcasts on several local and national media outlets. An in-depth, multiple-part story aired in several installments on Detroit's local Channel 4 (WDIV) station in September, followed by the story airing nationally on the Today Show in the same month. Kelly's story was also aired by ESPN in October. In sharing her own story, Kelly has urged others to listen to their bodies when they suspect something is off. “It's so important to really know yourself and know your body. Know if there's something just feels a little bit off to go in and get it checked out. It can take five minutes at a medical clinic to make sure everything is okay.”
Smiling Again: How Accoustic Neuroma Brain Surgery Changed My Life

In February of 2018, Melissa Smith, co-host of “the four,” a lifestyle show on 9&10 News in Northern Michigan, underwent brain surgery for an acoustic neuroma at Michigan Medicine. Here, she shares her own story of diagnosis, surgery, and recovery.

The Diagnosis
I was diagnosed with an acoustic neuroma in 2010. My primary care doctor sent me for an MRI because of chronic migraines, and the scan picked it up as a small speck. I wasn’t having any symptoms. In fact, I was told the migraines were probably not even from the tumor. One doctor told me these types of tumors are slow growing and surgery may do more damage, so watching and waiting might be best. During the years that followed, annual MRIs showed little to no growth. Feeling optimistic, I eventually stopped going for the follow-ups.

Divine Intervention
In August 2017 I scheduled an appointment with my ear, nose, and throat doctor for what seemed like laryngitis. Looking back, I feel I was led to this office visit through divine intervention. At the appointment, the doctor asked about my yearly MRIs. I smiled. “Oh, I’m fine!” I joked. “I stopped going for those!” He immediately scheduled an MRI for me. A week later, he called with the results. I was sitting with my now-husband, Phil, at our kitchen table talking about our upcoming wedding. We were less than a year out, and like any bride-to-be, I was ecstatic about what was ahead. He shared that the acoustic neuroma had grown significantly and was nudging up against the base of my brain; it needed to come out as soon as possible. The tumor was considered medium to large, and he was shocked I wasn’t having symptoms. A million thoughts raced through my mind, from how this would impact my job as a news anchor, to my wedding, to life in general.

The Surgery
I researched extensively over the next several weeks and scheduled consultations with University of Michigan neurosurgeon Dr. Byron Gregory Thompson and Dr. Hussam El-Kashlan, a U-M head and neck surgeon. These two became my “dream team.” Hearing, balance, and facial nerve tests prior to surgery all came back normal, but I was told my balance on the right side was weakened from the tumor. I was also told that after surgery I could experience dizziness and may have to learn to regain my balance. There was also a chance I would lose hearing on my right side and have facial paralysis. “What if I can’t walk down the aisle for my wedding?” “What if I don’t look like myself or can’t hear when I recite my vows? If I have kids one day, will I be able to hear them?” For months, these thoughts consumed me. Then finally, on Monday, Feb. 12, 2018, I was wheeled in for surgery. The day of surgery felt like a dream. Since U-M is a teaching hospital, the OR looked like a classroom with medical students sitting in. The anesthesiologist tried to make me feel relaxed. As he placed an oxygen mask on my face, he asked, “Where would you like to go during your surgery, while you’re sleeping?” “I want to go to my favorite beach on Lake Michigan. It’s called Port Oneida.” He shouted to the whole surgical room I was going to Lake Michigan and they all cheered and started clapping. It gave me a sense of comfort. One of my surgeons stood over me, smiling. He looked down and asked if there was anything else. “Yes. I just want to come out of this as the same Melissa,” I said.

The Recovery
It seemed like all of five minutes had gone by when I opened my eyes in the ICU. The room seemed blurry. In front of me, I saw my family and Phil smiling. My mom smiled and told me I had been in surgery for 13 hours. The surgeons had gotten the entire tumor. I couldn’t format sentences and had a hard time putting simple words together. I was away from work for more than two months, regaining my balance with physical therapy. During most of this time, the right side of my face was paralyzed. I couldn’t close my right eye for several weeks, and couldn’t chew or taste food on my right side. I also had a constant loud buzzing in my ear. But, the worst part was that I couldn’t fully smile. Once I returned to work in April and life returned to a new normal, I debated canceling our upcoming wedding. In my heart, though, I knew I couldn’t let the tumor get in the way of life. As planned, Phil and I were married on July 14, just five months after my surgery. It was the best day of my life. When I walked down the aisle with both of my parents, I felt strong. My balance didn’t let me down, and my smile didn’t either.

Today
Brain surgery forced me to accept that some things are out of my control. I continue to remind myself that I’m extremely blessed for the miracle surgeons at the University of Michigan. They saved me from something that could have caused irreversible damage or worse to my body. I’ve learned how sensitive, yet resilient and brilliant, the human body is. On Feb. 12, as I struggled to lift my bandaged head in the ICU and format sentences, I never thought I would smile with my mom during my wedding rehearsal, dance with my dad during my reception, or laugh with Phil while we celebrated our wedding. But I was able to do all of that, and more.

Excerpt from story originally published in Grand Traverse Woman magazine; republished on Michigan Health Blog with permission.
The Castro-Lowenstein Laboratory has a longstanding record of excellence and innovation in the discovery of the cellular, molecular, and mathematical basis underlying the growth patterns of malignant brain tumors, and in cancer cell interactions with the tumor microenvironment in both experimental models and human patients. Dr. Maria Castro, R.C. Schneider Collegiate Professor of Neurosurgery, and Dr. Pedro Lowenstein, Richard C. Schneider Collegiate Professor of Neurosurgery, have a vision to develop and implement transformative novel treatments to patients with brain tumors. In 2019, the Laboratory made unprecedented advances toward realizing this goal.

In a five-year study recently published in *Science Translational Medicine*, the Castro-Lowenstein team reported findings that will impact the treatment of low-grade gliomas. The team developed the first genetically engineered animal model of low-grade gliomas, in which the IDH1 gene is mutated. In humans, these tumors occur at a young age. Although survival can be 7-10 years, the tumors relapse following initial treatment with surgery and chemotherapy. In their new mouse model, the team demonstrated that tumor formation requires not only the IDH1 mutation but also additional mutations in p53 and ATRX. When all three mutations are present, mutated IDH1 increases the tumor cells’ response to radiation-induced DNA damage, reducing the efficacy of the radiation treatment. The addition of a drug that inhibits a critical pathway in DNA damage repair restored tumor sensitivity to radiation. The researchers confirmed their findings in human tissue samples, suggesting that a precision medicine approach to gliomas would improve treatment. The FDA has already approved DNA repair blockers for other cancers. The researchers are working to translate their findings into a clinical trial.

In another paper, published in *ACS Nano*, the team, in collaboration with Dr. Anna Schwendeman’s laboratory in the School of Pharmaceutical Sciences, reported the use of high-density lipoprotein nanodiscs to co-deliver chemo- and immune-therapeutics for high-grade gliomas. In this study, docetaxel (DTX), a widely used chemotherapeutic agent, was incorporated into high-density lipoprotein nanodiscs that were coupled with CpG adjuvant. Local treatment of gliomas with the nanodiscs resulted in sustained release of the drug formulation at the tumor site while avoiding adverse off-target toxicity. These findings represent a powerful new approach for glioma chemo-immunotherapy. Local drug delivery at the time of surgery may offer the advantages of treating residual disease and extending the period to recurrence, resulting from the anti-glioma immunological memory response.

Enrollment of adult glioma patients at U-M was recently completed for the Phase I clinical trial of a novel immunotherapy approach pioneered by the Castro-Lowenstein team that uses gene therapy-mediated delivery of therapeutic genes into brain tumor, eliciting the reprogramming of the patient’s own immune system. This approach uses a combination of viral vectors that encode (1) a gene that induces tumor cell death, and (2) another gene that trains the patient’s immune system to recognize and kill any remaining tumor cells. The viral vectors are delivered into the tumor cavity to trigger an effective anti-tumor immune response. The clinical trial aims to treat the most aggressive form of brain cancer, glioblastoma multiforme. This approach could be key to improving outcomes for patients with brain tumors.

REFERENCES
News from the Crosby Neurosurgical Laboratories

Dr. Ya Hua, Research Professor of Neurosurgery, has been examining the role of clot-derived neurotoxic factors in brain injury after intracerebral hemorrhage. Her team has found that peroxiredoxin 2 (PRX2), a protein that is very highly expressed in red blood cells, has profound pro-inflammatory effects contributing to brain injury. This work, recently funded by the National Institutes of Health (NIH), has been published in Translational Stroke Research1. Over the last year, Dr. Nick Szerlip, Associate Professor of Neurosurgery, and Dr. Alexandra Calinescu, Research Assistant Professor of Neurosurgery, have set up and settled into their Crosby Laboratory space and spring-boarded their projects on spinal metastatic disease and engineering neural stem cells for the treatment of glioblastoma. Dr. Calinescu was awarded the Undergraduate Research Opportunity Program (UROP) Outstanding Research Mentor Award for her effort in guiding the projects of three undergraduate students, all of whom will be presenting their work at national meetings this year: Society for Neuroscience and Society for Neuro-Oncology.

One of our affiliated faculty, Anuska Andjelkovic, MD, PhD, Associate Professor of Pathology, has been studying the unusual roles of a gap junction protein, connexin 43, in brain endothelial cells. Collaborating with Richard Keep, PhD, Director of the Crosby Neurosurgical Laboratories, she has identified an important role of a truncated form of this protein in cell signaling and blood-brain barrier disruption in both cavernous malformations and cerebral amyloid angiopathy. This work has recently been funded with two R01 grants from the NIH. One resource for resident training is an NIH R25 grant that was refunded this year (2019-2024). This grant, which represents a collaboration between Neurology, Neurosurgery and Neuropathology, funds a residency-fellowship training program – the U-M Clinical Neuroscientist Training Program – to advance talented junior clinician-neuroscientists rapidly to independence, thus helping to produce the next generation of physician scientists. U-M Neurosurgery graduate Dr. Kevin Chen (2018) is a past recipient of this award. A focus of Dr. Guohua Xi, Richard C. Schneider Research Professor of Neurosurgery, and his collaborators in the Crosby Laboratories has been the role of hemoglobin and its degradation product, iron, in brain injury after intracerebral hemorrhage. Preclinical results from this work led to a Phase II clinical trial of an iron chelator, deferoxamine, for intracerebral hemorrhage. The results of this trial, i-DEF, were published this year in Lancet Neurology2. Discussions are ongoing about a Phase III trial.

Members of the Crosby Neurosurgical Laboratories continue to serve on multiple editorial boards. Guohua Xi serves as Associate Editor for both the Journal of Cerebral Blood Flow and Metabolism (impact factor 6.0) and Translational Stroke Research (impact factor 5.8), and Richard Keep is co-Editor-in-Chief of Fluids and Barriers of the CNS (new impact factor 3.7). Dr. Xi also co-edited a special issue of CNS Neuroscience & Therapeutics entitled, ‘Hemorrhagic stroke’, while Dr. Keep co-edited a special issue of Neurobiology of Disease entitled, ‘Stroke: the impact of aging on brain injury and recovery’. Dr. Keep has also been appointed to the Scientific Advisory Board of the Hydrocephalus Association beginning in 2020.

Nurses, physicians, administrative leaders, faculty and staff as well as patients and families have been involved since the beginning of the planning process to help ensure that the new facility meets the many different needs of those it will serve. According to David Spahlinger, MD, president of the University of Michigan Health System, "The new adult inpatient hospital will allow for the relocation of 110 beds currently in semi-private rooms at University Hospital to the new hospital. As a result, all Michigan Medicine inpatient beds will be single private rooms. "Private rooms are important for the quality of our patient and family member experience, and they are a proven factor in reducing hospital-acquired infections." After construction of the new rooms and relocation of the existing beds, the project will add a total of 154 new beds to the medical campus. The building will be constructed adjacent to the Frankel Cardiovascular Center, with plans for bridge and tunnel connections to existing inpatient care facilities. Planning for incremental parking, transportation and roadway improvements is underway. Funding for the project will be provided from Michigan Medicine resources, but Michigan Medicine also is launching a philanthropic campaign. "We invite the community to join us in building the new hospital. Contributions will fuel progress across the neurological and neurosurgical care, cardiovascular, thoracic and other critical areas of care, ensuring the greatest possible impact for patients and families as well as for medical research and education," said Eric Barritt, Associate Vice President and Chief Development Officer.

In keeping with the University's commitment to prioritize sustainability and reduce its carbon footprint, Michigan Medicine is working with its team of architects and engineers to achieve LEED Gold status for the project. LEED provides a framework to create healthy, highly-efficient and cost-saving "green" facilities. Michigan Medicine brought together many people from across the medical campus and university to participate in the extensive team planning process for the new hospital.

MICHIGAN MEDICINE NEWS

History in the Making: Michigan Medicine Introduces Hospital of the Future

Michigan Medicine announced in September plans to build a new adult hospital that will increase patient access and transform medical and surgical care. The new 12-story hospital will house 264 private rooms equipped for universal intensive care, a state-of-the-art neurological and neurosurgical center, high-level, specialty care services for cardiovascular and thoracic patients, along with advanced imaging.

U-M’s Board of Regents unanimously approved the five-year project on Sept. 19, 2019. The new 690,000 gross-square-foot hospital will provide more access to care for adult patients at Michigan Medicine, where current hospital facilities often operate at more than 90% capacity. A groundbreaking ceremony was held on Oct. 25, 2019 to officially mark the beginning of the construction phase of the project. "We are proud to be at the forefront of innovation with a new hospital that will support the extraordinary work of our faculty, nurses and other providers and our research community," said Marschall Runge, MD, PhD, the executive vice president of medical affairs for U-M, CEO of Michigan Medicine and dean of the Medical School. "It’s an investment in Michigan Medicine’s mission of advancing health to serve Michigan and the world."

To learn more, please visit uofmhealth.org/hospitalofthefuture.
Michigan Medicine Statewide Affiliations Update

Michigan Medicine’s vision and long-term strategic goal is to build a statewide system of care that will effectively manage care for 400,000 lives locally, serve the full health care needs of 3.5 million lives across the state of Michigan and beyond, and improve the value of care for all. This statewide system of care includes a variety of partnerships and affiliation structures, including but not limited to hospital owned interests in Metro Health, MidMichigan Health, and St. Joseph Mercy Chelsea, as well as master affiliations with Trinity Health Michigan and Sparrow Health System. Great strides continue to be made in achieving Michigan Medicine's strategic goal. Several developments launched in fiscal year 2019 in support of this strategy are outlined below.

St. Joseph Mercy Chelsea: Beginning in July 2018, St. Joseph Mercy Health and U-M have partnered to provide care through a joint venture at St. Joseph Mercy Chelsea. The coming together of our two award-winning health systems allows us to share knowledge, resources, best practices, patient protocols and more to drive innovation and a higher level of care. U-M family medicine and ophthalmology providers have been caring for patients in Chelsea for over a decade. They are now joined by U-M surgeons, urologists and gynecologists, many of whom see patients in clinics in Chelsea as well as perform procedures at St. Joseph Mercy Chelsea.

St. Joseph Mercy Ann Arbor - 10 East Medicine Unit: As of September 2018, through an innovative collaboration, patients can be admitted to a special Michigan Medicine-staffed unit on the 10th floor of St. Joseph Mercy Ann Arbor. The unit is designed to provide care for patients with general medical needs and elderly patients who can benefit from some of the specialized geriatric staffing and features present on the unit.

Sparrow Health: In March 2019, Sparrow Health System and Michigan Medicine signed an affiliation agreement paving the way for ongoing collaboration between the two systems. Both organizations are committed to providing the right care, at the right time, in the right place through shared clinical goals and ensuring patients have access to specialty care options near their local communities. Since March, the parties initiated the first implementation of the agreement, a joint venture integrating the pediatric services offered through Sparrow Children's Center in Lansing. The affiliation agreement also signals an intention to work together on future opportunities that may be developed by teams of physicians and leaders from both systems.

U-M Medical School Continues Preparations for LCME Reaccreditation Process

In fall 2018, the University of Michigan Medical School (UMMS) began preparing for the Liaison Committee on Medical Education (LCME) reaccreditation process. The LCME – an organization that provides programmatic accreditation to medical schools in the United States and Canada – will meet with UMMS faculty, students, and administrators during the reaccreditation site visit, which will take place April 19-22, 2020. Much work has been done to date to prepare for this site visit, and efforts will continue through the conclusion of the reaccreditation process. This accreditation spans an eight-year term.

In anticipation of the 2020 LCME site visit, UMMS has been conducting an ongoing self-assessment of its medical education program and curriculum to increase awareness of competencies and competitiveness with peer schools. Committees of UMMS leadership, faculty and staff were formed to carry out the self-study process. The LCME Self-Study Task Force has been overseeing all activities of the reaccreditation process. Subcommittees focused on Admissions/Records; Student Support, Advising, Coaching; Curricular Management and Assessment; Curricular Objectives and Content; Faculty; Independent Student Analysis; Learning Environment and Wellness; Organization and Leadership; and Resources have taken on extensive duties related to the self-study process.

The LCME mock site visit took place in September this year and achieved two key goals: to receive feedback on UMMS's reaccreditation materials and progress toward compliance, and to determine the UMMS educational community's readiness for the April 2020 site visit. Mock interviewers left campus impressed by what they called a "great program" and "great community" of faculty, staff, and learners. From the mock site visit, a number of improvement areas were identified that are currently being addressed to ensure UMMS meets LCME accreditation standards at the 2020 official visit.

The LCME's accreditation decision will be received in October 2020.
Working Together to Fight Pediatric Brain Tumors

Finding a treatment — and possibly a cure — for a rare but deadly brain tumor known as a pediatric high-grade glioma is a top priority for Michigan Medicine researchers. Scientists led by Drs. Maria Castro and Pedro Lowenstein from the Department of Neurosurgery’s Translational Neuro-Oncology Lab are exploring how immunotherapy used to treat tumors in adults could be effective in combatting them in children — with encouraging results. (To read more about this research, see page 21.) When U-M alumna Kimberly Gilman, ’89 BA, LSA, and her husband, alumnus Jeffrey Gelfand, ’88 BBA, Ross, heard about this promising research, they wanted to get involved. Knowing firsthand how critical timing is in the fight against pediatric brain tumors, they wanted to help expedite the research so it could be used to treat patients sooner.

As affiliates of the Pediatric Brain Tumor Foundation (PBTF), Jeff and Kim helped make the connection between the Foundation and the Michigan Medicine lab that led to a generous gift representing almost two-thirds of the $800,000 project goal. Funds were raised through PBTF’s annual Think Fit for Kids Family Fitness Festival, chaired by Ms. Gilman. The pair’s advocacy and tireless efforts will help Drs. Castro and Lowenstein and their team complete experiments to advance the research toward clinical trials and FDA approval.

“Kids diagnosed with brain cancer do not have the luxury of time. We are thrilled to have the opportunity to streamline the research process by leveraging a Michigan Medicine treatment strategy that has already been approved for adults in order to benefit the community of pediatric patients,” Ms. Gilman said. While this research has been underway for a number of years, recent breakthroughs have raised the stakes in the race to move it forward. “Over the past 10 years we have witnessed the passion and commitment of Dr. Castro and Dr. Lowenstein in the fight to cure pediatric brain tumors,” said Karen Cioma-James of Leah’s Happy Hearts. “We have been so proud to support their lab over the years and are incredibly excited to see how they will continue to advance their research with all the current momentum and success. To see so many generous donors and foundations, like the Pediatric Brain Tumor Foundation, come together to support the mission of this research is both exciting and inspiring. Today, more than ever before, we remain confident that we are going to find a cure.” Dr. Castro agrees, “Our lab is grateful for all the support we receive from generous donors like the Pediatric Brain Tumor Foundation, Leah’s Happy Hearts, Smiles for Sophie Forever, and the Chad Tough Foundation. We will continue to work our hardest until we find a cure.”

Together, support from these organizations and individuals is helping to shape the future of pediatric brain tumor treatment at Michigan Medicine and beyond.
The Far-Reaching Benefits of the Neurosurgery Residence Wellness Initiative

“Resident wellness is one of the hottest topics in medical education right now. Wellness amongst neurosurgery residents is kind of an anomaly: studies show that we are among the most burnt out residents while concurrently being among the most highly satisfied medical trainees,” says Yamaan Saadeh, MD, a sixth-year resident in the Department of Neurosurgery.

Last year, during the Department’s seminal Centennial Celebration, the Neurosurgery Resident Wellness Initiative was launched to boost the physical, mental, and emotional well-being of the newest members of the team — our neurosurgical residents. Because self-care is a vital component of professionalism, the Department is committed to supporting the physical and mental health of residents by offering nutritional snack and meal options, fitness incentives such as gym membership reimbursements, and team-building activities to build comradery amongst resident trainees.

The goal is to ensure that residents don’t become part of the 60 percent of practicing physicians who meet the criteria for burnout. Stressed health care providers can exhibit poor judgement, make bad medical decisions, and display hostility toward coworkers and patients. Workplace stress also can extend to personal lives, leading to depression, anxiety, poor sleep, and broken relationships. By fostering a satisfied and resilient workforce, physicians are more engaged and better able to fulfill their mission as clinicians.

Dr. Karin Muraszko, Julian T. Hoff Professor and Chair, is a strong proponent of the Initiative and is very grateful for the generous support from donors that have made it possible. “Our residents are our most precious commodity. They provide our patients with outstanding care while contributing new and groundbreaking knowledge to the field. This work is incredibly demanding from a psychological and physical standpoint — further underscoring how vital it is that we support the newest members of our community. They are our future and nurturing them now will allow them to flourish into the future.”

Dr. Saadeh also is grateful to the Department and alumni who have created and provided for the Neurosurgery Resident Wellness Initiative, which pays for activities like the annual neurosurgery softball tournament in New York City. “This year, everyone got involved: residents, faculty, fellows, nurses, and our administrators took part in practices, scrimmages, and cheering the team on. It was truly a whole department endeavor,” says Dr. Saadeh, who shared that the team made it to the playoffs for the first time ever this year. “We had a strong performance and an even better time.” The Initiative also sponsored a “Michigan Basketball Game Night Out” for residents and their families, as well as a Thanksgiving dinner.

The Department’s commitment to resident wellness goes well beyond activities, Dr. Saadeh says. “Our department chair, faculty, and mentors model integrity and dedication for us every day, creating a culture of wellness for everyone.” Generous support from donors and resident alumni from all over the country enables the Department to build upon this culture and ensure an enriched resident experience for the next generation of neurosurgeons.

JOIN US: BE A VICTOR!

Join us: Be a Victor! If you would like to learn more about philanthropy, the fundraising priorities of the Department of Neurosurgery, or how you can make a gift, please contact our development officer, Kirsten Petriches.

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The Michigan Medicine Office of Development supports the fundraising priorities of faculty and staff with the goal of accelerating breakthrough discovery, transforming patient care, developing leaders, recruiting and retaining extraordinary minds, and creating innovative environments for all.

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2019 PUBLICATIONS*
**Publications date range primarily from 11/30/18 to 11/25/19**


Maher CO.


2019 ACTIVE SPONSORED AWARDS / GRANTS

Engineering stem cells as diagnostic and therapeutic agents for glioblastoma
Calinescu A-A, Clines G
NIH R21 NS 107879 6/1/2018 – 5/31/2020

Immune-suppressive myeloid cells in the glioma microenvironment: Signaling mechanisms and novel therapeutic strategies
Castro M, Lowenstein P
NIH R33 NS 094804 9/1/2015 – 6/30/2020

Targeting ATRX-deficient pediatric GBM
Koschmann C, Castro M
NIH K08 CA 15905 12/1/2016 – 11/30/2021

Novel combined immunotherapeutic strategies for glioma: using pet dogs with spontaneous high-grade glioma
Castro M, Lowenstein P
NIH TO University of Minnesota U01 CA 224160 9/30/2019 – 8/31/2020

Interactions between the tumor cells and the neuro-immune microenvironment in mutant IDH1 gliomas: implications for therapeutics
Castro M, Ljungman M, Lowenstein P, Santor M, Venneti S, Zhao L
NIH R01 NS 105556 4/1/2018 – 2/28/2023

Immune-mediated therapies in a genetically engineered murine model of diffuse intrinsic pontine glioma
Castro, M, Lowenstein P, Muraszko K
NIH R21 NS 107894 4/1/2019 – 3/31/2021

Impact of H3K34R mutation in reprogramming the glioma immune microenvironment
Castro, M, Lowenstein P
American Brain Tumor Association BRF1900023 10/1/2019 – 9/30/2021

Cancer stem cell niche in brain tumors
Fan X
NIH R01 CA 148621 9/1/2018 – 6/30/2019 (NCTX) 6/30/2019

Investigating cancer stem cells – Niche interactions in brain tumors
Fan X
NIH R01 CA 163737 9/18/2012 – 7/31/2017 (NCTX) 7/31/2019

Targeting glioblastoma stem cells through epigenetic reprogramming
Fan X, Muraszko K
NIH R01 NS 105616 6/15/2018 – 6/30/2023

A phase 2/3 randomized, open-label study of Toca 511, a retroviral replicating vector, combined with Toca FC versus standard of care in subjects undergoing planned resection for recurrent glioblastoma or anaplastic astrocytoma
Heth J, Mammeser A
Tocagen, Inc. 7/1/2016 – 12/31/2018 (NCTX) 6/30/2019
Lipocardin-2 and intracerebral hemorrhage-induced brain injury
Hua Y, Keep R, Xi G
NIH R21 NS 091545
2/1/2016 – 1/31/2018 (NCTX) 1/31/2019

Peroxiredoxin 2 and intracerebral hemorrhage
Hua Y, Keep R, Xi G
NIH R21 NS112394
6/1/2019 – 5/31/2021

UM Clinical Neuroscientist Training Program
Albin R, Keep RF
NIH R25 NS089450
7/15/2019 – 6/30/2024

Role of S100a8/A9 in blood brain barrier dysfunction after sepsis
Singer BH, Andjelkovic-Zochowska AV, Segal BM, Keep RF
NIH K08 NS101054
4/1/2017 – 3/31/2020

Claudin expression profiles and blood brain barrier in aging
Andjelkovic-Zochowska AV, Stamatovic S, Keep RF
NIH R21 NS091545
9/15/2017 – 6/30/2022

Early hematoma lysis and hemorrhage toxicity in intracerebral hemorrhage
Keep R, Xi G, Hua Y, Xiang J
NIH R01 NS 106746
3/15/2018 – 2/28/2023

Connexin-43 isoform Cx43-20kDA in cerebral cavernous malformation type 3
Andjelkovic-Zochowska AV, Stamatovic S, Keep RF
NIH R21 NS111205
4/1/2019 – 3/31/2021

Connexin 43 and hemorrhagic complication in cerebral amyloid angiopathy
Andjelkovic-Zochowska AV, Stamatovic S, Keep RF
NIH RF1 AG064957
8/1/2019 – 4/30/2024

Neuroimmunology of malignant brain tumors: Innate mechanisms
Lowenstein P, Castro M, Nunez G
NIH 5 R01 NS096756
2/15/2016 – 1/31/2021

Tuning biomaterials-immune cell interactions for treatment of glioblastoma multiforme
Moon JJ, Lowenstein P, Castro M
NIH R01 EB022563
9/7/2016 – 5/31/2020

Mechanisms of glioma growth and invasion novel therapeutic strategies
Lowenstein P, Castro M
NIH 5 R01 NS 082311
4/1/2017 – 3/31/2019

Clinical study protocol to assess the safety and effectiveness of the Premia Spine TOPS system
Oppenlander M
Premia Spine CL-2830
7/19/2019 – 4/30/2024

MISTIE III
Pandey AS
NIH TO John Hopkins University U01 NS080824
1/23/2014 – 3/31/2019

Framing eighteen coils in cerebral aneurysms trial (FEAT)
Pandey AS
Styker Corporation TO Vanderbilt University Medical Center
5/1/2016 – 4/30/2019

Aneurysmal subarachnoid hemorrhage trial randomizing heparin (ASTROH)
Pandey AS
University of Louisville Research Foundation, Inc.
4/18/2016 – 2/28/2020

The Intra-arterial vassopasm trial-A multi-center study
Pandey AS, Keep RF, Thompson BG, Xi G
NIH R01 NS 108042
9/30/2018 – 7/31/2023

Novel ultrasonic technique for the treatment of hemorrhagic stroke
Pandey AS, Keep RF, Thompson BG, Xi G
NIH R01 NS 104663
9/30/2018 – 8/31/2020

Transcranial magnetic resonance guided histotripsy (tcMRgHt)
Xu Z, Pandey AS
NIH R01 EB028309
8/1/2019 – 4/30/2023

A phase 2b, randomized, double-blind, placebo-controlled study to evaluate the safety and efficacy of Staphylococcus Aureus 4-antigen vaccine (SA4Ag) in adults undergoing elective posterior instrumented lumbar spinal fusion procedures
Park P
Pfizer Incorporated TO inventive Health
5/20/2015 – 6/30/2019

A phase 2b/3, double-blind, randomized, placebo-controlled, multicenter study to assess the efficacy and safety of VX-210 in subjects with acute traumatic cervical spinal cord injury
Park P
Vertex Pharmaceuticals
8/4/16 – 1/31/2019

An ACDF multi-center study using ViviGen Cellular bone matrix
Park P
DePuy Orthopaedics, Inc.
12/31/2016 – 10/31/2019

Spine Surgery Clinical Fellowship
Park P
NeuroSurgery Research and Education Foundation (NREF)
7/1/2019 – 4/30/2023

Prospective radiographic and clinical evaluation of surgical treatment for cervical deformity: A multi-center study (PCD2)
Park P
DePuy Synthes To International Spine Study Group
7/1/2019 – 4/30/2029

A computational, neurobiological and clinical study of cortical connectivity during consciousness and anesthesia
Mashour GA, Patil PG, Lee U, Chestek CA
NIH R01 GM098578
7/15/2016 – 5/31/2020

NeuroNEXT Clinical Research Site at the University of Michigan
Albin R, Chou K, Patil PG
NIH U24 NS107158
7/15/2018 – 6/30/2023

Regenerative peripheral nerve interface for restoring individual finger movement in people with upper limb amputations
Chestek C, Patil PG
NIH R01 NS105132
7/15/2018 – 6/30/2023

Neural stem cell transplantation: A novel cellular therapy for Alzheimer’s disease
Feldman E, Murphy G, Patil PG
NIH U01 AG05/5620
8/15/2018 – 7/31/2021

Evaluating the efficacy and safety of VY-AADC02 in advanced Parkinson’s disease with motor fluctuations
Patil PG
IQVIA Holdings, Inc.
11/1/2018 – 8/31/2020

Reanimating paralyzed hands using an implantable, brain-controlled functional electrical stimulation neuroprosthesis
Chestek C, Patil PG
NIH F31 HD98804
5/1/2019 – 4/30/2022

Novel noninvasive methods of intracranial pressure and cerebrovascular autoregulation assessment seeing the brain through the eyes
Tiba M, Rajajee V, Williamson C
DOD W81XWH-18-1-0005
1/1/2018 – 1/31/2020

Stroke-related early tracheostomy versus prolonged orotracheal intubation in neurocritical care trial 2 (SETPOINT 2)
Rajajee V
PCORI TO Maine Medical Center
3/1/2018 – 1/30/2020

The impact of the dura mater on prostate spine metastases
Szerlip N
NIH R01 WP12XWH-18-1-0487
9/1/2018 – 8/31/2021

Initial clinical validation of a novel portable CT scanner in the neurological ICU
Williamson C, Rajajee V, Sheehan K
Xoran Technologies, LLC
5/1/2019 – 2/28/2020

Mechanisms of brain injury after intraventricular hemorrhage
Xi G, Hua Y, Keep RF, Morgenstern L
NIH R01 NS073595
2/15/2012 – 1/31/2017 (NCTX) 1/31/2019

Iron, minocycline and brain injury after intracerebral hemorrhage
Xi G, Hua Y, Keep RF
NIH R01 NS105125
5/1/2015 – 3/30/2020

Targeting CD47 to aid in clearing intracerebral hemorrhage
Xi G, Hua Y, Keep RF
NIH R01 NS096917
5/1/2016 – 3/31/2021

Brain iron quantification based on MRI in intracerebral hemorrhage
Chauhdry N, Xi G, Keep RF, Pandey AS, Nan B, Gemmete JJ, Cereverit TL
NIH R21 NS099684
7/11/2017 – 6/30/2020 NCTX 6/30/2020