

Extra! Extra! BCM Neurosurgery represented on front page of the Houston Chronicle

Newfound cells may help predict survival times for tumor patients

By Evan MacDonald

dren's Hospital and UTHealth Houston said the cells are a hy-brid of neurons and glia, the two main types of brain cells. They account for roughly one-third of cells found in a type of brain tu-tumor known as a glioma but can also be found elsewhere in the brain.

es to communicate with other cells in the body. That's a depar-ture from the long-held belief in neuroscience that neurons are the only brain cells that can gen-erate those signals, said Dr. Ben-

nayior. oservation really chal-Cells continues on A6



From left, Qianqian Ma, Rachel Curry, Benjamin Den Akdes Harmanci are among the Houston researchers in a study on the discovery of a "hybrid" type of brain

In September, co-first author Dr. Qianqian Ma, first author Dr. Rachel Curry, co-corresponding author Dr. Akdes Harmanci and **Dr. Benjamin Deneen** were featured on the cover of the *Houston* Chronicle in recognition of their work uncovering a new glioma cell type in the human brain.

The collaborative study between researchers at Baylor College of Medicine and the Jan and Dan Duncan Neurological Research Institute at Texas Children's Hospital, published in Cancer Cell, reveals that a third of the cells in glioma fire electrical impulses.

Additionally, the group also discovered that cells with hybrid neuron-glia characteristics are present in the non-tumor human brain. The findings highlight the importance of further studying the role of these newly identified cells in both glioma and normal brain function. Read the full article here (subscription may be required).

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Chair's Message

As we approach the close of the year, I am proud to reflect on what has been an exceptional year for the Department of Neurosurgery at Baylor College of Medicine. Our team continues to exemplify the highest standards in patient care, research, and education, making a lasting impact on the lives of countless individuals.

This year, our department maintained its unwavering commitment to providing excellent care for all aspects of neurosurgical disease. From spinal disorders to cerebrovascular conditions, neuro-oncology and skull base surgery, pain management, movement disorders, and peripheral nerve syndromes, our expertise spans the full spectrum of neurosurgery. Our Comprehensive Stroke Center has garnered multiple accolades from the American Heart Association, highlighting our exceptional outcomes and dedication to stroke care.

We are particularly proud that Baylor St. Luke's Medical Center has once again been recognized among the top 50 hospitals in the United States for Neurology and Neurosurgery—a testament to the extraordinary work of our faculty, staff, and residents.

The reach of our clinical services continues to grow. We are seeing more patients than ever before across the region, and we are thrilled to announce the expansion of our services with the addition of our new clinic in Sugar Land.

On the research front, our program has seen remarkable growth. We now have four McNair Scholars among our ranks and continue to rank among the top 10 neurosurgery departments nationally in NIH funding.

In addition, we have received significant awards from the Cancer Prevention and Research Institute of Texas (CPRIT), further fueling our pursuit of groundbreaking discoveries to improve patient outcomes.

Education remains a cornerstone of our mission, and this year has been no exception. We welcomed an outstanding group of subinterns and interviewees for our residency program, which continues to be recognized as one of the best training programs in the country. Excitingly, beginning in July 2025, we will have a full complement of 28 trainees with four residents in each class, reflecting the strength and growth of our program. Our residents are fortunate to train at some of the nation's most esteemed institutions, including The University of Texas MD Anderson Cancer Center, Texas Children's Hospital, Baylor St. Luke's Medical Center, the Michael E. DeBakey VA Medical Center, and Ben Taub Hospital.

As we look ahead to 2025, I am confident that our department will continue to thrive, achieving even greater milestones in clinical care, research, and education. I want to express my heartfelt gratitude to our faculty, staff, residents, fellows, and students for their dedication and tireless efforts. Together, we are advancing the field of neurosurgery and improving lives in ways that are truly inspiring.

Wishing you and your loved ones a joyful holiday season and a wonderful new year!

Upcoming Events

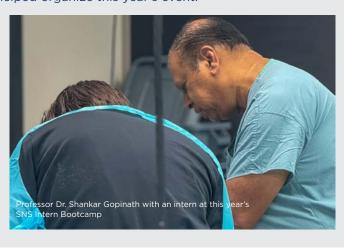
- December 25: Offices closed in observance of Christmas
- January 1: Offices closed in observance of New Year
- January 20: Offices closed in observance of MLK Day
- February 1: First day of Black
 History Month
- February 3: National Womens
 Physicians Day
- February 11: International Day of Women and Girls in Science

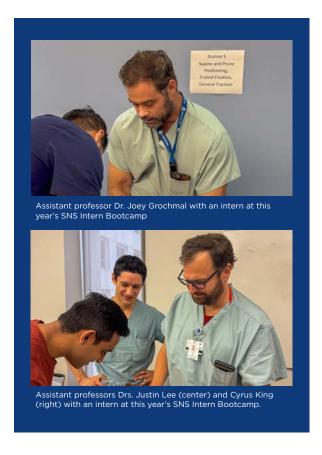


Lectureships, labs, awards and more, trainees, students and faculty keep busy

In July, our program's newest interns, Drs. Adrish Anand, Som Chaturvedi, Nisha Dabhi and Pedram Maleknia, joined neurosurgical interns from across the country at this year's Society of Neurological Surgeons Intern Bootcamp. Held at Main Baylor this year, this event is meant to aid interns as they transition from med school into the next seven years of residency training.

Many thanks to our BCM Neurosurgery faculty from across our five affiliated hospitals for their participation, and special mention to Dr. Robert North (MD Anderson), who helped organize this year's event.



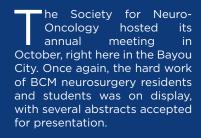


CNS and SNO Recap

BCM Neurosurgery faculty, residents, students and alumni turned out at this year's meetings



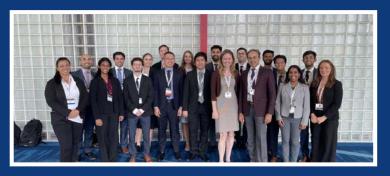
ouston was the host city for two of neurosurgery's largest annual meetings. In September, the Congress of Neurological Surgeons meeting rolled into town, with various poster, oral and digital presentations from BCM Neurosurgery faculty, students and residents. The meeting also provided the backdrop for our yearly alumni reception. It was great to reconnect with so many familiar faces!















Congrats, presenters!

Please join us in congratulating those who presented at CNS and SNO this year.

Jordan Altman (Undergrad)

CNS Digital Poster: Deep Brain Stimulation Recordings in Ventral Capsule/Ventral Striatum and Globus Pallidus Internus Reveal Relational Neural Activity Patterns

Sai Chilakapati, M.D. (PGY-2)

CNS Print Poster: *Outcomes After Surgical Treatment of Primary Benign Bone Tumors in Children

Nabeel Diab (Med Student)

CNS Oral Presentation: Dual Device Beat Frequency Artifact Impairs Local Field Potential Analysis

Alex Flores, M.D. (PGY-5)

CNS Print Posters: Deep Learning Transformer for Automating Spine Clinic Screening; Using a Large Language Model to Automate Screening of Abstracts for Neurosurgical Guideline Creation; Increase in Perioperative Ileus in Patients with Fundoplication Following High Thoracic to Pelvis Posterior Spinal Fusion for Neuromuscular Scoliosis; Route of Nutrition Predicts Perioperative Complications in Children with Neuromuscular Scoliosis Undergoing High Thoracic to Pelvis Posterior Spinal Fusion; Early Complications After Long Segment Fusion for Neuromuscular Scoliosis in a Child; Outcomes After Surgical Treatment of Primary Benign Bone Tumors in Children

Eric Goethe, M.D. (PGY-5)

CNS Print Poster: Neurocognitive Outcome Following Awake Craniotomy in Elderly Patients with High Grade Glioma

Katherine Kabotyanski (Medical Scientist Training Program)

Ethologically Oral Presentation: Identifying Relevant Neurobehavioral Biomarkers of Emotional State

Vigi Katlowitz, M.D., Ph.D. (PGY-5)

CNS Oral Presentation: Disruption of Neural Periodicity Predicts Clinical Response After Deep Brain Stimulation for Obsessive-Compulsive Disorder / CNS Mini Oral Posters: *Association Between Intraoperative Local Field Potentials, Lead Location, and Motor Outcomes in Patients Undergoing Deep Brain Stimulation of the Subthalamic Nucleus for Parkinson's Disease; Correlates of Neural Signaling Elucidate Survival Benefit in Gliomas / CNS Printed Posters: **Laminar Organization of Functional and Physiological Properties of Human Single Neurons and Local Field Potentials in a Hippocampal Microcircuit Using Neuropixels; Dural Venous Sinuses Outflow Anatomy Classification and Prediction of Transverse Sinus Stenting Performance; High Beta Power in Ventrolateral Prefrontal Cortex Indexes Approach Behavior Induced by Deep Brain Stimulation of the Ventral Capsule and Ventral Striatum / CNS Digital Poster: *Outcomes of Ventricular Assist Device Associated Intracranial Hemorrhage

Basit Khan, M.D. (Chief Resident)

SNO Oral Presentations: Integrated Clinical Genetic Analysis Reveals Neurotransmitter Receptor Dysregulation in Meningiomas Causing Seizure; Predictors of Histopathologic Results of Brain Biopsy in Patients Suspected of Secondary CNS Lymphoma

Sean Lau (Medical Student)

CNS Interactive Poster: Exploring Histone Modifications in Meningioma Pathogenesis

Tommy Liu (Medical Student)

CNS Print Poster: Evaluating the Concurrent Impact of Deep Brain Stimulation on Depression Symptoms in Patients with Obsessive-Compulsive Disorder: A Cohort Study

Elizabeth Ledbetter (Medical Student)

CNS Digital Posters: Interactions of PRC2 and DNMTs in Aggressive Meningiomas; Early Complications After Long Segment Fusion for Neuromuscular Scoliosis in a Child



JP McGinnis, M.D., Ph.D. (PGY-6)

CNS Oral Presentation: Developing Cell-Type Specific AAV Gene Therapy Vectors Using Living Human Brain

Rebecca Murdaugh, Ph.D. (Postdoctoral Fellow)

SNO Poster Presentation: Enhancing GD2.CART Therapy for Diffuse Midline Glioma with LSD1 and HDAC Inhibitors

Zain Naqvi (Med Student)

CNS Mini Oral Poster: The Scent of Stimulation: Olfactory Phenomena Induced by Deep Brain Stimulation / CNS Digital Poster: Comparative Efficacy of Asleep and Awake Deep Brain Stimulation Targeting Vim in Essential Tremor: A 6-Month TETRAS Analysis

Vijay Nitturi (Medical Research Pathway)

SNO Poster Presentation: Understanding Mechanistic Underpinnings of Molecular Subgroups of Meningioma

Shervin Nouri (Med Student)CNS Oral Presentation: Meningiomas Upregulate DNA Repair Pathways Involved in Double-Strand Breaks and Recombination / CNS Print Posters: *Increase in Perioperative Ileus in Patients with Fundoplication Following High Thoracic to Pelvis Posterior Spinal Fusion for Neuromuscular Scoliosis; *Route of Nutrition Predicts Perioperative Complications in Children with Neuromuscular Scoliosis Undergoing High Thoracic to Pelvis Posterior Spinal Fusion; *Early Complications After Long Segment Fusion for Neuromuscular Scoliosis in a Child

Matthew Ochoa (Undergrad)

CNS Digital Poster: Deep Stimulation Recordings in Ventral Capsule/Ventral Striatum and Globus Pallidus Internus Reveal Relational Neural Activity Patterns

Gabriel Reves (Med Student)

CNS Oral Presentation: Cost-Effectiveness Analysis of Laser Institial Thermal Therapy Versus Treatment as Usual for Mesial Temporal Lobe Epilepsy

Allie Revnolds (Research Coordinator III)

CNS Print Poster: Evaluating the Impact of Deep Brain Stimulation on Apathy Symptoms in Patients with Parkinson's Disease: A Cohort Study

Diego Roias (Med Student)

CNS Print Poster: Monitoring Meningioma Cell Cycle Activity Through Dream-MMB Activity Switching

Himanshu Sharma, M.D., Ph.D. (PGY-6)

CNS Digital Poster: Genetic Analysis of Rett Syndrome and Scoliosis

Omar Tanweer, M.D. (Director of Cerebrovascular and **Endovascular Neurosurgery)**

CNS Lunch and Learn: Session on Using Coils for Difficult Cerebrovascular Pathologies / CNS Oral Presentation: Using New Approaches for Difficult Stroke Thrombectomy Cases in Cerebrovascular Ischemia Symposium





Research Roundup

Pictured left: In October, Drs. Nicole Provenza and Sameer Sheth, along with other researchers at BCM and the University of Washington, were awarded nearly \$10 million in funding from the NIH BRAIN Initiative for the study of DBS of treatment-resistant bipolar depression.

Baylor receives grant to study DBS of treatmentresistant bipolar depression

Baylor College of Medicine received nearly \$10 million in funding from the NIH BRAIN Initiative to study effective treatments for the depressive phase of bipolar disorder. In the span of five years, the study will test whether deep brain stimulation (DBS) is effective and safe in patients with bipolar depression who have not responded to available therapies. It also seeks to identify biomarkers – based on brain recordings – of changes in mood states (e.g., depression vs. mania).

DBS is a well-established neurosurgical procedure that treats mostly movement disorders such as Parkinson's disease and essential tremor. It involves a neurosurgeon implanting electrodes in the brain and connecting them to an implantable pulse generator (IPG) device placed under the skin of the chest. This hardware is analogous to a cardiac pacemaker, hence the colloquial term "brain pacemaker" is often applied to DBS. Starting weeks after the surgery, a psychiatrist manages brain stimulation levels using a programming tablet that communicates wirelessly with the IPG. In this fashion, both therapy and possible side effects of DBS can be adjusted.

A collaborative team of investigators at Baylor and the University of Washington previously implanted DBS for patients with treatment-resistant depression and OCD, including Dr. Wayne Goodman, corresponding principal investigator and professor and D. C. and Irene Ellwood Chair in Psychiatry in the Menninger Department of Psychiatry and Behavioral Sciences at Baylor; Dr. Sameer Sheth, professor and vice chair of research in the Department of Neurosurgery at Baylor; Dr. Nicole Provenza, assistant professor in the Department of Neurosurgery at Baylor; and Dr. Jeffrey Herron, assistant professor of neurological surgery at the University of Washington.

"DBS has greatly improved quality of life in individuals with Parkinson's disease and essential tremor. Previous work has suggested that we can use this technology to engage and heal dysfunctional brain networks in individuals with depression and bipolar disorder as well. Success in this project will significantly advance our goal of using this therapy to help the millions of individuals worldwide who suffer from these disorders," Sheth said.

Click <u>here</u> to read the full story.

rs. Alexander Ropper and Alex Flores launch the Spine Innovations Lab

ongratulations to Drs. Alexander Ropper and Alex Flores, who have founded the Spine Innovations Lab. Along with their cross-collaborative team, the duo studies challenges in clinical spine surgery and develop technology-driven solutions, all with the aim of improving patient outcomes. Click here to visit the lab page.



On the move: Dr. Eleonora Bartoli participates in summer international engineering program

For many, the summer is a time for rest and relaxation after a busy academic year. Many do that by traveling abroad and immersing themselves in different cultures. For Dr. Eleonora Bartoli, assistant professor of neurosurgery, the summer brought a healthy mix of work, play and travel.

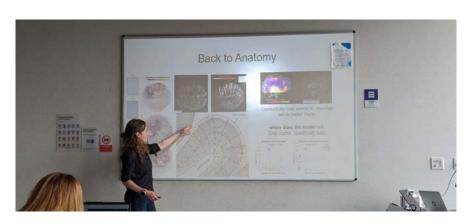
Bartoli, who holds an adjunct faculty position in the Department of Electrical and Computer Engineering at Rice University, joined other experts from Rice in attending Selected Topics in Computation Engineering for Scientific Challenges of the 21st Century: From Bioelectronic Devices to Solar Desalination Systems, a summer school program held in collaboration with Pontificia Universidad Javeriana in Bogotá, Colombia.

"This year's program was organized by two assistant professors from Rice: Dr. Alessandro Alabastri, and Dr. Raudel Avila, and with the help of graduate student Will Schmid" Bartoli said. "The mission was to teach students about computational modeling and its applications to various problems in science and engineering."

Bartoli was invited to give a seminar, "Topological optimization for neural pathways predictions in the human brain," based on a recent collaborative project with Alabastri. "This served to showcase the range of applications of advanced computational modeling tools, with an example from our research in neuroscience," she said.

Bartoli is passionate about mental health and her research aims to innovate brain stimulation therapies bv incorporating knowledge of brain signals that support functions, ultimately cognitive improving outcomes for patients undergoing treatments such as deep brain stimulation (DBS) for various psychiatric disorders. The opportunity to "study abroad" highlighted the importance of collaboration across various fields and multiple institutions.

Read the full story here.







Publications

Bartoli E, Devara E, Dang HQ, Rabinovich R, Mathura RK, Anand A, Pascuzzi BR, Adkinson J, Kenett YN, Bijanki KR, Sheth SA, Shofty B. Default mode network electrophysiological dynamics and causal role in creative thinking. Brain. 2024 Oct 3;147(10):3409-3425. doi: 10.1093/brain/awae199. PMID: 38889248; PMCID: PMC11449134. Available here.

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Welcome to the Team!

Join us in welcoming the following members to the BCM Neurosurgery family.

Maria Aguirre - Research Admin Associate

Humza Ahmed - Data Analytics Associate

Jordan Altman - Student Helper

Caitlin Bagnetto - Research Assistant GS

Jonathan Holden Bentley - Research Tech II

Tara Cation - Medical Assistant II

Saipravallika Chamarthi - Research Tech II

Peter Cserjesi - Research Assistant I

Tomasz Fraczek - Quantitative Methodologist

Melissa Franch - Post Doctoral Fellow

Hector Fuentes - Research Coordinator II

Maggie Grymes - Senior Coordinator, Program Management

Andy Guevara — Senior Coordinator, Patient Support

Compos Hensley - Research Tech I

Robynn Ivory - Coordinator, Business Operations (start 1/6/2025)

Zahra Jouahmad - Post Doctoral Fellow

Sean Lau - Research Tech II

Tommy Liu - MRP Student

Kasra Aziz Mansourian - Research Tech II

Elizabeth Mickiewicz - Research Tech II

Chelleese Paulsen - Medical Assistant II

Radhika Pradhan - Research Tech II (starting 1/13/2025)

Prathvi Panchal - Research Admin Associate

Ashley Puentes - Research Tech I

Zain Naqvi - MRP Student

Sameer Rajesh - Student Helper

Yvonne Reed - Research Coordinator II

Allie Reynolds - Research Coordinator III

Shivani Singla - Post Doctoral Associate

Shenetrius Sparkman - Medical Assistant II

Courtney Swain - Medical Assistant II

Kang Jung UK - Post Doctoral Associate

Nitturi Vijay - MRP Student

Magha Yadav - Research Coordinator II

Seng Bum Michael Yoo - Asst. Professor NTT

Yewen Zhou - Software Eng. & Program Associate

Congrats!

Join us in congratulating the following faculty on their recent promotions!

Nicole Provenza — Assistant Professor

Lona Winnegan — Assistant Professor

Healthcare Highlights

A second opinion offers a second chance

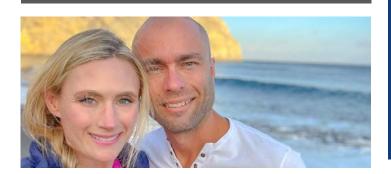
What should have been a relaxing evening at home quickly turned into an emergency trip to the hospital that set off a period of fear and confusion for nurse Kailey Ratcliff. From receiving a discouraging diagnosis at a small hospital in a Houston suburb to undergoing a successful craniotomy at Baylor St. Luke's Medical Center (BSLMC) in the world's largest medical center, Ratcliff's road to recovery would not have been possible had it not been for a trusted referral from family and the optimism of her Baylor College of Medicine and BSLMC care team.





Click here to read Kailey's story.

"The stars aligned": One warrior's journey with Parkinson's



When Allison Toepperwein first noticed a tremor in her left arm one April day in 2010, she could never have imagined the trajectory her life would take. From being diagnosed with Parkinson's disease as a Baylor College of Medicine patient, to becoming a Baylor employee and then a patient again, this time as a deep brain stimulation surgery recipient, Allison's journey has been filled with many victories, a few challenges, several side quests and an outpouring of support, with all roads leading back to Baylor.

Find the full story here.

Hot off the press: Dr. Alexander Ropper et al. release new book



In their new book, Spinoplastic Reconstruction, Drs. Alex Ropper, Sebastian Winocour (Division of Plastic Surgery), Michael A. Bohl (Carolina Neurosurgery & Spine Associates) and Edward M. Reece (Mayo Clinic) provide an in-depth multidisciplinary discussion on optimizing complex bony and soft tissue reconstruction.

Click here to learn more.



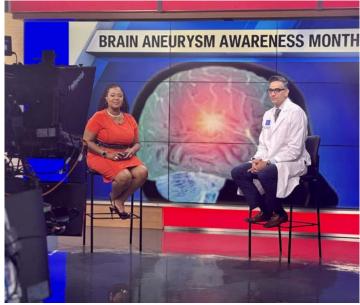


In the Community

From handing out koozies at the Houston Livestock Show and Rodeo, to holding talks at local senior centers, going live in the studio, to spreading the word at the Sugar Land Fall Festival (and everything in between), it has been a busy year at BCM Neurosurgery, spreading awareness for our department and clinics around the College and out in the community.

















Holiday Snapshots



BCM Neurosurgery faculty, staff, residents and students celebrate the most wonderful time of the year with plenty of decor and celebrating. Check out some of our favorite images this holiday season, and join us in congratulating the PMR Spine team for winning this year's clinic decorating contest!

Neurosurgery News is a publication of The Department of Neurosurgery at Baylor College of Medicine.

To submit content for the next newsletter, please email:

Cristina Flores (cristina.flores@bcm.edu)



DEPARTMENT OF NEUROSURGERY









