The Official Newsletter of the
Keck Medicine of USC
USC Brain Tumor Center
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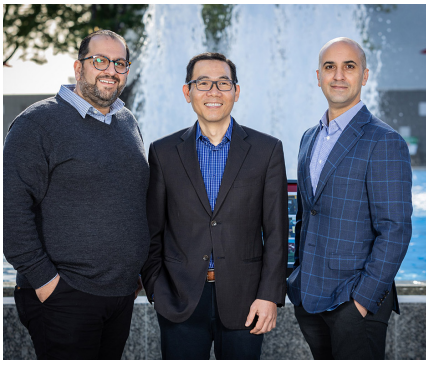
USC Norris Comprehensive Cancer Center
Keck Medicine of USC

USC BRAIN TUMOR CENTER Report

Volume 6 ▪ Issue 2
SPRING 2026

From the USC BTC Directors



Welcome to the Spring edition of the USC Brain Tumor Center newsletter. As we move into this season of renewal and momentum, we are proud to share an issue that reflects the **heart of our mission**: **compassionate care**, **meaningful community**, and **continued progress in research**, **advocacy**, and **innovation**.

We begin with **Endre Hudy's inspiring story**, which reminds us of the life-changing impact of expert, multidisciplinary care. Endre's journey from diagnosis to survivorship, and now to service on our Advisory Council, is a powerful example of resilience, hope, and the importance of a coordinated team approach. His voice reflects the lasting difference that compassionate, specialized care can make for patients and families facing a brain tumor diagnosis.

We are also proud to highlight **Nancy Hart**, our dedicated **Nurse Navigator**, whose work helps guide patients and families through some of the most overwhelming moments of their lives. Nancy represents the compassion, clarity, and commitment that define the USC Brain Tumor Center. Her efforts help ensure that patients feel supported, informed, and connected as they navigate treatment and follow-up care.

This Spring issue also comes at a particularly meaningful time, as we prepare to celebrate **Brain Tumor Awareness Month** in May.

Throughout the month, we are honored to take part in efforts that elevate awareness and strengthen advocacy at every level. This includes our work to bring greater visibility to brain tumor awareness through government outreach at the local, state, and national levels; participation in the **National Brain Tumor Society Walk**, where **Dr. Frances Chow** and **Dr. Gabriel Zada** will have the honor of addressing the community; Dr. Chow's participation in **"Head to the Hill"** advocacy event in Washington, D.C.; our partnership with **Smith Brothers Restaurants** to raise funds and awareness; and our collaboration with **Western University of Health Sciences' Student Interest Group in Neurology** to support patients through thoughtful outreach and advocacy. These efforts reflect our belief that awareness must be matched by action, partnership, and purpose.

We are also pleased to reflect on the success of the **Third Annual Southern California Brain Tumor Conference**, which brought together approximately 200 attendees and included a dedicated patient session developed in collaboration with the American Brain Tumor Association.

We are especially grateful to our keynote speaker, **Dr. Patrick Soon-Shiong**, whose inspiring remarks helped elevate the day and left a lasting impression on attendees. Alongside the recognition of Dr. Frances Chow with the **Five-Year Excellence in Patient Care & Leadership Award**, the outstanding poster presentations, and the strong institutional collaboration across the region, the conference served as a powerful reminder of how much can be accomplished when we come together in pursuit of progress.

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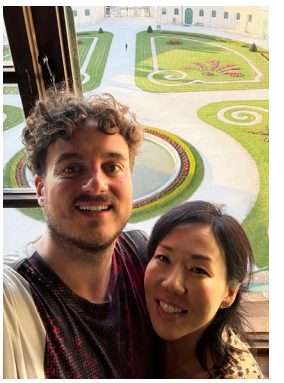
From Patient to Advocate: A USC Brain Tumor Center Success Story

By Endre Hudy



In 2020, I began experiencing mild, intermittent headaches. My primary care physician prescribed me pain medication, but I was determined to find the underlying cause rather than simply manage symptoms. I started drinking plenty of fluids with electrolytes, improved my sleep, monitored my blood pressure, exercised and lost weight. I even cut out coffee! But my headaches persisted. My physician said I was young, overall healthy with mild symptoms, so the probability of brain tumor was very low to warrant an MRI. After repeated visits, however, he finally ordered one.

Unfortunately, the MRI revealed a large 5 x 3 x 5 cm tumor in the posterior fossa pushing against my brainstem, growing into the fourth ventricle, and obstructing cerebrospinal fluid flow (CSF) causing hydrocephalus; hence the mild, intermittent headaches.

At the onset of the COVID-19 pandemic, my cancer journey began with isolation, uncertainty, and rapidly evolving medical protocols. My family from Hungary was unable to visit me in Los Angeles due to lockdowns. Hospital visits required repeated COVID testing (remember those long nasopharyngeal COVID swabs inserted deep down your nostril and throat?), and many consultations took place over newly adopted virtual platforms. My wife, Esther, and I navigated a complex landscape of shifting policies, delayed scheduling, and unclear treatment timelines.

We sought opinions from leading institutions across the West Coast, East Coast, and internationally, including medical centers in the EU and Switzerland. Ultimately, we chose the USC Brain Tumor Center (BTC) because of its depth of expertise, specialized focus, and truly inte-

Continues on page 2

"BTC Directors" ***continued***

Finally, this issue includes stories that remind us why this work matters so deeply. **Willa Chandler's tribute for Day of SCupport** speaks to the compassion and hope her family experienced through her father's care at the USC Brain Tumor Center, and underscores the importance of continued community support for our mission. We are also honored to share **Jared's story**, reflecting on the loss of his brother Hayden and the family's decision to establish the **Hayden M. Gidan Compassionate Care Fund**. Through this meaningful gift, the family is helping recognize individuals who exemplify the principles of compassionate caregiving and educate future physicians on the importance of providing care, not just treatment. Together, these stories highlight the strength of patients and families and the lasting impact of empathy, humanity, and whole-person care.

Thank you for being part of our community and for standing with us in support of patients, families, research, and hope. As we look to the future, we remain deeply committed to expanding clinical trials, advancing research, and accelerating discoveries that will lead to better treatments and brighter outcomes for patients and families affected by brain tumors.

Heal on!

Gabriel Zada, MD, MS, FAANS, FACS
Co-Director, USC Brain Tumor Center

David D. Tran, MD, PhD
Co-Director, USC Brain Tumor Center

Josh Neman, PhD
Scientific Director, USC Brain Tumor Center

Navigating Care with Heart: Spotlight on Nancy Hart MSN, RN USC Brain Tumor Center Nurse Navigator


Nancy Hart, MSN, RN

Having grown up in Southern California, attending Vanderbilt University School of Nursing and living in Nashville was an exciting change. Nancy earned her MSN through the bridge program at Vanderbilt, obtaining the advanced degree through an accelerated curriculum. After returning to Los Angeles, she discovered her passion to work in oncology, specifically childhood leukemia. She has worked as a bedside nurse, case manager, research nurse, and clinical nurse manager.

Seeking a new opportunity and challenge, Nancy joined the recently launched Brain Tumor Center as the **Nurse Navigator** in 2021. In this role, she guides patients through the system, ensuring their post-operative/new diagnosis treatment plan is in place. Every effort is made to schedule a multidisciplinary first appointment with neurosurgery, radiation oncology and neuro-oncology in attendance.

When insurance dictates treatment outside of USC, patients are provided with records necessary to meet with the treating physicians. She facilitates referrals to the BTC from both physicians and patient self-referrals.

Nancy is often the contact point for patients to get clarification and understanding of treatment, appointments, referrals, and everything in between. Questions and concerns from patients or caregivers are always funneled to the appropriate provider. "Working with such a collaborative team, it's a "win-win" set up for patients and the team! It's too easy to get lost in the health care world, especially after being told you have a life-altering diagnosis. Knowing my work makes life just a little bit simpler for our patients and families is truly rewarding."

"Patient to Advocate" ***continued***

grated, multidisciplinary approach: a high-level "one-stop shop" model that streamlined both decision-making and care.

First, the BTC's tumor board met and conducted a comprehensive multidisciplinary review of my case with input from experts from various fields and specialties. My treatment began with a suboccipital craniotomy to remove the tumor, performed under the supervision of Dr. Gabriel Zada. I was not afraid of the 5-10 hour surgery itself (as I would be sleeping through it), but of the uncertainty afterward: Would I wake up able to feel and move my body parts, speak, swallow, hear? Would I wake up at all?

When I regained consciousness in BTC's specialized neuro-ICU, I immediately moved my toes, tried to swallow, and listened for any noise around me. My first words to my nurse while still medicated were "You look like Beyoncé." It was a moment of profound relief.

When I was discharged from the hospital, I still couldn't move my head or walk to the restroom on my own. And because of the lockdown, it was just me and my wife, Esther, supporting me. Amidst this quiet downtime, all I could think was "I'm the luckiest among the unlucky." I had access to extraordinary care and a highly coordinated USC Tumor Board. It wasn't just Dr. Zada standing behind me in my cancer journey (quite literally, as I learned that's how my brain surgery was performed). It was the whole team, including RN Rebekah Ghazaryan, who provided exceptional coordination of my surgical care.

The next step was continuing treatment planning with Dr. Frances Chow, where we decided on following up with a month-long course of IMRT radiation therapy under the direction of Dr. Eric Chang.

I also had the unique opportunity to review my pathology with Dr. Kyle Hurth, who walked me through the classification of my tumor as a Grade 3 anaplastic ependymoma by counting mitotic cancer cells together under the microscope.

I have now surpassed the five-year progression-free milestone. Since then, I have been able to continue my life, earning an MBA in Italy, becoming a U.S. citizen and a UC Master Gardener, and beginning a new chapter in my professional career as a business and finance professor. I still have my battle scar that runs through the back of my head, halfway to my neck; a small price to pay for getting a second chance at life.

In my role on the BTC's Advisory Council, my goal is to promote the Center's mission focusing on advancing research and providing the best clinical care for its brain tumor patients. I am particularly focused on a central challenge in modern oncology: narrowing the gap between cutting-edge research and widespread clinical application. At Advisory Council meetings and the BTC's Annual Southern California Brain Tumor Conferences, we regularly explore key questions: How can emerging discoveries be more effectively integrated into standard patient care? How can new research be combined with or complement existing treatment options? And how can today's research inspire tomorrow's therapeutic strategies with broader applications?

I am particularly encouraged by the ongoing work at BTC, including research on Tumor Treating Fields therapy led by Dr. David Tran, and its combination with immunotherapy and chemotherapy as studied at the USC campus under Dr. Frances Chow. I am also inspired by collaborations between public and private research, such as the innovation of NeOnc Technologies, as well as by USC's adoption of advanced technologies like the Elekta Gamma Knife Esprit, which brings the latest radiosurgical capabilities into patient care.

I reflect on my experience at the USC Brain Tumor Center with deep gratitude. I am committed to supporting its mission of advancing research and delivering exceptional patient care, with the hope that we will see more success stories like mine, and less of the unfortunate reality of brain tumors that too often lead to debilitating neurological deficits, painful trauma, and promising lives cut far too short.

FAQs About Radiation Therapy, Chemotherapy, and Brachytherapy

By Rebekah Ghazaryan, RN, BSN, PHN, MSN/NP-S; RN Clinical Coordinator - USC Brain Tumor Center | USC Pituitary Center

Rebekah Ghazaryan, RN, BSN, PHN, MSN/NP-S

Hearing that you or a loved one may need treatment for a brain tumor can feel overwhelming. It is completely normal to have questions, concerns, and even some fear about what comes next. At the USC Brain Tumor Center, we want you to know that you are not alone.

Our team is here to guide you through each step of treatment and help you feel as informed and supported as possible.

Below are answers to some of the most common questions patients and families ask about radiation therapy, chemotherapy, and brachytherapy.

What is radiation therapy?

Radiation therapy uses high-energy beams to target tumor cells and help stop them from growing. It is a local treatment, which means it is directed to a specific area of the body. In brain tumor care, radiation may be recommended after surgery, in place of surgery in certain cases, or if a tumor returns.

What is chemotherapy?

Chemotherapy uses medication to destroy cancer cells or slow their growth. Unlike radiation, chemotherapy is often a systemic treatment, meaning it travels throughout the body. Some chemotherapy medications are given through an IV, while others come in pill form. For brain tumor patients, the exact medication and schedule depend on the type of tumor and your individual treatment plan.

What is brachytherapy?

Brachytherapy is a type of internal radiation treatment in which a radiation source is placed in or near the tumor. Because it delivers treatment very close to the target area, it can help reduce exposure to surrounding healthy tissue. While it is not commonly used for all brain tumors, your care team will discuss whether any specialized form of internal radiation is appropriate for your condition.

Will treatment hurt?

This is one of the most common questions patients ask.

The good news is that radiation therapy itself is not painful. You do not feel the radiation while it is being delivered.

Chemotherapy is similar to receiving other IV medications, although side effects can happen afterward depending on the drug.

If a procedure is involved with brachytherapy, sedation or anesthesia may be used to keep you as comfortable as possible.

Will I lose my hair?

Hair loss depends on the type of treatment you are receiving. Radiation to the brain can cause hair loss in the area being treated. Sometimes the hair grows back, although it may come back thinner or with a different texture. Some chemotherapy drugs can also cause hair loss, but not all do. Your team will let you know what to expect based on your treatment plan.

What side effects are common with radiation therapy?

The most common side effect of radiation therapy is fatigue, which can build up over time. Patients receiving radiation to the brain may also experience scalp sensitivity, irritation, temporary hair loss in the treated area, headaches, or swelling-related symptoms. Your team will monitor you closely and help manage any side effects that come up.

What side effects are common with chemotherapy?

Chemotherapy side effects vary from person to person and depend on the medication being used. Common side effects may include fatigue, nausea, decreased appetite, changes in blood counts, and increased risk of infection. Some patients have very mild side effects, while others need more support along the way. The important thing to know is that many side effects can be managed, and your care team is here to help you through them.

How long does treatment usually last?

Treatment schedules are different for every patient. Radiation may be given over several days or weeks, depending on the treatment plan. Chemotherapy may be given in cycles, with rest periods in between, or as a daily oral medication. Brachytherapy schedules vary depending on the type of treatment being used. Before treatment begins, your team will explain your schedule in detail so you know what to expect.

Can I continue my normal routine?

Many patients are able to continue some of their normal activities during treatment, but it is also important to give yourself grace. You may find that you have less energy than usual or need more rest. Some days may feel easier than others. Listening to your body, staying hydrated, eating as well as you can, and asking for help when needed can make a big difference.

Can I drive myself to treatment?

Sometimes yes, but it depends on how you are feeling and what treatment you are receiving. Many patients can drive themselves to routine radiation appointments, but fatigue, medications, seizure precautions, or other symptoms may make it safer to have someone drive. If you are receiving a procedure or sedation, you will likely need a ride home. Your care team will guide you on what is safest.

Will I be radioactive after treatment?

This is a very common concern. With standard external radiation therapy, you are not radioactive after treatment and it is safe to be around family, friends, and children. With certain types of internal radiation treatment, such as brachytherapy, temporary precautions may sometimes be needed. If that applies to you, your team will explain exactly what to do.

How will my doctors know if treatment is working?

Your doctors will follow your progress through MRI scans, follow-up visits, lab work when needed, and careful review of your symptoms. It is important to remember that changes on imaging do not always happen right away. Sometimes it takes time to see the full effect of treatment, and your doctors will look at the whole picture when evaluating your response.

When should I call my care team?

Please contact your medical team right away if you experience:

- Fever
- Severe nausea or vomiting
- New or worsening headaches
- Confusion
- New weakness or numbness
- Seizure activity
- Trouble breathing
- Any sudden or concerning change in symptoms

Even if you are not sure whether something is important, it is always okay to call. We would rather hear from you early than have you worry at home.

What questions should I ask my doctors?

It can be helpful to write questions down before appointments. Some good ones include:

- What is the goal of this treatment?
- What side effects should I expect?
- What symptoms should I report right away?
- Will I need help at home during treatment?
- How might treatment affect work, school, or daily life?
- What happens after treatment is complete?

A Final Word.....

Starting treatment can feel like stepping into the unknown, but you do not have to face it alone. Asking questions is encouraged, and no concern is too small. At the USC Brain Tumor Center, our goal is not only to treat the tumor, but to care for the whole person with compassion, clarity, and support.

Fight On and Heal On!

Celebrating Brain Tumor Awareness Month

Each May, we proudly join the broader brain tumor community in recognizing Brain Tumor Awareness Month, a time to elevate awareness, honor patients and families, and renew our commitment to advancing research, treatment, and hope.

This year, the USC Brain Tumor Center has officially submitted requests at the local, state, and national levels to have May formally acknowledged as Brain Tumor Awareness Month, reflecting the importance of bringing greater visibility to this devastating disease and the urgent need for continued support and progress.

This Year, **Dr. Frances Chow** has been selected to join the Society for Neuro-Oncology's prestigious national delegation for the **"Head to the Hill"** advocacy event in Washington, DC, taking place May 3–5, 2026.

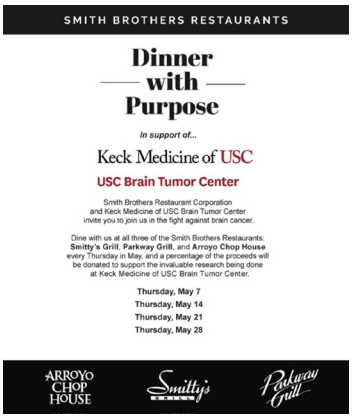
"Head to the Hill" is an annual event hosted by the National Brain Tumor Society that brings together clinicians, researchers, patients, and advocates from across the country to meet directly with members of Congress and their staff. The goal is to raise awareness about brain tumor research, promote increased federal funding, and advocate for policies that improve patient care and outcomes. During the multi-day event, participants will receive policy briefings and advocacy training before heading to Capitol Hill to share their expertise and personal perspectives. The initiative is widely regarded as one of the most impactful opportunities for the neuro-oncology community to influence national health policy.

Dr. Chow was chosen in recognition of her ongoing efforts to promote health policy initiatives to improve access to care for cancer patients in the state of California and beyond. This selection highlights the continued leadership and engagement of the USC Brain Tumor Center in local and national advocacy efforts, reinforcing its commitment to advancing research and improving the lives of patients affected by brain tumors.

National Brain Tumor Society

At the USC Brain Tumor Center, Brain Tumor Awareness Month is not only a time of recognition, but also a time of action and community engagement. On May 9, our team will proudly sponsor the **National Brain Tumor Society Walk**, standing alongside patients, survivors, caregivers, advocates, and supporters in a shared commitment to finding a cure. We are especially honored that **Dr. Gabriel Zada** and **Dr. Frances Chow** have been selected to address the brain tumor community that day, helping to inspire and unite all those impacted by this disease.

We are also excited to share a new partnership. **Western University of Health Sciences' Student Interest Group in Neurology (SIGN)** is collaborating with the USC Brain Tumor Center for Brain Tumor Awareness Month. Their organization is helping prepare packages to gift and honor patients, as well as provide support for them during their journey in battling brain tumors. As part of their philosophy and approach to humanistic patient care, they aim to focus on understanding patients as a whole, listening to their stories, and knowing who they are as people outside of their diagnosis, to provide optimal care. With these packages, WesternU SIGN wants to provide social and emotional support that restores hope and helps patients navigate through the troubles of their condition, treatment, and recovery. WesternU SIGN is also raising awareness amongst their student body of the various types of brain tumors and diseases, hoping to inspire others to spread the knowledge and advocate for further research and clinical innovation. Together, we all stand in solidarity with the brain tumor community, their families, and their healthcare providers. This month, every month, and throughout our futures as physicians.



Throughout the month, we are also grateful to partner with **Smith Brothers Restaurants** in an effort to raise funds and increase awareness about the importance of supporting brain cancer research.

Partnerships like these are invaluable in helping us engage the community and emphasize the critical role that academic medical centers and dedicated brain tumor programs play in advancing care and discovery.

Collaboration is also essential to progress. Each year, the USC Brain Tumor Center hosts the **Southern California Brain Tumor Conference**, bringing together speakers and experts from institutions across Southern California to share knowledge, foster innovation, and strengthen partnerships. By uniting around a common purpose, we move closer to discovering better treatments and, ultimately, a cure for this disease.

3RD ANNUAL Southern California BRAIN TUMOR CONFERENCE

Supporting the brain tumor community remains central to our mission all year long. Through this quarterly newsletter, we strive to keep our community informed about the work happening across our center. We are also proud to support patients and their loved ones through our monthly patient support group and patient caregiver support group, which provide connection, encouragement, and meaningful resources for those navigating the challenges of a brain tumor diagnosis. During Brain Tumor Awareness Month, we celebrate the strength of our patients, the dedication of caregivers, the generosity of our community, and the relentless work of clinicians and researchers who remain committed to changing the future of brain tumor care.

Southern California Brain Tumor Conference: A Celebration of Collaboration and Progress

We are proud to reflect on the tremendous success of the **Third Annual Southern California Brain Tumor Conference**, which brought together approximately 200 attendees, along with more than 20 participants in a dedicated patient session developed in collaboration with the **American Brain Tumor Association (ABTA)**. The conference opened with welcoming remarks from our Dean, followed by inspiring remarks from **Board of Trustees Chair Amy Ross**, who expressed strong support for the mission and continued growth of the USC Brain Tumor Center.

Throughout the day, the spirit of collaboration across Southern California institutions was on full display. Clinicians, researchers, trainees, and advocates came together to share new discoveries, exchange ideas, and strengthen the partnerships that are essential to advancing brain tumor research and improving care for patients and their families.

The conference featured many memorable highlights, including the presentation of the **Five-Year Excellence in Patient Care & Leadership Award** to **Dr. Frances Chow**, recognizing her outstanding contributions to patient care and leadership in the field. Attendees were also inspired by an exceptional keynote address from **Dr. Patrick Soon-Shiong**, whose vision for the future of precision medicine, innovation, and collaboration in cancer research left a lasting impression on the audience.

In addition, a dynamic poster session showcased the next generation of brain tumor research taking place across Southern California institutions, highlighting the depth of scientific talent and the promising discoveries that will help shape the future of the field. The conference concluded with the recognition of the top three research posters, followed by a celebratory reception honoring the remarkable progress and momentum of this growing collaborative community.

A particularly meaningful component of the conference was the **patient-focused session** held in partnership with the ABTA, which featured excellent presentations centered on the patient experience and comprehensive care. Topics included "**Caring for the Whole Person**" and "**Fighting Together Against Brain Cancer: Supporting Patients, Their Partners, and Their Providers as a Brain Cancer Team**." The session concluded with an inspiring patient panel discussion, offering powerful perspectives and reinforcing the importance of community, support, and partnership in the fight against brain cancer.

We extend our sincere gratitude to our industry sponsors and partners, whose generous support helped make this important gathering possible. Most importantly, we thank the many speakers, researchers, clinicians, patients, and advocates who contributed their time, expertise, and passion to advancing brain tumor care and research.

We look forward to continuing this important collaboration and welcoming our community back for the next Southern California Brain Tumor Conference in March 2027.

Southern California 3rd Annual Poster Session Winners

A tumor-selective EGFR inhibitor for glioblastoma.
Sarah Lee (UCLA)

Glioblastoma (GBM) remains one of the most aggressive and therapeutically resistant primary brain tumors. Although aberrant signaling of the epidermal growth factor receptor (EGFR) is one of the most common molecular drivers of GBM, existing EGFR-targeted therapies have shown limited clinical benefit. This limitation reflects, in part, poor penetration of the blood-brain barrier (BBB), insufficient activity against the diverse spectrum of amplified EGFR alterations present in tumors, and dose-limiting toxicity arising from inhibition of wild-type EGFR in normal epithelial tissue.

Characterizing EGFR in Non-Functional Pituitary Adenoma.
Chloe Redwood (USC-Zada Lab)

Non-functional pituitary adenomas (NFPAs) account for ~30% of pituitary adenomas (PAs) and are associated with large size at diagnosis, invasive growth, and high recurrence. Their molecular drivers remain poorly understood, limiting targeted treatment options. Epidermal growth factor receptor (EGFR), a transmembrane receptor tyrosine kinase implicated in tumor proliferation, survival, and invasion, has not been well characterized in NFPA biology. Methylation profiling data from our laboratory identified significant EGFR hypomethylation in invasive NFPAs, motivating further investigation. This study aims to assess EGFR expression in NFPAs and evaluate its role as a marker of invasive behavior and potential therapeutic target.

Pictured left to right: Samuel Amponsah-Effah, Chloe Redwood, Sarah Lee, and Josh Neman

Genetic Engineering of Glioblastoma Cells into Focused Ultrasound–Controlled, CAR-expressing Myeloid-like Cells For GBM Fratricide. **Samuel Amponsah-Effah (USC- Tran Lab)**

Glioblastoma (GBM) is a lethal, therapy-resistant brain tumor driven by glioma stemlike cells (GSCs). Despite progress in CAR-based immunotherapies in other cancers, their efficacy in GBM remains limited due to poor blood–brain barrier penetration and an immunosuppressive tumor microenvironment. In vivo immune engineering may overcome these obstacles. We propose a novel strategy to reprogram GSCs in situ into myeloid-like cells expressing a focused ultrasound (FUS)-inducible, HER2-specific CAR––enabling local, controllable fratricidal activity against HER2+GBM. FUS enables noninvasive, spatiotemporal regulation of CAR activity to minimize off-tumor toxicity. Our results demonstrate the feasibility of reprogramming GSCs into controllable, CAR-expressing immune-like cells. This FUS-triggered in situ GBM fratricide approach lays the groundwork for a novel GBM immunotherapy.

Supporting our Brain Tumor Patients and Their Families

The Southeastern Brain Tumor Foundation has once again granted the USC Brain Tumor Center with $2,000 worth of Uber/Uber Eats funds to provide to brain tumor patients in need. This allows for patients with significant financial needs, to access funding to help pay for a meal or a ride to a medical appt. Meeting these types of needs helps ease the overall burden that our patients and their families carry and we're overjoyed to partner with an amazing foundation for the second year in a row.

SOUTHEASTERN BRAIN TUMOR FOUNDATION
Support · Hope · Courage

Support Patients and Breakthroughs at the USC Brain Tumor Center USC Day of SCupport

Each year, the Trojan community comes together for the **USC Day of SCupport**—a celebration of the schools, programs, students, alumni, parents, faculty, staff, and friends who make USC so special. It is a reminder of what **#TrojansTogether** truly means: showing up for one another and supporting the causes that change lives.

This year, we are proud to highlight the USC Brain Tumor Center as part of this meaningful day of giving.

At the USC Brain Tumor Center, we care for patients facing some of life's most difficult diagnoses with expertise, compassion, and hope.

Our multidisciplinary team brings together leading specialists to develop highly personalized treatment plans for both adults and children with brain tumors.

As part of an academic medical center, we are also advancing cutting-edge research and expanding access to promising clinical trials—ensuring that patients benefit not only from the best care available today, but also from the breakthroughs of tomorrow.

From advanced imaging and minimally invasive surgery to precision medicine and immunotherapy, our team takes on the most complex cases with one goal: improving outcomes and quality of life for every patient we serve. We also understand that behind every diagnosis is a family, and we are committed to walking alongside each patient and loved one with empathy, support, and hope at every step.

The impact of this care is perhaps best expressed by those who have experienced it firsthand:

> *"My dad's glioblastoma journey was forever changed the moment he was placed in the care of the USC Brain Tumor Center. From the very beginning, the team's compassion and unwavering support carried our entire family through each step. Supporting the USC Brain Tumor Center means honoring patients like my dad and helping ensure that other families experience that same level of care, innovation, and hope."*
>
> *Willa Chandler, daughter of patient, USC Brain Tumor Center*

This **Day of SCupport**, we invite our community to make a gift to the USC Brain Tumor Center and help expand what is possible for patients and families facing brain tumors.

We are deeply grateful to our patients and their families for their continued support of our Center and for inspiring our mission every day.

Support the USC Brain Tumor Center:
https://dayofscupport.usc.edu/p/usc-brain-tumor-center

Honoring Hayden M. Gidan

*In the five years since Hayden Gidan's passing, his parents, Freddi Segal-Gidan, PA, PhD and Jon Gidan, DDS, have supported the **Hayden M. Gidan Compassionate Care Fund**, established in Hayden's memory. The fund is dedicated to advancing compassionate, whole-person care for individuals diagnosed with brain tumors and their families, with an emphasis on our ensuring our clinical providers are thinking beyond just the medical treatment, and towards the care needed. The fund has supported conferences for our USC Brain Tumor Center LCSW, Jinsy Rogers, as well as care-focused educational sessions at the USC BTC sponsored brain tumor conferences, reaching a large number of medical professionals all at once.*

As the USC Brain Tumor Center continues to pursue excellence in compassionate care, we remain committed to listening to those experiences that are often less visible or unheard—particularly those of family members and siblings. On the fifth anniversary of Hayden's passing, his brother Jared Gidan reflects on what it has meant to carry that loss forward.

5 Years

By Jared Gidan

It's been 5 years since my brother Hayden passed away. I often wonder what he would think of my life now. Since he passed, I've had another daughter. It's weird to have no pictures of them together. She asks about him though, I think, because she is a second child just like he was. Death is a weird thing to hear coming out of a four-year-old's mouth. She doesn't have any context around the weight of the word. So when she says it, it hits me hard. I try to collect myself quickly and come up with a reply. Just another reminder of my brother's passing. And I don't know if this is my own projection, but I see him in her. I also think about her older sister, and what their relationship is like. How beautiful and precious it is. And a part of me is so scared that one day they won't have each other anymore.

My older daughter at least got to meet him. She won't remember him, but I will remember them together, smiling and laughing at each other, and the strength it took for him to kneel down to get closer to her, and how hard it was for him to stand back up. My younger daughter never got that. There are no pictures of them together. There is no memory to carry. Just the stories I'll tell her, and the questions she'll keep asking.

Since my brother died, I've tried to do my best to move forward. Sometimes because I have to, and sometimes because I want to. This can be as simple as waking up in the morning, or as big as taking the family on a trip, just choosing to keep going. There aren't a whole lot of sibling support systems out there for adult siblings who have lost their siblings. There aren't even really any books on it. I always found that strange, because I know I'm not alone. When he passed, I wrote that the hardest adversity I'd ever face was the path ahead as a sibling who lost their brother way too early. Five years in, I still believe that.

I wonder what he'd be doing if he was still here. He'd be 33 years old now. When he passed he didn't leave behind a wife or kids or a job. There is a simplicity in that. But I think about who he was, the way he always pulled our family closer together when life got busy, the way he got knocked down over and over and always came back. He always bounced back. Until finally, he had no bounce left.

He loved chocolate. At California Pizza Kitchen, he'd always order the ice cream sundae and spoon the chocolate off the inside of the cup without ever finishing the ice cream. He refused to ski the cornice at Mammoth once and just walked back up to the gondola with my mom instead. That was Hay. Everything on his own terms.

My younger daughter will grow up hearing these stories. She'll keep asking questions I have to collect myself to answer: *"Was Hayden taller than you?" "Did Hayden like Mario, too?" "Did Hayden root for the Dodgers?"* And somewhere in that, in the retelling, in the catching my breath, I'll keep carrying him forward. He never went away easily. I don't plan to either.

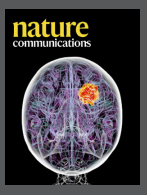
As we continue to expand efforts that place care, empathy, and family experience at the forefront of brain tumor treatment, we are deeply grateful for the ongoing support of the Segal-Gidan/Gidan family and the broader brain tumor community.

*Freddi, Jon and Jared invite others to join them in growing the fund they started. If you would like to make a gift to the **Hayden M. Gidan Compassionate Care Fund**, please contact **Nicole Measles, Director of Development, at Nicole.Measles@med.usc.edu or (213) 806-0693**.*

SELECTED PUBLICATIONS

Cancer stem cell assay-guided chemotherapy improves survival of patients with recurrent glioblastoma in a randomized trial. ***Ranjan T, Sengupta S, Glantz MJ, Green RM, Yu A, Aregawi D, Chaudhary R, Chen R, Zuccarello M, Lu-Emerson C, Moulding HD, Belman N, Glass J, Mammoser A, Anderson M, Valluri J, Marko N, Schroeder J, Jubelirer S, Chow F, Claudio PP, Alberico AM, Lirette ST, Denning KL, Howard CM.*** *Cell Rep Med. 2023 May 16;4(5):101025. doi: 10.1016/j.xcrm.2023.101025. Epub 2023 May 2.*

Therapy-resistant cancer stem cells (CSCs) contribute to the poor clinical outcomes of patients with recurrent glioblastoma (rGBM) who fail standard of care (SOC) therapy. ChemoID is a clinically validated assay for identifying CSC-targeted cytotoxic therapies in solid tumors. In a randomized clinical trial (NCT03632135), the ChemoID assay, a personalized approach for selecting the most effective treatment from FDA-approved chemotherapies, improves the survival of patients with rGBM (2016 WHO classification) over physician-chosen chemotherapy. Results of this study offer a promising way to provide more affordable treatment for patients with rGBM in lower socioeconomic groups in the US and around the world.



NANP targeting radiosensitizes glioblastoma through TNFR1 sialylation-driven mesenchymal shift. ***Ding Y, Zhang ZY, Ezhilarasan R, Modrek AS, Graciani M, Karp J, McManus G, Jambhale A, Sulman EP.*** *Nat Commun. 2026 Mar 18. doi: 10.1038/s41467-026-70853-x. Epub ahead of print.*

Glioblastoma (GBM) patients have dismal survival due to resistance to initial ionizing radiation therapy (RT). Clonal evolution analysis reveals no dominant RT-resistant clones, prompting a genome-wide CRISPR screen to identify radiosensitizing targets. The screening highlights DNA damage response genes, validating the effectiveness of our approach. N-acylneuraminate-9-phosphatase (NANP), a critical enzyme in the sialic acid synthetic pathway, is top-ranked in the screening and associated with patient outcomes. After radiation, NANP-deficient cells exhibit more DNA damage, G2/M arrest and apoptosis, and impaired DNA repair by favoring non-homologous end-joining over homologous recombination. Mechanistically, NANP influences NF-κB signaling and the mesenchymal state by modulating sialylation and internalization of tumor necrosis factor receptor 1 (TNFR1), thereby affecting RT sensitivity. Intracranial orthotopic xenograft experiments validate the function of NANP in vivo.

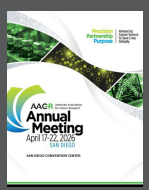
Here, we identify NANP as a radiosensitizing target dependent on TNFR1 sialylation and mesenchymal shift, providing a basis for developing RT sensitizers for GBM.

CONFERENCE ABSTRACTS

Integrated transcriptomic and epigenomic analysis to study the mechanism by which smoke-induced hypomethylation of cg05575921 increases lung cancer risk [abstract]. ***Matthew Gladstone, Khoi Huynh, Chunli Yan, Kimberly D. Siegmund, Aram Modrek, Ite Offringa.*** *In: Proceedings of the American Association for Cancer Research Annual Meeting 2026; Part 1 (Regular Abstracts); 2026 Apr 17-22; San Diego, CA.*

Lung cancer is the leading cause of cancer death in the US. The most common subtype is lung adenocarcinoma (LUAD), arising out of the alveolar epithelium. Tobacco smoke and pollution play a key role in LUAD risk and have been associated with changes in DNA methylation in numerous epigenome-wide association studies. Hypomethylation of cg05575921 is one of the most significant changes, predicting over 30% of the increased risk of lung cancer seen in smokers. However, the mechanism by which this methylation loss is linked to lung cancer risk remains unknown. We previously showed that cg05575921, located in intron 3 of the gene aryl hydrocarbon receptor repressor (AHRR), borders a tobacco smoke-inducible enhancer. Upon smoke exposure AHRR is the only gene within a two megabase window whose expression increases. We hypothesize that prolonged tobacco smoke exposure triggers maladaptive expression of AHRR, that hypomethylation of cg05575921 is a byproduct of the adjacent enhancer activation, and that constitutive expression of AHRR prevents protective xenobiotic detoxification responses, thereby increasing lung cancer risk.

Understanding why cg05575921 hypomethylation is strongly associated with lung cancer risk may help devise strategies to mitigate the effects of smoke exposure.



HMGB2-mediated radioresistance of glioblastoma stem cells. ***Sara Nalina Barcik Weissman, Cheol Park, Connor Mork, Khoi Huynh, Yingwen Ding, Ze-yan Zhang, Eric L Chang, Erik P Sulman, Aram S Modrek.*** *In: Proceedings of the American Association for Cancer Research Annual Meeting 2026; Part 1 (Regular Abstracts); 2026 Apr 17-22; San Diego, CA.*

Glioblastoma (GBM) is the most common and deadly adult central nervous system cancer. Despite surgical resection combined with DNA-damaging radiation and chemotherapy, GBM almost invariably recurs, becoming more resistant to radiation.

To investigate the drivers of this radioresistance, we conducted a knockout radiosensitization screen and identified the High Mobility Group B2 (HMGB2) protein as a potential contributor.

To elucidate HMGB2's role in GBM radioresistance, we performed viability, clonogenic survival, extreme limiting dilution (ELDA), and deletion mutant assays on patient-derived glioblastoma stem cells (GSCs) treated with a combination of radiotherapy (RT) and either HMGB2 knockdown or inhibition using Inflachromene (ICM), a small molecule inhibitor of HMGB2.

Our findings implicate HMGB2 in GBM radioresistance and suggest that the Acidic Tail region mediates chromatin binding, possibly playing a role in HMGB2's mechanism of action. Together, these results provide a foundation for clarifying HMGB2's role in GBM biology and it's potential relevance to improving therapeutic response.

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	Trial	Interventions	Phase
	Glioblastoma		
1	DB107-RRV, DB107-FC, and Radiation Therapy With or Without Temozolomide (TMZ) for High Grade Glioma	• DB107-RRV + DB107-FC + Standard Therapy	Phase 1/2A
2	EF-41/KEYNOTE D58: Phase 3 Study of Optune Concomitant With Temozolomide Plus Pembrolizumab in Newly Diagnosed Glioblastoma	• Optune + Pembrolizumab + Standard Therapy • Optune + Placebo + Standard Therapy	Phase 3
3	Multi-Center Randomized Controlled Phase 2b Clinical Trial to Evaluate the Safety and Efficacy of TVI-Brain-1 Combined with Conformal Radiotherapy and Temozolomide Compared to Standard Therapy as a Treatment for Newly Diagnosed O6-Methylguanine Methyltransferase Negative (MGMT Unmethylated) Grade 4 Astrocytoma (GBM)	• TVI-Brain-1 + Radiation + Temozolomide • Standard therapy	Phase 2b
4	A Phase 1/2 Study of Selinexor and Temozolomide in Recurrent Glioblastoma	• Selinexor + Temozolomide • Temozolomide	Phase 1/2
5	An Open-Label, Phase 1/2A Dose Escalation Study of Safety and Efficacy of NEO100 in Recurrent Grade IV Glioma	• Perillyl alcohol (inhaled)	Phase 1/2A
6	Study of NEO212 (Temozolomide-Perillyl Alcohol Conjugate) in Advanced Brain Cancer	• NEO212 (oral)	Phase 1
	Meningioma		
7	An Open-Label, Phase 2 Study of NEO100 in Participants with Residual, Progressive or Recurrent High-grade Meningioma	• Perillyl alcohol (inhaled)	Phase 2
8	Observation or Radiation Therapy in Patients with Newly Diagnosed Grade II Meningioma That Has Been Completely Removed by Surgery (NRG-BN003)	• Radiation • Standard therapy	Phase 3
9	MOMENTUM-1: A Randomized, Open-Label, Phase 2 study of [^{177}Lu] Lu-DOTATATE in Adults with Progressive Intracranial Grade 1-3 Meningioma	• Radionuclide 177 Lu • Standard therapy	Phase 2

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