

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

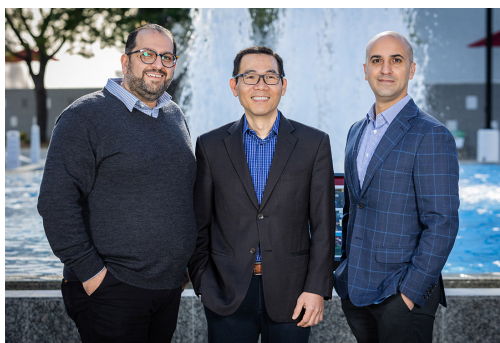
USC BRAIN TUMOR CENTER

Report

Volume 5 • Issue 4

AUTUMN 2025

From the USC BTC Directors



As we enter the fall season, we reflect with deep gratitude and pride on a remarkable year for the USC Brain Tumor Center. This fall marks five years since our official launch a milestone we celebrated with an elegant and memorable anniversary dinner at the Jonathan Club, graciously hosted by USC BTC Clinical Advisory Committee Members Jeff and Julieta Bennett. The evening brought together many dedicated faculty, donors, and friends, whose unwavering commitment has helped shape the BTC into a nationally recognized leader in brain tumor care and research.

Our program continues to advance innovative treatments, including groundbreaking work in **GammaTile brachytherapy**, offering patients new hope through targeted, localized radiation options at the time of surgery following tumor resection. These state-of-the-art therapies represent the Center's commitment to bringing the most precise and effective treatments directly to the operating room. GammaTile recognized the USC BTC as a Center of Excellence and regional referral center.

We are also proud to highlight **Dr. Thomas Chen**, whose expertise, research, and compassionate patient care exemplify the excellence that defines the USC Brain Tumor Center. His leadership and dedication continue to inspire our mission to improve outcomes and enhance the quality of life for every patient we serve. Dr. Chen has pioneered intranasal therapies for brain tumor, reflected by the IPO of his company NeOnc Technologies earlier this year.

We also include our **"Patient's Corner"** a piece dedicated to our patients and families. Here, readers can find helpful resources, updates, and personal insights designed to answer common questions and strengthen the sense of community that lies at the heart of our Center.

This fall, the USC Brain Tumor Center team has been actively engaged across the national landscape. Our faculty and staff represented USC at the **American Brain Tumor Association (ABTA) National Conference** and participated in the **ABTA BT5K in Santa Monica**, uniting with patients, caregivers, and advocates in support of life-changing research. We also collaborated with colleagues at the **Cleveland Clinic and Keck Medicine Brain Metastases Conference**, and our international leadership was once again recognized at the **International Society of Pituitary Surgeons (ISPS) Conference**, co-directed by Dr. Gabriel Zada.

We were honored to welcome **Supervisor Kathryn Barger's healthcare deputy, Tyler Cash** to our Center this season. This visit underscores the shared goal of expanding access to exceptional brain tumor care across Los Angeles County.

Finally, we are excited to announce the launch of the **USC Brain Tumor Center Patient Support Group**, a welcoming community that provides a space for patients to connect, share, and find strength together.

As we celebrate our achievements and look toward the remainder of the year, we remain steadfast in our mission: to advance research, education, and compassionate care for all those affected by brain tumors. We are deeply grateful for your partnership and support as we continue this important work.

With gratitude,

Gabriel Zada, MD, MS, FAANS, FACS

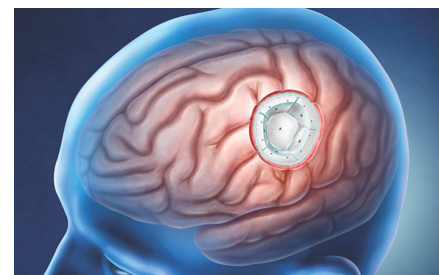
Co-Director, USC Brain Tumor Center

David D. Tran, MD, PhD

Co-Director, USC Brain Tumor Center

Josh Neman, PhD

Scientific Director, USC Brain Tumor Center



New Hope in Brain Tumor Treatment: Targeted Radiation with GammaTile Therapy

GammaTile therapy is a surgically implanted form of targeted radiation designed to deliver localized treatment directly to the tumor cavity following brain tumor resection. **Each GammaTile** is a **bioresorbable collagen matrix** embedded with small cesium-131 (Cs-131) seeds that emit therapeutic radiation over several weeks.

By placing the tiles along the resection cavity at the time of surgery, radiation is delivered precisely to the tumor bed—the region at highest risk for recurrence—while minimizing exposure to surrounding healthy brain tissue.

The controlled, short-range emission from Cs-131 provides a steep dose fall-off, enabling high-dose therapy within millimeters of the cavity surface and limiting long-term radiation toxicity.

GammaTile therapy has been used in both **primary** and **recurrent gliomas**, as well as **brain metastases from systemic cancers**. In gliomas, particularly high-grade or recurrent disease, it offers the advantage of immediate postoperative radiation without delay in wound healing or coordination of external beam radiotherapy.

This approach can help improve local control in patients with limited treatment options and in previously irradiated fields. For brain metastases, GammaTile can complement

Continues on page 3

Celebrating Five Years of Excellence: The USC Brain Tumor Center Marks a Milestone in Innovation, Compassion, and Impact

This fall, the **USC Brain Tumor Center (BTC)** proudly celebrated its **five-year anniversary**, marking a significant milestone in its mission to advance brain tumor research, clinical care, and patient support.

Since its establishment in 2020, the Center has become a national leader in multidisciplinary care and scientific discovery, bringing together experts across neurosurgery, neuro-oncology, radiation oncology, neuropathology, and research to improve outcomes and enhance quality of life for patients facing brain cancer.

To commemorate this momentous occasion, an elegant dinner was held at the **Jonathan Club in downtown Los Angeles**, graciously hosted by **Jeffrey and Julieta Bennett**, esteemed members of the **USC Brain Tumor Center Advisory Council** and generous supporters of the Center's mission. The evening brought together **faculty, donors, staff, patients, and friends** who have been instrumental in building the BTC into one of the nation's premier programs in brain tumor care and innovation.

Guests enjoyed an inspiring evening reflecting on the Center's remarkable growth over the past five years—highlighting achievements in research, clinical advancements, education, and community outreach. **Co-Directors Dr. Gabriel Zada, Dr. David Tran, and Josh Neman, PhD** shared reflections on the Center's evolution and



Pictured left to right: Gabriel Zada, MD, MS, Paola Mork, MHA, Julieta Bennett, Jeffrey Bennett, David Tran, MD, PhD, and Josh Neman, PhD.

future vision, emphasizing the importance of continued collaboration, cutting-edge research, and compassionate care.

The program also featured moving **testimonials from two patients**, who shared their journeys with courage and gratitude. Their stories served as powerful reminders of the Center's purpose—transforming lives through world-class care, pioneering research, and unwavering hope.

As the USC Brain Tumor Center celebrates this important milestone, it looks ahead with renewed dedication to expanding clinical trials, enhancing patient support

programs, and deepening its research collaborations. The past five years have been a story of growth, discovery, and community—and the next chapter promises to bring even greater impact.

The evening at the Jonathan Club was more than a celebration—it was a reflection of the extraordinary community that has shaped the USC Brain Tumor Center's success. We extend heartfelt thanks to everyone who has supported our mission and invite you to join us as we continue building a future of **innovation, compassion, and hope** for all those affected by brain tumors.

USC Brain Tumor Center Spotlight: Thomas Chen, MD, PhD

Dr. Chen is Professor of Neurological Surgery, Pathology, and Orthopedic Surgery, Keck School of Medicine of USC, and a member of the USC Brain Tumor Center Team.

Dr. Chen was born in Kaoshiung, Taiwan, and came to the United States when he was seven years old. His father was an anesthesiologist in Chicago. He graduated as valedictorian from high school.



Thomas Chen, MD, PhD

He attended the University of Illinois, Urbana Champaign, graduating in three years with highest honors in chemistry, Phi Beta Kappa, and Bronze Tablet (top 3% graduating class). He moved to California after being accepted to University of California San Francisco (UCSF) where he discovered his love of neurological disorders, and helping patients with neurological conditions. Dr. Chen graduated with honors (Alpha Omega Alpha) and came to USC in 1988 to train under Dr. Martin Weiss. During his residency, he completed a

PhD in pathobiology focused on glioma immunology under Dr. Florence Hofman. He found his mission in surgical neuro-oncology and the patients afflicted with brain tumors during his residency. He also went to Medical College of Wisconsin for a spine fellowship with Dr. Sanford Larson, with the goal of being able to operate on spine cancer patients as well.

Dr. Chen came back to USC in 1996 as assistant professor of neurosurgery and pathology, where he started a busy neuro-oncology practice and maintained a translational laboratory. He was subsequently promoted to associate professor with tenure in 2003. During this time, his research focused on understanding the biology of glioma endothelial cells, endoplasmic reticulum stress (ERS), and immunobiology of glioma cells, with a focus on cytokines and the microenvironment. Dr. Chen also started work on the blood brain barrier (BBB), examining

the role of intranasal brain delivery to bypass the BBB. In 2013, Dr. Chen was promoted to full professor with tenure. He has maintained a busy clinical practice in surgical neuro-oncology and spine surgery. He has been awarded the Best Teaching Award for Neurosurgery for the USC Department of Neurological Surgery.

His work has resulted in 165 peer reviewed publications and 178 patents. He has been involved in several startup companies with the goal of developing new treatments for brain tumor patients. One of the startup companies (NeOnc Technologies Holdings; NTHI) has been listed as a publicly traded Global Nasdaq company.

Dr. Chen is most proud of his work as a neurosurgeon in taking care of his patients, his teaching of the USC neurosurgery residents. He hopes that his lifetime translational research will change the practice in how brain tumor patients are treated in the future.

“GammaTile therapy” continued

surgical resection by sterilizing microscopic residual disease and reducing local recurrence rates, especially in lesions not well-suited for stereotactic radiosurgery. Overall, GammaTile represents a convergence of surgical and radiation oncology—delivering adjuvant therapy in a single procedure with an emphasis on preci-

sion, convenience, and preservation of neurocognitive function.

At the USC Brain Tumor Center, we have participated in the **GESTALT clinical trial** evaluating GammaTile therapy and continue to explore its role in the treatment of complex brain tumors.

While additional trials may be opened in the future to expand access and refine patient selection, we currently offer GammaTile on a case-by-case basis following discussion at our multidisciplinary brain tumor board to ensure individualized, evidence-based decision-making.

PATIENTS CORNER: Coping with Fatigue and Treatment Side Effects: A Clinical Perspective

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

For many patients undergoing treatment for brain tumors, fatigue is one of the most challenging and least visible side effects. Unlike ordinary tiredness, cancer-related or treatment fatigue often feels profound, affecting every aspect of life—physical strength, emotional resilience, and cognitive clarity. It is not simply fixed by sleep or rest. From a clinical perspective, fatigue represents a complex interplay of biological, psychological, and treatment-related factors that deserve compassionate attention and proactive management.



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

Understanding Why Fatigue Happens

Fatigue is the result of both the disease process and the body's response to treatment. Chemotherapy, radiation, and targeted therapies alter how the body produces and uses energy. Inflammation, hormonal changes, anemia, and medication side effects can all contribute.

In neuro-oncology, fatigue is further complicated by medications commonly used to control seizures, swelling, or nausea—such as anticonvulsants, corticosteroids, and antiemetics. These may affect sleep, metabolism, and mood. Emotional stress, anxiety, or depression—natural responses to a brain tumor diagnosis—can amplify fatigue and reduce motivation, creating a cycle that is hard to break.

Addressing Physical Fatigue

- 1. Energy Conservation and Pacing:** The “three Ps” approach—**Prioritize, Plan, and Pace**—can help preserve energy for what matters most. Schedule activities for the times of day when energy is highest, take regular rest breaks, and delegate when possible. Small adjustments can prevent overexertion and support recovery.
- 2. Optimize Sleep Quality:** Maintain consistent sleep and wake times, limit caffeine and screen exposure late in

the day, and create a calm bedtime routine. If medications interfere with sleep, your care team may adjust timing or dosage.

- 3. Evaluate Medical Causes:** Routine labs may identify treatable contributors such as anemia, thyroid dysfunction, or medication side effects. Managing pain, constipation, or nausea can also improve overall energy.
- 4. Incorporate Gentle Movement:** Light activity—walking, stretching, or yoga—can increase stamina, improve mood, and reduce fatigue. Physical therapists can help tailor safe exercise plans during and after treatment.
- 5. Prioritize Nutrition and Hydration:** Nutrient-rich foods and adequate hydration support the body's repair processes. Small, frequent meals with lean proteins, fruits, and vegetables can help maintain stable energy levels.

Mental Fatigue: When the Mind Feels Tired

Many patients describe not just physical exhaustion, but also **mental fatigue**—a sense of cognitive slowing, difficulty concentrating, or feeling “foggy.” This type of fatigue often stems from the combined effects of treatment, stress, medications, and the tumor itself.

From a clinical standpoint, mental fatigue may involve disruptions in attention, memory, and processing speed. The brain is working overtime to recover from surgery or adapt to therapy, all while managing emotional and physical demands.

Practical ways to manage mental fatigue include:

- **Cognitive pacing:** Alternate demanding tasks (like reading or conversations) with short breaks. Use a timer to avoid cognitive overload.
- **Simplify and structure:** Keep routines predictable, use planners or phone reminders, and reduce multitasking.
- **Brain wellness activities:** Gentle mental engagement such as puzzles,

audiobooks, or journaling can help maintain cognitive flexibility without overstimulation.

- **Restorative practices:** Mindfulness, guided imagery, or simply sitting quietly for a few minutes can help calm mental chatter and reset focus.
- **Ask for neurocognitive support:** Your team can refer you to neuropsychology or cognitive rehabilitation specialists who teach evidence-based strategies for memory, attention, and focus recovery.

Emotional Well-Being and Support

Fatigue—both physical and mental—can take an emotional toll. Feelings of frustration, isolation, or guilt are common. Support groups, individual counseling, and family education are invaluable. The **USC Brain Tumor Support Group** provides a safe space to share experiences and learn coping tools from others who truly understand. Please see our website for further information regarding patient and caregiver support group that is run by our Social Worker, Jinsy Rogers.

Living Well Through Treatment

Fatigue does not mean weakness—it is a biological signal that your body is working hard to heal and adapt. The goal is not to eliminate fatigue completely, but to manage it so you can continue to live meaningfully, maintain independence, and preserve your sense of self.

Managing fatigue is about balance, not perfection. Healing involves the whole person—body, mind, and spirit. Your care team at the USC Brain Tumor Center understands that supporting patients means addressing all facets of well-being, not just the tumor. With the right strategies and open communication, fatigue can be managed, allowing space for rest, purpose, and quality of life.

We are always here for our patients and their family members. Please reach out if you have any further questions.

Fight On and Heal On!

L.A. County Supervisor Barger's Healthcare Deputy, Tyler Cash Visits the USC Brain Tumor Center

Earlier in August, the USC Brain Tumor Center had the honor of welcoming Los Angeles County Supervisor Kathryn Barger's Healthcare Deputy, **Tyler Cash**, along with two of their policy fellows—both undergraduate students from the **USC Price School of Public Policy**. The visit provided a unique opportunity to highlight the groundbreaking work being done across research, clinical care, and patient advocacy at the USC BTC.

During the visit, **Co-Directors Dr. Gabriel Zada** and **Dr. David Tran**, together with **Paola Mork**, USC Brain Tumor Center Manager, and **Sally Malone**, Vice President of Health Government Relations at USC, offered a behind-the-scenes look at how USC is advancing innovative brain tumor research and improving patient outcomes through multidisciplinary collaboration. The group discussed ongoing clinical trials, translational research initiatives, and the Center's commitment to comprehensive patient care. Conversations also centered on the broader policy landscape—how public-private partner-



ships and advocacy can drive access to care and accelerate progress for individuals affected by brain tumors.

We are deeply grateful for the opportunity to share our mission and impact with leaders who are shaping the future of health policy in Los Angeles County. The USC Brain Tumor Center remains committed to fostering these collaborations as we continue to push the boundaries of neuroscience and patient care.

26th Annual Brain Tumor Update: A Collaborative Success Between USC and the Cleveland Clinic

The **26th Annual Brain Tumor Update** was held on October 18–19, 2025, at the Four Seasons Hotel in Las Vegas, in a joint provider ship between the **Cleveland Clinic** and the **Keck School of Medicine of USC**. This prestigious two-day conference brought together leading neurosurgeons, neuro-oncologists, radiation oncologists, and researchers from across the country to share the latest advancements in brain tumor research, treatment, and clinical innovation.

The comprehensive program featured an impressive lineup of sessions covering a wide range of critical topics, including **gliomas, sex hormones and brain tumors, sellar and parasellar tumors, emerging radiation technologies, brain metastases, and spinal tumor metastases**. Attendees gained valuable insights into evolving treatment paradigms, multidisciplinary management strategies, and the translational science shaping the future of neuro-oncology. The conference fostered meaningful dialogue and collaboration among experts from both institutions, underscoring the power of partnership in advancing discovery and improving outcomes for patients with complex brain and spinal tumors. The interactive for-



mat encouraged robust discussion and exchange of ideas, reflecting the shared commitment of USC and Cleveland Clinic to innovation, education, and excellence in patient care.

The program was exceptionally well received, drawing participants from across academic, clinical, and research settings. Building on this year's success, we are thrilled to announce that the **27th Annual Brain Tumor Update** will be **hosted by USC** and the **Cleveland Clinic in Los Angeles in 2026**, where the tradition of collaboration and scientific excellence will continue to thrive.



USC Brain Tumor Center Laces Up for the Cause at the ABTA BT5K

A beautiful Saturday morning on October 18th set the scene in Santa Monica as the **USC Brain Tumor Center (BTC)** team, along with their families and friends, came together in unity and purpose to participate in the **American Brain Tumor Association's (ABTA) Breakthrough for Brain Tumors 5K (BT5K)**. The event brought together hundreds of survivors, caregivers, healthcare professionals, and supporters—all walking and running to raise awareness and funds for brain tumor research.

This year, the USC Brain Tumor Center proudly served as a **Gold Sponsor** of the event, demonstrating its continued commitment to advancing research, supporting patients, and fostering community partnerships that make a meaningful difference. The USC BTC was well-represented, with **Dr. Gabriel Zada**, Co-Director of the USC Brain Tumor Center; **Dr. Aram Modrek**, radiation oncologist at the USC BTC and the USC Norris Comprehensive Cancer Center; and **Paola Mork**, Manager of the USC Brain Tumor Center, serving as part of the event's **Host Committee**.

The BT5K provided an inspiring opportunity to connect with patients, families, and colleagues who share the same mission—to improve outcomes and quality of life for those affected by brain tumors. The collective energy of the morning reflected the strength, courage, and hope of the brain tumor community. Funds raised from the event directly support the ABTA's mission of providing essential funding for brain tumor research, patient education, and support services that help individuals and families navigate the challenges of a brain tumor diagnosis.

The USC Brain Tumor Center extends heartfelt gratitude to everyone who joined our team, donated, or cheered us on. Your support amplifies the impact of our work and fuels the continued progress in the fight against brain tumors. We look forward to partnering with the ABTA again next year and hope that even more members of our USC community will join us in supporting this meaningful cause. Together, we are running toward a future of hope, discovery, and healing.



USC Brain Tumor Center Proudly Serves as a Platinum Sponsor at the ABTA National Conference

The **USC Brain Tumor Center (BTC)** was honored to serve as a **Platinum Sponsor** of the **2025 American Brain Tumor Association (ABTA) National Conference**, a hallmark event that unites patients, caregivers, clinicians, and researchers from across the country in a shared mission to advance brain tumor research, education, and patient support.

This year's conference welcomed nearly **1,400 attendees**, both in-person and virtually—including patients currently in treatment, individuals seeking to learn more about their diagnosis, and the caregivers who stand beside them.

A wide range of sessions addressed every stage of the journey, from the popular “*Behind the Scenes of a Tumor Board*” to practical discussions like “*Money Matters: Tackling Finances During Brain Tumor Treatment*” and sessions devoted to supportive and self-care strategies.

The event also featured **56 exhibitors**, providing valuable networking and learning opportunities for attendees. Through the **Whova app**, participants actively engaged in polls and discussions—the most popular poll asking, “*What topic has been most difficult for you to talk about with your loved one(s)?*”—highlighting the conference's commitment to fostering open, compassionate conversations around the challenges of living with and caring for those with brain tumors.

The USC Brain Tumor Center table drew tremendous interest throughout the event. Attendees stopped by to learn more about our **clinical trials**, the upcoming **2026 USC Brain Tumor Center Southern California Brain Tumor Conference**, and our expanding **Caregiver Support Group** as well as the launch of our new **Patient Support Group**.

It was inspiring to see so many individuals eager to connect, share experiences, and learn about the innovative work being done at USC to advance patient care and community engagement.

As a **Platinum Sponsor**, the USC BTC was proud to help support the ABTA's ongoing mission to fund groundbreaking research and provide vital education and resources to patients and families.

Our participation reflects our deep commitment to collaboration, compassion, and progress in the field of neuro-oncology.

We extend heartfelt thanks to the **American Brain Tumor Association** for hosting such an impactful and inspiring event.

The USC Brain Tumor Center is already looking forward to reconnecting with colleagues, partners, and patients at the **2026 ABTA National Conference**, as we continue to work together toward a future of discovery, healing, and hope.

USC Brain Tumor Center



Join Our Brain Tumor Patient Support Group

This group is open to any patient with a primary brain tumor (not metastatic).

When: Every 3rd Wednesday

Where: Contact Jinsy Rogers for the Zoom Link

Time: 12 PM - 1 PM

Facilitated by: Jinsy Rogers, LCSW, OSW-C

Why Join?

- A safe space for connection and support
- Share experiences with others who understand
- Learn coping strategies and resources

For more information, please contact:

✉ Jinsy.Rogers@med.usc.edu

☎ 323-865-6057

Beyond the Diagnosis: A Support Community for Brain Tumor Patients

The USC Brain Tumor Center offers a dedicated **Patient Support Group** designed to foster connection, comfort, and community among individuals affected by brain tumors. This group provides a safe and compassionate space where patients can share their experiences, gain emotional support, and learn from others navigating similar journeys.



Jinsy Rogers,
LCSW, OSW-C

Led by a Licensed Clinical Social Worker, the group also offers valuable education on treatment options, coping strategies, and survivorship resources.

Through shared stories and encouragement, the support group empowers patients to find strength, hope, and healing together.

USC Co-Leads the Return of the International Society of Pituitary Surgeons (ISPS) 2025 Conference

The **International Society of Pituitary Surgeons (ISPS) 2025 Conference** made its much-anticipated return on August 22–23, 2025, in **Niagara-on-the-Lake, Canada**—marking the first in-person gathering since 2018 following the COVID-19 pandemic. This year's program was **co-directed** by **Dr. Gabriel Zada** of the USC Brain Tumor Center and Keck School of Medicine of USC, alongside **Drs. Nelson Oyesiku** (University of North Carolina) and **Daniel Yoshor** (Baylor College of Medicine). The event was presented on behalf of ISPS and the **USC Office of Continuing Medical Education** at the Keck School of Medicine of USC, underscoring USC's continued leadership in global neurosurgical education and collaboration.

Hosted in the historic **Prince of Wales Hotel**, the conference convened an international audience of **neurosurgeons, otolaryngologists, endocrinologists, and radiation oncologists** committed to advancing the field of pituitary and skull base surgery. The Keck School of Medicine of USC, accredited by the Accreditation Council for Continuing Medical Education (ACCME), designated the meeting for 12.5 AMA PRA Category 1 Credits™, providing attendees with valuable opportunities for continuing education and professional development.

This year's ISPS program carried special significance, celebrating the revival of a **biannual tradition spanning more than 25 years** that has long served as a cornerstone for the global pituitary surgery



community. Sessions covered a broad range of topics, including the natural history and management of pituitary disorders, advanced diagnostic imaging, and innovative surgical and non-surgical treatment approaches.

Presentations emphasized the **evolution of interventional techniques, intra-operative neuromonitoring, and the integration of advanced imaging and anesthetic strategies**—all focused on optimizing patient outcomes.

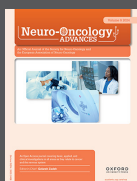
Beyond the scientific sessions, the conference highlighted the essential role of multidisciplinary collaboration in delivering comprehensive care for patients with pituitary and parasellar tumors.

Given the rarity and complexity of these conditions, participants reaffirmed the importance of specialized centers—like **USC's Pituitary Tumor Program**—where neurosurgeons, endocrinologists, and radiation oncologists work in concert to deliver coordinated,

evidence-based care. More than just an academic meeting, the **2025 ISPS Conference represented a long-awaited reunion** for the international pituitary surgery community.

The event fostered renewed collaboration, shared learning, and the exchange of groundbreaking ideas—reaffirming the ISPS's enduring commitment to advancing research, innovation, and excellence in the care of patients with pituitary disorders worldwide.

SELECTED PUBLICATIONS



NEO212, temozolomide conjugated to NEO100, exerts superior therapeutic activity over temozolomide in preclinical chemoradiation models of glioblastoma. Minea RO, Thein TZ, Yang Z, Campan M, Ward PM, Schönthal AH, Chen TC. *Neurooncol Adv.* 2024 Jun 11;6(1):vdae095. doi: 10.1093/noajnl/vdae095.

■ The chemotherapeutic standard of care for patients with glioblastoma (GB) is radiation therapy (RT) combined with temozolomide (TMZ). However, during the twenty years since its introduction, this so-called Stupp protocol has revealed major drawbacks, because nearly half of all GBs harbor intrinsic treatment resistance mechanisms. Prime among these are the increased expression of the DNA repair protein O6-guanine-DNA methyltransferase (MGMT) and cellular deficiency in DNA mismatch repair (MMR). Patients with such tumors receive very little, if any, benefit from TMZ. We are developing a novel molecule, NEO212 (TMZ conjugated to NEO100), that harbors the potential to overcome these limitations.



Patient with recurrent grade 4 astrocytoma responding favorably to intranasal delivery of NEO100, highly pure perillyl alcohol: illustrative case. Schönthal AH, Swenson S, Senecal FM, Mittenzwei R, Go JL, Chen TC. *J Neurosurg Case Lessons.* 2025 Mar 17;9(11):CASE24683. doi: 10.3171/CASE24683.

■ A 40-year-old woman was diagnosed with an isocitrate dehydrogenase 1-mutant, CNS WHO grade 4 astrocytoma harboring an unmethylated MGMT promoter. She underwent surgery and standard chemoradiation treatment with temozolomide (TMZ), but after 6 cycles of adjuvant TMZ, the tumor recurred. The patient was started on daily IN NEO100 at 288 mg 4 times a day, administered using a nebulizer and nasal mask. Routine MRI revealed steady tumor regression over the course of 13 months of daily IN NEO100, to the point where the tumor became inconspicuous. There were no serious adverse events, and her quality of life improved and remained high.

SAVE THE DATE

Friday, March 27, 2026

3RD ANNUAL

Southern California

BRAIN TUMOR CONFERENCE



Hosted by Keck Medicine of **USC**

CLINICAL TRIALS:
Now Enrolling at the
USC Brain Tumor Center

Have you or someone you know recently been diagnosed with a brain tumor? Choosing the right treatment can be challenging. To find out more about our breakthrough treatments, contact our specialized brain tumor team at **(844) 33-BRAIN (844-332-7246)** or email frances.chow@med.usc.edu.



GammaTile Center of Excellence

This designation recognizes the institution's exceptional expertise in the Gamma**Tile** procedure. Gamma**Tile** is an innovative radiation source that is placed during surgery to deliver focused, immediate radiation. It is designed to protect healthy tissue and minimize radiation side effects, including hair loss. Gamma**Tile** is available for advanced brain tumors including glioblastoma, meningioma, and metastatic brain tumors.

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 GammaTile and Stupp in Newly Diagnosed GBM (GESTALT)	• GammaTile + Standard therapy • Standard therapy	Phase 4
4 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
5 A Phase 1/2 Study of Selinexor and Temozolomide in Recurrent Glioblastoma	• Selinexor + Temozolomide • Temozolomide	Phase 1/2
6 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
7 Study of NE0212 (Temozolomide-Perillyl Alcohol Conjugate) in Advanced Brain Cancer	• NE0212 (oral)	Phase 1
Meningioma		
8 An Open-Label, Phase 2 Study of NEO100 in Participants with Residual, Progressive or Recurrent High-grade Meningioma	• Perillyl alcohol (inhaled)	Phase 2
9 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

Keck Medicine of USC

BEYOND EXCEPTIONAL MEDICINE™

USC Brain Tumor Center

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Patient referrals, (844) 33-BRAIN (844-332-7246)

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CALIFORNIA

At the USC Brain Tumor Center, our mission is to provide exceptional, comprehensive and innovative concierge-style treatment plans for adults and children with all types of brain tumors and related conditions. [Giveto.USC.edu](https://www.giveto.usc.edu)

We Are the USC Brain Tumor Center

NEUROSURGERY

Gabriel Zada, MD, MS
Josh Neman, PhD
Steven Giannotta, MD
Frank Attenello, MD, MS
Thomas Chen, MD, PhD
William Mack, MD
Oscar Aurelio, PhD
Camelia Danilov, PhD
Reza Ghodsi, PhD
Radu Minea, MD
Steve Swenson, PhD
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NEUROLOGY

Helena Chui, MD

NEURO-ONCOLOGY

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Frances Chow, MD, MS
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RADIATION ONCOLOGY

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Eric Chang, MD, FASTRO
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Lindsay Hwang, MD
Richard Jennelle, MD
Aram Modrek, MD, PhD
Jason Ye, MD

NEURO-RADIOLOGY

Zhaoyang Fan, PhD
Paul Kim, MD
Priya Rajagopalan, MD
Mark Shiroishi, MD

NEURO-PATHOLOGY

Kyle Hurth, MD, PhD
Anna Mathew, MD
Michael Selsted, MD, PhD

NORRIS CANCER CENTER

Dennis Deapen, DPH
Caryn Lerman, PhD

MOLECULAR BIOLOGY AND TRANSLATIONAL RESEARCH

Peggy Farnham, PhD
Brooke Naomi Nakamura
Radhika Madhav Joshi
Suhn Rhie, PhD
Axel Schöenthal, PhD
Jean Chen Shih, PhD
Anna Wu, PhD
Min Yu, PhD

ADVANCED IMAGING (USC Laboratory of Neuro Imaging)

Vishal Patel, MD
Arthur Toga, PhD
Paul Thompson, PhD
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