

## Year in Review - Scientific Updates



Children's Brain  
Tumor Project  
powered by families



Weill Cornell  
Medicine



### Important Clinical Trials for Children at Weill Cornell Medicine

The Children's Brain Tumor Project is highly motivated to translate our lab discoveries into therapeutic options available to children in treatment today. This requires the team to design a clinical trial that allows for such testing. In 2024, the CBTP was at the helm of three innovative clinical trials detailed below. Two are actively enrolling patients, and one will open for enrollment mid-year 2025.

Understanding the role of clinical trials is critical for families faced with a pediatric brain tumor diagnosis, because the majority of children with brain tumors end up enrolling in one or more trials throughout treatment. To that end, we created an informative website and included links on printed materials that have been distributed in support of our Health Inclusivity Initiative. We encourage our supporters to share the link across their communities [childrensbraintumorproject.org/clinicaltrials](https://childrensbraintumorproject.org/clinicaltrials). (see QR code)

#### **Tumor Biobanking for Drug Screening and Bioanalysis (ClinicalTrials.gov ID: NCT04852354)**

PI: Jeffrey Greenfield

Study Status: ENROLLING

This biobanking study aims to enhance our understanding of pediatric and adult central nervous system (CNS) tumors, with the goal of developing improved treatments and identifying new therapeutic targets. During routine surgeries, if extra tissue is available and not required for diagnostic purposes, it will undergo analyses such as genomic sequencing, proteomics, immunoprofiling, and primary tumor cell culturing. These efforts will enable researchers to create tumor cell lines and patient-derived xenograft mouse models to test drug responses and explore innovative treatment options. In addition to surgical samples, post-mortem donations of brain, spinal cord, cerebrospinal fluid, and blood will contribute to this biobank, further expanding research possibilities.

#### **Intra-Arterial (IA) Chemotherapy for Newly Diagnosed, Residual, or Recurrent Atypical Choroid Plexus Papilloma (ACPP) and Choroid Plexus Carcinoma (CPC) Prior to Second-Look Surgery (ClinicalTrials.gov ID: NCT04994977)**

PI: Mark Souweidane

Study Status: ENROLLING

Choroid Plexus Carcinoma (CPC) is an extremely rare and aggressive tumor that typically occurs in early childhood, developing within the brain's ventricles. Current treatment involves surgical removal followed by chemotherapy and/or radiation, yet the 3-year survival rate remains low at 30–40%. Successful outcomes largely depend on achieving gross total resection of the tumor. However, the complexity of CPC surgery is significant due to the tumor's size and vascularity, with up to 10% of children tragically losing their lives to blood loss during the procedure, and 50% of patients leaving the operating room with a subtotal resection that limits the effectiveness of adjuvant therapies. Intra-arterial (IA) chemotherapy offers a promising approach to address these challenges. Using tiny catheters to deliver medication directly to the tumor, IA chemotherapy effectively reduces blood flow and tumor size while minimizing systemic toxicity. This targeted approach not only enhances the safety and success of second-look surgeries but is particularly well-suited to CPC due to its anatomical location and arterial accessibility. By integrating IA drug delivery into treatment protocols, clinicians have the potential to significantly improve outcomes for children affected by this devastating disease.

#### **Phase 2 Open-Label Single-Arm Trial of Laser Interstitial Thermal Therapy (LITT) for Pediatric Patients with Newly Diagnosed or Recurrent Low-Grade Glioma (LGG) (ClinicalTrials.gov ID: N/A, PBTC ID: 062)**

PI: Mark Souweidane

Study Status: Approved by NCI-CTEP and currently under protocol development

This phase 2 multicenter clinical trial explores the potential of laser interstitial thermal therapy (LITT) as a stand-alone frontline treatment for low-grade gliomas (LGGs) in children. LGGs are slow-growing brain tumors that are challenging to treat surgically, especially when located in difficult-to-access areas like the thalamus or brainstem. LITT, a minimally invasive MRI-guided surgical modality, delivers controlled thermal energy to precisely ablate tumors while minimizing damage to surrounding tissue. This approach offers a promising option for patients who are not candidates for traditional surgery, with the potential to achieve outcomes comparable to maximal safe resection. This study aims to evaluate tumor control rates, risk profiles, and quality-of-life measures for this select group of patients, supporting informed decision-making and providing valuable guidance for using LITT as a frontline therapy for pediatric LGGs.

Study Contact: Colleen Sanders, 917-734-8787, [clc9095@nyp.org](mailto:clc9095@nyp.org)

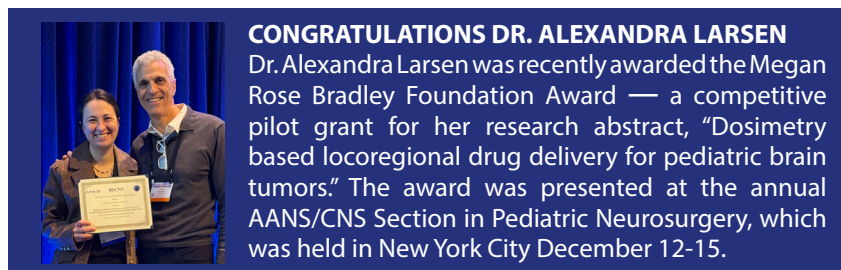


## 2024 Peer-Reviewed Publications

Peer-reviewed publications are critical for demonstrating scientific merit because they ensure that research findings are rigorously evaluated by experts in the field before being disseminated. This lengthy process helps maintain the integrity and credibility of scientific work by verifying the validity of the methods, the reliability of the data, and the soundness of the conclusions. Peer review also fosters accountability, as researchers must adhere to established standards and address constructive criticism from their peers. Our 2024 peer-reviewed publications not only validate the significance and quality of our work, but also enhance our impact and contribution to the advancement of science.

### RECENT PUBLICATIONS

- Yan RE, Greenfield JP. *Challenges and Outlooks in Precision Medicine: Expectations Versus Reality*. **World Neurosurg**. 2024 Oct;190:573-581. doi: 10.1016/j.wneu.2024.06.142. PMID: 39425299.
- Yan RE, Greenfield JP. *Emergence of Precision Medicine Within Neurological Surgery: Promise and Opportunity*. **World Neurosurg**. 2024 Oct;190:564-572. doi: 10.1016/j.wneu.2024.06.143. PMID: 39425298.
- Uribe-Cardenas R & Greenfield JP. *Reimagining the N-Of-1 Trial Within Pediatric Neuro-Oncology: A Shifting Paradigm*. **World Neurosurgery**. 190, 582-585 (2024). <https://doi.org/10.1016/j.wneu.2024.06.146>
- Yan RE, Chae JK, Dahmane N, Ciaramitaro P, Greenfield JP. *The Genetics of Chiari 1 Malformation*. **J Clin Med**. 2024 Oct 16;13(20):6157. doi: 10.3390/jcm13206157. PMID: 39458107; PMCID: PMC11508843.
- Yan RE, Corman A, Katgara L, Wang X, Xue X, Gajic ZZ, Sam R, Farid M, Friedman SM, Choo J, Raimondi I, Ganesan S, Katsevich E, Greenfield JP, Dahmane N, Sanjana NE. *Pooled CRISPR screens with joint single-nucleus chromatin accessibility and transcriptome profiling*. **Nat Biotechnol**. 2024 Nov 21. doi: 10.1038/s41587-024-02475-x. Epub ahead of print. PMID: 39572737.
- Al Assaad M, Gundem G, Liechty B, Sboner A, Medina J, Papaemmanuil E, Sternberg CN, Marks A, Souweidane MM, Greenfield JP, Tran I, Snuderl M, Elemento O, Imielinski M, Pisapia DJ, Mosquera JM. *The importance of escalating molecular diagnostics in patients with low-grade pediatric brain cancer*. **Cold Spring Harb Mol Case Stud**. 2024 Jan 10;9(4):a006275. doi: 10.1101/mcs.a006275. PMID: 37652664; PMCID: PMC10815291.
- Pandit-Taskar N, Zanzonico PB, Grkovski M, Donzelli M, Vietri SM, Horan C, Serencsits B, Prasad K, Lyashchenko S, Kramer K, Dunkel IJ, Souweidane MM. *Theranostic Intratumoral Convection-Enhanced Delivery of 124I-Omburtamab in Patients with Diffuse Intrinsic Pontine Glioma: Pharmacokinetics and Lesion Dosimetry*. **J Nucl Med**. 2024 Sep 3;65(9):1364-1370. doi: 10.2967/jnumed.123.266365. PMID: 39142829; PMCID: PMC11372263.
- Guadix SW, Pandey A, Gundlach C, Walsh M, Moss NS, Souweidane MM. *Laser interstitial thermal therapy as a radiation-sparing approach for central nervous system tumors in children with cancer predisposition syndromes: report of a child with Li-Fraumeni syndrome. Illustrative case*. **J Neurosurg Case Lessons**. 2024 Feb 5;7(6):CASE23595. doi: 10.3171/CASE23595. PMID: 38315990; PMCID: PMC10849145.
- Karajannis MA, Onar-Thomas A, Lin T, Baxter PA, Boué DR, Cole BL, Fuller C, Haque S, Jabado N, Lucas JT Jr, MacDonald SM, Matsushima C, Patel N, Pierson CR, Souweidane MM, Thomas DL, Walsh MF, Zaky W, Leary SES, Gajjar A, Fouladi M, Cohen KJ. *Phase 2 Trial of Veliparib, Local Irradiation and Temozolomide in Patients with Newly Diagnosed High-Grade Glioma: A Children's Oncology Group Study*. **Neuro Oncol**. 2024 Nov 19;noae247. doi: 10.1093/neuonc/noae247. Epub ahead of print. PMID: 39560182.



### CONGRATULATIONS DR. ALEXANDRA LARSEN

Dr. Alexandra Larsen was recently awarded the Megan Rose Bradley Foundation Award — a competitive pilot grant for her research abstract, “Dosimetry based locoregional drug delivery for pediatric brain tumors.” The award was presented at the annual AANS/CNS Section in Pediatric Neurosurgery, which was held in New York City December 12-15.

## Conferences and Awards



Presenting at and participating in research conferences are critical to fostering the exchange of ideas, enabling collaborations, and providing attendees with timely and significant updates in the field of pediatric brain tumor research.

### Congress of Neurological Surgeons (CNS)

Pictured above, CBTP alum and fifth-year neurosurgical resident Umberto Tosi, MD, was honored with the KLS Martin Tumor Award and presented his abstract, “Therapeutic Monoclonal Antibody-Mediated Inhibition of NOTCH Pathway Prolongs Survival In High Grade Glioma Models.”

### International Symposium on Pediatric Neuro-Oncology (ISPNO)

The CBTP team was selected to present eight projects via oral presentations, scientific posters, and panel participation. All of which were selected by the esteemed abstract review committee.

### Int'l Society for Pediatric Neurosurgery (ISPN)

Dr. Souweidane was the session chair on oncology.

### Accelerate 13th Pediatric Strategy Forum on Diffuse Midline Gliomas

Dr. Souweidane presented on drug delivery.

### ChadTough Defeat DIPG Research Workshop

Dr. Souweidane led a breakout session with Dr. Sabine Mueller on clinical correlation studies.

### Dean's Award for Excellence in Mentorship

The 2024 award recognized Dr. Mark Souweidane.

### CNS and American Association of Neurological Surgeons Joint Pediatric Section Meeting

Dr. Greenfield presented on pediatric patients' transition to adulthood, and Dr. Souweidane moderated the general session on brain tumors.

### Society of Neurological Surgeons 2024 Annual Meeting - Hosted at Weill Cornell Medicine

With presentations from both Dr. Jeffrey Greenfield and Dr. Mark Souweidane.