

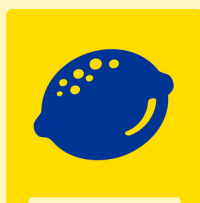


Alex's Lemonade Stand Foundation Brain Tumors Impact Report





Alex's Lemonade Stand Foundation (ALSF) emerged from the front yard lemonade stand of 4-year-old Alexandra "Alex" Scott, who was fighting cancer and wanted to raise money to find cures for all children with cancer. Her spirit and determination inspired others to support her cause, and when she passed away at the age of 8, she had raised \$1 million. Since then, the Foundation bearing her name has evolved into a national fundraising movement and is one of the leading funders of pediatric cancer research in the U.S. and Canada.



With Gratitude

Dear Friend,

All of us here at Alex's Lemonade Stand Foundation (ALSF) would like to sincerely thank you for your support of Alex's mission to find new treatments and cures for childhood cancers like brain tumors.

Your support is helping researchers to develop preliminary data, publish their findings, and push forward innovative treatment options. Thanks to you, we are closer to a day where no child will have to suffer from brain tumors.

We are truly honored to fight childhood cancer by your side. Thank you for being the driving force behind life-saving cures! Please don't hesitate to reach out if you need anything from us here at ALSF.

Until there's a cure,



Liz & Jay Scott

Alex's Parents & Co-Executive Directors

Alex's Lemonade Stand Foundation



Thanks to Supporters Like You

160

**brain tumor projects
(and counting) have been funded**

“The ALSF support is 'keeping the lights on' in the lab and making us competitive for future NIH funding.”

— Dr. Craig Mullen,
University of Rochester



“Understanding fundamental processes is critical to developing new targeted therapies. We greatly appreciate ALSF's investment in myself, my research, and my vision.”

— Dr. Genevieve Kendall,
Nationwide Children's Hospital

Meet a **Brain Tumor Hero**

Name: Lincoln

Loves: LEGOs, superheroes and playing with his puppy

Dislikes: Ice cream



In 2017, Lincoln was throwing up multiple times a day and experiencing headaches. He was referred to a pediatric neurologist, who ordered an urgent MRI. Then a frantic radiologist ushered them into the ER to show them the large brain tumor blocking the fluid in Lincoln's brain. Lincoln and his family's lives were forever changed.

At 3 years old, Lincoln underwent emergency surgery to relieve the pressure on his brain and then to remove the tumor. Unfortunately, it wasn't enough to keep the rare cancer from returning. Lincoln was diagnosed with anaplastic ependymoma, and relapsed in 2018 and 2021. He has had three rounds of proton radiation and two years-worth of chemotherapy treatments.

Since previous treatments did not eradicate the cancer, Lincoln was referred to a trial at the Children's Hospital of Georgia, run by ALSF-funded researcher Dr. Ted Johnson. Entering into the study meant traveling from their home in New Hampshire to Georgia once a month for a year. Travel expenses on top of being out of work for that time bore heavy on Lincoln's family. But with help from ALSF's Travel For Care program, Lincoln and his family no longer needed to worry about the financial burden.

"ALSF came in and helped our family in ways I cannot express," said Diane, Lincoln's mom.

In November 2022, Lincoln made his last visit to Augusta, completing twelve cycles of chemotherapy with the trial study. Thankfully, his scans were all clear!

Research Spotlight: New Projects in Brain Tumors

Ex Vivo Modeling of Medulloblastoma using Human iPSC-Derived Cerebellar Organoids

Stephanie Wu, PhD, St. Jude Children's Research Hospital

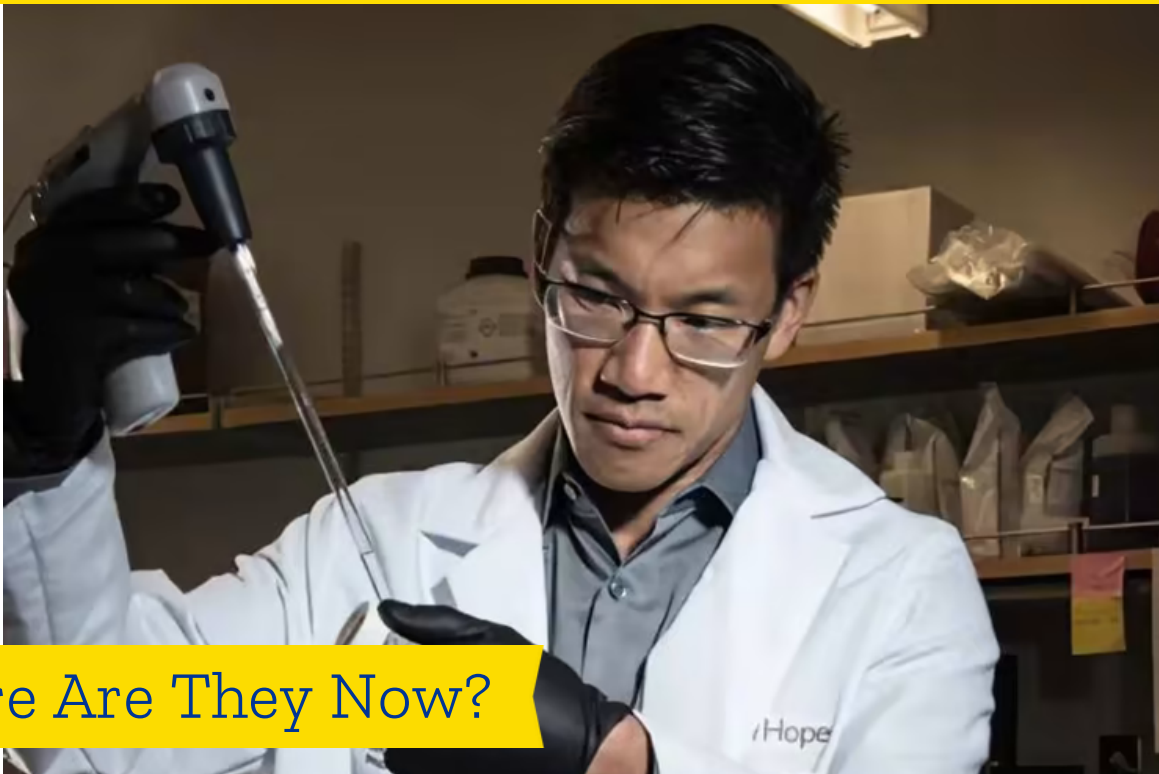
Dr. Stephanie Wu of St. Jude is using her newly awarded Young Investigator Grant to create multiple medulloblastoma subgroup models from cerebellar organoids and determine the developmental and molecular basis of medulloblastoma (MB). Her first aim is to create organoids that accurately reproduce the biology of different MBs, focusing on two poorly understood, clinically aggressive MB subgroups. Dr. Wu and her team will modify stem cells to contain gene mutations present in MB tumors and guide the cells to become cerebellar organoids. Simulating the process of MB development in this system will enable them to study early events of cancer initiation and determine how cells of the normal cerebellum become cancerous. Her second aim is to understand how MB tumor cells communicate with neighboring cerebellar cells to sustain tumor growth and survival. Monitoring this interaction will allow her to identify the types of signals being transmitted between the cells. By therapeutically targeting these communication signals in the future, she hopes to stop MB tumors from thriving in the cerebellum and cure affected children of their disease.



Phase I trial of multilamellar mRNA lipid particles for recurrent pediatric high grade glioma

Elias Sayour, MD/PhD, University of Florida

Due to the killing capacity of the immune system, immunotherapy targeting recurrent pediatric high grade glioma holds significant potential to meet the need for more effective and less toxic treatment options for patients with this disease. With his 'R' Accelerated Grant, Dr. Elias Sayour has developed a new mRNA vaccine called RNA-nanoparticles. RNA-nanoparticles are small enough to communicate with the immune system redirecting it against a patient's specific cancer. These nanoparticles will be personalized against a patient's specific brain tumor and the technology is amenable to "off the shelf" manufacturing. By employing RNA-nanoparticles encoding for tumor specific targets as an innovative and versatile platform, scientists can reprogram the intratumoral environment of pediatric high-grade glioma into an immune activated state. Based on preliminary data, he intends to conduct a phase I trial evaluating the safety and activity of this novel mRNA vaccine platform in children with high-grade gliomas.



Where Are They Now?

Leo Wang, MD/PhD, 2015 Young Investigator Grantee

ALSF Alum Dr. Leo Wang got his start in oncology research by studying acute myeloid leukemia. Now, he is taking his leukemia discoveries and translating that work into the study of immunotherapy as a treatment for brain tumors.

During his initial research, funded by an ALSF Young Investigator Grant, Dr. Wang became fascinated by leukemia stem cells (LSCs) and their ability to resist chemotherapy. Dr. Wang hypothesized that these LSCs caused relapses, common in patients with acute myeloid leukemia (AML). Dr. Wang used protein-focused technologies to understand how LSCs preserve their durable regenerative capacity, known as “stemness.” That initial work sparked a deep interest in blood cell stemness, leading Dr. Wang to study how blood cells survive and proliferate under hostile conditions. When he moved to City of Hope in 2016, this expertise became very helpful in a new way: he was able to design new strategies to improve the stemness of CAR-T cells – a type of immunotherapy that uses engineered T cells to fight cancer. That research has led to a clinical trial using CAR-T cells to treat children with relapsed or refractory brain tumors.

So far, preliminary results of the brain tumor CAR-T trial are encouraging, and Dr. Wang and his team are optimistic. The trial is currently open to children with any primary malignant brain tumor that expresses the target antigen. Dr. Wang’s is one of several similar trials in the United States right now, but he doesn’t see that as competition. He sees that as an exciting opportunity to collaborate with other scientists working on the same problem to find the best solution.



Thank You

for all you do to help kids with cancer!

