ST. JUDE

inspire

FALL 2026

Little Princess, Big Spirit

Reagan's pink-powered charm lifts everyone around her

Brain tumor research
St. Jude advances safer brain cancer treatments for kids

Standing strong for others
After cancer treatment, Sebastian gives back to St. Jude

Second chance for dad
St. Jude dad cherishes special moments with his daughter

Pure Joy

UniverSoul Circus delights St. Jude families and makes one child's dream come true.

For one dazzling afternoon, UniverSoul Circus transformed a space at St. Jude Children's Research Hospital® into a big-top wonder. UniverSoul CEO and Founder Cedric Walker choreographed a bespoke performance just for the audience of patients, siblings, parents and staff.

During treatment for a brain tumor, 14-year-old St. Jude patient Misheel discovered balloon art through her godfather, Robert Dunn – better known as Onionhead the Clown. Like Misheel's acrobat father, Dunn is a UniverSoul performer. Inspired by him, Misheel began twisting balloons into animals and flowers, giving them away just to see other kids smile.

That day, hula hoopers spun, acrobats soared, stilt dancers and jugglers filled the room with motion and color. And Misheel, living out her wildest dream, donned clown makeup and costume to join Dunn in entertaining her fellow patients.

FROM THE ALSAC PRESIDENT AND CEO

At St. Jude Children's Research Hospital®, we measure progress in moments – the first steps after a long surgery, the return of a child's laughter, a family's renewed sense of hope. And every one of those moments is possible because of compassionate supporters like you.

Thank you for welcoming this issue of St. Jude Inspire into your home. Recently, St. Jude named Charles W. M. Roberts, MD, PhD, as President and CEO-elect. As Director of the St. Jude Comprehensive Cancer Center for more than a decade, Dr. Roberts' contributions to our mission have been invaluable, and I am excited for the future and grateful for the support that carries it forward.

Our focus remains unchanged: advancing cures and saving children's lives. The stories in this issue reflect that commitment to action.

At the forefront is a special package devoted to one of the most urgent challenges in pediatric medicine: brain tumors. These diseases are complex, often aggressive and profoundly life-altering for the children and families who face them. But as you'll read in these pages, St. Jude is meeting that challenge with bold discovery, innovative treatments and unwavering determination.

You'll meet children like Lucy, who arrived unable to stand or speak after surgery for medulloblastoma – and who today is back home, writing her name, running and joyfully tapping out melodies on the piano. Her story is a reminder that progress is not just measured in survival, but in the quality of life that follows.

You'll also learn about the relentless research underway in our labs and clinics, from Dr. Paul Northcott's groundbreaking work identifying inherited gene mutations to new liquid biopsy methods that help detect relapse earlier. And in the NeuroOncology program, leaders like Dr. Giles Robinson are driving forward therapies that extend and improve life for children with some of the most difficult-to-treat brain tumors.

Together, these stories illuminate a powerful truth: Every discovery, every innovation and every child's brighter tomorrow is fueled by people like you who believe in this mission. Because of your generosity, St. Jude can continue pushing the boundaries of what's possible.

As we welcome new leadership at St. Jude beginning January 1, 2027, I am energized by the momentum we have built together and the promise of what comes next.

Thank you for standing with us, for believing in these children and for helping write the next chapter of hope.

Ike.

Ike Anand
President & CEO, ALSAC
The fundraising and awareness organization for St. Jude Children's Research Hospital

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GRATEFUL MOMENTS

A dad reflects on how St. Jude helped deepen his relationship with his daughter.

By **Sri** - ANIKA'S DAD

My family loves traveling. During the COVID-19 pandemic, we started a tradition of visiting national parks. Long road trips became our thing.

At this point, our two kids have been to 50 of them!

Interestingly, one of those road trips took us from our home in the Bay Area in California through Memphis, Tennessee, during the summer of 2023. It was just another pin on the map. I never imagined we would return under such different circumstances – or that we would end up living there for nine months the following year.

Around Thanksgiving in 2024, my 12-year-old daughter, Anika, developed what looked like an eye stye. We did hot compresses. We waited. But it kept getting worse. In February 2025, her doctors ordered additional tests and found out it was myeloid sarcoma, a rare cancerous tumor most common in people with acute myeloid leukemia.

A few weeks later, Anika was accepted to St. Jude Children's Research Hospital® after meeting the criteria for a new treatment.

Within days, my wife and I, along with our children, moved to Memphis.

Those first months were hard. I remember that, as a scientist, I was frantically trying to figure things out and asking, "What can I do to help?" But as a father, I felt very powerless, not knowing what her treatment response was going to be or what the routines would look like.

But being part of the St. Jude community was amazing.

I was struck by how the hospital worked with our entire family. I felt so much appreciation for the housing we were provided that allowed us as parents to keep working remotely. We'd never seen anything like that before.

"I was struck by how the hospital worked with our entire family. We'd never seen anything like that before."

– Sri, *Anika's dad*

Through it all, it felt like a safe place to be.

Anika formed friendships with other kids who were in treatment as well.

She took inspiration from the stories around her – learning why so many people chose to work at St. Jude and how personal their motivators were.

One moment that stayed with her was meeting Haley Arceneaux, a St. Jude cancer survivor and now a St. Jude physician assistant who became the youngest American to orbit Earth and the first pediatric cancer survivor in space. My daughter saw her as a hero.

After tests showed there was no more evidence of cancer, my wife and I began splitting time, traveling back to California for short stretches. When I stayed in Memphis with Anika, we grew closer. We went shopping together and ate ice cream at our favorite place near the hospital. It was uninterrupted father–daughter time – time that, under any other circumstances, we might never have had.

That was very special. You don't want cancer to ever happen. But since it's happened, it's almost a responsibility to make the most out of this second chance.

Now we're home. Anika is thrilled to be back in school with her friends. Her hair is growing back. While I once hoped we could simply put this behind us, I feel different now.

This experience changed her. It changed me. And I hope we never forget the lessons it gave us.

You can help ensure families like Anika's have more time to make more memories together.
stjude.org/ImpactGiving

Sebastian with his dad, Andres

Standing STRONG *for others*

After cancer treatment, Sebastian has made it his mission to give back to St. Jude.

By **Monsy Alvarado** - ALSAC

Sebastian leaned on his crutch as he took each careful step forward, a quiet reminder of everything his body has endured — and everything his heart still wants to do. Now a teenager, Sebastian is a cancer survivor whose life was forever changed at age 6. Years after completing treatment at St. Jude Children's Research Hospital®, he still returns to Memphis for annual checkups. And each visit reinforces his gratitude and his desire to give back to the place that saved his life.

"With everything St. Jude has done for me, I felt the need to start spreading the word about St. Jude," he said. "Even though it's been many years since I finished treatment, they are still making sure I'm OK and are still taking care of me."

In June 2014, Sebastian was an active 6-year-old who enjoyed the outdoors with his family when he started to experience headaches. One day while running, he stopped in his tracks and held his head due to pain, his mom, Belen, remembered. It led his mom and dad, Andres, to take him to the doctor.

Over two weeks, Sebastian's symptoms progressed, despite treatments for an upper-respiratory infection and then for a suspected sinus infection. Sebastian was taken to a local emergency room and returned to the ER a day later, when a CT scan revealed a mass in his brain.

Within days, he underwent surgery to remove the tumor and was diagnosed with medulloblastoma, one of the most common cancerous pediatric brain tumors.

"We were devastated," his mom said. "Sebastian had always been a sweet, caring child with an adventurous heart. It was difficult to imagine he was so sick."

Sebastian was referred to St. Jude for treatment because he met the criteria for SJMB12, a St. Jude clinical trial that adapts therapy based on the molecular make-up and clinical risk of each patient's tumor. His parents packed their bags, and along with Sebastian and his sister, Valentina, traveled more than 1,000 miles from Florida to Memphis, Tennessee, where they would remain for several months while Sebastian received treatment.

"St. Jude does everything it says it does, and more," Belen said. "They not only provide treatment, but make sure children have activities so they are not only thinking of being sick and being in a hospital. It's equipped for a child to practically have a good

St. Jude patient Sebastian is seen by Amar Gajjar, MD, during a regular checkup at St. Jude in May 2025.

time even if they are going through a difficult moment."

At St. Jude, Sebastian's treatment included six weeks of radiation therapy and four rounds of intravenous chemotherapy per the protocol. He returned home on Dec. 31, 2014, and had nearly a year of oral chemotherapy maintenance in an attempt to prevent tumor regrowth.

At first, Sebastian returned to St. Jude every three months for checkups. In the summer of 2026, he transitioned to the St. Jude After Completion of Therapy Clinic, which provides follow-up care and health counseling for long-term childhood cancer survivors who were treated at St. Jude.

Cancer treatment, his mom explained, caused Sebastian's growth plates to close prematurely, resulting in uneven leg growth. He has undergone multiple surgeries since treatment, most recently in Florida in June 2024 when orthopedic surgeons lengthened his legs.

"Everything I've been through has been difficult, but it has made me a stronger person. I am happy that I am able to enjoy time with family and friends while knowing that if anything goes wrong again, I have a place to lean on," he said.

Sharing his story and raising funds

That gratitude led Sebastian to find meaningful ways to support St. Jude. In September 2024 – while still recovering from leg surgery – he took on a leadership role in a local St. Jude Walk, guiding a team of 70 walkers with the help of a crutch.

Sebastian's team included friends, family, classmates, high school teachers and administrators. To grow his team, Sebastian and some of his friends attended parent-teacher conferences to spread the word about the upcoming event.

"I sat during lunch with a bunch of teachers spreading information to students and saying to them what St. Jude is, and that it's real, and not a commercial on TV," he said. "I told them it's so important to donate, but even more than donating, it's more important to show up and to spread awareness."

One day, students at his charter school were allowed to swap their school uniforms and wear their favorite team jerseys by donating $5 to support the St. Jude Walk. In all, Sebastian and his team raised more than $3,300.

In 2025, Sebastian set a higher goal for himself and his team – to nearly double what he raised in the first year.

"Every time I go back to St. Jude (for checkups) and see the kids who are sick, they always have a smile on their face, and that always motivates me," he said.

His determination doesn't surprise his mom, who said Sebastian consistently performs at a high level, both academically and personally.

He graduated high school in the spring of 2026 and also earned his associate degree from a community college through a dual enrollment program. He's excited about college and living away from home for the first time on his own.

Inspired in part by the surgeries on his leg, Sebastian wants to pursue a career as a biomedical engineer. He is particularly fascinated by medical implants and hopes to one day improve or enhance devices like heart monitors and titanium rods to help people keep healthy and mobile.

"I see how amazing it would be to work with people who save lives, and if in the future I could work with St. Jude in some way, that would be one of my dreams," he added.

St. Jude patient Sebastian laughs while on stage during the Promesa y Esperanza event in Memphis, Tenn., in October 2019.

You can help ensure patients like Sebastian get the chance to chase their dreams.
stjude.org/ImpactGiving

HOME AT ST. JUDE

HomeGoods adds comfort and care to ‘second home’ for families.

By **Zack McMillin** - ALSAC

No matter the temperature outside, autumn becomes official at St. Jude Children’s Research Hospital® when longtime partner HomeGoods helps transform the center of campus into the annual Fall Festival.

Patients are welcomed to a mini-fair featuring music, games, face painting, tasty treats and arts and crafts (including slime-making). HomeGoods Associates travel from across the country to volunteer at different stations, offering children and their families a chance to experience moments of joy and comfort while they are away from home.

Fall Festival has become a cherished part of the St. Jude calendar and is one of several ways HomeGoods rallies support for the lifesaving mission. For more than 15 years, the generosity of customers and Associates has helped raise more than $95 million through efforts such as the St. Jude Walk and the annual St. Jude *Thanks and Giving*® campaign.

The HomeGoods commitment to helping St. Jude create a home-away-from-home also extends to an initiative at patient family residences, curating fall and Halloween-themed décor to add warmth and delight.

After visiting St. Jude, HomeGoods team members return to stores in their home regions more inspired to engage colleagues and customers with the mission.

“We often hear from our teams that our partnership with St. Jude is something they are truly proud of,” said Victoria Shonkoff, Sr. Vice President and Marketing Director for HomeGoods and Homesense. “It’s incredibly meaningful for all of us to see the impact our support has on children and families.”

> *We often hear from our teams that our partnership with St. Jude is something they are truly proud of.*
>
> **– Victoria Shonkoff,** *Sr. Vice President and Marketing Director for HomeGoods and Homesense*

As the partnership between HomeGoods and St. Jude continues to strengthen, it expands in new ways. In recognition of ongoing fundraising achievements, HomeGoods has been named as St. Jude Corporate Partner of the Year and St. Jude *Thanks and Giving* Partner of the Year.

And it is especially motivating when HomeGoods hears appreciation directly from patient families sharing the impact of its support on their journeys to hope and healing.

“The incredible stories of strength from patients and their families continue to inspire our HomeGoods Associates and teams,” said George MacNaught, Sr. Vice President and Director of Stores for HomeGoods and Homesense. “These powerful stories energize us and reinforce our commitment to supporting St. Jude.”

During the 2025 St. Jude *Thanks and Giving* campaign, the HomeGoods team heard directly from the father of a young St. Jude patient, Harry Jr., who expressed gratitude for helping ensure their “second home” at St. Jude is filled with comfort and loving care.

Harry Sr. explained that while going through treatment at St. Jude, his son would signal if he was having a good day or bad day with a thumbs up or thumbs down. Upon hearing words of appreciation and encouragement, Harry Jr. gave a thumbs up.

“I told myself I wouldn’t get emotional today because it’s been a long journey, but you all give us hope,” Harry Sr. said. “Everything you’ve done over 15 years, all that you’ve raised, we wouldn’t be sitting here today without people like you.”

Little Princess, Big Spirit

Reagan's pink-powered charm lifts everyone around her.

By **Betsy Taylor** - ALSAC

To know Reagan is to imagine a little granny who tells it like it is. She has been there and done that – and she is not afraid to speak her mind.

Reagan, though, is only 5 years old.

Her mom, Kiara, quiet and thoughtful, is mystified by, and a bit in awe of, her little firecracker. Picture them together walking through St. Jude Children's Research Hospital®, headed toward Kay Kafe – that's where Reagan's favorite ramen noodles are. A nurse walks past. Reagan stops her mid-stride, strikes up a conversation and maybe even offers bold, unsolicited advice.

Kiara would never have done that. She would have assumed the nurse had places to be, important things to do. But she has seen this scenario play out enough times to know that transformation happens when people meet Reagan.

They stop. They laugh. They seem to glow from her attention. They say, "Hey, I'm glad I saw you today, Reagan." And Kiara can tell they truly mean it.

"To be a 5-year-old going through what she's going through – it's tough," her dad, Bronte, said. "But in every room she goes into, somehow, she makes people's days better."

So, Kiara stands back and appreciates Reagan being Reagan – as Reagan holds court in her world.

So afraid. So cared for.

Reagan was referred to St. Jude in November 2023 after visiting the doctor because of a mass.

"At St. Jude, it was almost like a movie," Bronte said, "where the doctors come in and say, 'Well, we've run some tests,'" before delivering shocking news: Reagan had cancer.

"I've always expected that if I was ever in that situation, I would break down and cry," he continued. "But it was almost like a moment of silence. You never expect for your family to be in that room."

Reagan was diagnosed with embryonal rhabdomyosarcoma, a soft tissue sarcoma that arises from immature cells that normally develop into skeletal muscle.

"You're so afraid," Kiara said. But those fears eased once treatment began. "We were welcomed with so much love and understanding. You're seeing how hard-working and diligent these doctors are when it comes to saving these kids, and you're like, 'OK, I can relax.'"

Reagan's family has never received a bill from St. Jude for treatment, travel, housing or food. That support has been a relief to her family.

"Not having to worry about the financial aspect gives us that space to completely key in on Reagan and focus on what she needs," Bronte said. "It's been very beneficial, helping us maneuver through it emotionally, mentally and spiritually."

Reagan and her parents met with a genetic counselor who conducted testing.

"We were welcomed with so much love and understanding. You're seeing how hard-working and diligent these doctors are when it comes to saving these kids, and you're like, 'OK, I can relax.'"

– Kiara, *Reagan's mom*

The information helped them understand that Reagan did not have a genetic mutation that is known to increase the risk of cancer.

St. Jude also discussed the possible impacts of treatment on Reagan's health in the future.

And when Kiara felt overwhelmed, Reagan's caseworker at St. Jude connected her with someone to talk to. "The therapist was able to help me get through," Kiara said.

Perseverance

Survival rates for embryonic rhabdomyosarcoma have improved over the past several decades due to the use of multimodal therapy, which includes surgery, chemotherapy and, in some cases, radiotherapy. Reagan's first course of treatment used surgery to remove around 80% of the tumor and followed up with chemotherapy to kill any remaining cancer cells. Her treatment lasted for almost a year.

Reagan felt pain from the surgery, and she sometimes threw up from chemotherapy. Kiara would rub her daughter's little back. Remarkably though, Kiara said, she had more good days than bad.

The family celebrated the end of treatment in late 2024, but that celebration was short-lived. At her first three-month follow-up appointment in early 2025, tests revealed active cancer cells. She underwent a second treatment plan of chemotherapy and proton beam radiotherapy to eradicate her recurrent cancer.

"It's such a relief to see that they have a plan in place," Kiara said. "And it's also one where my kid can still be as much of a kid as possible in the process."

But this treatment was more aggressive than the last one,

"When I see those pictures, (of adult cancer survivors) it gives me so much hope. It makes me think, OK, Reagan has a future. Maybe even a future at St. Jude."

– Kiara, *Reagan's mom*

and doctors told them to expect Reagan to have some bad days with possible fatigue, nausea or bad moods. For the most part, blessedly, that wasn't the case, her parents marvel. She persevered with little complaint.

A future

Kiara has a favorite hallway at St. Jude, one lined with portraits of St. Jude cancer survivors. Each adult in those portraits holds a frame with a photo of their younger self – back when they were still in treatment. It's a powerful image: The grown-up carrying the child they once were. Or maybe it's the other way around – the resilience of that child carrying through to adulthood.

"When I see those pictures, it gives me so much hope," Kiara said. "It makes me think, OK, Reagan has a future. Maybe even a future at St. Jude."

Reagan has become conversant in all things medical, to the point that she will talk about her blood pressure numbers. When she grows up, she wants to be a doctor or a nurse – influenced by her caregivers at St. Jude. The experience has been life-changing, Kiara said.

Bronte agrees. "I wish people could spend at least a day or two at St. Jude, not for anything medical, but just to walk around to see, to experience, to hear, to smell, literally," he said. To transform – like he did – into someone who cherishes each moment of life.

The power of pink

Most days when Reagan heads to St. Jude, she is happy because she enjoys spending time with her doctors and nurses who let her play "princess" or do fashion shows.

"She loves the color pink, and I feel the color pink describes her so well," Kiara said. "She's very girly. She loves to ballerina dance."

She also gets a chance to play with other patients and, if there is time, the little girl gets her nails done at the salon in Family Commons, a

“From the very beginning, she didn’t really see St. Jude as a hospital. She saw St. Jude as a playground.”

– Kiara, *Reagan’s mom*

treatment-free zone designed for St. Jude patients and families so they can relax, reflect and recharge.

“From the very beginning, she didn’t really see St. Jude as a hospital. She saw St. Jude as a playground,” Kiara said.

Kiara doesn’t have a prescription for her daughter’s life. She simply prays that Reagan survives and lives a life filled with purpose and determination. “She may not remember most of what she’s going through now, as tough as it is. I would hope that she holds on to that spirit to just keep going because that’s the most important part of surviving – just getting up every day, having the effort and the energy and the want to do better.”

More than anything, Kiara wants her daughter to simply be herself – that bright, fun, pink-infused spirit who shares her wisdom with everyone she meets. “Just to see her still be Reagan, still be pink, means everything.”

Your support helps patients like Reagan have a chance to realize their dreams.
stjude.org/ImpactGiving

HOPE drives innovation

St. Jude scientists work with clinicians to develop more effective, less toxic treatments for children with brain tumors.

By **Ruma Kumar** - ALSAC

Growing up in a small town in Ontario, Canada, Paul Northcott's early life involved playing ice hockey and shoveling snow. He thought he might always be there. But over the years, his studies at the University of Toronto led him to explore the world of cancer genetics. And as his training continued – taking him to Heidelberg, Germany, and then bringing him to St. Jude Children's Research Hospital® in Memphis in 2015 – he began to focus on pediatric brain tumors.

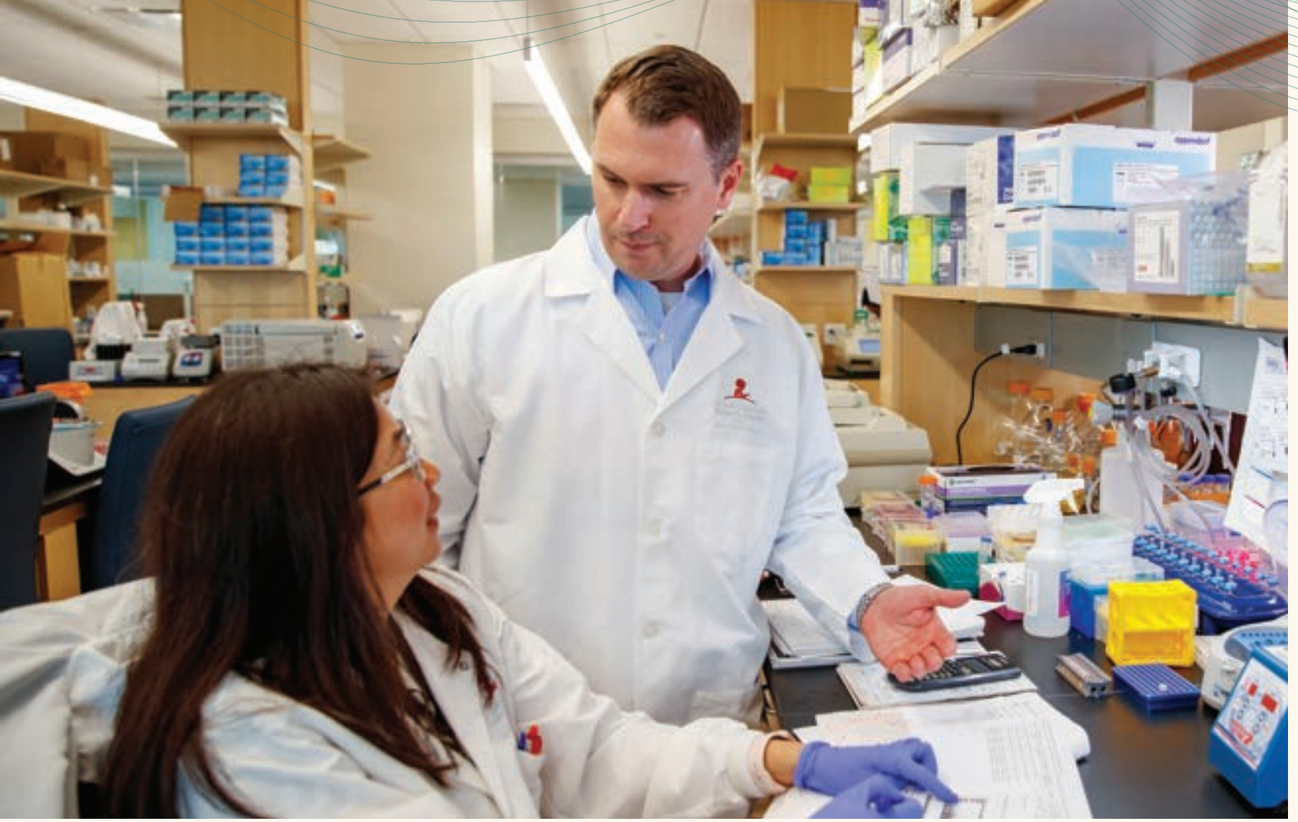
At least 5,000 children in the U.S. are diagnosed with brain tumors every year. Though these tumors are relatively rare, more children die from brain malignancies than any other type of pediatric cancer. That reality underscores the urgent need for better, more effective treatments. Brain tumors present numerous challenges – complicated surgery, spread to surrounding tissues, a lack of druggable targets and a high risk of relapse. The treatments administered to children with brain cancer – chemotherapy and radiotherapy – can cause long-term side effects and diminish quality of life.

To meet the challenges of advancing knowledge, enhancing treatment and improving the outcomes of children affected by malignant brain tumors, St. Jude established the Center of Excellence in Neuro-Oncology Sciences (CENOS).

The center, led by director Northcott, PhD, is a powerhouse team of scientists and bioinformaticians, united behind the singular goal of giving every child with a brain tumor a better chance at life. Together, they focus on some of the most aggressive childhood brain tumors, and their discoveries are changing how doctors in clinics are diagnosing, risk stratifying, treating and monitoring these diseases. CENOS includes the labs of Northcott, Suzanne Baker, PhD, and Stephen Mack, PhD,

"What many of us often overlook or take for granted is that survival is not the only end game here. What we want to achieve is a good quality of life after cancer."

– Paul Northcott, *Director, Center of Excellence in Neuro-Oncology Sciences*
Co-Leader, Cancer Center Neurobiology and Brain Tumor Program



Paul Northcott, PhD, speaks with a researcher in his lab within the Inspiration4 Advanced Research Center at St. Jude Children's Research Hospital.

with a total of around 50 staff and trainees. Northcott said the center hopes to double its size in the next few years to expand bench-to-bedside research dedicated to serving children with brain cancers. While the work is based in the lab, patients are at the center of the work done by CENOS.

Within the St. Jude Comprehensive Cancer Center, Northcott also co-directs, with Giles Robinson, MD, the Neurobiology and Brain Tumor Program (NBTP) at St. Jude. Bridging laboratory research with clinical care and research, NBPT has the goal of improving survival and reducing morbidity of children with brain tumors by developing the most effective, least toxic therapies through a better understanding of disease pathogenesis and normal brain development.

What St. Jude offers inspired Northcott when he started his lab at St. Jude more than a decade ago. With an emphasis on translating research discoveries into clinical trials, Northcott and his scientist peers form genuine partnerships with their clinical collaborators. The infrastructure exists at St. Jude for laboratory discoveries to impact diagnosis and care for patients.

"Innovation is necessary to drive discovery," he said. "At the end of the day, we need to make discoveries that will enable more sensitive and accurate approaches to diagnosis and inform more effective treatments for these children."

One recent discovery involved a defective gene in children who develop medulloblastoma, a cancer affecting the cerebellum, the part of the brain responsible for coordination and balance. Over the last couple of decades, work led by St. Jude doctors and scientists has helped reveal that medulloblastoma is more complex than previously thought. Four molecular subtypes of the disease further break down to more than a dozen subgroups, some more aggressive than others, with survival rates varying greatly from 40% to 90%. Treatment often includes surgery to remove the tumor, chemotherapy and proton beam radiotherapy.

By analyzing samples from more than 1,000 children with medulloblastoma, Northcott and his team discovered that an inherited deficient ELP1 gene increased the risk for some children to develop a molecular subtype of medulloblastoma called Sonic Hedgehog (SHH) activated medulloblastoma. The ELP1 deficiency causes cells to turn off p53, a protein that suppresses tumors, increasing the risk of developing SHH-medulloblastoma. From this fundamental research, the team was able to use models in the lab to restore p53 activity as a targeted therapy for SHH-medulloblastoma.

"And now this therapy is being considered as a novel approach for children that have this particular gene mutation," Northcott said. Research like this is all part of the process of developing innovative new treatments that will prove effective and safe and not have the same undesirable long-term side effects of previous generations of treatment.

When it comes to survivors of medulloblastoma and other pediatric brain and spinal tumors, "What many of us often overlook or take for granted is that survival is not the only end game here," explains Northcott. "What we want to achieve is a good quality of life after cancer."

"Many of (these survivors) will never leave home," Northcott said. "They won't go on to lead independent lives. They won't have jobs. They're basically homebound for the rest of their lives. That's not sufficient. We need to change that narrative."

Changing that narrative is rooted in fundamental research like that being conducted in laboratories at St. Jude.

Northcott and his team are also pursuing ways to help children whose medulloblastoma returns — a form of the disease that is harder to treat. About 30% of children treated for medulloblastoma experience a relapse of their disease, and when the cancer comes back, only 10% of them survive beyond a couple of years. This unacceptable outcome demonstrates a critical need for improved methodology to monitor response during therapy, to surveil disease during follow-up and to identify targets at relapse.

Therefore, Northcott and his team have developed a test to detect if medulloblastoma cells have returned. It's a biopsy of a few milliliters of spinal fluid. The pathology lab can look for DNA from cancer cells in the biopsy. The new approach is more sensitive than an MRI, which is typically used, allowing doctors to spot recurrence sooner when the cancer is more likely to respond to treatments. These new liquid biopsy methods being developed in Northcott's lab are transitioning into standardized clinical tests that St. Jude patients will soon undergo alongside MRIs to help clinicians better monitor treatment response.

Currently, there are no effective therapies for children who do not respond to the current standard of care of surgery, chemotherapy and radiotherapy. That reality fuels Northcott, who is driven to find approaches for these cases and to cure what is considered to be incurable.

At St. Jude, the investment into basic science powers discoveries that shape understanding. Through translational research, Northcott and his peers in CENOS can use that understanding to develop new diagnostic methods or test new targets, which, in turn, get shared with clinical researchers who develop new clinical trials to improve survival rates and quality of life for survivors.

Even though the various brain tumors and subtypes present significant challenges for researchers and clinicians, it is the mission and support to do this research that provide reason for hope. "I believe the future is very bright, and we will continue to make impactful discoveries on this campus," Northcott said.

"I believe the future is very bright, and we will continue to make impactful discoveries on this campus."

– Paul Northcott, *Director, Center of Excellence in Neuro-Oncology Sciences Co-Leader, Cancer Center Neurobiology and Brain Tumor Program*

From immobility TO MELODY

Lucy is back home – walking, talking and playing piano – after a brain cancer diagnosis and treatment at St. Jude.

By **Monsy Alvarado** - ALSAC

Just a few years ago, the little girl could not stand, walk or talk. Now an active elementary school student, she enjoys music, delights in eating her mom's cuisine that honors their Chinese roots and embraces every new experience.

Lucy was 3 when medical tests showed a mass in her brain. She was transferred to a children's hospital near her home in California where she underwent surgery to remove as much of the tumor as possible. She was diagnosed with medulloblastoma, one of the most common cancerous brain tumors in childhood.

The day after Lucy's surgery, she developed posterior fossa syndrome (PFS), which impeded her ability to speak, stand and walk. PFS sometimes occurs after surgery to remove brain tumors at the base of the skull where important parts of the central nervous system are housed. Most children with PFS gradually improve and regain their speech and motor skills.

"We saw an energetic kid become one that could not walk, speak or write, and we were so anxious," her mom, Yanli, said. "But during that time we thought, as long as she was alive that was good."

Lucy was referred to St. Jude Children's Research Hospital® and arrived in December of 2023 to be treated by Amar Gajjar, MD, Chair of the Department of Pediatric Medicine. At St. Jude, molecular testing – including methylation analysis – was performed on Lucy's tumor, which identified the group and subtype of her tumor: group 3/4, subgroup 7. Methylation profiling allows doctors to understand the tumor's profile and to offer a precise diagnosis for different tumors that might appear the same under a microscope.

Yanli said she had read of other protocols done at St. Jude with Lucy's tumor subtype and felt fortunate that their daughter would receive treatment there.

"We believed that she could have a better result at St. Jude," she said. "We felt confident and thought that Lucy could survive."

> *We believed that she could have a better result at St. Jude.*
>
> **– Yanli,** *Lucy's mom*

St. Jude researchers have discovered new ways to predict how well treatment will work by analyzing the molecular features of the tumor. Once Lucy's tumor was classified, St. Jude was able to tailor her treatment by determining the effective doses of radiotherapy and courses of chemotherapy to cure her disease but limit side effects.

Patients with group 3 and group 4 medulloblastoma have a more aggressive disease that requires radiotherapy. St. Jude is home to the first proton therapy center dedicated exclusively to children. Proton beam radiotherapy allows the energy and depth of the protons to be matched to the tumor's size and shape, sparing healthy tissue surrounding the tumor, reducing both short- and long-term side effects – critical for children whose brains and bodies are still developing.

After completing treatment, including physical and occupational therapy, Lucy returned to California in the fall of 2024 and started school several months later. She learned how to write her name, identify numbers and do basic math. Inspired by the music room at St. Jude, one of her favorite places to visit while in treatment, Lucy began taking piano lessons and has performed in her first piano recital.

Lucy and her younger brother, Lewis, traveled to China for the first time recently. There, they met relatives and Lucy celebrated her 6th birthday with friends and family at an indoor playground.

"She was super excited to see that part of the world with her parents and brother," her mom said. "To connect with Chinese culture, food and, of course, to be happy."

Decades of brain tumor discovery at St. Jude

Brain tumors in children are among the most challenging cancers to treat. Since 1985, St. Jude has made extensive strides in researching and treating pediatric brain tumors. See how St. Jude is helping to usher in the next generation of brain tumor cures and treatments.

1985

St. Jude launches its brain tumor program, bringing together oncology, radiation oncology, neurology, psychology and neurosurgery.

1995

St. Jude establishes the Department of Developmental Neurobiology to support research in brain tumor biology and developmental origins.

2004

St. Jude study shows computer-planned, three-dimensional conformal radiotherapy after surgery can precisely target pediatric ependymoma tumors while sparing healthy brain tissue.

2006

Risk-adapted therapy raises 5-year survival to 85% for average-risk and 70% for high-risk medulloblastoma. It shows a highly favorable outcome for WNT-activated disease.

2010

St. Jude-led research shows different molecular groups of medulloblastoma – Sonic Hedgehog (SHH) and WNT – arise from different cell types and are molecularly and anatomically distinct.

2012

The St. Jude Pediatric Cancer Genome Project identifies genetic mutations associated with diffuse intrinsic pontine glioma and with different medulloblastoma molecular groups.

2013

Researchers launch first molecularly risk-stratified medulloblastoma clinical trial in 20 sites and four countries.

2015

St. Jude opens the first proton beam radiotherapy center dedicated solely to children.

2016

St. Jude co-leads an international team to molecularly classify poorly described aggressive embryonal tumors so that these can be better studied.

2017

St. Jude co-leads an international study that delivers the most comprehensive view of genomic changes in medulloblastoma.

2018

Researchers uncover how a key mutation drives DIPG by disrupting the system that controls gene activity in brainstem cells.

2021

St. Jude shows liquid biopsy in brain tumors can detect disease earlier than MRI with goal of detecting relapsed cancer when it is easier to treat.

2022

St. Jude launches SJiMB21, a clinical trial that pioneers the use of methylation-based molecular classification to determine treatment for infants and young children.

2023

St. Jude launches its first CAR T-cell trial for brain tumors (LOC3CAR).

2025

St. Jude publishes analysis of almost 1,000 medulloblastoma cases refining risk-stratification approaches for reducing toxicity and improving survival for the next generation of clinical trials.

RELENTLESS PROGRESS

St. Jude doctors, scientists keep pressing to better understand and treat aggressive brain tumors in children.

By **Ruma Kumar** - ALSAC

Recent decades have included remarkable progress in understanding and treating childhood brain tumors. Molecular studies of childhood brain cancer have been practice-changing for people like Giles Robinson, MD, Director of the Division of Neuro-Oncology and Co-Leader of the Cancer Center Neurobiology and Brain Tumor Program (NBTP) at St. Jude Children's Research Hospital®.

Understanding the molecular composition of brain tumors and the traits of different subtypes of tumors have allowed clinicians to improve survival and reduce side effects for what were once considered incurable cancer subtypes. Incremental advances in pediatric brain cancer are driving progress toward safer, more effective cures.

When Robinson first started at St. Jude in 2007, all high-grade gliomas (HGG) – a broad term used to describe aggressive tumors that form in the brain and spine from glial cells – were treated with radiotherapy. The clinical trials that were available tried one drug after another without knowing what to target. Tumor tissue was rarely sampled because it was thought to be too difficult and dangerous to operate, leading clinicians to resort to "treating tumors in the dark," Robinson said.

> *We now know what driver mutations are present in these tumors and that if we can figure out ways to inhibit these mutations, we can stop the cancer cells from growing.*
>
> – **Giles Robinson, MD,** *Director, Division of Neuro-Oncology. Co-leader, Cancer Center Neurobiology and Brain Tumor Program*

Brain tumors represent the most common solid tumor of childhood, and HGGs make up the largest fraction of this group of tumors. But survival outcomes can vary greatly, based on the different genetic subgroup of tumor as well as the location, age of onset and gender predilection.

While survival of patients with high-grade gliomas remains low overall, Robinson said he and his colleagues, like Suzanne Baker, PhD, in the NBTP, are developing a greater understanding of the diseases and how best to control tumor growth and lengthen lives of the children who have them.

In this era of advanced genome sequencing, the brain tumor program is studying tumor tissue samples from patients to learn what genetic mutations drive high-grade gliomas and, therefore, develop more effective drugs and clinical trials to target the disease. If treatment of these tumors used to be like working in the dark, the molecular analysis done today is like shining a light on the tumor.

"Incredibly, for a few patients with HGG, this knowledge has resulted in targeted therapy, where some patients are cured or have had their life significantly lengthened by drugs that target the mutation found in their tumor," Robinson said.

In some rare cases, patients at St. Jude have had HGG with one of the mutations commonly found in adult lung cancer. Using targeted drugs designed for those mutations led to a few encouraging results.

"However, for most children with HGG there is no known cure, but there is hope that we can find one," Robinson said. "We now know what driver mutations are present in these tumors and that if we can figure out ways to inhibit these mutations, we can stop the cancer cells from growing."

Within pediatric neuro-oncology, doctors and researchers face the added challenge that if brain cancers relapse after conventional treatment, they behave more aggressively and have poor prognoses. For example, in the 30% of medulloblastoma cases that relapse after therapy, only 10% of the patients survive.

Not long ago, most patients died of relapsed tumors within one to two years of a tumor's return. But scientific understanding is leading to newer treatments for children at St. Jude with relapsed brain tumors, allowing double to triple that time.

Most importantly, through working with Paul Northcott, PhD, we are now developing a new technique called liquid biopsy, Robinson said. Earlier interventions may lead to better results for some tumors.

Despite the difficulty in treating children who are facing heart-wrenching odds with relapsed or difficult to treat brain tumors, Robinson finds hope in the research being pursued at St. Jude.

"Huge changes are happening in the world of pediatric brain tumors because of this research, and when we successfully show that a new therapy works, our research raises the bar of conventional care."

Meet the Artist

Annzie

Annzie's unusual name is as unique as the girl herself. "We kind of made it up," said her mom, Tamara. "We wanted something different. I'm not real sure how we got to Annzie, but I do feel like it fits her."

Annzie, one of three children in the family, is "our wild child," said Tamara. "Her favorite song is 'Girl On Fire,' and that's like her anthem. She loves to dance and sing. She loves her little stuffed cows. She loves her dog, who she also calls her brother."

Annzie was diagnosed with Fanconi anemia after bloodwork at her 6-year-old wellness visit showed low platelets and hemoglobin. Fanconi anemia, an inherited blood disorder, prevents bone marrow from making enough blood cells, leading to bone marrow failure and, in some instances, cancers like leukemia and solid tumors.

Referred to St. Jude Children's Research Hospital®, Annzie underwent a bone marrow transplant, with her big sister as her donor. After her recovery from the transplant, Annzie continued to return to St. Jude for donor lymphocyte infusions to support the development of her new immune system.

At St. Jude, she loved meeting and playing with other kids and doing arts and crafts. "I think arts and crafts helped take her focus away from treatment and helped keep her spirits bright," said Tamara.

Annzie created this butterfly and flower while at St. Jude. Blue is her favorite color, but yellow makes her "feel like sunshine," she said. Both paintings evoke her favorite season of the year. "She loves spring because it's finally warm after the cold, the flowers start blooming, and she can finally lay in the green grass," said her mom.

Annzie is doing well and continues to return to St. Jude for checkups. She is even able to attend some appointments at her local St. Jude affiliate clinic. She wants to be an artist or a rock star when she grows up.

Bring patient art to life with this AR experience. Scan the QR code. Then hold camera over page to begin.

A Life of Service

From Mumbai to Oklahoma: one family's multigenerational promise to help St. Jude save more lives.

By **Bethany Horton** - ALSAC

Born in Mumbai, India, Dr. Paul Mullasseril grew up in a close-knit family whose values of faith, education and service would shape the course of his life. When he lost both his mother and his uncle to cancer in quick succession, those early lessons took on new meaning. Grief deepened his desire to build a life centered on helping others, a calling that would eventually guide him across continents.

After earning his degree in dentistry, Paul felt compelled to push beyond the limitations of the training available in India. Determined to treat patients with oral cancer, he and his wife, Anaita, also a dentist, began searching for specialized opportunities abroad.

In 1992, after being accepted into a postdoctoral program at the University of Oklahoma, the young couple relocated to the United States and began building a life on a foundation of service to others.

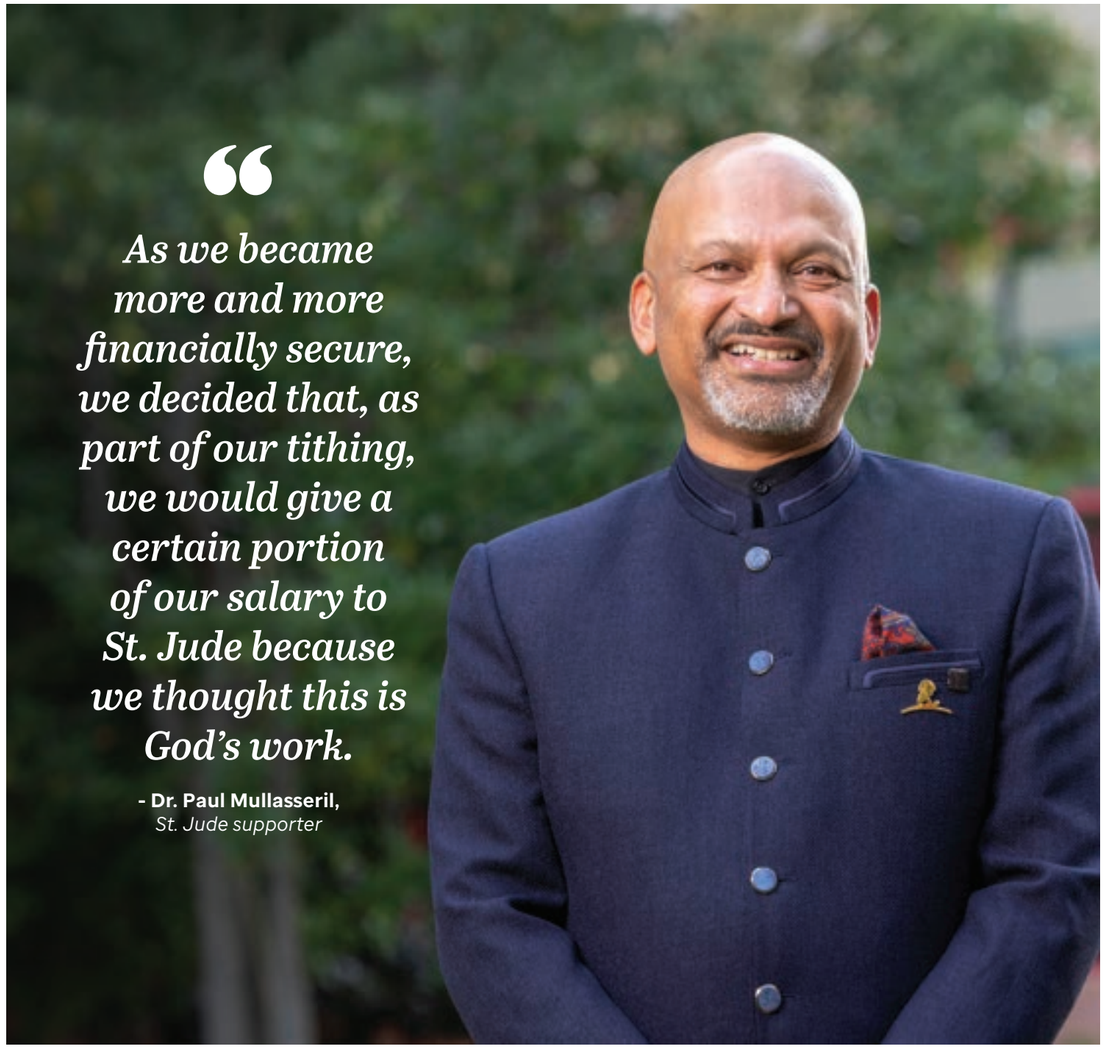
As they worked to find a footing in their new country, Paul and Anaita learned about St. Jude Children's Research Hospital®. At a time when they were dreaming of one day having children of their own, the reassurance of a place devoted to treating childhood cancer brought them comfort and inspiration. Paul knew the pain of watching a loved one suffer, and he felt called to support the mission of St. Jude. Their giving started modestly but grew with each stage of their lives.

"As we became more and more financially secure, we decided that, as part of our tithing, we would give a certain portion of our salary to St. Jude because we thought this is God's work," he said.

Following his studies and a fellowship at MD Anderson Cancer Center, Paul accepted a faculty role at the University of Oklahoma. A few years later, moved by the events of Sept. 11, 2001, he joined the Army Reserves. His service strengthened his commitment to underserved people, especially American veterans, and led him to establish a Veterans Day at the University of Oklahoma clinic, offering free dental care to veterans.

Education remained a central influence throughout his journey. In 2021, Paul stepped into a role that honored his family's legacy: Dean of the University of Oklahoma College of Dentistry. Training the next generation of practitioners mirrors what he views as one of the most vital aspects of the St. Jude mission – sharing discoveries so more physicians worldwide have the knowledge needed to save children. "Many researchers try to keep the research to themselves, but St. Jude spreads that knowledge throughout the world," he said.

Paul and Anaita's son and daughter, now young adults, grew up in a home devoted to St. Jude and its mission. Their daughter even selected her college for the chance to participate in a St. Jude summer research program.



Each year, the couple looks for meaningful ways to ensure their giving makes an immediate impact, and they plan to include St. Jude in their estate plans. "The beautiful part of this is that we talked to our kids about it, and they were 100% behind it," Paul said. "So, I think that legacy will continue not just with us but with our children."

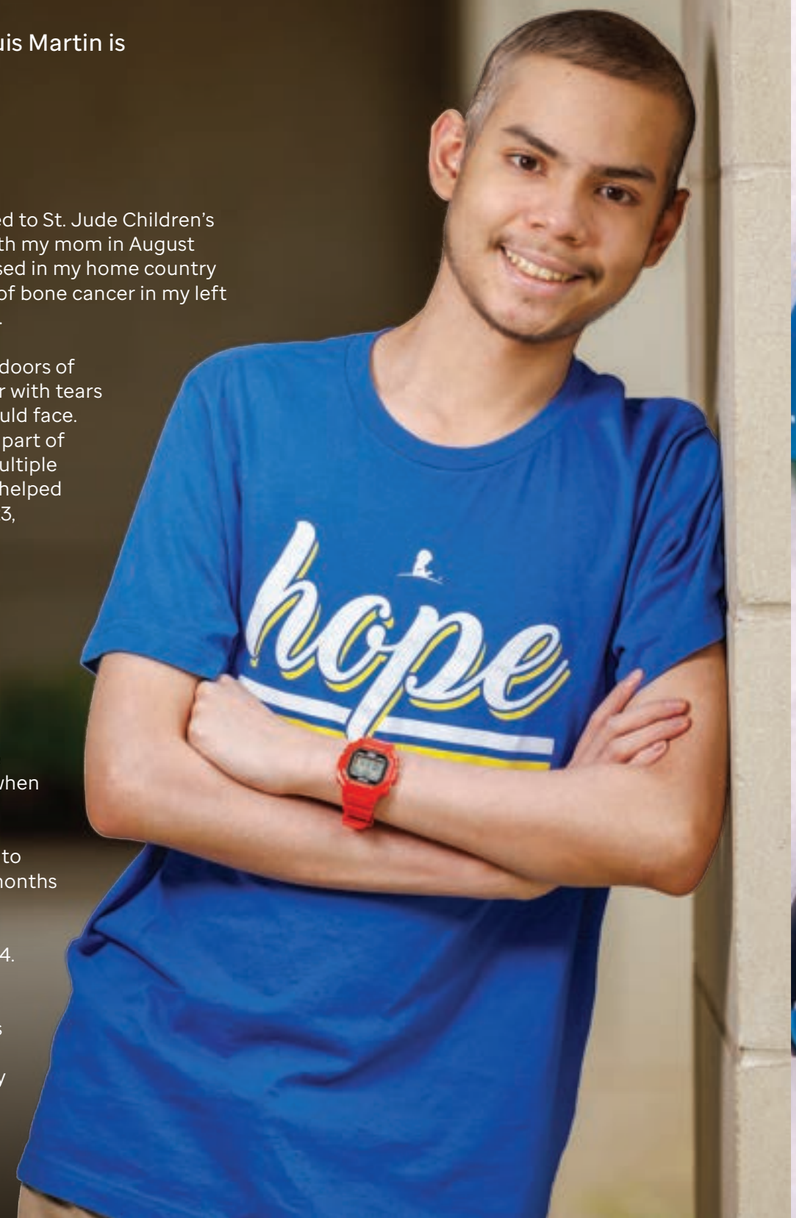
Paul's journey, from profound early loss to a lifetime dedicated to service, education and generosity, reflects a legacy built on compassion and shared purpose. And through his family's ongoing commitment, that legacy will continue to touch lives for generations to come.

You can join the Mullasseril family in leaving a legacy in support of St. Jude.
stjude.org/ImpactGiving

HOME AGAIN

Thankful for his care at St. Jude, Luis Martin is embracing life after cancer.

By **Luis Martin** - St. Jude cancer survivor



My name is Luis Martin. I was referred to St. Jude Children's Research Hospital® and arrived with my mom in August 2023, a month after being diagnosed in my home country of Nicaragua with osteosarcoma – a type of bone cancer in my left knee. It had also metastasized to my lungs.

It was 2 a.m. when we walked through the doors of St. Jude. My mom and I hugged each other with tears because of the uncertainty of what we would face. I started my treatment on Sept. 1, 2023, as part of a clinical trial. I received chemotherapy, multiple surgeries and a newer treatment that has helped some patients with solid tumors. On May 23, 2024, at 12:30 p.m., I finished my last IV chemotherapy.

Days later, on May 29, the doctors gave us the news: "There is no evidence of disease." The best Mother's Day gift for my mom, since in my country we celebrate that day on May 30. I couldn't believe it! The most difficult stage of my life was over. One that I didn't feel capable of reaching on those days in the hospital when my body was sore and exhausted.

After finishing chemotherapy, I continued to take the newer treatment for around six months until my treatment was finished.

I returned to my country at the end of 2024. I am so grateful to God, to my talented medical team and to all the donors who support St. Jude. Thanks to their generous help, St. Jude can continue its mission of finding new cures to save the lives of many children with cancer, just like me.

St. Jude Children's Research Hospital®
Finding cures. Saving children.
ALSAC • DANNY THOMAS, FOUNDER
501 St. Jude Place
Memphis, TN 38105

World-class care for Jonathan

When Jonathan was only 7 months old, what initially appeared to be an allergic reaction to milk turned out to be much more serious. At a doctor's visit, a mass was discovered in his belly, and tests later revealed Jonathan had a cancerous germ cell tumor.

He started chemotherapy treatment near his home, but it didn't shrink the tumor. His doctors referred him to St. Jude Children's Research Hospital® in Memphis, Tennessee.

Jonathan, the youngest of two boys, arrived in Memphis in July 2024. At St. Jude, he underwent multiple surgeries, as well as chemotherapy and proton beam radiotherapy.

Jonathan is now back home where his treatment continues. "I didn't know about St. Jude from the start, but now I understand that it is a good place," his mom, Batel, said. "I know I'm in good hands. They have good doctors, and they do the best for my kid."

You help bring hope and healing to patients like Jonathan when you support St. Jude. Did you know many ways to give with non-cash assets — like stocks and IRAs — may present unique opportunities to save on taxes while furthering the St. Jude mission? Donate today at **stjude**.org/ImpactGiving