St. Jude Children’s Research Hospital was founded by the late entertainer Danny Thomas. It opened February 4, 1962. The institution was created because of a promise Thomas made during the depression era to St. Jude Thaddeus, the patron saint of the hopeless.

“Show me my way in life,” Thomas prayed. In return, Thomas promised to build St. Jude Thaddeus a shrine. That shrine became a world-class research institution that treats children regardless of race, color, creed or their ability to pay. This remarkable event also inspired the name of this magazine, Promise.
Snappy synapses
The brain’s ability to transmit and process information requires a lifelong commitment to maintaining the integrity of synapses—the special connections that permit the passage of nerve impulses from one nerve cell to another, according to investigators at St. Jude and Hokkaido University School of Medicine, Japan.

This long-term commitment requires proteins called synaptoporphins to maintain millions of synapses in good working order. In the absence of such proteins, the synapses weaken and eventually fall apart. This compromises nerve transmission and provides the opportunity for other nerves to extend their axons toward these faltering synapses and make inappropriate connections that further disrupt brain function.

Critical collaboration
The Ink4c and Pch1 genes work together to suppress development of the brain tumor medulloblastoma, according to St. Jude researchers and their colleagues at three other institutions. The genetic teamwork occurs independently of another tumor suppressor, the p53 gene. The discovery sheds light on how cells in the cerebellum called granule neuronal precursor cells give rise to medulloblastoma when certain genes are absent or functioning abnormally. A report on this work appeared in Genes & Development in November 2005.

Based on these findings, the St. Jude Pediatric Brain Tumor Program will try to determine if the absence or presence of the Ink4c RNA or protein in medulloblastoma cells can help doctors predict patient outcomes, said Martine Roussel, PhD, of Genetics and Tumor Biology, the paper’s senior author.

Clearer combination
In the lab, St. Jude investigators have found a new treatment for the pediatric eye cancer retinoblastoma that appears to be more effective than the current standard therapy and more likely to prevent recurrence of this cancer. A report on this work appeared in Clinical Cancer Research in October 2005.

The study showed that combination therapy with topotecan and carboplatin is superior to the standard therapy using vincristine, carboplatin and etoposide. The study suggests a new approach to treatment that could save both lives and vision, said Michael A. Dyer, PhD, of Developmental Neurobiology, the report’s senior author. The new treatment might also prevent recurrence of retinoblastoma in children whose cancer is advanced.

Stem cells and brain tumors
Brain tumors called ependymomas that occur in different parts of the central nervous system appear to arise from subpopulations of stem cells called radial glia cells (RGCs), according to St. Jude investigators. The discovery explains why some identical-looking ependymomas are actually distinctly different diseases.

The study found that when rare populations of RGCs acquire mutations that disrupt the cell signaling pathways controlling growth and differentiation, these cells reproduce continually and give rise to an ependymoma. The findings suggest that treatments should be designed to kill cancer stem cells instead of the tumor itself, said Richard Gilbertson, MD, PhD, of Developmental Neurobiology and Hematology-Oncology. He was senior author of a report on this work, which appeared in Cancer Cell in October 2005.

Stress reliever
St. Jude researchers have discovered a previously unrecognized mechanism that controls a key protein linked to the cell’s stress response. This finding holds promise for new ways to enhance cancer therapies or protect cells from dying after exposure to damaging chemicals or radiation.

The gene for this protein, called p53, is the most commonly mutated gene in human cancer; p53 plays a critical role in helping cells respond to stresses that damage DNA.

The St. Jude study showed that the level of p53 protein synthesis increases following DNA damage. Scientists may be able to use this mechanism to modulate p53 function in order to control whether cells in the body mutate, and whether cells live or die after DNA damage. A report on this work appeared in the journal Cell in October 2005. Michael Kastan, MD, PhD, of Hematology-Oncology, was the paper’s senior author.

Research with muscle
The loss of function of the FOXO1a gene plays an important role in development of the most common soft tissue cancers in children; restoring that gene’s function in cancer cells suppresses the cancer, according to St. Jude researchers. The cancer, called alveolar rhabdomyosarcoma (ARMS), arises from immature skeletal muscle cells.

Researchers found that the expression of FOXO1a is suppressed in ARMS and that the gene potentially suppresses tumor activity when re-introduced into ARMS tumor cells in the laboratory. Thus, the investigators theorize that the observed loss of FOXO1a activity is a pivotal step in ARMS development. Gerard Grosveld, PhD, of Genetics and Tumor Cell Biology is senior author of a report on these findings, which appeared in Journal of Cell Biology in September 2005.

St. Jude takes care of children. That care can mean chemotherapy treatment for cancer, tutoring help so a child doesn’t fall behind in school, a hug on a bad day or tending to the needs of pediatric cancer patients displaced because of Hurricane Katrina. More than 125 children whose cancer treatment was disrupted because of the catastrophe received care at St. Jude affiliates in Louisiana or, like the mother and child below, were flown to Memphis for treatment. Reporter Lisa Ling (at left) interviewed St. Jude National Outreach Director Mario Thomas and several patients whose care was disrupted by Katrina. The segment was aired on The Oprah Winfrey Show.

Construction of the hospital’s Integrated Patient Care and Research Building (IPCRB) continues to progress. The 300,000-square-foot facility is scheduled for completion in June 2007.

Transplants and teeth
Many children who undergo bone marrow transplantation (BMT) as part of cancer treatment already have dental abnormalities that leave them vulnerable to potentially life-threatening bacterial infections, according to St. Jude investigators.

Researchers found that the most common dental problem in children about to undergo BMT was tooth decay, often resulting from neglected oral hygiene and poor nutrition. Tooth decay is especially dangerous in children undergoing BMT because physicians must first suppress patients’ immune systems to reduce the chance of transplant rejection. Therefore, these children should have dental check-ups. Sue Kaste, DO, of Radiological Sciences and Christopher Rowland, DDS, of Surgery co-authored a report on this study, which appeared in Bone Marrow Transplantation in October 2005.
Amazing Grace

FROM A ROADSIDE IN RURAL CHINA TO THE HEART OF A MISSISSIPPI FAMILY, THE JOURNEY OF ANNA GRACE DAVIS IS JUST BEGINNING.

BY RUTH ANN HENSLEY

Draped in a luxurious feather boa, crowned with a silver jeweled tiara and daintily sipping tea as if the Queen Mother herself had instructed her, a young girl charms her admiring subjects. With a dramatic sweep of her hand and a prim toss of her head, she brushes back the regal, dark locks that cascade to her waist and instructs her court to “Drink more tea!” Her guests might assume that they’re in the company of the heir apparent to a throne. Except that the boa is made from chicken feathers dyed purple, the crown is plastic, and the 5-year-old sipping imaginary tea has already won more battles than most royals have fought in a lifetime.

Anna Grace Davis was abandoned on the roadside of a rural community in southern China when she was only a day old. What may seem like a cruel deed may in fact have been the very act of kindness that set off a miraculous chain of events that has inspired, delighted and amazed people from Memphis to Malaysia. The kindness, divine coincidence and incredible family support that have guided her life are proof that true princesses are made, not born. Anna Grace doesn’t require sovereign rights to a kingdom because her feisty charm has free reign over the hearts of everyone she meets.

The long and winding road

“We banned immediately,” says her dad, Greg Davis, as he recalls holding Anna Grace in his arms the evening he and his wife, Nancy, stood in the Chinese consulate’s office to finalize the adoption that had taken 22 months to complete.

“There were seven couples with seven new babies in that office; six of the seven babies were screaming at the top of their lungs, and Anna had her head nestled right here in my neck,” he says, tilting his head to the side.

A rare blood disease that nearly took Nancy’s life in 1994 had led the couple to consider adoption when they decided to enlarge their family. Their biological son, Colton, was 8 years old when Anna Grace was adopted from an orphanage in Le Chang, China, where she was taken after being found on the roadside. In addition to dealing with the blood disorder, the family has dealt with a heart disease that has subjected Colton to four open-heart surgeries.

After weathering life-threatening storms of poor health and enduring months of frustrating international adoption delays, Greg and Nancy were ready to begin a new chapter in their lives the day they walked out of the consulate’s office.

But less than a week after their arrival home, the couple began to notice a change in Anna Grace. “We thought she had an ear infection,” Greg says. It turns out she did have an infection in both ears. But Anna was also losing the ability to sit up on her own, and one of her eyes had begun wandering inward. “Even though her ears were getting better, she was not,” Nancy says.

A pediatric ophthalmologist who examined Anna Grace indicated the eye problem might correct itself. But when the baby became less steady and began vomiting, the couple rushed her back to the pediatrician. This time the pediatrician ordered a CAT scan. By that point, Anna Grace couldn’t sit up at all.

“We were driving home after the CAT scan and the pediatrician called us,” Nancy recalls. “The pediatrician said, ‘Where are you right now?’ Greg said, ‘We’re driving down the interstate.’ And he said, ‘Well, you’d better pull over.’”

The faith factor

The CAT scan had revealed an orange-sized medulloblastoma tumor on Anna Grace’s brain stem. The Davis family didn’t go home that day; they immediately turned around and went back to the hospital, where Anna Grace underwent surgery to remove the malignant brain tumor.

Every queen has her loyal subjects, and Anna Grace is no different. Today, her entourage consists of her baby doll and her parents, Nancy and Greg Davis.
The first words out of the neurosurgeon’s mouth were, ‘This is every parent’s worst nightmare,’” Nancy says. It wasn’t a line they expected to read in the new chapter of their life, but the family pulled together.

“We’ve faced challenges before, and we’ve learned that what happens inside of you is far more important than what happens to you,” Greg says. “The greatest expression of faith is to keep on going when you don’t have all the answers, when you don’t understand God’s plan.”

“We have a saying in our family,” Nancy says. “You can get bitter, or you can get better.” So the Davises decided they were going to get better.

Anna Grace survived the complex, life-threatening brain surgery and was referred to St. Jude Children’s Research Hospital, where the 13-month-old began 16 months of chemotherapy and a procedure called conformal radiation. This form of radiation is a precise treatment that sends radiation beams from several directions directly onto the brain tumor, killing it and sparing the rest of the brain from most of the harmful effects of radiation. St. Jude pioneered the use of this therapy in protocols for children with brain tumors.

“There were pages, typewritten pages, of the possible negative side effects of the treatment,” Greg says, “ranging from mild to don’t-even-talk-about-it.”

**Saving grace**

Not only did Anna Grace survive, but she thrived. She gained 12 pounds while she was in treatment. And most amazing of all, outside of hair loss, she suffered no ill side effects.

“And she did bald really well,” Nancy says of her fashion-conscious daughter.

“Yeah, she had about a hundred hats,” Greg says with a laugh.

For an infant to survive brain surgery and such an aggressive round of treatments with virtually no side effects such as loss of motor skills, hearing loss and speech impediments, is extremely rare.

“She really is the poster child for our treatment efforts,” says Maryam Fouladi, MD, of St. Jude Hematology-Oncology, who monitored Anna’s case throughout her treatments and sees her every six months for checkups.

“Anna is the best of both worlds—she’s cured of her disease, and she’s functionally normal,” Fouladi says. “Not only does that give faith and hope to other families, but it gives us, as doctors, hope that we’re making some strides in moving toward that goal.”

“It’s been a joy to watch her grow up,” says Jana Freeman, a clinical research associate in Hematology-Oncology. Freeman and the Davis family maintain a friendship that formed during Anna’s treatments. “We are so grateful for stories like this,” Freeman says.

The Davises are grateful, too, for the support of the St. Jude staff. “I can’t imagine going through what we went through with our daughter anywhere else,” Nancy says. “It’s an amazing place.”

Greg agrees. “These doctors are here for way more than a paycheck,” he says. “It’s a life mission. It’s a calling for them to be here.”

Greg would know about that sort of thing, since he’s the pastor of a church. He says prayers from around the world, the decision to take things one day at a time and faith in God’s plan brought their family together and made them stronger.

“I don’t know what Anna Grace is going to do in life. But I do know that God went to an extreme amount of trouble to get her out of China, to get her here and to get her well,” he says.

Anna Grace’s physician says that if the child had not been left on the roadside and adopted by the Davis family, she would not have survived her cancer.

“She wouldn’t have lasted another month,” says Fouladi, who describes the Davis family as phenomenal. “It’s interesting that her middle name should be Grace,” Fouladi continues, “because that’s what she is.”

Even as a toddler undergoing treatment, Anna Grace stole the hearts of St. Jude staff. “Polly, she’s precious,” says Maryam Fouladi, MD, of St. Jude Hematology-Oncology. “Everyone in the clinic is so thrilled when Anna Grace comes because she’s always got a new act or a new cheer to share with us. She’s such an inspiration.”

**Fitting his famous vow to St. Jude Thaddeus (“Help me find my place in life and I will build you a shrine”), Danny Thomas found employment in radio dramas—precursors to the modern day soap opera, or as it is called today, daytime television.**

**Daytime television has not forgotten Danny Thomas or St. Jude. For more than a decade, the stars of As The World Turns, All My Children, One Life to Live, The Young and the Restless, General Hospital, Guiding Light, Another World, The Bold and the Beautiful, Days of Our Lives and other programs have supported the institution through an event called Daytime Television Salutes St. Jude Children’s Research Hospital.**

The event was the idea of Emmy award-winning actress Martha Byrne, who plays Lily on As The World Turns. Byrne has been a supporter of St. Jude since, at the age of 10, she appeared in Annie on Broadway. “My mom always donated a portion of my earnings to St. Jude,” Byrne says. “She loved the hospital and felt that when you are given an opportunity you should give back.”

In 1993, Byrne literally knocked on the door of the St. Jude fund-raising offices in New York, told them she was on a daytime TV drama and that she wanted to support the research hospital. From that encounter, the fund-raising event was born. It’s a night where loyal fans can mix and mingle with stars, participate in silent and live auctions and support St. Jude in the process.

“That first year we only had about 100 guests and we raised about $15,000,” Byrne says. The event is now the second largest gathering of daytime TV stars, and has raised more than $1 million since its inception.

“It has become a staple in the industry, which is what I wanted it to be,” Byrne says. “I wanted it to be huge, and I knew it had the potential to do so. I knew there was a niche there, because our fans are so loyal.”

That loyal fan base, Byrne feels, sparked the event’s growth. “I feel like it’s more a testimony—not to me, but to the fans and the daytime TV community,” she says.

“St. Jude is so fortunate to have the support of people such as Martha Byrne and the entire daytime TV community—from its stars to its fans,” said David L. McKee, chief operating officer of ALSAC, the fund-raising arm of St. Jude. “Our mission of finding cures and saving children is a universal one. The success St. Jude has had in saving the lives of children could not have happened without this kind of support.”

For more information about the Daytime Television Salutes St. Jude event, visit www.stjude.org/daytimetv.
Flu Fighters

Researchers at St. Jude help the world prepare for an avian flu outbreak.

BY VICTORIA TILNEY MCDONOUGH

When sunlight shines through the stained glass window in Robert Webster’s home, colors dapple the floor and walls. But this is not your average stained glass window. There are no saints or prophets, no historical or biblical scenes. Instead, there are ducks and migratory birds, humans and music—fluid particles depicting 16 different subtypes of influenza viruses.

Commissioned by Webster and his wife, Marjorie, this window was created by an English artist to depict the natural history of influenza viruses and the exchange among species. Its design is based on the life’s work of Webster, PhD, of Infectious Diseases, who holds the Rose Marie Thomas Chair at St. Jude Children’s Research Hospital.

“Ducks are like the Trojan horse of this virus,” says Robert Webster, PhD. “They can be infected—spreading this disease around—and look perfectly healthy and unaffected.” This stained glass window, which hangs in Webster’s house, illustrates the natural history of the influenza virus.

The window is art at its best, but the situation it reflects is nothing short of terrifying. Building like uncontrollable anger, the threat of a worldwide avian flu pandemic is rising toward its snapping point.

Not your average flu

Ready or not, every winter a new strain of the human influenza virus makes its rounds, killing approximately 36,000 people in the United States, usually children and the elderly. Since the virus mutates so quickly, no one ever becomes fully immune. International experts create a new vaccine each year targeted to that year’s strain. That is the ordinary flu.

The most virulent form of the flu virus, known as H5N1, consists of eight segments of RNA, enclosed in protein capsules, surrounded by a globular envelope of proteins. The virus looks like a microscopic hedgehog. Aquatic birds of the world, ducks in particular, serve as the flu’s “reservoir,” the place where the virus naturally exists between outbreaks. In the last several years, however, H5N1 has learned to hop among other species.

“The H5N1 virus has taken on some nasty characteristics since it was first seen in 1996 in southern China. Human-to-human transmission is the only thing that it has yet to learn,” says Webster, who directs the World Health Organization (WHO) Collaborating Laboratory on the Ecology of Influenza Viruses in Lower Animals and Birds. Located at St. Jude, it’s the world’s only lab designed to study flu at the animal-human interface.

And why is such a lab situated in the middle of a children’s hospital? “Because influenza kills kids,” Webster says. Like all viruses, H5N1 needs to take over a host cell to reproduce. The more hosts it can grow in, the more chances it has to spread. The H5N1 virus has become expert at jumping from host to host. The more the virus multiplies—the more opportunities it gets to make a genetic “mistake”—the greater chance it has to mutate into a strain that has the capability to transmit human to human.

For Webster, who has been studying flu viruses for more than 40 years, the current H5N1 in Asia is the most deadly virus he has seen. “There has never been anything like it,” he says. Not only is it frighteningly lethal to chickens—killing them within hours of exposure and making them endure a hideous death—it has, over the last few years, killed mammals like cats and tigers with equal prowess. “A human-to-human version of this virus would be catastrophic,” he adds.

At press time, strains of H5N1 had been detected in Cambodia, China, Croatia, Greece, Hong Kong, Indonesia, Japan, Kuwait, Laos, Mongolia, South Korea, Thailand, Vietnam, Romania, Russia, and Turkey.

Since it appeared in 1997, H5N1 has been responsible for hundreds of millions of poultry deaths in Asia alone. Although it has appeared mostly in birds and some mammals, it has also killed 68 humans who came in contact with infected birds. The virus has killed more than half of the humans it has infected. The recent spread to Europe seems to be a result of infection in wild migratory birds.

For many flu experts like Webster, a worldwide epidemic, or pandemic, is more a matter of when than if.

Looking back for clues

As the threat of a pandemic from the avian flu becomes more vivid, people are looking back in history at other flu epidemics for clues, comparisons, warnings.

In 1918, in the wake of the devastating trench battles of World War I, the Spanish flu killed at least 50 million people worldwide in 18 months. Recently, scientists completed the sequence of the genome of that virus, providing clues and patterns to its deadly bent. In 1957, an Asian flu, in which bird and human viruses mixed, caused 1 million human deaths; another such outbreak in 1968 in Hong Kong killed about 750,000.

In 1997, the H5N1 virus leapt to humans. When several people died and more fell terribly sick, the source of the virus was traced to Hong Kong’s live-poultry markets. Officials wasted no time, killing all poultry (chickens, ducks, geese, quail, pheasants and guinea fowl) in local farms and markets—1.5 million of them.

“I was there that day,” says Webster, who is well aware of the maelstrom such a pandemic could cause. “We went to the big central market and all the scientists were scrambling to get samples for study while behind us all the chickens were being killed as fast as possible. Then the...
“You can’t be prepared for every rare event, but we do know that there is a history of influenza, a pattern of recurrence. It behooves us to put our ducks in a row, as it were.”

press arrived—hundreds and hundreds of microphones outside the market gates. I was nominated to be the spokesperson and was placed on top of a great big yellow Jeep to give a statement. I was pounded with questions. Finally, the guy driving quickly took me away. But the paparazzi followed on motorcycles. The Jeep was driven into a garage, and I jumped into another car so I could escape to get more samples at another place where they were killing the chickens.”

Hong Kong was successful in its culling efforts; that particular genetic strain of H5N1 has never been seen again. Since then, improved sanitation, poultry vaccination and stricter rules have kept the live-poultry markets of Hong Kong virus free. But in each of the nearby countries, such precautions have not been taken, and a viral outbreak would be almost impossible to control.

Prevention: vaccines
Erich Hoffmann, PhD, Infectious Diseases, developed a process called reverse genetics. By tinkering with a virus’ genes, it is possible to create a new strain that can be used as a “master seed” for vaccine manufacturing.

“Basically, we created a benign virus like the ones found in nature,” says Hoffmann. “Using reverse genetics, we were able to make a genetically modified harmless strain that grows well in chicken eggs and is an optimal vaccine strain.”

“Quickly” has been a key word lately. With the virus spreading across Asia and most recently to Europe, governments are starting to sweat.

The seed stock developed at St. Jude against the H5N1 virus is currently in clinical trials. Although the jury is not yet in, the message so far is that the vaccine is effective but will be more difficult to manufacture than ordinary vaccine and will require more doses. “Instead of producing 10 doses of vaccine from a chicken embryo [the way all flu vaccine is produced], you will only produce one dose of vaccine per egg. So that means it’s going to take millions more eggs to produce enough vaccine for the United States alone,” explains Richard Webby, PhD, Infectious Diseases. “If a pandemic were to break out today, we would not be prepared. But we are far more prepared than we were five years ago.”

And the United States does not have the infrastructure to produce vaccine. “Whether it’s your tea cups or motor cars or dresses, so many things we have in this country are now made off shore,” Webster says. “We are dependent on foreign countries for our goods. That includes vaccine. We used to have eight manufacturing companies in the U.S. making vaccine; now we have only two. This is a severe problem.

“Governments need to step up and take responsibility,” continues Webster, now an American citizen, though a New Zealander by birth. “No company is going to take on the problem of liability, and there is always risk involved with the manufacturing of vaccine. Hurricane Katrina has changed our attitude; we realize we are not prepared. You can’t be prepared for every rare event, but we do know that there is a history of influenza, a pattern of recurrence. It behooves us to put our ducks in a row, as it were.”

Prevention: antiviral drugs
Down the hall from the labs where Webster’s team develops seed virus strains for pandemic preparedness and studies the molecular basis of disease-causing influenza viruses, other scientists combine antiviral drugs that may work against a potential avian flu outbreak.

“Sutting up and showering twice daily to work with dangerous viruses, Elena Govorkova, MD, PhD, Infectious Diseases, tests combinations of two classes of antiviral drugs—oseltamivir (Tamiflu) and zanamivir (Relenza), and amantadine and rimantadine. Some of these antiviral drugs work best at the beginning of the flu; others are more effective as the flu progresses. “We have already found that these drugs work synergistically, increasing the effect of each other,” she says. “However, initiation of antiviral treatment within 48 hours after infection is crucial for the most beneficial effect.”

Resistance to amantadine has spread significantly among the H5N1 virus subtypes because chickens in China may have been given the drug to prevent an outbreak. The St. Jude team reached this conclusion by evaluating the frequency of drug-resistant strains and by studying mutations in one protein of different flu viruses found in North America and Southeast Asia during 1991–2004.

“We were able to determine how frequently amantadine resistance occurs in avian influenza A subtypes isolated in various parts of the world—especially among those subtypes that had the potential to cause a pandemic,” explains Natalia Ilyushina, PhD, Infectious Diseases.

The media has touted Tamiflu as the drug to stockpile, along with the vaccine when it is ready. Unfortunately, there is not enough antiviral medication to support the millions of people worldwide who could become infected if a full-blown pandemic unfolds. And in some Asian regions, the virus may also be building up resistance to this drug.

Traditions are hard to break
In the summer of 2005, Webster’s team set up a surveillance site in Lao, one of the least developed countries in Asia, bordering the Mekong River east of Thailand. “We went to help initiate a study on the ecology of influenza in collaboration with the National Animal Health Centre,” says David Walker, Infectious Diseases.

The team organized twice-a-week collections of feces from poultry in local markets, from small flocks that raise背后 their homes and from birds in the town’s environs. “We collected primarily from ducks but also from chickens, turkey, goose, quail and sometimes ornamental birds. We arranged a collection schedule and virus isolation practices with the Lao staff, coordinating the acquisition of supplies and helping train the staff.”

Traditions in this part of the world play a key role in the avian flu’s potential to jump from human to human. Ducks and chickens are an inextricable facet in the culture and cuisine. They can also be a family’s livelihood—whether for a farmer or a co-farmer.

A cock can bring in a great deal of money and prestige. So much so that cock owners do not hesitate to risk their health by sucking the blood from the wounds of their champions after matches, or the mucus from the birds’ tracheas to ensure better breathing.

The tradition of eating blood pudding is also prevalent in Lao and Vietnam. “It’s a special treat for the young men in these areas after they go drinking. They go and eat this fresh, uncooked duck blood, cloaked with some bits and pieces of vegetable and meat,” says Walker. Recently, two brothers died from the H5N1 virus after indulging in this delicacy in Vietnam.

The science of art
In the last year alone, Webster, a feisty 73-year-old, has logged more than a half-a-million miles worldwide in his relentless study of the baneful H5N1 virus.

“The difficulty that I am having at this moment is that the things I have been afraid might happen are happening: I am watching my predictions unfold before me,” he says. “I guess that is why I am still working and not retired like most people my age.”

When asked if the stained glass window in his house makes him nervous, reminding him of what could be right around the corner, he smiles, sips his tea, and says, matter-of-factly, “No. It’s just a piece of art.”

Webster directs the World Health Organization (WHO) Collaborating Laboratory on the Ecology of Influenza Viruses in Lower Animals and Birds. Located at St. Jude, it’s the world’s only lab designed to study flu at the animal-human interface.
The WEIGHT Trait

BY BONNIE KOURVELAS

Are you fated to be fat? The loss of one gene may tip the scales toward obesity.

We’ve all heard the advice: to avoid obesity, eat less and exercise. Watch your portion control. Eat the right foods. Hit the gym.

This is still good advice, but now researchers at St. Jude Children’s Research Hospital have come across intriguing evidence that at least some cases of adult-onset obesity may not be caused solely by overeating. In this study, scientists discovered that when one copy of the Prox1 gene is missing, normal development of the lymphatic system is disrupted. Lymph can then leak out of ruptured lymphatic vessels and fat cells nearby—often in the abdomen—become significantly enlarged, accumulating extra fatty acids provided by the lymph.

The system of capillaries and vessels that drains lymph is essential for the immune response in inflammation, and it is the main route for the spread of tumors to the lymph nodes. This study indicates that lymphatic system disruption, caused by loss of a specific gene, might allow lymph fluid to leak into the body and then stimulate fat cells in that area to grow larger. Researchers also discovered that when lymph is mixed with cultured cells, those cells are stimulated to develop into fat cells.

“This is the first in vivo evidence showing that defects in the integrity of the lymphatic vasculature could lead to adult obesity,” says Guillermo Oliver, PhD, of Genetics and Tumor Cell Biology. “Our findings might encourage physicians to consider that at least some of their obese patients might be suffering from a problem that can’t be solved by eating less and exercising more.

“This form of obesity is interesting because we thought most of the time, obesity follows certain rules; for example, in general, an obese person will develop diabetes. That’s common in most forms of obesity. But now we’ve discovered a type that doesn’t follow some of those rules.”

A growing problem

Excess weight has become a major health concern in the United States. According to the latest statistics, at least two-thirds of American adults are overweight, and one-third of them are obese. It’s a trend that cuts across ages, genders, racial and ethnic groups, educational levels, smokers and non-smokers alike. Between 1960 and 2000, obesity more than doubled from 13.3 percent to 30.9 percent of American adults. Many obese adults also develop diabetes, with an estimated 70 percent of diabetes in the United States attributed to obesity. If these trends continue, obesity will cause billions of dollars in health care costs in upcoming decades. It is a problem that is being researched on many levels in many institutions.

But why, you may ask, is a hospital devoted to curing childhood diseases presenting research that addresses adult-onset obesity? Occasionally, research conducted at St. Jude leads to discoveries that have little or nothing to do with catastrophic childhood illnesses. Oliver says this study illustrates the importance of all the research done at St. Jude.

“Although this is a place that focuses mostly on pediatric cancers, we also have a huge commitment to basic research: studying how things work normally in the body,” he explains. “In order to understand how something in the body works wrong, first we must study how it works right.”

Why weight?

The obesity research began as basic study of the Prox1 gene. Several years ago, Oliver’s lab discovered that Prox1 is necessary for normal development of the lymphatic system. Scientists knew the lymphatic system would be affected by manipulating this gene, but the resulting obesity connection was unexpected and extreme. This form of obesity didn’t follow the usual rules, because it was not linked to diabetes or defects in the liver or pancreas, which can be factors in obesity.

But, Oliver asks, can we make individuals who lack the Prox1 gene leaner? And how can we keep them from becoming obese in the first place?

“We don’t know—this is just the first step in this particular research,” he says. “Now, more work must be done, studying the lymphatic system as well as the genes that affect it. One important question is: What exactly is it in the lymphatic fluid that stimulates cells to turn into fat cells? This will be extremely valuable to know. We are just scratching the surface here.”

He laughs at the notion of the “Oliver Diet” hitting the bookstores one day. Before anyone can assume that a weight problem is caused by leaky lymph, researchers must dig deeper to learn more about the lymphatic system and its general functional role in health and disease.

“Now, we need to learn more about the exact mechanisms of how the lymphatics become leaky and promote weight gain,” Oliver says. “Then, maybe in the future, we will figure out how to ameliorate this.”

Prox1 JHQH OHDQHU”
Hurricane evacuee Mason King finds safe harbor at St. Jude.

BY VICTORIA TILNEY MCDONOUGH

The day Mason King entered the world, he was about the size of a paperback dictionary and weighed little more. At 1 lb., 13 oz., he could almost fit in his mother’s palm. Until that day, a paperback dictionary was just another book for D’Anna Holmes, a studious and driven sophomore at Dillard University in New Orleans. When she discovered she was pregnant, D’Anna was sick with worry that her parents would be disappointed. They were strict, and in her family, life was supposed to follow a certain order: college, career, marriage, children. There were consequences to making choices that disrupted that order. But sometimes life’s unexpected surprises become blessings—one that spread their gentle fingers, touching the hearts of more people than can be counted. Mason is one of those blessings. Born premature at 26 weeks, he immediately rose to No. 1 on everyone’s list. One look at the tiny baby and his family promptly fell in love.

The first hug

Unlike most parents, who are able to take their baby home after a few days in the hospital, D’Anna and Mason’s dad, Ronnie King, had to say good-bye to their son each day for almost five months. Within days of his birth in July 2004, the young parents quickly learned that life is rarely neat and predictable; ironically, the best of life is often lived outside those tidy lines.

“I didn’t get to hold him until he was a month old,” says D’Anna. “Everything was so surreal. It took me a while to realize that this was my life, but looking in Mason’s eyes, especially that day when I finally got to hold him to me, I knew I wouldn’t trade it for anything.”

Like many preemies, Mason faced multiple health issues. He had a small seepage of blood in his brain, and before he even weighed 2 lbs., he had to have surgery to clip the vein above his heart, something that closes naturally for a full-term baby. Severe respiratory problems and a collapsed trachea forced doctors to perform a tracheotomy, something Mason will have until he can breathe easily on his own.

“Mason just makes your day when he lights up with that little smile,” says speech-language pathologist Sarah Zoerink (at left), Rehabilitation Services, who is working with Mason to improve his feeding and language skills. Mason’s mother, D’Anna is pictured in the background.

For a college student striding confidently toward graduation, having a premature baby became a crash course in medicine and health care. More importantly, D’Anna’s vision focused, her priorities shifted and her heart suddenly grew several sizes.

Dark clouds

That vision would become even more vivid in the following months.

In August 2005, D’Anna and Ronnie found out Mason had hepatoblastoma, a tumor in the liver. His abdomen had become distended, and soon he was barely taking any formula. After a battery of scans and tests, a liver biopsy came back positive for cancer. The tumor comprised almost half of his body weight.

Almost immediately, Mason started his first round of chemotherapy at Children’s Hospital in New Orleans. Hepatoblastoma is rare and accounts for only 1 percent of pediatric cancers worldwide. The standard treatment includes four rounds of chemotherapy to shrink the tumor followed by surgery to remove the tumor and then two more rounds of chemotherapy. Because the liver has the capacity to regenerate, up to three-quarters of it can be safely removed.

D’Anna and Ronnie were so busy tending to Mason, overseeing his treatment, giving him love and comfort—and still going to school full time—that they barely had time to tune in to the news. As they entertained Mason with his favorite stuffed monkey, Alfred, clouds gathered, winds accelerated, and then, just like that, Hurricane Katrina changed the landscape of their lives.

“We had been in the hospital, sort of sealed from the outside world,” says D’Anna. Sure, they knew something big was going on when the lights went out, generators were put in place and patients were moved up several floors and to the side of the hospital most protected from the wind. But it wasn’t until they drove in a convoy to Baton Rouge with ambulances
Another hurricane

From Baton Rouge, D’Anna and Mason flew to St. Jude Children’s Research Hospital while Ronnie drove.

“I was nervous—flying in a small plane and thinking about what would happen next,” says D’Anna. “I sat next to a nurse practitioner from St. Jude and she gave me great comfort. She had had leukemia as a kid, and here she was in the seat next to me assuring me that we’d be taken care of at St. Jude.”

“It was an honor to be in that situation and to be able to help,” says Cindy Burleson, RN, director, Domestic Affiliates. “I was very impressed with D’Anna—how knowledgeable she already was about Mason’s condition and how loving she was with her beautiful son. She had been through one hurricane and was facing another; I tried to keep her distracted and comforted.”

“We felt comfortable here from the first minute,” says Ronnie. “St. Jude is one of the most wonderful places, and the staff makes this time as easy as possible. They love of everything. It’s a place where nothing matters but you and your child.”

Since starting treatment, Mason has made noticeable progress. His tumor is no longer visible and has shrunk substantially. His energy level has also increased, much to the joy of his parents.

“Mason’s parents are incredibly dedicated to him. They’re always by his bed. They are on top of his medical care, and their recounting of what happened in Louisiana helped immeasurably since we didn’t have his full medical records immediately,” says Jeffrey Dorne, MD, Hematology-Oncology. “I asked them how they weathered the hurricane, and what was striking was that they didn’t care about what had happened to their possessions. It was all about their son and taking care of him.”

Morning people

D’Anna Holmes doesn’t know exactly how life will unfold in the next six to 12 months. Like Mason, who is taking baby steps toward getting better and catching up to his age developmentally, she is also taking life day by day. Although enrolled in online college courses, she yearns to get back to her beloved great-aunt’s home in New Orleans where she has lived since Mason was born.

“I know a lot of people will read this, and I don’t want them to get sad or cry when they hear Mason’s story because it’s not sad. Yes, he has been through a lot; we all have,” says D’Anna. “One of my favorite things to tell people about Mason is that, even this little, he’s a morning person,” she continues. “I’ll wake up and say, ‘Good morning, Mason.’ He’ll roll over and have this smile on his face like, ‘Good morning, I’m ready to start some trouble!’ Our son’s a story is hopeful. One after all, it’s Mason’s story so far.”

By the time Katrina hit New Orleans, tiny Mason King had already faced one hurricane—a diagnosis of hepatoblastoma, a liver tumor. Nevertheless, he has retained his sunny disposition. “One of my favorite things to tell people is that he was diagnosed with hepatoblastoma, a liver tumor. Nevertheless, he was in the seat next to me assuring me that we’d be taken care of at St. Jude.”

His life was saved by people he didn’t know. Now Elias Skovron helps save the lives of children who has neve.
Miracles

ONE OF THEIR CHILDREN HAD DIED OF SICKLE CELL DISEASE. THE OTHER TWO WERE DESPERATELY ILL WITH THE SAME DISORDER. TO WHOM COULD THE HERNÁNDEZ FAMILY TURN FOR HELP?

BY ELIZABETH JANE WALKER

Her footsteps echoing in the empty church, a solitary woman approached the statue of St. Jude Thaddeus. In the holy silence, the dim tranquility, Mary Carmen Hernández placed her hand on the saint’s cool, marble foot. As the young woman began to pray, the baby moved within her womb. Hours later, Mary Carmen felt her first contractions; the next day, Enrique José was born.

Mary Carmen and her husband, Equinomidas, delighted in the birth of their first child. But soon they discovered that Enrique had inherited a terrible blood disorder. The disease ravaged his small body and took his life after only seven years and eight months. Burdened with sorrow, the couple from Venezuela nevertheless drew upon deep reserves of faith as they contemplated their loss.

“It hurt very, very much,” Mary Carmen confides. “If a child is healthy and is safe, that is good; this is a miracle. Some children need to go to heaven, and this is another miracle. Heaven is a different kind of miracle. Enrique no longer feels pain. My husband and I are parents of an angel, and this is something special that God sent us.”

Reason for hope

Enrique suffered from sickle cell disease, an inherited disorder of the red blood cells. The disorder causes round, soft cells to become sickle-shaped. The misshapen cells hook together, forming long rods that clog small blood vessels and deprive organs and tissues of oxygen-carrying blood. The bottleneck leads to episodes of severe pain, strokes, pneumonia, organ damage and even death. Millions of people worldwide suffer from sickle cell disease. In the United States, it affects about 72,000 people, mostly African Americans and Latino Americans. Researchers at St. Jude Children’s Research Hospital have been investigating treatments for sickle cell disease since the institution opened in 1962. In fact, the hospital’s first ALSAC grant recipient was a scientist studying this genetic disorder. Regular blood transfusions are a common treatment physicians use to combat the severe symptoms of sickle cell disease, but long-term transfusion therapy carries a risk of iron overload and other life-threatening reactions. For some patients, St. Jude physicians use hydroxyurea, a form of chemotherapy, to decrease pain crises and lung problems.

More than 20 years ago, a St. Jude patient was the world’s first patient to be cured of sickle cell disease by undergoing a bone marrow transplant. Since that time, hundreds of patients worldwide have been cured by obtaining stem cell transplants from matched donors, usually siblings who have the correct tissue type and who do not have the disease themselves. Unfortunately, only a small percentage of patients with sickle cell disease have matched siblings who are disease free. That’s why St. Jude began exploring ways to use parents as stem cell donors. The procedure, called a haploidentical stem cell transplant, uses a special machine to magnetize and isolate donor stem cells. This process reduces the chance that donor T-cells will attack the patient and cause a potentially life-threatening condition called graft-versus-host disease.

T-cells are white blood cells that recognize cells that do not belong in the

TWO MORE

Miracles
body. Transplanted T-cells can per-
cept the patient’s organs and tissues
as the enemy and can mount a war
to destroy them.

“A transplant is the only cure that’s
available for children with sickle cell
disease, but not many of our patients
have a suitable match,” explains Russell
Ware, MD, PhD, director of the St. Jude
Hematology Division. “In an attempt to
provide this opportunity to more fami-
lies, we needed to find a different donor.
Nearly everyone has a parent who’s avail-
able, even if they don’t have matched
brothers or sisters. Haploidentical stem
cell transplantation provides that curative
option, so we’re very excited about it.”

Although the new treatment was
discovered after Enrique’s death, Mary
Carmen and Epaminondas had two rea-
sons to be excited about it: their other
children, Maria Fernanda “Mafe” and
Fernando José “Nano” had also been born
with severe cases of sickle cell disease.

**Coming full circle**

In the early 1960s, a priest in
Caracas, Venezuela, suggested to his
parishioners that they raise money to build
a church in honor of St. Jude Thaddeus,
the patron saint of hopeless causes. Every
Sunday, Mafe and Nano’s grandmother
gave a weekly donation to the fund. When

the priest asked his flock to give more
money to support a children’s hospital that
had just been built in the United States,
the family’s matriarch again answered the
call. For more than 30 years, she donated
money for that purpose.

Little did she know that she was help-
ing to fund a fledging hospital that would
one day treat her grandchildren. In
Venezuela, regular chronic blood
transfusions were not available for Nano
and Mafe. Both children became sicker
and suffer from frequent pain crises
and even strokes. During one particularly
frightening period, fluid accumulated
around Nano’s heart.

Then St. Jude Children’s Research
Hospital opened a protocol that offered
hope. Nano would be the second child
with sickle cell disease in the world to
receive a stem cell transplant using a par-
tially matched parent as a donor.

In June 2003, Mary Carmen’s sister
stepped forward as the family was leav-
ing for Memphis. “This is for you,” she
said, as she pressed an object into Mary
Carmen’s palm. Opening her hand, Mary
Carmen gazed at a figurine that had been
given to guests at her first communion
many years before. Clinging to the small
statue of St. Jude Thaddeus, she boarded
the plane.

When she arrived in Memphis and
saw the statue of St. Jude in front of the

hospital, she suddenly realized this was
the same institution her mother-in-law
had been supporting since the 1960s.
“My family said, ‘This is a miracle!’”
Mary Carmen recalls.

**Expertise and resources**

In Memphis, Nano immediately
began preparations for his transplant.
Three months later, he underwent the
procedure, with his dad serving as
the stem cell donor. Unfortunately,
Nano’s body rejected that transplant
and he underwent a second procedure
in October of that year. This time, the
stem cells engrafted successfully.

“It was hard,” admits Nano, who
suffered three strokes before arriving at
St. Jude. “I wouldn’t like for anybody
to have to go through two transplants,
but this hospital saved my life, and it
will save my sister’s life.”

Now 15 years old, Nano attends
high school near Target House while
awaiting his sister’s transplant. “I want
to be an NBA player when I grow up,”
says the young athlete, who also plays
the guitar and trumpet. His dislikes?
“Algebra!” he says.

Paul Woodard, MD, asserts that
the success of the hospital’s stem cell
transplant program can be attributed
to expertise and resources. “To my
knowledge, we’re the only place in the
world that’s doing haploidentical trans-
plants for sickle cell disease,” he says.

“With a high learning curve to doing
these transplants. You have to learn
how to do them well. We have a team
who understands how to do it—from
the doctors and nurse practitioners to
the lab workers and support staff. It
took several years to get that place.

“Haploidentical transplants are
also lab-intensive compared to other
kinds of transplants,” he continues. “You
have to have a lot of support resources.
For instance, we have to do molecular moni-
toring every week to monitor for donor
cells in circulation, and that’s expensive.”

Although Mafe will be the fifth
patient in the world to undergo the pro-
cedure, her protocol is a little different
than the one that was used to treat Nano.
The new version of the study has been
tweaked to make the engraftment process
even better. “We’re doing these stud-
ies very slowly on purpose,” Woodard
explains. “We treat two patients at a time,
and we don’t enrol subsequent patients
until one of those two is at least 100 days
post-transplant.” This process helps the

**Two more miracles**

Like the other kids in the study, Mafe
has had multiple strokes. “I couldn’t see
very well, and I couldn’t walk very well,”
she says, recalling one such incident, which was accom-
ppanied by a horrific headache. “I knew
immediately what it was. It was scary.”

As she prepares for her upcoming
transplant, Mafe continues to concentrate
on the future. A bright girl who loves the
debugging of languages—she speaks Spanish, English
and French—Mafe is also an artist, musician and expert volleyball player.
Her vocational dreams fall into yet another category. “I want to be a
plastic surgeon someday,” proclaims
Mafe, who keeps in touch with her
friends in Venezuela via telephone
and e-mail. She and her family have
not returned home since 2003, and
they expect to be at St. Jude for a
year past her transplant.

Mary Carmen says the separation
from family and friends is difficult,
but that she and Epaminondas try
to keep everything in perspective.
“Our focus is Mafe and Nano—and God,
who is most important,” she says.
“We miss our family, but the really
important things are here. We can
do this with faith. We have love
for our children and love for life.
We have to give our children hope,
and this is the place to do that. St. Jude
is wonderful. In this place we have seen
many, many miracles—in many ways,
in many situations.”

“I see light for the future,” she con-
tinues. “Nano is a miracle, and Mafe
will be another miracle. It will happen
together (Facing page, top) In 2003 Fernando José Hernández,
known as “Nano,” was the second child with sickle cell
disease at St. Jude and in the world to receive a stem cell
transplant.

(Facing page, bottom) “This hospital saved my life, and
it will save my sister’s life,” says Nano, pictured with his
17-year-old sister. Mafe will be the fifth patient in the
world to undergo a haploidentical transplant for sickle cell
disease.

(Left) “To my knowledge, we’re the only place in the world that’s
doing haploidentical transplants for sickle cell disease.”

(Left) Paul Woodard, MD, helps Mafe prepare for her
transplant.

(Above) Paul Woodard, MD, helps Mafe prepare for her
transplant.

(Left) Paul Woodard, MD, helps Mafe prepare for her
transplant.

(Left) Paul Woodard, MD, helps Mafe prepare for her
transplant.
The best dose of a chemotherapy drug for one child is not necessarily the best dose for another. St. Jude scientists are simplifying individualized therapy for children with cancer.

Getting the right dosage of a drug is important for treatment of any disease. Researchers at St. Jude Children’s Research Hospital know that finding the best dosage of the drug topotecan offers hope to children with neuroblastoma. This tumor usually arises in the tissues of the adrenal glands but is also seen in the nerve tissues of the neck, chest, abdomen and pelvis. Pinpointing the optimum dosage to treat neuroblastoma can be tricky.

“Topotecan is a fascinating drug,” says Clinton Stewart, PharmD, of St. Jude Pharmaceutical Sciences. “It interacts with a critical enzyme in the body called topoisomerase. This enzyme helps DNA unwind so it can replicate, and topotecan inhibits its function, leading to cell death.”

From the results of a number of earlier studies, St. Jude researchers found that giving a low topotecan dosage on an extended schedule was the best way to kill tumors. More recently scientists found that if they closely monitored and fine tuned topotecan drug levels for each child—a technique called pharmacokinetic-based (PK-based) dosing—children with neuroblastoma responded very well.

“PK-based dosing is a promising tool that reduces variability in the amount of topotecan in the body, leading to improvements in response and ultimately improving the odds of survival,” Stewart says. “Basically, what we’re trying to do is get the right dosage of topotecan in the kids to get a good anti-tumor effect and to minimize toxicity.”

One of those studies was in collaboration with Victor Santana, MD, director of the Solid Tumor division and co-leader of the Solid Malignancies Program.

“The study with Dr. Santana showed that by obtaining plasma samples from children with neuroblastoma, then adjusting the topotecan dosage, we could attain the concentrations in the blood we needed,” Stewart says. “It showed that we could do this and that it would be safe in children.”

A recent study addressed the problem posed by the different rates at which children eliminate or clear topotecan from their bodies. Such differences mean that the standard topotecan dosage might help some children, but in others the drug levels might be either too low to kill cancer cells or so high that it produces unacceptable side effects.

According to researchers, this study was critical. “Those children were newly diagnosed; they received topotecan as one agent, and they got two courses on the dosage individualization schedule,” Stewart explains.

In the study, children received topotecan before undergoing standard treatment. The aim of this initial treatment was to quickly reduce the size of the tumor that must be surgically removed. Reducing tumor size with topotecan and surgery also reduces the risk that the cancer will develop resistance to standard chemotherapy drugs that are administered afterward. The children did exceedingly well and tolerated the therapy with few ill effects.

“Topotecan was the first drug Bryce got,” says Kristi Cherry, whose son was found to have stage I-V neuroblastoma when he was 10 months old. “After only two rounds of chemotheraphy, his softball-sized primary tumor shrank 25 percent. The doctors were very pleased at how well it worked.”

Bryce also had mild side effects that were on par with other drugs he was taking. “But I didn’t realize how great topotecan was until I started speaking to other families who had children on the same drug,” Kristi says. “They were raving.”

Those rave reviews are what doctors like to hear. “Our results are a proof-of-principle that children who receive topotecan may have an earlier reduction of their tumor size if treated according to the PK-guided dosing strategy,” says Santana. “Our findings also suggest that children who receive topotecan according to a PK-guided dosing strategy may have a better initial response and reduction in the size of the tumor.”

St. Jude researchers have also used PK-based topotecan dosing for the brain tumor medulloblastoma and are starting the same type of studies with the eye cancer retinoblastoma. Results of the neuroblastoma study are being sent to the Children’s Oncology Group (COG) for another PK-based dosing pilot study. COG is a National Cancer Institute-supported clinical trials cooperative group devoted to childhood and adolescent cancer research.

“If there is success in the pilot study, we hope to propose some form of dosage individualization for topotecan in a Phase III study for the entire Children’s Oncology Group,” Stewart says. “In addition, we are working on a method where we could tell pediatric oncologists that if their patient has certain characteristics they could adjust the topotecan dosage to get a better anti-tumor effect and not even need to check blood levels.”

Six-year-old Bryce is thriving, says his mother.

“He reacted so well to topotecan,” she says. “He plays T-ball and is an active child. You would never know he had cancer.”
A Mother’s Vantage Point

“We as a family will recognize St. Jude as a place of miracles where our daughter was given a second chance—not only at life, but as a walking, dancing symbol of hope.”

As the mother of a St. Jude child, I can only imagine what it really means to go through the traumatic experience of having childhood cancer. However, through the eyes and feelings of my daughter, Micah Grace, I can almost imagine.

When Micah arrived at St. Jude, she was only 11 months old. Several signs had led us to believe something was wrong with our little girl’s body, but in October of 2001, it was confirmed: Micah had cancer.

A tumor called neuroblastoma, stage IV, had wrapped around Micah’s tiny spinal column and had done so much damage that she would likely be paralyzed from the waist down, a condition which the doctors said was probably permanent. As a mother, my head was spinning: Cancer? Paralysis? Life-threatening? I could quote other parents here by saying, “Our worst fears had just come true.”

But cancer? This hadn’t even registered in my paranoid, first-time-mom mind. My imagination had been swelling with worries about a childhood of broken bones, chicken pox and common colds. But Micah’s prognosis gave her just above a 50 percent chance of survival. In reference to your child’s life-or-death ratio, 50 percent sounds devastating.

However, from the moment we entered St. Jude, we were embraced by an unbelievable sense of family. Everything was taken care of financially, emotionally, physically and medically. After all of Micah’s chemotherapy, surgeries, therapy, medicines and shots, our view of St. Jude is not of painful, traumatic memories, but of a wonderful place, full of hope.

After months of chemotherapy and four operations, news came that was music to our ears: Micah was in remission! Last September, we celebrated her third year in remission. Since the end of treatment, Micah not only walks, but is our beautiful, dancing ballerina.

Although Micah’s memories of St. Jude may only be through photos and stories, we as a family will recognize St. Jude as a place of miracles where our daughter was given a second chance—not only at life, but as a walking, dancing symbol of hope.

We thank the doctors and nurses at St. Jude for their awesome devotion to our children. We thank God for his healing powers. And we thank the hospital’s many financial donors and supporters for making sure that St. Jude kids have the best treatment possible. When it comes to our children, St. Jude really does try to make sure that, in the words of founder Danny Thomas, “no child dies in the dawn of life.” I am so thankful I am blessed to watch Micah experience the dawn of her life.

Today, 5-year-old Micah Grace enjoys coloring and drawing, riding her bike, playing T-ball, dancing and singing. She has flown to several states to share her story. Her goal is to raise “lots of money for St. Jude so that kids won’t die, like I didn’t.” She is well on her way to fulfilling that dream.