



# stories

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## The Promise of Research

Duke research gives children a fighting chance. A recent Hollywood film documents just one example.

*Read more on page 4*



## A Message from the Chair

Through innovative research and a steadfast commitment to defeat devastating childhood diseases, Duke Children's has marked many victories.

We've made tremendous strides toward curing diseases such as childhood cancers and food allergies, and Duke Children's is one of only two places in the world where curative treatment for DiGeorge syndrome is performed.

This issue of *Stories* highlights the importance of research and sheds light on the life saving treatment for Pompe disease, which was developed at Duke Children's.

The development of Myozyme, which recently gained national attention with the movie *Extraordinary Measures*, slows or prevents the progression of Pompe disease in children. Previously this disease claimed the lives of most children before their first birthday. Today, a child in our first clinical trial for Myozyme is 11 years old.

There are currently a number of diseases for which existing treatments are inadequate, and sadly, there are diseases for which there is still no treatment at all. This is why Duke Children's makes such a huge investment in the future by pursuing research endeavors. There are still problems to be solved, and still answers to be found.

We know that you share our passion. The outpouring of support from our MIX 101.5 Radiothon in February exemplifies this community's faith that Duke Children's is the place for answers and the place for hope.

Our children deserve to be healthy, to enjoy their childhoods, to grow up and start families of their own. Thank you for joining our team to help not only the children in our community, but those from around the world who will benefit from our research.

Because nothing matters more,



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## DENTAL EMERGENCY: WHAT TO DO WHEN YOUR CHILD DAMAGES A TOOTH



### Q&A with Martha Ann Keels, DDS, PhD

Children being children, accidents are often unavoidable. Sometimes teeth can be broken, loosened, or knocked out completely. If this happens, it's important to know what steps to take for the best possible chance of saving a damaged tooth.

"The good news is that most dental injuries can be avoided," says Martha Ann Keels, DDS, PhD, division chief of pediatric dentistry. "But if an accident does occur, don't worry—most times even a tooth that's been knocked out completely can be saved if proper care is taken in the first 20 minutes."

#### Q. When are dental injuries most likely to occur?

**A.** Dental trauma can occur any time. The most common types of injuries are from toddlers falling down and children and teens injured while playing sports. The peak period for trauma to baby teeth is between 18 and 36 months—a time when children are curious, yet uncoordinated.

With permanent teeth, sports injuries are the most common cause of dental trauma. Swinging arms and elbows and butting heads are common causes of injuries in football, baseball, and basketball. Parents of cheerleaders should also take caution, as dental injuries in that sport are increasing.

#### Q. What do you do if a tooth has been knocked out of place?

**A.** If the tooth has been knocked backwards or out of position but is still in the socket, simply wash your hands, then pinch the crown of the tooth and snap it back into place. The teeth on either side will guide it into position.

Use a cold compress (a cold, wet towel or washcloth pressed firmly against the area) to reduce swelling, then go to the dentist as soon as

possible to ensure proper positioning of the tooth.

If a baby tooth has been knocked out, don't worry about replacing it. Clean the child's mouth gently with water and use a cold compress to reduce swelling. Make an appointment with your child's dentist to determine how serious the injury is.

If it's a permanent tooth, it's critical that you put it right back into the socket immediately to avoid serious nerve damage. Even if you're a bit squeamish, you must get the tooth back into the socket.

"Just think: you can get it done. You're saving your child's smile," said Dr. Keels.

If for some reason you can't get the tooth back in, place it in cold milk or saline. These liquids help protect the delicate cells around the root much better than water. The important thing is to keep the tooth moist but avoid washing or rubbing it, and avoid touching the root.

#### Q. What if a tooth has been chipped or broken?

**A.** If possible, locate the fragment of the broken tooth, put it in a plastic bag or cup with water, and go to the dentist as soon as possible.

If the tooth has been shattered or more than half of the tooth is broken, find the tooth fragments, and go to the dentist immediately. The dentist can re-bond your tooth fragment with special tooth glue. If the fracture is over half the tooth, the nerve of the tooth may be exposed and need immediate treatment.

#### Q. How can I avoid dental injuries?

**A.** If you have a toddler, childproof your home by placing gates across stairs and padding sharp edges.

A mouth guard is mandatory for teens who are active in sports or other activities like skateboarding. While a store-bought guard is a good start, a custom-fitted mouth guard provides better protection.

"No matter what type of injury occurs, the first 20-30 minutes are crucial in determining if a tooth can be repaired or saved," Keels said.

Most dentists have a number to call in case of such an emergency. It is important to have a dental home by age one—a dentist dedicated to your child's oral health—and maintain regular visits. You don't want your child's first visit to the dentist to be for a potentially frightening situation such as this. ●



# Making the Call

## This year's MIX 101.5 Radiothon was another stunner

Again and again, despite a troubled economy, increased competition for attention, and demands on people's time, our community responds. We have a million reasons to say thank you...\$1,019,376 to be exact.

Over three days every February, stories of hope and miracles are broadcast over MIX 101.5's airwaves. For every story heard, there are hundreds more that come in through the phone bank from those making the call to support Duke Children's. Listeners call because Duke Children's helped a loved one, and they want to give back.

### A Patient Knows the Value of Giving Back

Kiera Molloy has battled pancreatitis since she was three years old. The otherwise healthy toddler started having severe stomach cramps. They would attack monthly and last for 10 days. She could barely eat.

"She'd get herself into a ball and scream for hours," recalls Kiera's mom Margie. "She was usually a very easygoing child, so we knew this was not normal."

Kiera went through a series of tests with no diagnosis. Then, the family found Duke Children's. They learned that Kiera had a disease that blocks the enzymes needed to digest food from releasing from the pancreas. Food does not get digested and the pancreas essentially starts to digest itself.



Kiera (second from right) poses with her family after the swim meet.

So Kiera became a regular at Duke Children's, returning for intravenous nutrition during flare-ups. Between the ages of four and nine, she went to the hospital about 30 times. Today, at age 15, her episodes are less frequent—occurring just once a year. She has also learned how to manage them better by limiting her food and resting when she feels the pain coming on.

Despite often being sidelined because of her disease, Kiera has propelled herself through a competitive swimming career.

On the morning of the final day of Radiothon this year, Kiera was on her way to the state swimming championship. She called and made her pledge.

"I am not sure where I would have been on February 11 if it had not been for Duke Children's, but I am sure I would not have been on my way to the state swimming championships," says Kiera, who took third and seventh places in her events that day. "They are just so caring and so considerate. They don't just take care of me, they get involved in what I'm doing."

Now a high school sophomore, she is looking ahead to colleges. "I know my present and future success are thanks to the help I received at Duke Children's," says Kiera. "I'm never going to forget that." ●

## The Child Life Specialist Provides Support at a Critical Time



When a child enters a hospital, he faces many difficult challenges ranging from being in an unfamiliar environment to experiencing invasive or painful procedures.

A child's needs in the hospital are similar to those at home—a need to feel secure, comforted, and accepted and to be able to engage in age-appropriate activities. These needs are often magnified by the stress of illness and hospitalization. The Child Life Program at Duke Children's Hospital & Health Center creates an environment designed to ease children's fears and provide the important emotional and social care to make the hospital experience as pleasant as possible for both the child and the family.

Our 10 child life specialists aim to reduce the stress and anxiety of the hospital setting for children. They are experts in child development who promote effective coping through play, preparation, education, and self-expression.

Through their knowledge of growth and development issues and children's reactions to the stresses of illness and medical procedures, child life specialists offer opportunities for patients and their families to gain mastery over difficult experiences. They provide developmentally

appropriate information to children and adolescents about their diagnoses and treatments.

The child life specialist is an essential component of a quality pediatric health care team. They focus on the psychosocial needs of the child and collaborate with parents and other caregivers to:

- Ease a child's fear and anxiety through play
- Encourage understanding by educating patients and families about upcoming procedures
- Engage and energize children through planned social activities, special visits, and entertainment such as teen night, karaoke night, or visits from the Carolina Hurricanes and Duke athletes
- Consider the needs of the siblings and others affected by a child's illness
- Support families facing grief

Stress can inhibit the ability of a patient to heal and stay healthy at any age. The efforts of child life specialists help manage stress. They can also reduce the need for potentially dangerous sedatives and pain medication through skilled distraction techniques and coping mechanisms.

"I do what I do because of the amazing patients and families I get to meet every day," says Judy Johnson, child life specialist. "As a child life specialist, my focus is to make the hospital experience better for that family. When we meet children who are in for the first time they are anxious and fearful. We talk about what's happening and incorporate medical play to help with understanding. We work on building coping skills that work for them. The reward for me is seeing a child master her situation whether it is an IV start, surgery, or other procedure." ●

## Paws for Celebration

The pitter-patter of little feet are what we long to hear when dreaming of children. But when your child becomes hospitalized, it could be the scamper of paws that brightens her day.

Guf, a furry, four-legged friend does not wear a white coat or tote a stethoscope, but his ability to make a child feel better is second-to-none.

"Anything you can do to bring a sense of home to children helps their healing process," says Carolyn Schneiders, child life specialist at Duke Children's. "With pet therapy, the children are reminded of the unconditional love from their own pets. They light up when one of our three dogs enters the room. We have evidence that pet therapy is a powerful diversion from pain. Children actually push their pain medication pumps less when with one of the dogs."

Three dogs, two golden retrievers and one corgi, visit the hospital on Wednesday evenings. They also make special visits to specific patients about three times a month. The dogs are certified by Therapy Dog International, Inc. or the Delta Society, and strict infection control measures are in place to protect the patients. The dogs distract children from pain and engage children who have to remain flat after surgery. And, of course, they brighten everyone's day. ●



# Building Bridges

From life-shattering diagnosis to hope

**P**ompe disease. Before the debut of the movie *Extraordinary Measures* starring Harrison Ford and Brendan Fraser you might never have heard the term. But Deana Bridges knows it all too well.

Deana's son Mason died of infantile onset Pompe disease at just seven and a half months old in 2002. The family lived in Georgia at the time. Doctors had been dismissing her concerns that Mason was not eating and seemed very weak. It took tests following a bout of pneumonia to discover the life-shattering diagnosis of Pompe disease. Doctors told her to take Mason home and love him for the short time he had left. There was nothing that they could do.

Unable to accept just waiting for her child to die, Deana did what many parents do—she turned to the Internet. Her search uncovered promising research at Duke Children's Hospital & Health Center—an answer she would find too late for Mason.

When Deana was pregnant again, her doctor performed an amniocentesis to rule out Pompe disease. She waited with hope for the results. After all, she has three children without the disease. She would not be so lucky. Her unborn child had Pompe disease.

Deana struggled with the options. "I chose life for him," she says.

Dakota was born on Valentine's Day in 2006 and entered into the last clinical trial for Myozyme—an enzyme replacement therapy developed at Duke—before it gained FDA approval in April 2006. At just two weeks old, Dakota was the youngest patient in the clinical trials at Duke.

State by state, the Bridges made their way to Duke Children's for hope and for the miracle drug—first living near family in South Carolina for a year and commuting to Duke Children's for treatment, then eventually moving to North Carolina, just minutes from the hospital.

"I knew Duke Children's was the best and safest place for Dakota," says Deana. "They know exactly what to do, and I didn't want to take any chances with his life. Moving to North Carolina to be close to Duke Children's was an easy decision."

Dakota has come to Duke Children's every two weeks since he was a newborn for infusions of Myozyme. It is a part of life for him. He looks forward to his visits to Duke Children's, especially art therapy and seeing all his nurses. He is very energetic and happy after his treatments.

"Dakota is like any other four-year-old boy," says Deana. "You would never be able to tell that he is sick. He loves music, being outside, and entertaining us. He is a show stopper."

And he is her blessing. "I hope to see Dakota grow up, get married, and live as normal a life as he can," wishes Deana.

Dakota, like all the children being treated with Myozyme, is helping scientists understand more about Pompe disease and how to treat it. Being the youngest child in the trial, he has proven that earlier treatment is definitely better. Each child is different and contributes different insights into this devastating disease.

Current research is aimed at enhancing the longevity and quality of life for patients with Pompe disease. One avenue is exploring strategies that will avoid the immune response that sometimes occurs when the body recognizes Myozyme as foreign. Another approach focuses on better muscle delivery of the enzyme therapy. Researchers are also exploring the role of gene replacement therapy as well as the significance of diet and exercise. ●



## What Is Pompe Disease?

Pompe disease results when mutations occur in the gene that triggers the production of an enzyme called acid alpha-glucosidase (GAA). That enzyme is responsible for helping the body break down glycogen (sugar).

When GAA is absent or deficient, the glycogen builds up in the body's cells, damaging tissues and causing progressive heart and skeletal muscle weakness.

About one in 40,000 people have Pompe disease. In adults, the disease progresses slowly, and can result in reduced motor abilities and difficulty breathing.

Symptoms progress more rapidly in the 30 to 35 infants born with Pompe disease in the U.S. annually, who would die in the first year of life without treatment. In infancy, the disease causes the heart muscle to enlarge and thicken, and results in weakness and difficulty breathing.

## Duke Research Goes Hollywood

The film *Extraordinary Measures* tells the story of one man's quest to obtain treatment for his children who suffer from a rare metabolic disorder called Pompe disease.

The real story began 20 years ago at Duke Children's Hospital & Health Center when pediatric geneticist Y.T. Chen, MD, PhD, began work on the first and only life-saving treatment for Pompe disease.

In 2006, the FDA approved the use of Myozyme, which is manufactured and marketed by Genzyme Corporation. As a result, the children portrayed in the movie, and those who are living with Pompe disease worldwide, were treated with Myozyme and given their first fighting chance at life.



# Giving Babies a Chance to Beat the Odds

What motivates a doctor to devote his life to research? In Y.T. Chen's case, it was watching a baby take his last breath. The baby had a devastating genetic disorder known as Pompe disease. At the time, the diagnosis was a death sentence. Chen would devote the next 20 years to finding a way to keep this from happening again and again. His motivation was the desire to give these babies a chance to celebrate their first birthday, a chance to grow up, a chance to thrive. In the process he made medical history. Chen's dedication and pursuit to find answers led to the development of Myozyme and a chance for babies with Pompe disease to beat the odds.

While Y.T. Chen was in medical school, scientists discovered the DNA sequence. Chen quickly became fascinated with the concept of genes. His career path and fascination would

frustrating," says Chen. "The National Institutes of Health only funded basic science back then [in the 1980s and early 1990s]. I was ready to translate my basic science into drug development, but no one wanted to invest a lot of money in something that was not guaranteed to work."

Fortunately the Muscular Dystrophy Association and a small biotech company, Synpac, saw the promise, and the journey toward the development of Myozyme took flight...literally.

In 1993 Chen engineered a line of cells that could produce the GAA enzyme (the enzyme Pompe disease patients are lacking). Within 18 months, animal studies proved fruitful when Japanese quail missing the enzyme went from being incredibly weak to flipping from their backs to their feet after three to four weeks of infusions. One of the birds even flew.



Dr. Y.T. Chen (right) reviews results in his lab.

took two hours, and I just stood there watching."

Those first three babies—all who likely would have died before their first birthday—showed signs that the drug was working. Two lived with medical support until about three years of age. The youngest, who entered the trial at three weeks old, is now 11 years old.

Myozyme received FDA approval in April 2006. It is currently manufactured for worldwide distribution by Genzyme Corporation.

## A Commitment to Genetics Research Ensures Center's Strength

Now, along with his wife Alice, Dr. Chen has donated \$4.8 million to ensure medical genetics research at Duke Children's continues. With royalties he receives as the inventor of Myozyme, Chen has established a professorship, an associate professorship, and a fellowship in pediatric genetics and genomics. His family has also provided operational funds for the research center, which was dedicated this past July as the Y.T. and Alice Chen Pediatric Genetics and Genomics Research Center.

"We want to see new treatments developed," says Chen. "This is a very good time. There are so many tools—genomics, gene sequencing, stem cells, and new ways of putting genes into animals and humans."

Chen is currently researching genes that create severe drug reactions. Some of his research is already in clinical practice where doctors can run a genetic test to see if a patient has the "allergic gene." The FDA has changed labels on two drugs based on Chen's research. ●

## Early Research

Y.T. Chen's early research involved using common cornstarch as a slow-release glucose to help children with low blood glucose. Duke Children's has since become one of the premier children's hospitals in the world for children battling glycogen storage diseases (GSD), of which Pompe disease is just one of numerous types. Cornstarch therapy is a standard treatment today for children with GSD. The program is now led by the third generation of researchers following Chen's leadership and building on his early discovery. Priya Kishnani, MD, who led the human clinical trials for Myozyme, is the current chief of pediatric medical genetics.

soon lead him to Columbia University to pursue a PhD in human genetics. Chen lived and breathed to study genes. He became so passionate about genetics, in fact, that he and his wife Alice named their son Gene.

Chen began basic science research in the 1980s. "I love basic science," says Chen. "I could bury myself in the lab for days and be perfectly happy. But outside the lab, babies were dying. I had to help them."

Pompe disease and the pursuit for a treatment soon became Chen's only project. And as is the case for any researcher, Chen was not only chasing science, he was chasing funding. "It can be very

"I remember getting a call from the doctor in Japan that was doing the bird testing," Chen recalls. "He said 'I have good news and bad news. The bad news is that we have lost the bird. The good news is that we lost him because he was able to fly away.'"

In 1999, the research team was ready for human trials. They could only produce enough medicine to enroll three babies in the first trial. "There was a lot of pressure to enroll more babies...from the media to senators," recalls Chen. "But we just couldn't. Many families were pleading with us. This was their only hope. I was very scared during the first infusion of Myozyme in the first baby. It



## CHARITABLE GIVING

Save on taxes when you convert your traditional IRA to a Roth IRA

Friends of Duke Children's support our mission in a variety of ways. A recent change in tax law offers you a way to make a gift to Duke Children's while making a smart move for your financial future.

Roth IRAs offer significant tax benefits to individuals by allowing for income tax-free withdrawals after age 59½.

Beginning in January 2010, anyone who owns a traditional IRA can convert it to a Roth IRA, regardless of income level, to take advantage of the benefits the Roth provides. Unlike a traditional IRA, owners of a Roth IRA are not required to take minimum distributions after reaching age 70½, allowing the account to grow tax free for heirs.

You can convert all or part of your traditional IRA to a Roth IRA. All funds, however, are considered taxable income, and income tax must be paid on the amount transferred. For conversions done in 2010 only, the amount transferred will be reported as taxable income in 2011 and 2012 (50 percent of amount each year), unless you elect to report the full amount in 2010.

You may consider making a charitable gift to offset the income taxes due as a result of the conversion. Our Office of Gift Planning can help. Contact Joe Tynan at 919-667-2506 or e-mail tynan002@mc.duke.edu.

## FACTORS TO CONSIDER IN MAKING THE DECISION TO CONVERT A TRADITIONAL IRA TO A ROTH IRA

- Your traditional IRA has decreased in value because of the recent recession, so the cost of converting will be lower.
- Distributions from a Roth IRA are income tax-free. If federal income tax rates increase, the value of those tax-free distributions will increase.
- Owners of Roth IRAs are not required to take minimum distributions after reaching age 70½. If you do not need the IRA for living expenses during retirement and your goal is to allow the account to grow for the benefit of children or other heirs, then converting to a Roth IRA will help realize that goal and pass the account to heirs income tax free.

This article is intended to demonstrate different ways to consider giving to Duke Children's and should not be taken as personal financial advice. Please speak with your financial advisor before making decisions regarding your IRA. ●

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## Discovering a Treatment is Just the Beginning

Priya Kishnani, MD was the lead investigator of the trials that took Y.T. Chen's work developing Myozyme out of the lab and into humans. Clinical trials started in 1999 with three frail babies.

Today, one of those babies is a healthy, 11-year-old boy who plays baseball and enjoys a normal life.

"I will never forget when he took his first step," Kishnani says. "After having to give bad news to so many families, it is a moment I will never forget."

But with only 11 years of experience, she cautions that it's too early to predict the future.

"There are patients who have done remarkably well but others have not. We've learned that early initiation of treatment is paramount to a successful outcome."

Each patient helps the Pompe team learn how to better help the next. "You're not done when you've developed the therapy," says Kishnani. "We are learning about side effects and reactions. There is a small subset of patients who develop an antibody to the enzyme treatment. We take what we learn from these patients back to the bench, analyze, make alterations, and bring it back to the bedside. We hope soon we can predict who will develop the antibody and alter the course of treatment accordingly."

The team coordinating the care and advancing the treatment of patients with Pompe disease has grown five-fold since the trials first began. Cardiologists, pulmonologists, anesthesiologists, geneticists, and

many more people collaborate to ensure that each patient receives the best care possible. This example of the team approach to care is one of the things that makes Duke Children's so special and is an advantage in solving the complex problems presented by rare childhood diseases.

Kishnani also works worldwide educating other physicians about Pompe disease and helping Myozyme gain approval in other countries. Additionally families and physicians reach out to her from all corners of the globe. "I probably hear from people in at least three countries a day."

With her expertise in Pompe disease, Kishnani is an international resource. From Singapore to India to Malaysia and Argentina, Kishnani is a force of hope to families faced with a diagnosis of Pompe disease.

She also advocates for newborn screening here at home. Currently newborn screening for Pompe disease is mandated only in New York and Illinois. In Taiwan, where newborn screening includes Pompe disease, published studies reported a far superior outcome in babies who were identified with Pompe disease at birth. "They are walking and have made marvelous motor gains," Kishnani says. The motor gains of children who were identified with Pompe disease later "are not as robust," she says.

"Pompe disease is a rapidly progressing disease," says Kishnani. "Babies are born already showing



Dr. Priya Kishnani examines a patient.

symptoms of Pompe disease—their hearts are already damaged. We have clear evidence that when we start Myozyme very early in life the outcome is tremendously better. Not being diagnosed until four or five months old can be too late for some babies."

It's the reason why Duke and others are pushing to include Pompe disease and other rare genetic diseases in the battery of newborn screening. Duke researchers worked with others to develop a blood test to take the place of an invasive skin or muscle biopsy. "This simple drop of blood lets us diagnose patients in as quickly as 24 hours," Kishnani says. ●

## From Idea to Treatment...From Bench to Bedside

When a scientist conceives an idea to improve an existing treatment or create a new one, it could be years or decades before patients begin to benefit from that first spark of a thought.

First the scientist spends time in the lab understanding the complexities of the disease—its patterns, behaviors, and idiosyncrasies—to determine how the new therapy must perform.

The scientist must examine the toxicity of the treatment on the body's organs and perform metabolic studies.

Private funding is essential at this early stage. Government funding, such as that from the National Institutes of Health (NIH), requires extensive preliminary data. The gathering of that data requires seed funding.

Human trials can begin once substantial government or private funding is secured. There are four phases of human clinical trials. In phase one the scientist examines the drug against the person to determine the right dosage. In phase two the scientist observes the drug against the disease. Phase three places the drug against another treatment (usually a placebo). Finally, in phase four the drug goes up against other known therapies.

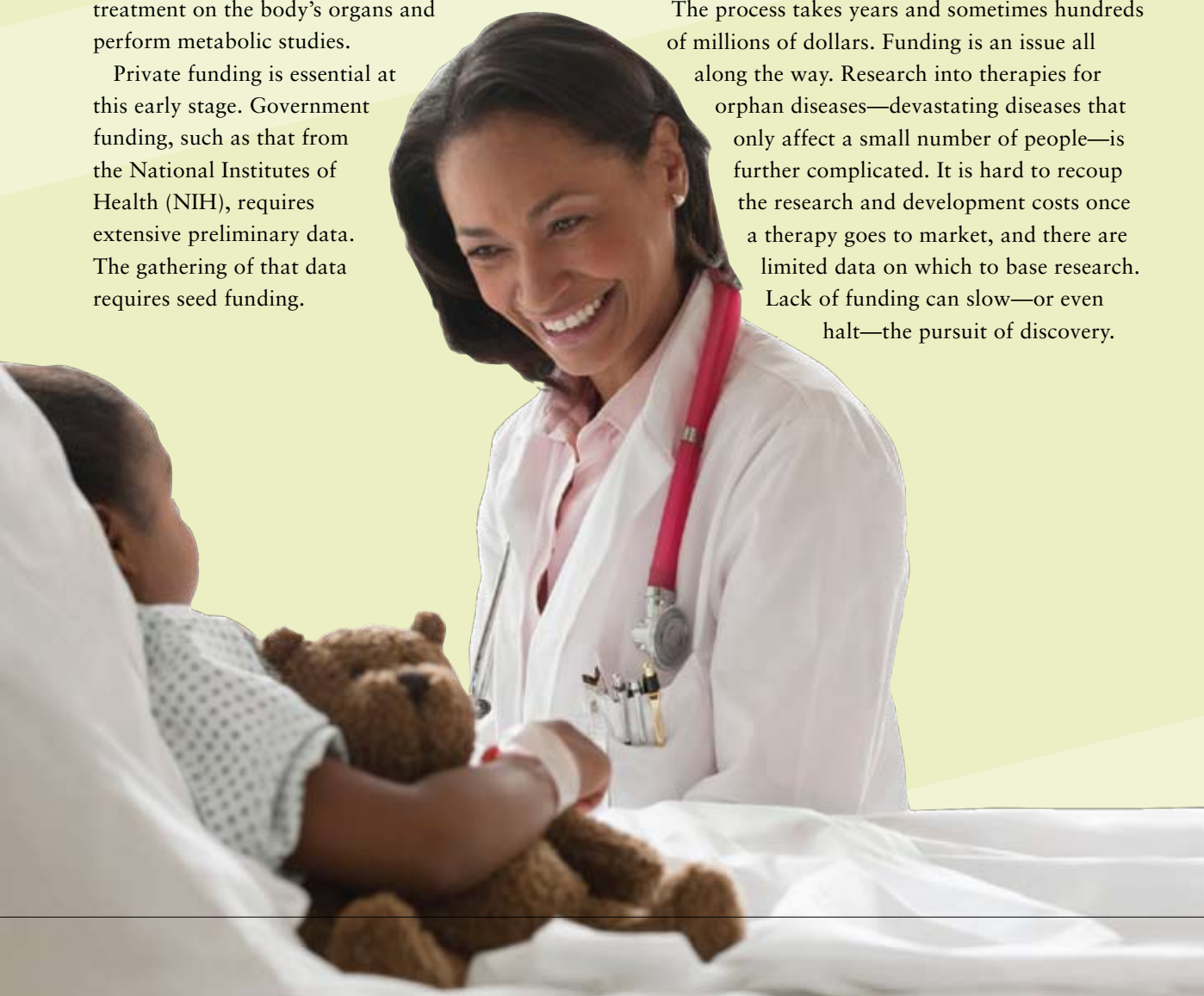
The process takes years and sometimes hundreds of millions of dollars. Funding is an issue all along the way. Research into therapies for orphan diseases—devastating diseases that only affect a small number of people—is further complicated. It is hard to recoup the research and development costs once a therapy goes to market, and there are limited data on which to base research. Lack of funding can slow—or even halt—the pursuit of discovery.

### Saving One Child Is Reason Enough

The research at Duke Children's is strengthened by being a part of Duke Medicine and Duke University. Many departments across Duke collaborate on projects, from engineering to environmental science to global health. An enormous team comes together for our children.

Today, we take for granted treatments and vaccines against devastating diseases like polio, measles, and smallpox—that we would still be fighting if not for people, foundations, corporations, and organizations funding research. Duke Children's is the place where more diseases can be removed from the list of those threatening our children.

Duke Children's is working to establish an Innovative Initiatives Fund to expand the spectrum of research in children's health. This fund would allow for exploration into new approaches in diagnosing, treating, and preventing disease. It would also attract new researchers to Duke Children's and help retain the top faculty who are often targets of recruitment by other hospitals. Please contact us for more information. ●



## Want to Help?

Great things are possible because of you! If you are interested in supporting Duke Children's Hospital & Health Center, please contact our Development Office.

919-667-2565  
dukekids@notes.duke.edu  
dukechildrens.org



**B is for Book** A Duke Children's study has shown how pre-teen fiction affects the behaviors of girls aged 9-13 around issues of weight and body image.

**P is for Peanut** Duke Children's researchers have demonstrated long-term peanut tolerance in children with peanut allergies—opening up a whole new, worry-free world for kids and parents affected by food allergy.

**Z is for Zebrafish** Zebrafish represent a model system for Duke Children's researchers to learn more about the causes of congenital heart disease.

## From Allergy to Zebrafish, a Stack of Miracles at Duke Children's

From A to Z, Duke Children's is building miracles every day.

- Physicians are using cord blood transplants to save the lives of children with genetic diseases and cancer. Duke Children's was the first medical center to use cord blood from unrelated donors.
- A Duke Children's pediatrician was a leader in the clinical trial to test the safety of the H1N1 vaccine prior to its distribution last summer.
- Duke Children's neonatologists pioneered the use of induced hypothermia (body cooling) to protect the brains of extremely low birth weight babies.

These are just a few of the miracles stacked up by Duke Children's—the building blocks of healthier lives around the world.

# stories

## Hope

Physicians and researchers at Duke Children's give families reason to believe in miracles

