# OUT IN FRONT

SPRING 2019

# WOMEN'S AND CHILDREN'S HEALTH

COVER STORY

**Two heartbeats, one limitless love**

*A young family experiences joy, heartbreak, and gratitude*

**Perfectly imperfect**

*A miraculous heart procedure opens a new world for a teenager and her family*

**To the stars**

*From an unlikely start, leukemia researcher rises up*

UTHealth® | The University of Texas Health Science Center at Houston

# UTHealth's Comprehensive Campaign

To improve health care and the well-being of our family, friends, and neighbors, we are planning for our first comprehensive campaign focusing on three themes that resonate most with our community.

### BRAIN AND BEHAVIORAL HEALTH

Brain and Behavioral Health conditions are common and affect multiple areas of a person's life including movement, thought, mood, body function, and mental state. We are susceptible to a myriad of brain-related disorders throughout every stage of life and even more so as we age.

### HEALTHY AGING

Healthy Aging is all-encompassing, spanning from preconception to geriatric care and integrating all organ systems in the body. We care for families across the life continuum to help our community celebrate more of life's precious moments.

### WOMEN'S AND CHILDREN'S HEALTH

Women's and Children's Health begins before we are born, and it carries us through some of our most treasured moments —from genetic counseling for expectant mothers to pediatric medicine and instructional tools that address the education and developmental needs of all children.

## STORY LEGEND

**The many faces of UTHealth are dedicated to delivering exceptional care to people of all ages, training the health care leaders of tomorrow, and conducting groundbreaking research to improve the health and well-being of our communities. Each story in *Out in Front* is aligned with one or more of these mission areas, indicated by the icons below.**

EDUCATION

RESEARCH

PATIENT CARE

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## ABOUT THE COVER

**Christine and Blake Dugger were elated to learn they would be adding another child to their family of four, and they were astonished when an ultrasound detected an extra heartbeat. Twins were on the way, and the Duggers felt divinely blessed. But their enchanting dream turned into a harrowing nightmare when deadly conditions threatened the lives of both twins.**

**In a desperate search for answers, Christine journeyed 2,000 miles to visit a renowned UTHealth maternal-fetal medicine physician, whose surgical expertise and compassion created the best outcome—and delivered the ultimate gift.**

“To serve and to love
are the greatest action and ethical
verbs in our language. And
to serve and to love are the greatest
ideals for medicine and life.”

John P. McGovern, MD

# WITH GRATITUDE

The many faces of UTHealth are committed to serving the unique needs of women and children, driving research and delivering care that will empower women to take control of their health and enable families to keep their children healthy and happy.

Within the pages of this year’s *Out in Front: Women’s and Children’s Health* publication, you will read powerful stories of our dedication to these two distinct populations—from women who are changing the landscape of health care to programs that inspire healthy eating for the entire family to physicians who find solutions to ease the suffering of children.

Everything we do is made possible by the commitment and generosity of like-minded individuals like you. On behalf of the women and children who find hope and healing within the walls of UTHealth, we simply say: **Thank you**.

**Giuseppe N. Colasurdo, MD**

**UTHealth President**
**Alkek-Williams Distinguished Chair**

# TWO HEARTBEATS, ONE LIMITLESS LOVE

## A YOUNG FAMILY EXPERIENCES JOY, HEARTBREAK, AND GRATITUDE

**In summer 2018, family and friends joined the Duggers as they remembered the beautiful, fleeting moments they shared with their son and brother. Although Rand left far before his time, his purpose and selflessness changed his family's lives forever.**

Shock and excitement rushed over Christine and Blake Dugger in October 2017 when they learned another child was on the way. Medical complications during Christine's previous pregnancies and a history of miscarriages left the Duggers uncertain whether another child was possible. But now, their life in Sacramento, California, with demanding careers and two blossoming daughters, was finally falling into a groove.

Christine's nine-week appointment brought a greater shock when the doctor grew quiet and scanned Christine's abdomen for a cyst.

"Finally, our doctor told us it couldn't be a cyst because cysts don't have heartbeats," Christine says. The Duggers were having identical twins.

The holidays were blissful. Christine and Blake announced the news to the girls on Christmas morning, and the Duggers spent the rest of the season sharing their miracle with friends and family. They learned the twins were boys and named them Crosby and Rand.

**Ramesha M. Papanna, MD**

Associate Professor
Department of Obstetrics, Gynecology, and Reproductive Sciences
Director, Fetal Intervention Fellowship
McGovern Medical School at UTHealth

## A humbling revelation

Joy and wonder soured into fear and anxiety in late January during Christine's routine checkup with her maternal-fetal medicine doctors. They discovered Rand had renal agenesis, a lethal condition where one or both kidneys fail to develop, and Rand would die in utero or soon after birth.

Christine's doctors referred her to a maternal-fetal medicine center in San Francisco to receive advanced care for the remainder of her pregnancy.

Rand performed for the ultrasounds: He kicked, hiccupped, and took practice breaths. But each appointment brought more bad news and no answers. Unfortunately, each ultrasound showed elevated middle cerebral artery readings for Rand and low readings for Crosby, which indicated something was wrong.

Christine poured herself into researching the twins' condition and analyzed every ultrasound report by plotting trend lines with the readings. Gradually, it became clear to her that the twins had developed twin anemia polycythemia sequence (TAPS), a rare form of twin-to-twin transfusion syndrome caused by chronic blood loss between the fetuses through tiny vessels in the placenta. "It was like we had been struck by lightning twice," says Christine. "In addition to Rand's fatal anomaly, Crosby was now faced with a life-threatening situation."

Despite the evidence Christine found, her doctors did not diagnose the twins with TAPS—furthermore, they told her they do not have interventions for TAPS at their facility. The only solution her doctors could offer was selective reduction, which would end Rand's life. However, because the twins shared vascularity, ending Rand's life would put Crosby's life at risk.

"Although we knew Rand would not live after birth, we were not willing to risk Crosby," Christine says.

## Finding an answer

A desperate internet search for help led Christine to Ramesha M. Papanna, MD, nearly 2,000 miles away. Papanna, a physician-scientist affiliated with The Fetal Center at McGovern Medical School at UTHealth and Children's Memorial Hermann Hospital, reviewed her health records immediately and told her he had a solution.

"TAPS is a severely misunderstood condition that puts the lives of both twins at risk," Papanna explains. "We had to act quickly to preserve Crosby's life."

Papanna was waiting for Christine when she arrived at The Fetal Center at Children's Memorial Hermann Hospital late one Friday night in March.

"Dr. Papanna treated me with such respect, and he was genuinely approachable, yet I was in awe of him," Christine remembers. "Here is this world-class physician who is changing the lives of so many families, and he's with me in a hospital room at 9 p.m. on a Friday night."

The next morning, Papanna performed a fetoscopic laser ablation to close the blood vessels connecting Crosby and Rand, safeguarding Crosby until delivery.

"For the first time in my pregnancy, I felt like I was in control of something," says Christine. "I couldn't save Rand, but I could do what I needed to save Crosby."

## A limitless love

Crosby was born healthy ten weeks later on Memorial Day, but he needed breathing assistance.

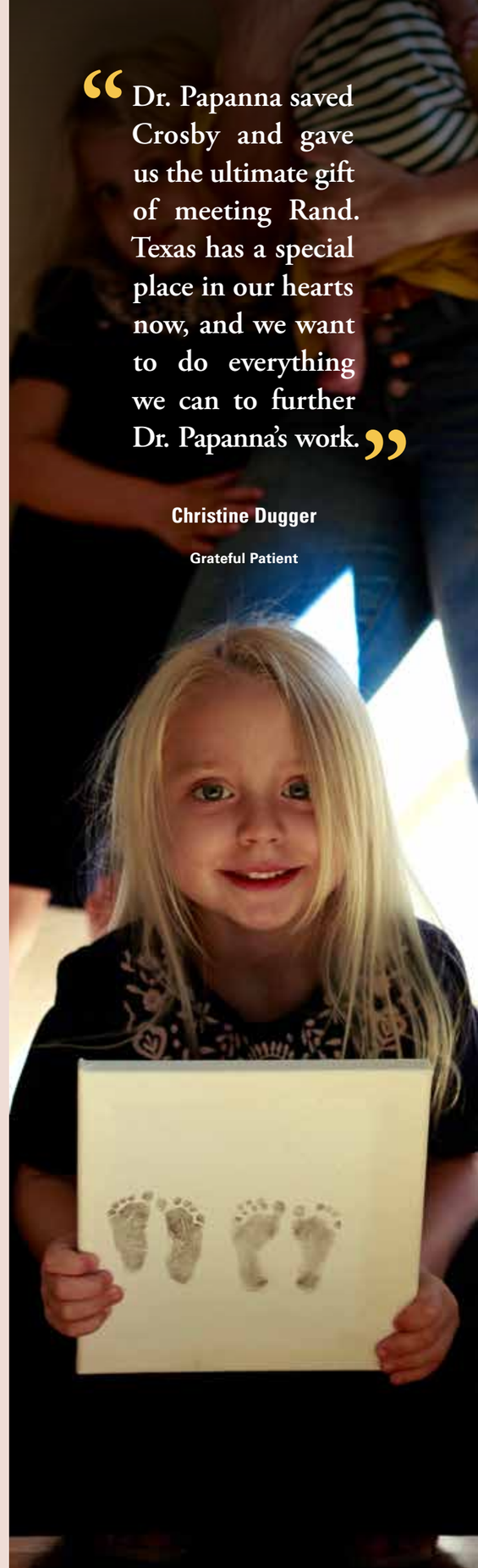
Rand came one minute later. He lived for 58 minutes, during which his parents showered him with a lifetime of love.

"I've never said as many 'I love yous' as I did in those 58 minutes," says Christine. As Rand laid on his mother's chest, the chaplain baptized him. Before the Duggers said goodbye to Rand after their hospital stay, their daughters met their brother and the family took photos of the twins together for keepsakes.

"I truly believe Crosby wouldn't have survived without Rand," Christine says. "Rand gave his life for his brother and taught us about limitless love."

A few days after the twins were born, the Duggers created the Rand Francis Dugger TAPS Research Memorial Fund at McGovern Medical School to raise funds for Papanna's work. On Giving Tuesday 2018, they helped raise money with family, friends, and connections on Facebook.

The Duggers incorporate Rand into their lives every day through photos, bedtime prayers, and conversation. Although grief lingers, Christine says they are channeling their sadness into establishing a foundation to advocate for and support Papanna's TAPS research.



# TINY TREASURES

## SPECIALISTS AT THE FETAL CENTER CARE FOR BABIES BEFORE BIRTH

**KuoJen Tsao, MD**

The Children's Fund Distinguished Professor in Pediatric Surgery

Professor and Chief, Division of General and Thoracic Pediatric Surgery

Program Director, Pediatric Surgery Fellowship Department of Pediatric Surgery

Co-Director, The Fetal Center

McGovern Medical School at UTHealth

**Anthony Johnson, DO**

Professor, Department of Obstetrics, Gynecology, and Reproductive Sciences

Co-Director, The Fetal Center

McGovern Medical School at UTHealth

Texas is one of the rare states that mandates specific criteria in order establish a center of excellence. Co-directed by KuoJen Tsao, MD, and Anthony Johnson, DO, The Fetal Center is one of only two in Texas to meet this requirement. Specialists at The Fetal Center, a partnership between McGovern Medical School at UTHealth and Children's Memorial Hermann Hospital, actively pursue research to improve patient outcomes and establish new benchmarks for patient care.

Unlike many other fetal programs across the nation, the team at The Fetal Center covers the continuum, caring for both babies and mothers. This means that babies are not removed from their mothers. Rather, they receive treatment right next door.

"Our patients don't need to leave the building," says Johnson. "We care from conception to end of life. We are about the family unit."

In addition to providing exceptional care for genetic anomalies and congenital abnormalities, The Fetal Center is an international leader in research to improve outcomes.

"In some programs, there is one person who is at the top of the food chain. Here, we are like the United Nations," says Johnson. "We work as a continuum. Every discipline is represented, whether it is in discovery science, clinical research, or translational research. Our focus is the patient—that is key to us."

Johnson is the local principal investigator for the Tracheal Occlusion to Accelerate Lung Growth clinical trial. Serving as the only trial site in the United States for both the severe and moderate arms, the trial enrolls patients with congenital diaphragmatic hernia—a rare, life-threatening genetic condition that limits lung growth. Babies with this condition undergo an in utero procedure that uses a balloon to the windpipe to allow the fluid produced by the lung to come through and expand the lung. Typically, babies with the severe form of this condition have a survival rate of 40% at best. However, preliminary data suggests that this device may double the survival rate.

Taking a bird's-eye view on health care, Tsao focuses on health services research—how to improve quality and patient care by implementing safety systems. "People are human and make mistakes. We need to create systems to help everyone be safe," explains Tsao.

Tsao received a grant from the March of Dimes to support the development of the March of Dimes Perinatal Safety Center—the first center of its kind. Working with the Department of Psychological Sciences at Rice University, Tsao's team is developing ways to improve the culture of safety in hospitals and health care. The grant will support the evidence-based techniques and training to improve patient safety during pregnancy, labor, delivery, postnatal care, and transition to home life. It will also focus on ways to create, teach, and assess safety culture among hospitals.

"They tell you that you need a culture of safety, but no one gives you a blueprint for it," says Tsao. "Our research is about creating that blueprint."

While these projects have already begun, researchers at The Fetal Center are assiduously pursuing the next health challenge.

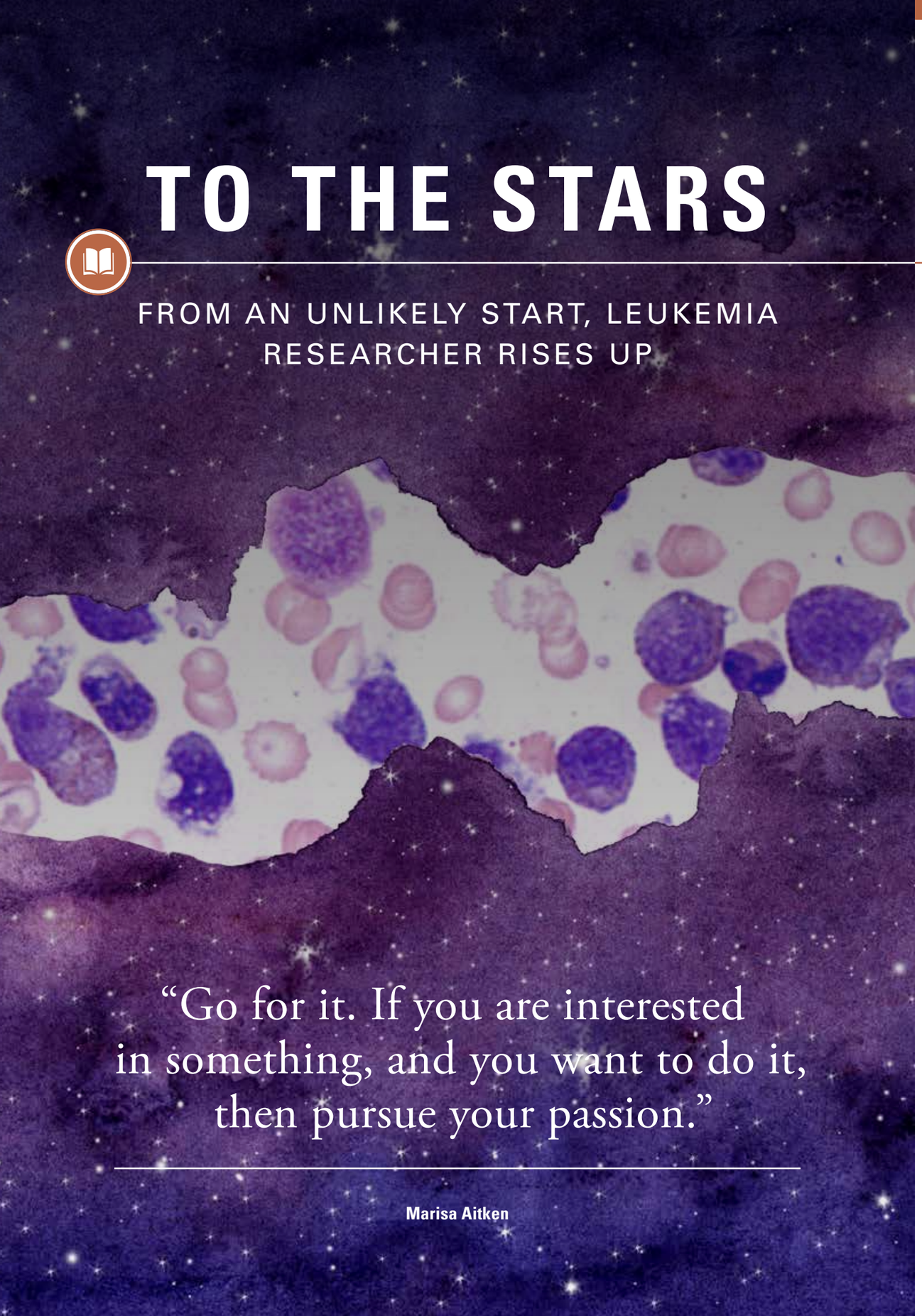
"Every time we close a door, there are three more doors behind it that we need to close, and that requires research and funds. Philanthropy is exceptionally important," says Johnson. He explains that patients suffering from rare diseases benefit from philanthropy in particular because those diseases rarely receive as much federal funding as common ones.

"Additional funding would allow us to move faster and broader," adds Tsao. "We could move in parallel with what we are already doing and develop tools like simulations to improve safety."

Through the help of our philanthropic community, we can keep closing research doors and continue improving the lives of babies before they are born.

# TO THE STARS

## FROM AN UNLIKELY START, LEUKEMIA RESEARCHER RISES UP



"Go for it. If you are interested in something, and you want to do it, then pursue your passion."

**Marisa Aitken**

Pursuing dual roles as a scientist and physician, Marisa Aitken fuses laboratory-based discovery with the human touch of caring for patients.

At first, Marisa Aitken found the idea of becoming a scientist repugnant.

"To me, science was mixing A and B together in a chemistry lab and seeing if they explode," she says.

Instead, Marisa dreamed of emulating her father's career as a physician. In college, she agreed to a summer research program only as the price of obtaining a letter of recommendation to medical school from her chemistry professor.

"Sure enough, I hated the first two weeks," she recalls. "I had no idea what I was doing. I was counting cells in a microscope to see if certain drugs killed them."

An MD/PhD student who worked across the hall brought Marisa to a children's hospital and introduced her to a boy with leukemia, the disease she had studied so reluctantly.

"If there was ever a proverbial lightbulb that lit up in my head, that was it," Marisa says.

Now approaching the completion of her own MD/PhD—offered jointly through McGovern Medical School at UTHealth and The University of Texas MD Anderson Cancer Center UTHealth Graduate School of Biomedical Sciences—Marisa weaves a synergy of medicine and science.

She spends most of her time in a laboratory researching leukemia, devoting Friday mornings to help treat patients at an MD Anderson leukemia clinic. Her clinical time keeps fresh in her mind the faces—and lives—behind the disease she studies. She also draws on her scientific knowledge to help patients understand leukemia and how new therapies work to heal their bodies.

"I'm so unbelievably privileged to be pursuing a career where I can engage my own curiosity in a way that benefits other people," says Marisa, an inaugural recipient of the Dr. John J. Kopchick Fellowship at MD Anderson UTHealth Graduate School. "That's such a profound and wonderful position to be in."

# Ad Astra

Several times a year, Marisa meets with a group unique to MD Anderson UTHealth Graduate School called Ad Astra (Latin for "To the Stars"). The group provides a forum for female MD/PhD students to discuss challenges and opportunities in their future careers and learn from female leaders in the field. Ad Astra began as an initiative of Dianna M. Milewicz, MD, PhD, who was concerned with the number of female candidates dropping out of the program. Discussions have ranged from leadership and interviewing skills to family planning and obstacles women face in medical science.

**Dianna M. Milewicz, MD, PhD**

President George H. W. Bush
Chair in Cardiovascular Medicine
Division Director, Medical Genetics
Vice Chair, Department of Internal Medicine
McGovern Medical School at UTHealth

"I've been really fortunate, for the most part, to be seen as a student or as a scientist and not specifically a female in those roles," says Marisa, who believes society has become more accepting of women in scientific fields. "But I still try to avoid pitfalls like understating my opinion because I'm a woman. I think these are sometimes things that we subconsciously do because that's what women around us do, whereas men are less likely to do those things."

Reflecting on the disparity between the percentage of women in scientific degree programs and those who actually pursue careers in the field, she suspects family pressures and the realities of childbearing may lead some women to abandon their initial goals.

"I think starting a family while pursuing a scientific career is very manageable, but it requires more than just yourself," says Marisa, whose husband works at The University of Texas MD Anderson Cancer Center and discusses with her how they can support each other's aspirations. "A supportive spouse or significant other really makes a difference."

As she looks forward to a career as a physician-scientist, she hopes to split her time between leukemia research and clinical practice much as she does now. And Marisa hopes that girls with scientific aspirations will take one clear message from her accomplishments.

"Go for it," she says. "If you are interested in something, and you want to do it, then pursue your passion."

Michele K. Herring, MD, celebrates her 60th birthday with her husband and children. From left to right are Jimmy, Joey, Michele, Andy, Meghan, and Matt.

## ALUMNI SPOTLIGHT

Michele K. Herring, MD '87, excelled in her medical education at McGovern Medical School at UTHealth and helped build a thriving internal medicine practice while raising four children.

"It's important for young female medical professionals to have strong women mentors to look up to," she says. "There were significantly more male students and faculty than females when I started medical school, but I drew inspiration from a few exceptional women faculty."

Herring's first child came during her second year at McGovern Medical School, and she had her second child just after graduating. Balancing her demanding career and robust family life has always been challenging, but she has earned career honors like becoming Chief Resident while rarely missing family activities.

Herring joined a medical clinic with three female internal medicine physicians in 1992 with the goal of creating a unique part-time primary care practice opportunity allowing physicians to manage a healthy work-life balance. After 27 years, Herring continues to manage this successful clinic model that has since doubled in size.

"My training at UTHealth exposed me to a variety of experiences," says Herring. "It helped prepare me for a rewarding career and full life."

Each year, Herring and her husband support the Dean's Excellence Fund at McGovern Medical School to open more opportunities for students like her to succeed.


# PERFECTLY IMPERFECT

A MIRACULOUS HEART PROCEDURE OPENS A NEW WORLD FOR A TEENAGER AND HER FAMILY

**1%** of babies in the US are born with a congenital heart defect (about 40,000).

**25%** of babies with a congenital heart defect have a critical defect that often requires surgery in their first year of life.

**1.4 million** adults and **1 million** children in the US have a congenital heart defect.

"When we treat children for congenital heart disease, we aim to set them up for 80 to 90 years of success. Every decision I make as a surgeon is the same decision I would make for my own child."

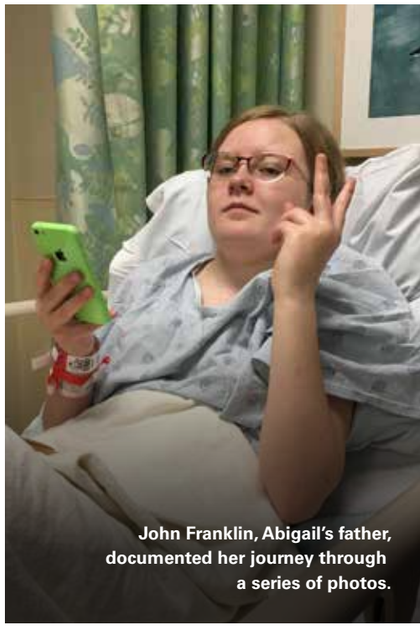
**Jorge D. Salazar, MD**

John P. and Kathrine G. McGovern Distinguished Chair
Professor and Chief, Division of Pediatric
and Congenital Heart Surgery
McGovern Medical School at UTHealth

Eve and John Franklin knew something was wrong with Abigail's heart before she was born. An ultrasound revealed it was struggling to keep pace with her growing body.

"The doctors told us to prepare for the worst," says Eve.

Continuous monitoring and countless tests grew into a cloud of anxiety that lingered long after Abigail's birth at 38 weeks. Upon delivery, doctors whisked her to the newborn intensive care unit to receive a pacemaker to regulate her heart's rhythm.



John Franklin, Abigail's father, documented her journey through a series of photos.

## One in a million

Abigail was born with a rare defect called congenitally corrected transposition of the great arteries, where the connections of her heart developed backward. Her right ventricle, which normally supplies blood to the lungs, pumped blood to her body, while her left ventricle supplied blood to her lungs.

Often, the tremendous strain on the right ventricle to pump blood to the body leads to heart failure. But Abigail was one in a million—in one in a million: Her heart baffled doctors by functioning despite its defect.

Over the next 15 years, doctors learned Abigail's heart also had a severe obstruction of blood flow to the lungs, a leaky valve, and a hole in her heart. Remarkably, these imperfections composed an unlikely harmony that preserved her heart through childhood.

"Her doctors called her perfectly imperfect," says Eve. "Every error had a correction that just made things work."

Although Abigail struggled with physical activities like running and riding bikes, she learned to compensate and enjoy life. "The only time I noticed a problem," Abigail explains, "is when something big happened, like being exhausted during a walk in the summer heat."

The improbable harmony of Abigail's heart began crumbling in 2017. Climbing a flight of stairs turned her blue as her heart struggled to supply her body with oxygen-rich blood. Every doctor she visited said a heart transplant was her only option. But a transplant is a risky last resort, often bringing its own complications.

"When they told us this was Abigail's only option," explains John, "it was like someone predicting something terrible is going to happen—maybe not today or tomorrow, but it will happen."

Eve and John also knew Abigail's deteriorating heart might prevent her from pursuing her hopes and dreams, like becoming a cardiologist and a mother.

## Fixing Abigail's heart

Then in June 2018, Eve found herself staring at her phone in disbelief and hope. A nurse from the Children's Heart Center at Children's Memorial Hermann Hospital called to say an innovative surgeon, Jorge D. Salazar, MD, was certain he could fix Abigail's heart.

"Abigail's situation was incredible," says Salazar. "We discovered her obstruction of blood flow to the lungs trained her left ventricle to work much harder than necessary. By straining to pump blood across her obstruction her entire life, it trained itself for its intended role of pumping blood to her body."

Ordinarily, the left ventricle could not tolerate a new demanding role of pumping blood to the rest of the body instead of just the lungs. But Abigail's imperfect heart enabled a perfect solution—its obstruction made possible a surgery to give her a normal heart.

In September, Salazar and his team completed a 12-hour open-heart surgery, where they closed the holes and performed a double-switch operation to rewire the arteries and ventricles. They were also able to remove her pacemaker to allow her repaired heart to regulate its own rhythm. Abigail now has a heart that functions normally.

The Franklins no longer worry Abigail will need a heart transplant. Eve recently went running with Abigail, something they could not do before the operation. "The freedom and the joy of even going for a run with Abigail just feels so good," says Eve. "It's a whole new world for us, and Dr. Salazar made it possible."

> "Before my surgery, I wanted to be a cardiologist, but I thought it was just a dream," says Abigail. "I still want to be in the medical field. I can be anything."

And, she can put her whole heart into it.

"Promise me you'll **remember**,
you are **braver** than you believe,
**stronger** than you seem,
and **smarter** than you think."

*—Winnie the Pooh, A. A. Milne*

# ARTIST, EDUCATOR, PHILANTHROPIST

## FORMER DEAN PAINTS MASTERPIECE AT UTHEALTH SCHOOL OF DENTISTRY

"Dentistry is an art," says Johnson, a current professor and former Dean of UTHealth School of Dentistry. "You are creating something beautiful that will improve a child's appearance and speech."

When reconstructing a child's tooth or filling a cavity, Ronald Johnson, DDS, never saw his work strictly as a dental procedure.

An accomplished painter and sculptor since childhood, Johnson's career in pediatric dentistry merged his desire to help children with his artistic creativity. Six decades of clinical practice, teaching, and academic leadership have shown him the challenges and rewards of the field.

"Children are very honest," he says. "You have to know how to communicate with them. They will notice everything you do, so you have to be pleasant and know how to treat them even when they are disruptive. You can't lose your peace of mind."

A graduate of the University of Pittsburgh and Harvard University, Johnson has taught and practiced at five hospitals and five schools, serving as Dean of the School of Dentistry from 1996 to 2002. He developed new techniques to improve pediatric treatment, including a special children's headrest to allow a surgical team optimal positioning during operations.

Johnson taught pediatric residents the most effective methods to treat patients and help meet a community need to increase the number of minority dentists. He placed special emphasis on ensuring residents learned to work in a cooperative manner with dental assistants and other staff members.

"Pediatric dentistry must be a sit-down, interactive process where the team works together, maintains a pleasant attitude, and manages the child's behavior with kindness," he says.

In 2017, Johnson established the Ronald Johnson, DDS Research and Academic Excellence Impact Fund at the School of Dentistry. Created to honor his mother, who supported him in his pursuit of dentistry, the endowment provides resources for the academic and research needs of pediatric residents.

The fund helps fill a vital need for resident research support. Every pediatric dental resident must conduct a research initiative to graduate from the program, but the Department of Pediatric Dentistry has limited funds to offset expenses such as equipment, surveys, and tests. As a result, residents often must pay these costs out-of-pocket, delaying their research or forcing them to abandon their initial projects for less expensive alternatives.

"They have a tough enough program to complete already, so I think it's important that we provide them funding to conduct their research," Johnson says.

When the UTHealth Pediatric Dentistry Clinic completed renovations to its clinic space in 2017, the school honored Johnson's generosity by naming the clinic's state-of-the-art conference room after him and displaying one of his paintings prominently on the wall.

"Dr. Johnson's leadership and generosity continue to make a difference for our residents and the patients they serve," said John A. Valenza, DDS, Dean of the School of Dentistry. "We are honored to forever associate his name with the care of children, a mission to which he has devoted his life."

Having achieved the highest levels of academic dentistry, advanced the field through innovation, and trained countless pediatric dentists, Johnson never forgets the children at the center of his work—and the simple rewards of reaching even the most difficult patients.

"If I can befriend them and make them smile, I've won the battle," he says.


**Ronald Johnson, DDS, continues to embrace the many facets of life, enjoying his passion for art (top photo with John A. Valenza, DDS), honoring the memory of his mother (middle), and supporting the training of pediatric dental residents (bottom) who follow in his footsteps.**

# A HEALTHY FUTURE

## MAKING HEALTHY OPTIONS FIRST CHOICE FOR THE WHOLE FAMILY

When eating out, Caroline chooses grilled chicken over chicken nuggets, broccoli instead of fries, and water rather than soda without hesitation—smart choices for a five-year-old faced with a menu full of unhealthy options.

The source of such wisdom is her mom Michelle Urbina, who has completed the Healthy Eating Active Living (HEAL) program, an initiative of UTHealth School of Public Health. HEAL helps women who are pregnant or have young children embrace a healthier lifestyle for themselves and their family.

Michelle, age 24, enrolled when she was expecting Clark, now a thriving infant. She credits the program, run by UT Physicians, with transforming her life. UT Physicians is the clinical practice of McGovern Medical School at UTHealth.

"I'm proof it totally works. I've lost 30 pounds and feel better in every way," she says. "My whole family is benefiting because I'm sharing everything I've learned with them and putting it into practice each day."

The program offers weekly group classes that include cooking demonstrations, exercise sessions, fresh fruit and vegetables (complete with healthy recipes) for participants to take home, and health education and support on topics such as breastfeeding.

Since its inception in 2014, more than 500 women and their families, often from medically underserved communities, have reaped HEAL's rewards.

"I went to the classes with my mom, who lost 15 pounds. She has struggled with her weight for years and has all the sicknesses—diabetes, high blood pressure, and high cholesterol," Michelle says. "I was overweight, too, and knew if I carried on, I would be taking pills in my 30s. I wanted to avoid having health problems."

Led by a registered dietitian and community health worker, each class covers a specific topic, such as food substitution. Michelle learned how to "cheat with beets."

"I grate the beetroot and mix it into tomato sauce. Instead of oils or butter, I'm using herbs and spices to add flavor," she says. "In my culture, we eat a lot of tortillas, so all these tricks are very useful."

Michelle Urbina and her daughter, Caroline, attended a HEAL class in the demonstration kitchen at the School of Public Health to learn how to cook healthy, affordable meals.

Michelle's discerning eye and healthy habits have already rubbed off on Caroline.

"My daughter eats her vegetables. Whenever we go to a restaurant, she picks the healthy options," Michelle says. "If you start them early, it's easy. I'm going to make Clark's baby food from scratch with beets, carrots, and spinach."

The exercise demonstrations also prompt steps in the right direction.

"I had never tried yoga or meditation before. It really opened my mind, and now I know what to do whenever I'm feeling stressed," she says. "I have just joined a gym for the first time ever. I go with my husband, and he's so proud of me."

Since losing weight and becoming more physically active, Michelle has more energy and self-confidence, not to mention an exciting new job helping disabled people gain employment.

"When you're feeling positive, opportunities come your way, and good things happen," she says. "HEAL completely changed my life, and I'm so grateful."

Shreela V. Sharma, PhD, RDN, LD, designed the program along with the late Philip Nader, MD, and colleagues at the Michael and Susan Dell Center for Healthy Living and she is currently evaluating its effectiveness.

"The HEAL program is all about empowering women like Michelle with the knowledge and practical guidance to make healthier choices, which are also fun, tasty, and convenient," Sharma said. "HEAL is unique because it links health care organizations to prevention services. By laying the right foundation at a prime time, women are reducing the risk of developing common chronic diseases for themselves and their unborn babies or infants and setting themselves up for a healthy future."

## CHARITABLE FOUNDATION INVESTS IN WOMEN'S HEALTH

The Vivian L. Smith Foundation, a Houston nonprofit organization, learned about the HEAL program and its potential to reduce the rates of maternal mortality and obesity in Texas. Eager to help transform the lives of new and expectant mothers and their children, the foundation made a commitment to support the HEAL program in partnership with the Nourish Program.

"We are proud to support the HEAL program and the lifesaving difference it makes," says Ransom C. Lummis, President of the Vivian L. Smith Foundation. "We hope our gift will serve as a catalyst for this initiative to spread throughout the state."

## NOURISH PROGRAM HELPS NUTRITION EXPERTS CHANGE LIVES

The Nourish Program at UTHealth School of Public Health boasts state-of-the-art facilities—a demonstration kitchen, holistic garden, and simulation lab—to integrate nutrition and health. Our dedicated faculty unlock the full potential of these essential tools to help our community.

Shreela V. Sharma, PhD, RDN, LD, serves as Assistant Director of the School of Public Health's dietetic internship program, training students to treat and prevent disease through nutrition.

As part of Sharma's commitment to public health and programs like HEAL, she and her husband, Vibhu Sharma, recently established the Shreela and Vibhu Sharma Endowed Fund for Excellence in Community Nutrition, Health, and Wellness at the School of Public Health. The fund will support doctoral fellows who conduct research that makes programs like HEAL more effective.

**Shreela V. Sharma, PhD, RDN, LD**

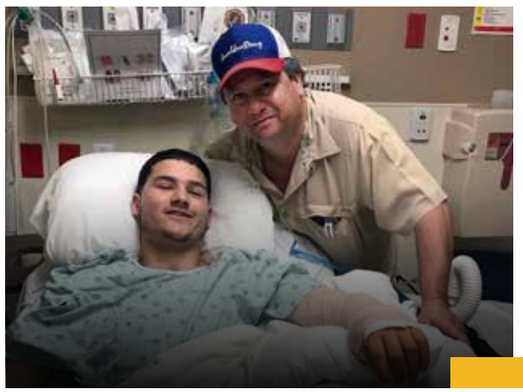
**Associate Professor, Department of Epidemiology, Human Genetics, and Environmental Sciences**
**Assistant Director, Dietetic Internship Program**
**Michael & Susan Dell Center for Healthy Living**
**UTHealth School of Public Health**

# ONE MILESTONE AT A TIME

## UTHEALTH EXPERTS HELP A TEENAGER RECLAIM INDEPENDENCE AFTER A TRAUMATIC INJURY DERAILS HIS LIFE

David Jacob Anzaldua smiles with his companion, Deuce, who joined him on countless outdoor excursions across Texas.

A Life Flight helicopter transferred Jacob to Memorial Hermann (top), where he spent weeks receiving advanced postsurgical care (bottom).



David Jacob Anzaldua awoke to his Chevy Silverado biting the rumble strips that guide US Highway 79 in Jewett, Texas. He jerked the wheel, but his truck began rolling across a ditch before wrapping around a tree outside Leon High School, where he once owned Friday nights as an all-state linebacker.

It was the morning before the 18-year-old freshman's final exams at Tyler Junior College, and he was determined to finish the year strong. He planned to transfer to a four-year university to play college baseball and pursue a degree in kinesiology—but one moment of drowsiness on his way home after spending the night in College Station, Texas, changed his life forever.

"I knew something was wrong immediately," says Jacob. "I couldn't lift my arms to turn down the radio or turn off the truck." The last thing he remembers is the pulsing blades of the helicopter that carried him to a nearby hospital in Temple.

The crash fractured Jacob's C4 vertebra halfway down his neck, paralyzing him from the neck down.

Doctors in nearby Temple, Texas, immediately performed a procedure to fuse Jacob's injured vertebra to stabilize his spine and decompress the nerves, but they believed he would never move again. Severe injuries to the C4 vertebra often cause quadriplegia, and patients may need a ventilator to breathe.

Five days after his accident, doctors transferred him to Memorial Hermann-Texas Medical Center to receive advanced postsurgical care led by UTHealth neurosurgeon Daniel H. Kim, MD. Kim's team helped Jacob fight off life-threatening bouts of pneumonia, infections, and breathing complications. Since then, UTHealth experts from departments such as physical medicine and rehabilitation, orthopedic surgery, and psychiatry and behavioral sciences have taken charge of Jacob's recovery.

"Time, medication, and therapy are among the most important factors in recovery from a life-changing injury. But Jacob's attitude and incredible support system have helped him persevere beyond expectations."

**Isaac Hernandez Jimenez, MD**

Assistant Professor
Department of Physical Medicine and Rehabilitation
McGovern Medical School at UTHealth

## A winning attitude

For nearly a month, a tracheostomy in his neck tethered him to a ventilator. He felt trapped inside his own body, unable to move.

Family and friends visited his bedside daily and helped him muster the courage and strength to push through. "My dad raised me to find my way through any obstacle," says Jacob. "I realized this accident may alter my life, but it doesn't have to ruin it."

Kim also infused Jacob and his family with a crucial dose of hope. "Dr. Kim told me physical therapy would be my new favorite sport," says Jacob. "With hard work and determination, I could still find a way to do the things I love."

One month after his accident, Jacob wholeheartedly dove into rehabilitation at TIRR Memorial Hermann with UTHealth faculty. The teenager—who once traveled across Texas hunting, fishing, and playing sports—began relearning basic life functions.

Isaac Hernandez Jimenez, MD, directs Jacob's rehabilitation team at TIRR Memorial Hermann, which includes physical, occupational, recreational, respiratory, and speech therapists, as well as psychologists, rehabilitation nurses, and social workers. Each member of the team works together to help Jacob regain independence.

"Between Jacob's extraordinary willpower and the rehabilitation team's expertise, he has already reached milestones that others thought were unattainable," explains Hernandez Jimenez.

## Dreaming big

Jacob hit his first milestone in his first week of rehabilitation: slightly raising his left arm. By October, he was brushing his teeth with a special toothbrush. Setting and reaching new goals sparked a greater desire.

"I go hunting every year," he says. "Deer hunting season opened in September, and I wasn't going to miss it."

In November, a utility vehicle transported Jacob and his wheelchair into the brush of Loranger, Louisiana. Half a year after his devastating accident, he again felt the thrill of the hunt he has known since childhood.

With help from UTHealth experts, Jacob continues pushing himself to regain more independence. Psychologists and other behavioral health specialists have helped him turn his aspirations toward the future. Jacob plans to return to college to complete a psychology degree, which will enable him to counsel others who have experienced traumatic injuries.

"I'm realistic, but I don't set limitations on myself," says Jacob. "I'm going to walk again, or I'm going to die trying."

**Top: Jacob's father, Ruben, is a pillar of his support system, encouraging him to persevere through rehabilitation.**

**Bottom: Jacob's mindset and support system are key to the sweeping strides he has made in recovery. He focuses on staying positive, and his family and friends encourage him when challenges stand in the way.**

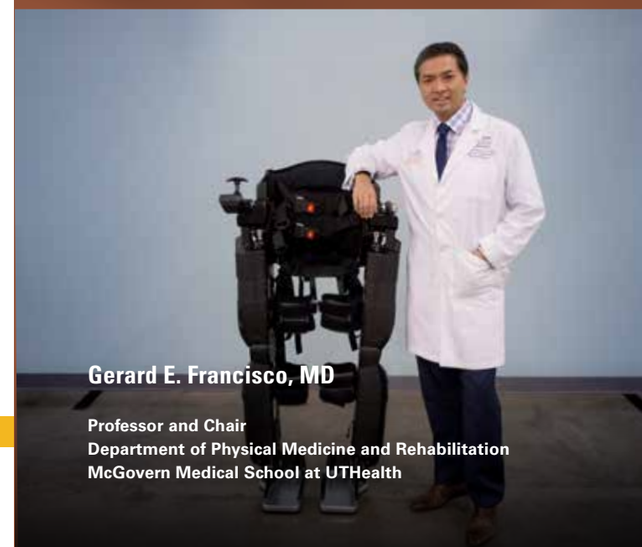
## A LEADER IN SPINAL CORD INJURY REHABILITATION

The Department of Physical Medicine and Rehabilitation at McGovern Medical School, led by Gerard E. Francisco, MD, is dedicated to advancing health care, education, and research in spinal cord injury rehabilitation. In partnership with the Spinal Cord Injury Program at TIRR Memorial Hermann, the department has a rich history of improving outcomes for patients with devastating spinal cord injuries.

"Treating patients with spinal cord injuries is incredibly rewarding," says Francisco. "The new technologies we have access to, including robots and exoskeletons, can substantially improve the function and quality of life for our patients."

Francisco is investigating how robotic lower-limb exoskeletons may help train patients to walk again after a stroke. The knowledge gained from this study will help develop biorobots and powered, wearable exoskeletons that could benefit patients with spinal cord injuries. Additionally, UTHealth physical medicine and rehabilitation researchers at the NeuroRecovery Research Center at TIRR Memorial Hermann are investigating how nonsurgical brain and spine stimulation can boost recovery of arm movement in people paralyzed from the neck down.

"We are looking beyond just helping patients walk again," he says. "We are empowering them through rehabilitation and helping them contribute to society, while guiding them toward happiness."



**Gerard E. Francisco, MD**

**Professor and Chair**
**Department of Physical Medicine and Rehabilitation**
**McGovern Medical School at UTHealth**

# TEACHING PARENTS TO BE TEACHERS

## TURNING EVERYDAY MOMENTS INTO TEACHABLE MOMENTS

Tricia Zucker, PhD, partners with Yellowstone Academy for the "Teaching Together–STEM" study.

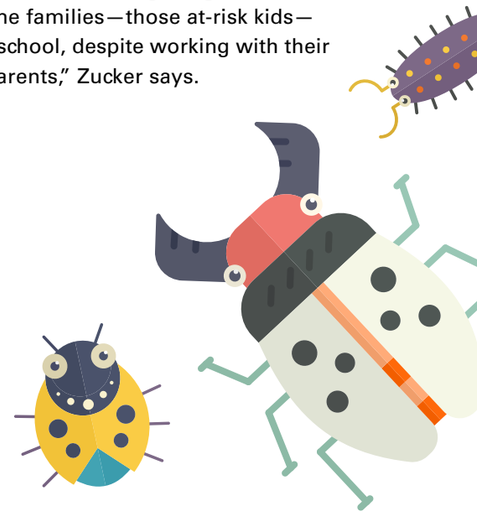
Going on a bug hunt does not have to be an icky adventure. It can be a learning experience, a quest for discovery. And maybe a little bit icky to keep it fun.

"We had a mom and daughter looking under bricks to find bugs to talk about," says Tricia Zucker, PhD. "They were looking at a bug to see if it had as many legs as that spider they found earlier. They are learning a process of thinking about the world around them and developing the child's natural curiosity."

Zucker is the principal investigator for "Teaching Together–STEM," a $2 million, four-year National Science Foundation (NSF) grant that the Children's Learning Institute (CLI) at McGovern Medical School at UTHealth shares with the Children's Museum of Houston. Their focus is on teaching and learning barriers faced by low-income families with four-year-old, pre-kindergarten children in the fields of science, technology, engineering, and math (STEM). "If you believe parents are their children's first and most important teachers, then we want to fully equip them to teach their children everything they need to know at the various phases and stages of their learning," Zucker explains.

Zucker understands the basic challenges parents face when trying to engage their children in learning. She has daughters, including a four-year-old. She also tutored fifth-graders after school who could not read. "I didn't know how to help them, so I went back to school in the evenings to get a PhD because people told me I would really like doing this. And it turns out that I do."

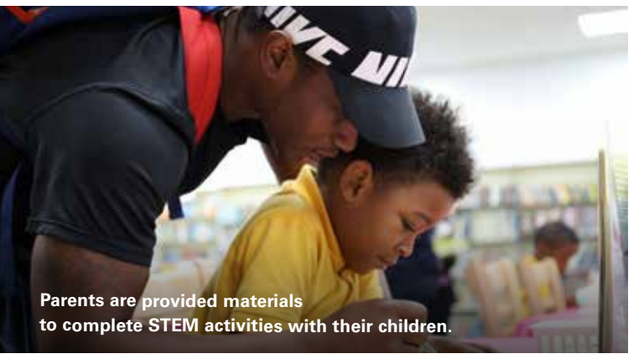
The NSF project began in October 2018. It builds on a language and literacy study by CLI and the museum that was funded by the U.S. Department of Education. "In this past study, we found that we did not do enough to get children from low-income families—those at-risk kids—truly ready for school, despite working with their teachers and parents," Zucker says.



"We teach parents to ask 'how and why' questions to get their kids to think like scientists and mathematicians do. It's just reframing how they would do your everyday routines and not being afraid of using technical words with their child."

**Tricia Zucker, PhD**

**Harriet and Joe Foster Distinguished Professor**
**Associate Professor, Pediatrics**
**Children's Learning Institute**
**McGovern Medical School at UTHealth**



Parents are provided materials to complete STEM activities with their children.

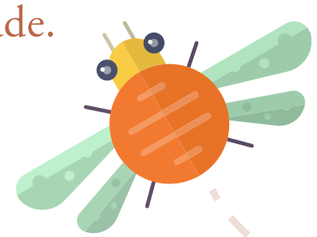
She quickly points out that this is not because of a lack of desire from the parents. "Every parent's fundamental desire is for their kids to have the best education possible and to use that for opportunities for a rewarding career and successful future."

Barriers for parents may have one or more of three characteristics: Parents may not have the time to learn the best way to work with their children, they may not have the financial resources, or they may have anxieties about teaching math and science. Zucker believes when parents see that math and science can be as simple as counting, grouping, and comparing, they will feel more at ease working with their preschooler. "We want to turn everyday moments into teachable moments and give parents tools to realize the long-term benefits of a great education."

The study divides 360 parent-child pairs from English- or Spanish-speaking families into four groups. One set is the control group, which receives only preschool services at their school. A second group has access to STEM workshops hosted by the museum, which incorporate informal, hands-on, fun activities like building bridges or catapults. Families in the third group receive the workshop plus STEM activity kits to use at home. Parents in the fourth group also receive financial incentives for completing any informal science or math activity with their child.

Zucker says some educators believe pre-kindergarten is a critical period for engaging families, which is why she hopes to see an improvement in how parents talk about STEM with their children during normal activities. "If you can get parents and children on the STEM trajectory at the pre-K juncture where they believe anything is possible, then anything will be possible."

And possibilities are where dreams are made.



# ENGINEERING FUN AND LEARNING AT SCIENCE NIGHT

How do you ignite scientific wonder in kids? Let them concoct a bucket of slime to explore the states of matter—and get a little messy.

More than 250 children and their families hung out with students from The University of Texas MD Anderson Cancer Center UTHealth Graduate School of Biomedical Sciences during its annual Science Night on January 26, 2019, part of the school's Community Outreach Program.

Throughout the evening, children joined fun, scientific, and sometimes messy experiments, which included a build-your-own-lava-lamp station illustrating the concept of density and a disc-drop game demonstrating how radiation interacts with the human body.

The Community Outreach Program is a student-run organization at MD Anderson UTHealth Graduate School that serves the Houston community through fun and educational scientific programs. In addition to encouraging scientific interest in elementary through high school students, the Community Outreach Program helps the Graduate School students learn valuable teaching skills.

# TECHNICALLY SPEAKING

## WOMEN OF STEM IN HEALTH CARE

Researchers in STEM fields—science, technology, engineering, and math—lead humanity into the frontiers of discovery. Three researchers at UTHealth School of Biomedical Informatics explain what they do, why they do it, and how the next generation of female researchers can use their knowledge to improve health care and save lives.

Throughout my career, my research has covered a wide range of topics from hearing-impaired children creating their own languages, to information foraging in hospitals, to how people and technology integrate within systems. My goal is to develop tools that help health care teams receive the right information at the right time. Distributing information across a system changes the way we think—and the way we work. This is true in everyday life. For example, we don't remember phone numbers now because they are in our phones, or we can simply look the number up online. As technology evolves, so does the way we work.

I trained in psychology and linguistics. Both fields have a strong representation of women. UTHealth School of Biomedical Informatics also has very diverse faculty and students. At the school, individuals may have trained in social science, engineering, or nursing. I think young women should find their place and push forward with what interests them, whether that is in STEM or another area. I tell my nieces the biggest boundaries they will find are the ones they choose to accept.

**Amy Franklin, PhD**

**Assistant Dean for Faculty Affairs and Business Development**

**Associate Professor**
**UTHealth School of Biomedical Informatics**

I always wanted to be a nurse. When I became one, I taught myself how to program and started working on databases for my hospital. Continuing my education at the School of Biomedical Informatics seemed like a perfect match.

We cannot provide nurses at a fast enough rate to keep up with the demand of our aging population. So, research at Cizik School of Nursing at UTHealth includes developing a smart apartment for older adults, people with disabilities, and anyone who needs help in the home. Because patients are at the center of health care, we want the smart apartment to have seamless and easy-to-use technology that helps people stay at home as they age. The system will notice any changes to one's movements or actions that could indicate a stroke or massive fall—and notify the right people to get help. Ultimately, it could help prevent these events.

Women interested in STEM should broaden how they think by taking liberal arts courses like philosophy and social sciences. We need people who can think outside that technology box. Individuals with a liberal arts background can bring different experiences to solving problems.

**Constance M. Johnson, PhD '03**

**Maria C. and Christopher J. Pappas Family Distinguished Chair in Nursing**
**Lee and Joe Jamail Distinguished Professor in the School of Nursing**
**Associate Dean for Research**
**Cizik School of Nursing at UTHealth**

**Professor**
**UTHealth School of Biomedical Informatics**

Prior to the implementation of electronic health records, a baby died from a medication error at a hospital. The error was caused by a breakdown in the workflow and the paper documentation. Later, when I saw what we could do with an electronic health record, I wondered if the baby could've lived had we not relied on paper records.

Several years later, I was a project manager overseeing the implementation of an electronic health record system in nine military sites in the United States and abroad. At the same time, I started working on my doctorate in nursing. My goal for the future was to teach so I applied to the School of Biomedical Informatics after I graduated. Within a year of graduating, I came here to work.

Biomedical informatics and technology, when implemented correctly, will deliver accurate data to the providers in a timely manner to improve decision making. When you improve access to accurate information, you can improve patient care.

I suggest young women get exposure to STEM so they can expand their educational options and see the impact they can make on improving health. Have patience and endurance—don't give up.

**Angela Ross, DNP**

**Assistant Professor**
**UTHealth School of Biomedical Informatics**

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The Memorial Hermann Red Duke Trauma Institute is one of the busiest Level I trauma units in the nation, and LBJ Hospital's Level III trauma center is the busiest Level III unit in the state.

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OUT IN FRONT: WOMEN'S AND CHILDREN'S HEALTH 2019

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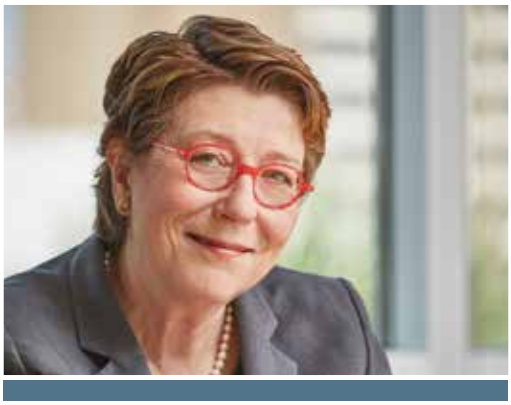

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