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SPOTLIGHT: TRANSPLANTATION//p. 8

A. OSAMA GABER, M.D., FACS, *DIRECTOR OF THE HOUSTON METHODIST J.C. WALTER TRANSPLANT CENTER, ENVISIONS A PLACE WHERE TRANSPLANT RECIPIENTS CAN GATHER FOR SUPPORT, GUIDANCE AND A SENSE OF COMMUNITY. HE SHARES HIS THOUGHTS ON DEMYSTIFYING TRANSPLANTATION, AND WORKING ALONGSIDE EXCEPTIONAL TALENT WITHIN THE TEXAS MEDICAL CENTER.*

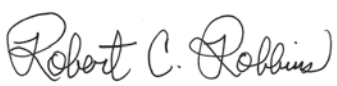
PRESIDENT'S PERSPECTIVE

ROBERT C. ROBBINS, M.D.
President and
Chief Executive Officer,
Texas Medical Center

I recently attended a meeting for the Clinical Research Design team—one of the six design team components of the Texas Medical Center Strategic Plan—and was impressed by many of the ideas that were presented there, not the least of which was a valuable initiative to develop a common TMC Institutional Review Board (IRB).

We have the best and the brightest clinicians and researchers here within the Texas Medical Center, and the representative design team participants bring unique perspectives and ideas to the table. I had the opportunity to hear firsthand from the clinical research design team about the value of a common IRB, focused on multi-institutional collaboration and third-party clinical research within the medical center.

All of our members are committed to providing the best possible patient care, and research is essential to that mission. In addition to the individual IRBs maintained by the institution across the Texas Medical Center, we are exploring how a common IRB could help streamline multi-institutional research efforts and allow for a single point of contact for researchers and third parties wishing to conduct research within the medical center. This approach could potentially serve to offer a single entry point for innovation and industry, to marry great ideas and the collective passion of researchers across this campus. As all researchers and clinicians understand, the review process can be daunting. The goal of a common TMC IRB would be to streamline the process, and provide resources to assist investigators in shepherding research proposals to increase the research conducted and, in turn, discoveries made.



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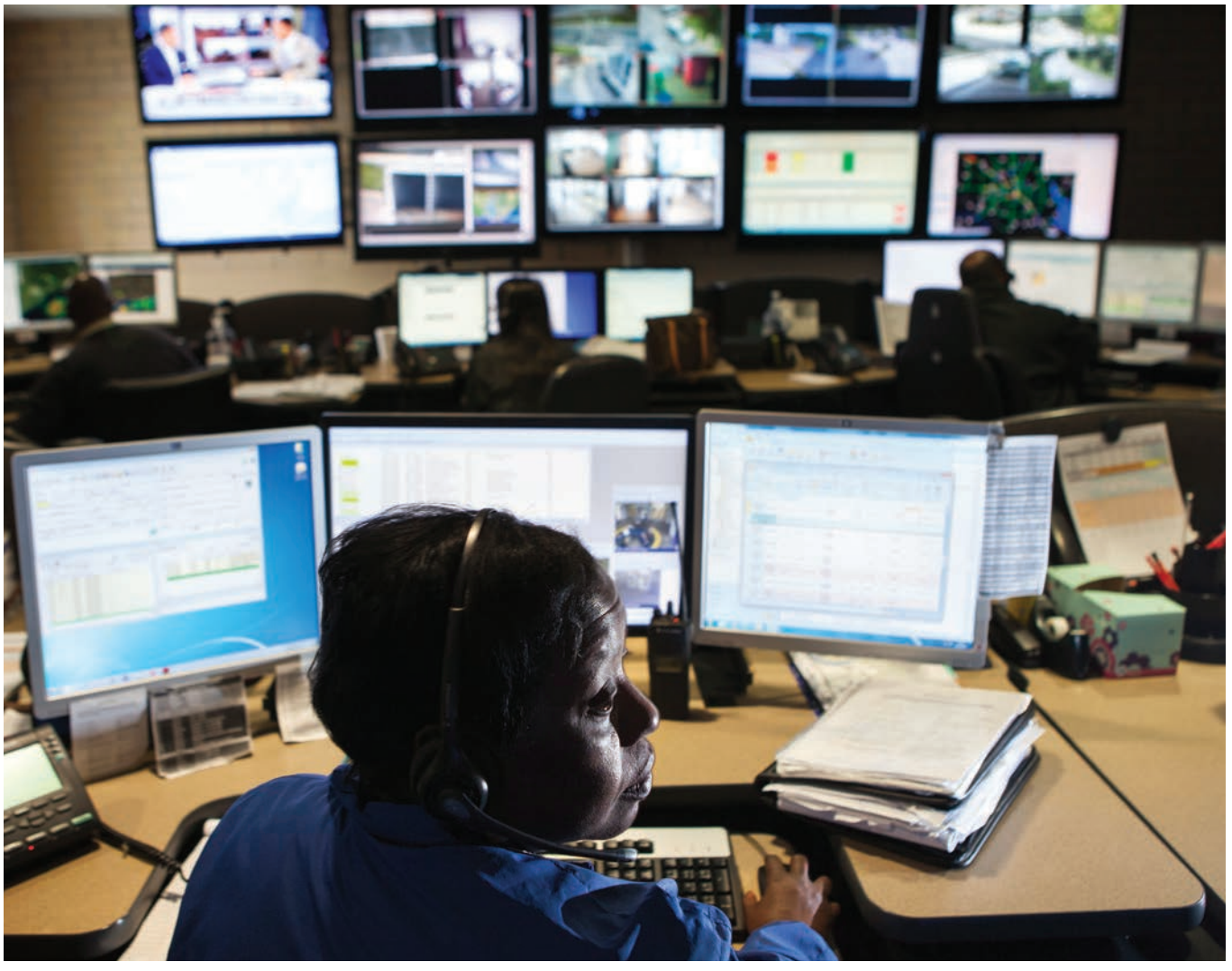
A Watchful Eye on the Medical Center

THE CITY OF HOUSTON WAS HIT HARD BY TROPICAL STORM ALLISON IN 2001 AND HURRICANE IKE IN 2008. TODAY, SAFETY OFFICERS AND RESEARCHERS SHARE WHAT THE TEXAS MEDICAL CENTER HAS LEARNED FROM STORMS PAST, AND HOW THE COMMUNITY IS POSITIONED TO HANDLE THOSE IN THE FUTURE.

By Amanda D. Stein



The Texas Medical Center operations center serves as a hub for the monitoring of weather and water levels in Brays Bayou. (Credit: Scott Dalton)

Tropical Storm Allison made landfall on June 5, 2001, dropping over 15 inches of rain in three hours in the city of Houston and earning the distinction of one of the most intense rainfalls to ever hit an urban area in the United States. Severe storms and hurricanes—including Ike and Rita—have hit the region since, but none have impacted the Texas Medical Center as severely as Allison.

The most damage from Allison came from flooding in the tunnels and basements connecting several member institutions, although others were also hit with costly infrastructure damage and loss of invaluable research equipment, animals and samples. Baylor College of Medicine alone lost 60,000 tumor samples, collected over decades.

It was a costly and temporarily crippling storm, but left the Texas Medical Center member institutions united in their resolve to be better prepared in the future. The lessons learned from Allison—during which FEMA reported a total rainfall of roughly 32 trillion gallons—are evident in the storm monitoring and flood mitigation measures in place across the medical center today.

Among other improvements and measures, the Texas Medical Center adopted a Hazard Mitigation Plan in 2003, designed to improve the campus infrastructure to protect at the 500-year flood level, the widely accepted rating for critical facilities like those within the medical center.

Also included in post-Allison efforts were improvements to the existing Flood Alert System (FAS), initially developed by Rice University at the request of TMC leadership in 1997. The system is one of the few radar-based flood warning systems in the United States today, and runs real-time models of rainfall for the Texas Medical Center.

"I have staff and students that watch it literally 24/7," said Philip Bedient, Ph.D., Herman Brown Professor of Engineering in Civil and Environmental Engineering at Rice University, and the brains behind the FAS. "Allison occurred between midnight and 3 a.m. But the alert system was all automatic, and it actually worked well for as long as the power was on. The power lasted until 2 a.m., but because of the system, we knew by 1 a.m. that the medical center was going to get absolutely hammered. But there was nothing they could do at that point."

The system includes two mounted cameras, directed at Brays Bayou.

"Those are the only cameras in all of Houston that look down at a Bayou," said Bedient. "But the medical center really needs to know if they are about to get flooded, because they need to manage operations, surgeries, personnel... all of it. So they have a huge responsibility in the event of a major flood."

The stakes are much higher for hospitals during a natural disaster than they might be for non-essential infrastructure. The institutions within the Texas Medical Center are keenly aware of their dual responsibility to the community—to protect their facilities and current patients, while also preparing to meet the need for emergency medical services that will undoubtedly arise during severe weather.

To help avoid disruption to power during a storm, all of the hospitals within the medical center house backup generators, and a plan for supplying enough fuel to keep their power on for a predetermined period of time. Many also lifted their electrical switchgear to several feet above the ground.

The campus also saw the addition of more than 170 flood doors, designed to protect the most vulnerable low-lying entryways and below-ground tunnels that connect several institutions in the heart of the medical center.

"Given what happened in Allison, here we are many years later, now the Texas Medical Center would be able to lock down and actually protect themselves pretty handedly against the return of another Allison," said Bedient.

The Flood Management Group (FMG) was established in 2003 to help outline the policies and procedures for flood mitigation, and to manage the operation of the flood doors across the medical center. The FMG is a collaborative effort by the Texas Medical Center, Texas Children's Hospital, Houston Methodist Hospital, CHI St. Luke's Health-Baylor St. Luke's Medical Center, and the Children's Nutrition Research Center.

"The flood tunnel protection and communication plan established by the Flood Management Group includes mutually agreed upon protocol for identifying areas to protect, warning procedures for potential flooding, establishing a priority of protection and defining a flow for communication. It also defines training requirements for each participating institution," explained Texas Medical Center Director of Security Services Cheyne Day.

The Texas Medical Center also has a fully staffed operations center, which monitors the weather, and water levels in the bayou, around the clock. Well before the water levels reach a critical point, member institutions are in communication about the best course of action for securing the campus. Practice runs of these scenarios are conducted four times a year, to ensure all members of the mitigation teams are up-to-date on the policies and procedures for various scenarios.

"The operations center is sort of the nucleus that kind of brings together all of our member institutions," explained David Pollard, operations center supervisor. "It allows for the 24/7 monitoring and communications of any inclement weather or incidents. Of course, each member institution has their own communications centers, but some of their procedures and processes are predicated off of the communications that we are sending out.

"We have a very strong relationship with the Harris County Emergency Management, the Harris County Flood District, Rice University and the FAS3, so it is a joint effort," he said. "But we do try to do our best to be the nucleus of it all, the centralized watchful eye at all times. So while everyone is sleeping, we are still monitoring and communicating."

The medical center's proximity to Brays Bayou, paired with the area's often extreme precipitation makes it more susceptible to flooding. The City of Houston has sponsored improvements to the bayou and the Harris Gully, including a sizeable project to build a channel under Kirby drive, to help manage runoff through the gully.

Pollard has worked within the medical center long enough to recall the damage caused by Allison in 2001. He noted that the improvements to the Harris Gully box culvert—the tunnel that diverts water under the street—have delivered noticeable results.

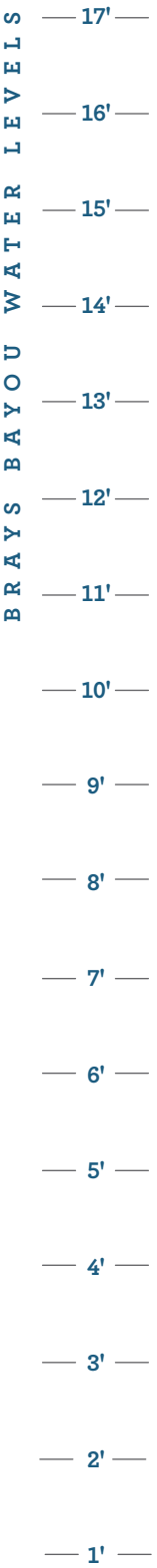
"There have been so many advancements, and so much work and money put into the Harris County Gully to help keep the Texas Medical Center from flooding," said Pollard. "It has been well tested over the past year or two and has truly held up phenomenally."

While technology can help institutions execute an evacuation promptly or divert floodwater, there is nothing that can be done to prevent the kind of torrential downpour that the city might experience during a tropical storm or hurricane. Each institution within the Texas Medical Center is committed to mitigating—through year-long planning and investments in infrastructure—the impact that a severe storm might have on their patients and facilities. It is an ongoing effort, but one that those familiar with the medical center feel confident in.

Bedient, for one, has seen plenty of bad weather. As an outspoken advocate for better hurricane protection measures for the Houston Ship Channel, he knows well the impact that one severe storm can have on the city. But he expressed confidence in the level of protection afforded by the upgrades and monitoring within the medical center.

"In terms of getting ready for the next hurricane season, I would say that the medical center, now, within the city of Houston, is probably one of the most flood-prepared and flood protected areas in the city." ■

ADVANCING FLOOD MITIGATION



The level at which the water in Brays Bayou will crest. **16 ½'**

2 The number of times the water level in Brays Bayou has crested since 2001.

1,000+ The number of people removed from the Texas Medical Center by helicopter following Tropical Storm Allison.

$5,000,000,000
The estimated total of damages caused by Tropical Storm Allison in 2001, making it the costliest tropical storm in U.S. history, according to NOAA.

The level at which all flood doors and gates are closed. **10'**

32,000,000,000,000 GALLONS The estimated equivalent of water dropped by Tropical Storm Allison. That is enough to meet the U.S. water demands for an entire year.

The level at which teams mobilize, impacted garages are closed and flood doors may be staffed. **7'**

The level at which notifications go out to the flood management group. **5'**

170+ The number of flood doors and gates located across the Texas Medical Center.

Weather conditions and bayou water levels are monitored around the clock. **24/7**

Sources: "Case Study of Flood Mitigation and Hazard Management," Bedient et al. Texas Medical Center Flood Management Group

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Putting BPA Alternatives to the Test

New technology may help identify safe alternatives to bisphenol A

By Alex Orlando

Numerous studies have linked exposure to bisphenol A (BPA)—a man-made synthetic compound used to make plastics that exists in many household items, such as grocery store receipts and plastic bottles—with various health problems ranging from poor growth to cancer. Studies conducted in young animals exposed to BPA have raised safety concerns about its use in infant bottles and toddler training cups, prompting the Federal Drug Administration to support industry efforts to find BPA alternatives. Many new compounds, including bisphenol A analogs (BPXs) are now used as substitutes. However, their effects on humans are not fully understood. Are these alternatives actually safer?

Researchers at Baylor College of Medicine and the Texas A&M Health Science Center have developed new tests that can classify the safety of these compounds using a big data approach to simultaneously query numerous biological mechanisms. The advance could offer a fast and cost-effective process for identifying safe replacements for BPA. The findings appear in the current edition of the Cell Press journal, Chemistry and Biology.

"When products are marketed, voluntarily, as 'BPA Free,' there's no guarantee of what is being substituted and how the plastic is being ranked—these other compounds are being used instead," said senior corresponding author Michael Mancini, Ph.D., professor and director of the Integrated Microscopy Core at Baylor and co-founder/co-director of the Gulf Coast Consortium for Chemical Genomics and its high-throughput screening program located at the Texas A&M Institute for Biosciences and Technology (IBT). "There's no existing accurate survey of how many of these alternatives are being used and what they are, and they're not being labeled appropriately. Having the ability to perform high-throughput screening of compounds to determine their biological activity presents an enormous opportunity for environmental studies."

BPA and BPXs belong to a class of compounds called endocrine disruptors, referring to the ability to interfere with the body's endocrine, or hormonal, system. Using their newly developed assays, Mancini and his colleagues characterized how 18 different BPA analogs affect alpha and beta forms of the estrogen receptor, which are primary targets of this class of chemicals. Their studies were conducted using high-throughput microscopy and automated image analysis in different cell line models, with varying exposures to BPA analogs.

"I think it's fair to say that many of these BPA analogs have not been thoroughly tested, yet they are used in everyday plastics, such as water bottles, baby bottles and the lining of canned goods," said lead author Fabio Stossi, Ph.D., assistant professor of molecular and cellular biology at Baylor.

The investigators found that many BPA analogs have inhibitory effects on the beta form of the estrogen receptor, a less well-studied steroid receptor that has tumor fighting properties. Many analogs also acted to stimulate the alpha form of the estrogen receptor, or had mixed inhibitory and stimulatory effects. Determining precisely how these effects influence human health will require additional research.

"The vast majority of high-production chemicals used in commerce have not adequately been assessed for their safety. As a society, we need to develop new approaches that are more economical and less cumbersome than traditional bioassays to determine the safety of chemicals we are introducing into our environment," reflected Cheryl Lyn Walker, Ph.D., director of the Texas A&M IBT. "These types of high-content, high-throughput assays that can give us very precise and detailed information quickly, can be run economically and can be used for identifying hazards. They can also be used when alternatives are available for chemicals of concern, such as BPA, to ensure we are not substituting one hazard with another."

These studies would not have been possible without the investments made by the National Institute of Environmental Health Sciences (NIEHS) in this research program, which represents a breakthrough in the ability to focus precious resources on those BPA analogs, and other endocrine-disrupting chemicals that are a cause for concern, added Walker.

The scientists note that there are likely many more BPA-like compounds that can be found in products and in the environment. These new high-throughput assays developed at Baylor and the IBT are widely applicable, enabling rapid testing of these compounds for unexpected and undesirable activities.

"The general integration of microscopy into the standard molecular and biochemical approaches of doing things has been expanding exponentially," said Mancini. "Modern molecular cell biology has really exploded in recent years as an industry. Identifying which cells, and how many of them, are responding to a drug is now a possibility. We're able to look at thousands of cells, one cell at a time. That's increasingly adaptable to most projects, and we're so deep into the single cell approach that we can provide an additional perspective."

(Credit: Baylor College of Medicine)

> "I think it's fair to say that many of these BPA analogs have not been thoroughly tested, yet they are used in everyday plastics, such as water bottles, baby bottles and the lining of canned goods."
>
> — FABIO STOSSI, PH.D.
> *Assistant Professor of Molecular and Cellular Biology at Baylor*

A. OSAMA GABER, M.D., FACS, ***DIRECTOR OF THE HOUSTON METHODIST J.C. WALTER TRANSPLANT CENTER, SAT DOWN WITH TEXAS MEDICAL CENTER CHIEF STRATEGY AND OPERATING OFFICER AND EXECUTIVE VICE PRESIDENT WILLIAM F. McKEON TO TALK ABOUT HIS VISION FOR A COMMUNITY CENTER FOR TRANSPLANT RECIPIENTS, AND THE MISSION OF THE FOUNDATION HE STARTED IN HIS DAUGHTER'S MEMORY.***

Q | ***Tell us a bit about your formative years.***

A | I was born in Alexandria, Egypt. At that time, Alexandria was a beautiful Mediterranean city. It was just amazing. Very cosmopolitan. We lived in an apartment right on the Mediterranean, and we had two Jewish families, one Greek family, one Italian and then us. And actually, the owner of the apartment building was an older Jewish gentleman. He was one of the reasons I learned English so well. I could come home and speak to him. He also was a stamp collector and taught me that, so it was just a really beautiful time growing up in Alexandria.

My father was in the textile business, but he was a lawyer by schooling. He never really worked as a lawyer. He worked in textiles, and he was very smart man. Self-taught, very hardworking, really wanted, from the very beginning, wanted us to explore the world and know about the world beyond Egypt. He was one of the first globalists; he believed the whole world was one place and that you really need to know all of it. He was a fantastic guy.

Our family had four boys, and we went to the English boys school in Alexandria. Very British at the time. Really fun, and I played soccer. I was on the

school team. I was the goal keeper, and really liked it. It was a good time. Then about the early 60s, my dad was chosen to run this textile conglomerate of ten or eleven factories, so we had to move to Cairo. I was in the 6th grade when we left, so I started middle school in Cairo.

We lived actually across the street from the school. And the school became sort of the center of our lives. It had a boarding school, so we had kids from all over the world who, because of their parents, came to Egypt. And the school had enormous playgrounds, so our soccer got a lot better. It was a magical time. It was the 60s, so there was a lot of change internally in Egypt, and in the world. I have a lot of memories of the day John F. Kennedy was assassinated and the day we landed on the moon. Just being part of the world, from Egypt, was an amazing thing. And of course, wars that happened in Egypt. I went to take exams during air raids and had to spend some nights in bomb shelters.

But because of where we grew up, we spoke English, we spoke a little bit of French, we had excellent teachers...it was easy to really think of the world like my dad had intended it to be. I always knew I was probably going to go to England and study medicine there. And I tried that, after medical school, but England at that time was going through a lot, and America was the place. So I came here and started my life, and I met my wife in medical school.

Every textbook I studied, I figured out who the professors were and what schools they taught at, and then I just wrote them all letters. And there was this professor at Cornell in New York. I wrote him a letter and said I want to do some surgical training, and amazingly I got a response. And it said, 'We interview people between February and March, and you are welcome to come for an interview.' I put that letter into my pocket and headed to the United States. They sent that letter to everyone. I was young and naïve.

But it was a different world. I sat in my room and made phone calls to different people in the states and someone in Washington D.C. said, 'Our department always needs people. Why don't you come stay for a couple of days and see what happens?' So I fly into D.C., and the next morning one of the residents quits. They said, 'Why don't you talk to the chief of surgery? He is looking for people.' So I walked into his office and it turns out he was the physician for Camp David, where President Sadat had just negotiated a peace treaty. He had known him, and he was very sympathetic to Egyptians. And he said, 'Okay, I can give you a job,' and I started and the rest is history.

I haven't thought of it for a long time...but what an amazing country.

Q | *How did you know you wanted to be a surgeon?*

A | I don't know that answer. I always wanted to be a surgeon. My personality sort of fit it. Because you made judgments, you went ahead and acted on them, and then you very quickly learned if you were right or wrong. It was that gut feeling, depending on your intuition, and I knew that I had those things. Even when I was in Egypt doing my residency, I really loved doing things. I just couldn't see myself sitting in a clinic. Now, as a surgeon, I spend 50 percent of my time doing medicine, actually, and I like it. But it is those hours in the operating room that really make me feel like I can keep going. Different people have different things. And that was my thing.

So I started my surgical training in Washington D.C., and you talk about mentors...after two months of being there, I took a rotation at the Children's Hospital, which is across the street. And I met Dr. Judson Randolph, one of the giants of pediatric surgery. I had no idea; I was just a kid from Egypt trying to find his way. But after I had been there for about three weeks, he calls me into his office and he says, 'You know I have watched you, you are a really good doctor. What do you want to be in life?' And I said, 'You know, I really want to be an academic person. I want to do research.' So he said, 'Here is the list of schools. Go apply and I will be happy to help you.'

And that changed my life.

A couple of months later, I get this letter from Boston University, and they say come on in for an interview. So Dr. Randolph writes me a letter, and my wife and I drive to Boston.

We rent a car, and I keep driving all night long, it was eight and a half or nine hours, so we finally make it, the interview starts at noon, we arrive at 11. I change my clothes into my suit in the hospital, she is waiting in the car, sleeping in the car in front of Boston University, I go in to interview, and the interview doesn't go really well. I am just completely unprepared for this. And then I meet Peter Decker, another mentor, just an amazing person. Peter is the head of surgical oncology, the chief of surgery, and he looks at Randolph's letter, and he said, 'You know, the guy who wrote you this letter, I know him, and I know that if he writes a letter like this, you must be really special.'

So we start in Boston the next year, Lillian starts a job at the Deaconess, very prestigious. Boston sort of unlocked our careers and our future. It just fell into place. My career was a series of events that resulted from me not really thinking anything was impossible. Of course, now, when I see young people, I recognize it is so much more complex for them. They have so many more barriers.

Today, I see young people who are just starting medical school, and they know exactly what they want to specialize in. For me, every rotation I went to, I loved. Everything I did, I wanted to do. And it is that which makes you dig deeper into everything, and creates the sort of doctor that knows a lot. I think one of the biggest problems—and it really affects how we do health care in this country—is that everybody needs 25 consultants, because everybody knows one very specific thing. And that fragments care.

As I went through my surgical career, I really focused on learning the medicine. So, for example, I tried to learn about diabetes, and it turns out that doing that was very good for me because that's what I do my research in, and it really helps in taking care of the patients because you aren't just doing the surgery, but you know the patient. And it is really very powerful.

Q | *What is something that surprises you, as you look back now, about where you have ended up?*

A | I think Houston was a great surprise for me. I interviewed quite a few places for my first job. I traveled and I gave lectures in lots of places. But I think when I came to Houston, it was completely different. The Texas Medical Center is an amazing place. That was the biggest surprise.

You come here and all of the doctors are really good. It's like the quality of the people is superb. So it's so easy to look around and say, 'Take care of my patient. Fix this. Do that.' Everywhere here, the physicians are very high quality people. And I think that enables building programs and knowing no limits. Because you can't do it by yourself. Everyone around you pushes you. They demand more, all the time. And you have to really keep up with those guys. They are all smart. It's not cutthroat competitive, but you have to be just as good as all of those good people.

Q | *Organ donation is different in different parts of the world. In some countries, you are automatically opted in. What steps would you like to see in educating our community, or our country, about organ donation?*

A | I think that what is really challenging with organ donation is if you talk to people, they completely understand that organ donation is necessary. They say they will do it. But I think the situations in which organ donations happen are so dramatic, that it impacts that decision.

Denial is probably the most profound and common human feeling, and I think that the biggest education one could do is really demystifying transplantation. It is not about taking people who are going to die tomorrow and then letting them live in a wheelchair in a nursing home. There are people living normal, healthy lives because of transplantation. If we can take that to people, I think that would make a huge difference in organ donations. People understand fundamentally that this is good, but facing the situation, the death of a loved one, is very traumatic.

I can tell you that people spend months after somebody dies believing they are going to turn a corner and see them back. And it's hard to make that decision. So when people make that decision, I have a lot of respect for it, because they were able to grasp the finality. Because I don't think it's just education. It's human nature.

> People might think of the individual transplant departments. But if you look at transplantation at the Texas Medical Center, it is now a much bigger endeavor. We have a unifying power.

Q | *Tell us about Nora's Home.*

A | If you look at the Texas Medical Center as a conglomerate, they have the largest transplant program in the country. Methodist isn't the largest, but if you put us all together, we are the largest in the country. And for the largest program to not have a place for transplant patients to stay is a real problem for all of these patients that come from all over the world.

What's amazing about this place is the support that people give each other. And I knew that. I just kept telling people, let's just build it, and then you will see what I mean. And when I walk in Nora's Home, it is phenomenal. There are almost 900 transplants done here every year in the Texas Medical Center. That's a lot of transplants. So there is a huge need. And my idea is not only to give them a place to stay, but to create a transplant life center, so it is a place to come before and after you have had a transplant, to see other people, maybe to exercise, maybe learn how to cook for your new life, learn about your medications.

You know, one of the hardest things people face after transplantation is finding a job. Because of the stigma, people think that you are sick. So these transplant recipients can form communities, to do things together. That's where I see this eventually needs to go. So that these people, after they have stayed together, worked together, lived through the transplant experience together, now they can help each other for the rest of their lives. And that is what I think is so amazing about the transplant community, is that people understand each other. They know what they have to go through.

Q | *I would imagine that there are benefits to being able to share the same discussions, the same challenges, the same worries...*

A | I always think about it this way. You've had a really long day in the hospital. You've seen 20 doctors. Some say you are a little better. Some say you are a little worse. Some say you need to start this. Some say you need to stop this. And then you walk in here and all of these people say, 'Yes, I have had that happen. Don't worry about it.' 'Yeah, I know that doctor...He's great. He will take care of it.' So then you can tell your story and nobody says, 'What's that?'

Everybody understands. So you have that strength to then, the next morning, go and face it. And I think that's what's so unique about this. It's about people being able to walk in here and just lay down and not be afraid that anyone is going to think 'Why are you telling me these stories?' People want to know your stories, they want to give you support.

Q | *What can we expect for the future of Nora's Home?*

A | This is an amazing place. We have enough space that I think we can make it bigger. I think we can create this life center and community center for the transplant patients, and it would be a place where they can come not when they are sick. Not when they are waiting. Not when they just left the hospital. But just come for sports, cooking, education and everything they need in one place. Eventually that's what I would like to see happen.

People might think of the individual transplant departments. But if you look at transplantation at the Texas Medical Center, it is now a much bigger endeavor. We have a unifying power.

The transplant business is growing, unfortunately. Because the diseases that cause organ failure are some of the fastest growing diseases, not just in this country but in the world. Diabetes, hypertension, liver failure, heart failure, pulmonary diseases, asthma, emphysema are some of the fastest growing diseases in the world.

I see us going in a direction where we can talk prevention. You would talk to a transplant surgeon, like myself, asking what can we do for obesity, in terms of prevention? What can we do in terms of hepatitis? Asthma? Because that eventually makes our endeavor more than not treating people until they get into organ failure and then we give them a transplant. If we are to actually advance care, we should be on the front lines to prevent people from getting here. And only use this treatment for those diseases we are not able to stop. That's what I think about constantly. ■

ABOUT NORA GABER

Nora Gaber was a beautiful young girl with an incredible sense of compassion and kindness. She was known for her giving heart and desire to help those in need, especially those less fortunate than herself.

Nora reached out to everyone she met and made friends easily. In school, she was honored with the "Best Friend Award" and would always ask her family to stop and help any person she saw on the street in need.

In 1997, Nora's life was tragically cut short in an automobile accident. In recognition of her loving spirit, her parents, Osama and Lillian Gaber, donated her organs to help save the lives of other sick children.

Inspired by their daughter's unique sense of kindness, Nora's parents created the Nora's Gift Foundation in 1998 as a way to carry on their daughter's legacy. Nora's Home serves to help, house and support transplantation patients and their families. Located near the Texas Medical Center, Nora's Home provides private bedrooms, a chapel, community room, education center and free shuttle service to the medical center.

(Photos by Michael Stravato)

Unraveling the Mysteries of Pregnancy

A landmark study may play a role in preventing preterm births

By Alex Orlando

ABOVE: The placenta is not sterile after all. Researchers discovered that the organ harbors a small but diverse community of bacteria. (Credit: Texas Children's Hospital)
LEFT: James Versalovic, M.D., Ph.D., and a research associate (Credit: Texas Children's Hospital)
RIGHT: Kjersti Aagaard, M.D., Ph.D.
(Credit: Baylor College of Medicine)

> “The hope is that we will get a clearer picture of how several of the microbial communities in women and their placentas change over the course of the entire pregnancy among those at risk for preterm birth.”

— KJERSTI AAGAARD, M.D., PH.D.
Associate Professor of Obstetrics and Gynecology in Maternal Fetal Medicine at Baylor College of Medicine and the Texas Children’s Pavilion for Women

The biology of pregnancy is entering uncharted waters. Groundbreaking new research demonstrates that the placenta harbors a small, but diverse, community of bacteria capable of influencing the course of pregnancy, reported researchers from Baylor College of Medicine and Texas Children’s Hospital, overturning previously held beliefs that it is mostly sterile.

“We’re really just beginning to understand the broader role of the placenta in shaping the overall health of a pregnancy,” said Kjersti Aagaard, M.D., Ph.D., associate professor of obstetrics and gynecology in maternal fetal medicine at Baylor and the Texas Children’s Pavilion for Women, as well as the lead and corresponding author on the report. “As the interface between mother and child, the more that we can understand about what leaves ‘footprints’ on the placenta, the easier it’s going to be to track and appreciate the impact of environmental exposure on pregnancy health and the health of our next generation.”

The findings, published in the most recent issue of Science Translational Medicine, illustrate important new insights on the structure of the placental microbiome, the organisms present, and how they might be capable of impacting a pregnancy. The microbiome refers to the population of microbes—trillions of bacteria, viruses and fungi—that colonize the human body. These organisms influence digestion, metabolism and an array of unknown biological processes. Research to characterize these microbial communities is essential for understanding human development, explained Aagaard.

Aagaard and her colleagues are key members in the collaborative National Institutes of Health (NIH) funded Human Microbiome Project, which seeks to further characterize these communities and how they relate to health and healing human disease.

In this study, the first and largest to focus on the placental microbiome, 320 human subjects’ samples were analyzed comprehensively following a process called shotgun metagenomic sequencing. The technology enables microbiologists to uniquely evaluate bacterial diversity and detect the abundance of specific microbes and all their genetic pathways in a community.

“It started, from my perspective, in really trying to understand the dynamics of the microbiome during pregnancy,” added James Versalovic, M.D., Ph.D., co-author on the report, professor of pathology and immunology at Baylor and head of pathology at Texas Children’s. “In 2011 we initiated the PeriBank at Ben Taub General Hospital, aided by the support of Baylor and Texas Children’s Hospital’s Pavillion for Women, to begin to collect placental tissue from every birth where parental consent was provided. It created an incredibly precious resource for clinical research in obstetrics and gynecology, enabling us to look for bacteria using DNA sequencing.”

In determining that the placenta is not sterile—meaning free from bacteria or other living organisms—the researchers identified that it actually harbors a diverse and unique microbiome. The placental microbiome is relatively low in terms of microbial abundance, explained Aagaard, and modern genomics techniques are required to observe or identify the bacteria present.

Of the samples, Escherichia coli (E. coli), a bacteria that lives in the intestines of most healthy individuals, was the most abundant species. Prevotella tannerae (gingival crevices) and non-pathogenic Neisseria species (mucosal surfaces), both species of the oral cavity, were also detected in highest relative abundance.

“Interestingly, when we looked very thoroughly at the placenta in relation to many other sites of the body, we found that the placental microbiome does not bear many similarities to the microbiomes closest in terms of anatomic location,” said Aagaard. “Specifically, it is not much like the vaginal or intestinal microbiome, but is actually most similar to the oral microbiome.”

This finding has important implications on the likely importance of oral health during pregnancy, she said. “It reinforces long-standing data relating periodontal disease to risk of preterm birth.” Clinically, these results have the potential to prompt an increased emphasis on oral hygiene in pregnant women while simultaneously spurring research focus on the connection between the oral cavity and the placenta.

“We’re very interested in characterizing the connections between microbiomes,” said Versalovic. “Generally, people refer to the human microbiome as if it’s one thing, which it is, but there are still distinct microbial communities. We’re exploring the ways that you can change the microbiome in the oral cavity and have an effect, remotely, at a distal site. We’re examining those connections in other places, as well—for example, by influencing the intestinal microbiome it seems as if there’s an effect on brain function. So, naturally, we’re interested in how the oral cavity and its microbiome may affect pregnancy and preterm birth.”

Additionally, the researchers observed differences in the placental microbiome based on a remote history of infection during the pregnancy—most commonly urinary tract infections from many months ago that were treated successfully with antibiotics.

The researchers have identified another factor that structures the placental microbiome in unique ways: preterm birth. “Within a reasonable margin of error, we’d be able to tell whether someone had a preterm birth by metagenomically characterizing the placental microbiome profile,” said Aagaard. “If we examine the differences between mothers who have had preterm births versus term births, that’s the first step on the way toward meaningful interventions.”

Exposure of the fetus to a placental microbiome may have fundamental implications for early human development and the physiology of pregnancy, added Versalovic. A larger study led by Aagaard and her team is currently underway to expand these findings to describe the placental microbiome profiles across pregnancy and in relation to preterm birth.

“The hope is that we will get a clearer picture of how several of the microbial communities in women and their placentas change over the course of the entire pregnancy among those at risk for preterm birth. These discoveries could lead to rapid breakthroughs in not only identifying women at risk for preterm birth, but developing new and worthwhile strategies for prevention,” said Aagaard. “As we catch glimmers of the microbial biology of pregnancy, we can start to see a not too distant future where we will prevent preterm birth (or its complications in newborns) with truly novel approaches aimed at enhancing the healthy microbes of not just the vagina, but the mouth and gut, as well. By unraveling the mysteries of pregnancy, we are learning that our microbes may be as much friend as foe. This is fantastic news for our moms and their babies.” ■

Redefining Rehabilitation

A holistic approach to rehabilitation sets TIRR Memorial Hermann apart

By Alex Orlando

Founded in 1977, TIRR Memorial Hermann Hotwheels is a competitive traveling junior wheelchair basketball team, comprised of elementary, middle and high schools students age eight to 18. Peter, left, and Aaron Berry, right, are both proud members of the team. (Credit: TIRR Memorial Hermann)

Adversity in the form of debilitating illness and injury can act as a barrier, presenting obstacles in every facet of life, from something as simple as brushing your teeth in the morning to the ability to engage in competitive sports. Peter and Aaron Berry, 11 and 10, respectively, have consistently broken through those barriers since becoming paralyzed from the waist down in an automobile accident in 2011. Juggling a busy schedule that includes schoolwork, spending time with family and friends, swim therapy and wheelchair basketball, the boys haven't allowed their disability to slow them down; for them, obstacles have become opportunities.

"They're very passionate about basketball. The coaching is incredible... it just epitomizes this all encompassing approach to providing support," said Simone Berry, the boys' aunt and guardian. "Before the accident, the boys were very competitive in their sports, and this has allowed that competitive energy and spirit to carry on. They learn life lessons in the experience with wheelchair basketball and through traveling across the country—they're so close with their teammates."

Founded in 1997, TIRR Memorial Hermann (The Institute for Rehabilitation and Research) Hotwheels is a competitive traveling junior wheelchair basketball team, comprised of elementary, middle and high school students age eight to 18. In 2013, the team achieved the highly coveted number one ranking in the National Wheelchair Basketball Association (NWBA) Junior Division. As one component of the adaptive sports program at TIRR Memorial Hermann, Hotwheels serves as a testament to the potential of holistic rehabilitation to give individuals their lives back.

Continually recognized as one of America's Best Hospitals by U.S. News and World Report, TIRR Memorial Hermann is a national leader in medical rehabilitation and research. Emphasizing their dedication in education, they also act as a teaching hospital for Baylor College of Medicine and The University of Texas Medical School at Houston. Treating patients both within the Texas Medical Center and beyond, TIRR Memorial Hermann's integrated network of rehabilitation facilities enables them to serve the entire greater Houston community.

"When you look at what we do, it's clear that we're a leader not only in patient care, but in contributing to new technology and research, in terms of the productivity and dedication of our staff, and in our efforts at preparing rehabilitation professionals for the future, across all disciplines," said Carl Josehart, chief executive officer of TIRR Memorial Hermann "I really do believe that we are creating the standards that other people are following in the industry."

Since 1959, TIRR Memorial Hermann has been a national leader in interdisciplinary rehabilitation services, patient care, education and research. Through the continued education of its experts, TIRR Memorial Hermann has maintained its status as the source of new discovery and thought leadership within the field for decades. To further those efforts, TIRR Memorial Hermann opened the TIRR Memorial Hermann Research Center in 2013.

With the renovation of the 42,600 square foot building behind the main hospital, all of the research endeavors came together under one roof. TIRR Memorial Hermann patients are able to see their physician and continue across the sky bridge to participate in research. Josehart describes the bridge that connects the hospital to the research building as more than a physical connection. "It's a symbolic connection of how we want to do the research. Our research is really translational based on things we think can help our patients and make our rehab efforts more effective. It's a visible

reminder of the transfer of knowledge from the lab to the bedside and back to the lab for further refinement." Expanding upon that translation, TIRR Memorial Hermann is currently growing their robotics and adaptive technology programs.

"There's also this incredible sense of creativity and ingenuity in our staff here," added Josehart. "Just because there isn't a preexisting product out there, that doesn't slow anybody down here. I find people making things all the time—give them a roll of duct tape and a broom handle and they'll invent it. They have an incredible desire to continue to push the envelope."

Amber Armstead, an occupational therapist at TIRR Memorial Hermann Outpatient Rehabilitation at the Kirby Glen Center who specializes in adaptive equipment and technology as well as spinal cord injury, was involved in the Berry boys' rehabilitation. "With spinal cord patients, sometimes they'll be defeated initially because they're still grieving for their loss," she reflected. "But by the time that they leave here, they realize that they can do literally everything else in their life, except walk, and that's huge. If the technology ever catches up to them, they'll be able to walk, too."

Espousing a philosophy that focuses on the entire person, rather than just the physical recovery itself, Josehart is convinced that rehabilitation should be involved in breaking down barriers, and preventing a disability from interfering with quality of life. "Rehabilitation at TIRR Memorial Hermann focuses on the whole community—we don't consider it a success until patients are re-engaged into any part of life that gives meaning to them," he said. "Whether that's going to school, or back to work, or being involved in sports, arts or their faith community, we want them to be able to embrace everything." In conjunction with organizations across Houston, programs at TIRR Memorial Hermann involve everything from a partnership with United Airlines that teaches patients how to feel comfortable navigating through the airport, to a relationship with a restaurant in the medical center that helps individuals feel comfortable at a fine dining establishment.

Regaining some semblance of normalcy after a debilitating illness or injury is no easy task. For Peter and Aaron, that uphill battle was compounded by the tragedy that upended their lives three years ago, when their family vehicle was struck head-on while returning from a summer vacation in Colorado. Josh and Robin Berry, the children's parents and pillars in Houston's Jewish community, were killed, while Peter and Aaron were left paralyzed from the waist down after sustaining serious spinal cord injuries. Their younger sister, Willa, suffered broken bones that have since healed.

After receiving initial treatment at Covenant Health System's Women's and Children's Hospital in Lubbock, the boys were transferred to Children's Memorial Hermann Hospital where they were under the care of the pediatric trauma team for several weeks. Following one last transfer to Shriners Hospitals for Children in Chicago, the boys finally settled into a new routine of rehabilitation and recovery at TIRR Memorial Hermann Outpatient Rehabilitation. Embedding a holistic approach towards recovery into their rehabilitation process that encompasses everything from Hotwheels to physical and occupational therapy, TIRR Memorial Hermann provided a foundation of support that has helped the Berry boys to thrive three years after the accident.

"The continued presence in their lives, from TIRR Memorial Hermann, has had such a profound impact," said Simone Berry. "They're doing really well—they're doing great. They're living normal lives and participating in the same activities as any other children in their age group. I truly believe that these children embrace life." She has been integral in forming a solid family unit in the wake of their tragedy, helping the children continue to make great strides.

"I admire the Berrys so much, not only for their courage, but for the strength required to share their story with the public," Josehart said. "Through their ability to do that, they can provide hope for families who are facing similar situations. These stories happen every single day, 365 days a year. One of our patients' biggest fears is that others will give up or stop trying. At a juncture when many families feel that they might want to be private, something that we can all respect, the act of sharing their story was truly inspirational." ■

> "Rehabilitation at TIRR Memorial Hermann focuses on the whole community—we don't consider it a success until patients are re-engaged into any part of life that gives meaning to them."
>
> — CARL JOSEHART
> *Chief Executive Officer of TIRR Memorial Hermann*

TOP: TIRR Memorial Hermann has a dedicated international program that works with diverse patient backgrounds and nationalities that can accommodate a variety of dietary, language and religious needs. LOWER LEFT: Personalized treatment helps patients optimize balance, mobility, endurance and more. LOWER RIGHT: Bodyweight supported treadmill system that has seats for the therapist. The treadmill is used in conjunction with activity-based therapy and locomotor training for gait. (Credit: TIRR Memorial Hermann)


Methodist

A Game with Heart

ON JULY 11, HOUSTON WILL WELCOME THE TRANSPLANT GAMES OF AMERICA FOR THE FIRST TIME, BRINGING TOGETHER ORGAN RECIPIENTS, LIVING DONORS AND DONOR FAMILIES FOR A CELEBRATION OF LIFE.

By Amanda D. Stein

Amy Frackowiak

You might mistake her for an Olympian if you saw her competing. But Amy Frackowiak has more than just passion and a competitive spirit behind her. She stands for a team of athletes who are determined to make the most of each day, on and off the field. And they are unstoppable.

Frackowiak is a kidney transplant recipient and co-manager of the Transplant Games of America's Team Texas, made up of more than 245 organ transplant recipients, living donors and donor families.

Along with team manager and heart transplant recipient Brian Gilliam, and Houston Methodist Hospital Transplant Coordinator Donna Esposito, Frackowiak hopes to help spread the message of organ donation through participation in the 2014 Transplant Games of America, taking place in Houston, July 11-15.

The Transplant Games of America is a multi-sport festival, akin to the Olympics, where teams and individuals from around the country compete in everything from basketball and cycling to ballroom dancing and Texas hold 'em. It's an opportunity for transplant recipients, living donors and donor families to gather to share their stories and experiences.

The games will be held in venues across the city of Houston, capped by opening and closing ceremonies, on July 12 and 15, respectively. Medals are awarded to the top three competitors in each of the ten age groups. The ultimate goal of the event is to increase the number of registered organ donors in the state of Texas and around the country.

"There are 120,000 people in the United States right now waiting for an organ donation, and 18 people die almost every day waiting for an organ," said Bill Ryan, president and chief executive officer of the Transplant Games of America. "Houston is a major metropolitan area, and home to the Texas Medical Center, the largest medical center in the world. We thought it was important to bring the games to a city or state that we thought could bring major change to the donor registry list, and in fact it has."

According to Donate Life America, ninety percent of Americans say they support organ donation, but only thirty percent know what it takes to become a donor. The organizers of Team Texas knew early on that it would take something as big as the Transplant Games to help spread the message of organ donation in Texas, a state with a shockingly low number of registered organ donors.

"In 2008, when I was waiting for a heart, the Texas registry was at approximately 500,000," said Gilliam. "Today it has over five million. There are no friendlier people in the world than there are in the state of Texas. There are no more giving people in this world than in the state of Texas. But people are uneducated about it.

"There are 12,000 Texans right now waiting for an organ donation," he added. "It's just that people don't know the facts. Organ donations are saving lives."

A single donor can impact countless recipients through the transplantation of the heart, liver, kidneys, pancreas, lung, intestine, corneas and tissue. For the first time this year, the Transplant Games will highlight corneal and tissue transplantation, in an effort to raise awareness for the life-changing, and often life-saving, procedures.

"We are hoping that the games will help us demonstrate that there is hope, and the possibility of a healthy, happy life after transplantation," said Ryan.

Twenty-four-year-old Team Texas athlete Katy Portell was only four years old when she underwent surgery at Texas Children's Hospital to repair a severe heart defect. A donor valve saved her life. Today, she is happy and healthy, giving back to a cause that is literally near to her heart. She serves as a volunteer program coordinator for the Southwest Transplant Alliance in Dallas, and is looking forward to running the 5K and competing in darts and trivia during the July games.

(continued page 20)

> "We are hoping that the games will help us demonstrate that there is hope, and the possibility of a healthy, happy life after transplantation."
>
> — BILL RYAN
> *President and Chief Executive Officer of Transplant Games of America*

FACING PAGE (Credit: Terry Vine Photography)

The Faces of Team Texas

More than 245 recipients, living donors and donor families will represent Team Texas during the Transplant Games of America's opening ceremonies.

CYCLING

KIDNEY RECIPIENT

Houston Methodist Hospital, 2001

Events: Cycling

I received a kidney from my mom. In 2001, at 20 years old, becoming athletic and physically fit after my transplant was a goal of mine. I wanted to enjoy the freedom of being outside after spending a lot of time indoors in a dialysis clinic, and cycling allows me to do that. At first, it was a struggle to just walk a mile. Now I can ride 100.

SHOT PUT

HEART RECIPIENT

Houston Methodist Hospital, 2008

Events: Table Tennis, Volleyball, Track & Field

Before the heart issues, I was always active. I remember telling God that I would wait as long as it takes to get a transplant. On December 24, 2008, I had the transplant. Since transplantation, I started back up with Taekwondo and received my black belt. I was also a medal winner in four out of five events in the 2010 and 2012 transplant games.

BASKETBALL

HEART RECIPIENT

Houston Methodist Hospital, 2007

Events: Basketball, Bowling, 5K, Track & Field

I hope to make people aware of how important it is to register as an eye, tissue, skin and organ donor. There is a great quality of life after transplantation. I do ninety percent of what I use to do, and the other ten percent I shouldn't have been doing anyway. In my spare time, I volunteer by talking to patients waiting to be transplanted and singing with the Salvation Army Habor Light Choir.

CORNHOLE

HEART RECIPIENT

Texas Children's Hospital, 2013

Events: Cornhole, Ball Throw, Track & Field

With my new heart and second chance, I get to run and jump and just be a kid. I compete because I can. Before my transplant, I had a trachea and spent up to 16 hours a day tethered to my ventilator. Running and jumping was out of the question because I ran out of breath walking across the room. With my new heart, I can play and be free. I even got rid of my trach.

5K

LIVER RECIPIENT

The University of Texas Medical Branch at Galveston, 2009

Events: 5K

I am very grateful and fortunate to be given a second chance of life. Starting in 2009, I was admitted to six different ICUs, and was given only 30 days left to live. Two weeks later, on December 8, 2009, I received a full liver transplant at UTMB Galveston. Since then, I have been active, starting a transplant patient support group and promoting organ donation awareness.

(Credit: Terry Vine Photography)

CYCLING

HEART RECIPIENT

Baylor St. Luke's Medical Center, 2011

Events: Cycling, 5K, Bowling, Track & Field

I compete because it gives me a chance to show that I am taking the best care of the heart that was given to me and I hope it gives the donor families a bit of comfort to see what their gift has given to someone else. It also lets me try to be an athlete like I once was before being diagnosed with my genetic heart disease.

VOLLEYBALL

DOUBLE LUNG RECIPIENT

Houston Methodist Hospital, 2008 & 2013

Events: Volleyball, 5K, Cornhole

I compete to inspire those who are waiting to not give up. And also for my donor family, for making such a huge sacrifice, and for my family and friends for all the love and support they have given me. I love crafting and cooking. I'm very active in my church, and I enjoy traveling with my granddaughter Madison.

DISCUS

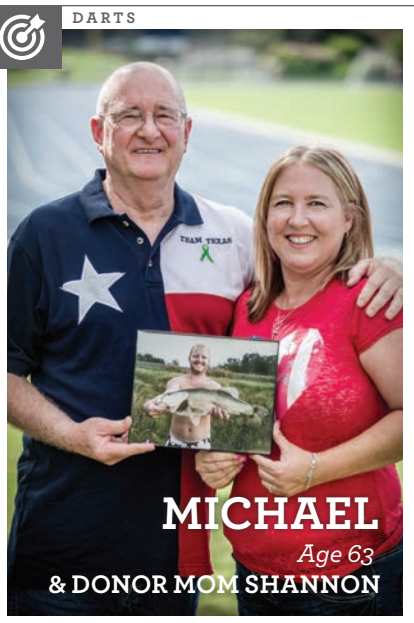
LIVER RECIPIENT

Memorial Hermann Hospital—Texas Medical Center, 2006

Events: 5K, Cycling, Volleyball, Track & Field

After receiving a transplant, your eyes and heart open up to what is important and meaningful in life. Love God and your family, and make a difference in people's lives. That's it. Don't worry about the rest. Life is too short not to enjoy it. I enjoy cycling, running, playing soccer, camping and gardening. I am also a volunteer for Life Gift.

DARTS



HEART RECIPIENT

Houston Methodist Hospital, 2010

Events: Darts, Ballroom Dancing

I first became involved with Transplant Games because my wife works at Texas Children's Hospital and had the opportunity to go to the 2012 games with the renal transplant kiddos. I had my first heart attack at age 35 and then had another four in the next twenty-plus years. I spent 46 days in the hospital waiting for my heart. I was given the gift of life by a young man name Roy.

BASKETBALL

HEART RECIPIENT

Texas Children's Hospital, 2003

Events: Basketball, 5K, Track & Field

The gift of organ donation says so much about our capacity for great compassion and generosity. Twelve years ago my cardiologist told me I would never play sports again. When I saw the flyer for the Transplant Games, I saw an opportunity to prove him wrong. In my spare time, I enjoy cooking, baking, volunteering, reading and spending time with my niece and nephew.

SHANNON—MOM OF ROY HECK, MICHAEL'S DONOR

Events: Donor Family Tribute

A couple months after Roy passed away, I woke up with this need to make blankets. And I'm not a crafty person, people can tell you. But it felt like literally it was God speaking to me. Hospitals, especially up in the ICU floor, are really cold. Even though it was March, and we were wearing flip-flops and shorts, it was so cold. So that's where the need for blankets came from, to bring warmth and comfort. So I started making these blankets and donating them to Life Gift. We call our blanket ministry It's a 'Heck' of a Blanket.

Even with the loss of Roy, I always have to keep it conscious in my mind that it's okay to live life, to love life and to enjoy it. We get so bogged down with our jobs, and our life is so busy that sometime you just have to stop, get on the ground and play with the grandkids. Roy has taught me how to live, that's for sure.

> “There was nothing else that I could do to save Roy here on Earth, but for him to be able to give others that chance to spend time with their families, and just live life...there are no words.”
>
> — SHANNON LENOX
> *Donor Mom*

TOP: Team Texas Manager Brian Gilliam, left, and Co-Manager Donna Esposito, see the games as an opportunity to encourage organ donor registration. (Credit: Terry Vine Photography) CENTER AND BOTTOM: Members of Team Texas will take part in some of the 18 games featured at this year’s Transplant Games of America. (Credit: Donna Esposito)

Living donors are also actively involved in the games, representing those who have donated a kidney to a friend, loved one or even stranger. Charlene Murphy received a kidney from her brother shortly after his eighteenth birthday. He had counted down the days, determined to give her the chance to watch her young children grow up. She will be running the 5K alongside her donor. “He said no matter how fast or how slow I go, he will be right there beside me so that both kidneys will cross the finish line at the same time,” she said.

Portell and Murphy are just two of the more than 2,900 recipients, donors and families registered to compete, and the number continues to grow. But the event is about more than just the competition. Over the course of the games, participants are encouraged to take part in a number of special events designed to help members of the transplant community connect and share stories of hope and life after donation and transplantation. One of those events is the donor tribute, an event Ryan calls “the single most emotional moment of the games.”

Sheree Jones will be taking part in the donor tribute, honoring her son Chad, and those she has come to know through the Organ Donation Hall of Fame, a website she started to recognize deceased and living donors. She and her family will be carrying that torch to the donor tribute, in the form of a Hall of Fame display.

Heart transplant recipient Kevin Spencer will also be there. As a two-time recipient treated twice by O. H. “Bud” Frasier, M.D., of the Texas Heart Institute, Spencer feels fortunate to still be living, and loving, life. He recognizes that his second, and third, chances came from the selflessness of strangers.

“I marvel at times that I have gone through so much and I am still here enjoying life. That two people have had their lives cut short and yet I live,” said Spencer. “The odds were against me, but I owe it to my Lord Jesus and living in Houston where the cutting edge of cardio technology was happening, that I got my many chances at life. I would tell anyone who isn’t a registered organ donor, that they have the ability to give a great gift of life not to just the one who receives the organ, but to their family.”

Donor mom Shannon Lenox feels strongly that the best way an organ recipient can honor their donor is to live each day with passion and purpose. Lenox’s son, Roy Heck, was a lover of life. He was an adventurer, an outdoorsman, a best friend to a young neighbor with Down syndrome, and a friendly face for families impacted by Hurricane Ike. Even before his tragic death in 2010, Heck was a hero to so many who knew him. But his legacy changed just a bit the day his heart gave Michael Nall a second chance at life.

Lenox has met and spent time with Nall and his family. She says it helps bring peace, to know that her son’s selflessness in life has continued on after his passing. She will be there to cheer on Nall as he competes in the ballroom dancing and darts events, and they will honor Heck’s memory during the donor tribute.

“Roy lived his life to the fullest,” said Lenox. “He had a short time to live a lifetime, and that’s what he did every day. To know that Roy’s heart still beats, even though he’s not the one carrying it...and to see Michael as a father, a grandfather and a husband, and to know that he gets to have that second chance, it just solidifies that during the darkest point of my life, I made the right decision.

“There was nothing else that I could do to save Roy here on Earth, but for him to be able to give others that chance to spend time with their families, and just live life...there are no words.” ■

The Science of Improvement

A value-based health care delivery course launched at the Texas Medical Center sheds light on important issues

By Alex Orlando

LEFT: Michael E. Porter, Ph.D. (Credit: Jimmy Ushkurnis)
RIGHT: Robert S. Kaplan, Ph.D. (Credit: Harvard Business School)
FACING PAGE, LEFT TO RIGHT: Thomas W. Feely, M.D., Robert C. Robbins, M.D., Kathleen Carberry, R.N., MPH, Porter, Kaplan, Charles Fraser Jr., M.D. (Credit: Spike Johnson)

> "Solving our health care crisis begins with getting all stakeholders to agree on a single overarching goal—improving the quality of care delivered for each dollar spent—and providing them with a common strategic framework to accomplish this goal."
>
> — MICHAEL E. PORTER, PH.D.
> *Bishop William Lawrence University Professor at Harvard Business School*

What is the actual cost of health care? Rising health care costs threaten the growth of the American economy. Despite the amount we spend, quality is uneven, errors continue to occur and the health status of Americans, in general, is no better than many other developed countries that spend less. Health care spending in the United States currently exceeds 17 percent of our gross domestic product, according to the Commonwealth Fund. A lack of knowledge and transparency about costs and outcomes of delivering patient care is a principal driver of high and escalating expenditures.

In an effort to counter that imbalance, the Texas Medical Center worked to bring a course titled Value-Based Health Care Delivery (VBHCD) to Houston, earlier this year. The course, taught by renowned Harvard Business School (HBS) professors Michael E. Porter, Ph.D., and Robert S. Kaplan, Ph.D., emphasized a simple but essential idea: the fundamental purpose of any health care organization is to improve value for patients—defined as the health outcomes achieved per dollar spent.

"Value for patients is the only goal that can unite the interests of all system participants, and improving value is the only real solution to the health care challenge," said Porter, Bishop William Lawrence University Professor at the Harvard Business School. "Value improvement will require major changes in the way health care is delivered, measured and reimbursed, not just incremental improvement." Porter characterizes value as the "true north" with which to navigate the major challenges in health care.

Aiming to educate executives, physician leaders, practicing physicians and senior administrators responsible for health care delivery within the Texas Medical Center, the curriculum was anchored in actual in-depth case studies, including a new case on Texas Children's Heart Center. The course took place in April at the Bioscience Research Collaborative. It was sponsored by a steering committee that included, among others, Robert C. Robbins, M.D., president and chief executive officer of the Texas Medical Center, Charles Fraser Jr., M.D., surgeon-in-chief of Texas Children's Hospital, Thomas W. Feeley, M.D., head of The University of Texas MD Anderson Cancer Center's Institute for Cancer Care Innovation (ICCI) and Kathleen Carberry, R.N., MPH, director of the Texas Children's Hospital Outcomes & Impact Service.

"The senior leaders attending quickly recognized the universal relevance of the issues and choices faced by the organizations highlighted in the case studies—there's a huge potential to rapidly translate those ideas into action within their own organizations," said Porter. "The course was also a good platform for those senior leaders to develop relationships with their peers in other organizations, facilitating collaborations and ongoing discussions."

Embracing an inherently optimistic view of health care reform, Kaplan, HBS's Marvin Bower Professor of Leadership Development, Emeritus, is adamant that sacrificing quality through harsh reduction of costs isn't a tenable, or even necessary, solution to these problems. "There's a lot of pressure on the health care system to do more with less and there's an emphasis on trying to contain costs or even reduce costs, which can be detrimental to the patients we're

> “There’s a lot of pressure on the health care system to do more with less and there’s an emphasis on trying to contain costs or even reduce costs, which can be detrimental to the patients we’re trying to serve. By measuring outcomes and costs and introducing new reimbursement approaches, we can deliver better care with fewer resources.”
>
> — ROBERT S. KAPLAN, PH.D.
> *Marvin Bower Professor of Leadership Development, Emeritus at Harvard Business School*

trying to serve,” he explained. “By measuring outcomes and costs and introducing new reimbursement approaches, we can deliver better care with fewer resources.”

Kaplan, who pioneered a methodology to calculate costs known as time-driven activity-based costing (TDABC), felt that the timing was right do expose value framework to the Texas Medical Center. “This framework can be applied across the medical center and beyond—the questions that we’re addressing are global in scope and not necessarily limited to the Texas Medical Center or even the United States,” he reflected. “It addresses health care delivery problems that systems around the world are trying to solve.”

The work conducted by Porter and Kaplan has sent ripples across the medical center that extend far beyond their two days teaching in Houston. MD Anderson’s ICCI has used Porter’s model of value creation since its inception—most of ICCI’s programs center around outcome and cost measurement. Porter’s advice has been instrumental in setting the institute’s current course, and will be essential for the future courtesy of his recent appointment to the ICCI’s external advisory board to serve as the institute’s key external advisor.

Kaplan, a founding member of the ICCI’s external advisory board, provided the basis to implement TDABC in health care, which was first used at MD Anderson in a pilot project to calculate costs of care in the head and neck multidisciplinary center. ICCI has partnered with MD Anderson’s Business Analytics team, led by James Incalcaterra, Ph.D., director for value measurement and analysis, to evaluate and expand the use of TDABC in multiple venues, including analyzing and planning for an institution-wide software application that will enable the use of TDABC in all clinical care areas and an evaluation of bundled payments for cancer.

“The Institute for Cancer Care Innovation was established to demonstrate the value of MD Anderson’s research-driven multidisciplinary care—we wanted to display the fact that we have excellent outcomes and a care delivery system that adds value to patients with cancer,” said Feeley, who helped to organize the ICCI. “All of the projects that we have directly relate to Professor Porter’s strategic agenda. We want to show the practical applications of these concepts.”

According to Feeley, the potential for the course to act as an entry point of engagement for administration within the medical center is tremendous. “I think that most people don’t really appreciate a concept like VBHCD until they’ve truly participated in thinking about it,” he said. “The real challenge is how to build upon these conceptual foundations and integrate them into the culture of MD Anderson and the Texas Medical Center. I’m so excited to work with students and residents, as well, the next generation of health care providers, so that they can start to think about these things up front and during the course of their medical education.”

Carberry remains similarly excited about the opportunity to leverage the instruction they received into action. “I was so proud to host these two gurus in the field of business—for them to come to Houston and see, firsthand, what’s happening in the medical center is incredible,” she said. “Historically, thought leadership in medicine has been centered in New England, but I’d love to see that transition down to Texas. The stars are aligning for the TMC to really be the powerhouse in medicine that we were always meant to be.”

In keeping with the sincere brand of enthusiasm that characterizes their philosophy on health care reform, Porter and Kaplan’s bright vision for the future necessitates a foundation of uniform strategy and collaboration. “Solving our health care crisis begins with getting all stakeholders to agree on a single overarching goal—improving the quality of care delivered for each dollar spent—and providing them with a common strategic framework to accomplish this goal,” Porter said. “Too few physicians are trained in applying strategic thinking to health care delivery, with so much of that training being based in their particular specialty. This curriculum will significantly change their perspective on how to solve the current challenge of unsustainable cost growth and variable quality in health care, and our hope over time is to expand the reach of value framework to every interested physician or physician-in-training.” ■

JOHN NAU, *PRESIDENT AND CHIEF EXECUTIVE OFFICER OF SILVER EAGLE DISTRIBUTORS, SHARES MEMORIES OF HIS MIDWEST UPBRINGING, THE CHILDHOOD ADVENTURES THAT INSPIRED A LOVE FOR AMERICAN HISTORY, AND THE CENTER THAT HE HOPES WILL ENCOURAGE HOUSTONIANS TO LEARN ABOUT THE REGION'S PAST.*

Q | *Tell us about your formative years in Chicago.*

A | I was just up there a couple of weeks ago for my 50th high school reunion and as they say, it was a room full of old folks. But it brought back a lot of just absolutely wonderful memories. I grew up in a Northwest suburb of Chicago and attended a public high school with 523 graduates in our class. We were on the front edge of the baby boomers. I learned a sense of Midwestern values that I think I have been able to carry with me. I watched growth. I watched farm fields become shopping centers. I watched a real clear delineated little town become swallowed up by the expansion of Chicago.

I became a big fan of mass transit because of commuter railroads. I can remember going to Cubs games on my own with a bunch of buddies when I was eight, nine, ten years old. It was a wonderful time to grow up. There was Davy Crockett. There were Mouseketeers. We were learning, growing, establishing values and we didn't have the shock of the 60s yet. That was to come. My dad actually took me on a couple of trips. He was a traveling salesman all over the middle part of the country, and it was those trips that really began to set my feet in the study of American history and American leadership.

If you are born and raised in Illinois, it's almost a requirement that you make a pilgrimage to Springfield. You go to Lincoln's home and Lincoln's tomb. That really sparked an interest for me. A couple of years later, I was not even ten yet, I visited my first Civil War battlefield, and as they say, the hook was set. That started this quest to understand American history and American values, not just the values of the upper Midwest. And there's one other thing we did that has stayed with me. During the summer, we would take a trip up to northern Wisconsin. It was our one vacation, and I became friends with the son of a chief of the Chippewa nation, in a little town called Lac du Flambeau. I learned about Native American heritage. I couldn't go on an island called Strawberry Island and I didn't understand why until much, much later in life. I learned the specialness of sacred places.

That was formative for me to understand another peoples values, even within the United States.

Q | *Tell us what led to your interest in history.*
A | Two interests in my family came together. By this time in high school, I was reading about Civil War battles and leaders and really beginning to understand how critical that period of time was to the creation of America as we know it today. And my mother loved old antebellum mansions. So the summer after my sophomore year in high school, we all piled in the family station wagon, which was a cultural right of passage in the 50s and early 60s. Everybody got in and you weren't a mile down the road before you were getting into a fight with your brother or sister. That's how it was. So we go to Virginia to tour the old homes and the battlefields, and we make the trip to Charlottesville to see Monticello. While there, we hear all about the University of Virginia. I put one foot on Mr. Jefferson's Lawn, and said, 'This is where I want to go to school.' I was fortunate enough to be admitted. It was after I applied and was admitted that I learned it was all men. It was the last major public university to go coed, and that kind of shows you the depth of my research.

Q | *What were the series of happy decisions or accidents that finally brought you to Texas?*
A | Well, in looking back...the first was going to UVA. It was luck, or it was something, that caused the Coca Cola Company to hire a history major that had never taken a business course in his life. By that time I was married, I was a UVA graduate, and had just been discharged from the Marine Corps. My wife and I lived in Atlanta; Lansing, Michigan; back in Chicago; Des Moines, Iowa; Kansas City; St. Louis; Miami and then moved to Texas in January of 1987. During that journey I was very fortunate, in both soft drinks and beer, to learn how to 'turn a company around.' And so that journey led us here. Back then, it was Southwest Distributing. There wasn't anything fundamentally wrong or broken, but it was a single dimension business. They were beer distributors. I view our role as being marketers, especially in a city as big and diverse as Houston. You have to understand your market, break it into as many pieces as you can, and then you will be successful. I guess becoming a turnaround guy through on-the-job training would be my answer.

Q | *Going back, what was one of the most significant artifacts that you collected as a child that you still have today?*
A | It was discovered at the Antietam Battlefield, in a place where a lot of Texas troops fought, in a cornfield. It was a bayonet, clearly used by a Confederate. It is four-sided, if you look at the tip. There are four sides rather than the typical three-sided bayonet. It was lost in the carnage at the cornfield. Back before the national park owned the land, it was owned by an elderly couple. They ran a little gift stand right there near the Sunken Road, and she gave it to me. We sat there and talked, and I was probably all of 12 or 13 years old, and I have always remembered both the kindness and her description of taking care of the land. And today, Antietam is probably as pristine as any battlefield, and I give credit to that woman, her husband, and the other people there. That's the one I remember.

Q | *Having served in the service, are military artifacts more meaningful to you?*
A | What's most meaningful to me is the connection to the individual. They say service is 95 percent boredom and five percent terror. And there is so much of a connection to the soldiers from the American Revolution to the Civil War, to today's troops. The equipment is different, but the individual is basically the same. The Civil War was the first war that was photographed. We have a couple thousand images of soldiers, their letters, and even pieces that have soldiers' art. They couldn't describe a camp scene, but they drew it. And I think that's so personal. That's what, to me, transcends the years and connects today's military with that of our forefathers.

Q | *You have an amputation kit in your collection...*
A | It's personal to me. I know of six of my ancestors that fought in the Civil War. One lost an arm at Antietam. (I didn't know the details of his service back when I was going to the battlefield, but I have learned it subsequently.) He loses an arm, goes back to Massachusetts, recovers, is commissioned, goes back into the Union Army, commands what is then called the United States Color Troops, fights in five more battles, and then winds up living after the war in Charleston. Another artifact I have is a crutch with a stump on it. It was made by a Tennessee Confederate in the Calvary. He lost his leg at Shiloh, made the crutch and then walked about 80 miles to his home in western Tennessee. We have that crutch. This personalizes it.

Q | *I understand you have grand plans for the Nau Center for Texas Cultural Heritage. Can you tell us a little more about that?*
A | We are going to tell the story of 29 counties, from Beaumont down to Goliad, and of course the greater Houston region. When you step back and think about all of the cultural resources that we have, we are missing a place to learn about the heritage and the cultures that created Houston and the region today. I think we are missing an economic development opportunity created by tourism, especially when we have conventions in town. Because, we don't have an easily accessible visitor's center.

We have 1.8 million conventioneers and their guests that come into Houston every year, and we are viewed as a city that destroyed its past, knocked down the old places, built steel and glass. That's not really the case. We will provide a resource to visitors, school children and residents to help them understand the sites of the region. We have old homes, we have churches and this part of Texas has many, many famous old courthouses. With the exception of the Alamo, we have every major site from the Texas Revolution. Our region is where the declaration was signed and where the Constitution was formed. People from around the country come here and they don't know that.

The Nau Center will provide a place to reflect on our past and learn about the people that had these really big ideas. Why are we one of the biggest ports in the U.S., 40 miles inland? That took big ideas and the support of the community to make it happen. My wife and I have lived in many different cities. We found this freedom in the people and the mindset here in Houston, and given my background in history, we see the Nau Center as a way for us to give back to the community. Most importantly, I think it is really to the credit of the leadership of Texas, both in Austin and the academic leadership, that 7th graders are required to take a course in Texas history. Our facility will help give them a place to connect faces, names, events with what they see in a textbook.

This is not going to be the kind of museum that you and I grew up with, where you go in and it's case after case of old stuff. We put a group of educators together, a number of them were elementary educators, and I said, 'Tell me, what do we need to do to educate a 7th grader?' Without any hesitation, this person looks at me and says, 'You're going to have to entertain them before you educate them.' We have a firm from California and about half of their staff are former Disney writers. The facts are going to be history, but there is going to be an entertainment element utilizing technology. We will be the first 21st century visitors center. And the first 21st century, true heritage center in the U.S.

If Houston is today what the rest of the country will look like in 40 or 50 years, I think we have, if not an obligation, an opportunity to tell the story of how all of those people have come together and work as one. Because we do. And there is friction among groups. There is friction no matter what your ethnicity. That's just human nature. But the reality is that Houston really works together. You go back to the 60s. How did Houston desegregate over 48 hours and it just happened? Well, there is a story there. Why was Houston the only major city that didn't have riots in '68 and '69? Those are great stories. And people will learn about them and help us, the city of Houston, educate the rest of the country.

Q | ***How important has the Texas Medical Center been in the historical fabric of what makes Houston what it is today?***

A | I think the medical center is one of the biggest assets to Houston today. Not just to the city but to the region. When you think about everything that goes on…number one, it's a job center. I was down there this morning, got out of the dentist chair alright. There are thousands of jobs and think about all of the families that are supported there. Think about the research, what's gone on at MD Anderson and the Texas Heart Institute. I mean, heart transplants, things that 70 years ago, when the center was founded, were just dreams. They are reality today. So the Texas Medical Center is critical to the performance of the city of Houston and it's one of the ways that Houston touches the rest of the country and the rest of the world. We do it there. We do it in energy. We do it in transportation. Those are the quiet impacts that Houston has, but the medical center to me is phenomenal. Whenever I come back on a flight from Europe, and see all of the people that are traveling in, specifically to come to Houston's medical center, it's very gratifying.

Q | ***Looking back, what have you found to be the most enjoyable or memorable experiences of your own past?***

A | I would say preserving civil war battlefields. In my previous role as chairman of the Civil War Trust, we have saved over 30,000 acres all over the country. It is great to watch enthusiasts and students come together. That's one.

Two, I was fortunate to be the chairman of the Texas Historical Commission. We were able to bring business ideas to the heritage of Texas, and we created 11 different heritage trails. As soon as those Heritage Trail Maps went out, businesses in the sites that we identified went up 18 to 22 percent. I began to tell people, you don't preserve it just because it's old. There needs to be a purpose. So we brought economic development to the heritage of Texas. I was fortunate enough to be appointed by President George W. Bush as chairman of the federal Advisory Council on Historic Preservation. This gave me the opportunity to reconnect with Native American tribes. They sat at the table with us. I was able to formulate a treaty, and this was a memorable day. If you were representing the president, you did it in a coat and a tie. Everybody else was in traditional Native American regalia, and we signed a treaty. And I found myself smoking a peace pipe that was Sitting Bull's personal peace pipe, with 19 other chiefs of tribes from all over the upper Missouri River system. So those are the kinds of memorable experiences…trying to advance the idea of heritage as an economic, cultural and social benefit.

> "By this time in high school, I was reading about Civil War battles and leaders and really beginning to understand how critical that period of time was to the creation of America as we know it today."

Q | ***How do you talk to children about how exciting history is, when they have traditionally seen it as nothing more than pages in a history book?***

A | Good teachers don't just talk dates and places, they engage students in a dynamic way and make history come alive. Last summer, I took my oldest grandson, Reese, and his brother and sister to the Vicksburg Battlefield, over along the Mississippi River. I watched him become not just excited but focused. It wasn't just the cannon, it was the story-telling, and the fact that he was on the ground. I didn't notice, but he went over with his parents and bought a Union uniform. As I came out of the hotel the next morning, he was standing there, eight years old, in this uniform. He really connected. He wants to know when we are going to go to another battlefield. So I would say that you need to make history come alive. You either do it in an entertainment format, or literally put their boots on the ground. Take them to a place like the Alamo, or here in Houston, San Jacinto. Or go to the old courthouse and talk about what it means. There is a value component that you will never just absorb out of a textbook. And that's what American history is about. It's about values and what people did to make those values continue from the 1700s to today. ■

A hand-painted drum used by the 117th New York Volunteer Infantry (ca. 1862) is among John Nau's collection of historical artifacts. (Photography by Michael Stravato)

An Evening of Ethics and Art

Geneticists and ethicists gather to spark conversation around clinical studies and patient consent

By Amanda D. Stein

To get people talking about ethics, often the issues have to be right in front of them. They have to have context. That is the thought behind the Bioethics on Stage series presented by Baylor College of Medicine's Center for Medical Ethics and Health Policy.

Written by psychologist and bioethicist Lynn W. Bush, and law professor and bioethicist Karen H. Rothernberg, the play engages the audience in a scenario in which a family deals with clinical research trials, and the disclosure of genetic testing findings. The event is designed to get people from all walks of life thinking, and talking, about the ethics of research and medicine in a unique way.

Baylor's Center for Medical Ethics and Health Policy Director and Leon Jaworski Professor of Biomedical Ethics Amy McGuire, J.D., Ph.D., narrated the play, encouraging audience members to think through the scenarios from the perspective of a patient deciding whether to take part in clinical testing. She hopes this play will serve as the first of many opportunities for the medical community and the general public to come together around conversations that take place within the Texas Medical Center and homes across the country, every day.

"This play raises issues around clinical trial research participation, and some of the issues associated with that, including the decision making that goes into designing an ethical research protocol, and the participation by individuals and families," said McGuire. "And this particular research study involves genetic testing, so it raises a lot of issues around decisions about genetic testing, the kinds of information you can get back from new genomic technologies that are being used, and how to communicate that information to family members."

The play opened with a single mother and her three children visiting a pediatric genetic clinic. Two of the three children, nineteen-year-old Bobby and sixteen-year-old Amy, have an autosomal recessive genetic disorder, and the family was offered a chance to take part in a clinical study. The conversations that followed centered around the consent form, and the kinds of questions and conflicts a family might face related to genetic testing.

The first act, titled "It's Not That Simple," includes a scene where the family is reading through the consent form sent home with them by Dr. Hardy, played by Lorraine Potocki, M.D., FACMG, professor of molecular and human genetics at Baylor.

"The form goes on to say, 'In the future, we may contact you to find out if you are interested in learning about your results or gene variants that are important to your health and/or the health of your relatives,'" said Amy, played by Doe Florsheim, president of The Partnership for Baylor College of Medicine.

"They say 'important,' but how will they decide what's really important enough to tell us?" replied Bobby, played by Robert Robbins, M.D., president of the Texas Medical Center.

The audience engaged in conversations around that very idea during the first discussion portion of the play. Geneticists, physicians and members of the general public weighed in on what the family could or should expect in the way of privacy, consent of health information for children, and the desperation that might drive families to take part in clinical trials without really understanding what the outcome could be. Would a family risk finding out more than they want to know about their own health, for the chance to find a treatment or cure for a particular health problem they face every day?

One audience member suggested that in cases where genetic testing holds promise for a treatment or cure, families and individuals may be quick to sign a document like the consent forms presented in the play. A geneticist in the audience suggested that even families in desperate situations might give more thought to the forms than some would expect. She noted that many of her patients' families, facing pediatric cancer, request time to go over the forms and discuss their options.

(Credit: Baylor College of Medicine)

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>
> — AMY MCGUIRE, J.D., PH.D.
> *Director of Baylor College of Medicine's Center for Medical Ethics and Health Policy*

The play's second act, titled "It's So Complicated," includes a scene in which the family is told of "some potentially significant findings unrelated to what [they] were looking for."

The mom, played by Melanie Gray, a partner at Winston and Strawn LLP and a Baylor board member, is advised to seek further testing from a neurologist, for the possibility of early-onset Alzheimer's disease. Bobby is told that he carries the BRCA mutation, giving him a six percent lifetime risk for developing breast cancer. And the youngest and "healthiest" son of the family, Sam, played by Reid Sutton, M.D., associate professor of molecular and human genetics at Baylor, is told he must quit the swim team because of a genetic predisposition to Long QT syndrome.

The scene sparked conversations about a doctor's role in carefully and completely explaining the findings of these types of genetic tests, and not rushing into a diagnosis. Some also questioned the current practice of "all or nothing" disclosure of significant health findings from genetic testing. ■

Patients' Songs Take Flight

Purple Songs Can Fly offers pediatric patients and their families a creative outlet

By Alex Orlando

Walking into Anita Kruse's cozy, personalized in-house recording studio at Texas Children's Cancer and Hematology Centers, the understanding that you're still inside of a pediatric hospital dissolves entirely. A vibrant shade of purple adorns the walls, apparent in the studio's artwork and even on furniture, while a microphone, keyboard and recording equipment establish a tone of excitement and creativity. Purple Songs Can Fly (PSCF), a unique program that provides a musical outlet for children being treated for cancer and blood disorders at Texas Children's Cancer and Hematology Centers, offers the potential to mentally transport patients through self-expression.

"I think of writing songs and creativity in general as a way for your spirit to rise above whatever else may be going on in your life," reflected Kruse, a pianist and songwriter who founded Purple Songs Can Fly in 2006 after spending several years as a visiting artist in Texas Children's Cancer and Hematology Centers Arts in Medicine Program. "Purple Songs represents that idea of rising above illness."

In the program, children and their siblings work closely with Kruse and other professional composers to write, record, and burn songs to disc within short sessions. As the first in-house recording studio ever created on a pediatric cancer floor, Purple Songs Can Fly has inspired similar programs across the country and has been featured in numerous publications and broadcasts. In a recent partnership with the Houston Symphony, musicians are invited to visit the PSCF recording studio to provide musical accompaniment to the children's songs.

"When a child has an opportunity to create something, they're creating a legacy, whether it's a piece of art or a song," said Carol Herron, coordinator of the Arts in Medicine Program at Texas Children's Cancer and Hematology Centers. "Through having their voices recorded, the children and their family have something tangible to go along with the memory of something wonderful, positive and creative. It acts as a reminder of this creative outlet that they had during a portion of their lives that was very difficult."

In June of 2013, PSCF celebrated a significant milestone—their 500th song was written and recorded. A year earlier, they expanded their program to include a portable recording system that allows them to work at patients' bedsides, both on the 9th floor of Texas Children's Cancer Center inpatient unit and in their Bone Marrow Transplant (BMT) unit. While Kruse initially intended for the children's hopes and dreams to fly through the creation of their unique records, she has found creative ways for their songs to literally soar.

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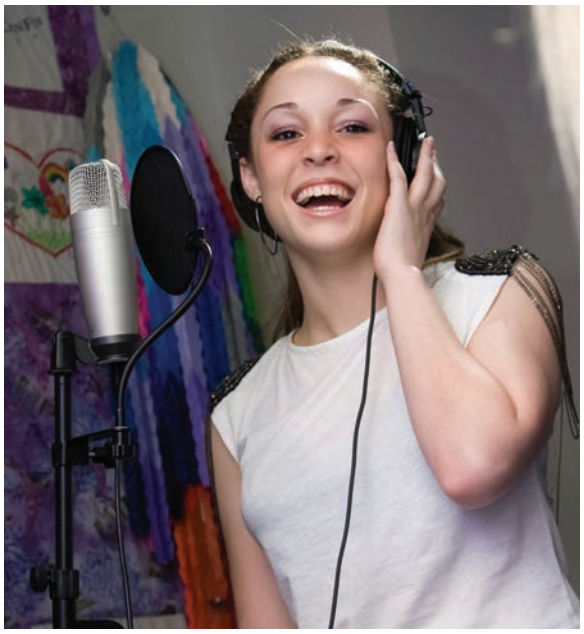
Transcending symbolism, the songs created through PSCF have traveled on two different space shuttle missions with astronauts Scott Parazynski and Heidi Stefanyshyn-Piper. They have been carried on tour with The Rolling Stones, played under the ocean at the Aquarius NOAA Research Center, and taken to the top of Mount Everest. Although not as far reaching as their journey through space, the songs have also been played on Continental Airlines' in-flight play lists and are currently available on United Airlines.

Even with an expansive scope of exposure that has taken them out of our atmosphere, Purple Songs Can Fly represents just one element of Texas Children's Arts in Medicine Program. "We have so many wonderful community partners—we're so fortunate to live in a community that's so rich in the arts and supports the arts," said Herron. "We want to provide as many points of exposure to as many types of art as possible for our patients, because you never know what's going to connect for a child."

Exposing children and teens to art in both inpatient and outpatient clinical settings, the Arts in Medicine Program has close to 15 partners they work with on an ongoing basis. A collaboration with the Museum of Fine Arts, based on a current museum exhibit, allows children in the Texas Children's Bone Marrow Transplant unit to work with an artist from the museum at the bedside. Writers in the Schools (WITS) assigns one writer to work year-round to help patients cultivate the creative writing process. Afterwards, the Arts in Medicine program uses the children's poems and short stories to put together The Splendid Review, a quarterly anthology of children's writing that is sent to patients and their families. Diana Sanchez, a resident artist from City ArtWorks, assists patients with art projects such as printing, clay work, and self portraits, focusing primarily on children in the BMT unit. Earlier this year, costumed dancers from the Houston Ballet's production of Aladdin made a special visit to Texas Children's Cancer Center.

Kruse sees the union of health care and the arts as a way to retain that element of humanity that can often be lost through the treatment process. "For children who are facing life and death situations, it's been fascinating to see how they're so motivated about sharing profound messages—maybe they end up being their message to the world," she said. "All of the arts have the ability to tap into the deepest parts of who we are—what could be more important? To see the evolution of that understanding throughout Texas Children's is really amazing. I see it just becoming more of a mainstream idea, that healing and creativity are linked together on a deeper level that we're just beginning to understand and even document, or study, scientifically. To see those ripples reverberating throughout the health community, as it is embraced as an important element in healing, is fantastic."

"Our goal is to take them away, mentally, from being here, so you want that personal one-on-one connection with a child, whether it's through photography, writing, or singing. You're outside of the hospital for those few minutes," added Herron. "Frequently, there's a tendency to see children kind of one-dimensionally, just as patients. Through art, we learn more about them. Keeping the humanity in health care is so important; it's about enriching their day, in that moment, which carries over into their treatment and throughout their lives."



ABOVE: Purple Songs Can Fly helps pediatric patients and their families soar through the writing and recording of their original songs. LOWER LEFT: Layla Borghese, a former patient at Texas Children's Cancer Center. LOWER MIDDLE: Anita Kruse, Purple Songs Can Fly founder, bonds with a patient. LOWER RIGHT: Christian Spear, Purple Songs Can Fly's first songwriting fellow and a former patient. (Credit: Texas Children's Hospital)

ACCOLADES

GABRIEL M. AISENBERG, M.D., assistant professor of internal medicine at The University of Texas Health Science Center at Houston (UTHealth) and director of general internal medicine at LBJ Hospital, has been named the winner of the John P. McGovern Award as the exceptional clinical teacher. This is his second time to win the McGovern award—the first was in 2012. The John P. McGovern Award is given annually to an outstanding clinical faculty member as chosen by the senior class.

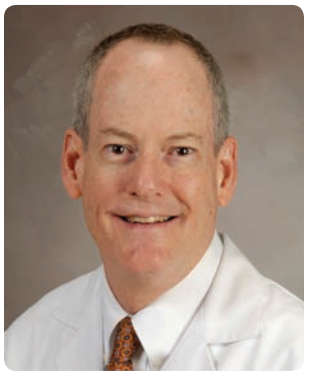
JULIE A. BOOM, M.D., director of the Immunization Project at Texas Children's Hospital and associate professor at Baylor College of Medicine, has been named Centers for Disease Control and Prevention (CDC) Childhood Immunization Champion for Texas. This annual award, given by the CDC Foundation and the CDC, honors exemplary childhood immunization advocates. Boom was nominated by her peers and selected as a Champion among health care professionals, community advocates, and other immunization leaders for making a significant contribution to public health in Texas through her work in children's immunization.

MICHAEL H. COVERT, president and chief executive officer of Palomar Health in San Diego, has been named chief executive officer of the CHI St. Luke's Health market. A veteran health care executive, Covert will serve not only as the top executive of the Houston-based health system but also as a senior vice president for Catholic Health Initiatives, the parent company of CHI St. Luke's Health. The two roles reflect and underscore the expanding responsibilities of key Catholic Health Initiatives executives responsible for providing leadership, strategic integration and overall operational management for regional or statewide groups of health facilities that span the continuum of care.

BRADFORD GOODWIN, DVM, executive director of the Center for Laboratory Animal Medicine and Care at The University of Texas Health Science Center at Houston (UTHealth), recently received the 2013 Distinguished Service Award from the Texas Society for Biomedical Research. The award recognizes and is in appreciation for his many years of dedicated service to the science, research, and medical communities in the state of Texas. A veterinarian since 1967, Goodwin joined the Medical School and UTHealth in 1989, following a military career with the U.S. Army Veterinary Corps that included serving as President Lyndon B. Johnson's attending veterinarian.

DAVID HERNDON, M.D., who holds the Jesse H. Jones Distinguished Chair in Burn Surgery at the University of Texas Medical Branch (UTMB), was honored with the Medallion for Scientific Achievement by the American Surgical Association (ASA). This is the highest accolade presented by the ASA, the oldest surgical society in the United States, established in 1880. Herndon also serves as chief of staff and director of research at Shriners Hospitals for Children—Galveston. He was recognized for his multiple, seminal contributions to the burn field, including his discoveries related to the hypermetabolic response to burn injury.

ANIL KULKARNI, MSC, PH.D., professor in the Department of Surgery at The University of Texas Health Science Center at Houston (UTHealth) Medical School, was awarded a highly competitive Fulbright-Nehru Scholarship Award for Academic and Professional Experience to travel to India this fall to teach immunonutrition and functional foods in the global health era. As part of his fellowship, one of his goals back home in Houston will be to establish the Center of ImmunonUTrition, which will feature the development of basic and translational curriculum in these specific areas.



JOHN RIGGS, M.D., chief medical informatics officer for Harris Health System, has assumed an additional position as chief of service of obstetrics and gynecology for the health system's Lyndon B. Johnson Hospital. Riggs serves as an associate professor in the Department of Obstetrics, Gynecology and Reproductive Sciences at The University of Texas Health Science Center at Houston (UTHealth). He has worked in LBJ Hospital's OB/GYN services since 1990, when UTHealth's medical partnership with Harris Health began. His goals are to expand OB/GYN services in many of Harris Health's outpatient facilities and reinvigorate UTHealth's residency program.

WILLIAM C. WATTERS III, M.D., MMS, has been named president of the North American Spine Society. Watters is a clinical associate professor for the Department of Orthopedic Surgery of The University of Texas Medical Branch at Galveston, and the Department of Orthopedic Surgery at Baylor College of Medicine. He received advanced training in spinal surgery at the University of Pennsylvania and has served on major committees for organizations such as the American Academy of Orthopedic Surgery and American Board of Spine Surgery, and holds a position on the Board of Advisors for World Spine Care.

Study Shows Chikungunya Virus Mutation Places Several Countries at Risk of Epidemic Circulation

For the first time, University of Texas Medical Branch at Galveston (UTMB) researchers were able to predict further adaptations of the chikungunya virus that recently spread from Africa to several continents that will likely result in even more efficient transmission and infection of more people by this virus strain.

A key factor in a viruses' potential to sustain its circulation and ultimately cause disease is its ability to adapt to new host environments. The number and complexity of these adaptations is shaped by how hospitable the new host is to a certain virus.

Since 2005, one in 1,000 chikungunya virus infections has resulted in a fatal disease. "A typical infection involves very severe arthritic symptoms, leaving the sufferer severely afflicted by pain to the point where people can't work or function normally," said UTMB Professor Scott Weaver, Ph.D., lead author of this paper that will be published in Nature Communications. "Chikungunya continues to be a major threat to public health around the world."

A UTMB team previously found that a recently emerged lineage strain of the chikungunya virus has adapted itself to be hosted by not only the Aedes aegypti mosquito that lives mainly in the tropics but also to the Asian tiger mosquito, A. albopictus, which can currently be found on all continents except Antarctica. This mutation in the Indian Ocean lineage occurred through a single adaptive change in the virus' genetic code that alters one protein in the envelope surrounding the virus.

Their newest investigation analyzed recent events in chikungunya virus evolution that will aid in predicting future trends in transmission and circulation that determine epidemic potential. Weaver and his team found that the initial adaption provided the framework for a second wave of adaptations that can enable rapid diversification of viral strains and even more efficient transmission to people. In addition, analysis of the chikungunya virus strain expressing a combination of the second-wave adaptive mutations revealed a similar pattern of changes and heightened adaptive qualities suggesting the future emergence of even higher transmission efficiency.

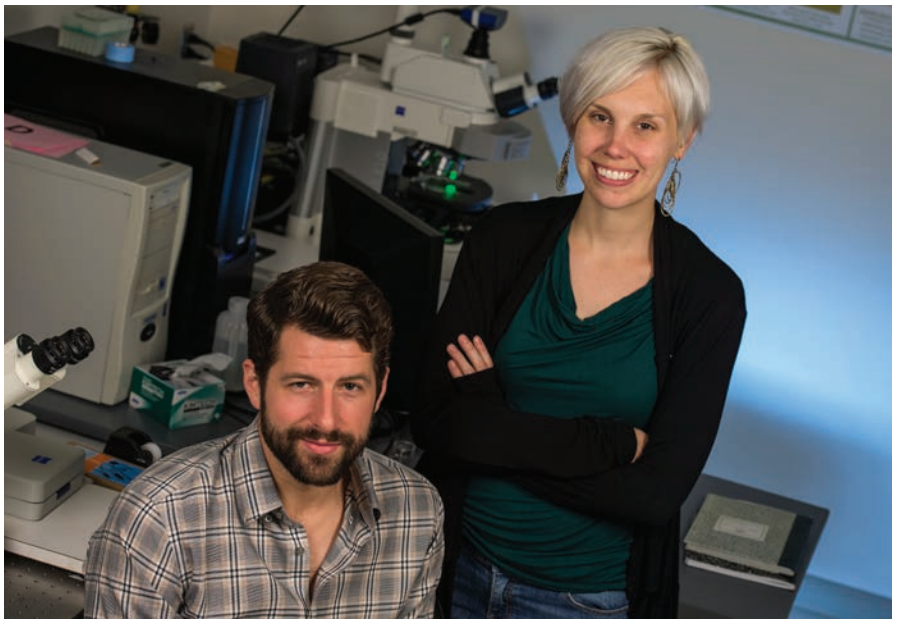
The researchers concluded that the Indian Ocean lineage of chikungunya virus that has spread to the Indian Ocean Basin, Southeast Asia, Oceania and Europe continues to mutate and adapt to develop higher efficiency for transmission by the Asian tiger mosquito. "Although a different chikungunya virus strain from the Asian lineage is now circulating in the Americas, the introduction of the Indian Ocean lineage could put temperate regions where A. albopictus thrives at risk for expansion of epidemic circulation," Weaver cautioned.

Other authors of this paper include Konstantin A. Tsetsarkin, Rubing Chen, Ruimei Yun, Shannan L. Rossi, Kenneth S. Plante, Mathilde Guerbois, Naomi Forrester, Grace Leal and Jing Huang from UTMB; Guey Chuen Perng from Emory University School of Medicine and the National Cheng Kung University in Taiwan; Easwaran Sreekumar from the Rajiv Gandhi Centre for Biotechnology in India; and Suchetana Mukhopadhyay from Indiana University. This research was supported by the National Institutes of Health and the Department of Biotechnology of the Indian Government.

— Donna Ramirez, UTMB

Rice Developing Mobile DNA Test for HIV

> “It’s important for clinicians to be able to quantitatively monitor patients’ viral loads in order to ensure the disease is responding to therapy.”
>
> — ZACHARY CRANNELL
> *Rice University Bioengineer Graduate Student and Co-lead Author*



Rice graduate students Zachary Crannell, left, and Brittany Rohrman are leading Rice University bioengineers in an effort to develop an efficient test to detect signs of HIV and its progress in patients in low-resource settings. (Credit: Jeff Fitlow/Rice University)

Rice University bioengineers are developing a simple, highly accurate test to detect signs of HIV and its progress in patients in resource-poor settings.

The current gold standard to diagnose HIV in infants and to monitor viral load depends on lab equipment and technical expertise generally available only in clinics, said Rice bioengineer Rebecca Richards-Kortum. The new research features a nucleic acid-based test that can be performed at the site of care.

Richards-Kortum, director of the Rice 360° Institute for Global Health Technologies, and her colleagues reported their results in the American Chemical Society journal Analytical Chemistry.

The proof-of-concept work by co-lead authors Zachary Crannell and Brittany Rohrman, both graduate students in the Richards-Kortum lab, follows their similar technique to detect the parasite that causes the diarrheal disease cryptosporidiosis, reported earlier this year.

The new technique would replace a complex lab procedure based on polymerase chain reaction with one that relies on recombinase polymerase amplification (RPA), a method to quickly amplify—that is, multiply—genetic markers found in blood to levels where they can be easily counted. In a test the team calls qRPA, a specific sequence in HIV DNA is targeted and tagged with fluorescent probes that can be seen and quantified by a portable machine. Software analysis of the fluorescing DNA allows clinicians to determine with great accuracy whether the virus is present in a patient’s blood and/or how much is there.

The researchers calibrated the test by also amplifying an internal positive control not found in human blood. “It’s amplified by the same primers as the HIV sequence, so it tells us that the assay is working properly,” Rohrman said.

The students originally intended their work to look for HIV in infants, but the technique can also help to track viral loads in older patients. “It’s important for clinicians to be able to quantitatively monitor patients’ viral loads in order to ensure the disease is responding to therapy,” Crannell said.

To be clinically viable, a DNA-based test for HIV has to be able to quantify virus loads over four orders of magnitude, from very low to very high, the researchers said. They reported the Rice test easily meets that goal.

They are developing tools for low-resource settings where high-tech lab equipment is not available. Although they used a thermal cycler, the researchers are working on a technique that will keep the entire procedure between room and body temperatures so that it can be performed at the point of care in the developing world.

The research was funded by a grant from the Bill & Melinda Gates Foundation through the Grand Challenges in Global Health Initiative.

— Mike Williams, Rice University

FDA License Allows Blood Center to Expand Impact on Patients with Rare Blood Traits

Carla Collins, assistant manager in The Blood Center's Consultation and Reference Laboratory, uses the ACP 215 to prepare a rare unit of red blood cells for freezing. (Credit: Gulf Coast Regional Blood Center)

> "There have been times when a patient doesn't get transfused within 24 hours, due to a variety of potential complications, so the unit has to be transfused to someone else or discarded. The ACP 215 allows us more time to use that special unit for someone who really needs it."
>
> — CHERI JENNINGS
> *Director of Technical Services at Gulf Coast Regional Blood Center*

Thanks to a recently approved Federal Drug Administration (FDA) license, patients across the country in need of rare units of red blood cells may breathe a little sigh of relief. In late April, Gulf Coast Regional Blood Center became the first civilian organization licensed by the FDA to manufacture red blood cells using the Haemonetics ACP 215 Automated Cell Processor. This instrument is used to freeze and thaw rare units of red blood cells that aren't commonly found in the general population.

For someone with rare blood traits that are only present in one in a million people, finding a matching unit can be a tricky waiting game—and sometimes patients can't afford to wait. Red blood cell donations are good for 42 days when refrigerated and stored in a liquid state. Rare units, however, are frozen so they can be stored for 10 years and made quickly available when a rare patient need arises.

Usually an open system is used to freeze and thaw blood. When this method is used, the units expire 24 hours after being thawed, meaning there is very little time available to transfuse the units to the patient. The ACP 215, however, is a completely closed system. Units frozen and thawed on the ACP 215 are good for 14 days after being thawed.

"There have been times when a patient doesn't get transfused within 24 hours, due to a variety of potential complications, so the unit has to be transfused to someone else or discarded," Director of Technical Services Cheri Jennings said. "The ACP 215 allows us more time to use that special unit for someone who really needs it."

The ACP 215 was originally developed for the U.S. Navy, which has been using it for years. Only a handful of civilian blood banks have one, and Gulf Coast Regional Blood Center is the first to apply for and receive a license from the FDA. The Blood Center has been using the ACP 215 since fall 2011 to provide units for patients in the Texas Gulf Coast region.

The FDA license opens up the door to send thawed units to blood centers across the American Rare Donor Program network, which uses a database to track and organize rare donor information. This means that if a rare unit from Houston was the only match for a patient in Seattle, the ACP 215 would allow time to thaw and ship the unit for patient use. While it is possible to ship frozen units, they are extremely fragile and can easily break before being thawed, leaving the patient stuck waiting for a one in a million unit to be found in their region.

Gulf Coast Regional Blood Center's Consultation and Reference Laboratory processes approximately 1,400 units every month that vary in rarity from matching one in 1,000 people to one in a million. This spring, The Blood Center launched a new marketing campaign, One 2 One, designed to recruit rare donors in the Texas Gulf Coast region, with the goal of increasing the number of rare units donated and frozen for future patient use.

"We participate in the American Rare Donor Program, and people from across the country call us routinely for rare units. Because Houston is so diverse, we are fortunate to have a large supply of rare units," Jennings said. "This will allow us to participate in that program more extensively and provide rare units to patients in need throughout the U.S." ■

— Meagan Raeke,
Gulf Coast Regional Blood Center

Nation's First Mobile Stroke Unit Successfully Transports First Patient

The University of Texas Health Science Center at Houston (UTHealth) Medical School, in partnership with Memorial Hermann-Texas Medical Center (TMC), announced that the UTHealth Mobile Stroke Unit had successfully transported and helped save the life of its first patient.

The unit, which is the first and only of its kind in the nation treating patients, is a specially-equipped ambulance with a CT (computed tomography) scanner that allows a stroke unit team member to quickly assess whether a patient is having a stroke caused by a blood clot and, if so, the clot-buster tPA (tissue plasminogen activator) can be administered.

Since becoming fully licensed and ready to go live late last month, the unit was dispatched for the first time to 30-year-old Maureen Osaka's home near downtown Houston after 911 received a call from Osaka's friend that the woman was suffering from stroke-like symptoms.

"I felt so weak, I couldn't use my hand and I was so dizzy," said Osaka. "I couldn't stand up so I started crawling from the living room to my bedroom, thinking I was going to lie down and go to sleep to hopefully feel better—I didn't know what was going on. But before I could make it to my room, the whole left side of my body stopped working and I could no longer see, so I made it to the phone and blindly started dialing the only numbers I knew."

Upon arrival, the mobile stroke unit team assessed Osaka then moved her into the ambulance where they immediately started the CT scan. Within minutes, they were able to confirm Osaka was not only suffering a stroke but probably had one of the rarest and most fatal types of stroke, a basilar artery occlusion, which means the blood clot was blocking an artery that provides blood to the brain stem.

Having the critical information they needed from the scan, the team was able to begin administering tPA treatment on site, before the ambulance even left the scene for the Comprehensive Stroke Center at the Mischer Neuroscience Institute at Memorial Hermann-TMC. "The type of stroke that Ms. Osaka suffered is often difficult to diagnose, so in addition to speeding treatment, the Mobile Stroke Unit brings specialized stroke expertise right to the patient's home at a time when it is needed most," said James C. Grotta, M.D., the neurologist who led the team that treated Osaka that day.

"tPA is the only FDA-approved treatment for an ischemic stroke, but it must be given within three hours of the first signs of stroke to be most effective," added Grotta, who is also director of stroke research in the Clinical Institute for Research & Innovation at Memorial Hermann-TMC and director of the mobile stroke unit consortium that will also include the stroke teams from Houston Methodist Hospital and CHI St. Luke's Health-Baylor St. Luke's Medical Center, local businesses and philanthropists. "It typically takes an hour once a stroke patient arrives in the emergency room to receive treatment, and that's not counting transport time. In these situations, every minute—every second—counts, so the earlier the clinical team can intervene, the better the outcome."

"Ms. Osaka was treated approximately 78 minutes after she first felt sick. Fewer than one percent of all stroke patients are treated that quickly. When she first arrived at the Memorial Hermann-TMC Emergency Center, her basilar artery was still blocked, but by the time the team got her up to the endovascular suite to try to extract the clot, it had already largely dissolved," said Grotta.

Mark Dannenbaum, M.D., neurosurgeon with the Mischer Neuroscience Institute at Memorial Hermann-TMC and associate professor in the department of neurosurgery at UTHealth, performed the endovascular procedure to remove the rest of the blood clot from her brain. Patients with an acute basilar artery occlusion, the type of stroke that Osaka suffered, typically have a mortality rate of greater than 85 percent. Those who survive are often left partially paralyzed or otherwise severely disabled, whether mentally, physically or both. But just days after her stroke, Osaka was moving her left side, speaking clearly and walking independently.

> "Now that we quite literally have a mobile emergency room in the ambulance, we are able to assess and treat the patient faster than ever before possible."
>
> — STEPHANIE PARKER, R.N., BSN
> *Project Manager for the UTHealth Mobile Stroke Unit*

"I remember being in the ambulance on the way to the hospital and thinking I'd never be able to use my hand again. I'll never talk again. I'd lost all hope," said Osaka. "But I can still talk! In just one day, I went from not being able to speak, to speaking but no one could understand me, to now speaking and pronouncing things perfectly. Before the end of that same day, I could also move my hand again. It was like a dream! I could even stand up and walk!"

"Now that we quite literally have a mobile emergency room in the ambulance, we are able to assess and treat the patient faster than ever before possible," said Stephanie Parker, R.N., BSN, project manager for the UTHealth Mobile Stroke Unit. "Because we were able to arrive so quickly and initiate tPA treatment on scene, we may have not only saved Ms. Osaka's life, but by cutting down on precious time, we were able to help save millions of her brain cells and minimize any residual disability as well."

Osaka, who is originally from Nigeria but travels the world doing philanthropic work, feels blessed and thankful that she happened to be in Houston and within the unit's response radius when her stroke occurred. ■

— Kathryn Klein, Memorial Hermann—Texas Medical Center

July 2014

9 ***Responsible Conduct of Research Seminar Series***
Presented by Tyron C. Hoover, M.D.
Wednesday, Noon-1:00 p.m.
MD Anderson Cancer Center,
Basic Science Research Building
Onstead Auditorium
tjcostello@mdanderson.org

10 ***Aptamer-Guided Delivery of siRNA to Cancer Stem Cells to Overcome Chemoresistance***
Presented by Wei Duan, M.D., Ph.D., Deakin University School of Medicine
Thursday, Noon-1:00 p.m.
Houston Methodist Research Institute
John F. Bookout Auditorium,
6670 Bertner Ave.

11-15 ***Transplant Games of America***
Locations across Houston
www.transplantgamesofamerica.org

15 ***Behavior Change Interventions for Multiple Cancer Risk Factors: Obesity, Tobacco, and Alcohol***
Integrative Medicine Program Lecture Series
Tuesday, Noon-1:00 p.m.
MD Anderson Cancer Center
Hickey Auditorium, Main Building
fdwebber@mdanderson.org

18 ***Synthesis and Characterization of a Novel, in situ-Forming, Biodegradable Hydrogels for Cellular Delivery in Craniofacial Bone Tissue Engineering***
Presentation by Brendan Watson, doctoral candidate
Friday, 10:00 a.m.- noon
Rice University
284 BioScience Research Collaborative

23 ***The Affordable Care Act: Is Health Care Becoming More Affordable?***
Baker Hall Dore Commons,
6100 Main Street
www.bakerinstitute.org/events/1648

25-26 ***Houston Advances in Robotic Urologic Surgery: Novel Techniques and Optimizing Outcomes***
HMH Research Institute,
MITIE, 5th floor
6670 Bertner Ave
mitieevents@houstonmethodist.org
713-441-7912
www.mitietexas.com/robotics

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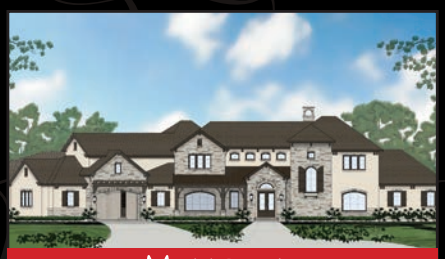

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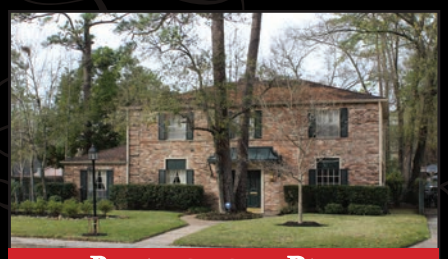

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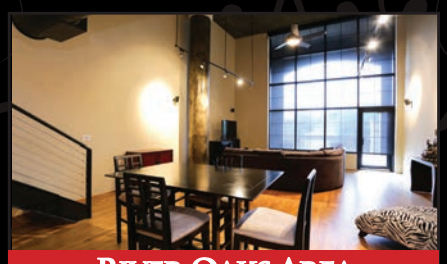

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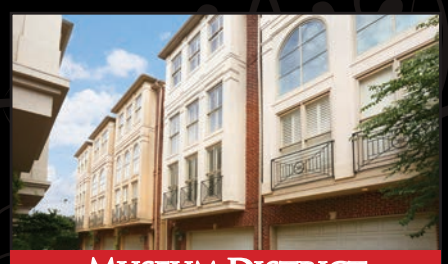

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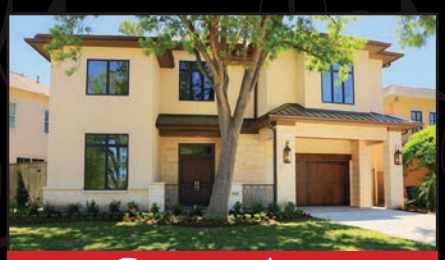

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