

OUT IN FRONT

FALL 2018

BRAIN AND BEHAVIORAL HEALTH

COVER STORY

**Putting a patient
in the driver's seat**

*Laser surgery sets epilepsy
patient free*

A family tradition

*How generosity propels
brain research*

**Restoring health,
restoring identity**

*High school soccer star returns
to his passion*

UTHealth's Comprehensive Campaign

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

BRAIN AND BEHAVIORAL HEALTH



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

HEALTHY AGING



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

WOMEN'S AND CHILDREN'S HEALTH



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

STORY LEGEND

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



EDUCATION



RESEARCH



PATIENT CARE

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ABOUT THE COVER

Epilepsy took the driver's seat of Christine Melody's life for almost two decades. She fought to control it, to conceal it—to keep one hand on the wheel. But in the end, she knew who held the keys.

UTHealth experts wielded advanced laser surgery techniques against Christine's epilepsy, freeing her from the seizures that disrupted her life. Christine takes the road in her first car knowing that—in more ways than one—she's the one driving now.



BRAIN AND BEHAVIORAL HEALTH



WITH GRATITUDE

As a leading and comprehensive academic health science center, UTHealth is uniquely well-positioned to address the most pressing health-related issues of our time. Top among these are brain and behavioral disorders. The effects of these disorders ripple across our community and impact us all. As we align our efforts with the health challenges that matter most to our community, I am pleased to share with you this year's *Out in Front: Brain and Behavioral Health* publication.

The following stories illustrate how UTHealth is engaging scientists from across our schools and partners from across our community—working together on the frontier of brain and behavioral sciences. Better understanding the mechanics of the mind and body, developing innovative treatments, and educating the next leaders in health care keep us out in front of the diseases that touch our families, friends, and neighbors.

Because of philanthropic partners like you, we are leading breakthroughs in brain and behavioral disorders—from using stem cells to speed recovery after a brain injury, to investigating the mental and physical impact of Huntington's disease, to developing surgical techniques that put patients in the driver's seat of their own health. It takes a community coming together to make life-changing discoveries like these.


On behalf of the many faces of UTHealth: **Thank you.**

Giuseppe N. Colasurdo, MD

President, UTHealth
Alkek-Williams Distinguished Chair

A FAMILY TRADITION

HOW GENEROSITY PROPELS
BRAIN RESEARCH

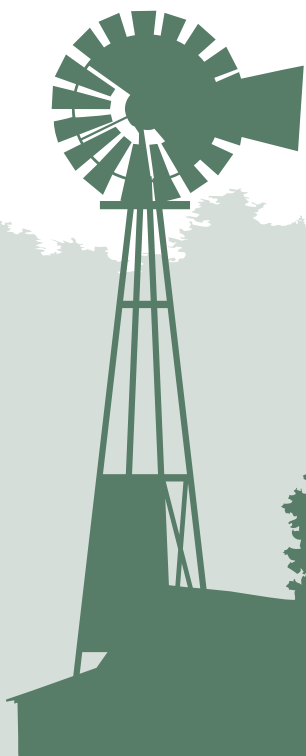


Growing up on a cattle ranch in East Texas, Kathaleen Wall learned her foundational values from her parents: faith, family, community—and generosity.

“Caring for others was woven into my mother’s DNA,” says Kathaleen, a technology business executive and former congressional candidate. “She instilled in me her belief in the Golden Rule, which she demonstrated daily by her sacrificial willingness to serve others.”

When her mother passed away from a rare form of brain cancer, Kathaleen’s helplessness to save her infused new purpose into that belief.

“I wanted to help others and do my part in finding cures for other diseases,” she says. “I know what it’s like to have a loved one die from an incurable disease and wonder why a cure or better treatment hasn’t been found.”





Charles Cox, Jr., MD, believes stem cells hold the key to preventing long-term brain damage in children with traumatic brain injuries.

In 2017, Kathaleen and her husband, Holloway “Holly” Frost, met physician-scientists from McGovern Medical School at UTHealth who are exploring the use of adult stem cells to treat traumatic brain injury and stroke. Given the severe, lifelong disability these conditions can cause, Kathaleen felt new treatment advances would prove transformative for patients and their families. After touring their laboratories to learn more, Kathaleen and Holly donated a total of \$500,000 to support stem cell research.

Part of their gift established the Grace Reynolds Wall Research Fund in memory of Kathaleen’s mother. The endowment fuels discovery in the Department of Pediatric Surgery under the direction of Charles S. Cox, Jr., MD. Cox explores preventing brain damage in children who have suffered a traumatic brain injury by using the child’s own stem cells, an approach that has been shown to be promising in early clinical trials at UTHealth.

“Thanks to Kathaleen and Holly, we can move forward with research that otherwise might not be possible,” Cox says. “Their generosity will make a life-changing difference for children with serious brain injuries.”

Kathaleen and Holly also directed funding to Sean I. Savitz, MD, whose research focuses on using stem cells to enhance recovery following a stroke, potentially restoring function to stroke victims. Savitz currently leads the Houston site of a clinical trial begun in 2017 to study the method’s safety and effectiveness.

“We’ve seen how a stroke can devastate a person’s life in so many ways,” Savitz says. “I am grateful that Kathaleen and Holly are helping us harness the potential of stem cells to enhance the recovery of stroke victims.”

Drawing from her business background, Kathaleen also sees her philanthropy through an economic lens. With stem cell research still in its infancy, she believes her gifts can help grow the scale of the work Cox, Savitz, and others are conducting—increasing accessibility and decreasing costs.

“The goal is to make these medical advancements part of standard patient care with breakthrough results at an affordable cost,” she says. “I genuinely want to help McGovern Medical School conduct the highest caliber of research in the biomedical and health sciences, providing exemplary clinical and patient care services.”

To that end, Kathaleen’s connection with UTHealth faculty also provided an opportunity for a possible future physician-scientist to explore the medical field: her niece Marissa Wall, a college sophomore who hopes to become a doctor.

After shadowing McGovern Medical School faculty for a week, Marissa gained an appreciation for the genuine care that UTHealth physicians showed their patients. She also saw firsthand how philanthropy directly affects patients by providing new methods to save and improve lives. Her experience reinforced a desire that Wall’s mother embraced wholeheartedly.

“I want my life to be in service to others,” Marissa says, “just as these doctors serve every day.”



Kathaleen Wall
Donor

A PARADIGM SHIFT FOR STROKE

REDUCING INFLAMMATION TO PRESERVE THE BRAIN AND THE PERSON



“Stroke is an acute condition where time is everything. The more cells we can preserve, the more function we can preserve, and the more we can preserve the person overall. This drives me to do what I can.”

Unbeknownst to Sean I. Savitz, MD, his professional career would take on a momentum of its own when he was recruited to join McGovern Medical School at UTHealth faculty more than 10 years ago as a stroke specialist with a background in stem cells.

“I really wanted to work in an area where there is a huge public health need, a condition that irrevocably changes someone’s life—and their entire family,” says Savitz. “And where there’s an opportunity to intervene quickly that can actually reverse damage to the brain.”

Savitz applies his scientific background in the mechanisms of neurons to study the effects of stem cells on stroke. His initial studies used the patients’ own stem cells—harvested from their bone marrow—to determine the effects on the brain. Soon after, he received funding from the National Institutes of Health to continue his research, working closely with the Food and Drug Administration for approval and to determine safety.

The paradigm shift came when researchers determined that stem cells from a healthy volunteer could work just as well as the patient’s own stem cells. This provided a much less invasive option and opened the door for Savitz to work with industry leaders on different versions of an “off-the-shelf” product approach before picking one to pursue.

In fall of 2018, Savitz began leading a definitive phase III clinical trial to determine the effectiveness of using a stem cell product derived from a volunteer to reduce damage to the brain following a stroke. After a stroke, or any major injury to the brain, the body begins a cascade of responses that culminate with a massive migration of inflammatory cells to the brain, which can cause secondary damage.

“The stem cells seem to change that entire process and modulate the inflammatory response in a way that neutralizes the detrimental effects of inflammation and increases the recovery aspects,” explains Savitz.

If results of the phase III trial are promising, Savitz hopes that stem cells may become a standard of treatment for stroke care in the near future. But the work doesn’t end there. “Once that happens, we will explore different ways to optimize the approach and identify the time window in which these cells will work best,” says Savitz.

Savitz estimates that the window to react is between 10 and 36 hours, possibly even longer. “That’s actually a huge window in comparison to what we have been doing in stroke over the past 20 years. Now, using other therapies, we have to treat people within three hours to be able to help them.”

When life-changing science like this relies on the National Institutes of Health for funding, it could take decades before treatments come to fruition. Savitz says that with philanthropic support, advancing new treatments could happen at a much faster rate.

“UTHealth is truly unique and ideal for these studies because we have the infrastructure to carry out breakthrough technologies,” says Savitz. “The science that’s being worked out on stem cells is right here. We were first.”



Sean I. Savitz, MD

Professor, Department of Neurology
Frank M. Yatsu, M.D. Chair in Neurology
Director, Vascular Neurology Program
McGovern Medical School at UTHealth

Director, Institute for Stroke and Cerebrovascular Disease
UTHealth



EXPANDING REACH

UTHEALTH IS LEADING TELEHEALTH CARE ACROSS TEXAS

“Using the most advanced telemedicine technology, we can assess patients and make the right medical decisions that will impact their long-term care. When it comes to stroke, time lost is brain function lost, so these timely decisions are vital.”

Tzu-Ching Wu, MD

Professor, Department of Neurology
Director, Teleneurology Program
McGovern Medical School at UTHealth

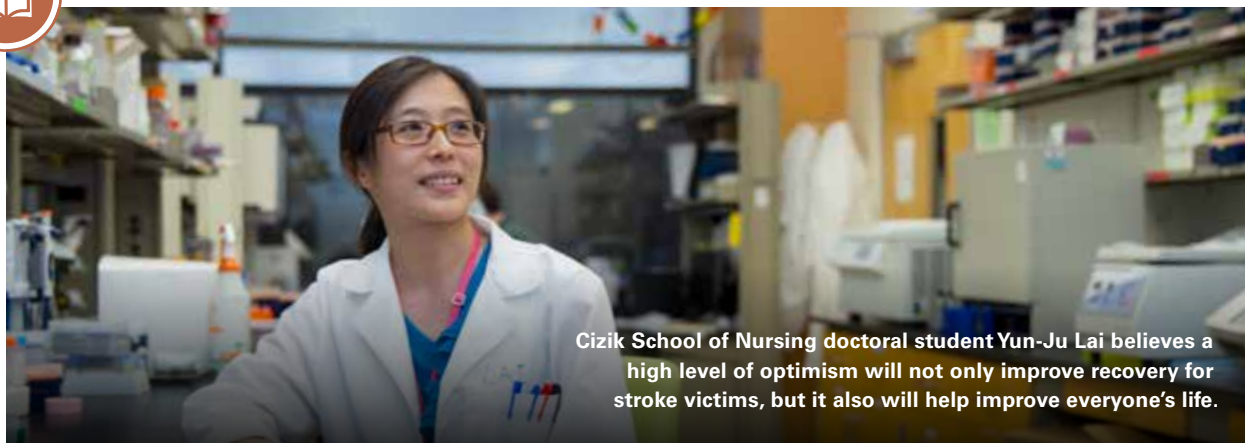
A grandmother of 12 was getting ready to meet a friend when she suddenly felt dizzy. Within 30 minutes, she was being examined at her local hospital by a neurologist 100 miles away at McGovern Medical School at UTHealth.

Thanks to telemedicine, she received tissue plasminogen activator, a clotbuster, and the only medication available to treat acute ischemic stroke. It dissolves the blockage in the artery that is depriving that area of the brain of blood. Time is the essence for efficacy, so the sooner it is given, the better the chance of a full recovery.

Since 2006, neurologists at McGovern Medical School have provided teleneurology services with a focus on stroke to patients throughout Southeast Texas. With a boost of philanthropic support in 2010, the program expanded to sites across the state. The 24/7 acute neurology service provides access to our expert vascular neurologists to communities—that often lack their own specialists—and supplements their existing neurology services.

BETTER LIVING THROUGH BETTER THINKING

USING OPTIMISM TO IMPROVE STROKE RECOVERY



Cizik School of Nursing doctoral student Yun-Ju Lai believes a high level of optimism will not only improve recovery for stroke victims, but it also will help improve everyone's life.

Behind the body, an amazing machine made up of muscle and blood, skin, and bones, is the essence of what makes a person—the mind and influence of emotions. Figuring out the connection between mental and physical health is what keeps Cizik School of Nursing at UTHealth doctoral student Yun-Ju Lai up at night.

“People with higher optimism levels have better immunity, especially against heart disease and breast cancer,” she explains. “It also helps patients recover after surgery. But research on optimism, immunity, and stroke recovery has not been done yet, so that’s my project.”

Lai began working at Memorial Hermann-Texas Medical Center after earning a Bachelor of Science in Nursing from Cizik School of Nursing in 2015. “I was in a neurology unit when I started my nursing career. I took care of many stroke patients,” she says. One was a patient of neurologist Louise D. McCullough, MD, PhD.

“I Googled Dr. McCullough to find out more about her,” says Lai. “Then, I asked her if I could join her team in research, and she said ‘Yes!’”

By then, Lai had entered the nursing PhD program at Cizik School of Nursing and needed a research project. She noticed some of her patients had emotional difficulties because their

stroke affected their careers and their ability to get around. “That’s very devastating because they are now dependent on someone else,” she says. So she chose optimism and stroke as her research focus.

Lai establishes a research baseline within the first 24 hours after a stroke by using a questionnaire that assesses a person’s level of optimism. She also follows up with patients and monitors their physical recovery for three months.

“We ask 10 questions about the patient’s expectations,” she explains. “We then come up with a final score where the higher number is the highest optimism. The neurologist tests the severity of the stroke and the disability. Then, I correlate those scores with the body’s immunity information. My hypothesis is that a high level of optimism will lower the severity of the stroke symptoms and improve recovery.”

Lai says she hopes her research will help improve everyone’s health. “Even if you don’t have a stroke, optimism helps you become happier. If you start to think of everything in a positive way, you can change your mind to think about things differently, and that will help your body and you feel better.”

There is no doubt that Lai’s optimism will lead to healthier lives for all of us.

VISIONARY LEADERSHIP IN STROKE CARE

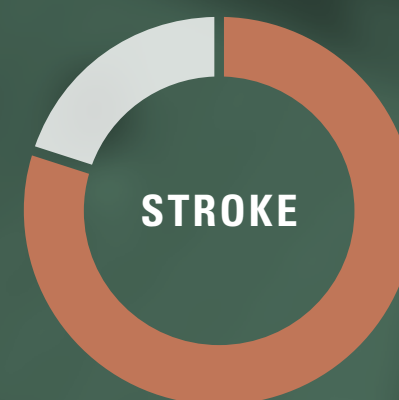


Louise D. McCullough, MD, PhD

Professor and Chair, Department of Neurology
Roy M. and Phyllis Gough Huffington Distinguished Chair
McGovern Medical School at UTHealth

A practicing vascular neurologist and a researcher, Louise D. McCullough, MD, PhD, has a longstanding interest in vascular physiology, neuro-inflammation, gender differences in stroke, and the effects of aging on stroke. As a physician-scientist, what she sees in the clinic focuses how she studies neurological conditions, and, conversely, she applies significant findings from her research to her clinical practice, creating an information loop that informs the way medicine is practiced.

In her research lab at McGovern Medical School at UTHealth, McCullough is attempting to reduce age-related inflammation to mitigate the impact of a brain injury (such as a stroke) on the body. To do this, her research focuses on replacing the patient’s bone marrow and manipulating the microbiome, which includes the full collection of genes from the natural microbes that inhabit our bodies. Furthermore, she has extensively studied the differences between males and females in stroke caused by a blocked artery to the brain. Her research demonstrated that males and females display significant differences in the origination, presentation, treatment, and outcome of stroke.



UP TO 80% OF STROKES CAN BE PREVENTED BY ADDRESSING MODIFIABLE RISK FACTORS.

- IDENTIFY AND TREAT HIGH BLOOD PRESSURE, DIABETES, AND HIGH CHOLESTEROL.
- DO NOT SMOKE.
- EXERCISE REGULARLY.
- AVOID EXCESSIVE FAT AND SALT IN YOUR DIET.



PUTTING A PATIENT IN THE *DRIVER'S* *SEAT*

LASER SURGERY
SETS EPILEPSY PATIENT FREE

Christine Melody has taken back control of her life thanks to leading-edge epilepsy laser surgery performed by UTHealth neurologists.



“Being able to help people lead more fulfilling lives is such a privilege, and I’m delighted to have been given the opportunity to put Christine back in the driver’s seat.”

Nitin Tandon, MD

Professor, The Vivian L. Smith Department
of Neurosurgery
McGovern Medical School at UTHealth

Getting your driver’s license is a liberating moment, but for Christine Melody, it meant so much more than the freedom of the open road. Finally getting behind that wheel marked an end to the phase of her life where she was imprisoned by epilepsy and the happy beginning of living life to the fullest.

It had been a torturous journey of frightening seizures and a search for a successful treatment spanning almost two decades.

Determined to lead a normal life, Christine and her parents tried everything to prevent seizures. Despite warnings from doctors, she pushed herself to excel in gymnastics and cheerleading. She became so adept at masking her condition that people were often completely oblivious to it. But sometimes concealing a seizure simply wasn’t possible.



“At a cheerleading competition, I suddenly sensed a bad episode coming. I walked away from the line and started mumbling and fidgeting, unable to fully control my movements. It was like being a puppet controlled by someone else,” Christine says, “I felt so embarrassed, frustrated, and alone.”

Often, only her closest friends and family could spot the telltale signs of a seizure. So when she moved away to study at college, the frightening reality of her vulnerability hit home.

“Things went downhill fast. I was having up to 20 seizures a day, and being away at college became a constant struggle,” Christine says.

Her parents realized something had to change. The crucial turning point came when Christine and her parents, Martha and Tom, met Nitin Tandon, MD.

“We spent years traveling across the country searching for answers and for hope. But no one gave us the confidence to proceed with surgery. Then right here on our doorstep in Houston, we met Dr. Tandon, who is amazing and made us realize not having the surgery could be even more dangerous,” Christine says.

Tandon is at the forefront of leading-edge brain surgery that can effectively treat epilepsy by pinpointing the source with fine electrode probes and tackling it with laser precision to eliminate seizures.

“He was the answer to all our prayers. From the first consultation, we knew we were finally on the right path,” Martha says.

Mesial temporal lobe epilepsy, which affects Christine, represents around a quarter of all epilepsy cases. The least invasive surgical option is called laser interstitial thermal therapy, commonly known as laser ablation, which burns away the scar on her brain that was left by the aftermath of her first seizure. Christine was also evaluated by Stephen Thompson, MD, Assistant Professor in the Department of Neurology, who reviewed all her data and approved her candidacy for the procedure.

“After Dr. Tandon explained the procedure and his track record in performing it, we didn’t hesitate. He even put me in touch with other patients who had been through the same thing,” Christine says.

Christine went in for surgery on July 28, 2017. It was a complete success. “When I woke up, the first thing I did was cry. Nurses reassured me it all went fine, and I said, ‘These are tears of joy!’ The biggest weight had been lifted from my life and my whole family. Finally I was free—we all were,” she says.

A few months later, to celebrate her newfound independence, Christine received a special present for her 21st birthday. “I couldn’t believe it when my parents led me outside to a brand new car. I’d been wanting to drive for so long and had almost lost hope,” she says. Making the most of her new lease on life, there have been plenty of road trips.

Passionate about helping others, Christine is volunteering with the Epilepsy Foundation and speaks with people who have the condition and may be considering surgery. “I just want people to know there’s light at the end of that long dark tunnel, and it’s really worth getting there,” Christine explains.

“It’s hard to express how blessed we feel. Dr. Tandon hasn’t just given our daughter the ability to drive—he has given her wings to fly,” Martha says.

Such transformational results are the driving force behind Tandon’s work. “Outcomes such as these, and the enormous impact we have on the lives of not just the individual but the whole family, is exactly what motivates us each day to come up with new approaches and cures for epilepsy,” he says.

To read the full story, visit go.uth.edu/bbhealth.



LOOKING BEYOND A DISEASE

UNRAVELING HUNTINGTON'S DISEASE
THROUGH RESEARCH

The patients who see Natalia Pessoa Rocha, PhD, a postdoctoral research fellow in the laboratory of Antonio L. Teixeira, MD, PhD, carry a heavier burden than most. Some come in wheelchairs, bereft of muscle control in their legs. Others seem the perfect picture of health. But one tie binds them inextricably together: Huntington's disease.

“Every day, I am met with a different story, a very beautiful story that tells much more about them than the disease itself,” Rocha says. “I don't call them Huntington's disease patients because they cannot be defined by this disease. They are much more than that.”

A fatal, incurable genetic disorder that breaks down nerve cells in the brain, Huntington's disease usually appears in a person's 30s or 40s, gradually impairing mental and physical functions. Patients suffer loss of movement control; cognitive decline; and psychiatric symptoms such as anxiety, mania, and depression. Treatment can help relieve symptoms, but doctors remain powerless to slow the disease itself. It leaves late-stage patients bedridden, unable to speak, and wholly dependent on others for care.

Huntington's disease stems from an inherited gene defect; parents have a 50 percent chance of passing it to their children, and testing can identify if a person has the defective gene before symptoms appear.

“Every time I talk to a patient, they say, ‘Please help us. Please find a cure,’” Rocha says. “They've seen parents and other family members with Huntington's disease, so they know what will come.”



Erin Furr Stimming, MD

Director, Huntington's Disease Society of America Center of Excellence
Director, Neurology Clerkship Program
Associate Professor,
Department of Neurology
McGovern Medical School at UTHealth



Antonio L. Teixeira, MD, PhD

Director, Neuropsychiatry Program
Professor, Department of Psychiatry
and Behavioral Sciences
McGovern Medical School at UTHealth



Gabriela Colpo, PhD (right), and Natalia Pessoa Rocha, PhD, (left) work to give hope to patients with Huntington's disease.



Giving hope to Huntington's disease through research

To deliver on this plea, Rocha works to discover the link between Huntington's disease and the immune system. Scientists know that inflammation—the body's response to perceived harm—interacts with neurodegenerative diseases such as Parkinson's disease and Alzheimer's disease, which Rocha studied in her native Brazil. But the effects of this interaction and how it might relate to Huntington's disease remain murky.

"There is a time point with neurodegenerative diseases—we don't know exactly when this time point occurs—when instead of helping, the immune system can contribute to neuron damage," Teixeira says.

Rocha evaluates patients at the Huntington's Disease Society of America Center of Excellence at McGovern Medical School at UTHealth. Directed by Erin Furr Stimming, MD, the center is the only one of its kind in Texas, drawing patients from across the country to receive comprehensive care and participate in research.

Teixeira's team conducts a comprehensive clinical evaluation of physical, psychological, and cognitive symptoms. They also draw blood samples to test for inflammatory markers that might relate to changes in clinical symptoms. Rocha says entire families will come to help with research, including young patients who carry the Huntington's gene and want to believe that their futures are not already written.

"When they look at me, I see hope in their eyes," she says.

A neurodegenerative disease with behavioral health implications

For others, hope seems hard to come by. Roughly half of patients with Huntington's suffer from depression, which scientists believe results mostly from changes the disease causes in the brain rather than the psychological impact of a Huntington's diagnosis.

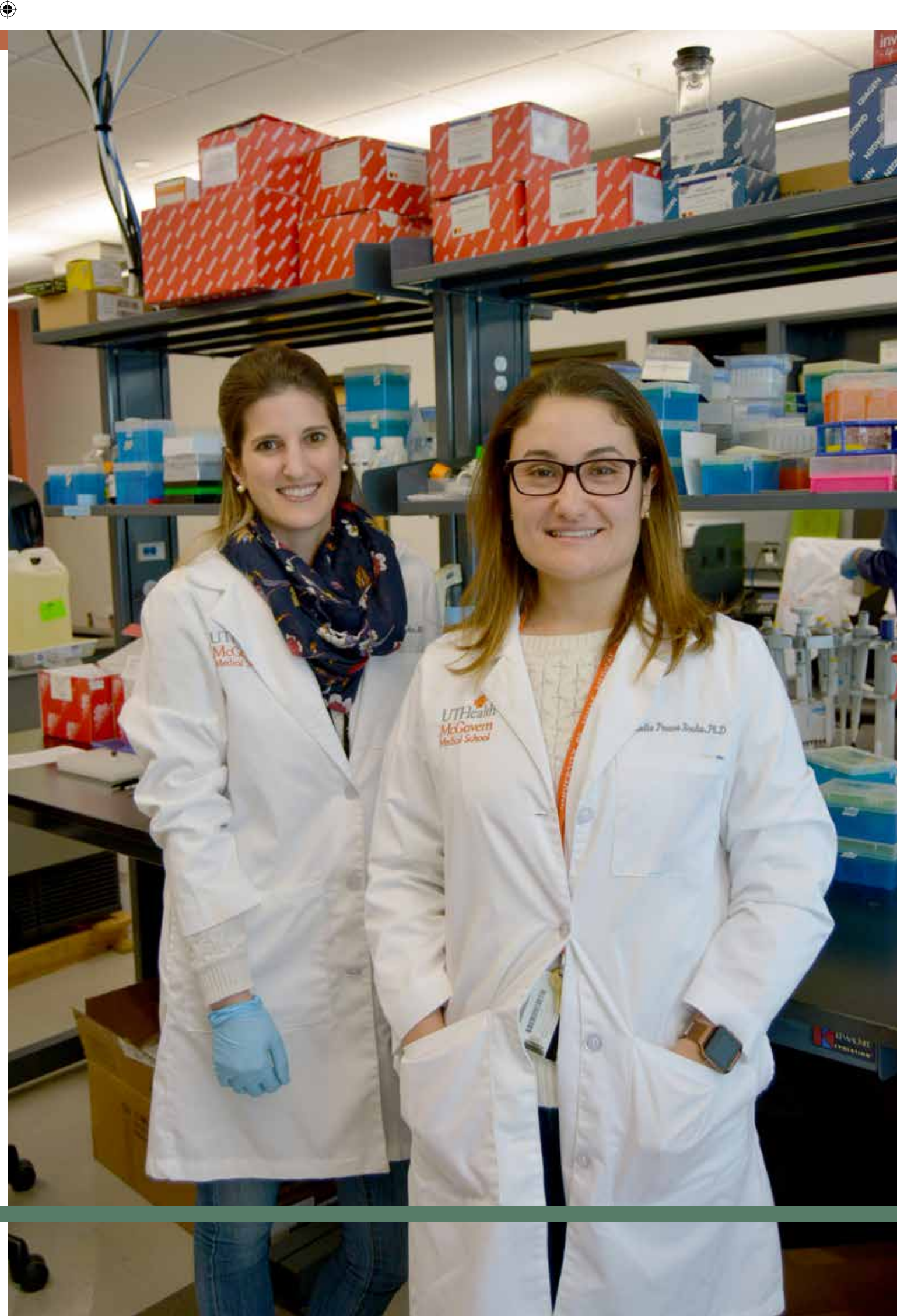
Gabriela Colpo, PhD, also a research fellow in Teixeira's lab, focuses her work on this aspect of Huntington's disease. When Rocha tests patients, Colpo evaluates them to determine why some develop depression and others do not. She is searching for genetic pathways that might lead to depression in her patients.

"Depression usually starts much earlier than movement symptoms," Colpo says.

Research gives hope that the days of Huntington's disease as an unstoppable force may be ending. New therapies like stem cells are showing promise in early research—Colpo is preparing a preclinical trial to see if stem cells can improve symptoms or delay the onset of the disease itself.

As Rocha continues her research, she says the patients she sees help her more than she helps them; they inspire her with their determination—even during the late, debilitating stage of Huntington's—to fight to their utmost ability.

"I am amazed at how hard they are trying with all the difficulties associated with the disease," Rocha says. "If they are trying that hard, I think we have to try even harder."





RESTORING HEALTH, RESTORING IDENTITY

HIGH SCHOOL SOCCER STAR RETURNS TO HIS PASSION



Ian de Koster
Patient

Ian de Koster took aim at the soccer ball and launched himself into the air. As the 17-year-old high school soccer player's head propelled the ball downfield, an opponent's skull whacked into his. Ian recalls a daze creeping into his vision and seeing things as if they were happening in a movie, but he quickly collected himself and continued playing.

A few minutes later, a hard-driven ball collided with his head. Again, he shook it off. But misfortune was quick to strike once more, and an opponent's elbow cracked Ian's left temple as the players jostled for position. In a rapid 15 minutes, Ian had taken three powerful blows directly to his head.

Athletic trainers for Ian's high school soccer team evaluated him and referred him to the nearest emergency room, concerned that his confusion and blurred vision could signal a concussion, a type of traumatic brain injury. The symptoms are usually temporary, such as headaches and difficulties in concentration, memory, balance, and coordination. Sometimes, though, there is bleeding in or around the brain, which can be fatal.

A long road to recovery

Although a CT scan alleviated fears of bleeding and showed no apparent structural injury, Ian struggled with post-concussion syndrome long after his injury. Ian's parents, Frank and Myriam, could not understand what was happening. "None of Ian's sports medicine specialists could tell us what to expect—they just kept telling us that we couldn't do anything but wait" says Frank.

Light and sound triggered excruciating headaches, and Ian could do little more than lay in bed and suffer through school. On days Ian couldn't leave his darkened bedroom, his grandmother would bring him meals and read to him by a dim lantern. Just as his symptoms started to improve about a month later, misfortune struck again when he slammed his head on a cabinet at home.

The de Kosters were back to square one. Fueled by anxiety over his future and an inability to recover, Ian's condition plummeted. "When you see your child disabled and in pain, you feel helpless," says Myriam.

Fear grew, and Frank and Myriam began questioning their son's future. Will he suffer from headaches for the rest of his life? Will he have permanent brain damage? Could he ever return to the sport he loved? Low on hope and out of options, they withdrew Ian from school to focus on his recovery.

Searching for support, the de Kosters met with the head athletic trainer at Ian's high school, who referred them to Summer D. Ott, PsyD, a neuropsychologist specializing in sports-related concussions. Ott serves as team neuropsychological consultant for the Houston Texans and the Houston Rockets, along with numerous Houston-area universities and school districts.

An end to the guessing game

"From day one, Dr. Ott's professionalism put us at ease," says Myriam. "We were no longer guessing about Ian's condition out of fear."

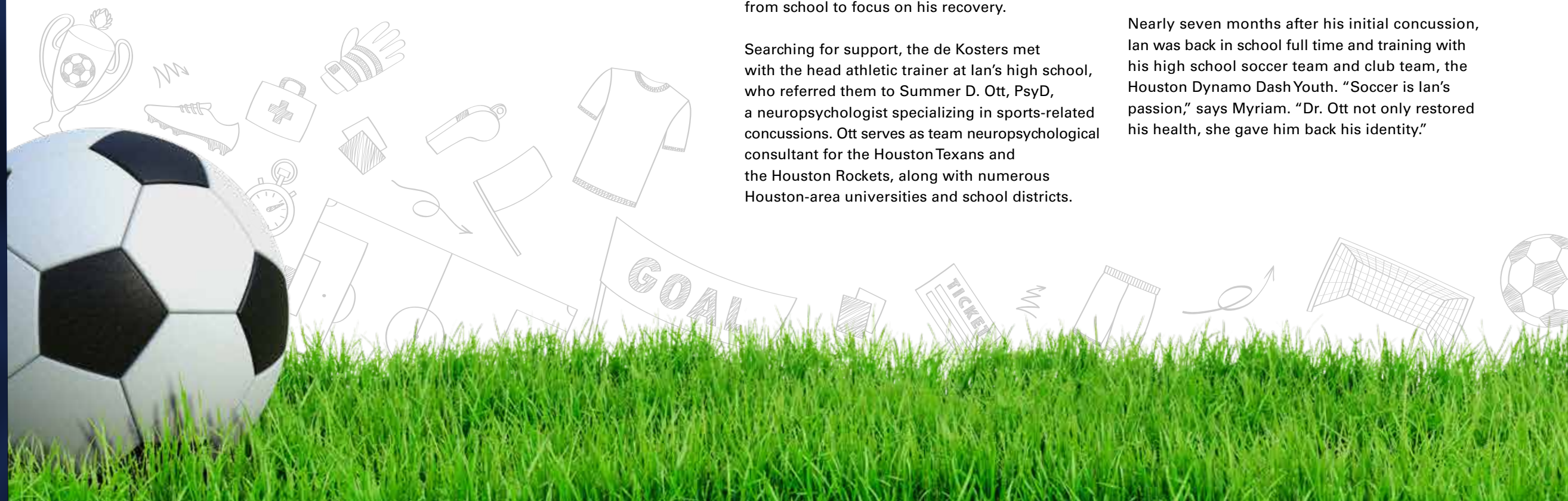
Ott's first course of action was to fully understand Ian's story and evaluate all of his symptoms, bringing in additional neurological and headache specialists to run tests. "Concussion treatment is individualized, and what works for one person might not work for another," Ott advises.

Following Ott's protocol of physical therapy, supportive psychotherapy, and neurological care, Ian made remarkable strides toward recovery. Within weeks, he was able to resume schoolwork and begin a progressive exercise program.

More than just treating Ian's concussion symptoms, Ott provided support for Frank and Myriam. "She took the time to teach us how to care for Ian emotionally as parents," says Myriam, "and how to help him get past his own emotions to look forward to his future."

"Dr. Ott was willing to walk this road with us," explains Frank. "No matter how difficult things got or how much we struggled, she gave us the answers and hope we needed."

Nearly seven months after his initial concussion, Ian was back in school full time and training with his high school soccer team and club team, the Houston Dynamo Dash Youth. "Soccer is Ian's passion," says Myriam. "Dr. Ott not only restored his health, she gave him back his identity."



UTHEALTH CONCUSSION RESEARCHERS WORK IN CONCERT



Pramod Dash, PhD

Nina and Michael Zilkha Distinguished Chair
in Neurodegenerative Disease Research
Interim Chair, Department of Neurobiology and Anatomy
Professor, Department of Neurobiology and Anatomy
McGovern Medical School at UTHHealth

Pramod Dash, PhD, drives interdisciplinary collaboration between clinicians and researchers to find better treatments and mitigate the severity of concussions. Dash works in tandem with clinicians to find predictive tools that will enable them to intervene more quickly and accurately in concussion cases.

“In a brain injury like a concussion, every organ is more or less affected because of the close interaction between the brain and the body,” Dash says. “In one study, we found that if we reduce inflammation in the body, we can mitigate brain damage and improve patient outcomes.”

This intersection of concussion research and clinical treatment has never been more significant. Reports of high-profile professional athletes progressively losing their physical and mental abilities, sometimes leading to suicide, have ignited a national debate about the risk of participating in contact sports. Researchers have found that repeated concussions can cause abnormalities in the brain called chronic traumatic encephalopathy (CTE).

“If we can discover the neurochemical changes caused by concussion that increase the risk for developing CTE, we may be able to intervene early after the injury and reduce the risk for developing CTE and associated behavioral/cognitive problems,” Dash explains. “This would improve quality of life for people who have sustained a concussion as well as their families.”



CROWDFUNDING TO IMPROVE CONCUSSION OUTCOMES

As Director of the Concussion Program at Memorial Hermann IRONMAN Sports Medicine Institute, Summer D. Ott, PsyD, is committed to finding ways to improve patient outcomes. That includes studying how brainwave optimization may reduce the duration and severity of post-concussion symptoms in adolescents, like Ian, who suffer long after their injury.

High-resolution, relational, resonance-based, electroencephalic mirroring (HIRREM®) technology uses scalp sensors to monitor a patient's brainwaves, which it then translates into audible tones that are mirrored back via headphones. This helps the brain auto-calibrate and reset stress response patterns in the same way a musical instrument would tune itself. Ott believes this home-based, non-invasive, and non-pharmacological treatment could be used immediately after an adolescent sustains a concussion to help prevent the development of chronic issues.

Using UTHHealth's online crowdfunding platform, Ott is raising resources to examine the effectiveness of using HIRREM® technology to treat post-concussion symptoms in adolescents. No standard treatment for these devastating symptoms currently exists, but Ott aims to find a solution and raise awareness of the importance of properly caring for concussions.

Ott's crowdfunding project is expected to launch in the fall of 2018. To learn more about crowdfunding initiatives around the university, visit:

launch.uth.edu

“The beauty of our concussion research initiative is that we incorporate all of the resources and brilliant minds we have at UTHHealth.”

Summer D. Ott, PsyD

Assistant Professor, Department of Orthopedic Surgery
McGovern Medical School at UTHHealth





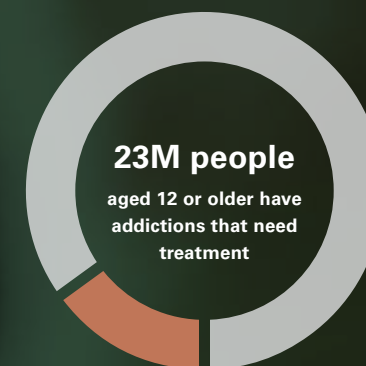
Joy M. Schmitz, PhD

Louis A. Faillace, MD Professor, Department of Psychiatry and Behavioral Sciences
Director, Center for Neurobehavioral Research on Addiction
McGovern Medical School at UTHealth

ADDRESSING A GROWING CRISIS



1 in 10 people struggle with some level of substance abuse.



Only 15% of 23M people with addictions get treatment at a specialized facility.

PRESCRIPTION OPIOID DRUGS

contribute to 40% of all opioid overdose deaths in the United States.

MERGING BIOLOGICAL AND COGNITIVE SCIENCE TO TACKLE ADDICTION

Addiction, one of the leading behavioral disorders, takes a heavy toll on individuals, their families, and entire communities. When caught in the downward spiral of addiction—whether to drugs or alcohol—families suffer because of destructive behavior, diminished health, and problems at home or work. Furthermore, the community suffers from increased crime, which contributes to our already overcrowded penitentiaries, and the economy hurts from lost work.

“It’s such a prevalent problem. You can’t ignore it. It affects us on so many levels,” says clinical psychologist and researcher Joy M. Schmitz, PhD.

Often stigmatized, this growing crisis plagues Houston—and all of Texas. “One of the longstanding misconceptions about addiction is that it is a problem of will, a problem of character,” explains Scott D. Lane, PhD, who studies the biology behind addiction. “Even though we are in the 21st century, there are people who still harbor those misconceptions.”

Solving this complex brain disorder will take a comprehensive and collaborative approach linking biology with psychological, social, and behavioral aspects to address the growing crisis. And that's exactly what Schmitz and Lane set out to do.

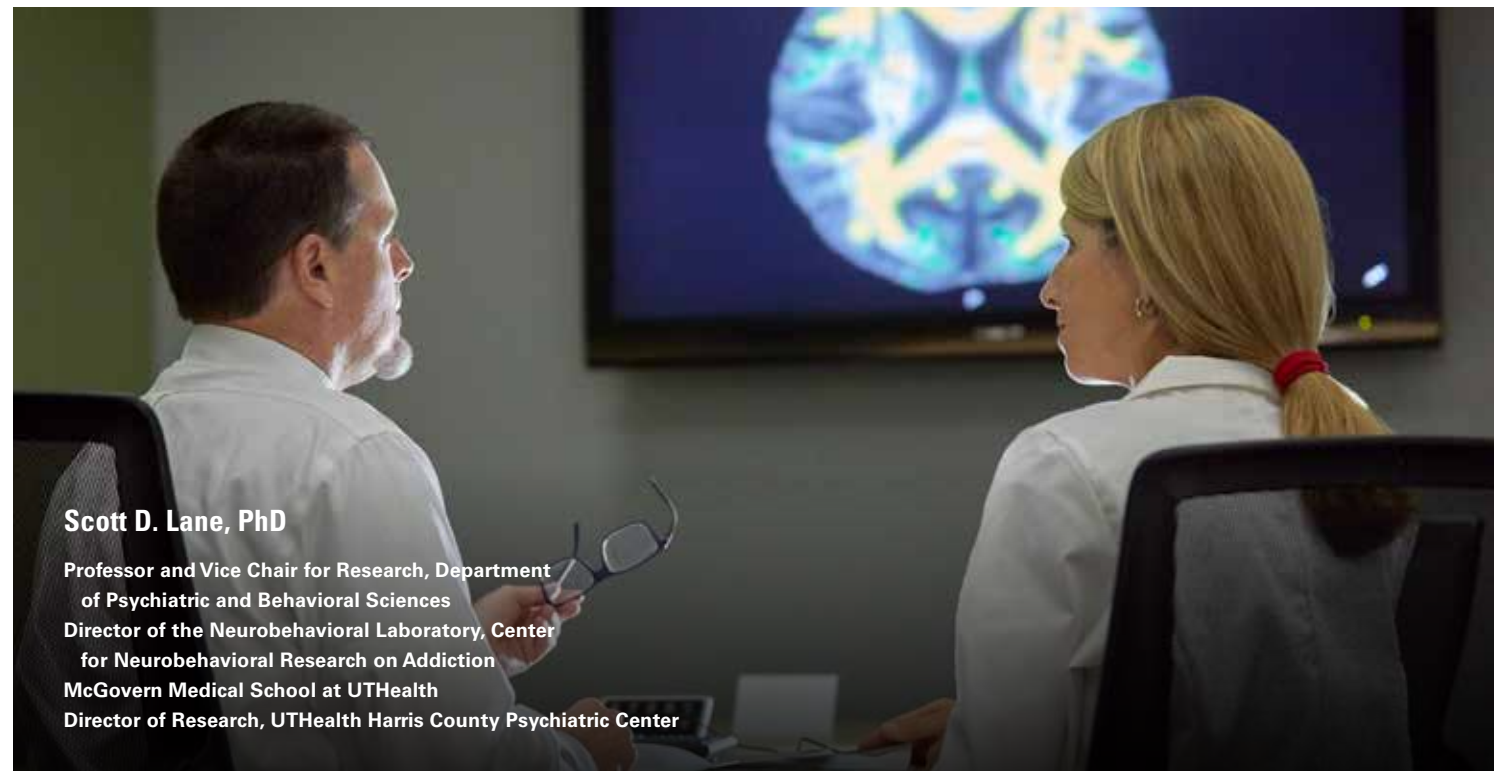
The keystone of their efforts resides in the Center for Neurobehavioral Research on Addiction, a hub of expertise and discovery on substance use and addiction with a multidisciplinary team of researchers and health practitioners located within McGovern Medical School at UTHealth. The center has a number of core focus areas, among which is community outreach.

"While we study a number of classes of drugs to determine mechanisms and possible treatment options, we are a center," says Lane. "As a center, we need to be flexible enough to respond to the needs of our local and national community." In fall 2018, Schmitz and Lane, along with other researchers from the center, joined forces with John A. Harvin, MD, and the Department of Surgery at McGovern Medical School to launch a priority project in the fight against the prescription opioid misuse crisis. Almost everyone who undergoes a traumatic surgery will walk away with an opioid prescription. Some of those people will start abusing opiates and become at risk for overdose. Statistically, as many as one in five patients develop long-term opioid abuse or dependence following surgery.

"It's a combination of the fact that these people have had major surgery, so they receive major pain medications, and they have also been through a traumatic event, such as a major car accident or being shot," says Lane. "So, the combination of biological and psychological factors that puts them at an increased risk." Using tools from addiction science, Schmitz and Lane are screening and identifying those at high risk. The simple but critical first step in this process is to assess a short list of key variables, including the history of drug use and psychiatric conditions. This assessment is administered to every patient admitted for surgery. At two weeks and four weeks, they will use mobile technology to follow up with the patients on their recovery.

"Then, we would like to establish patient navigation services to help those patients who are at highest risk for opiate abuse to access care at our clinic and address their pain medication and psychological needs to make a safe transition," adds Schmitz.

Researchers at the center will be among the first in the nation to perform a systematic and scientific application to understand how we can best predict who is at risk following trauma surgery. At this point, however, there is a clear need for pain management or possible addiction treatment after hospitalization, but a lack of coordination in delivering these services. This is where philanthropy can play an important role by helping to establish this translational service.



Scott D. Lane, PhD

Professor and Vice Chair for Research, Department of Psychiatric and Behavioral Sciences
 Director of the Neurobehavioral Laboratory, Center for Neurobehavioral Research on Addiction
 McGovern Medical School at UTHealth
 Director of Research, UTHealth Harris County Psychiatric Center

"When we can show how the brain of someone suffering from addiction is different from someone who isn't, that's a biological marker, not a problem of character," says Lane. "When we have good markers, we can move forward, merging biological and cognitive science to address a widely misunderstood problem."

Schmitz and Lane are leading innovative research to better understand addiction and how best to treat it.

CORE AREAS OF FOCUS

UTHealth is poised to advance the causes that matter most to our community, and this has never been more true than in understanding and overcoming substance use disorders. By improving outcomes, we hope to break the cycle of chronic recidivism that too many of our patients fall into. The generosity of our donors can help fuel life-changing research in the center's core focus areas to bring treatments to individuals and their families sooner.

- Genetics/cellular biology to understand the role of genetic, epigenetic, cellular, and environmental variation in addiction
- Behavioral neuroscience to identify neurobiological and behavioral mechanisms of addiction and treatment effects
- Biostatistics/bioinformatics to provide support in research methods and biostatistics
- Clinical trials to develop and evaluate behavioral and pharmacological treatment interventions
- Public health/community outreach to make evidence-based treatment services more accessible and to disseminate research-based knowledge to the community
- Education and training to prepare the next generation of addiction scientists, treatment providers, and leaders
- Administration and regulatory affairs to integrate activities across the cores and outside programs and to assure regulatory compliance

GETTING TO THE ROOT OF DISORDERS

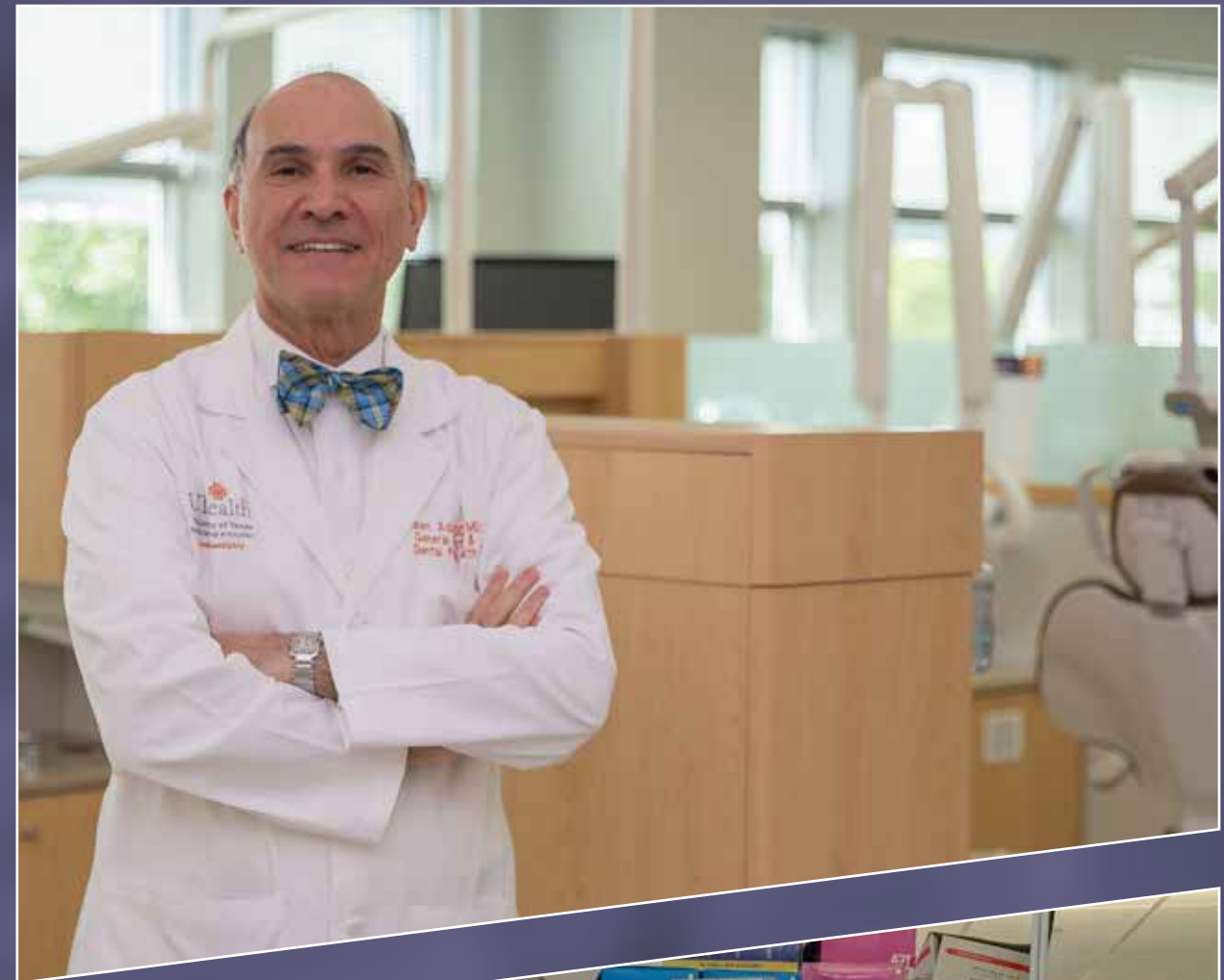
INTEGRATIVE SOLUTIONS FOR ENIGMATIC JAW DISORDERS



“Many patients have underlying behavioral health disorders like depression or anxiety, which can complicate treatments and make them less effective. Cognitive behavioral therapy and stress management can be effective ways to treat chronic pain caused by temporomandibular disorder and offer alternatives to opioid pain medications.”

Shawn S. Adibi, DDS

Associate Professor, Department of General Practice and Dental Public Health
UTHealth School of Dentistry



Shawn S. Adibi, DDS (top), mentors students like Davor Seferovic (bottom) to practice evidence-based dentistry—procedures and interventions that are based on science. When you don't know the answer or solution, Adibi emphasizes performing research to fill in the gaps.

“The more conservative care we can give to a patient, the better the result is for the individual and our society.” Davor Seferovic embraces his mentor's motto as he pursues his future as a dentist.

Davor, a second-year student studying epidemiology at UTHealth School of Public Health, works in the lab of Shawn S. Adibi, DDS, at UTHealth School of Dentistry. Under Adibi's mentorship, he has cultivated his interest in finding answers to devastating oral conditions like temporomandibular disorder (TMD), which causes chronic pain in the jaw joint among other medical problems.

Adibi advises Davor to integrate dental, medical, and mental health care to heal the physical and emotional damage TMD causes. “He lays out all of the treatment options,” says Davor, who hopes to begin dental school in fall of 2019. “Often, there are alternative treatments that aren't invasive and don't require pain medications.”

From excruciating pain throughout the neck and shoulders to limited jaw movements and headaches, symptoms of TMD vary greatly

between individuals. Dentists routinely rely on little evidence to treat symptoms that have festered into agonizing ailments, and standard treatment can involve opioid pain medications and surgery.

One way Adibi mitigates the psychological toll that chronic pain can have on a patient with TMD is by incorporating mental health professionals in treatment. Oral splints, physical therapy, dietary modifications, and yoga are some of the other treatments Adibi prescribes to help heal patients. But above all, he emphasizes patient education as the most important factor in a successful treatment.

“If we can help patients understand the root cause of their disorder,” says Adibi, “they will be more involved and engaged in their own care and overall health.”

“Collaboration between different health professions is a major benefit to our health care system,” says Davor. “I want to use my public health perspective to inform my future clinical practice and research.”



MENDING THE BODY AND MIND

NEARLY FATAL ACCIDENT BEGINS A LONG ROAD TO A NEW JOURNEY



Cody Comeaux
Patient

Bobby Nix, MD, believes in educating his patients so they have a better understanding of their condition and treatment options and works with them to better manage their mental health.

The car accident was bad. Cracked skull. Broken face. Crushed ankles. Limited brain activity. Coma.

Cody Comeaux of New Iberia, Louisiana, was 23 years old when the early morning accident changed his life forever. The damage to Cody's brain resulted in amnesia, short-term memory loss, and, eventually, the loss of friends and family.

"I lost friends because they didn't understand that the physiological and neurological effects of the accident were completely out of my control," he remembers. "It wasn't like I was intentionally hurting their feelings with the things I said and did. Whatever came to my mind came out of my mouth."

Cody's lack of social filters also affected his relationship with his mother. "Because of my brain injury, I'd say a lot of out-there things and not even remember it. So after a year, I had to leave the house for the sake of her other children."

His struggles to mend his body and mind meant seeing a family doctor, who had limited training in neurology, and participating in various therapy groups. About five years after the accident, his group therapist agreed with Cody's plan to move to Katy, Texas, where he could save money by living with his father and stepmother, maybe find a long-term job, and start a new life.

In Texas, Cody continued to struggle greatly with his mental well-being, anxieties, and attention deficit disorder. His stepmother recommended that he establish a primary care physician at a nearby UT Physicians clinic, the clinical practice of McGovern Medical School at UTHealth. His UT Physicians doctor reached out to a social worker who recommended Cody see a psychiatrist.

Cody was able to schedule an appointment with Bobby Nix, MD, a well-respected psychiatrist who helps his patients manage their mental health and better understand their condition and treatment options.

"Bobby Nix. He's not just a psychiatrist who prescribes medication; he goes way beyond that," Cody explains. "He gets into my soul and my life. He jumps out of his shoes and steps into my shoes and becomes me and thinks on my level."

Cody appreciates the way Nix listens and recommends ways Cody can progress with his new life, moving ahead with his interests in the entertainment industry.

"I started moving further in the entertainment industry because of him," says Cody. "I am a certified professional voice-over artist. I'm also a writer and a comedian. I've done stand-up comedy since I've seen Dr. Nix. Stand-up comedy was always my dream, but I didn't have the courage to do it."

He credits Nix with giving him a focus on life in a way he had never experienced. "He didn't force it," Cody says. "I saw a lot of medical professionals and psychiatric doctors in Louisiana, and their approach was almost military. Dr. Nix is laid back. He even gave me feedback on movies I suggested. That's not what professionals do in my experience. He takes a personal interest in me, and that means so much."

If Cody had to describe in one sentence how Nix changed his life, it would be, "Dr. Bobby Nix has resurrected me from a psychological and emotional death."



Bobby Nix, MD

Vice Chair for Clinical Affairs
Assistant Professor, McGovern Medical School
Director, UT Physicians Behavioral Health
Outpatient Services



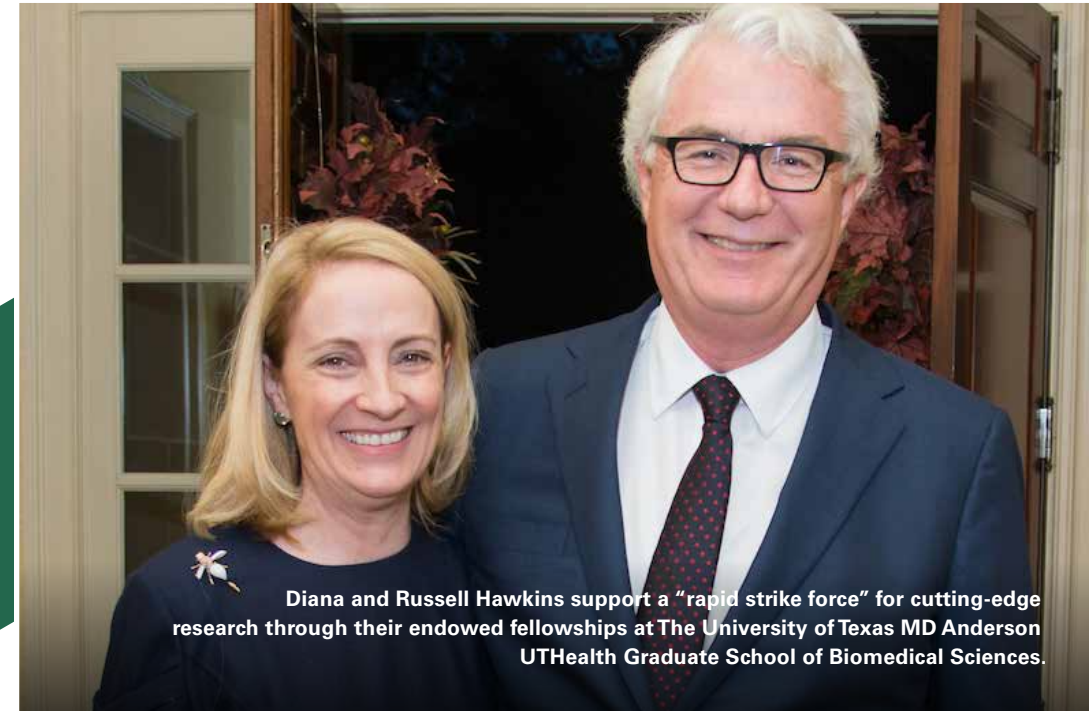
LEADING BY EXAMPLE

DIANA AND RUSSELL HAWKINS
OPEN DOORS TO DISCOVERY

“Russell and I could not think of a better way to advance research that will improve the lives of the people of our community than through establishing the Diana and Russell Hawkins Discovery Fellowships. We wanted to give these bright, curious, and amazing graduate students the opportunity to stretch their minds by working on cutting-edge research with some of the world’s top scientists.”

Diana M. Hawkins
UTHealth Development Board Chair

Diana Mayor Hawkins



Diana and Russell Hawkins support a “rapid strike force” for cutting-edge research through their endowed fellowships at The University of Texas MD Anderson UTHealth Graduate School of Biomedical Sciences.

Diana Mayor Hawkins begins her 20th year as a member of the UTHealth Development Board by assuming the role of Chair, a position she will hold for two years. She has served as a member of the board’s membership committee, executive committee, and campaign cabinet. She also is a past chair of The University of Texas MD Anderson Cancer Center UTHealth Graduate School of Biomedical Sciences Advisory Council.

Her interest in graduate education and research led her to establish, along with her husband, the Diana and Russell Hawkins Discovery Fellowship at MD Anderson UTHealth Graduate School in 2010. The fellowships provide full stipends for a “rapid strike force” of exceptional students pursuing cutting-edge research in areas that might not receive government funding. Two students receive fellowship stipends each academic year, and they can hold the award for up to three years.

Current Hawkins Discovery Fellows



NATASHA KHARAS

Advisor
Program
Research

Valentin Dragoi, PhD
Neuroscience

Our research will expand our understanding of the neurobiology of sleep and of the neuronal coding that drives perception. This will aid in designing neural prosthetics that could help a variety of neurological disorders that impact sleep.



KIEFER FORSETH

Advisor
Program
Research

Nitin Tandon, MD
Neuroscience

I study a defining human capability: speech. There remain questions about the architecture and function of the broad network of brain regions that support speaking aloud. Improving our understanding of speech and the associated brain networks will lead to new treatments to help the thousands of people with damaged language faculties.



NDIDI UZOR

Advisor
Co-Advisor
Program
Research

Andrey S. Tsvetkov, PhD
Louise D. McCullough, MD, PhD
Neuroscience

In Huntington's disease, a crucial pathway known as autophagy slows down in brain cells, allowing cell structures and proteins to build up. This can damage the brain cells. My research seeks to discover if peroxisomes, small structures related to oxidation and fatty acid breakdown, are affected in Huntington's disease.



MEAGHAN ROY-O'REILLY

Advisor
Program
Research

Louise D. McCullough, MD, PhD
The Brown Foundation Institute of Molecular Medicine
for the Prevention of Human Diseases

Ischemic strokes occur from narrowed or blocked arteries to the brain, resulting in severely reduced blood flow called ischemia. My research focuses on the effects of aging on inflammation and functional outcome following ischemic stroke.



1,500+
CLINICIANS SERVING

80
MEDICAL SPECIALTIES AND
SUB-SPECIALTIES

With a focus on patient quality and safety, physicians, residents, fellows, and students provide exemplary clinical services at UT Physicians offices located throughout the Texas Medical Center and the greater Houston area. One of the fastest-growing academic clinical practices in the nation, UT Physicians, a part of UTHealth, has more than 1,500 clinicians certified in 80 medical specialties and sub-specialties, providing multi-specialty care for the entire family.

Our faculty, residents, fellows, and students provide inpatient care at our primary teaching hospitals, Memorial Hermann–Texas Medical Center, Children’s Memorial Hermann Hospital, and Harris Health’s Lyndon B. Johnson (LBJ) Hospital in addition to UTHealth Harris County Psychiatric Center, TIRR Memorial Hermann, and The University of Texas MD Anderson Cancer Center.

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

THANK YOU

Advancing brain and behavioral health is among the many ways that UTHealth’s community of experts is solving the greatest health challenges of our time.

To learn more about how we are discovering breakthrough advances in the prevention and treatment of disease, please contact:

UTHealth Office of Development

713.500.3200
giving@uth.tmc.edu

www.uth.edu/giving
go.uth.edu/BBHealth

By supporting UTHealth, you help to create healthier lives in our community and well beyond. Together, we are on the frontier of discoveries that bring quality patient care to our communities.

OUT IN FRONT: BRAIN AND BEHAVIORAL HEALTH

2018

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EDUCATION



RESEARCH



PATIENT CARE

The mission of UTHealth is to educate health science professionals, discover and translate advances in the biomedical and social sciences, and model the best practices in clinical care and public health.

We pursue this mission in order to advance the quality of human life by enhancing the diagnosis, treatment, and prevention of disease and injury as well as promoting individual health and community well-being.

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