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#4 Urology



# #22

in the Nation

Cardiology & Heart Surgery

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#2
Hospital in

#4
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#34
in the Nation
Neurology &
Neurosurgery



#38
in the Nation
Gastroenterology
& GI Surgery



WILLIAM F. McKEON

President and Chief Executive Officer

Texas Medical Center

The ancient Egyptians were the first to identify and document the disease around 3000 B.C., according to the American Cancer Society. Interestingly, Egyptian writings describe cancer as a condition for which "there is no treatment." More than 2,500 years later, the Greek physician Hippocrates, considered the father of medicine, used the terms "carcinos" and "carcinoma" to describe cancer cells that form and expand like the legs of a crab.

Cancer begins when abnormal cells start to divide uncontrollably. Over time, the term "cancer," which is the name given to a collection of related diseases, became a universal word used to describe the spread of a potentially deadly disease in any part of the body.

But the term has come to mean so much more. For many, "cancer" is associated with other terms: "fear" and "anxiety," but also "strength" and "perseverance." The term resonates around the globe.

Each day we are making great strides in understanding cancer and developing new therapies to combat or eliminate the disease. However, time is our enemy. The number of new cancer cases per year worldwide is expected to rise to 23.6 million by 2030, according to the National Institutes of Health.

I recently co-hosted a meeting of some of the top scientists from around the world. Together, we are developing a technology platform that will allow cancer patients and researchers to share data and participate in clinical trials to accelerate the discovery of new cancer therapies. In May 2017, Australian philanthropists Andrew and Nicola Forrest allocated more than \$50 million to launch the Eliminate Cancer Initiative (ECI) as a convener across the global cancer community.

The Eliminate Cancer Initiative is designed to remove barriers and enable synergy across academia, philanthropy, private industry and government to accelerate progress toward fighting a disease that has affected so many.

I am excited to join forces with my friend Andrew Forrest and the leadership of ECI to connect patients and researchers throughout the world to eradicate cancer. Perhaps one day another word will be associated with cancer: "cure."

William 7. Myk

#### TMC PULSE

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President and Chief Executive Officer William F. McKeon

Communications Director Ryan Holeywell

Pulse Editor Maggie Galehouse mgalehouse@tmc.edu

Assistant Editor Cindy George cgeorge@tmc.edu

Staff Writers Alexandra Becker Christine Hall Britni R. McAshan Shanley Pierce

Photojournalist Cody Duty

Contributing Photographer Annie Mulligan

NEWSROOM 713-791-8812 news@tmc.edu

ADVERTISING
Felicia Zbranek-Zeitman

713-791-8829 newsads@tmc.edu

DISTRIBUTION
Daniel Martinez
713-791-6136

distribution@tmc.edu

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Deadlifting at 70



Palliative Care and Spirituality for Life



Art that Comforts Near the End



The Best, the Worst and the Future of Nanotechnology



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ON THIS PAGE: A boy plays baseball in Salinas, Puerto Rico.

**ON THE COVER:** Eugene Alford, M.D., a facial plastic and reconstructive surgeon at Houston Methodist Hospital, stands in his Permobil F5 power wheelchair.

## How old is great?

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#### **Growing Tumors in Eggs to Decode Cancer**

An old technique offers new hope

By Christine Hall



Researchers at Baylor College of Medicine use a light to ensure a chicken egg has been fertilized and is ready for the implantation of a tumor.

any biological experiments involve working with live mice or watching cells develop in petri dishes.

That's why Baylor College of Medicine prostate cancer researcher David Rowley, Ph.D., was intrigued last year when he heard a colleague speak about using fertilized eggs to grow tumors. The new take on an old idea emerged during a seminar in which Andrew Sikora, M.D., Ph.D.—an otolaryngologist (specializing in diseases of the ear, nose and throat) and researcher at Baylor—described how he performed research in his laboratory.

"Before Andrew could get off the stage, my colleague, Rebeca San Martin, and I were up there talking with him," said Rowley, a professor in Baylor's Dan L Duncan Comprehensive Cancer Center and leader of the college's cancer biology program.

Sikora has updated the 100-yearold research technique—growing tumors in fertilized chicken eggs for the 21st century. While studying its history, he found an article that explained the original research and other early studies.

"It's totally old school—they had the idea to grow tumors in chicken eggs, and they actually did it and got them to grow," Sikora said.

(continued)



Eggs with implanted tumors sit in an incubator.

"Tumor Transplantation to the Chick Embryo"—a 1952 article published in Annals of the New York Academy of Sciences—noted the 1912 original research that "mouse and rat tumors would grow" when implanted in a chicken embryo's chorio-allantoic membrane, known as CAM. The mid-century investigators confirmed that the approach showed promise because the embryo, lacking a defense against foreign tissue, would supply blood vessels and connective tissue for the tumors.

#### Advantages of eggs

Sikora aims to reinvent the use of eggs as a universal platform for cancer biology.

He is the academic director of Baylor's Patient-Derived Xenograft and Advanced In Vivo Models Core, a part of Baylor's research arm that has excelled at optimizing fertilized egg conditions and models. The core creates a collaborative environment for scientists to discuss potential studies using eggs.

"The eggs are so well vascularized that people used them as a platform to test angiogenesis," said Sikora, referencing the process by which new blood vessels grow from pre-existing ones. "Does this compound induce blood vessels to grow? Can it grow cell lines to the primary tumor? We are pushing the system as far as we can to answer as many questions as possible."

The CAM can support many human cancers, from the head and neck—Sikora's areas of expertise—to breast, skin, ovarian, bladder and other cancer types. Even rare growths such as pancreatic

neuroendocrine tumors can develop on the CAM, he said.

Sikora views fertilized eggs as "more faithful to the body" than a petri dish. In addition, the in vitro model enables quicker and more cost-effective pre-clinical trials of drugs because hundreds of samples can be tested at one time with results in about a week. Successful experiments can proceed to mice research.

Rowley's interest sprang from the potential for efficiency. Mice

experiments require more time and expense because of the need for special facilities and monitoring.

"It is a nice intermediate between doing an experiment on a cell culture dish and in a mouse," he said.

#### Blocking prostate cancer

Rowley and Sikora worked together on research that involved metastasizing prostate cancer cells to a bovine bone. Bone metastasis is typically how prostate cancer kills.

Rebeca San Martin, Ph.D., the postdoctoral fellow who was working with Rowley at the time, wrote her thesis on the technology. The process involved placing a 5-millimeter bovine bone cube coded with tenascin-C—a protein often observed in cancerous tissue—on the CAM. She then placed an organoid made of cancer and stroma cells a few centimeters away to see if the cells would move to the bone. The cancer migrated, and those results were published in the November 2017 issue of *Cancer Research*.

Now, Rowley is investigating whether the cells traveled through the blood vasculature—a nod to one theory about how cancer cells metastasize to bone—and if a therapy targeting tenascin-C could neutralize the process.

"We think tenascin-C forms at the site of wound repairs," he said. "Cancers are essentially wounds that don't heal."

Because the eggs offer financial and time-saving benefits for preliminary testing, Rowley believes they could be used to accelerate other experiments that otherwise would be conducted in mice.

"We got a lot of information from our study, but time will tell," he said. "Could it be a better, cost-effective way to screen drugs? There may be other advantages or disadvantages to this method, but we don't know yet."



Andrew Sikora, M.D., Ph.D., an otolaryngologist and researcher at Baylor College of Medicine, checks on the eggs.



## Not all superheroes wear capes. This month, they do.

September is National Childhood Cancer Awareness Month and Texas Children's Cancer Center® is cheering on the brave boys and girls working to take down their very own supervillain – pediatric cancer. Each year, Texas Children's Cancer Center diagnoses over 500 children with cancer. As the largest pediatric cancer center in the United States, we have an elite force of more than 1,000 superhero physicians, researchers, nurses and support staff dedicated to protecting children, creating new weapons and pushing forward in the battle against pediatric cancer. This month – and all year round – we stand with the tough, strong and determined young superheroes we are proud to call our patients.



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#### Deadlifting at 70

Strength training helps prevent osteoporosis and falls

By Alexandra Becker

wo years ago, Jean Hoepfel was just starting out for a jog when she tripped over a piece of metal and fell hard onto the sidewalk. The 68-year-old could tell immediately that she'd broken her arm. Amid a rush of adrenaline, she drove herself to the emergency room, where she was treated and referred out for physical therapy at Memorial Hermann IRONMAN Sports Medicine Institute.

"I was so angry," Hoepfel, now 70, recalled. "I've been active my whole life, and I don't even have osteoporosis."

But the incident shook her. How could she avoid this-or worse-in the future?

The answer, it turns out, was weight training.

A growing body of research shows that physical activity involving weight-bearing exercise can improve muscle mass, strength and balance,

66 I don't take any drugs at all. Why would you want to take a drug with side effects when you can prevent doing that by changing your lifestyle? 9 9

— JEAN HOEPFEL Weightlifter

increase bone density and also reduce the risk of developing osteoporosis. One in two women will break a bone in their lifetime due to osteoporosis; the incidence is greater than that of heart attack, stroke and breast cancer combined, according to the National Osteoporosis Foundation. And a 2014 study published in the Journal of Family &

Community Medicine found that weightbearing exercise programs increased bone mineral density more than non-weight-bearing exercise in patients ages 60 to 67 who already had osteoporosis.

"As we age, we literally need to lift heavy things," said Brian Duncan, a physical therapist and director of human performance and residency programs at Memorial Hermann IRONMAN Sports Medicine Institute. "In our 50s and 60s, we start to rapidly lose strength unless we're providing the body a stimulus, and if we do that, then the body reacts based on the amount and the intensity of our stimulus."

Duncan explained that while most individuals understand the concept behind growing muscle, they don't realize that the same principle applies to maintaining bone strength.

(continued)

Jean Hoepfel, 70, performs bicep curls at the Memorial Hermann IRONMAN Sports Medicine Institute's Human Performance Lab.





Hoepfel works out with her trainer, Chris Slocum, a senior performance coach with Athlete Training and Health and Memorial Hermann IRONMAN Sports Medicine Institute.

"People think of muscles as reacting to stress—like if I do a bunch of bicep curls, eventually my biceps are going to perform better, and then if I keep going and I eat enough, they're actually going to grow in size, or what we call hypertrophy," Duncan said. "Our bones and our cartilage react in a somewhat similar manner. Your bone doesn't hypertrophy, but it becomes more dense, and cartilage and tendons become better at handling a load, so they are less likely to rupture or fail."

After completing her physical therapy, Hoepfel wanted to begin her weightlifting journey with a trainer whose expertise could safely guide her through the gym. Her goal was to maximize benefit without injuring herself. As a lifelong runner and professional exercise epidemiologist, she knew the importance of doing it right.

Hoepfel engaged the help of Chris Slocum, a senior performance coach with Athlete Training and Health and Memorial Hermann IRONMAN Sports Medicine Institute.

"I wanted to work with somebody who was really well-qualified, who had their master's degree in exercise science and all the top-tier certifications," Hoepfel said. "It's got to be under supervision, that's the only safe way to do it, and here you have physical therapists and athletic trainers, so it really is the ideal situation."

For the past two years, she has shown up at the Memorial Hermann IRONMAN Sports Medicine

66 If you have time to go to book club or to start quilting or knitting, you have time to go to the gym.

— JEAN HOEPFEL

Institute's Human Performance Lab three times a week for bench presses, sled pushes, bent over barbell rows, pull-ups, battle ropes, triceps pushdowns and medicine ball slams. She has even worked up to a 190-pound deadlift, a powerlifting exercise in which an individual lifts a loaded barbell off the ground to her hips, then slowly lowers it.

"She doesn't go that heavy all the time, but she was very proud of that; I was very proud of that," Slocum said. "It was a big statement."

An even bigger statement? Hoepfel's dualenergy X-ray absorptiometry scan—known as a DXA scan—which measures bone mineral density. Her measurements have improved since she started lifting. "The bending and compressing forces tell your bones, 'Hey, we need to be stronger, we need to stay dense,' and we see those changes over the span of a year in the DXA scans, particularly with women," Duncan said.

By using free weights under the supervision of a trainer rather than simply engaging machines at a gym, Hoepfel is also maintaining her balance, which becomes increasingly important as individuals age.

"With free weights, we're also training the nervous system, so our ability to react and our reaction time improves," Duncan said. "What's particularly important is that when you stumble going up the curb or hit a crack in the sidewalk, can you get your foot out in front of you in time to maintain your balance? And then if you do, are you strong enough? Can you initiate a rapid muscle contraction and develop force rapidly enough so that you don't collapse? Falls are very dangerous, especially the older people get."

Free weights, Duncan added, help an aging body expect the unexpected.

"As we age, a lot of times we don't go out and kick a soccer ball, we don't do things that are somewhat unpredictable and so when something unpredictable faces us in life, we struggle to react to it," Duncan said. "When training with free weights, while it's not unpredictable, there's a little more of that unpredictable nature to it."

In addition to launching a new exercise routine, Hoepfel met with a sports dietitian at the Human Performance Lab to discuss the importance of eating adequate protein. While it won't build muscle or strengthen bone on its own, the diet will complement the weightlifting as she works to stave off osteoporosis. Her main goal, she said, is to embrace exercise and nutrition over medicine.

"I don't take any drugs at all," she said proudly.
"Why would you want to take a drug with side
effects when you can prevent doing that by changing your lifestyle?"

It's a good question—and one many patients, especially those marching past middle-age, should ask their doctors.

"Exercise is something you have to do the rest of your life," Hoepfel said. "We all have 24 hours in a day, and in my age group, a lot of women may not be gainfully employed outside the home anymore, so we have the time. If you have time to go to book club or to start quilting or knitting, you have time to go to the gym."



VISIT TMCNEWS.ORG TO WATCH AN ORIGINAL VIDEO FEATURING JEAN HOEPFEL.



CARMEL BITONDO DYER, M.D., is a voice for the older patient population. At The University of Texas Health Science Center at Houston (UTHealth), she is the founder and executive director of the Consortium on Aging and a professor of geriatric and palliative medicine at McGovern Medical School. She was a delegate to the 2005 White House Conference on Aging and has twice provided testimony to the U.S. Senate on behalf of vulnerable elders. Dyer spoke with *Pulse* about the challenges of geriatric care and her passion for helping people age.



#### Q What led you to geriatric medicine?

A I It was really two-fold. One, I had this incredible Italian grandmother who lived to be 98 years old. She was still living alone when she died, and she was just really a great inspiration to me. She had been a seamstress in the sweatshops of New York City. She designed wedding gowns. She was amazing.

I also had an opportunity when I was a senior in college. You know how you have to get medical experience to do medical training? I was in a small town—DeLand, Florida—and there were no volunteer jobs, so the school guidance counselor hooked me up with one of the local nursing homes. The director of nurses took me under her wing and she put me through nurses' aide training. She had me round with the geriatrician, and I just thought this was a tremendous career.

#### Q │ Was there anything in particular that has stayed with you from that experience?

A We saw these people in very late age, and I remember there was a gentleman who had problems with dementia. When he passed away, they handed us a one-page biography of all the contributions he had made on the national front and locally. I thought, 'We missed

this. We missed it. We saw him in his late age, but he had a whole lifetime of contributions.' I thought, 'That's what should come first when you meet somebody. You're only seeing a snapshot of them when you see them when they're elderly. You don't know all the things that they have done in their life.'

## • Why do you think there is a shortage of geriatricians in the United States?

A | Unfortunately, geriatricians deal mostly with Medicare. Medicare reimbursement is based on volume. With elderly patients, you have to spend more time. As a result, geriatric medicine is the only field where you can get extra training and earn less money. I think that's why. I also don't think that everyone realizes what a difference the expertise makes. Here's why: Back when MD Anderson was started and Texas Children's Hospital was started, the average life expectancy was 68 years of age. Now, it's pushing 80. The textbooks have not caught up, and the training we get in geriatrics is really targeted toward the frail elderly.

## Is that why you are leading an initiative to create a geriatric hospital?

A There is a lot of dissatisfaction in the public with the health care system when you're of an advanced age. We are not equipping health professionals with what they need. If you only get a month of training in geriatrics in internal medicine in medical school, that's not enough. Both Baylor and UTHealth teach geriatrics, but many medical schools do not teach it at all. I'm a geriatric specialist, so people send me the more challenging cases in that regard, but there's a big quality gap and there's huge room for improvement. I see the costs escalating and health care taking up a greater

part of the gross domestic product every year. I know there's a better way to do it. You're going to put a pediatrician in charge of a pediatric hospital. If you're a hospital, or somewhere where a large portion of your patients are elderly, you need geriatricians there.

## Where, specifically, do you see the most acute need for better geriatric care?

A I I could say everywhere, but I think I would start in the hospital. A lot of people disagree with me. They say, 'Carmel, don't you understand? We've got to keep people out of the hospital!' Yes, we do. However, we are not yet stopping heart attacks, sepsis or stroke. Well, we are making dents in those conditions, but people still have them and they still come into the hospital, and that's where the greatest harms are. Hospitalists are at a disadvantage. The patients have 80 years of history and the hospitalist is seeing them in a snapshot, and is challenged to save their lives right

#### U.S. GERIATRICIAN SUPPLY AND DEMAND

	Full-time Geriatricians
SUPPLY	
Estimated supply, 2013	3,590
Projected supply, 2025	6,230
DEMAND	
Estimated demand, 2013	22,940
Projected demand, 2025	33,200
TOTAL SHORTAGE	
Projected supply (minus) demand, 2025	-26,970

<sup>\*</sup> The 2013 demand estimates 30 percent of the 65-plus patient population needs care by a geriatrician.

Source: U.S. Department of Health and Human Services, "National and Regional Projections of Supply and Demand for Geriatricians: 2013-2025"

then and there.

The next area would be in the transition from the hospital out to the community. That's because it's hard for patients to understand all the instructions. Sometimes the medicines are changed.

The third area is medication management—outpatient or inpatient. Older people react differently to medications. Older people with dementia react yet still differently than other older adults. I like to say if I could teach every doctor in the United States one thing, it would be how to manage medications in the very elderly, because there are no algorithms you can follow for that. I'm being very edgy and very controversial here.

#### Q | You've testified in front of the U.S. Congress on behalf of vulnerable elderly people. Can you describe that experience?

A I I have had the privilege to do work in elder abuse prevention and intervention and disaster preparedness for more than 20 years. We were able to present to the U.S. Senate Special Committee on Aging—to look them in the eye and tell them what we are seeing on the ground. It was a great privilege.

## Q Did you see any tangible results from that special committee?

A Actually, out of that came the Elder Justice Act [signed into law by President Barack Obama on March 23, 2010, as part of the Patient Protection and Affordable Care Act]. The law, which protects seniors from elder abuse, helps stimulate a lot of activity at the federal level.

(continued)



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#### Q | You are featured in UT Health videos discussing illness in older populations. What are some of the biggest challenges and misconceptions there?

A One of the cardinal signs of illness in an older patient is an altered mental status, but it's hard to know how to interpret that. Are they just having a bad day? Are they getting Alzheimer's disease, or is it really that they're acutely ill? Whenever that happens, family members and caregivers need to get their older loved one to some sort of a health care provider, but I don't think people realize that. In addition, I don't think people realize that older adults can have infections without having a white blood cell count that's high or without having a fever. They don't, I think, understand that for some frail, elderly people, you can't drill down on their blood pressure or their blood sugar because you'll lower it too much for their body state, and that results in falls. In fact, studies now show that there could be brain and heart damage

I like to say if I could teach every doctor in the United States one thing, it would be how to manage medications in the very elderly, because there are no algorithms you can follow for that.

from ratcheting the blood pressure down and managing it too tightly in old age.

## • Of the studies you're conducting at the Consortium on Aging, is there one of which you are particularly proud?

A | We were able to start a telecommunication program for Adult
Protective Services clients—the first
in the country. We've done almost
500 cases now, and we started it last
June. We can do a tele-consultation
with a geriatric elder mistreatment
expert and geriatrician where the
case worker goes into the home
with an iPad and we FaceTime.
It's all HIPAA [Health Insurance
Portability and Accountability
Act] protected. We help make
determinations about how well the

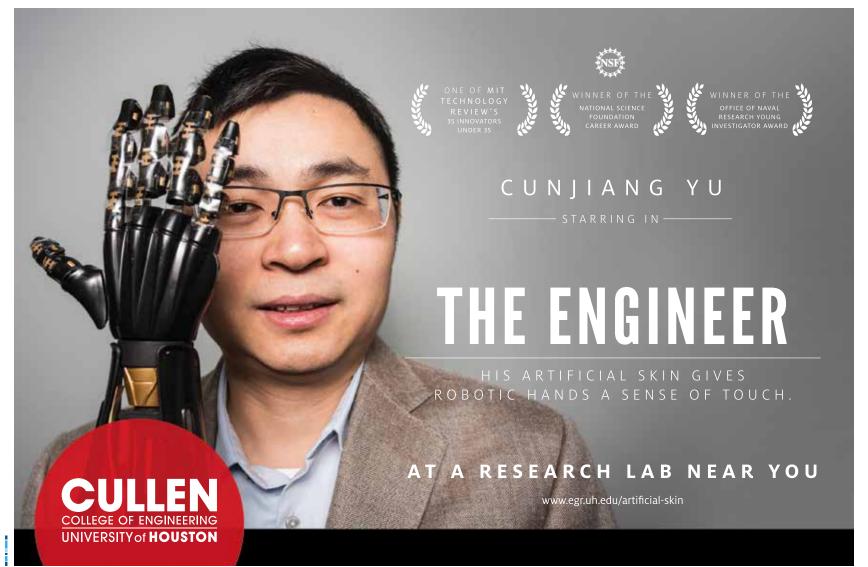
patients can make decisions about themselves, whether or not abuse or neglect is present and do they need any medical interventions. We are giving advice to the protective service worker so they can do a better job of taking care of these victims. We just got a paper accepted on this subject in the Journal of the American Geriatrics Society. We were waiting until we got 500 patients, and now we're going to start analyzing. Jason Burnett, Ph.D., co-director of the Texas Elder Abuse and Mistreatment Institute, is leading that.

## Q | You also talk about the concept of healthy aging. What does that mean to you?

**A** I think that the term has been applied really broadly, right? You

start aging from the time you're born. Truly, where people start to be concerned about aging starts at age 65. That's when you need to prepare—if averages are correct—to live another 20-plus years. You have to make sure you're taking the steps so that when you are 85 and 90, you're the healthiest and the most functional you can be. It's never too late to start thinking about healthy aging. However, with the people and the patients that I've seen, there are probably two major things to do: First is exercise, exercise, exercise. I have a treadmill desk in my office so I can practice what I preach. The second thing is, research studies have shown that having a positive attitude helps preserve cognitive health. People who make lemonade out of lemons, people who look at the bright side and are resilient they do better. We don't have to wait to be 65 to do that. We can start that anytime.

Carmel Bitondo Dyer, M.D., was interviewed by Pulse Senior Innovation Writer Christine Hall. The conversation was edited for clarity and length.



#### Palliative Care and Spirituality for Life

Houston Methodist Research Institute to host a joint conference with the Pontifical Academy for Life on Sept. 17

By Shanley Pierce

istorically, medicine has focused on disease rather than whole-patient care.

"In general, academic medicine has had great difficulty incorporating palliative care, supportive care and—in a sense—whole-patient care into disease management," said Eduardo Bruera, M.D., medical director of the Supportive Care Center at The University of Texas MD Anderson Cancer Center and chair of the department of Palliative, Rehabilitation and Integrative Medicine. "But things are changing, and they're changing for the better."

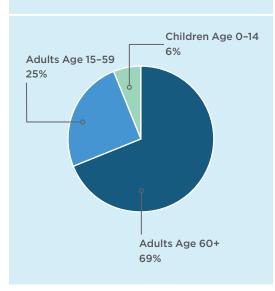
Bruera is a co-organizer of the Palliative Care and Spirituality for Life (PCSLife) conference, presented by Houston Methodist Research Institute and the Roman Catholic Church's Pontifical Academy for Life in Vatican City. PCSLife will be held Sept. 17 at Houston Methodist Research Institute.

Hosted in collaboration with MD Anderson's Department of Palliative, Rehabilitation and Integrative Medicine, PCSLife will feature palliative care and spiritual experts from Italy and across the United States. The conference will explore the importance of palliative care and spirituality in clinical practice, the benefits of palliative care to patients and health care systems, and best practices to help patients preserve dignity at the end of life.

"There is no moment of greater distress than the moment in which we are going to end our lives," Bruera said. "It is never easy to be ill. It is always going to be difficult to die. We can never expect to turn the end of our lives into a pleasant experience, but there's a lot of unnecessary ... physical, emotional, spiritual and family suffering. That is what we are very good at alleviating."

Palliative care, a relatively new subspecialty in

#### WHO NEEDS PALLIATIVE CARE EACH YEAR?



Source: World Health Organization, 2014

medicine, focuses on improving the quality of life for patients and their families. Its ethos is based on the understanding that treating patients doesn't mean just treating their disease; it means treating the patient as a whole and providing physical, psychosocial and spiritual support to alleviate pain and suffering. Palliative care is not just for the end of life, though that is often when it is needed.

Palliative care pioneer Declan Walsh, M.D., chair of the department of supportive oncology at the Levine Cancer Institute in Charlotte, North Carolina, established the first palliative care program in the U.S. in 1987. He said that gaining a deeper understanding of what patients are experiencing through palliative care also plays an

important role in clinical care.

"Many of the challenges that cancer patients have around issues, like nutrition, are things that are important in palliative care, but they're also important because they teach us more about the nature of these illnesses," said Walsh, who will be speaking at PCSLife. "If we understand that better, we'll be able to provide better care for the patient, but also better understand how we can manage cancer as a disease."

According to the World Health Organization (WHO), an estimated 40 million people require palliative care every year, but only about 14 percent of them receive it due to a lack of awareness and access. Cardiovascular diseases and cancer are the two main chronic ailments that require palliative care, along with other conditions including chronic respiratory diseases, AIDS, diabetes, multiple sclerosis and Parkinson's disease.

In 2014, the World Health Assembly, the decision-making body of WHO, issued the first ever global resolution to encourage WHO and member states to improve and expand access to palliative care, calling it a "core component of health systems."

In July, the U.S. House of Representatives approved H.R.1676, the Palliative Care and Hospice Education and Training Act. This bill amends the Public Health Service Act by requiring the Department of Health and Human Services to provide support for palliative care and hospice education centers. It also calls for the Agency for Healthcare Research and Quality to provide a national education and awareness campaign about the benefits of palliative care, and the National Institutes of Health to expand national research programs in palliative care. The bill is pending in the Senate.

(continued)

Palliative Care

Palliative care improves the quality of life of patients and their families who are facing problems associated with life-threatening illness. This approach to care focuses on preventing and relieving suffering through the early identification, correct assessment and treatment of pain and other problems—whether physical, psychosocial or spiritual.

#### PALLIATIVE CARE AND SPIRITUALITY FOR LIFE CONFERENCE

#### WHEN

7:30 a.m. - 6:00 p.m. Monday, Sept. 17, 2018

#### WHERE

Houston Methodist Research Institute 6670 Bertner Ave.

#### **DETAILS**

Free; registration required

#### INFO

pcslife.org/agenda

"[I'm] hopeful that this will be a major catalyst to move the field forward," Walsh said. "We've done a lot of good groundwork and development, but there's a lot more work left to do."

Medicine and science have made great leaps over the past half century to improve and extend patients' lives, thanks to new therapeutics and interventions to treat disease. But living longer doesn't mean death can be ignored.

"Death has been prolonged, yet there's all sorts of issues around terminal illness that have not

been fully discussed," said Sheldon Rubenfeld, M.D., clinical professor of medicine at Baylor College of Medicine. "Our culture is one that is very optimistic and forward-looking. Death is not something we dwell on. Nonetheless, with the expansion of medicine and the financial support for medicine in the last 50 years, death has taken on a different character than it had before, so we need to discuss it more openly."

Rubenfeld will lead an interfaith roundtable at PCSLife to explore the role of religion in palliative care.

"You cannot exclude the role of religion in palliative care, specifically, or medicine in general. It's just too important to human beings," Rubenfeld said. "The public needs to know that they're not at odds with one another. They're working in tandem to deal with these very difficult issues."

PCSLife will run in conjunction with the 19th annual Marialuisa Lectureship for Life, an award established by Houston Methodist Research Institute president and CEO Mauro Ferrari, Ph.D., in honor of his first wife, Marialuisa, who passed away from cancer in 1995. Ferrari will present the award to Vincenzo Paglia, president of the Pontifical Academy for Life.

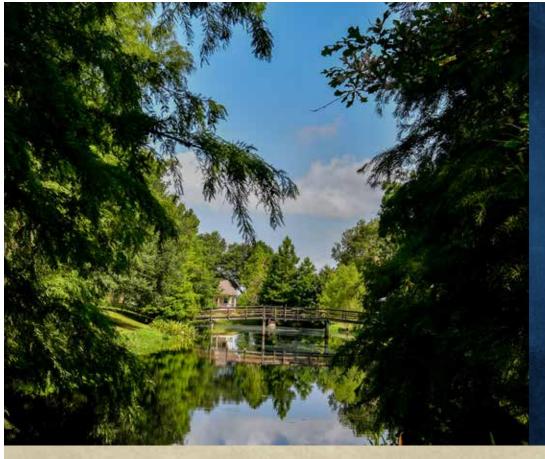
"Pain happens," Ferrari said. "But it's a

tremendous source of energy. The gift of transforming one's own pain into good things for others—if that is not the greatest gift, I don't know what is."

In 2017, Ferrari was appointed by the Pontifical Academy for Life to serve a five-year term as one of 89 corresponding members from 30 countries. The academy, which focuses on promoting human life and bioethics, declared palliative care "the most humane response to the needs of seriously ill and dying children, adults, and fragile elders, to ensure that they are cared for until the end," according to a 2018 paper published by the organization.

PCSLife speakers hope the conference will demonstrate the importance and benefits of palliative care and serve as a call to action for health care leaders to implement palliative care programs in their respective hospitals.

The palliative care unit is the "intensive care unit for human suffering," Bruera said. "The same as we have intensive care units in every single hospital, I think the future will hopefully bring at least one palliative care unit to every single institution at the Texas Medical Center. We hope that now it's a matter of inspiring the leadership of the different institutions at TMC to take advantage. That, to me, is the big goal."



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#### **Art that Comforts Near the End**

An artist offers solace in MD Anderson's Palliative Care Unit

By Britni R. McAshan

of the rest of the hospital, the Palliative Care Unit (PCU) at The University of Texas MD Anderson Cancer Center is a respite for patients who need comfort.

The PCU does not cure patients, but offers optimal levels of comfort as they transition out of active cancer treatment.

Often, the next stop is hospice care.

"This is a very sensitive time for folks. They are not getting the outcome they wanted," said Paul Walker, M.D., associate professor in the department of Palliative, Rehabilitation and Integrative Medicine at MD Anderson. "When people get to the PCU they can be angry, disappointed. It's dealing with a lot of emotions."

To care for patients, the PCU engages an interdisciplinary team of physicians, nurses, chaplains, social workers and Lynn Randolph—an artist who should not be mistaken for an art therapist.

Randolph's work has appeared in The Menil Collection, the Museum of Fine Arts, Houston, and other galleries locally and nationwide. The artist spends each Tuesday work-

ing with PCU
patients and their
families through
COLLAGE: The
Art for Cancer
Network, a program started in
2006 by oncologist Jennifer
Wheler, M.D.

Usually, Randolph begins her interaction with a patient by carefully



Artist Lynn Randolph works with patients on the Palliative Care Unit at MD Anderson Cancer Center.

entering the patient's room with her pencil and sketchbook. She introduces herself and then asks if the patient and his or her loved ones would like a drawing.



"Her Soul's Visit," by Lynn Randolph, is original artwork from a series about end-of-life experiences.

"I usually ask for some history, what the patient and their family like to do or if they have an image in their mind of something that has meaning for them," Randolph explained. "Sometimes I am drawing with the lights off, wearing a mask and gloves. These are not pieces that would ever leave my studio. It's not my art—it is their art and they bond to it."

#### A 'life review'

Patients are referred to the PCU or the palliative care mobile team if they experience more severe symptoms than usual—extreme pain, fatigue, anxiety, sadness, vomiting, nausea and depression—or if they have received a poor prognosis for their cancer treatment. Typically, patients stay on the PCU for five or six days.

"In a sense, it is an intensive care unit ... for the management of the physical and emotional suffering in the patient," said Eduardo Bruera, M.D., medical director of MD Anderson's Supportive Care Center and chair of the department of Palliative, Rehabilitation and Integrative Medicine. "It is a concept that is quite different than the traditional concept of a hospital, because these are patients who have considerable physical and emotional distress. Actually, the unit is a step up in their care."

Patient comfort is packed into every crevice of the 12-bed PCU.

(continued)

Soft pink lighting instead of sharp fluorescents fills the hallways, while inspirational messages appear not only on the walls, but on the ceilings, so patients on stretchers can see them. In addition to medication, massage and acupuncture, PCU patients have the option to work with Randolph.

"Very often, if they are uncomfortable, if they start talking to me or I get them to draw, they forget about the pain. It goes away," Randolph said. "It is a period where the world stops and they go into themselves. They have rich, wonderful things inside themselves that I can translate in meaningful ways."

Unlike traditional art therapy, Randolph is not expecting the patients to achieve a milestone, such as walking, speaking or expressing emotion. Her presence and creativity are expressly supportive. PCU patients share their fondest memories with Randolph, whether it is a dirt road leading to their favorite place, a bike ride in the mountains or the tender touch of a loved one.

"It is something that isn't medical, but it is happiness or some experience they had that came together in a drawing," Randolph said. "I don't pretend that it changes anything monumental—I don't know what the ultimate outcomes are—but I think I am drawing things for people that they will keep and cherish for a long time."

A "life review" is the description Walker assigns to Randolph's work with PCU patients.

"The images that come out in Lynn's drawings are the times that have been important, the relationships that have been important, the places, spiritual and religious views that have been important," Walker said. "There is an important psychological benefit of the images and these images can be symbols to express something we don't have words for."

#### 'My husband was a patient'

Beyond her artistic talent, Randolph knows better than most what it feels like to have a loved one in the PCU.

"My husband was a patient here in 2000 and, after he was diagnosed, he only lived about five months," she said. "During that time, I had to learn how to go through this process, and there were things that I discovered that helped me and there are ways that I can help other people because I have been through it."

Her spouse's diagnosis and grim prognosis changed Randolph's outlook on life—a living-in-themoment lesson she shares with PCU patients.

"You can grab hold of it right

here, right now," she said. "Being with him was all I could really do. Everything that happened for those five months, I was just with him and he lived until he died. If you can get people to stop and live while they are still there and to be together, that is something you don't think about unless someone you are totally intertwined with is in that circumstance."

Since joining the unit a decade ago, Randolph—now remarried—has made a profound contribution to the psychosocial and spiritual counseling team at MD Anderson's PCU.

"She brings her life experiences and what she learned from those experiences to the bedside with those patients," Walker said. "She has been in the situation of being a spouse of a dying husband, a sister of a dying brother—incredibly traumatic—and I think that sensitivity comes through."



#### How TMC Employees Spend Their Spare Time



NAME: Ehab Hanna, M.D.

occupation: Professor and vice chair of the Department of Head and Neck Surgery at MD Anderson Cancer Center

INTEREST: Windsurfing

hab Hanna, M.D., unwinds from the high-pressure demands of his work as a head and neck surgeon by windsurfing, a sport that combines the adrenaline rush of surfing with the tranquility of sailing.

"I don't think about anything else other than just that feeling of flying on top of the water," Hanna said. "That's the reason I'm really hooked."

In 2012, Hanna met with a visiting physicist from Russia—who was conducting research on nanotechnology and cancer—to see if there were opportunities to collaborate. Although the two men had nothing in common, the Russian physicist happened to be a champion windsurfer and invited Hanna out to the beach in Seabrook, Texas, to give windsurfing a try.

"In America, when you're introduced to a new sport, there is sort of a standard way of teaching whereby you get some classwork first, theoretical work, learn about the wind, the current, the board, the equipment, board handling, safety tips, etc. Then you get on the water," Hanna said. "The Russian way is very different."

With no training whatsoever, Hanna hopped on a board at the physicist's behest, grabbed onto the sail and took off into the rough waves. He heard his de facto teacher mocking him from afar and yelling instructions to stand up straight on the board.

"Despite all of this humiliation and berating, somehow I just truly enjoyed it," Hanna said.

The following week, he signed up for "a proper lesson with a proper instructor under proper conditions."

Hanna has always harbored a deep, visceral connection to the water. It calls to

him like a siren.

Thirty years ago, he immigrated to the United States from Egypt, where he spent his summers on the beaches along the Red and Mediterranean seas. As a youth, he swam competitively and learned how to scuba dive. His first high school job was working as a lifeguard.

"Every time I'm near the water—either looking at the water or swimming in the water—it's like something happens in my soul," he said. "The water, to me, is my element. ... All my senses are there. You're smelling the salt water, you're feeling the wind on your face, you're feeling the sun on your skin."

As a surgeon, Hanna thrives on competition.

"Surgeons, we're just a different breed," he said. "When we're in, we're all in."

That same unwavering focus and determination kicked in when Hanna decided to learn how to fly across the water at 30 miles an hour.

"I got the lessons, did the beginner lesson, then the intermediate, then did the advanced, subscribed to every magazine, bought every book about windsurfing," Hanna said. "Whatever publication on windsurfing there is, I subscribed."

While there was a steep learning curve, Hanna remained committed. He carved out time in his busy schedule to practice—every Wednesday afternoon and Saturday morning—and has windsurfed in places where he attended scientific meetings, including Israel, Turkey, Italy, Brazil and Canada.

His studious approach to windsurfing paid off. He eventually built up the skill and confidence to race, competing in the 2012 Kona North American Championship on Lake Waconia in Minnesota and placing 38th out of 60.

Hanna plans to compete again next year, but in the meantime, he teaches novice windsurfers on Saturday mornings at the Seabrook Sailing Club.

Being on the water allows him to recharge.

"When I get on the board, I cannot have my iPhone, I cannot have my pager. I cannot have anything other than just my sail and my board," Hanna said. "It's so good for the soul [to be] just uninterrupted, unbothered, unreachable, disconnected, literally disconnected emotionally and mentally from any other worries."

By Shanley Pierce

# from UNDER How one surgeon survived two tragedies

By Shanley Pierce

n Dec. 30, 2007, Eugene
Alford, M.D., put on his
Sunday best and prepared
to head to church with his family.
His brown hair was neatly coiffed
and his thick mustache perfectly
groomed, but for some reason, as
he stood in his home in Houston's
Montrose neighborhood, he couldn't
quite shake a "weird" feeling.

"I had this real sense of foreboding that something really bad was going to happen," Alford said.

"It was a feeling that I was going to lose a person or I was going to fall from grace."

Alford, a facial plastic and reconstructive surgeon at Houston Methodist Hospital, decided to skip church and spend the day on his 86-acre farm in Bellville, 70 miles west of Houston. He hopped on his tractor, a 20th anniversary present from his wife, Mary, and started mowing the pasture. For Alford, ever the country boy, driving a tractor was the ultimate form of therapy.

He wanted to create a deer blind and had mapped out some brush he needed to clear with his tractor, which was equipped with a frontend loader. As he plowed through the thicket, he spotted a dead white oak tree squarely in the middle of the clearing. He rolled up to it twice, each time backing away.

"For some reason, on the third try, I thought, 'Quit being a chicken and do it!" Alford recalled.

Determined to remove the tree, Alford lifted the front-end loader of his tractor and accelerated toward it, hoping to jostle the dead oak into submission. But water had collected at the tree fork and



Eugene Alford, M.D., is a facial plastic and reconstructive surgeon at Houston Methodist Hospital.

rotted through the wood. As the tractor dug into the trunk, the 950-pound tree top snapped off and collapsed forward onto Alford, pinching him between the steering wheel and the tractor seat. His spine was crushed immediately.

"I knew I was paralyzed and I knew I was hurt," said Alford, who was 48 at the time.

The tree knocked Alford's cell phone holster off his belt and onto the ground beneath the tractor, out of reach. His heart sank, but then he remembered what he had done before he climbed onto the tractor, something seemingly inconsequential that he had never done before: He had taken his phone off his belt and placed it in his shirt pocket.

He reached for the phone and hit speed dial for Mary. She was in the kitchen at home in Houston, steeped in commotion. Two of their kids were preparing for their church's youth ski trip to Colorado the next day, and a gaggle of their daughter's high school friends was hanging out on the front porch. Still, when Mary heard the house phone chime, she picked up on the first ring.

"I was calling to say goodbye because I really thought I was going to die," Alford said.

Through labored breathing, he managed to tell his wife what happened. In a panic, Mary handed the phone to their youngest son, Charles, who had just turned 15, with instructions to keep Gene on the line while she called for help on her cell phone. Charles kept his father talking, giving him the encouragement he needed to hang on just a little longer. Little did Alford know that 14 months later, he would be on the receiving end of a similar call in the face of another family tragedy.

"I couldn't let Gene stop talking. I knew enough to think, 'We have to keep him awake,'" Mary said.

Alford was trapped in Austin County, and Mary was calling from Harris County. She dialed 911, but after learning she could not send help to another county, she frantically contacted friends who lived next door to their Bellville farm. They answered the phone right away, called 911 and rushed out of their house toward Alford's property.

Meanwhile, the local sheriff overheard the volunteer fire department call go out for Alford's location. He recognized the address, set out on foot to find Alford pinned down in his tractor and immediately radioed Life Flight for help.

In a rush of adrenaline, the sheriff and Alford's next-door neighbor managed to hoist the massive tree off Alford's body. Shortly thereafter, Life Flight arrived and airlifted the doctor to the Level 1 trauma center at Memorial Hermann-Texas Medical Center.

. . .

After trauma doctors stabilized Alford, he was transferred to Houston Methodist to undergo surgery the following day, New Year's Eve.

He suffered six broken ribs, a broken collarbone and a broken shoulder blade from the accident. Worse, the tree crushed nearly every thoracic vertebra in his spine and pinched the blood vessels that supply blood to his spinal cord. The injury paralyzed Alford from the waist down, but because his spinal cord wasn't fully severed, his condition is classified as an incomplete spinal cord injury, meaning he has some feeling and function in his legs, but cannot walk.

(continued)

Facing: Alford and two surgical residents perform nasal reconstruction on a patient on June 28, 2018, at Houston Methodist Outpatient Center.

I was calling to say goodbye because I really thought I was going to die.

- EUGENE ALFORD, M.D.





Alford shares a moment with Charles Soparkar, M.D., Ph.D., outside the OR.

Approximately 288,000 people in the United States are living with a spinal cord injury, with 17,700 new cases occurring each year, according to the National Spinal Cord

Injury Statistical Center. Most of the injuries are caused by vehicular accidents, falls, acts of violence and sports and recreation activities. Nearly 70 percent of all cases result in incomplete spinal cord injuries.

"The big cable that comes into your house and powers all your TVs [has] a million little wires," Mary explained. "If that's cut, you can't just attach it back altogether. You might [attach] some of them. You might get some audio. You might get some video. But there are too many little wires. That's sort of how Gene is."

Alford remained in Houston Methodist's intensive care unit under heavy sedation for a week and a half.

"We definitely worried about him dying during those 11 days, but I never worried about, 'Oh my goodness, how are we going to spend the rest of our lives like this?" Mary said. "We just didn't allow ourselves to think that way."

On Jan. 10, Alford moved from the Houston Methodist ICU to TIRR Memorial Hermann, a rehabilitation hospital for patients with brain injury, spinal cord injury, stroke and other conditions. He spent a grueling six weeks in physical and occupational therapy to relearn basic functional skills—how to feed himself, use the bathroom, shower, get in and out of a wheelchair, and more. This was his new normal.

"When I was at TIRR, I was surrounded by therapists, enthusiastic people," Alford said. "TIRR's a sad place with what people are going through there, but if you think about how much recovery people are making, it's a really happy place."

Alford returned home for two months in March and April 2008 and spent many days in solitude while Mary, a dentist, went to work. He filled his time writing thank you notes to family and friends who had sent food and flowers, but it was a struggle.

"It used to take me two minutes to write a thank you note, but now it takes 10 or 15 because I'm in this funk," Alford said. "You're trying to say thank you, which is a happy emotion, but there's not any happiness at all."

. . .

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We had been living by the seat of our pants, but that wasn't ... going to work. We had to say to one another, 'I'm in it for the long haul.' Yes, we said that the day we got married, but I don't think we really knew what that meant.

- MARY ALFORD, DDS Wife of Eugene Alford, M.D.

Before the accident, Alford was in high demand—at the peak of his surgical career. He performed more than 800 surgeries in 2007 alone.

"We always joked when people asked us how long we've been married. It's 34 years on the calendar, but he's only been home for seven because he worked so much," Mary quipped.

The surgeon rose to international fame in 2005 after performing an extensive facial reconstruction on Carolyn Thomas, a young woman whose boyfriend shot her in the face at point-blank range in 2003. Thomas lost 80 percent of her face and became widely known as "the woman without a face." Thanks to Alford, his facial reconstruction team at Houston Methodist and the head and neck team at The University of Texas MD Anderson Cancer Center, Thomas' face was rebuilt. She and Alford appeared on The Oprah Winfrey Show and Larry King Live to discuss the groundbreaking reconstructive surgery.

As a surgeon, Alford was in command for most of his career. In the operating room, he controlled what tools to use, where to cut, how to suture. But after his injury, he was no longer in control.

This was a challenge for the surgeon. The claws of self-doubt and depression dug deep into his psyche. Who in the world is going to come see a doctor in a wheelchair and let him operate on them, he wondered? How am I ever going to be a father to my children?

"I was never suicidal, but boy, it was just dark," Alford said.

He also knew that his condition could strain his relationship with Mary. After the accident, she became his primary caregiver, helping him shower, dress and get in and out of the car.

Adjusting to physical disabilities can put marriages at risk. Although spinal cord injury patients don't tend to divorce soon after an injury, the rate of divorce increases over time, jumping from 9.5 percent of patients to more than 19 percent 10 years later, according to the National Spinal Cord Injury Statistical Center.

But divorce "wasn't an option for us," Mary said. She had vowed to be at her husband's side in sickness and in health, and they both knew their marriage was fortified by the conviction that they would survive even thrive—with his disability.

"We had been living by the seat of our pants, but that wasn't ... going to work. We had to say to one another, 'I'm in it for the long haul," Mary said. "Yes, we said that the day we got married, but I don't think we really knew what that meant."

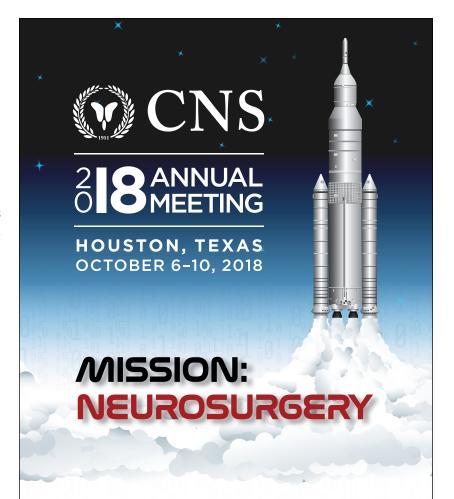
The spinal injury wasn't the first time a shadow had been cast over Alford's life.

During his first semester at Texas A&M University, Alford earned a midterm grade point average of 0.8. Defeated, he packed up his car and started driving home to Henderson, Texas, although he didn't withdraw from school. When he stopped to gas up in Madisonville, he spotted a payphone and decided to call his parents and talk to them about quitting Texas A&M.

"Have you done your best?" his father asked.

"What do you mean?" Alford said.

(continued)



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Bess Alford (daughter), Mary Alford, Lauren Alford (daughter-in-law) and John Alford (son) stand behind Eugene Alford and his service dog, Sam, during a trip to Glacier National Park.

"You've never quit anything in your life. You're not going to be a quitter now," his father replied. "If you've done your best and you fail, then that's OK. That's not quitting. But if you haven't done your best, you can't come home."

At that moment, Alford realized he hadn't given it his best. He got in his car and drove back to school. To this day, Alford considers that advice one of the greatest gifts his father gave him.

In May 2008, Alford returned to TIRR for the second phase of his

rehabilitation, a rigorous program that tested his physical limits. Mary and a team of occupational therapists, physical therapists and aides rallied around him as he trudged through his recovery.

"Even when he was the most broken and the most wounded, he always had his determination and his kindness. He was so engaging," said Meg Marquart, a physical therapist who helped Alford at TIRR. "I had never seen the man shrink away from a challenge. He was always asking, 'What's next? What's the next step?""

At TIRR, Alford participated in a neurorecovery therapy program designed to rewire spinal pathways below the site of injury in paralyzed patients. During each session, he was lifted into a weight-bearing harness that allowed him to stand upright over a treadmill, while his therapists and assistants manually moved his legs to simulate walking. The locomotor training essentially stimulates the body into relearning the motor skills required for walking

by sending sensory information from the legs and trunk to the nervous system.

Alford accepted the fact that the tables had turned on him: He wasn't the doctor in charge anymore. He was the patient.

"When I learned to listen, to take advice, to take commands, that's when things started getting better," he said. "It was a new territory."

He came to embrace the idea that, although he could no longer use his legs, he still had his brain and his hands. He could still be a great surgeon—even if that meant being in a wheelchair.

"There's no proof that a paralyzed doctor can come back to work, but I never gave up the faith that I can do that," Alford said. "I know what my best is and my best is in a wheelchair now."

In October 2008, after
10 months of intensive rehab at
TIRR, Alford returned to work at
Houston Methodist Hospital in a
Permobil power wheelchair that
can be adjusted to a sitting or





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- Neuromuscular Conditions (such as Parkinson's)
- Inflammatory Conditions (arthritis, etc.)
- Balance Recovery
- Swallow Function Recovery
- Dialysis

standing position—perfect for operating. The hospital installed a German-manufactured operating room table designed with an unobstructed base, allowing Alford to move more freely in his wheelchair during procedures.

He started with small surgeries, including repairing a teenager's broken nose and reconstructing a woman's nose after removing a basal cell carcinoma. Alford decided not to perform any more extensive procedures that require a certain speed and mobility. But at the very least, he was still doing what he loved.

. . .

On Thursday, Feb. 12, 2009, Alford completed his first facelift since the accident. Things were finally looking up.

But the next morning, his phone rang around 8:30 a.m. It was Mary, calling to say that she and Charles had been in a car accident. Charles was driving and he had drifted into the median and overcorrected, causing the car to roll over four times.

"We've been in a wreck. Charles is hurt," Mary said to him over the phone.

"It's OK. He'll be fine. Don't worry about the car," Alford told her, not realizing his wife was still in the vehicle with Charles lying in her lap.

"No, Charles has been hurt," Mary repeated. "I think he's dead."

Charles' neck had snapped in the tumble, and he was declared dead at the scene.

Alford knew physical pain, but he had never experienced the emotional agony of losing a child.



Charles Alford died in a car accident at age 16 on Feb. 13. 2009.

"I can deal with anything that happens to me," he said. "Just don't hurt my kids or my family."

At Charles' memorial service on Feb. 18, 2009, five days after the accident, Mary sat by her husband both of them in wheelchairs—with her leg and hand in a cast.

"What a pathetic-looking bunch we were, but when we sang 'In Christ Alone,' I stood because there was nothing else I could do to proclaim that," Mary said. "I know that God's hand has been in this, and it continues to be in this. He has made us different and better through both Gene's spinal cord injury and Charles' death, and I don't want to waste that."

• •

Today, when Alford wheels into the operating room, he is greeted by a sea of familiar faces. He has worked with the same OR techs for more than 22 years and continues to teach surgical residents.

"I was getting pretty wrapped up in myself before the tree fell on me," Alford said. "I miss running. I miss playing golf. I would really love to be able to do those things again, but if it meant being an arrogant surgeon, then I would give up my legs to not be that person."

It's been 11 years since Alford's spinal cord injury and nine years since his son's death. Alford still thinks about that day in December when he was trapped under the tree, listening to Charles' voice on the other end of the phone.

"I used to cry all the time. I couldn't say his name," Alford said.

Much of his life after the accident and the tragic loss of his son has been about resilience.

"Before I was injured, my tools were scalpel and forceps, but now God gave me a different tool: a wheelchair," Alford said. "You can go from a place of absolute darkness and despair and point to that fork in the road where you can either choose despair or you can choose hope. You've got to choose the path that leads to hope."

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Health care in Puerto Rico after Hurricane Maria

By Alexandra Becker

#### SALINAS, Puerto Rico -

The two doctors found Pedro Rodríguez napping on a hammock under a torn blue tarp. He was surrounded by mountains, wild and lush, an occasional smattering of hot pink flowers from native Framboyan trees punctuating the deep green landscape. Rodríguez had come home to die among them.

It was 10 months to the day since Hurricane Maria struck Puerto Rico, devastating an island already crippled by a financial crisis and still recovering from Hurricane Irma just two weeks prior. The mortality rate on the island jumped by 62 percent after the storm, with estimates that the number of hurricane-related deaths could be as high as 4,645, according to a study published in

July by The New England Journal of Medicine.

In the end, Maria would be the worst natural disaster on record for the U.S. commonwealth.

An estimated 135,000-plus people relocated to the mainland over the six months following the hurricane, according to the Center for Puerto Rican Studies in New York. These displaced survivors joined droves of professionals who have been leaving the island for years to pursue better opportunities.

But Puerto Rico is a place of paradox. Despite the ravaged, post-Maria landscape, despite the brain drain fueled by the island's ongoing financial crisis, Puerto Ricans are starting to come home—even people like Pedro Rodríguez, who face grave health challenges.

They will not give up.

#### A calling

Before visiting Rodríguez, Dr. Mario Polo and Dr. Ricardo Flores stopped by a playground in Salinas with a trunk full of toys. Local kids arrived on bicycles and horseback and joined the doctors for a game of baseball. A boy in a faded striped shirt emptied his pockets, throwing a tattered black wallet and two packages of BBQ-flavored sunflower seeds into the dirt, and ran to the outfield. Behind him, the plantain crops were once again thriving, ready to be fried or roasted or mashed into flour. Blue tarps serving as makeshift roofs filled the hills, and the families living under them were preparing to attend a region-wide food festival.

The party would go late into the night, after the coqui frogs began their chorus, after the Medalla beer cans stacked up, after a karaoke singer serenaded the streets of Salinas with Frank Sinatra's "My Way."

Y más, mucho más que esto, lo hice a mi manera.

Polo smiled at the sound.

"Here, there will always be a reason to celebrate," he said.

Like Rodríguez, Polo recently moved back to the island. He left his position as a neurointerventional surgeon with Houston Methodist The Woodlands Hospital so that he and his wife could raise their children closer to family.

He also felt a calling.

After Maria, Polo joined forces with Flores, a fellow Puerto Rico native and clinical director of the Cancer and Hematology Centers at Texas Children's Hospital The Woodlands, to create a Houston-based relief group called Texas United for Puerto Rico. Their mission was to collect medical supplies and get them to the island as quickly as possible.

(continued)



Above: Dr. Mario Polo, left, and Dr. Ricardo Flores hand out toys to local kids in Salinas, Puerto Rico. Facing: Pedro Rodríguez at his home in Salinas.



Now, the two doctors had returned. Polo permanently and Flores for a visit. In addition to checking in on Rodríguez, they were on a fact-finding expedition to learn about the state of health care since Maria and determine which supplies were still most needed.

The doctors know that patients on the island still need attention and care, all these months later. They will not give up.

#### Too concrete, too cold

Parts of Puerto Rico are still without basic utilities. Residents haul water from streams, boil it to drink and cook on open fires or with propane, if they're lucky. Locals describe helicopters hovering with utility poles, rooting them into the land one by one-painstaking work to restore a power grid that was unreliable even before the hurricane.

But high in the hills of Salinas, 50 miles south of San Juan, Rodríguez's home buzzed with electricity that had been restored a few weeks before the doctors visited in late July. A rusted refrigerator chilled Coca-Cola, bottled water, sliced lunch meat and yellow cheese-luxuries Rodríguez had done without for months. In one room, a light bulb shone bright on family photos of Pedro, his wife Saidael González, and their son, Johny. Hanging on the wall was a newspaper clipping of



Pediatric resident Samuel Pabon, Dr. Gloria Colón, Dr. Maria Echevarria and Dr. Ricardo Flores on their way to see patients at the University of Puerto Rico Pediatric Hospital.

Carlos Correa in the throes of last year's World Series win, a relic from when Johny still

But Johny requires special care. As a young boy, he was left mentally delayed after suffering from hydrocephalus and meningitis. After Maria hit, the already lengthy journey to the main hospital in San Juan, coupled with the absence of basic utilities, prompted the family to relocate to Michigan and live with Rodríguez's

sister-in-law. Now in his late thirties, Johny would have electricity, clean water and easy access to hospitals.

His father, however, couldn't bear it. Michigan was too concrete, too cold. So he said goodbye to his wife and son and returned to Puerto Rico, to his home that had stood fast through the storm.

Because of early-onset Alzheimer's, Rodríguez sometimes forgets that he will very likely never see his wife and son again. Speaking in Spanish,











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he said that he misses them, and hopes they will visit soon.

Rodríguez also told Drs. Polo and Flores that he had lost almost all feeling in both feet, a sign that his diabetes was now causing permanent nerve damage. His left eye was swollen shut.

But he will not give up his home in the Salinas hills.

#### Like an atomic bomb

On Sept. 21, 2017, the morning after the hurricane, Dr. Gloria Colón, a pediatric oncologist with the University of Puerto Rico Pediatric Hospital in San Juan, tried to drive to work. She described the scene as apocalyptic, "like an atomic bomb went off." Power lines lay haphazard on the ground, blocking the roads. Traffic lights dangled in the middle of the street and buildings and trees sat sloped and broken from surges of wind and rain.

"We went to sleep in 2017 and woke up in the 1940s after Maria," Colón said. "We are not used to being without electricity, without facilities, without communications."

Like so many others, Colón was unable to reach the hospital that morning. But in the days that followed, doctors, nurses, residents and medical students arrived in droves, prepared to We went to sleep in 2017 and woke up in the 1940s after Maria. We are not used to being without electricity, without facilities, without communications.

— GLORIA COLÓN, M.D.

Pediatric oncologist with the University of
Puerto Rico Pediatric Hospital in San Juan

treat patients and collect supplies. The hospital, which already served as the headquarters for trauma and specialty care on the island, quickly became the center of operation for relief efforts. Donations flooded in from charities and nonprofits. The first-floor classroom became a makeshift warehouse, with medical students organizing and labeling inhalers and insulin and antibiotics for distribution. Teams ventured out to remote areas to check on the elderly and on patients who needed ventilation or whose medications required refrigeration. Everyone pitched in, even those who lost their own homes and belongings.

Not once during the storm or its aftermath did the hospital shut down. But nearly a year after

Maria, problems remain. A giant mobile power generator is parked out front. Inside, a NICU that split open during the storm is still undergoing repairs, and only two elevators are operational. Hospital-wide shortages of critical medicine and supplies are ongoing, Drs. Polo and Flores learned, and include staples such as ketamine, antibiotics, alcohol wipes, oxygen monitors, rabies vaccines and chemotherapy drugs.

According to local physicians, though, it isn't simply a matter of the storm's aftermath, but rather one of government bureaucracy. Protocols requiring multiple layers of approval lead to delay after delay.

"The hurricane aggravated our crisis," said Dr. Maria Echevarria, a pediatric neuro-oncologist with the hospital. "We now face, sadly, the same things we faced prior to Maria. We had the crisis, we resolved it, but the baseline—we have the same limitations, the same government."

Even before the storm, physicians typically made double the salary in the contiguous U.S. for the same job in Puerto Rico. They are a large subset of the professionals who have left for the mainland, adding to an already challenging recovery effort.

(continued)

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"It's frustrating and it happens in every specialty," said Dr. Jahzel M. González Pagán, one of four pediatric emergency medicine physicians across the entire island, which 3.3 million people call home, according to recent estimates. "We are short of staff and we cannot get more staff because there's not enough money."

But, she said, she has no plans to join the diaspora.

"We work here, we're going to fight for that, but we're going to have to keep fighting." They will not give up.

#### "Yo No Me Quito"

At Rodríguez's home in the hills, chickens peck at the ground while dodging empty cans and plastic debris. Nearby, a wheelbarrow blooms with old food containers, an egg carton, papers and a shirt. Stacks of propane tanks, plastic cars and a playhouse sit abandoned, surrounded by potted plants that look well cared for, groomed even, but that could just be Puerto Rico. Things here tend to survive.

Mosaic tiles cover the entryway and statuettes of the Blessed Virgin Mary stand guard under a hand-painted bench. On the façade, colored glass



Cyclists ride down a historic street in Old San Juan.

pebbles spell out "I love," "Jesus," "Vive" and "PR," the words pieced together like a cross. Old Christmas lights hang above a mural painted on the left side of Rodríguez's front door—a man with a baseball bat standing between the American

flag and the Puerto Rican flag, his hat tipped toward Puerto Rico's single star.

Until the end, a close relative will look after Rodríguez. In Puerto Rico, extended families often live together, not necessarily in the same dwelling but on the same plot of land. It's a practice that reflects the culture, one that values social interaction and family above all.

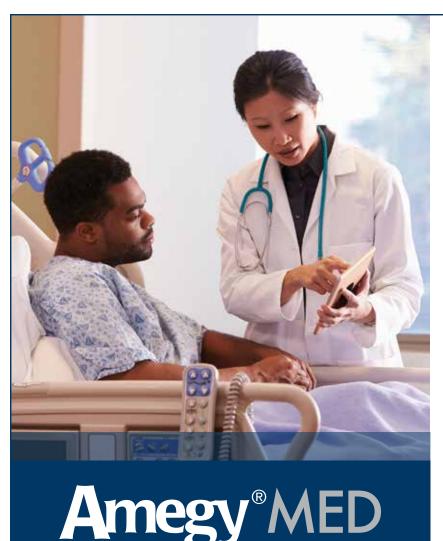
In Old San Juan, the historic colonial section of the island's capital, a slogan is plastered among the pastel buildings, blue cobblestone streets and wrought-iron balconies: Yo No Me Quito.

It's a message of endurance that resonates throughout the island, from the old forts of the Spanish Empire to González Pagán's emergency room.

It was there on the first day of Polo's new job in Puerto Rico, and in the room of a cancer patient who declined a medical trip to Houston in favor of her grandmother's soup and her cousin's companionship.

It is there at Rodríguez's home while he swings in a hammock under the midday sun.

*I will not give up.* ■



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## CURATED

The Intersection of ARTS and MEDICINE

By Britni R. McAshan

hat makes a body beautiful? Is it symmetry and perfect skin? Or is it uniqueness—the subtle and not-so-subtle differences that prove each one of us is not like anyone else?

Body as a Work of Art: More Than Skin Deep, a new, original exhibit at The Health Museum, dives deep into this conversation, challenging visitors to think beyond beauty stereotypes.

The exhibit gathers work from multiple artists.

"It is really about encouraging people to define [beauty] intrinsically," said La Tanya Miles, director of education and public programs at the museum.

One section of the exhibit, "Scar Stories: Portraits of Survival," offers dramatic black and white photographs by photojournalist Cody Duty that depict Texas Medical Center patients with visible scars. The photos originally appeared in the September 2017 issue of *TMC Pulse* magazine. Visitors to the exhibit are invited to select the portraits on a touch screen to learn more about the patients and the stories behind their scars.

Another photographic component of the exhibit is "Positive Exposure" by Rick Guidotti, whose images depict individuals living with genetic, physical, behavioral or intellectual differences. Guidotti's portraits aim to change social attitudes around individuals perceived as different.

"BODYSUITS," another piece of the exhibit, comes from Los Angeles-based artist Sarah Sitkin, who created life-size molds from real bodies that allow museum visitors to step into someone else's skin. Sitkin has turned real bodies into wearable garments.

Still another portion of the exhibit, "Hidden Beauty," offers the work of Norman Barker, a professor of pathology and art as applied medicine at Johns Hopkins University who explores art at the cellular level.

"Hidden Beauty' was created when Norm was looking at diseased cells under the microscope and he thought, 'These could be on the walls of an art gallery,'" Miles said. His work, she added, speaks to the paradox that something harmful can also be beautiful.

"Hidden Beauty" also inspired "Beautiful Affliction," by costume designer Cherie Acosta. The ethereal gowns in Acosta's collection carry colorful lavender designs inspired by diseased cells—cytomegalovirus and leukemia among them—and were developed for a dance piece about illness. A video of the dance performance is available for viewing in the museum's McGovern Theater.

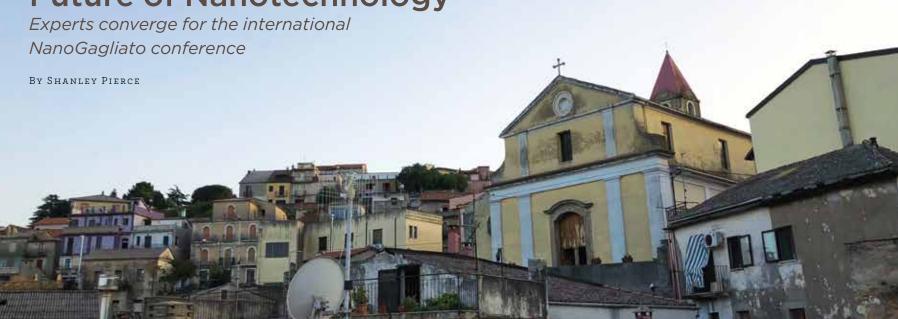
In addition to Body as a Work of Art, a new collection, entitled "The Texas Medical Center Experience," uses an interactive timeline to highlight the history of medical innovation and the individuals responsible for several groundbreaking accomplishments. This collection also gathers artifacts from the Texas Medical Center and the John P. McGovern Historical Collections and Research Center. ■

Body as a Work of Art: More Than Skin Deep will be on display at The Health Museum, 1515 Hermann Drive, through Jan. 11, 2019. Information: 713-521-1515 or thehealthmuseum.org.

"Beautiful Affliction," by costume designer Cherie Acosta, features gowns with patterns inspired by diseased cells.



## The Best, the Worst and the Future of Nanotechnology



#### GAGLIATO, Italy -

estled on a mountainside in the southern tip of Italy's boot is Gagliato, a tiny Calabrian town that 470 people call home. Every July, experts from multiple sectors—nanoscientists, doctors, venture capitalists, educators and others—converge here for NanoGagliato, an unconventional five-day conference on nanotechnology and nanomedicine.

Founded in 2008 by Mauro
Ferrari, Ph.D., president and CEO
of Houston Methodist Research
Institute, and his wife, Paola,
NanoGagliato combines informal,
format-free roundtable discussions,
community and educational outreach initiatives, and local cuisine
and activities for a unique take on
scientific engagement.

"This [is] a little international community hotspot where we can share so much that comes from an incredible landscape of the sun, the sea, the local tourism, the hills, the history, the archaeology, the food and the science," Paola said. "It's a little Shangri-La we built in a very unlikely place."

In a series of panel discussions held in a newly renovated two-story building and a beachside restaurant that offers a panoramic view of the Ionian Sea, speakers delved into the best, the worst and the future of nanotechnology.

"The atmosphere, the lack of structure and the lack of formal mannerisms make NanoGagliato the perfect environment to help people feel free to share passionately and scientifically outside their comfort zones in a completely unbiased way," said Adriele Prina-Mello, Ph.D., a returning NanoGagliato speaker and an assistant professor in translational nanomedicine at the Trinity Translational Medicine Institute School of Medicine in Dublin, Ireland. "The energy that is brought in ... is contagious."

#### NanoBest

Nanofabrication—the design and manufacture of devices small

enough to be measured in nanometers—was touted as one of the best developments in nanotechnology during NanoGagliato's "NanoBest" discussion.

The key to translating research into viable health care solutions and therapeutics is the establishment of good manufacturing practices facilities, Ferrari said. A good example is Houston Methodist's cGMP (current Good Manufacturing Practices) Core, a 2,810-square-foot facility on the 12th floor of the Houston Methodist Research Institute. The facility allows scientists to avoid the cost and delays associated with outsourcing the production and distribution of therapeutics and devices and, instead, take their research from bench to bedside for

first-in-human clinical trials in a single space.

"In the near and total absence of facilities such as that in academia, this connects activity typically in university research institutes' settings to distribution, which is typically done in the private sector world," Ferrari said. "We've been preaching about the importance of that connector for years and years, and now we get to walk the walk and talk the talk."

#### NanoWorst

Cerulean Pharma, a company that developed nanoparticle technology to deliver chemotherapy drugs to cancer cells, was identified as a "NanoWorst" at NanoGagliato.

In 2013, Cerulean's premier drug, known as CRLX101, underwent an open-label Phase 2 clinical trial in hopes of extending patients' survival rates. Due to a massive trial design error, patients on Cerulean's drug lived 6.3 months, while patients on other therapies lived 11.9 months.

Three years later, the company failed to produce positive results in a Phase 2 trial for kidney cancer. Instead of improving survival rates, the combination of CRLX101 and a standard cancer drug, bevacizumab, failed to keep the cancer from spreading.

Paola and Mauro Ferrari (center) kick off NanoGagliato 2018 with a festive celebration that included singing and dancing in Gagliato's town square.



The writing was on the wall. Cerulean's nanoparticle assets were sold off to Novartis and the rest of the company merged with Daré Bioscience.

But many NanoGagliato panelists agreed that failures in the field should serve as cautionary tales to help other scientific endeavors succeed.

"We should have a little more enthusiasm for publishing failures because it would help us all to learn more," said John Cooke, M.D., Ph.D., director of the Center for Cardiovascular Regeneration in the Houston Methodist DeBakey Heart and Vascular Center. "It is from the failures that we learn."

#### NanoFuture

Joy Wolfram, Ph.D., principle investigator in the Nanomedicine and Extracellular Vesicles Laboratory at the Mayo Clinic's Jacksonville, Florida campus, identified four promising research initiatives

in nanotechnology.

In the field of nanomedicine, the liver is the enemy. Between 30 to 99 percent of drug-loaded nanoparticles injected into the blood accumulate in the liver because the body identifies nanoparticles as a threat. As a result, only a fraction of the nanoparticles actually make it to the tumor site.

"One promising strategy is to temporarily block the liver from eating nanoparticles so we can get more to the tumor," Wolfram said.

Another research area focuses on the biological nanoparticles—called extracellular vesicles (EVs)—that cells secrete. EVs allow cells to communicate with each other by sending "text messages" of the body, Wolfram explained. If scientists are able to gain a better understanding of EVs, they can leverage the cell's communication system and load EVs onto therapeutic agents to disseminate from cell to cell.

Scientists are also developing



While morning panel discussions took place in a conference room in Gagliato, afternoon sessions were held in Lido San Domenico, a beachside bar and restaurant that overlooks the Ionian Sea.

diagnostic tools to optimize nanoparticle therapy by determining which patient populations would benefit and how to customize the size and shape of nanoparticles to the individual.

Finally, scientists are studying

how nanoparticles change in space and time in an effort to optimize therapies.

Ultimately, the success of nanomedicine will be its disappearance, Ferrari said.

(continued)



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"Right now, we are focusing on nanomedicine as a tool, as a field, with the recognition that it can bring success. That's important," he said. "However, the true measure of success is when it is merged into the current oncological practice to the extent that nobody thinks of 'nano,' but they only think of the disease. Most importantly, they only think of the patient, so it becomes merged into the fabric."

Other experts who attended the conference included returning speaker Barbara Bass, M.D., executive director at Houston Methodist Institute for Technology, Innovation and Education and 98th president of the American College of Surgeons, and Steve Conlan, Ph.D., professor of molecular and cell biology at Swansea University Medical School in Swansea, Wales. NanoGagliato also welcomed Yinka Ajibola, founder of the Gilgal Education Foundation in Nigeria; Robert Wah, M.D., former president of the American Medical Association;



Susan Miller, M.D., family medicine specialist with Houston Methodist Academic Medicine Associates, participates in a Q&A with a young NanoPiccola student at the local school.

and special guest speaker Stefano Domenicali, CEO of Lamborghini.

Birth of NanoGagliato
Mauro and Paola Ferrari traveled
frequently from the United States
to southern Italy after a close friend
and colleague from the University
of California, Berkeley asked Mauro
to help him create the biomedical
engineering department for the
new Università degli Studi Magna
Græcia in Catanzaro in 2003.

After spending their summers in the region, the couple decided to look for a home up the hill, away from the crowded beach town of Soverato. They stumbled upon Gagliato, a down-on-its-heels town 25 miles south of Catanzaro.

"At the time, [Gagliato] was dying. There were no shops, nothing," Mauro recalled. "I said, "This is the ugliest place I have ever seen."

Even against the backdrop

of dereliction, the town enchanted Paola.

"I found this area so beautiful and so energetic," Paola said. "It might not be the prettiest little town on the hill. However, it's the closest and has a lot of charm."

After they purchased their house in Gagliato in 2005, Paola was determined to make Gagliato more than their family's summer escape; she wanted to cultivate a space to stimulate the intellect and bring together global experts.

In 2008, the Ferraris invited seven nanoscientist friends to their Gagliato home. The small group from Japan, England, France and Germany gathered in the living room to discuss nanotechnology and nanomedicine over glasses of Italian wine.

"When we started, nanomedicine wasn't as big of a movement as it is right now," Mauro said. "We thought we'd just spend some time together, go to the beach, talk and have sessions. Then,





it grew from there."

The following year, they established the Accademia di Gagliato delle Nanoscienze (The Academy of Gagliato of NanoSciences), a nonprofit dedicated to organizing future meetings and activities with the support of private sponsorships and public grants, with Paola serving as president.

The annual gathering expanded and came to include a town-wide event in the piazza. A junior version of the conference, NanoPiccola, was added to the list of events as well, to engage local schoolchildren in STEM [science, technology, engineering and mathematics] education through hands-on experiments.

Maria Antonia Cutruzzola, a second-year molecular biology student at the University of Calabria in Consenza, grew up in Gagliato and has been attending NanoGagliato since she was 11. She plans to become a research scientist, much like the ones who have inspired her at the conference, in hopes of one day curing cancer.

"I saw the experiments [at NanoGagliato] and I was like, 'Wow, this is fantastic!' I was so excited, so in love with science after that," Cutruzzola, 20, said. "If I can contribute in my little way for a better world, like doing research to cure some illness, I want to do that."

But her parents struggled with the idea. Cutruzzola would be the first in her family to get a degree, and her parents worried that college in the big city wasn't a suitable place for girls.

Determined to help Cutruzzola succeed, the Ferraris and other NanoGagliato guests met with her parents.

"[We] went there and spent a few hours and then a few hours again and a few hours again to try to convince them," Ferrari said. "If she had been a boy, it would have been different, but she's a girl. ... It was a huge cultural step."

The addition of this year's Equality Moonshot Roundtable which focused on closing the gender gap in STEM, innovation and economic wealth—sent a powerful message that resonated with Cutruzzola.

"Strong women and gender equality are what young people need. It is what kids need. Little girls, they don't all want to be hair-dressers," Cutruzzola said. "They want to have powerful role models and a lot of role models to pick from to be whatever they want to be."

#### Keep showing up

NanoGagliato has grown since its inception a decade ago, and the town has evolved along with it.

Despite some initial apprehension toward the Ferraris and their guests, Gagliato now embraces the family and its signature event.

The slight increase in tourism and activities from the conference has led to a revitalization of the area's microeconomy. A 2016 "Global Report on Culture for Sustainable Urban Development," published by the United Nations Educational, Scientific and Cultural Organization, identified Gagliato as a place where culture has played a role in realizing sustainable local development.

"I thought about what kind of commitment we were taking on. It turns out, if you start doing this, you have to see it through to success," Mauro Ferrari said. "The only way to do that is to keep showing up, keep doing the right thing and be friends with everybody."

Recently, the Accademia di Gagliato delle Nanoscienze submitted a \$1.5 million grant to establish Gagliato as a STEM learning destination. The grant would allow the organization to complete plans to renovate a neglected building and turn it into the headquarters for NanoPiccola. The building would also serve as a civic center and a STEM and English preschool for local children.

"Good things happen when you put good people together," Paola Ferrari said. "It's the gift that keeps on giving." ■





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#### **Bracing for a Deficit of Doctors**

As baby boomers retire, health care is poised for a change

By Britni R. McAshan

The exodus of baby boomers from the workforce has begun and, with it, the retirement of tens of thousands of physicians.

The United States could see a shortage of as many as 120,000 physicians by 2030, according to a recent report published by the Association of American Medical Colleges (AAMC). Fueling the shortfall is population growth, an increase in the number of aging Americans and the retirement of doctors.

Should doctors work longer? Should they retire at 65? And what does the exodus mean for other physicians and patients?

"We actually need physicians to stick around longer," said Barbara Bass, M.D., executive director of the Houston Methodist Institute for Technology, Innovation and Education (MITIE) and president of the American College of Surgeons. "We are anticipating major shortages in general surgery, orthopedics and urology in the next decade or two as the current crop of physicians retire."

A 2016 study published in the Annals of Family Medicine found that primary care physicians who retired from clinical practice between 2010 and 2014 were 65 years old on average.

Bass recommends finding ways to keep retirement-age surgeons in good practice for a longer period of time. One suggestion: fewer hours.

"We come to work at seven, go home at seven, and you couple that with a few nights of being on call and being up all night, it really takes its toll," she said. "It's one thing to stay up all night when you are 22, but when you are 62, it's really hard. Our work does demand a certain degree of physical performance and fitness—whether that is just standing for a long time, visual acuity or manual dexterity."

In a study released by American Medical Association Insurance—
"The 2014 Work/Life Profiles of
Today's U.S. Physician"—researchers found that 21 percent of responding physicians aged 60 to 69 worked fewer than 40 hours per week, but another 20 percent of the same age group worked more than 60 hours per week. Across all ages, nearly half the physicians surveyed said they would prefer to work fewer hours.

Still, a national movement that supports older doctors working fewer hours has yet to take root.

#### Tests and teaching

Some have suggested that physicians who hope to work past age 65 might benefit from regular testing to gauge their mental and physical acuity. Others counter that, although no mandatory evaluation process for aging physicians exists in the U.S., board certification and hospital regulations help ensure that patients receive the best quality of care.

"The closest thing really has to do with re-credentialing—that has to happen at all hospitals on a two- or three-year basis," said Savitri Fedson, M.D., associate professor in the Center for Medical Ethics and Health Policy at Baylor College of Medicine. "To maintain hospital privileges to do a certain procedure, you have to have demonstrated that you have done a certain number of procedures in the last two years with an acceptable complication rate."

In addition, she said, physicians

with board certification receive continuing education in their specialty and keep up with advances in technology, patient safety and more. A "board-certified" physician is dedicated to providing topnotch patient care via a rigorous, voluntary commitment to lifelong learning.

Some physicians are able to shift into academic roles in their later years, but that's not a viable option for the majority.

"One of the things that happens in academic centers is that as people get older and you try and get them out of clinical responsibilities, they certainly have a huge wealth of knowledge and would be some of the best teachers for medical students," Fedson said. "But that is not a financially feasible model the way our health care is set up, because the reimbursement for teaching is not done to the same extent that reimbursement is done for procedures and, therefore, it is hard to justify salaries."

#### Brain drain

Experts anticipate a massive brain drain in health care as baby boomers leave medicine.

"The concern for me is the loss of wisdom that comes from people who are still practicing at a good level," said Joseph Kass, M.D.,
Baylor professor in the departments of Neurology, Psychiatry and Behavioral Sciences and in Medical Ethics and Health Policy. "Maybe their hand skills aren't as amazing as they used to be, but they still have a wisdom and a knowledge—not just because they have been doing this for 40 years, but because they have kept up with developments, they

#### UNITED STATES PHYSICIAN SHORTAGE

One-third of all currently active doctors will be 65 or older in the next decade.



The U.S.

population
is estimated to grow
11 percent by 2030, with those
over age 65
increasing by
50 percent.



The U.S. could see an overall shortage of as many as 120,000 physicians by 2030.

Source: Association of American Medical Colleges

have perspective and know history and the human mistakes of yore."

Intergenerational learning also offers tangible benefits to younger physicians immersed in technology, said Kass, who is also Baylor's associate dean of Student Affairs.

"There is an art to medicine that does get lost because of technology," he said. "Technology is great—we want the imaging, we want all of these things to diagnose better, but there is still the laying of hands on a patient and being able to take a really good history. Those are the things we stand to lose."

#### Managing patient expectations

The AAMC estimates a shortfall of between 14,800 and 49,300 primary care physicians by 2030.

"Part of the problem with that is that we still have a relative deficit of primary care physicians," Fedson said. "We have made up some of that with the wider acceptance of physician extenders—the use of well-trained nurse practitioners and physician assistants to help, but I think the impending shortages of physicians will mean that it will probably be more difficult to do some things."

Certainly, patients will need to be more realistic about where they receive their care.

"Part of the expectation in this country is that 'I have a right to see whatever specialist I want to.' So patients think if you have joint pain, you should go see an orthopedic surgeon. That is not necessarily the case," Fedson said. "If you have joint pain, once you exclude trauma or break or anything mechanically wrong, you could see a physical

therapist instead. That gatekeeper can be beneficial for patients and streamline appropriate care for patients with a dwindling number of subspecialists."

#### Managing physician expecations

Aside from the impact retiring baby boomers will have on the health care industry, it is worth considering what retirement will mean for physicians who have been practicing for close to half a century. Physicians contemplating retirement should reflect on their hobbies and interests before making a move, Fedson said.

"In medicine, we get positive reinforcement nearly every day. People thank you for what you do and while we don't explicitly need the thanks, I think everyone likes to know that what they are doing has value," she said. "You go from working in a field where you know, on some level, what you are doing makes a difference. And then not to have that, suddenly, can be very, very difficult from an emotional well-being standpoint."

As long as aging physicians can complete their duties, Bass said, keeping them around and delaying retirement could be beneficial.

"If their performance is strong and capable, let's figure out ways to keep them on board as opposed to ways to shut them down," Bass said. "We need capable, happy, healthy physicians that can provide care to our patients. As we look ahead to the anticipated shortage of physicians, if we can find a positive way to extend one's career—even on a part-time basis—that is going to be a good thing."



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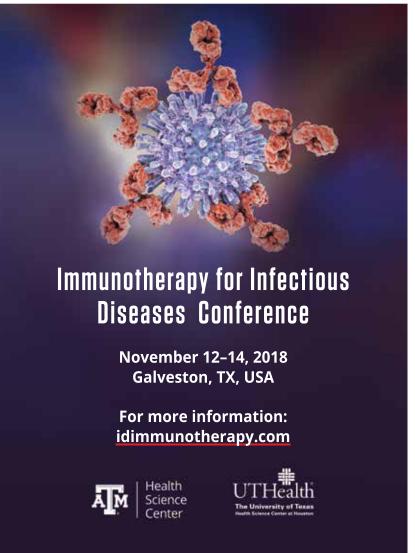
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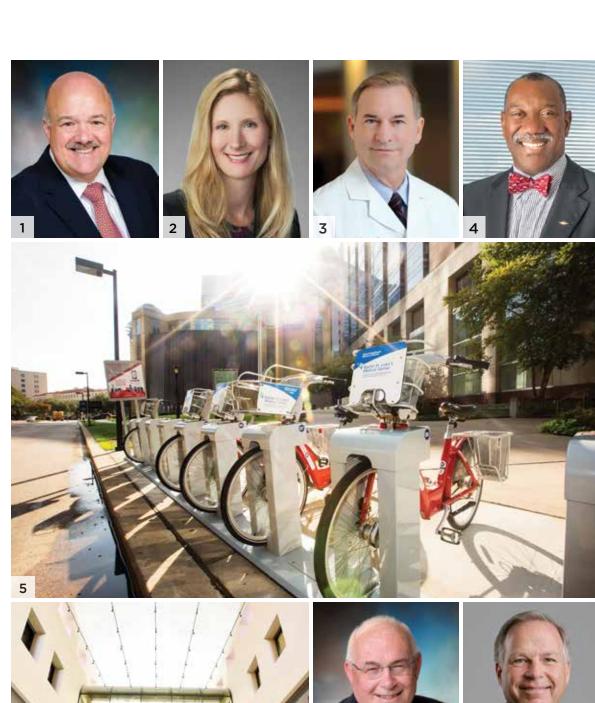




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- 1 DAVID MARSHALL, J.D., D.N.P., RN, chief nursing and patient care services executive at The University of Texas Medical Branch at Galveston (UTMB), was named a 2018 American Academy of Nursing fellow.
- **2 | LAUREN QUINN** was promoted to vice president of external relations for LifeGift, the federally-designated organ and tissue recovery agency serving 109 Texas counties in Southeast, North and West Texas.
- 3 | WILLIAM GIBBONS, M.D., medical director of the Family Fertility Center and chief of reproductive medicine at Texas Children's Pavilion for Women, was selected as a "World Class Reviewer" by the medical journal, Fertility and Sterility.
- 4 | EARL SHIPP, former vice president of operations, U.S. Gulf Coast, The Dow Chemical Company, was elected chair of the CHI St. Luke's Health System Board of Directors.
- **5** | Houston **BCycle** stations were recently installed at the Texas Medical Center (TMC) Transit Center (6910 Fannin St.); TMC Garage 2 (1150 Bates Ave.); TMC Commons (6550 Bertner Ave., shown right); and 6411 Fannin St.
- 6 | THE UNIVERSITY OF TEXAS MD **ANDERSON CANCER CENTER** hosted its annual "MD Anderson Day" at THE JOHN P. McGOVERN MUSEUM OF HEALTH MEDICAL SCIENCE. Staff and physicians from MD Anderson provided attendees with healthy living and wellness resources.
- 7 | ALAN D. BARRETT, PH.D., director of the Sealy Center for Vaccine Development at UTMB, was awarded an honorary Doctor of Science degree by his alma mater, the University of Warwick in England.
- 8 | JACK B. MOORE, a retired Houston executive, began a two-year term as Chairman of the American Heart Association Houston Board of Directors on July 1.
- 9 | GUADALUPE QUINTANILLA, ED.D, speaks to Baylor College of Medicine physician assistant (PA) students and their community partners during a fiesta luncheon celebrating the end of a two-week language immersion program. The program pairs a PA student with a Spanish-speaking senior citizen in the community and encourages hands-on practice and learning.









Credit: Nos. 1, 2, 3, 6, 7, 8, 11, 12, 13, courtesy photos; No. 4, Emily Jaschke; No. 9, Bethany Strother, Baylor College of Medicine; No. 10, Dave Einsel; No. 14, CJ Martin



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10 | On July 29, more than 180 campers headed to CAMP PERIWINKLE for a week of activities including horseback riding, archery, and arts and crafts. The week-long camp for children with cancer and their siblings from TEXAS CHILDREN'S CANCER AND HEMATOLOGY CENTERS aims to provide safe, emotionally healing adventures to increase independence and self-esteem.

11 | MICHAEL R. KAUTH, PH.D., investigator at the Center for Innovations in Quality Effectiveness and Safety (IQuESt) at the Michael E. DeBakey VA Medical Center; and professor in the Menninger Department of Psychiatry & Behavioral Sciences at Baylor College of Medicine, received The James Besyner Award for Lifetime Achievement in public service from the American Psychological Association.

12 | ALI DODGE-KHATAMI, M.D., PH.D., an internationally recognized leader in pediatric and congenital heart surgery, has joined The University of Texas Health Science Center at Houston (UTHealth) department of pediatric surgery as professor and director of Pediatric Heart Surgery. He also is an attending pediatric cardiovascular surgeon at the Children's Heart Center at Children's Memorial Hermann Hospital.

13 | PRINCESS HAIFA BINT FAISAL BIN
ABDULAZIZ AL SAUD of Saudi Arabia
listens as JENNY CHANG, M.D., director
of the Houston Methodist Cancer Center,
explains the latest findings and clinical trials
regarding Triple Negative Breast Cancer at
Houston Methodist Hospital. The princess
and her delegation arrived in mid-July for a
visit organized by Houston Methodist
Global Health.

14 DEMARCUS AND SADÉ KELLY, with their children Ariana, Jacob and Hosiah, were among the families who attended a "Made in Texas" themed neonatal intensive care unit (NICU) reunion on Aug. 4, where they were reunited with TEXAS CHILDREN'S HOSPITAL doctors, nurses and other staff who cared for them. The reunion celebrated former patients who graduated from the Newborn Center in 2017.

## September 2018

9/12

The Nation's Pulse: The Texas Medical Center's 2018 Consumer Survey

Results of a national survey on health policy issues Wednesday, 5:30 – 8 p.m. Third Coast Restaurant

6550 Bertner Ave.
Register at:

tmcsurvey.eventbrite.com

9/14-15

Interdisciplinary Conference on Supportive Care, Hospice and Palliative Medicine

Friday and Saturday, 8 a.m. – 4:30 p.m. MD Anderson R. Lee Clark Clinic Robert C. Hickey Auditorium Floor 11 1515 Holcombe Blvd.

Tickets start at \$150; register at mdanderson.org egagneau@mdanderson.org 713-745-0080 9/19

Fireside Chat with Billy Cohn, M.D., and Joseph M. DeSimone, Ph.D.

Discussion on medical device design, development and manufacturing Wednesday, 5 – 7 p.m.

TMC Innovation Institute 2450 Holcombe Blvd., Suite X

Register at eventbrite.com lifesciences@carbon3d.com 650-285-6307 9/28

Mindfulness 101 Workshop

Led by Elizabeth Slator, Ph.D. Friday, 3 – 5 p.m. Rice University Glasscock School of

Continuing Studies
Anderson-Clark Center
6100 S. Main St.

acpcoord@rice.edu 713-348-4803



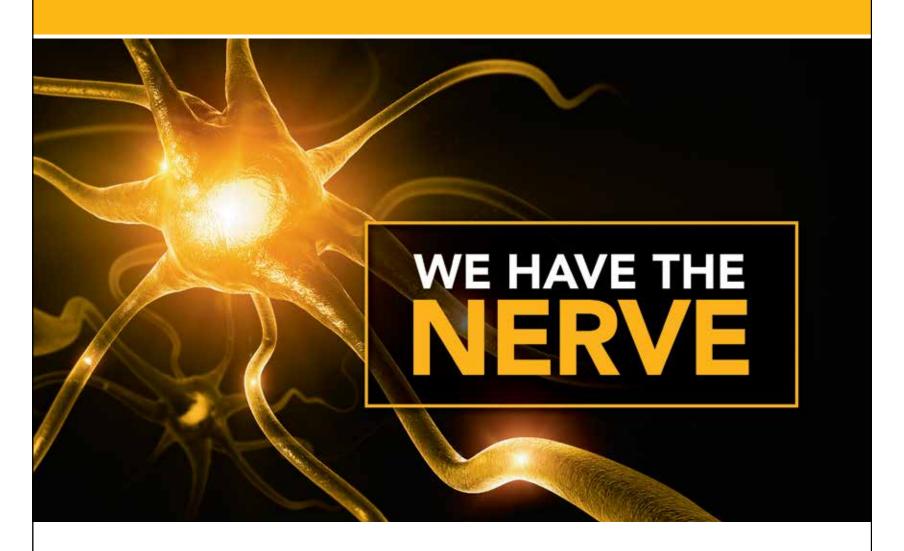
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