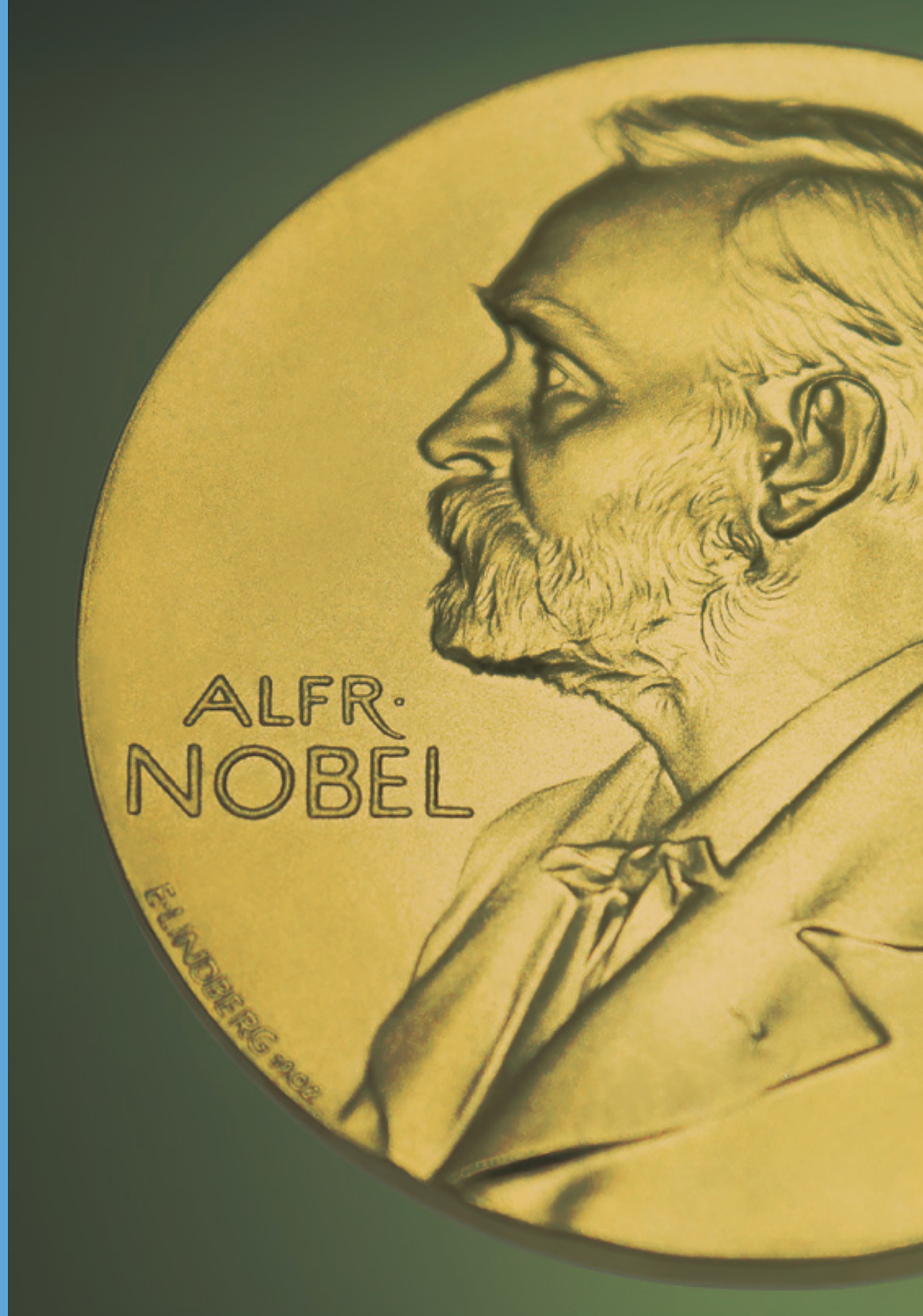
Strengthening Reputational Excellence

UTSW faculty, staff, students, and community supporters are making an impact – through exceptional work that has led to high-profile awards bolstering the institution's reputation for excellence and through efforts that engage the community in innovative outreach programs.

UT Southwestern faculty members have been awarded Nobel Prizes in 1985, 1988, 1994, 2011, and 2013.



UT Southwestern heightens community outreach efforts

"You guys want to hold a brain?"

In any other context, it might seem a strange question. But this was UT Southwestern Science Saturday, and guests gathered for just this kind of experience – a chance to hold a model brain, amplify their own heartbeat, or don a safety suit and boots.

Nearly 1,700 visitors attended Science Saturday, the first event of its kind. Open to the public, and promoted via community partners such as *The Dallas Morning News* and the Perot Museum of Nature and Science, the fall 2018 event on McDermott Plaza attracted visitors of all ages, ranging from those just beginning to show interest in science to some with a long history of work in research.

"This kind of open discussion with our community is part of us giving back and what makes me enthusiastic for the future of science and medicine, especially at UT Southwestern," said Dr. Stuart Ravnik, Associate Dean of the UT Southwestern Graduate School of Biomedical Sciences.

These outreach initiatives connect UT Southwestern directly with various stakeholders – thought leaders, decision-makers, potential donors, key influencers, and other community leaders.

For more than seven decades, UT Southwestern has been an integral part of the Dallas community. The institution's impact is broad in the health care industry and significant for its economic impact in North Texas. These outreach initiatives connect UT Southwestern directly with various stakeholders – thought leaders, decision-makers, potential donors, key influencers, and other community leaders – who can support the work and mission of the institution in a myriad of ways. It is also an opportunity to introduce others to the UT Southwestern mission by bringing them to campus for the first time.

UT Southwestern engages the Dallas community with outreach initiatives to promote awareness of its mission in myriad ways, some of which include: **A.** Science Saturday **B.** Black Men in White Coats **C.** Conquering Cancer **D.** Soluna: Music and the Brain **E.** Science in the City **F.** Carnaval de Salud

In addition to Science Saturday, UT Southwestern's high-priority areas of brain research and cancer care were the focus of several other outreach initiatives during the year. In February 2019, the Harold C. Simmons Comprehensive Cancer Center partnered with former Dallas Mayor Mike Rawlings and Fort Worth Mayor Betsy Price to launch Conquering Cancer, a campaign aimed at raising cancer awareness and increasing screening.

The program kicked off at the Dallas Mavericks game against the Indiana Pacers, with UT Southwestern, the mayors, and the Mavericks asking the community to make time for mammograms, stop smoking, get screened for hepatitis C and colon cancer, vaccinate teens and preteens against HPV, and learn about cancer risk through genetic testing.

In April 2019, UT Southwestern and *The Dallas Morning News* again joined forces to open the doors of research labs to the Dallas-area community with the second annual Science in the City, a community initiative to allow the public inside the research labs that are changing the world of science and health care.

Only 10 days later, UT Southwestern's Peter O'Donnell Jr. Brain Institute partnered with the Dallas Symphony Association for Soluna: Music and the Brain, which featured world-renowned brain scientists and clinicians coming together to discuss interaction, improvisation, and cross-cultural communication through music. During the pre-event reception and intermission, UT Southwestern volunteers from the O'Donnell Brain Institute showed guests an actual brain and answered questions.

In late April, UT Southwestern produced the annual Carnaval de Salud at Thomas J. Rusk Middle School. The event, organized and run by UT Southwestern students, faculty, and staff volunteers, is in its 15th year of providing free health care services, information, and lifestyle strategies to hundreds of families from underserved populations in Dallas.

This is only the beginning: Expect to see even more outreach by UT Southwestern going forward. It's all connected to fulfilling the mission of promoting health and a healthy society that enables individuals to achieve their full potential.

Each year, as part of the United to Serve campaign, UTSW students, faculty, and staff participate in Carnaval de Salud, a community health fair at Thomas J. Rusk Middle School.

Beyond borders: Physician-scientist fights infectious diseases worldwide

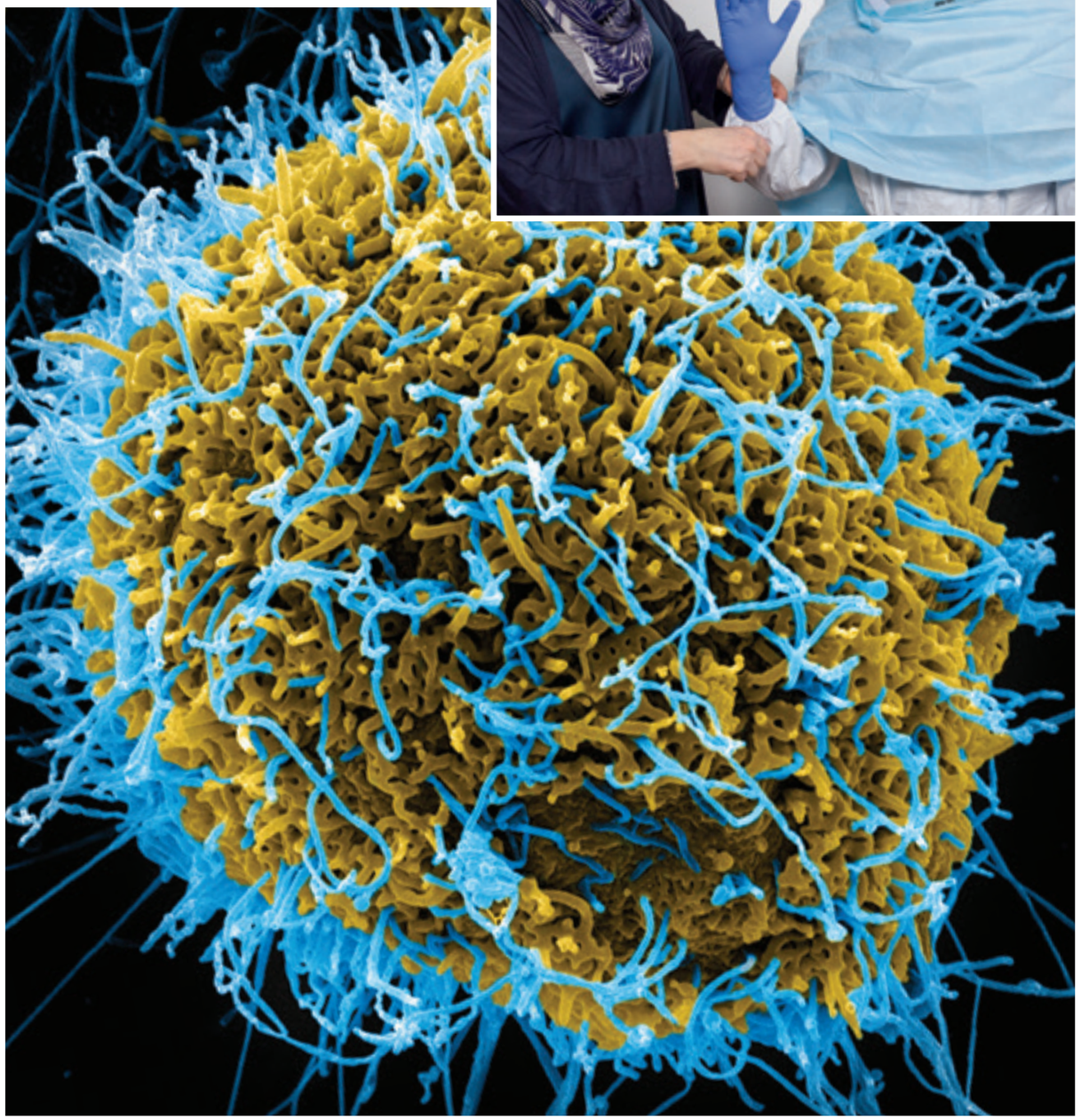
An Ebola outbreak in West Africa hit close to home for North Texas in late 2014 – one patient who died of the disease in the U.S. was treated in Dallas, and two local health care workers acquired the infection but recovered. Worldwide, hospitals and the public were on high alert.

Since then, UT Southwestern has stepped forward in national and international efforts to reduce the chances of such deaths and infections happening again on American soil or elsewhere in the world, and to minimize the severity of new outbreaks.

Dr. Trish Perl, a UT Southwestern infectious diseases specialist who has worked with the World Health Organization (WHO), led an effort to create guidelines for personal protective equipment standards for health care workers treating Ebola patients. The guidelines were published in late 2018.

Dr. Perl, Chief of the Division of Infectious Diseases and Geographic Medicine, and the international team working with her found that some strategies designed to protect workers – such as taping their gloves to their gowns – may have added to their risk by making it more difficult for them to safely take the gowns off. There also was evidence

Dr. Trish Perl demonstrates proper use of protective gear for clinicians working with Ebola patients with the help of UTSW medical student Michael Ji.



Shown budding from an infected cell are filamentous Ebola virus particles (colored blue).

that the bleach used to spray down the equipment may have led to breakdowns in the material, she said.

While there is evidence to support the need for goggles, coveralls, and a respirator, her subcommittee found that removing these pieces of gear – not engineered to work together – may have led to transmission among health care workers. Risks were associated with the combination of the gear.

"Health care workers were actually fainting from the heat because of the lack of breathability of the protective equipment used at the time," she said. Other workers then had to rush to suit up and pull them out of the room. Her group's guidelines suggest that fluid-resistant gowns and clear plastic shields that hang in front of the face, along with gloves and thick-soled boots, provide effective protection.

If adopted, the new guidelines could help during the current African outbreak that began in 2018, Dr. Perl said. And if a case were to arise here now, she added, the American health care system would be in a much better position to handle it.

This is important locally because North Texas is at risk of experiencing other emerging infections. Dallas Fort Worth International Airport – the nation's fourth-busiest airport – receives travelers from around the globe and is making North Texas become increasingly hospitable to disease-carrying vectors due to climate warming.

For example, in 2012, Dallas was the epicenter of the largest West Nile outbreak in the country. Then, in 2016, Dallas reported the nation's first sexually transmitted case of Zika, another viral infection most often seen in South America and also spread by mosquitoes.

As more and more infectious diseases emerge, and reemerge, academic institutions like UT Southwestern will need to play an increasingly important role in helping with investigations, running diagnostics, developing treatments, and providing potential prevention strategies, Dr. Perl said.

With these growing threats, UT Southwestern has taken action. Staff members at William P. Clements Jr. University Hospital receive special training to assess and diagnose Ebola patients, joining a network of highly skilled medical centers across the country designated either as assessment or treatment centers.

"I think we have a better understanding now of what the potential risks are and an understanding of how difficult it is to treat Ebola patients successfully," added Dr. Perl, a Professor of Internal Medicine who holds the Jay P. Sanford Professorship in Infectious Diseases.

"I think we have a better understanding now of what the potential risks are and an understanding of how difficult it is to treat Ebola patients successfully." – *Dr. Trish Perl*

UTSW reaches out with vision of hope in Ethiopia

Local healers suspected Bisrat Sisay was possessed by evil spirits. They could offer no other explanation for the boy's violent convulsions that would throw him to the ground and turn his eyes ghostly white.

Now 14 years old, Bisrat is beginning a new stage of his life, one where he can logically explain to others that epilepsy – not an evil spirit – causes his convulsions. Although he was diagnosed with the condition several years ago, his parents didn't know how to manage the seizures until UT Southwestern started a medical outreach program in Ethiopia that is elevating the care provided by the local hospital.

Bisrat's story is disturbingly common in Ethiopia, where a shortage of neurologists leaves large swaths of the country without doctors to treat common brain conditions such as epilepsy and autism. But a recent groundswell of international collaborations between developing countries and U.S. medical centers is helping to address the scarcity, in particular in several sub-Saharan Africa nations where the situation is most dire.

Bisrat Sisay

UT Southwestern Drs. Karen Kowalske (right) and Mehari Gebreyohanns (in glasses) conduct multidisciplinary teaching rounds at Ethiopia's Tibebe Ghion Bahir Dar University Hospital.

Dr. Mehari Gebreyohanns (at right in glasses) conducts teaching rounds in the ICU of Ethiopia's Tibebe Ghion Bahir Dar University Hospital in July 2019.

Bahir Dar University, Ethiopia

In one of the newest efforts, UT Southwestern established a partnership in the Ethiopian city of Bahir Dar where a hospital serving a region of several million people has no neurologist and lacks basic brain-scanning equipment. UTSW clinicians teach medical personnel there the basics of neurology and each summer send physicians and doctors-in-training to help with patients like Bisrat.

"This is how we develop a new breed of doctors," said Dr. Mehari Gebreyohanns, a UT Southwestern neurologist from Ethiopia who spearheads the collaboration endorsed by Bahir Dar University and the local government. "We are training the next generation of leaders who believe they can improve the quality of life, not just in the U.S., but in countries thousands of miles away."

The need is great. One survey found that 23 African nations average one neurologist per 5 million people, while 12 nations have no neurologists, added Dr. Gebreyohanns, Assistant Professor of Neurology & Neurotherapeutics.

The UT Southwestern program, endorsed by Ethiopia's health minister, is part of the Medical Center's Global Health Initiative that aims to help developing countries improve their health care infrastructure while offering international training opportunities for its resident doctors.

UT Southwestern's exceptional scientists and clinicians earn major honors

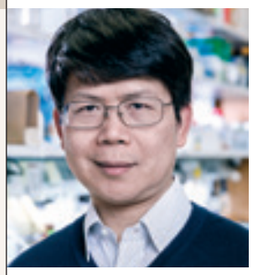
The discoveries of an enzyme that activates the body's immune defenses, a hormone released by fat cells (which expanded our understanding of diabetes), and the first mammalian gene controlling circadian rhythms are among the scientific achievements that led to prestigious honors for UT Southwestern faculty this past year. And in an example of clinical excellence, outstanding patient care and advocacy resulted in a department chair being named a Giant of Cancer Care. Highlighted on these pages are some of those extraordinary individuals whose work merited top honors in 2018-2019.

UT Southwestern's faculty has received six Nobel Prizes, and includes 22 members of the National Academy of Sciences, 17 members of the National Academy of Medicine, and 14 Howard Hughes Medical Institute Investigators.

The full-time faculty of more than 2,500 is responsible for groundbreaking medical advances and is committed to translating science-driven research quickly to new clinical treatments.

UT Southwestern physicians provide care in about 80 specialties to more than 105,000 hospitalized patients, nearly 370,000 emergency room cases, and oversee approximately 3 million outpatient visits a year.

Dr. Zhijian "James" Chen – *Breakthrough Prize in Life Sciences*



Biochemist Dr. Zhijian "James" Chen won the prestigious 2019 Breakthrough Prize in Life Sciences for his discovery of the cGAS enzyme that launches the body's immune defense system. That enzyme patrols the cell's interior and triggers the immune system in response to DNA.

The international award program, founded in 2013, is sponsored by Sergey Brin, Priscilla Chan and Mark Zuckerberg, Ma Huateng, Yuri and Julia Milner, and Anne Wojcicki. Winners receive $3 million each.

Dr. Chen is Professor of Molecular Biology and Director of the Center for Inflammation Research as well as a Howard Hughes Medical Institute Investigator. He holds the George L. MacGregor Distinguished Chair in Biomedical Science.

Dr. Chen's discovery of the enzyme cyclic GMP-AMP synthase (cGAS) solved a longtime medical mystery. In 1908, a Nobel Laureate noted that surgeons in Europe treated patients with DNA to boost their patients' defense against infections. Dr. Chen's investigations revealed the mechanism underlying that response.

Dr. Philipp Scherer – *Manpei Suzuki International Prize for Diabetes Research*

Dr. Philipp Scherer last year became the first scientist to win what could be called the "Triple Crown" of recognition for diabetes research breakthroughs. Dr. Scherer, Director of the Touchstone Center for Diabetes Research, was awarded the 2018 Manpei Suzuki International Prize for Diabetes Research in recognition of his discovery of adiponectin, a hormone released by fat cells, and for his subsequent research into the hormone's role in fending off diabetes.

His research has "deepened and widened our understanding of diabetes, obesity, and energy homeostasis," according to the Manpei Suzuki Diabetes Foundation.

Dr. Scherer was recognized in 2017 with what is considered the top European award in diabetes research, the EASD-Novo Nordisk Foundation Diabetes Prize for Excellence, given by the Germany-based European Association for the Study of Diabetes and the Novo Nordisk Foundation of Denmark. And in 2015, he received the prestigious Banting Medal for Scientific Achievement from the American Diabetes Association. Collectively, these three awards are considered the highest honors for achievement in diabetes research.

Dr. Scherer, a Professor of Internal Medicine and Cell Biology, holds the Gifford O. Touchstone, Jr. and Randolph G. Touchstone Distinguished Chair in Diabetes Research.

Dr. Joseph Takahashi – *Gruber Neuroscience Prize*

Dr. Joseph Takahashi, Chair of Neuroscience, won the Gruber Neuroscience Prize last year for his pioneering work on the molecular and genetic bases of circadian rhythms in mammals.

The international award – which honors scientists for major discoveries that advance the understanding of the nervous system – recognized Dr. Takahashi's discovery of Clock, *the first mammalian gene controlling circadian rhythms. Subsequent research has established* Clock *as a prominent regulator of many genes and a key target to better understand the primary underpinnings of human physiology.*

A cascade of other findings has stemmed from his lab's work over the years, helping scientists understand the important role biological clocks have in some of the most crucial functions in the human body – from sleep and mental health to metabolism and defending against deadly diseases such as cancer.

Dr. Takahashi is also an Investigator with the Howard Hughes Medical Institute and a member the National Academy of Sciences, the National Academy of Medicine, and the American Academy of Arts and Sciences. He holds the Loyd B. Sands Distinguished Chair in Neuroscience.

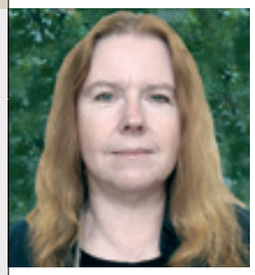
Dr. Sean Morrison – *National Academy of Medicine*

Dr. Sean Morrison, Director of the Children's Medical Center Research Institute at UT Southwestern and a UTSW Professor of Pediatrics, was elected in late 2018 to the National Academy of Medicine (NAM). The recognition is one of the highest honors in health and medicine.

The NAM – formerly known as the Institute of Medicine – recognizes individuals who have demonstrated outstanding professional achievement and a commitment to service. Along with the National Academy of Sciences and the National Academy of Engineering, the NAM advises the nation and the international community on critical issues in health, medicine, and related policies.

Dr. Morrison identified a series of genes required for stem cell self-renewal, which is necessary for stem cells to persist throughout life and regenerate tissues after injury. His research showed that stem cell self-renewal mechanisms change over time to match the varying growth and regeneration demands of tissues during development and aging.

Also an Investigator with the Howard Hughes Medical Institute, Dr. Morrison holds the Kathryne and Gene Bishop Distinguished Chair in Pediatric Research at Children's Research Institute at UT Southwestern and the Mary McDermott Cook Chair in Pediatric Genetics.



Dr. Melanie Cobb – *American Academy of Arts and Sciences*

Dr. Melanie Cobb, Professor of Pharmacology and Associate Director of Basic Research for the Harold C. Simmons Comprehensive Cancer Center, was elected to membership in the American Academy of Arts and Sciences, one of the most prestigious honorary societies in the world.

She joins the ranks of Thomas Jefferson, Alexander Graham Bell, Bruce Springsteen, Jonas Salk, and other Americans who have been elected to the Academy for distinguished, enduring contributions over a wide range of disciplines. Founded in 1780, the American Academy of Arts and Sciences includes more than 250 Nobel Laureates and 60 Pulitzer Prize winners among its members.

Dr. Cobb leads UT Southwestern's Cancer Cell Networks Program and headed a team that discovered one class of protein kinase enzymes that play critical roles in cancer development. She identified the first mammalian mitogen-activated protein kinases in the early 1990s. She purified them, isolated cDNAs encoding these proteins, and named them ERK1, ERK2, and ERK3, or ERKs. It was a meaningful breakthrough because Ras, an important protein involved in cell growth and differentiation, has an intimate relationship with these kinases. The misregulated or inappropriate functions of ERKs, in partnership with Ras, can contribute to cancer development.

Dr. Cobb, also a member of the National Academy of Sciences, holds the Jane and Bill Browning, Jr. Chair in Medical Science.

Dr. David Johnson – *Giant of Cancer Care*

Dr. David Johnson was honored last year as one of 15 Giants of Cancer Care by OncLive.com, the website for the Oncology Specialty Group.

Dr. Johnson, who holds the R. Ellwood Jones, M.D. Distinguished Professorship in Clinical Education, was recruited to UT Southwestern in 2010 to serve as Chair of Internal Medicine. He is an oncologist who has been on all sides of cancer: as an attending physician, as a leading expert in clinical trials, as an enthusiastic supporter of cancer research, and as a former cancer patient.

In his early 40s, while on the faculty at Vanderbilt University School of Medicine, Dr. Johnson was treating cancer patients in Tennessee when he was diagnosed with lymphoma, which led him to connect with patients on a level that few other doctors could match.

Meanwhile, he pushed forward with clinical trials for several new drugs that would later become staples in lung cancer treatment. This clinical research was a significant contribution to cancer care, and his achievement was one of the reasons he was selected to become UT Southwestern's fourth Chair of Internal Medicine. During his tenure as Chair, Dr. Johnson hired 150 new faculty members and played a role in opening the new, 460-bed William P. Clements Jr. University Hospital.