P
rior to the COVID-19 pand
emic, North Texas faced many long-standing public health challenges, including high rates of various common chronic illnesses, such as obesity and heart disease, mental health issues in access to care, and the impact of socioeconomic determinants on health in our communities. The pandemic, as the latest in many challenges to public health, underscored the need to develop science-based interventions, as well as an expanded public health workforce in Texas. In response to these issues, UT Southwestern is establishing a School of Public Health. As the University’s newest school in more than 50 years, the School of Public Health will join UTSW’s Medical School, School of Health Professions, and Graduate School of Biomedical Sciences and will initially be located in renovated space on South Campus.

Beyond the need to address public health issues through research and innovation, as the COVID-19 pandemic has shown, there is also an urgent need for additional public health resources in our communities, including professionals trained in preventive interventions, epidemiologic crisis response, disease surveillance, contact tracing, and public health outreach,” said Daniel K. Podolsky, M.D., President of UT Southwestern.

Dr. Podolsky noted that 200 of Texas’ 254 counties lack sufficient resources in terms of the number of public health professionals trained in such specialties. “The UT Southwestern School of Public Health will be dedicated to producing a new generation of public health leaders skilled in the areas of data sciences, epidemiology, health policy, health care delivery research, implementation science, and other disciplines,” said Dr. Podolsky. “The new school will build upon our strengths in basic and clinical sciences, and the expertise we have developed in fields such as population and data sciences, bioinformatics, and computational biology.” The school, which expects to welcome its first class of Master of Public Health students in the fall of 2023, followed by classes for Ph.D. students in the fall of 2024, will also leverage assets in Dallas-Fort Worth— one of the most diverse and fastest-growing regions in the United States—by partnering with multiple community organizations, regional health departments, and universities, including partners Parkland Health & Hospital System, Children’s Health, and UT Dallas.

In February, plans for the new School of Public Health were approved by the UT System Board of Regents; then the Texas Legislature endorsed the new initiative by appropriating $10 million in seed funding for the coming biennium. Those funds, combined with $45 million in state funding for facility planning for new School of Public Health

By Deborah Wormser

Novel microscopy method provides a peek into the future of cell biology

By Deborah Wormser

What if a microscope could explore the 3D microcosm of blood vessels, nerves, and cancer cells instantaneously in virtual reality, provide views from multiple directions in real time without physically moving the specimen, and work up to 100 times faster than current technology?

UT Southwestern scientists believe they have achieved just that, collaborating with colleagues in England and Australia to build and test a novel optical device that converts commonly used microscopes into multiple projection imaging systems. The invention, described in an article in Nature Methods, could open new avenues in advanced microscopy, the researchers said.

“It is a completely new technology, although the theoretical foundations for it can be found in old computer science literature,” said corresponding author Reto Fiolka, Ph.D. Both he and co-author Kevin Dean, Ph.D., are Assistant Professors of Cell Biology and in the Lyda Hill Department of Biomatics. “It is as if you are holding the biological specimen with your hand, rotating it, and inspecting it, which is an incredibly intuitive way to interact with a sample. By rapidly imaging the sample from two different perspectives, we can interactively visualize the sample in virtual reality on the fly,” said Dr. Dean, Director of the UTSW Microscopy Innovation Laboratory, which collaborates with researchers across campus to develop custom instruments that leverage advances in light microscopy. Currently, acquiring 3D image information from a microscope requires a Permission to use MICROSCOPY on page 6

Bruce Beutler, M.D., Director of the Center for the Genetics of Host Defense

Using artificial intelligence, UT Southwestern scientists have identified thousands of genetic mutations likely to affect the immune system in mice. The work is part of one Nobel Laureate’s quest to find virtually all such variations in mammals.

“This study identifies 101 novel gene candidates with greater than 95% chance of being required for immunity,” said Bruce Beutler, M.D., Director of the Center for the Genetics of Host Defense (CGHD) and corresponding author of the study in PNAS. "Many of these candidates we have already verified by creating the mutations or knocking out the genes."

Lead author Yuxi Xu, Ph.D., a computational biologist at CGHD, wrote the software.

“We’ve developed software called Candidate Explorer (CE) that uses a machine-learning algorithm to identify chemically induced mutations likely to cause traits related to immunity. The software determines the probability that any mutation we’ve induced will be verified as causative after further testing,” Dr. Beutler said. His discovery of an important family of receptors that allow mammals to quickly sense infection and trigger an inflammatory response led to the 2011 Nobel Prize in Physiology or Medicine.

The purpose of CE is to help researchers predict whether a mutation associated with a phenotype (trait or function) is a truly causative mutation, he said.

“CE has already helped us to identify hundreds of genes with novel mutations in immunology that will improve our understanding of the immune system.”

Please see IMMUNITY on page 6
IN MEMORIAM

Peggy Joyce Whalley, M.D., Pioneered work in maternal-fetal medicine and high-risk pregnancies

By Patrick Wascovich

Peggy Joyce Whalley, M.D., a Professor Emeritus of Obstetrics and Gynecology whose work in maternal-fetal medicine with high-risk pregnancies saved thousands of infants of women mothers and their offspring during a 32-year career at UT Southwestern, died July 6 in Austin. The alumna of UT Southwestern Medical School was 94. She was truly a giant in academic obstetrics but was far from an egotistical person despite her many accomplishments," said Gary Cunningham, M.D., Professor of Obstetrics and Gynecology and Chair Emeritus who led the Department from 1983 to 2018.

"She was regarded as a "team player" and contributed to all aspects of departmental assignments," said Cunningham. "Her diligence and persistence would improve the outcome for women suffering from complications of pregnancy, those who were diagnosed with a new disease, or those who were enrolled in a new study."

"Dr. Whalley’s first research papers were published in the Journal of Clinical Investigation and the American Journal of Obstetrics and Gynecology, and her residency in obstetrics and gynecology under the late Donald Seldin, M.D., Chairman Emeritus of Internal Medicine, and her residency in obstetrics and gynecology under the late Jack Pritchard, M.D., Professor Emeritus of Obstetrics and Gynecology. Dr. Whalley was the first female Ob/Gyn resident at Parkland and the first to serve as chief resident her senior year. She then completed a one-year fellowship in medicine under the direction of Dr. Seldin and remained part of the faculty in 1961," said Cunningham.

Recognizing the impact of this unit on mortality, Dr. Whalley received the Award in 1976 for her community service from the Dallas Branch of the American Association of University Women. Dabbed Peggy’s Palace, the facility at Parkland was officially dedicated in 1965.

"Her work at the high-risk unit continued a pattern of Dr. Whalley breaking ground for others to follow," said Cunningham. "She was the first to conduct research that revealed the transport function of the atrium. In conjunction with this research, she and Dr. Mitchell received the ACC Distinctive Scientist Award – the only investigator to receive both awards. She also was recognized with the Carl J. Wiggers Award from the American Physiological Society, the Pathenion Prize from The Physiological Society, the Award of Merit from the American Heart Association, the Honor Award from the American College of Sports, a Career Development Award from the U.S. Public Health Service, the Albert Nelson Marquis Lifetime Achievement Award from Marquis Who’s Who, and was listed as a Distinguished Humanitarian by Marquis Who’s Who.

"Dr. Whalley was born in 1928 in Longview, Texas, and graduated with honors in 1950 from Washington University in St. Louis. She received her medical degree from UT Southwestern in 1954.

Money US$700 hopes to raise through planning curriculum and hiring faculty; as well as redesigning existing UT Southwestern space to accommodate the new school, said Celente Sugg Skinner, Ph.D., Chair of the Department of Counseling and Data Science and Interim Dean of the UT Southwestern School of Public Health. Additional funding will be needed in the future as the program grows and requires construction of a dedicated building on campus, Dr. Skinner said.

UT Southwestern already plays a leadership role in addressing public health needs in the region and conducts research on health care disparities and interventions. For example, as the region continues to battle COVID-19 infections, UT Southwestern’s data scientists and epidemiologists produce a biweekly forecasting model that public health officials, as well as the general public, utilize to gauge whether the spread of the disease is rising or falling and what public behaviors are additional risk factors for exposure.

Beyond COVID-19 and continuously throughout the pandemic, UT Southwestern has also persisted in its efforts to provide basic and preventive care using a variety of outreach programs. Through the Fort Worth affiliate of its Harold C. Simmons Comprehensive Cancer Center – the Montie T. C. Moak Cancer Institute – and UTSW’s side local cancer screening providers throughout North Texas, UT Southwestern has increased screening for breast, colorectal, and lung cancer in 35 regional counties. Additional efforts have also supported vaccinations for adolescents to protect against HPV, a common virus that can lead to several types of cancer later in life.

"This new school will be research intensive and will generate evidence about what works with large groups of patients, develop professionals to expand these efforts, and begin refining what regarding a content on a large scale across systems that benefit the citizens of Dallas, the S.W., and the U.S.," Dr. Skinner said.

SEEN THE END TITLES HELD BY Dr. Podolsky above. Dr. Skinner holds the Parkland-Cosby Chair in Medical Education Professor.
Researchers find immune component to rare neurodegenerative disease

Niemann-Pick disease Type C may eventually be treated with immune inhibitors

By Christian Brosseau

UT Southwestern researchers have identified an immune protein tied to the rare neurodegenerative condition known as Niemann-Pick disease Type C. The finding, made in mouse models and published in Nature, could offer a new therapeutic target for this condition that was identified more than a century ago but still lacks effective treatments.

“Niemann-Pick disease has never been considered an immune disorder,” said lead author Nan Yan, Ph.D., Professor of Immunology and Microbiology. “These findings put it in a whole new light.”

Niemann-Pick disease Type C, which affects the progressive decline in motor and intellectual abilities that characterize Niemann-Pick disease, was identified in 1969. Dr. Yan’s lab team made its discovery by chance while researching the immune protein STING, short for stimulator of interferon genes.

STING is a critical part of the body’s defense against viruses, typically relying on another protein known as cyclic GMP-AMP synthase (cGAS) to sense DNA and turn on immune genes to fight off viral invaders. The cGAS enzyme was identified at UT Southwestern.

STING journeys to different organelles to perform various tasks before it ends up in lysosomes, which serve as cellular garbage dumps. Disposal of STING is critical for an appropriate immune response, explained Dr. Yan, research has shown when STING isn’t properly discarded, it continues to signal immune cells, leading to a variety of autoimmune conditions.

To determine what proteins interact with STING, researchers used proximity labeling, which causes other proteins around a protein of interest to glow. After analyzing their data, Dr. Yan’s team was surprised to find that STING interacts with a protein that’s located on the surface of lysosomes and is produced by the Npc1 gene.

Because STING had never been implicated in Niemann-Pick disease Type C, Dr. Yan investigated further. The researchers removed the gene for STING from mice in which the Npc1 gene had also been deleted. Deleting Npc1 typically causes progressive problems in motor function, but animals with both the Npc1 and STING genes deleted remained healthy.

Further research suggested that the protein produced by Npc1 has a binding site for STING that allows it to enter lysosomes for disposal. When the protein produced by Npc1 is missing, STING remains in cells, propagating Niemann-Pick disease Type C patients, they found that several immune-simulating genes were overactive, as would be expected if STING disposal was defective.

In addition, Dr. Yan found that STING signals are activated independently of cGAS in Niemann-Pick disease. This expands STING biology beyond its conventional role in host defense against infection.

Dr. Yan said that his lab and others are investigating the use of experimental drugs that inhibit STING to treat various autoimmune conditions. These compounds may also be useful for Niemann-Pick disease Type C.

“If we can demonstrate that these compounds are effective in our animal models,” Dr. Yan said, “we may be able to offer an effective therapy to Niemann-Pick disease patients.”

More online: Read the full story in the nonsouthwestern.edu/newsroom.

Hope for patients with a rare bone-destroying condition

Research uncovers one cause of, and potential treatment for, Gorham-Stout disease

By Carol Marie Cropper

An international research team led by a UT Southwestern scientist has identified a cause of and a possible treatment for Gorham-Stout disease, a painful, disfiguring, and life-threatening condition that destroys bone and can cause respiratory failure. The disease typically strikes children or young adults, leading to damage affected bones as they are invaded and taken over by lytic skeletal tissues. Bones in the skull, scapula, pelvis, ribs, and the shoulder, pelvis are the most commonly affected.

In a study published recently in JCI Insight, the researchers identified a mutation in the KRAS gene in bone samples taken from a patient who later died of Gorham-Stout disease. When mice were engineered to have a similar KRAS mutation, they developed symptoms of Gorham-Stout disease, the study reported, indicating such mutations may be cause of the disorder — a breakthrough for a disease whose origins have remained unknown.

In a second finding that holds particular promise for treatment, when researchers gave the young mice trametinib — a drug approved by the FDA to treat cancers linked to KRAS mutations — the mice showed fewer of the characteristic Gorham-Stout disease lymphatic vessel abnormalities.

“This finding has the potential to make a big impact on this disease and the treatment of patients,” said Dr. Dellinger.

The study’s findings were also noted by Dr. Marc Feldman, a professor of medicine and the chief of the division of rheumatology at UT Southwestern Medical Center.

“My colleagues and I at UT Southwestern are excited about the findings because they open up new avenues for understanding the disease and potentially for treatment,” Dr. Feldman said.

Dr. Dellinger is the Director of the Erik Jonsson Center for Research in Molecular Genetics and Human Disease at UT Southwestern. He is a Regental Professor and holds The W.A. (Monty) and Distinguished Chair in Cholesterol and Atherosclerosis Research, and the Paul J. Thomas Chair in Medicine.

More online: Read the full story in the nonsouthwestern.edu/newsroom.
**Study shows wealth mobility affects Americans’ long-term cardio health**

**By Patrick Washcovich**

In a recent study published in JAMA Cardiology, researchers found a correlation between a relative decline in wealth during midlife and an increased likelihood of a cardiac event or heart disease after age 65, while an increase in wealth between ages 50 and 64 was found to lower cardiovascular risk.

Although the association between socioeconomic status and cardiovascular outcomes is well established, little research has been done to determine whether longitudinal changes in wealth are associated with cardiovascular health. In the study, Andrew Sumarsono, M.D., Assistant Professor of Internal Medicine, along with colleagues from Harvard-affiliated Brigham and Women’s Hospital Heart & Vascular Center and the London School of Economics, investigated the cardiovascular toll that changes in monetary health can have in the U.S., where there is a 18- to 15-year difference in life expectancy between the population’s richest 1% and the poorest 1%.

Examining a cohort of more than 5,000 adults without cardiovascular disease, the study found that middle-aged participants who experienced upward wealth mobility—defined as relative increases in the total value of assets excluding primary residence—had lower cardiovascular risk after age 65 compared to peers of similar age. Conversely, participants who experienced downward wealth mobility in the latter parts of their careers had higher cardiovascular risk later in life. Cardiovascular events cited as outcomes include acute myocardial infarction, heart failure, cardiac arrhythmia, and stroke, or cardiac-related death.

“We already know that wealth relates to health, but we show that wealth trajectories also matter. This means that the cardiovascular risk associated with wealth is not permanent and can be influenced,” said Dr. Sumarsono, a faculty member in the Division of Hospital Medicine.

The researchers estimate a 1% swing in cardiovascular risk for every $100,000 gained or lost by individuals. Notably, participants who started in the top 20% of wealth and experienced downward wealth mobility still had similar cardiovascular risk as those who remained fixed in the top quintile. However, those who started in the bottom fifth of wealth accumulation and experienced upward wealth mobility had lower cardiovascular risk than those fixed in the bottom quintile. These findings linking wealth change and downturn cardiovascular events were similar across all racial or ethnic subgroups.

“We found that irrespective of one’s baseline wealth, upward wealth mobility relative to peers in late-middle age was associated with lower risk of a new cardiac event or death after age 65,” Dr. Sumarsono said. “We also found the inverse was true—that people who experienced downward wealth mobility relative to one’s peers faced a higher risk of a new cardiac event or death after 65, potentially offsetting some of the benefit associated with prior economic thriving.”

**More online: Read the full story in the newsroom at asuthwestern.edu/newsroom.**

**Studging off food poisoning depends on the time of day**

Levels of natural antimicrobial molecule fluctuate on a circadian rhythm, study shows

**By Christopher Brownlie**

The body’s ability to prevent food poisoning by producing a natural antimicrobial compound increases during the day, when exposure to noxious bacteria is most likely, a study by UT Southwestern scientists suggests.

The findings, published in Cell, could eventually lead to timed therapies and nutrition regimens designed to maximize this immune response.

“This study shows that our immune systems are not turned on all the time, which is an unexpected result,” said study leader John F. Brooks II, Ph.D., a professor of Internal Medicine and Microbiology. “Our findings suggest that there are peak times in which the body is more primed to fight infections.”

Researchers have long known that virtually all animals follow circadian cycles tied to sunrise and sunset, but few have investigated whether these rhythms in the expression of natural antimicrobial agents produced in the gut—such as the natural antibiotics found in the guts of mice to fight foodborne illness—varied in different states of health. To investigate, the researchers looked for rhythms in the expression of natural antimicrobial agents produced in the guts of mice to fight foodborne illness. In normal lab mice, one of these rhythms is that gut bacteria typically present in rodents, including a bacterium called REG3G (REG3G) was essentially absent at night, when these nocturnal animals are active, and less so during the day. However, in mice raised to have no gut bacteria, REG3G was essentially absent throughout the day and night.

The researchers found that mice fed with cycling amounts of REG3G had less resident populations of segmented filamentous bacteria in their guts that microbes typically present in rodents, nonhuman primates, and humans— that attach to the intestinal lining and change their host’s gene activity.

Further experiments showed that these bacteria attached to the animals’ intestinal lining during feeding, probably to shield off nutrients. When they attached, REG3G production ramped up in the intestines. This cycling had significant consequences for the ability of mice to fight off infection, the researchers said. “This phenomenon also occurs in humans,” Dr. Brooks said. “If we can learn how to prime the immune response in humans, we may be able to prevent food poisoning.”

**Immunity**

Continued from page 1

system so that we can find new ways to keep it robust, and also know the reason it sometimes fails,” Dr. Beutler said.

The software examines 67 features of the primary genetic mapping data to arrive at estimates related to a mutation’s likelihood of causing a trait. For some mutations, causation is very clear; for others, less so. “One of the strengths of CE,” said Dr. Beutler, “is that it’s machine learning from experiments in which researchers re-create the mutation in a fresh pedigree and verify or exclude the hypothesis of causation.”

All mutations made available to the scientific community through a public repository, and the data supporting causation are viewable within the Candidate Explorer program on the CGHD website, Mutagenetix.

The team used CE to evaluate about 87,000 mutation/trait associations that passed the initial statistical threshold for candidacy. The traits examined were based on flow cytometry data collected on circulating immune cells of third-generation mutant mice. In this screen, Candidate Explorer ranked 2,356 mutations in 1,279 genes as good or excellent candidates for causation of traits. This work is part of a research program that Dr. Beutler set out on nearly a decade ago to identify every mutation that may affect the immune mouse system.

“We’ve now worked through about 60% of the genome and have identified thousands of genes—hundreds of them novel—that participate in immunity in the mouse,” he said. “The majority of these also contribute to human immunity.”

The current study focused on changes in genes known to be tied to immunity, such as B cells, macrophages, and natural killer cells. The work received support from the National Institutes of Health grants R01 AI25386 and U19 AI061627.

Dr. Beutler a Regental Professor and holds the Raymond and Ellen W. Uhr, M.D. Distinguished Chair in Immunology and is a Nancy Cain and Jeffrey A. Marcus Scholar in Medical Research, in Honor of Dr. Bill S. Vowell.

Dr. Hooper holds the Jonathan W. Uhr, M.D. Distinguished Chair in Immunology and is a Nancy Cain and Jeffrey A. Marcus Scholar in Medical Research, in Honor of Dr. Bill S. Vowell.

**Freedom from Cardiovascular Event or Death by Midline Wealth Mobility**

| Years since turning age 65 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 |
| Relative decline in wealth | 50 | 55 | 60 | 65 | 70 | 75 | 80 | 85 | 90 | 95 | 100 |

**Upward mobility**

**Downward mobility**

**No wealth change**

Andrew Sumarsono, M.D.

John F. Brooks II, Ph.D.

Lora Hooper, M.D.

Raymond and Ellen W. Uhr, M.D. Distinguished Chair in Immunology

Dr. Beutler is a Regental Professor and holds the Raymond and Ellen W. Uhr, M.D. Distinguished Chair in Cancer Research, in Honor of Lavette and Raymond Wylie, Sr.

**Results of the study**

The researchers developed Candidate Explorer (CE), software that uses a machine-learning algorithm to identify mutations causative of phenotypes. Using CE, more than 87,000 mutation/trait associations were identified by flow cytometry screening of circulating immune cells from genetically mice.

The study showed 2,179 genes representing 2,356 mutations were rated as good or excellent candidates for causation of phenotypes. Many of these genes were not previously implicated in immunity.

**More online: Read the full story in the newsroom at asuthwestern.edu/newsroom.**
Artificial intelligence used to assess metastatic potential of skin cancers

By Christen Brownlee

Using artificial intelligence (AI), researchers from UT Southwestern have developed a way to accurately predict which skin cancers are highly metastatic. The findings, published as the July cover article of Cell Systems, show how AI-based tools can revolutionize pathology for cancer and other diseases.

“We now have a general framework that allows us to take tissue samples and predict mechanisms inside cells that drive disease, mechanisms that are currently inaccessible in any other way,” said study leader Gaudenz Danuser, Ph.D., Chair of the Lyda Hill Department of Bioinformatics.

AI technology has significantly advanced, Dr. Danuser explained, with deep learning-based methods now able to distinguish minute differences in images invisible to the human eye. Researchers have proposed using this latent information to look for differences in disease characteristics that could offer insight on prognoses or guide treatments. However, he said, the differences distinguished by AI are generally not interpretable in terms of specific cellular characteristics – a drawback that has made AI a tough sell for clinical use.

For this challenge, Dr. Danuser and his colleagues used AI to search for differences between images of melanoma cells with high and low metastatic potential and then reverse-engineered their findings to determine which features produced the variances. Using tumor samples from seven patients and information on their disease progression, including metastasis, the researchers took videos of about 12,000 random cells living in petri dishes, generating about 1.7 million raw images. The researchers then used an AI algorithm to pull 56 different abstract numerical features from these images. The research team found one feature able to accurately discriminate between cells with high and low metastatic potential. By manipulating this abstract numerical feature, they produced artificial images that exaggerated visible characteristics that AI had learned were important for metastasis, the researchers showed.

The researchers then used the AI algorithm to predict which mouse melanoma tumors would be highly metastatic by comparing whether the murine tumors had the exaggerated features seen in the artificial images. Researchers injected the tumors into mice. Those predicted to be highly metastatic formed tumors that readily spread throughout the body, while those predicted to have low metastatic potential spread little or not at all.

Dr. Danuser noted that this method needs further study before it becomes part of clinical care. But eventually, he added, it may be possible to use AI to distinguish important features of cancers and other diseases.

Nonsurgical treatment using valves provides relief for emphysema patients

By Jan Jarvis

A nonsurgical procedure that uses innovative valve devices – both developed through multicenter clinical studies, including at UT Southwestern – is giving patients with severe emphysema a new treatment option that allows them to breathe easier.

“The procedure, called bronchoscopic lung volume reduction, or BLVR, uses the scope to visualize the small airways during exhalation and air-trapping in the lungs. A healthy adult takes about 10 to 16 breaths per minute – but patients with severe COPD, such as emphysema, usually breathe much faster. Patients often try inhalers, oxygen, medications, and pulmonary rehabilitation to breathe easier. BLVR is a minimally invasive procedure that usually takes less than 30 minutes with a hospital stay of two to three days. The procedure uses tiny one-way valves to prevent air from entering the diseased areas of the lungs. The valves are placed inside the airways of a diseased lung to redirect air to healthier parts of the lung. Credit: Olympus America

Not everyone qualifies for the procedure; severe emphysema patients must be on maximum medical therapy and inhalers, which reduce inflammation in their lungs and open the airways to ease symptoms. They also must be nonsmokers and participate in pulmonary rehabilitation.

For patients with severe lung disease, the procedure can be life-changing. “BLVR doesn’t just improve lung function for people with severe emphysema – it can give them a big psychological boost, as well, and a more positive outlook about their disease,” Dr. Abu-Hijleh said. “Many of our patients have told us they were able to resume their daily routines, get out of the house more, and reclaim their lives because they feel better physically and mentally.”
About Gilliam Fellowships:

50 adviser-student pairs in 2023, the largest group to date
331 Fellows in the community since the program’s inception
$50,000 per year, per award
Since 2016, the program has trained 199 mentors

Gilliam mentor training:

creates inclusive environments for students in science by working with faculty to become aware of the own cultural identities, understand the critical role of listening, and feel comfortable engaging with others.

Features a yearlong course in culturally aware mentorship.

Ester Álvarez Benedicto

In the segment, lab. Álvarez Benedicto studies LNP for nucleic acid delivery (RNA/DNA). LNPs have numerous applications – such as in the COVID-19 vaccine. “Both Pfizer and Moderna use LNPs to deliver the messenger RNA (ribonucleic acid) that codes for the spike protein. My project specifically intends to repurpose LNPs for gene delivery to immune cells.

Michael Trinh

Last year, this work earned him the Merton Memorial Fellowship Award from the American Society of Cell Biology, and the William F. and Grace H. Kohlpatric award from the UT Southwestern Graduate School of Biomedical Sciences.

Mr. Trinh was born in Dallas after his parents fled Vietnam as children and met in the United States as a wedding couple. He was inspired to study medicine and science by his grandfather, whose commitment to being a lifelong learner motivated Mr. Trinh to his own educational journey.

Now, with support from the Soros Fellowship, Mr. Trinh can continue his own research, advancing the legacy of learning that his grand- father instilled in him. He said the Soros Fellowships are a great recognition of what immigrants have to offer this country.

“These are people from all different parts of the world who are working to make it a better place,” he said.


Mr. Trinh holds the Philip and Doris Park Distinguished Chair in Cholesterol and Atherosclerosis Research, and the Paul and Julie A. Beecherl Jr. Distinguished Chair in Biomedical Research, and the Paul J. Thomas Chair in Medicine.
Dr. Julio Pérez Fontán, M.D., who led UT Southwestern’s Department of Pediatrics as Chair for more than a decade, has been appointed Professor Emeritus of Pediatrics in honor of his contributions. Dr. Pérez Fontán, who retired from UT Southwestern in 2014, joined the department in 1980 as part of a faculty expansion led by Dr. Kern Wildenthal, M.D., Ph.D., and was named Chair the following year. He 1980 as an Associate Professor of Ophthalmology at UT Southwestern. In 1986, Dr. Fontán became known for his leadership that has guided the development of UT Southwestern’s Ophthalmology Department into one of the most outstanding departments of ophthalmology in the United States.

Prior to joining UT Southwestern in 1986, Dr. Fontán served in the United States Naval Reserve and a Staff Ophthalmologist at the National Naval Medical Center in Bethesda, Maryland. A native of Fort Worth, he attended Texas Christian University, then graduated from Washington University School of Medicine in St. Louis. He completed his internship, residency, and a fellowship at Harvard Medical School-affiliated institutions.

Dr. Pérez Fontán was a model Chair who led his department with wisdom, vision, equity, and an unwavering commitment to the institution’s mission,” said David Johnson, M.D., former Chair of Internal Medicine. “Under his leadership, the Department of Pediatrics worked to meaningfully serve our patients, to shape the future of our practice, and to educate future physicians.”

Stephen Skapik, M.D., Interim Chair of Pediatrics, added that Dr. Pérez Fontán set and executed clear goals for the Department.

“The health of our educational programs and the success of our mission relies on the dedication and innovation of our faculty,” said Dr. Skapik.

Although Dr. Pérez Fontán found it gratifying to lead critically ill children, he was just as committed to building a strong set of pediatric programs at UT Southwestern and Children’s Health. During the past 16 years, he worked to develop an infrastructure that would lead to improved pediatric care in Dallas. Bringing a top-notch team to UT Southwestern was one of his goals.

In the laboratory, his research focused on the role of the inflammatory cytokines in the uncontrolled growth of cancer cells. His work has been funded by the National Institutes of Health, leading to multiple publications and reviews in the medical literature.

Growing up in Spain, Dr. Pérez Fontán chose a discipline – pediatrics – that not only promised enormous personal rewards but also the opportunity to understand more about the why and how of developmental disorders. For 40 years, Dr. Pérez Fontán has never lost his calling to care for sick children, but he has strived to improve health care by advancing research for them.

“When we teach others, we not only have a multiplier effect, but also establish a foundation on which others can advance and improve on what we did ourselves,” he said.

Dr. Pérez Fontán came from a family of physicians, and his father and graduate degrees – both summa cum laude – from the University of Santiago de Compostela in Spain. He completed residency in pediatrics at the Children’s Hospital of the Autonomous University of Barcelona. He completed his fellowship in the Department of Pediatrics and the Cardiovascular Research Institute at the University of California, San Francisco. In 1992, he was recruited to the Department of Pediatrics at Yale University School of Medicine. In 1992, he was recruited to the Department of Pediatrics at Yale University School of Medicine and the St. Louis Children’s Hospital.

Dr. Pérez Fontán, who plans to divide his time between Westport, Connecticut, and the Atlantic coast of Northern Spain, said leaving UT Southwestern will be difficult.

“Dr. Pérez Fontán has always inspired me and has always been an example to me. He has always taught me that if I work hard and take pride in the accomplishments of the many colleagues and friends that I leave behind.”

Dr. Johnson holds the R. Edward Jones, M.D., Distinguished Professorship in Clinical Education. The professorship is endowed by Dr. Jones and serves as a Distinguished Chair in Pediatric Oncology Research.
An Olympic undertaking

UTSW Medical School student plays on Nigerian team in this summer’s Tokyo Games

By Carol Marie Cropper

Despite the rigors of medical school and a worldwide pandemic, Erica Ogwumike—a rising second-year student at UT Southwestern Medical School—has made another of her dreams come true: playing basketball in the Olympics.

Ms. Ogwumike, the daughter of Nigerian immigrants who was born in the U.S. and has dual U.S.-Nigerian citizenship, was chosen as a member of the Nigerian women’s national basketball team. The Houston-area native and a member of the Nigerian women’s national basketball team. The Houston-area native and professional sports teams and events during her career.

She and all other participants completed two COVID-19 tests within 96 hours of their

MS. OGWUMIKE, Wearing Her Olympic Team Uniform

Ms. Ogwumike’s Olympic selection hasn’t changed her mind.

“I love medicine. This is what I want to do,” she said, describing medicine as an altruistic profession focused on “helping patients reach their optimal level of health. … I feel like there’s nothing that’s more rewarding than that.”

Still, she is grateful for this extraordinary opportunity to participate in a sport where she shined and in which two of her older sisters now play professionally for the Los Angeles Sparks.

“Having at the Olympics—playing on the Nigerian National Team—was something that I really wanted to do, so I tried to find a way to be able to do it without losing some of the experiences that I get in medical school.”

The effort meant getting up at 5 a.m. this summer to review medical school coursework and do research on diversity inclusion for a professor before heading to practice with others in contention for the Nigerian team, followed by more research, a second practice, and then additional research going well into the night.

During the 2020-21 school year, COVID-19 restrictions meant Ms. Ogwumike couldn’t practice with a team, so she did strength and conditioning exercises for two hours each morning before beginning her studies and trained once or twice a week with a professional who works with Women’s National Basketball Association players.

“It required a lot of early mornings,” she said. “It was a time management, and organizational skills she developed playing basketball.

Growing up the youngest of four sisters in a Houston suburb, Ms. Ogwumike said her parents lined up piano and dance lessons, as well as gymnastics, and—when they got too tall for gymnastics—basketball for the girls. Ms. Ogwumike is 5 feet, 9 inches tall, while two of her sisters top 6 feet and the third stands 5 feet, 11 inches.

Ms. Ogwumike and her team at the Olympic opening ceremony

In high school, Ms. Ogwumike excelled at more than sports, she was also president of her junior and senior classes and graduated class valedictorian.

Ms. Ogwumike said her first thought upon hearing she had made the Nigerian team after playing in a July 18 exhibition game in Las Vegas was that she needed to check with UT Southwestern to make sure her Olympics trip wouldn’t interfere with her return to medical school in August. There was no need for concern.

“They’re so supportive and they were just really excited,” she said. “They told me to take a lot of selfies, and they’re rooting for me.”

“Erica Ogwumike is exactly the type of student we want at UT Southwestern,” said Shawna Nesbitt, M.D., Associate Dean for Student Diversity and Inclusion. “She is bright, dedicated, and motivated to excellence. We are delighted to have her as a member of our student body and proud that she has reached the highest level of achievement in her sport—competing in the Olympics.”

Ms. Ogwumike knows she is fortunate. But her success isn’t the result of luck.

“If there are two things that you’re truly passionate in, go 100% at both of them,” she said. “I didn’t have to sacrifice one dream at the expense of another.”

Ms. Ogwumike, a second-year student, passed on a chance to play professional basketball to attend UT Southwestern Medical School.

More online: From Tokyo, Ms. Ogwumike shares more about her Olympic experience.

Check out the video on Center Times Plus at utsouthwestern.edu/videos.

Sports medicine doctor serves as volunteer physician at Olympics

By Patrick McEve

UT Southwestern’s medical expertise made its way to the Olympics in Tokyo with Stephanie Tow, M.D., providing her knowledge of sports medicine as a volunteer physician to the Games.

“A lot of sports medicine physicians strive to work at the Olympics at some point, so it was an honor to be asked and to be able to go so early in my career,” said Dr. Tow, an Assistant Professor in the Department of Physical Medicine and Rehabilitation. “It’s such a privilege to be able to work with international leaders on this side of sports medicine.”

For two weeks, Dr. Tow served as a volunteer physician on the general medical staff. She was assigned to provide general medical support to those in the media center or at an isolation hotel designated for participants who tested positive for COVID-19 and were asymptomatic or had mild symptoms.

It was her first time back in Asia since living in London on a Fulbright Scholarship from 2008-2009.

Dr. Tow’s position as the head team physician for the U.S. Paralympics national swim team helped in her application to serve on the Olympics medical staff. She also has a wealth of experience in sports medicine event coverage, including serving as the Medical Director for the World Para Swimming World Series in Lewisville in 2011 and as a volunteer physician with multiple youth, high school, collegiate, and professional sports teams and events during her career.

She and all other participants completed COVID-19 tests within 96 hours of their flight arrival. After she landed, Dr. Tow underwent a comprehensive review process that included approval of documents and more screening, including another COVID-19 test, after which she and all Olympic Games participants had to perform daily COVID-19 testing during the duration of their trip.

“I took every protective measure I could,” said Dr. Tow, who completed her residency at UTSW in 2017. “It was an exciting time to finally bring the world together and show off a lot of our athletes in the Olympic and Paralympic movements.”

Microscopy

Continued from page 1

Data-intensive process, in which hundreds of 2D images of the specimen are assembled into a so-called image stack. To visualize the data, the image stack is then loaded into a graphics software program that performs computations to form two-dimensional projections from different looking perspectives on a computer screen.

“For these two steps to make sense of the data, the image stack is then loaded into a graphics software program that performs computations to form two-dimensional projections from different viewing perspectives on a computer screen.”

“The two-step process requires a lot of time and may need a very powerful and expensive computer to interact with the data,” Dr. Fiolka said.

The team realized it could form projections from multiple angles by optical means, bypassing the need to acquire image stacks and rendering them with a computer. This is achieved by a simple and cost-effective unit consisting of two rotating mirrors that is inserted in front of the camera of the microscope.

“As a result, we can do all this in real time, without any noticeable delay. Surprisingly, we can look from different angles ‘live’ at our samples without rotating the samples or the microscope,” Dr. Fiolka said.

“We believe this invention may represent a new paradigm for acquiring 3D information via a fluorescence microscope.”

It also promises incredibly fast imaging. While an entire 3D image stack may require hundreds of camera frames, the new method requires only one camera exposure.

Initially, the researchers developed the system with two common light-sheet microscopes that require a post-processing step to make sense of the data. That step is called de-skewing and essentially means rearranging the individual images to remove some distortions of the 3D image stack. The scientists originally sought to perform this de-skewing optically.

While experimenting with the optical de-skewing method, they realized that when they used an incorrect amount of “de-skew,”...