UT ARLINGTON health

THE UNIVERSITY OF TEXAS AT ARLINGTON · COLLEGE OF NURSING AND HEALTH INNOVATION · 2020

Elevating Elder Care

With robust gerontology education and research, UTA is ensuring better health for the aging population.

Caring.

Xiaoxia Zhang, a PhD kinesiology student, leads a Tai Chi class on the UTA campus. Zhang began the free one-hour class at UTA early in 2019. Tai Chi, a Chinese martial art, is practiced for both self-defense and health benefits. The class attracts faculty, alumni, and members of the community.

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ON THE COVER: ILLUSTRATION BY CARL WIENS

NOTES FROM THE **Dean**

BY EVERY QUANTIFIABLE MEASURE, UTA's College of Nursing and Health Innovation is steadily transforming itself into one of the nation's leading centers for health care education, research, and service to humanity.

In the last year, several leading influencers ranked our undergraduate and graduate nursing programs among the best in the country, and our College was one of only 10 institutions in the United States designated a Center of Excellence by the National League for Nursing.

Enrollment in our three doctoral programs is at an all-time high. In the last three years, we have quadrupled the number of students in our Doctor of Nursing Practice program. Enrollment in our PhD nursing program is up. And our relatively new PhD in kinesiology program continues to attract a steady number of students. These students are distinguishing themselves as scholars while also working to find solutions to nagging health care problems. Collectively, they have published dozens of articles in scholarly journals and given numerous poster presentations throughout the United States and overseas. Some have won competitive national awards.

Our strong doctoral programs help us attract more talented faculty and graduate students. Our roster of research faculty is expanding, further burnishing UTA's reputation as a leading research institution. Our faculty members include respected experts in patient safety, bone and muscle disease, health disparities, neural control of the cardiovascular system, esophageal cancer, smoking cessation, and maternal mortality.

As a comprehensive center for health care education, we remain steadfast in our commitment to not only create a new generation of health care workers, but also to develop academic programs that meet the needs of our community and the nation's shifting demographics. That's why, thanks to a $4.7 million transformational gift from the Deerbrook Charitable Trust, we are expanding our adult gerontology graduate nursing program. Among other things, the gift will fund an endowed faculty position and scholarships for students. In a similar vein, in fall 2019, we unveiled a Master of Public Health degree that prepares students to tackle public health issues confronting residents of large urban communities.

I am delighted to present the 2020 *UTA Health* magazine, a snapshot of the efforts of scores of talented students, faculty, alumni, and administrators to improve health outcomes in the Dallas-Fort Worth Metroplex and beyond.

Elizabeth Merwin, Ph.D., RN, FAAN
Dean, College of Nursing and Health Innovation

rounds

Research and academic insights

A growing program for an expanding field

Someday, Claudy Jean Pierre plans to get a doctorate in public health and specialize in maternal and child health research.

When he learned that the College of Nursing and Health Innovation's Master of Public Health (MPH) degree had been approved in July 2019, he jumped at a chance to be one of its 12 inaugural part- and full-time students. The program, which commenced in fall 2019, is one of only a few MPH programs in the United States that offers a concentration in urban health.

The degree prepares students to meet the demands of public health issues confronting residents of large urban communities. It also tackles health inequities among racial, ethnic, and socioeconomic groups in these communities. The coursework covers a variety of topics and skills critical to the promotion of health in urban areas.

According to the Bureau of Labor Statistics, public health is one of America's fastest-growing professions. The rising need for public health professionals prompted UTA to roll out an undergraduate public health degree and a postgraduate certificate in fall 2017. Both the bachelor's degree and post-graduate certificate have been immensely popular, attracting hundreds of students like Jean Pierre.

"The MPH program offers flexibility to working students and includes plans for those who want to graduate in two, three, or four years," says Erin Carlson, who serves as associate professor of kinesiology and director of the Graduate Public Health Program. "Graduates will be equipped to advocate for policies to address health needs in urban communities, as well as conduct health needs assessments, program implementation, and program evaluation."

Rhonda Prisby, associate professor of kinesiology, in the lab.

Unexpected Discovery

One researcher's "aha" moment

One joy of research is finding something important that you weren't even looking for. Rhonda Prisby's research odyssey began with examining how blood vessels can cause bone ailments. The professor of kinesiology initially sought to explore how poor blood circulation might contribute to diseases such as osteoporosis. To do that, she began investigating tiny blood vessels in bone marrow.

Then, she made her first unexpected finding: "We saw blood vessels that had ossified—vascular tissue had theoretically converted into bone tissue," she says.

To take a closer look, she used ultramicroscopic techniques to compare ossified blood vessels to normal blood vessels and found another surprise: Both types of blood vessels contained microscopic bone-like bits, which she calls ossified particles, or OSPs.

That naturally led to the next question: What happens to these OSPs? In the next experiment, Dr. Prisby and her team examined blood samples from rats and humans with scanning electron microscopy, and lo and behold, they found OSPs.

The findings, published in *Microcirculation*, mean that OSPs may leak out of the marrow and circulate into the body's bloodstream, which can clog blood vessels and potentially contribute to heart attacks or strokes. Many have jagged edges that could damage vessel walls, precipitating diseases such as atherosclerosis.

"When looking for etiologies related to vascular calcification, heart attack, or stroke, perhaps we should consider if and how ossified particles contribute to these diseases," Prisby says. "My lab will examine these possibilities."

Driven to help

Even as a child, senior nursing major Lucas Farris knew he was destined for a life of helping people. The son of a firefighter and a nurse, he recalls that many of the conversations at the dinner table were related to health care.

He chose nursing because of the opportunity to build long-term relationships with patients. And he chose UTA in part because his parents are alumni. He also found the diversity of the student body enticing. Since enrolling as a student, he's never looked back.

"The faculty and administration have been supportive," he says. "My time here has been very positive."

Farris has served as president of the Male Student Nursing Association and director of Breakthrough to Nursing, which helps prepare students for licensure as registered nurses.

His awards include the Jean Ashwill Leadership Award and the Arlington Nursing Students' Association scholarship. He spent the last three semesters doing his clinicals at Parkland Hospital.

"I am passionate about making sure the underprivileged and underserved are well served," he says.

BRIAN STAUFFER

Halting Human Trafficking

PhD student helps protect the vulnerable

When Jessica Perry Granger, an experienced emergency room nurse and PhD student, was working in the emergency room of a San Antonio hospital about a decade ago, she was inspired by some of her youngest patients to take on her current career goal: becoming an expert in human trafficking.

"We were constantly having children come in who were discovered in stash houses," she recalls. "I was shocked that this was going on in America."

Nearly 11,000 human trafficking cases were reported in the U.S. in 2018, according to the National Human Trafficking Hotline. The Emergency Nursing Association says that 87% of victims have contact with health workers who don't see or know the signs of human trafficking. About two-thirds are seen in the emergency room.

Granger is determined to do more to help future nurses have the tools and resources to better assist these particularly vulnerable patients.

"Health care is late to the game here, but we are borrowing from other disciplines like criminal justice and social work," she says. "The gap in literature is a mile wide."

Granger plans to graduate in May 2020 and says she will either become a full-time faculty member at a research institution or work as a nurse scientist at an acute care facility. Either way, she's staying focused on her goal to protect human trafficking victims.

"My career goal is to become an expert in the field," she says. "I want to be of help in eradicating slavery in the United States."

Nurse without borders

Lori Spies always wanted to give back to the community, but her idea of "community" was big. As a nurse practitioner looking to apply to a PhD program, she wanted to expand her borders—and not just professionally.

"I wanted to do research in an international setting," she says. "Everywhere I explored told me, 'You can do that—after you get your PhD.'"

Only the College of Nursing and Health Innovation offered her a visa. "At UTA, they said, 'That's your passion. It won't be easy, but we'll facilitate it.'"

For her dissertation, she traveled to Africa to study the problem of task-shifting for nurses.

Dr. Spies is now an assistant professor at Baylor University's Louise Herrington School of Nursing. Recently, she completed a two-year project collaborating with nurses in India, Vietnam, and Zambia to develop best practices to improve global health care for hypertension. The project was funded by a Fulbright Global U.S. Scholar Award.

"At the end of the day, it's often a nurse who delivers that vaccine to a patient in remote Zambia and even across developed nations," Spies says. "Nurses are ideally positioned to take their frontline knowledge and inform people at the policy level. It just makes sense to have nurses be a part of those conversations about how we can improve health care."

Standout student

Jocelyn Payan is steadily making progress toward a career in academia.

Early in 2019, she became the College of Nursing and Health Innovation's first public health major to be named a McNair Scholar. She spent the summer of 2019 doing a research internship with the Ronald E. McNair Post-Baccalaureate Achievement Program, which helps prepare promising students from disadvantaged backgrounds for doctoral studies.

According to her research, one in five families in the U.S. has at least one child with special health care needs. She concluded that caregivers of children with special health care needs often face unaffordable health care costs, difficulties maintaining employment, a lack of child and/or respite care, and a lack of access to recreational activities.

Payan chose public health as a major after talking with an academic advisor. Now, she aspires to earn a doctorate in pubilc health and is busy applying to graduate schools.

"I love public health," she says. "I want to go into academia and impact students as my professors have impacted me."

Vape Safety

Researcher examines health effects of e-cigarettes

Ziyad Ben Taleb, assistant professor of kinesiology, is in the middle of a burgeoning and controversial public health issue: e-cigarettes, or vaping. Vaping has made headlines lately for an outbreak of lung illnesses associated with the practice.

Dr. Ben Taleb, who heads UTA's Nicotine and Tobacco Research Laboratory, is examining smoking cessation and the epidemiology of tobacco use, with a focus on investigating health effects on cardiovascular function associated with exposure to smoking devices such as hookahs and e-cigarettes. Unlike traditional cigarettes, which use combustion, e-cigarettes use heat to convert a nicotine solution into an aerosol. For this reason, many consumers consider them a safer alternative to cigarettes. However, the safety of e-cigarettes has not been adequately tested.

"To date, there has been limited scientific research designed to investigate the cardiovascular consequences of vaping compared to cigarette smoking," says Ben Taleb, a Fulbright scholar with extensive training in public health and medicine.

In his study, he is working with two Department of Kinesiology colleagues to provide comprehensive bio-behavioral evidence regarding the effect of e-cigarette use on cardiovascular function and subjective experiences. The findings will help guide the U.S. Food and Drug Administration in developing scientifically driven regulations of e-cigarette use.

Ben Taleb says that although cigarette smoking rates have decreased, it is still the leading cause of preventable death and disease in the United States. Many of the nation's 35 million smokers are low-income or otherwise marginalized.

"We in public health want to save people through rigorous research," he says. "That way, we can reduce mortality and morbidity."


Mary Clark Robinson at work.

Health Care Leader

Alumna credits UTA for success

Nursing runs in Mary Clark Robinson's blood.

Her mother, Delores Clark, who passed away early in 2019, was a pediatric nurse practitioner and later a nursing faculty member at UTA, where she helped start the RN-BSN program.

"I had a strong nurse role model in my mom," says Dr. Robinson, who earned a bachelor's degree in nursing in 1982.

She has held a wide variety of roles in health care, including director of professional practice and education at Texas Health Fort Worth, chief nursing officer at Texas Health Southwest, and interim chief nursing officer at Texas Health Cleburne. After commencing her career in nursing she returned to school and obtained master's and doctoral degrees in nursing.

Currently the senior vice president and chief nursing officer at Reliable Health for Texas Health Resources, Robinson works closely with the chief medical officer in a clinical dyad focused on providing consumer-focused clinical care across the full continuum consistently throughout the Texas Health Resources system. Much of the emphasis of her work is on excellence, safety, and improvement. The goal is to ensure that the hospital system stands out for its performance and focus on the consumer.

"I can definitely say I am not in a traditional nursing senior vice president role," she says. "I'm very appreciative to UTA for giving me a great foundation. It gave me an opportunity to be well-grounded in the profession of nursing, and it was a great springboard for the rest of my career."

Technology boost

It's every health researcher's dream: to be able to peer deep into the human body and see, at the most fundamental level, what's causing illnesses. Now researchers in the College of Nursing and Health Innovation have a state-of-the-art tool to do just that.

In August 2019, a Nikon A1R inverted laser scanning confocal microscope system was installed in UTA's Science & Engineering Innovation & Research building. The system was purchased with a $449,000 Shared Instrument Grant from the National Institutes of Health, which was awarded to Zui Pan, associate professor of nursing and biology.

The system opens a window for scientists to view previously invisible biochemical actors that perform essential functions on a stage as small as 200 nanometers—more than 200 times smaller than the width of a human hair.

Dr. Pan and her team will use it to advance their research exploring the role of calcium ions in esophageal cancer and cardiovascular diseases.

"If we better understand the basic mechanisms underlying diseases, we can develop and test better compounds and treatments for patients," she says.

Stress in the Blood

Finding the link between depression and cardiovascular disease

Depression and cardiovascular disease are two of society's most prevalent health problems, affecting hundreds of millions of people. It's well-known that they often share a key factor: stress. But how exactly does stress cause deleterious changes in blood flow? Can malfunctioning blood vessels contribute to depression? Do depressed people physiologically respond differently to stress than others do?

"Adults with depression have an accelerated risk of developing cardiovascular disease," says Jody Greaney, assistant professor of kinesiology. "Not only are they more likely to develop the disease in the future, but they also develop it at an earlier age. The risk is excessive and premature compared to an adult who has never had a history of depression."

Through her research, Dr. Greaney seeks to unravel the interconnections between depression, stress, and cardiovascular diseases. To do so, she uses a technique called microneurography, which involves inserting a microelectrode into a nerve in the lower leg to directly record sympathetic nervous system activity. In experiments with volunteers, she introduces mild experimental stressors—giving them a math problem to solve mentally, for example—and uses microneurography to determine if stress responsiveness is altered in adults with depression.

In another study funded by the National Institutes of Health, Greaney is investigating impairments in the mechanisms and biochemical signaling pathways that regulate the dilation of blood vessels in adults with depression. For the study, she uses intradermal microdialysis to stimulate blood vessels and measures changes in blood flow with laser Doppler flowmetry.

"The hope would be that the findings from these studies could inform the development of innovative therapeutic strategies to minimize the risk of developing cardiovascular disease in adults with depression," she says.

Finding her path

Midway through her college career, Sara Peper—a third-year music major—decided to pursue a degree in exercise science. Two years later, she became the first undergraduate ever to win the American College of Sports Medicine (ACSM) President's Cup for her research on using silicon-based biomaterials to heal muscle and bone injuries.

Peper was first inspired to delve into physiology after taking an anatomy course taught by biology Lecturer Timothy Henry. Then, seeking to explore laboratory research, she was welcomed as a volunteer into the lab of Paul Fadel, associate dean for research and a professor of kinesiology.

Dr. Fadel steered her to Venu Varanasi, associate professor in the Bone and Muscle Research Center, who was looking for a part-time summer research assistant. Soon, she became integrated into the lab's research.

Peper was granted lead authorship of the research abstract submitted to the ACSM national competition, which only graduate students have won before.

"So many people contributed to my success and taught me everything I know," she says.

After graduating in August 2019, Peper continued her biomaterials research in UTA's master's program in biomedical engineering. Ultimately, she plans to pursue a joint MD/PhD degree.

International Outreach

Alumnus takes on health care challenges across the world

A few years ago, Elvis Ngyia had an encounter with a patient that got him thinking about how to impact health care in Africa. The woman had been operated on a few months earlier by a Nigerian surgeon and cared for by African nurses after surgery. Several of her nurses at the rehabilitation center had also been African.

"She told me that she was in Uganda a couple of months ago and the health care system there is not good," recalls Dr. Ngyia, a nurse practitioner who graduated from UTA with a PhD in nursing in December 2016. He now runs his own family medicine and psychiatry practice in Grand Prairie. "And she said, 'But here I am in my country, and Africans are taking care of me.'"

That encounter inspired him to create the International Organization of African Nurses (IOAN), a group committed to addressing many of the overwhelming health care challenges in Africa through partnerships with other organizations. IOAN was formally launched in late October 2019, attracting members from 15 African countries. Nygia says the goal is to be an organization without borders, tackling the myriad health care challenges on the continent through collaboration.

"I tell people the challenges and the problems we face exist irrespective of country boundaries," he says. "In mounting solutions to these problems, we should not let these country boundaries stand as obstacles."

Elvis Ngyia provides care beyond borders.

Excellent educator

Rebecca Garner, a clinical associate professor of kinesiology, aced all the criteria to win UTA's William S. Ward Endowment Award, which is given to a faculty member who, among other things, has a great work ethic and loves guiding students.

For several years, Dr. Garner has opened students' eyes to public health, a broad field that includes health management and policy, epidemiology, and more. In 2017 she spearheaded a new bachelor's degree program in public health. Three years later, the program has more than 400 students. A master's degree program recently launched as well.

Garner's students affirm her virtues as a teacher—how, with an ever-present smile, she calmly but firmly urges and enables them to explore their ideas, step out of their comfort zones, and put their best foot forward. They say she is always available to supply encouragement and advice when things don't go smoothly.

"Dr. Garner inspired so many of us to see how all the factors happening in communities can affect people's health," says Anita Corbitt, a member of the first class of public health undergraduates and now a master's student. "Whether public health students end up becoming health professionals or go into other majors, they can find ways to change behaviors and policies to promote public health."

Managing medication

Yan Xiao brings an engineer's perspective to one of the top patient risks: harm from medications in home settings.

Around the world, costs associated with medication-related harm total $42 billion. In the United States, medication-related harm contributes to 700,000 emergency department visits annually.

In 2019, Dr. Xiao, professor of nursing, and his collaborators were awarded a $2.5 million grant to help tackle the problem. It is part of the U.S. Department of Health and Human Services' efforts to improve patient safety.

Xiao's research team will collaborate with older adults and primary care clinicians to redesign primary care work systems to address leading preventable problems associated with medications, especially those experienced by low-income individuals. They will also develop interventions that will reduce unsafe use of medication. Xiao is part of the Partnership in Resilience for Medication Safety Learning Lab, a consortium led by UTA.

"The lab's long-term impact will be insights, innovative tools, design guidelines, and effective strategies for partnering among patients, families, and professionals to reduce inappropriate opioid use and other common high-risk dangerous medication practices," Xiao says.

Better Rural Care

Researcher works to enhance rural nursing

Jessica Smith, an assistant professor of nursing, has a special interest in nursing resources in rural hospitals.

She says rural hospitals need more skilled nurses and better work environments.

"I see rural residents with health problems not as well addressed, and there is much room for improvement," says Dr. Smith, a first-generation college graduate who grew up in Alvord, Texas, a town of approximately 1,300 residents located about 75 minutes northeast of Dallas.

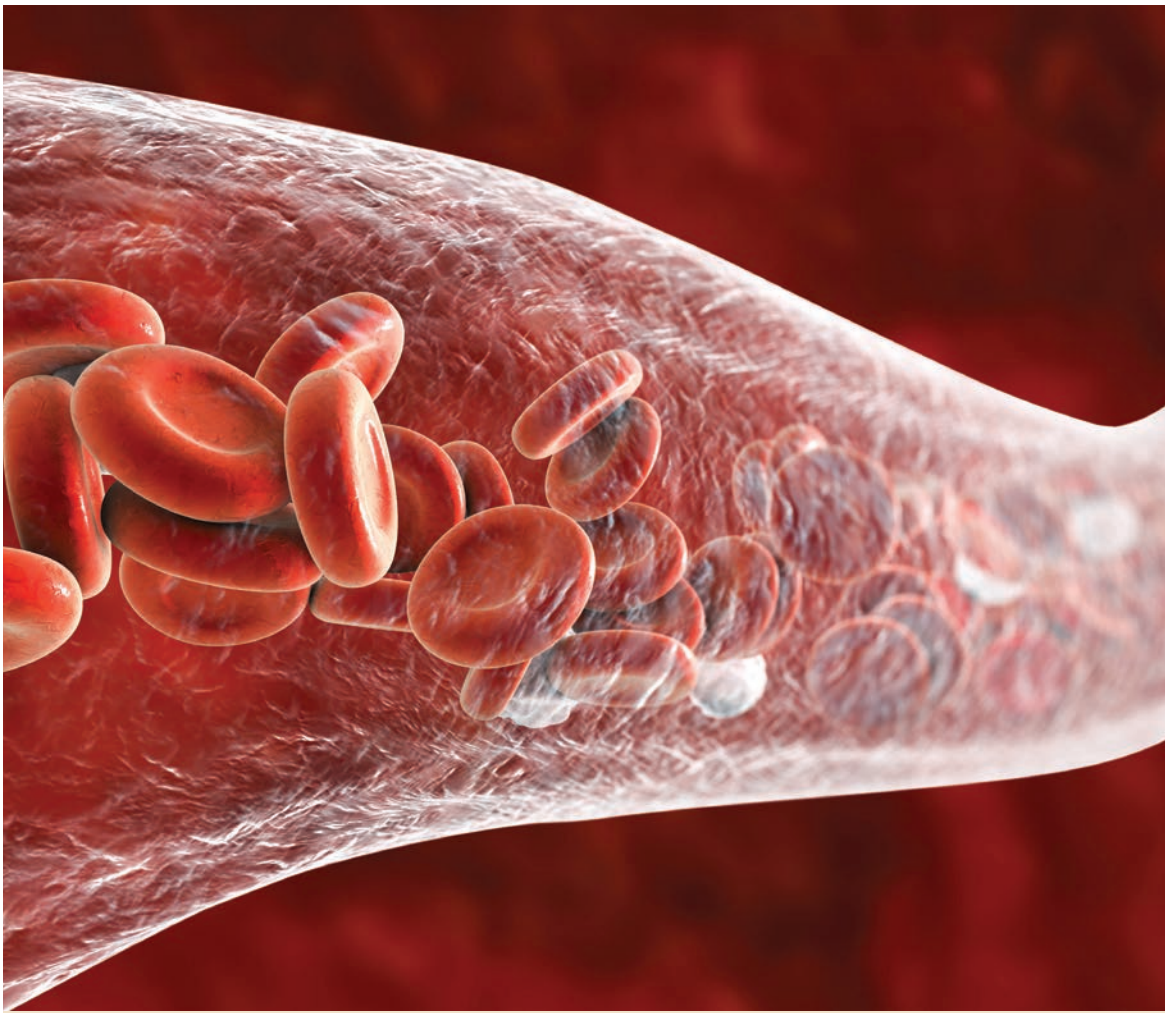
A fellow of the Center for Health Outcomes and Policy Research at the University of Pennsylvania School of Nursing, Smith is working on how to increase the capacity of the nursing workforce in rural areas.

One of her papers, which was published in *Public Health Nursing*, highlights challenges such as higher patients-per-nurse ratios, nurses with lower skill mixes, and fewer bachelor's degree-prepared nurses. She was also lead author of an article published in *SAGE Open Nursing* that explores a prospective association between greater nursing skill mixes, better work environments, and a decreased frequency of adverse events such as medication errors, injurious falls, pressure ulcers, and urinary tract infections.

Smith is collaborating with Kyrah K. Brown, an assistant professor of kinesiology, on improving the education of nursing and public health students in order to enhance patient care. Their focus is about how the work environment relates to severe maternal morbidities affecting the maternal population.

"We aim to understand what is known about relationships between nursing work environments and maternal outcomes. Understanding this will help inform future research agendas and recommendations for practice and nursing education," she says.

Jessica Smith, assistant professor of nursing, is taking on rural nursing challenges.



Studying Sugar Control

Doctoral student seeks novel approach to diabetes treatment

More than 30 million adults in the U.S. have Type 2 diabetes, a figure projected to rise dramatically by 2050. Despite recent advancements in medicine, nearly half of diabetic patients don't control their blood sugar adequately. These figures are motivating third-year kinesiology doctoral student Benjamin Young to look for solutions. Through a competitive $53,000, two-year American Heart Association fellowship, he is studying the underlying mechanisms of impaired sugar control in Type 2 patients.

"If we can understand that, we can develop therapeutics," he says. "There aren't many treatments targeting that aspect."

Young is working with the Human Cardiovascular Control Lab to research non-pharmacological therapeutic approaches to help patients control blood sugar by increasing blood flow to muscles. One approach uses pneumatic cuff compression to recapitulate blood flow response.

"The cuff has been around but it's not traditionally used for this," says Young, who became enamored with research while completing a 2015 fellowship in biomedical studies at Penn State University. "We picked it because of the ease of technique. It can be used at home—no trainer or gym necessary."

In addition to his American Heart Association fellowship, Young has racked up several other notable accomplishments as a graduate student. He has published several articles in leading journals, such as *Hypertension*. In late 2019, he spent a month at the University of Southern Denmark as part of a European Association Travel Fellowship to learn skills and techniques that will facilitate his projects.

"We're doing things that are readily usable right now," he says. "It's really important because Type 2 diabetes is also a precursor to the development of other diseases, including cardiovascular disorders and hypertension."

Academic all-star

Xiaoxia Zhang, a doctoral student in kinesiology with research interests that include motor behavior and obesity prevention across the lifespan, is already a prolific and published researcher. She has authored or co-authored 13 scholarly publications, has six additional articles under review, and 10 articles in progress.

Her hard work has not gone unrecognized. In 2019, she received a research award from the Society of Health and Physical Educators (known as SHAPE America) and another from the International Chinese Society for Physical Activities and Health for her research papers. She was one of only two graduate students in the country to receive the SHAPE America award.

In addition, she received two grants to support her dissertation work: a SHAPE America Graduate Student Grant and another from the College of Nursing and Health Innovation's Center for Research and Scholarship focusing on physical activity and brain health among depressed students.

Zhang transferred to UTA in order to continue working with her advisor, Xiangli Gu, an assistant professor of kinesiology. Dr. Gu heads the College's Movement and Physical Activity Epidemiology Laboratory, and Zhang helped her establish the lab.

MICHAEL AUSTIN

The Doctors ARE IN

Through the College of Nursing and Health Innovation's robust doctoral programs, UTA students are getting a major boost in their professional careers—and making a big impact near and far.

BY OLALEKAN OGUNTOYINBO

It's an exciting time for the three doctoral programs in the College of Nursing and Health Innovation. The programs include research-intensive PhDs in kinesiology and nursing. The third doctorate—a Doctor of Nursing Practice (DNP)—is a practice-oriented degree focused on preparing graduates to make significant improvements within the work environment.

The Doctors Are in

Enrollment is up. And students in the three doctoral programs are playing a critical role in advancing health and the human condition locally, nationally and globally. They are distinguishing themselves as researchers, advocates, and innovators. They are recipients of grants, research awards, and fellowships. Additionally, they have published large numbers of scholarly articles and given podium or poster presentations at conferences—sharing solutions to health care challenges in the community and at hospitals.

The students' research spans the spectrum, including cardiac function in women, vascular function in populations with elevated cardiovascular and metabolic disease risk, developmental coordination, smoking cessation, and interactions between cancer, bones, and vasculature. One PhD nursing student is working on developing tools and resources that would help emergency room nurses easily identify human trafficking victims. One kinesiology student, a winner of the competitive two-year American Heart Association pre-doctoral fellowship, is studying the underlying mechanisms of impaired sugar control in Type 2 diabetes patients.

"Doctoral students are the heart and soul of research at any major research-intensive university," says Michael Nelson, an associate professor of kinesiology and a prolific researcher who has mentored and advised several doctoral students since coming to UTA three years ago. "They provide the energy needed and possess the motivation required to move research along."

PHD POWER

In 2018, the PhD nursing program, which is designed to prepare students for careers in the research space, admitted eight students. Today, there are 31 students in the program. Prior to that, the program attracted four to five new students each year, according to Marco Brotto, a professor of nursing and director of the program. He says the College's rising stature as a leader in health care research has helped pull in more students. He notes that in the last three years the program has produced seven Jonas scholars, a an Albert Schweitzer fellow, and many students who have authored or co-authored publications for scholarly journals.

Kinesiology doctoral students have similarly distinguished themselves since the program was launched three years ago. To date, they have published or co-published 48 scholarly articles and given 47 presentations.

Twenty-two students are currently enrolled in the program, including six who came on board in the fall. At least six students are expected to graduate before the end of the 2019-20 school year.

Working closely with their faculty members, these nursing and kinesiology students are helping UTA and the College tackle myriad health care challenges.

"Doctoral students are the heart and soul of research at any major research-intensive university.

They provide the energy needed and possess the motivation required to move research along."

MICHAEL AUSTIN

Donnalee Pollack, a PhD nursing student, is studying the development of pressure ulcers in veterans with spinal cord injuries. With her research advisor Marco Brotto, the George W. and Hazel M. Jay Professor of Nursing and director of the College's Bone-Muscle Research Center, she is seeking strategies to identify biomarkers that will improve the diagnosis and treatment of wounds in veterans.

Juan Feng, a fourth-year PhD nursing student and a cardiovascular nurse for the last 12 years, will analyze data from the National Health and Nutrition Examination Survey in order to examine the relationship between coffee and cardiovascular mortality.

"Coffee consumption can decrease all causes of mortality but the relationship between coffee and cardiovascular mortality is not clear," says Feng. "I have some preliminary results: Coffee consumption seems to decrease cardiovascular mortality. Cardiovascular disease is the leading cause of death in the United States. Research on the health factor of coffee consumption could have a significant impact in public health."

Chad Fuchs, a kinesiology PhD student, is looking at the association between motor imagery ability and age across the lifespan. He has had two articles published in scholarly journals and has three in review. Children who suffer from developmental coordination disorder, he says, are at greater risk for cardiovascular disease and severe mental health challenges in the future.

"If we can get them more active at an early age, it can offset health challenges," he says.

Sauyeh Zamani, a first-year PhD kinesiology student, will spend the next five years studying heart failure with preserved ejection fraction, a condition in which the heart contracts normally but the ventricles do not relax like they should. Together with kinesiology Assistant Professor Michael Nelson, her advisor and mentor, she will use advanced magnetic resonance imaging techniques to better define specific mechanisms causing heart disease, with the ultimate goal of finding novel treatment targets. Late in the summer of 2019, Zamani gave a poster presentation on diastolic dysfunction in women with coronary vascular ischemia at the European Society of Cardiology congress in Paris. The society, an organization of leading scientists and cardiologists, strives to reduce the burden of cardiovascular disease. The annual congress presents an opportunity to learn about new studies from top practitioners around the world.

Students are guided by faculty members who are practicing nurse administrators, informaticists, clinical nurse specialists, or nurse practitioners.

PRACTICE MAKES PERFECT

The practice-oriented DNP program has been spectacularly robust. Early in fall 2019, DNP enrollment stood at 206—more than four times the number of students three years earlier and the largest it's ever been. A new cohort of 40 students matriculated in October 2019, and 52 graduated the following December. While the program has grown in size, its excellence has only strengthened.

"We had 48 students when I came on board in September 2016," says Donna Hamby, a clinical assistant professor of nursing and director of the DNP program. "We met our goal of 200 students by May 2019. In the past three years, three students received Texas Nurses' Association Health Policy Fellowships, one student received an Albert Schweitzer Fellowship, and one student received the Texas State and National Rural Hospital Association Fellowships as part of her DNP project work."

The DNP degree is focused on taking the evidence developed from research and applying it to the health care environment to improve patient outcomes. Students are guided by faculty members who are practicing nurse administrators, informaticists, clinical nurse specialists, or nurse practitioners. Those faculty members are highly accessible and regularly make themselves available for meetings using tools like Zoom and Teams. For their professional development, all the DNP students disseminate results of their research via podium and poster presentations. Each student also submits a manuscript to a journal.

Students in the DNP program work on more practice-oriented projects, most of them designed to improve conditions in the workplace or in the community.

DNP student **Jaci SuLynn Mester** is working to save America's rural hospitals. A total of 118 have closed since 2010, according to Mester's data, and hundreds more are on the verge of collapse. A couple of years ago, Mester, a chief nursing officer at a small acute care center in Childress, a small Texas town about four hours northeast of the Dallas-Fort Worth Metroplex, received a year-long fellowship to aid her efforts to save rural hospitals. She researched the evidence needed for change, created a policy brief, and traveled to Austin and Washington, D.C., to work with policymakers and legislators to promote these changes.

In February 2019, she began a federal fellowship, which was essentially an extension of the state one. In February 2020, she presented the results of her efforts to change policy to the National Rural Hospital Association Congress.

Jennifer Luna, a DNP student and nurse education specialist in Baytown, Texas, is troubled by the fact that in her community, few people know how to do bystander CPR. That concern was spurred by the death of the dad of one her son's classmates who collapsed and was rushed to the hospital—her hospital.

"When he got to me he was brain dead," she says. "If someone could have done chest compressions, it could have been mitigated. In another instance, a valedictorian passed out in the gym playing basketball. Again, no one knew how to do bystander chest compression."

Luna is developing a policy change that would make teaching CPR mandatory at high schools in her community.

Patricia Plumer, a recent DNP graduate, was similarly motivated by another glaring need.

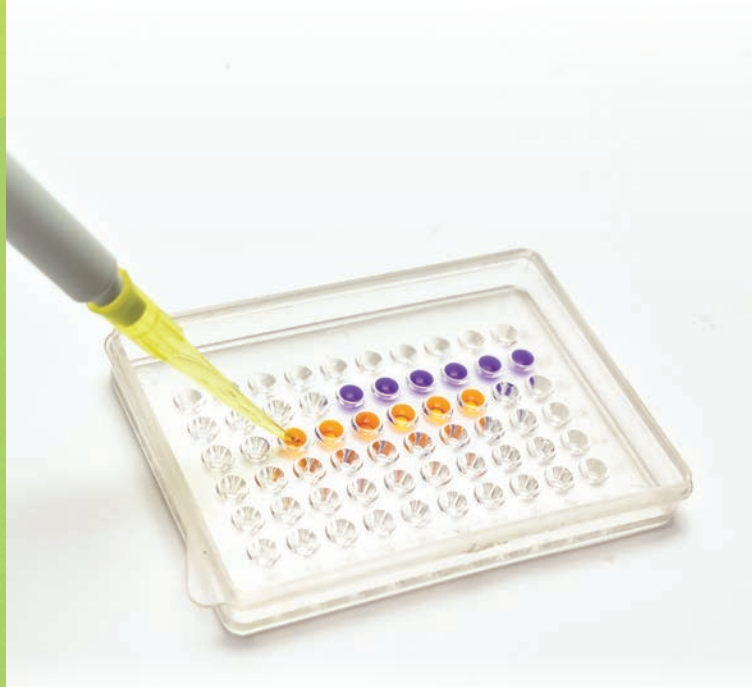
Dr. Plumer, now a clinical assistant professor of nursing at the College, was drawn to the subject of student suicide after she walked three students who were dealing with a mental health crisis to the campus health facility. The students were later referred for appropriate treatment.

That got Plumer thinking.

"I looked into it and saw that among college students, suicide is the second-leading cause of death," she says.

She worked to identify students at risk for suicide and planned a faculty development day to educate her colleagues about resources on campus and better prepare them for helping students. She works with UTA's counseling center to obtain data on the number of referrals.

"From September to December 2018, the number of referrals has more than doubled over the previous year," she says. "I have been hearing from faculty that they are seeing more students being treated for mental health concerns."



ADVANCING HEALTH CARE

Doctoral students in the college are focused on health and the human condition, exploring health management within physical, mental, and emotional contexts. Other projects completed by recent graduates include studies related to:

PHYSICAL

- *Improving mammography adherence*
- *Self-management of diabetes for older Hispanic women*
- *Improving access to genetic panel testing for hereditary cancer syndromes*
- *Interventions to reduce childhood obesity*
- *Risk of infection and indication of systemic antibiotics in chronic wounds*

MENTAL AND EMOTIONAL

- *Best practices for treatment of depression in heart failure, LVADs, and heart transplant populations*
- *Decreasing hospice caregiver burden*
- *Reducing anxiety, depression, and post-traumatic stress disorder in automatic internal cardioverter defibrillator patients*
- *Prevalence and risk factors for fear of birth in pregnant women in the U.S.*

Aging Well

BY MARY CHAPMAN

With a focus on gerontology programs and research, the College of Nursing and Health Innovation aims to transform health care for our aging population.

For nearly two years, senior citizens have been invited to live for a month at a "Smart Care Apartment" at the Lakewood Village Senior Living Community in Fort Worth. Although it appears to be a conventional space, the unit actually is a technologically advanced living laboratory designed to help older individuals remain healthy and independent.

With the help of $600,000 in federal funding, the state-of-the-art apartment was developed by Kathryn Daniel, associate professor of nursing and director of the Adult-Gerontology Primary Care Nurse Practitioner Program in the College of Nursing and Health Innovation (CONHI). The project is in collaboration with Manfred Huber and Gergely Zaruba, both professors in UTA's Department of Computer Science and Engineering.

Completed in 2015, the apartment collects and monitors real-time information about a resident's well-being and can intervene by alerting a caregiver on his or her behalf.

It's just one of the myriad forward-thinking efforts underway on the elderly and aging front in the College. After all, the nation itself is aging. By 2035, and for the first time in history, the number of individuals age 65 and older will exceed the number of those who are under 18, according to a U.S. Census Bureau projection.

"We're staying healthier and living longer," says Dr. Daniel, a 2019 American Academy of Nursing fellow and a recipient of a Distinguished Educator in Gerontological Nursing award from the National Hartford Center of Gerontological Nursing Excellence. "Our advances in health care have created a larger segment of the population."

Specialized Training

In general, there has been relatively little focus on elder care in the U.S. in terms of what interventions work, who older adults are, and what's important to them. To train caregivers to meet the needs of a rapidly aging population, CONHI is preparing nurses for advanced practice, management, and research in the field of gerontology.

"It's not enough to have a really broad education. It's like having an internal medicine doctor taking care of your kids. Yes, he's a doctor, but he's not a specialist," says Daniel. "People have minimal training in dementia, falls, and all the things that are unique to older adults. Every family is going to need a specialist. And we're not prepared for it."

To help combat the problem, CONHI is developing a postgraduate certificate program in gerontology. Some courses will be used by DNP and PhD nursing students to meet gerontology requirements.

"The family nurse practitioner program in the most popular program in the United States," Daniel notes. "But that doesn't provide the opportunity to dig down into the meat of challenges and unique issues that older adults have. So the new certificate allows us to spend more time and effort educating nurses in the specifics of caring for older adults. It also allows UTA to increase the number of gerontology-trained nurse practitioners."

Kathryn Daniel (left) sits with her mother in the College's Smart Care Apartment.

> "It's about how we can keep ourselves healthy, vibrant, and strong to the end ... It's not about living forever, but living well and free of disease for as long as possible."

One required course for the certificate is Health Policy for Older Adults, which helps nurses more fully understand Medicare, Medicaid, and other models and systems of care, including those in other countries. Other courses cover topics like advanced clinical management of frail adults, palliative care, and healthy aging.

"It's about how we can keep ourselves healthy, vibrant, and strong to the end," Daniel says. "It's not about living forever, but living well and free of disease for as long as possible."

CONHI is also creating a gerontology certificate program that should launch in spring 2020. "While it's not a preparation for a license, it will offer intensive courses that will enrich and inform students' practice," she explains.

Targeted Interventions

Other aging-related UTA efforts include the Center for Healthy Living and Longevity, which aims to improve the quality of life of older adults through innovative, evidence-based rehabilitation programs. The center utilizes current faculty expertise and focuses on the development of activity-based interventions and community education related to reducing fall risk, increasing fall resiliency, improving cardiovascular response, and reducing co-morbidity in high-risk aging populations.

Additionally, UTA offers FitSTEPS for Life, part of the trademark national program and the only free, evidence- and community-based cancer rehabilitation effort in the United States. FitSTEPS helps cancer patients boost mobility and increase endurance while undergoing treatment. Programs like FitSTEPS are especially important for older breast cancer patients, for whom a leading cause of mortality is cardiovascular disease.

Researchers are also working to combat specific health problems that tend to affect older adults, such as shortness of breath, an often debilitating symptom of chronic heart failure (CHF). Because shortness of breath—a condition called dyspnea—is difficult to alleviate, adults with CHF often restrict daily activities to avoid making symptoms worse. That, in turn, leads to further decreased fitness and physical functioning, which results in poorer quality of life.

Yaewon Seo, assistant professor of nursing, is working on a diaphragmatic breathing training intervention for shortness of breath. She has begun an eight-week pilot study with 12 CHF patients who experience dyspnea. The study will test the feasibility of home-based diaphragmatic breathing—deep and slow breathing using the diaphragm, controlled at six breaths per minute. In addition, the study will assess the

Participants play a Wii game at the Center for Healthy Living and Longevity.

intervention's immediate effects on dyspnea, physical functioning, and quality of life. Guided by theoretical concepts gleaned from social cognitive theory, the proposed intervention is designed to motivate patients to continue practicing it on their own, without supervision.

"Health care professionals love to put people right away into an exercise program, but I want to let them get ready to exercise," says Seo, who favors a multidimensional approach to dyspnea measurement. "It's re-training their breathing patterns and training them to use their diaphragm."

Whole-Body Health

Almost by definition, another research group on campus is central to any discussion about gerontology health care. The Bone-Muscle Research Center—directed by Marco Brotto, the George W. and Hazel M. Jay Endowed Professor and director of CONHI's PhD in Nursing Program—focuses its research on the musculoskeletal (MSK) system, the largest system in our bodies. More than one in two U.S. adults has some form of musculoskeletal (MSK) condition. Globally, the figure is close to 2 billion. The scenario worsens when aging enters the picture. That's when many people lose mass and optimal MSK function. As we are seeing with the devastating COVID-19, even viral infections can have serious consequences for older adults and lead to MSK losses.

The center now has a handful of patents for MSK diseases, including one that explores early biomarkers in the blood for muscle loss/weakness and osteoporosis, conditions more common to older adults. Such biomarkers could help patients at risk slow or halt progression of such conditions, Dr. Brotto says.

The center also has recognized researchers with different, albeit complementary, areas of expertise including bone, muscle, neuronal, immune, 3D bio-printing, and vascular biology. One such researcher is Zui Pan, associate professor of nursing, who is collaborating with the Baylor Scott & White Research Group on the study of the mechanism underlying esophageal motility disorders and eosinophilic esophagitis. Aging is related to esophageal motor abnormalities. Already, the collaboration is pointing to potential new treatments for eosinophilic esophagitis patients using the calcium channel blocker verapamil.

Another researcher, kinesiology Professor Rhonda Prisby, has discovered that blood vessels within bone marrow may progressively convert into bone-like particles with age. Such findings suggest the ossified particles may be a causal factor in heart attacks, strokes, vascular calcification, and other disorders.

"Some of the particles are large in diameter, so there's a potential to clog smaller vessels. And some have sharp tips and edges that could potentially damage the blood vessel wall," says Dr. Prisby, whose findings were published in *Microcirculation*. "We're attempting to determine why blood vessels are taking on this new phenotype, and we will see if we can further characterize what they're made of."

Growing the Program

As CONHI looks to the future, it aims to take its gerontology program even higher—ensuring that nurses are prepared to meet the needs of an aging population and examining health problems of the elderly on all fronts.

A $4.7 million gift from the Deerbrook Charitable Trust will help. The gift will fund specialized instruction and create an endowed faculty position for gerontology-focused graduate nursing programs. Because CONHI hopes to boost enrollment in the Master of Science in Nursing gerontology degree program, the bulk will go toward doubling the number of scholarships from 10 to 20. Additional scholarships are available to Doctor of Nursing Practice and PhD nursing students who focus on topics related to older adult health. Other funds will support online continuing education for nurses; the first group of webinars on older-adult health issues will be ready this year.

"In nursing education, we focus on meeting the changing needs of society by preparing nursing professionals with relevant knowledge and expertise, including in areas such as gerontology," says Elizabeth Merwin, dean of the College of Nursing and Health Innovation. "The support of Deerbrook Charitable Trust represents strong validation of our work in this space while advancing one of the University's key strategic priorities of health and the human condition."

Advancing Elder Care

Transformational gift boosts gerontology programs at UTA

Kelly Bowman believes care of the elderly is the future of health care in America. As an adult geriatric acute care nurse practitioner in Tyler, Texas, she's been closely following the trends in the nation's swiftly changing demographics.

According to the U.S. Census Bureau, 10,000 baby boomers turn 65 each day. The bureau projects that within a couple of decades, older people will outnumber children for the first time in the history of the country.

In order for health care professionals to do their jobs effectively, Bowman—who holds bachelor's and master's degrees in nursing from UTA—says that they need to better understand this growing patient population.

That's why she returned to UTA in January 2020 to pursue her Doctor of Nursing Practice degree. She believes this new degree will expand her horizons and strengthen her skills as a geriatric nurse practitioner.

Thanks to a $4.7 million gift given by the Deerbrook Charitable Trust in 2019, the College of Nursing and Health Innovation is expanding and strengthening its Adult Gerontology Nursing Program. In addition to creating an endowed faculty position and growing gerontology-focused graduate nursing programs, the trust's gift is funding scholarships. Bowman is one of the first recipients.

Deerbrook gave the gift because it recognizes UTA as a leader in the gerontology field and sees a need to create a stronger pipeline of health care professionals who take care of older adults.

The College has a strong track record of preparing nurses for advanced practice, management, and research careers as part of its efforts to address a changing health care landscape.

"Our graduate programs enable students to delve into specialized areas of nursing," says, Kathryn Daniel, an associate professor of nursing and director of the Adult Gerontology Nurse Practitioner programs. "Degrees at the master's and doctoral levels create opportunities for students like Kelly to focus on and dive deeper into issues in their areas of expertise."

class notes

2009

Mary Cazzell (PhD, Nursing) is director of nursing research and evidence-based practice at Cook Children's Medical Center in Fort Worth, Texas.

2010

Mercy Mumba (BSN; '16 PhD, Nursing) was honored with the Southern Nursing Research Society's Early Science Investigator Award, which is given annually to a nurse scientist who shows potential to develop a sustained program of research to enhance nursing science and practice. She also was called the youngest Zambian professor in a profile in the *Zambian Observer*. At age 29, she is as an assistant professor in the Capstone College of Nursing at the University of Alabama.

2012

D.J. Gross (BSN) has been hired as nurse practitioner at Ozarks Medical Center in Winona, Missouri.

2016

Kim Arnold (BSN) was profiled in the March 2019 issue of *D Magazine* for choosing to attend UTA to pursue a career in nursing after eight years spent caring for her critically ill son. She is a pediatric cardiology nurse at Children's Health in Dallas.

2019

Stephen Newhart (PhD, Kinesiology) is the proprietor of Vigor Active, a downtown Fort Worth gym that was previously owned by fitness guru Larry North. Newhart is also an adjunct faculty member in UTA's Department of Kinesiology.

2018

Brian Prejean (PhD, Kinesiology) works closely with engineers at KBR Inc., an engineering company that provides contractual services to NASA, to develop exercise equipment for long-duration spaceflights. As a human performance scientist, he's working to minimize mass and volume of equipment that combines resistance and aerobic exercise capabilities in a weightless environment.

"I'm really excited to operate in an exciting field like this, particularly at a time when we're trying to do more with lunar and deep space exploration," he says.

Dr. Prejean chose UTA because it was the best fit for his ambition of becoming a human performance scientist. He credits his kinesiology professors with helping prepare him for his current role. In addition, as a graduate student, Prejean landed a teaching assistantship that exposed him to a broad range of learning opportunities within the department, including scholarly techniques, the use of state-of-the-art equipment, and human performance analysis.

WHAT'S NEW?

We love to hear about the achievements of our amazing alumni. Send all your latest and greatest career news to classnotes@uta.edu.

Leaders in health care simulation learning

Today, the College of Nursing and Health Innovation (CONHI) continues to lead the way in simulation education. In the last year, CONHI has invested considerably in new equipment, including telepresence robots and artificial intelligence mannequins. The robots make it possible for people interacting with it to view and hear the operator and for the operator to see what the robot "sees" and "hears."

Assistant Dean Jennifer Roye, who oversees the Smart Hospital, is working to integrate telehealth into the graduate curriculum. Soon, student nurse practitioners will be able to log in remotely and interview and examine standardized patients. Dr. Roye says the technology will help the College in its mission to advance the students' critical-thinking skills.

"We want students to graduate ready to practice safely and efficiently. We want them to be able to make the right decisions to guide patient care in addition to being able to proficiently perform necessary nursing skills" she says. "NCLEX (National Council Licensure Examination) is moving toward more critical thinking, which will ultimately lead to enhanced patient safety and better patient outcomes."

In addition, the Smart Hospital is collaborating with other academic programs across UTA to strengthen interprofessional education for nursing students. Early in 2019, the Smart Hospital held a joint daylong poverty simulation exercise in conjunction with the School of Social Work and the Athletic Training and Public Health programs. The objective was to teach students about resources available to help those below the poverty level.

In January 2020, the hospital began a partnership with the Department of Bioengineering. Each semester, interns from that department will work with the mannequins and equipment in the Smart Hospital to develop new ideas to advance simulation equipment and simulation technology. The College is also working with the library and the computer science engineering senior students on a virtual reality simulation that would span all four semesters of the nursing program.

"There are so many opportunities here at the University for interdisciplinary education and collaboration," Roye says. "We want to maximize those relationships. It only adds value to our nursing students' experience."

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SHALAH PUCKETT, BSN student
Transport Team Paramedic
Children's Health Hospital in Dallas

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Fueling the nursing workforce

UTA's College of Nursing and Health Innovation is curbing the nation's nursing shortage as the largest producer of bachelor's degree-prepared registered nurses in Texas and one of the nation's largest nursing programs. In the last decade, more than 34,000 students have graduated with bachelor's, master's, and doctoral degrees in nursing. In addition, the College's kinesiology program, which offers degrees in exercise science, kinesiology, and public health, is steadily gaining renown for academic excellence and research.