STUDY ABROAD More UTA students are getting their passports stamped and gaining valuable international experience by taking classes all over the globe. p. 20

MAVERICK MAYORS UTA alumni are bringing innovative solutions to city hall, leading three diverse, dynamic Texas cities: Fort Worth, Grand Prairie, and Frisco. p. 28

PROVIDING RELIEF University researchers are finding new and improved ways to treat and manage chronic pain, bringing relief to millions who suffer. p. 34

Cities Rising

UTA researchers are working to make large, urban megacities livable and sustainable.
connects physicians

before medical school," says Joseph Balaban, a biochemistry major who was part of the pilot program. "One day we'd be working in the office, another day we'd go to the OR. That excitement of being able to do something new every day definitely had me hooked and strengthened my resolve to go to medical school."

Joseph Borrrelli Jr., an orthopedic surgeon at Texas Health Arlington Memorial, worked closely with UTA leaders to establish the program.

"It's critical for students to know early on how important it is that they learn the sacrifices, the commitment that we make," Dr. Borrrelli says. "They also see what a positive interaction health care is. We spend a great deal of time helping our patients, treating our patients, and bonding with our patients."

Texas Health Resources is one of the largest faith-based, nonprofit health systems in the United States.

JANET AND MIKE GREENE

Feeding the hungry is in Mike Greene's DNA. The UT Arlington Distinguished Alumnus grew up in a house attached to a grocery store and gas station his parents owned. "They helped feed families when their families couldn't feed themselves," he says. Now Mike '69 and his wife, Janet, are doing the same through their involvement with the Community Link food bank in Saginaw. Established in 2005, Community Link had operated from a small house just a stone's throw from Mike's childhood home.

The retired TV executive owned several vacant lots in the neighborhood and donated the land for a new building, which opened in March 2014. He sought help from fellow alumna Ralph Hawkins '71, chairman of the architectural firm HKS, which provided pro bono design. Last year Community Link distributed more than 225,000 pounds of food to nearly 20,000 people in Northwest Tarrant County. Mike hopes UTA will use the nonprofit as a learning laboratory. "Already the Computer Science and Engineering Department is working to streamline Community Link's efficiency so it can serve more clients," he says. "It's nice to be at a point in our lives where we can give back."
UTA researchers are devising new ways to treat and prevent chronic pain.

BY TRACI PETERSON
Millions of chronic pain sufferers may soon find welcome relief.

Electrical Engineering Professor J.-C. Chiao doesn't have to look far to find inspiration for helping the 100 million Americans living with chronic pain. He's one of them. Not only does Dr. Chiao have constant pain from slipped discs and pinched nerves in his neck, he also witnessed a family member suffer after chemotherapy for prostate cancer. Chiao's uncle used an implant device to electrically stimulate
his spinal cord and relieve the pain. The technology was the best available, but he had to manually change the stimulation dosages every 15 minutes.

“How can you work? How can you sleep?” asks Chiao, the Janet and Mike Greene Professor and Jenkins Garrett Professor in the College of Engineering’s Electrical Engineering Department. “He has passed away, but he had a miserable year before that because of this pain.”

The U.S. Institute of Medicine estimates that chronic pain costs $560–$640 billion annually. The institute’s 2011 “Relieving Pain in America” report called on public and private sectors to create better ways to prevent and manage pain.

Chiao and other UTA researchers are working to develop knowledge, methods, and technology across disciplines. Several partnerships in the College of Engineering, College of Science, and College of Nursing and Health Innovation have garnered millions of dollars in research support.

Chiao and psychology Professor Yuan Bo Peng have worked since 2006 to create a closed-loop pain treatment system. Dr. Peng designed the technology, which has received funding from the National Science Foundation, Texas Medical Research Collaborative, Texas Higher Education Coordinating Board, and Intel's telehealth initiative.

“The idea is to support treatment decisions,” directs UTAs Center on Ration, and Statistics, or COSU, which has helped create a pain management program, called a therapeutic restoration. It’s a team approach that requires psychologists, physicians, physical therapists, and other treatment providers to meet regularly, coordinate their methods and goals, and report progress.

As the leader of UTAs Center of Excellence for the Study of Health and Chronic Illnesses, Gatchel has led two large, federally funded research projects over the past two years. In one, supported by the Department of Defense, he applied the principles of functional restoration to treating military veterans suffering post-traumatic stress and chronic pain. In the other, funded by the NIH, he worked with dental clinics to identify, treat, and record results from 600-700 suffers of temporomandibular joint and muscle disorder, or TMJ. He is also collaborating with UNT Health Science Center on the Precision Texas project, which involves collecting a large biobank of back pain patients’ genomic profiles in order to assess what genotypes, combined with lifestyle factors, will predict the development of chronic back pain.

“Mood-related pain problems are more prevalent than all the other diseases or are part of those other conditions,” he says. “There are a lot of us in this who are very passionate because we see the human suffering as well as the financial cost associated with pain.”

“Every research institution works in silos where they’re not necessarily linked,” says Robert Gatchel, professor and director of UTAs Center on the Precision Texas project, which involves collecting a large biobank of back pain patients’ genomic profiles in order to assess what genotypes, combined with lifestyle factors, will predict the development of chronic back pain.

“Mood-related pain problems are more prevalent than all the other diseases or are part of those other conditions,” he says. “There are a lot of us in this who are very passionate because we see the human suffering as well as the financial cost associated with pain.”

FEELING THE EFFECTS

Easing pain doesn’t just help individuals, it also impacts families and workplaces. Robert Gatchel, who holds the Nancy P. and John G. Penson Endowed Professorship in Clinical Health Psychology at UTA, has researched the topic for 30 years. Because of his extensive work in this area, he has just been appointed as a Co-Chair of an National Institutes of Health (NIH) Work Group which will address research related to the “Prevention of Acute and Chronic Pain.”

“People in chronic pain develop a lot of depression because they can’t do the things they used to do,” he says. “They develop a lot of anxiety. They are really struggling to make a living, which then spreads to the family, so the family is also struggling.”

Dr. Gatchel codirected the first interdisciplinary pain management program, called a therapeutic restoration. It’s a team approach that requires psychologists, physicians, physical therapists, and other treatment providers to meet regularly, coordinate their methods and goals, and report progress.

As the leader of UTAs Center of Excellence for the Study of Health and Chronic Illnesses, Gatchel has led two large, federally funded research projects over the past two years. In one, supported by the Department of Defense, he applied the principles of functional restoration to treating military veterans suffering post-traumatic stress and chronic pain. In the other, funded by the NIH, he worked with dental clinics to identify, treat, and record results from 600-700 sufferers of temporomandibular joint and muscle disorder, or TMJ. He is also collaborating with UNT Health Science Center on the Precision Texas project, which involves collecting a large biobank of back pain patients’ genomic profiles in order to assess what genotypes, combined with lifestyle factors, will predict the development of chronic back pain.

“Mood-related pain problems are more prevalent than all the other diseases or are part of those other conditions,” he says. “There are a lot of us in this who are very passionate because we see the human suffering as well as the financial cost associated with pain.”

Harnessing Data

Gatchel hopes to work with Christopher Ray, associate dean for research and an associate professor of kinesiology in the College of Nursing and Health Innovation, to evaluate the influence of older adults. The aging pop that affects mobility. Gatchel also is part of a nce and College of Engineering a $574,998 National Science researchers plan to use biopredictive model for how react to certain treatments care decisions for the best by Rosenberger, an ass manufacturing, and sys project. The effort will use the design and manufacturing, and create a team to find the best way to make and deliver systems for other states patients. In that sense, it can judgment biases.

The interdisciplinary to the Electrical Engineering Engineering Department

“It starts with a device similar to the one Chiao’s uncle used. But the researchers are adding wirelessly networked implants, a computerized algorithm, and advanced flexible implantable devices that can document the subjective feeling of pain quantitatively and eliminate the need for manual operation. The device takes patients out of the equation, treating their pain in the background as they go on with their lives.”

— Dr. Robert Gatchel

“In many research inst work in silos where they’re not necessarily linked,” says Robert Gatchel, professor and director of UTAs Center on the Precision Texas project, which involves collecting a large biobank of back pain patients’ genomic profiles in order to assess what genotypes, combined with lifestyle factors, will predict the development of chronic back pain.

“Mood-related pain problems are more prevalent than all the other diseases or are part of those other conditions,” he says. “There are a lot of us in this who are very passionate because we see the human suffering as well as the financial cost associated with pain.”

Harnessing Data

Gatchel hopes to work with Christopher Ray, associate dean for research and an associate professor of kinesiology in the College of Nursing and Health Innovation, to evaluate the influence of older adults. The aging population that affects mobility.

Gatchel also is part of a national and College of Engineering a $574,998 National Science researchers plan to use a predictive model for how people react to certain treatments care decisions for the best way Rosenberger, an associate manufacturing, and system project. The effort will use the design and manufacturing, and create a team to find the best way to make and deliver systems for other states patients. In that sense, it can judge biases.

The interdisciplinary to the Electrical Engineering Engineering Department.

“It starts with a device similar to the one Chiao’s uncle used. But the researchers are adding wirelessly networked implants, a computerized algorithm, and advanced flexible implantable devices that can document the subjective feeling of pain quantitatively and eliminate the need for manual operation. The device takes patients out of the equation, treating their pain in the background as they go on with their lives.”

— Dr. Robert Gatchel

“In many research inst work in silos where they’re not necessarily linked.” Rosenberger’s team that works really well.

TEAMING UP

Collaboration also is seen sensory components of pain felt. Psychology Professor P. aspects since the early 1980s research methods that use studies.

“Our understanding of tremendously over the pa
to evaluate the influence of gait/walking changes in older adults. The aging population often incurs chronic pain that affects mobility.

Gatchel also is part of a team from the College of Science and College of Engineering that recently received a $574,998 National Science Foundation grant. The researchers plan to use big data analytics to develop a predictive model for how chronic pain patients will react to certain treatments and how to optimize health care decisions for the best cost-effective results.

Jay VanDerbosch, an associate professor of industrial manufacturing, and systems engineering, leads the project. The effort will use data from patients at the Eugene McDermott Center for Pain Management at UT Southwestern, where Gatchel is a clinical professor.

“The idea is to support the physician to try to make good treatment decisions,” says Dr. Rosenberger, who directs UTAs Center on Stochastic Modeling, Optimization, and Statistics, or COSMOS. “Our data include not just what’s happened in the past with their decision-making, but what other physicians have seen with their patients. In that sense, it can see through certain human judgment biases.”

The interdisciplinary team includes professors from the Electrical Engineering and Computer Science and Engineering Departments.

There’s a dramatic increase in methodology that has been driven primarily by our increased understanding of underlying biological mechanisms that are related to pain.”

In early 2015, Dr. Fuchs and physics Assistant Professor Samarendra Mohanty published a study in the journal PLOS One that showed how to inhibit pain perception in the anterior cingulate cortex region of the brain. In their optogenetic stimulation method, genes for light-sensitive proteins are delivered to neurons and then activated by a laser.

The study demonstrated that optogenetic stimulation could be more accurate and effective than current methods of delivering light to neurons. It also enabled the researchers to see how different types of pain activated neurons in the brain’s thalamus.

“The optogenetics helps you to dissect the neural circuitry,” Dr. Mohanty says. “That could also help with drug discovery.”

Funding for pain research remains problematic. The American Pain Society, which released its “Pain Research Agenda for the 21st Century” in December 2014, compared research spending on pain with that of other prevalent diseases. Pain research accounted for just 1 percent of the National Institutes of Health budget or about $4 per affected person, considerably less than the $451 a person for cancer and $8,562 for HIV.

Some researchers are attracting dollars from private institutions and companies. Cynthia Trowbridge, an associate professor of kinesiology in the College of Nursing and Health Innovation, has done sponsored research to explore how cryotherapy, thermal therapy, and electrical stimulation can ease pain.

Her work reveals how to best relieve muscle tissue pain in different body types, improving on the old “ice it for 20 minutes” advice.

“Movement is the key,” Dr. Trowbridge says. “So getting people back moving and using their body how it’s intended to be used instead of compensating, that is the goal. We want to improve function, but we can’t do that until we relieve the pain.”

Christopher Ray, associate professor of kinesiology and Health Innovation, has called on research institutions to work in silos where they’re doing their own research. They don’t necessarily walk down the hall or into another building, Rosenberger says. “Here we are building a team that works really well together.”

TEAMING UP

Collaboration also is essential to pinpointing the basic sensory components of pain and how it’s processed or felt. Psychology Prof. Perry Fuchs has studied these aspects since the early 1990s, developing behavioral research methods that can be applied in laboratory studies.

“Our understanding of the system has increased tremendously over the past 20 to 30 years,” he says.
With Highest Honors

50th annual Distinguished Alumni Awards recognize excellence

UTA honored five alumni and a prominent Arlington businessman for their professional achievements, community engagement, and service to the University at the 50th annual Distinguished Alumni Awards in November.

Sohrab Charnas '76, Tamara Hest Hilliard '87, Raj Malik '93, Alan Petsche '86, and Bonnie Petsche '86 received the Distinguished Alumni Award, while Arnold Petsche received the Honorary Distinguished Alumni Award.

Charnas is a licensed architect in California with over 35 years experience in architecture and real estate development. As founder and principal of Designworks, an architecture and land planning firm, he oversees the company’s design and production work. His diverse and extensive portfolio includes office buildings, research and development facilities, manufacturing facilities, shopping centers, and mixed-use business parks. Charnas earned a degree in architecture from UTA and has been involved with numerous young technology companies.

Hilliard is the founder, CEO, and owner of Tay's Gourmet LLC, a gourmet granola company based in Texas. Tay’s Gourmet Power Granola can be purchased in more than 500 stores throughout the Southwest or online at taysgourmet.com. In 1994 Hilliard won Miss Texas and was fourth runner-up in the Miss America competition. After earning her bachelor’s degree in radio/TV broadcasting from UTA, she enjoyed a long career as a spokeswoman and as an actor in commercials, TV, and films in the Dallas area.

Malik is president and founder of BioWorld Merchandising, a leading design and distribution company of licensed and private-label apparel and accessories with a focus on pop culture and youth brands. After earning a bachelor’s degree in computer science and engineering, he secured a music license and began designing and manufacturing unique licensed products for bands like Metallica and the Deftones. Malik has built BioWorld into a multinational organization with more than 250 employees and offices in China, Canada, India, Europe, and New York.

Alan Petsche owns Aaron Ave Records and the Candlelite Inn and is the retired chief operating officer for A.E. Petsche Co., an Arlington aerospace distribution firm founded by his father, Arnold. An ardent civic supporter of Arlington, Alan received a BBA from UTA and worked for the family business until it was sold in 2009. He and his wife, Bonnie, have opened two restaurants, established a commercial cabinet shop, started real estate investment/development companies, founded two independent record labels, and built two recording studios.

Bonnie Petsche, who received a BBA from UTA, is principal and vice president of Petsche Commercial Properties in Arlington. A devoted community volunteer, she serves on the Board of Trustees for Cook Children’s Medical Center and Cook Children’s Health Care System, among others, and chairs the Home Health Board of Trustees. Bonnie and Alan Petsche donated $1 million in 2001 to support construction of UTA’s College Park Center. The court of the state-of-the-art special events venue is named in their honor.

Arnold Petsche is president of A.E. Petsche Property Co. and the retired president and chairman of the board for the A.E. Petsche Co. He founded the A.E. Petsche Co. in 1966 to meet the aerospace industry’s need for streamlined production and distribution of high-performance wire and cable. When the Arlington-based company was sold to Arrow Electronics, it had grown to 20 branches worldwide with sales exceeding $200 million. In 2012 Petsche donated $1 million to establish the Arnold E. Petsche Center for Automotive Engineering at UTA.

Events

DIE FLEDERMAUS
The Maverick Theatre Company in association with the Department of Musical Theatre presents the Johann Strauss’ opera. Co-directed by Soo-Hong Kim and Anne Healy. February 26, 28, March 1, and 3. More information: uta.edu/theatre

RON PAUL
The former U.S. Congressman speaks as part of the Maverick Speakers Series. 7:30 p.m. Thursday, February 2, Texas Hall. More information: uta.edu/maverickspeakers

DONNA BAZILE
The political strategist and media commentator speaks as part of the Maverick Speakers Series. 7:30 p.m. Thursday, February 25, Texas Hall. More information: uta.edu/maverickspeakers

JANE GOODALL
The UN Messenger of Peace and renowned expert on chimpanzees will deliver a speech titled “Gombe and Beyond: An Evening with Dr. Jane Goodall” as part of the Maverick Speakers Series. 7:30 p.m. Thursday, March 31, College Park Center. More information: uta.edu/maverickspeakers