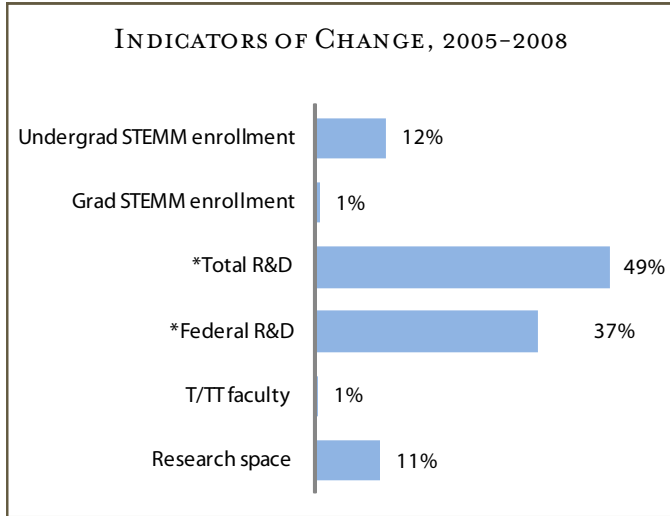


THE UNIVERSITY OF TEXAS AT EL PASO

The UT System has responded to the challenge set forth by the *Rising Above the Gathering Storm (RAGS)* report and has committed more than \$124 million to strengthen competitiveness at UT El Paso. The initial impact of these investments is presented here, organized according to the four critical elements described by RAGS: education, research and technology development, competitive capacity, and incentives.



STEMM = science, technology, engineering, math, and medical/health
 * % Change, 2005-2007. Source: NSF.

UT EL PASO AT A GLANCE

Student enrollment in STEM, 2008	
Undergraduate (STEMM % of total)	3,881 (23%)
Graduate (STEMM % of total)	633 (19%)
New faculty recruited (2005-2008)	
STARs faculty recruited	10
ETF research superiority award recipients	1
Physical space (square footage)	
Teaching	538,500
Research	177,400
Increase in total sq. ft. through initiative	13%
New STEM-related endowments (2005-2008)	\$1.8 million
Research expenditures, 2008	\$47.9 million
Federal research expenditures, 2008	\$27.0 million
Intellectual property revenue, 2005-2008	\$306 thousand
U.S. patents issued, 2005-2008	45
Licenses/options executed, 2005-2008	8
Start-up companies, 2005-2008	3

Education

Under the UT System Competitiveness Initiative, UT El Paso has increased its academic physical space by 264,000 square feet. Increases in classroom and research space have opened the door to many new degree programs. UT El Paso established three new degree STEM programs in computational science, public health, and chemistry. These expanded educational programs have been further strengthened by adding a new associate vice provost for enrollment management.

UT El Paso is focused on increasing student success in science, technology, engineering, math, and medical/health (STEMM) fields as suggested in the RAGS report, with an emphasis on recruiting, advising, and identifying financial aid for these students. Approximately one-fifth of all undergraduate and graduate students enrolled at UT El Paso major in STEM fields. Undergraduate enrollment in STEM has increased 12 percent at UT El Paso since 2005, which is more than double the overall undergraduate enrollment growth of 5 percent. UT El Paso's growth trend is higher than the 5 percent growth in undergraduate STEM enrollment at all UT System academic institutions.

Undergraduate enrollment in science, technology, engineering, and math fields has increased 12% since 2005. Graduate enrollment in STEM has increased 2% though total graduate enrollment has declined by 2%.



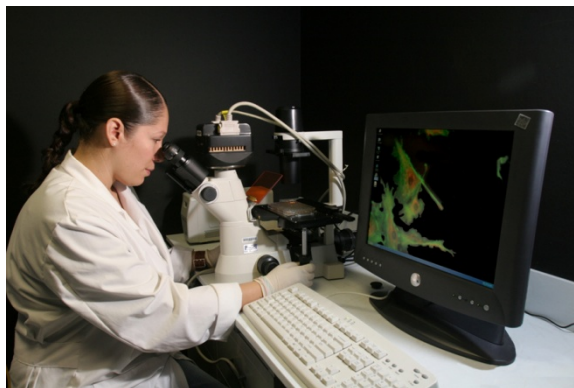
Undergraduate enrollment in nursing programs decreased by 5 students (1%) and enrollment in health professions decreased by 140 students (40%). These trends are less than the 9 percent nursing enrollment increase and the 6 percent increase in health professions enrollment at all UT System academic institutions.

Graduate enrollment in STEM fields has remained stable since 2005, adding an additional eight students, or 1 percent. This growth is less than the overall graduate enrollment of 9 percent at UT El Paso. The rate of increase at UT El Paso is less than the 8 percent increase of STEM graduate students enrolled at all UT System academic institutions while graduate enrollment for all

majors increased by 4 percent. The success of these graduate students is enhanced by UT El Paso's Bridge to the Doctorate initiative to award scholarships to minority STEM students. The initiative is funded by the UT System Louis Stokes Alliance for Minority Participation Program and is the only initiative to receive funding in 2009. Graduate student enrollment in nursing and health professions programs increased significantly, by 13 percent and 37 percent, respectively. Nursing graduate student enrollment at UT El Paso increased at approximately the same rate as all UT System academic institutions (13% and 12%, respectively). In contrast, graduate student enrollment in health professions grew significantly faster at UT El Paso (37%) than at all UT System academic institutions (12%).

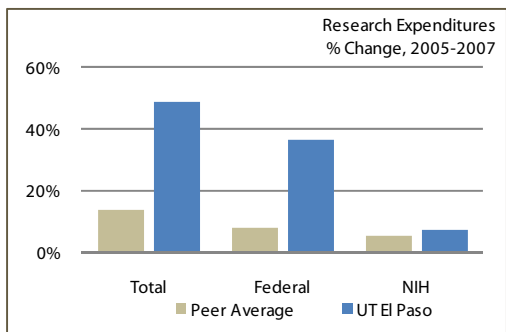
Research & Technology Development

UT El Paso continues to make strategic investments to enhance research initiatives, such as focusing its research efforts on multidisciplinary projects that are relevant to the Paso del Norte region. To demonstrate its commitment to enhance the region's economic development, UT El Paso has established the Kauffman Campus Initiative funded by the Ewing Marion Kauffman Foundation. Two centers have evolved to implement this initiative: the Center for Hispanic Entrepreneurship (CfHE) and the Center for Research Entrepreneurship and Innovative Enterprises (CREIE). CfHE Fellows work with students to develop and disseminate entrepreneurship educational materials specific to the Hispanic community. In addition to developing strategic partnerships, the CREIE provides commercialization consulting, coaching, and training.



Research expenditures at UTEP have drastically outpaced its peers in recent years. Total research expenditures increased by almost 50%; federal research expenditures by 37%.

UT El Paso researchers contribute to the institution's economic development goals as well. For example, several faculty have discovered important inventions that have led to commercializable products. Dr. Anthony Tarquin has developed a cost-effective way to regain up to 85 percent of the water that would normally be thrown away during the water desalination process. While most desalination plants return the salt concentrate to the ocean, disposing of the remaining salt concentrate is a significant challenge for inland communities. Another innovative example is a light filter that Dr. Carl Dirk has developed that can protect delicate works of art from photochemical damage. The filter is being used by museums to enhance the way paintings are viewed while also protecting them from the slow deterioration of paint pigments and canvas materials due to light exposure.



Source: NSF, NIH.

These institutional investments in research contribute to enhanced resources for faculty research projects, often tracked by the money spent to conduct the scientific investigations. Research expenditures at UT El Paso have dramatically outpaced its peers between 2005 and 2007, with total research expenditures increasing almost 50 percent while peers averaged a 14 percent increase. Research expenditures from federal sources increased 37 percent during the same time period while peers averaged an 8 percent decrease. These advances in research activities bring UT El Paso closer to their long-term goal of becoming a top-tier research institution.

Competitive Capacity

Competitive capacity, or the resources necessary to advance academic and research goals, is a fundamental building block for institutional activities. Resources include: world-class faculty, innovative buildings with advanced research laboratories and academic spaces, recognition programs to support faculty efforts, and interest from external donors.

FACULTY RECRUITMENT

The number of tenured/tenure track faculty has remained stable at UT El Paso since 2005. Twenty-one faculty members received a total of \$7.2 million in awards from the STARS (Science and Technology Acquisition and Recruitment) Program, with 10 awards used for recruitment from other institutions and 11 awards used for faculty retention at UT El Paso. Ten of the 21 were faculty in engineering, nine were in natural sciences, and two were from psychology. In addition, one faculty member—Dr. Thomas Davis—was recruited through a Texas Emerging Technology Research Superiority award to lead the newly created Center for Inland Desalination Systems.



Dr. Thomas Davis, one of the nation's foremost desalination experts, was recruited from the University of South Carolina to lead the research and commercialization effort. The Center is partnering with El Paso Water Utilities and the U.S. Army to establish the Center and implement current desalination technology.

STARS FACULTY



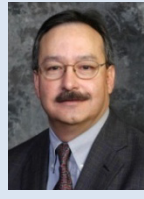
Dr. Renato Aguilera, professor of biological sciences and director of the cell culture and high throughput core facility of the Border Biomedical Research Center, was retained at UT El Paso. Dr. Aguilera is an expert in the degradation process of DNA and anti-cancer drug screening.



Dr. Edward Castañeda, chair and professor of psychology, was recruited from Arizona State University. Dr. Castañeda's research expertise is in the compensation of brain function following damage from drug addiction and brain injury.



Dr. Diane Doser, associate professor of geological sciences, was retained at UT El Paso to continue her research in earthquake seismology and environmental geophysics such as watershed studies and quality estimation of freshwater aquifers.



Dr. Jorge Gardea-Torresday, chair of the department of chemistry and Dudley Professor of Chemistry and Environmental Science and Engineering. Dr. Gardea-Torresday was retained at UT El Paso to continue his work in environmental chemistry, especially the investigation of the absorption of heavy metals into biomass and living plants.



Dr. Ann Quiroz Gates, associate vice president of research in the Office of Research and Sponsored Projects, was retained at UT El Paso. Dr. Gates directs the Cyber-ShARE Center, a center of excellence for innovative cyberinfrastructure used to advance education, interdisciplinary science, and engineering collaborations. Dr. Gates' research expertise is in grid computing and software fault monitoring.



Dr. Connie Gomez, assistant professor of mechanical engineering, was recruited from Drexel University where she received her Ph.D. Dr. Gomez's expertise is in interdisciplinary based design tools and bio-mechanical manufacturing systems.



Dr. June Kan-Mitchell, professor of biological sciences, was recruited from the department of immunology and microbiology and the Karmanos Cancer Institute at Wayne State University. Dr. Kan-Mitchell is internationally recognized for her research on underlying proteins in immunogenetics.



Dr. G. Randy Keller, professor emeritus of geological sciences, received a STARS award for retention. His research expertise is in seismic studies of major geological rifts, such as the Rio Grande and Kenya rifts.

STARS FACULTY



Dr. Vladik Kreinovich, professor of computer science, was retained at UT El Paso. Dr. Kreinovich's research expertise is in data processing algorithms and mathematical foundations of intelligent control.



Dr. Vinod Kumar, assistant professor of mechanical engineering, was recruited from Princeton University where he was senior research specialist in the Geophysical Fluid Dynamics Laboratory. Dr. Kumar's expertise is in computational, analytical, and experimental fluid dynamics and mechanics.



Dr. Kate Miller, professor of geological sciences was retained to continue her research on the application of active-source seismology to understand continental evolution and earthquake hazards.



Dr. Shizue Mito, assistant professor of chemistry, was recruited from a post-doctoral fellowship at Harvard University. Dr. Mito's research is focused on developing new reactions for the synthesis of bioactive compounds.



Dr. Soheil Nazarian, Mr. and Mrs. McIntosh Murchison IV Endowed Chaired Professor and director of the Center for Transportation and Infrastructure Systems was retained at UT El Paso. Dr. Nazarian's research focuses on the nondestructive testing of infrastructure.

Dr. Michele Nishiguchi, department of biological sciences, was recruited from New Mexico State University. Her research focuses on marine symbiosis, specifically the evolution of bacteria in host organisms. Dr. Nishiguchi joins UTEP in fall 2009.



Dr. Terry Pavlis, professor of geological sciences, was recruited from the University of New Orleans. His research focuses on structural geology and tectonics, such as the architecture of the earth's crust and strike-slip systems.



Dr. Wei Qian, professor of electrical and computer engineering and director of the Medical Imaging Informatics Program, was recruited from the University of South Florida. Dr. Qian's research focuses on medical imaging, especially at the cellular and molecular levels.



Dr. Richard Schoephoerster, dean of the college of engineering, was recruited from Florida International University where he established and served as the initial director of the Cardiovascular Engineering Center. He also established and served as the initial director of the Biomedical Engineering Institute, which was converted to a department, where Dr. Schoephoerster served as founding chair.



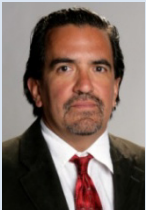
Dr. Patricia Teller, professor of computer science was retained at UT El Paso to continue her research on computer operating systems and computer architecture.



Dr. Ryan Wicker was retained as the Mr. and Mrs. MacIntosh Murchison Professor of Mechanical Engineering and director of the W. M. Keck Border Biomedical Manufacturing and Engineering Laboratory. Dr. Wicker's research focuses on the development of multi-material stereolithography technology.



Dr. Chuan Xiao, assistant professor of chemistry, was recruited from a post-doc fellowship at Purdue University. His research focuses on the structure of viruses and plant proteins, using x-ray crystallography and cryo-electron microscopy.



Dr. Michael Zarate, professor of psychology, was retained to continue his research on social cognitive processes that underlie prejudice and stereotyping.

INFRASTRUCTURE

New construction and renovation of existing facilities to create state-of-the-art buildings provide educational and research possibilities that drive the competitiveness initiative. UT El Paso increased research space by 11 percent since 2005, adding almost 17,000 square feet. In addition, the UT Competitiveness Initiative funded one new facility, the Physical Sciences/ Engineering Core Facility, and renovations to the Science and Engineering Core Facilities.

COMPETITIVENESS INITIATIVE PROVIDES \$113 MILLION FOR CAPITAL PROJECTS AT UT EL PASO



The Physical Sciences/Engineering Core Facility is a new state-of-the-art undergraduate laboratory and teaching facility for the chemistry and physics departments. The \$85 million project is expected to be completed in the summer of 2011.



The Science and Engineering Core Facilities Upgrade will renovate the existing Physical Sciences Building, the Engineering Science Complex, and finish out the remaining shelled portions of the existing Biosciences Research Building. The \$28 million project is expected to be complete in late 2011.

PHILANTHROPY TO SUPPORT STEMM INITIATIVES

A compelling indicator of competitiveness is the institution's appeal to philanthropists who join the institution's commitment to excellence. UT El Paso raised \$1.8 million in STEMM-specific endowments since FY 2005, including graduate fellowships, distinguished chairs to support faculty research, and student scholarships. Approximately \$83,000 is distributed for STEMM research and scholarships on an annual basis. STEMM-related allocations equal 41 percent of the total philanthropic distribution per year.

FACULTY AWARDS

The faculty at UT El Paso are often recognized for their significant contributions to their areas of expertise and respective fields of study. The institution's competitive stature is enhanced by the recognition that these awards bring and the experiences that are then shared with students. For example, Dr. Bridget Smith-Konter, geological sciences, and Dr. Juan Noveron, chemistry, each received a prestigious National Science Foundation CAREER award, a prestigious grant in support of junior faculty who effectively integrate innovative education and research. Dr. Robert Anders, dean of the School of Nursing, was named a Fellow of the American Academy of Nursing for his leadership in education, management, practice, and research. Other major awards recently received by faculty are:

- 4 Fulbright American Scholar Fellowships: Dr. Judith Munter, associate dean in the college of education, Dr. Carol Clark, associate professor of English, Dr. Godwin Udo, professor and chair in the department of information and decision sciences, and Dr. William Robertson, assistant professor of teacher education
- 2 National Endowment for Humanities Awards: Dr. Howard Campbell, professor of sociology and anthropology, and Dr. Sandra Deutsch, professor of history
- 1 National Endowment for Humanities Fellowship: Dr. Robert Bledsoe, professor emeritus of English

These awards are some examples of the many ways in which UT El Paso's faculty are recognized for their leadership in research and education.

Incentives

Various Systemwide initiatives and institutional programs provide additional incentives to excel in science, technology, engineering, math, and medical/health. The UT System's Chancellor's Entrepreneurship and Innovation Awards recognized Dr. Russell Chianelli, Professor of Materials Science and Engineering and Director of the Material Research and Technology Institute, for his discoveries in material science and energy. Dr. Chianelli's inventions have led to three U.S. patents and two spin-out companies: Mayan Pigments, Inc., and Refinery Science Corporation. Mayan Pigments also received \$1 million from the Texas Emerging Technology Fund to assist moving the Mayan-inspired organic/inorganic hybrid pigments out of the lab and into the consumer market.

The UT System Texas Ignition Fund has funded one invention at UT El Paso to commercialize a novel inhibitor for the prevention of organ or tissue rejection following a transplant.



Dr. Russell Chianelli

