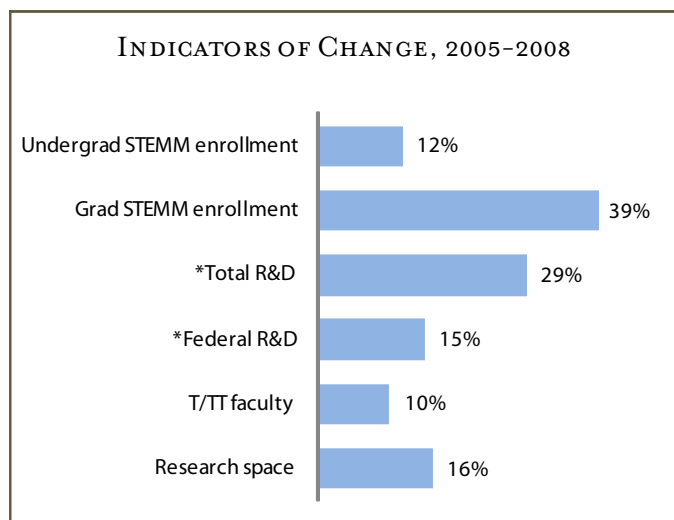


## THE UNIVERSITY OF TEXAS – PAN AMERICAN

The UT System has responded to the challenge set forth by the *Rising Above the Gathering Storm (RAGS)* report and has committed more than \$11 million to strengthen competitiveness at UT Pan American. 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.

Student enrollment in STEM, 2008	
Undergraduate (STEMM % of total)	2,228 (15%)
Graduate (STEMM % of total)	239 (11%)
New faculty recruited (2005-2008)	43
Physical space (square footage)	
Teaching	449,700
Research	56,400
Increase in total sq. ft. through initiative	2%
New STEM-related endowments (2005-2008)	\$471,000
Research expenditures, 2008	\$8.5 million
Federal research expenditures, 2008	\$4.7 million
Intellectual property revenue, 2005-2008	\$6 thousand
New invention disclosures, 2005-2008	32

### Education

Under the UT System Competitiveness Initiative, UT Pan American added five new STEM degree programs: a Bachelor's of Science in environmental science and computer engineering and a Master's of Science in chemistry, engineering management, and physician assistant programs. The challenge for these new degree programs is that the physical classroom space has declined at UT PanAm. In fact, over 8,000 square feet of academic square feet has been lost since 2005. For this reason, the investments in physical infrastructure made by the UT System Competitiveness Initiative are critical to support the current momentum to meet the educational and research missions of the institution.

*UTPA's innovative solutions to challenges in education are positively impacting student enrollment in critical fields. Undergraduate enrollment in science, technology, engineering, and math majors has increased 12% since 2005.*

UT Pan American has declared as a top priority an increase in STEM, nursing, and allied health graduates at all degree levels. To help meet that goal, UT PanAm has implemented the Sophomore Academic Mentoring (SAM) Program to increase retention of sophomores to juniors. In fall 2005, 58 percent of sophomores were retained for their junior year, up almost 6 percent from fall 2004. The goal is a 70 percent retention rate by 2010. UT Pan American has hired 150 SAM mentors, impacting 2,250 students per year.

A related priority for UT Pan American is to implement the Quality Enhancement Plan (QEP), "Engaging Learning for Mexican American Students in Gatekeeper Mathematics Courses." The focus on a series of three algebra courses at UT Pan American was selected because these courses posed the most difficult challenge for undergraduate students among all classes offered. The QEP committee suggested that student success will improve with enhanced curriculum, student support, and faculty development. In 2005, the pass rate for the intermediate gatekeeper algebra course was 47 percent, up from 37 percent the year before. The goal is a 70 percent pass rate in 2010.

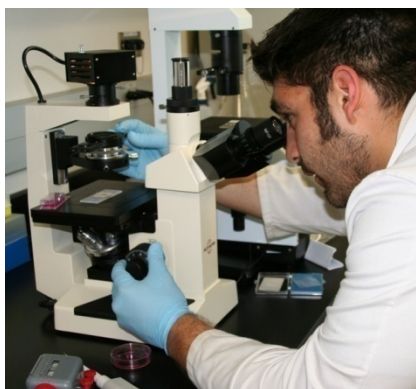
These innovative solutions to challenges in education are positively impacting student enrollment in STEM disciplines. Undergraduate enrollment in STEM has increased 12 percent at UT PanAm since 2005 while enrollment in all disciplines has increased only 3 percent. This growth trend is more than double the 5 percent growth in undergraduate STEM enrollment at all UT System academic institutions. Undergraduate enrollment in nursing demonstrated remarkable growth, increasing by 25 percent (217 students), and bringing enrollment to almost 1,090 students in 2008. This growth makes it the second largest undergraduate nursing program within UT System academic institutions. Likewise, undergraduate enrollment in health professions increased 21 percent (213 students), totaling over 1,200 students in 2008. This growth makes it the largest undergraduate health professions program within UT System academic institutions. These increases are significantly higher than the 9 percent nursing enrollment increase and the 6 percent increase in health professions enrollment at all UT System academic institutions.



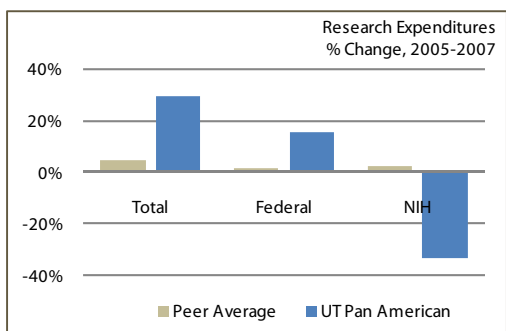
Graduate enrollment in STEM fields has shown sizable growth, increasing 39 percent since 2005, adding an additional 67 students. This growth is substantially larger than UT Pan American's growth in overall graduate enrollment, which increased by 4 percent. The rate of increase at UT Pan American is considerably larger than the 9 percent increase of STEM graduate students enrolled at all UT System academic institutions while graduate enrollment for all majors increased by 4 percent. Graduate student enrollment in nursing has remained relatively stable while nursing graduate student enrollment increased by 12 percent at all UT System academic institutions. Health professions graduate student enrollment at UTPA increased significantly faster than at all UT System academic institutions: 34 percent and 12 percent, respectively.

*Graduate enrollment in STEM has increased 39% since 2005, compared to an increase of 4% for all graduate enrollment.*

## Research & Technology Development



The University has invested in its research enterprise by providing faculty with significant training opportunities to support proposal development, grant management, and research compliance. Faculty have resources available to help them manage the entire range of extramural funding activities, from locating grant opportunities that match their research interests to developing the final report after the grant has ended. Assistance is also provided to support faculty in technology transfer and entrepreneurship. Podcast and video presentations are available online and an annual "entrepreneurship bootcamp" helps ensure that faculty members have the resources necessary to develop their innovative ideas into marketable products that benefit the region, state, and world.



Source: NSF, NIH

UT Pan American has provided another resource for their faculty by becoming a partner in the UT System South Texas Technology Management (STTM) office. The office, housed at UT Health Science Center at San Antonio, provides technology management services for UT Pan American as well as UT Brownsville and UT San Antonio. This partnership complements the university's staff in the Office of Innovation and Intellectual Property, who work directly with faculty and students to protect intellectual property and advance economic development for the region. The STTM provides consultation as needed for a wide variety of intellectual property issues.

These investments in organizational resources support faculty research projects, often tracked by the money spent to conduct the scientific investigations. Research expenditures at UTPA have increased at a significantly faster rate than peer institutions, totaling 29 percent between 2005 and 2007, while peers averaged a 5 percent increase. Research expenditures from federal sources increased 15 percent during the same time period while peers averaged a 1 percent increase. UTPA has made a commitment to supporting faculty research efforts, which will help the institution reach its goal of \$10 million in research expenditures by 2010.

## Competitive Capacity

Competitive capacity, or the resources necessary to advance academic and research goals, is fundamental for institutional advancement. 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

Attracting top-caliber senior researchers who are internationally recognized for advanced breakthroughs in their field leads to major innovations in discovery, development, and application of research. UTPA has increased the number of tenured/tenure track faculty by 10 percent, or 43 people, since 2005.

### INFRASTRUCTURE

UTPA increased research space almost 16 percent since 2005, adding over 7,500 square feet. In addition, the Competitiveness Initiative supported four new facilities and one major renovation: the Science Building Renovation, the Student Health Clinic, the Starr County Upper Level Center, the Animal Research Facility, and the Fine Arts Academic and Performance Center.

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#### COMPETITIVENESS INITIATIVE SUPPORTS \$11 MILLION FOR CAPITAL PROJECTS AT UT PAN AMERICAN

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*The Science Building Renovation* completed 13,500 square feet of the previously “shelled” third floor to house two research laboratories, four teaching laboratories, and 24 faculty offices. The \$2 million project was completed in fall of 2006, funded by the Higher Education Assistance Fund and tuition revenue bonds.

*The Animal Research Facility* construction will make a more technologically adequate area in the new Regional Academic Health Center that was constructed by the UT Health Science Center at San Antonio. Construction of the 20,000 square foot facility is currently on hold and is expected to total \$16.4 million.

*The Fine Arts Academic and Performance Center* will add space for academic studies in the Fine Arts and for performing arts and other University and community events. The \$49.7 million project is currently in the pre-planning phase and the project is expected to be complete in the spring of 2014.



*The Starr County Upper Level Center* is a satellite center of UT Pan American, offering upper division and graduate level coursework through on-campus and distance education courses in almost 18,000 square feet of space. The \$7.5 million Center is located in the southwestern part of the Rio Grande Valley, adjacent to the South Texas College campus in Rio Grande City. Construction is expected to be completed in fall 2010.



*The Student Health Clinic* replaces the former clinic in order to accommodate the campus’s growing needs. The \$1.4 million new Clinic consists of 7,300 square feet and was built in conjunction with the new Wellness and Recreation Sports Center. Construction of the facility was complete in fall 2007.

## 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 Pan American raised over \$471,000 in STEMM-specific endowments since FY 2005, particularly for student scholarships. Over \$7,700 is distributed for STEMM scholarships on an annual basis. STEMM-related allocations equal 8 percent of the total philanthropic distribution per year.

## FACULTY AWARDS

The faculty at UT Pan American are often recognized for their significant contributions to their 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.

### AWARD-WINNING FACULTY



*Dr. Deborah Cole*, assistant professor of english, was named a Fulbright American Scholar to create effective synergies across continents through lectures, teaching, and conducting research. Dr. Cole's expertise is in multilingualism and cultural diversity and comparative language ideologies. Her Fulbright studies were conducted at Gadjah Mada University in Yogyakarta, Indonesia.



*Dr. Bin Fu*, assistant professor of computer science, received a CAREER award from the National Science Foundation, a prestigious grant in support of junior faculty who effectively integrate innovative education and research. Dr. Fu has made significant contributions in bioinformatics (protein folding), algorithms (width-bounded separator theory, Rocchio's relevance feedback algorithm analysis, and Abelian group factorization), complexity theory, and molecular computing.



*Dr. Monica Diaz*, assistant professor of modern languages and literature, was named a fellow of the National Endowment for Humanities. The research award supported a project on the lives and writings of indigenous nuns in Colonial Mexico. Dr. Diaz specializes in Latin American colonial culture and literature.



*Dr. Ethan Sharp*, assistant professor of modern languages and literature, was named a Fulbright American Scholar to conduct research in Mexico. The focus of Dr. Sharp's research is the expanding drug addiction treatment programs in Monterrey and the focus on spirituality in the treatment process.

## Incentives

Various Systemwide initiatives and institutional programs provide additional incentives to excel in science, technology, engineering, math, and medical/health fields.



*The UT System's Chancellor's Entrepreneurship and Innovation Awards* recognized Dr. Banglin Chen, associate professor of chemistry, for his discoveries in hydrogen storage technology and nanoporous metal-organic supramolecules and frameworks. Dr. Chen's inventions are important to solve the challenge of gas storage.



*The UT System Texas Ignition Fund (TIF)* is a seed-grant program to further develop inventions that need additional work to attract angel or venture capital investors and advance the invention's path toward the marketplace. The TIF has funded Dr. Karen Lozano's project to commercialize a simplified nanomanufacturing process and a prototype research scale device to enhance research production of a variety of nanofibers resulting in lower nanofiber costs, higher yield, and increased processing safety. Dr. Lozano is associate professor of mechanical engineering at UT Pan American.

