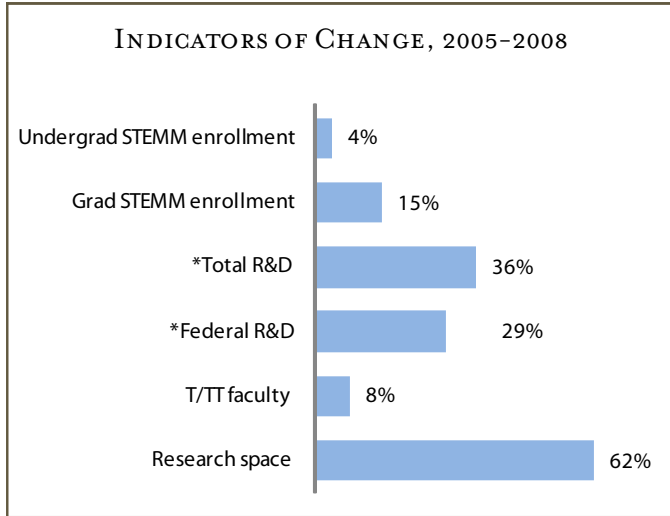


THE UNIVERSITY OF TEXAS AT SAN ANTONIO

The UT System has responded to the challenge set forth by the *Rising Above the Gathering Storm (RAGS)* report and has committed more than \$109 million to strengthen competitiveness at UT San Antonio. 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 SAN ANTONIO AT A GLANCE

Student enrollment in STEM, 2008	
Undergraduate (STEMM % of total)	6,427 (26%)
Graduate (STEMM % of total)	885 (25%)
New faculty recruited (2005-2008)	
STARs faculty recruited	9
ETF research superiority award recipients	1
Physical space (square footage)	
Teaching	546,000
Research	178,900
Increase in total sq. ft. through initiative	12%
New STEM-related endowments (2005-2008)	\$1.8 million
Research expenditures, 2008	\$34.6 million
Federal research expenditures, 2008	\$22.6 million
U.S. patents issued, 2005-2008	5
New invention disclosures, 2005-2008	44

Education

Under the UT System Competitiveness Initiative, UT San Antonio increased its academic physical space by 18,000 square feet. Increases in classroom and research space have opened the door to two new STEM degree programs in computer engineering and advanced manufacturing and enterprise engineering. These expanded opportunities are closely aligned with UT San Antonio's enrollment management plan that includes raised freshman admission criteria, enrollment partnerships with community colleges, and enhanced financial support of undergraduate students.

About 1/4 of all undergraduate and graduate students at UTSA are enrolled in science, technology, engineering, and math fields.



The enrollment plan is positively impacting student enrollment in STEM disciplines as well. Approximately one-quarter of all undergraduate and graduate students enrolled at UTSA major in science, technology, engineering, or math fields. Undergraduate enrollment in STEM has increased 4 percent at UTSA since 2005. This growth trend is close to the 5 percent growth in undergraduate STEM enrollment at all UT System academic institutions.

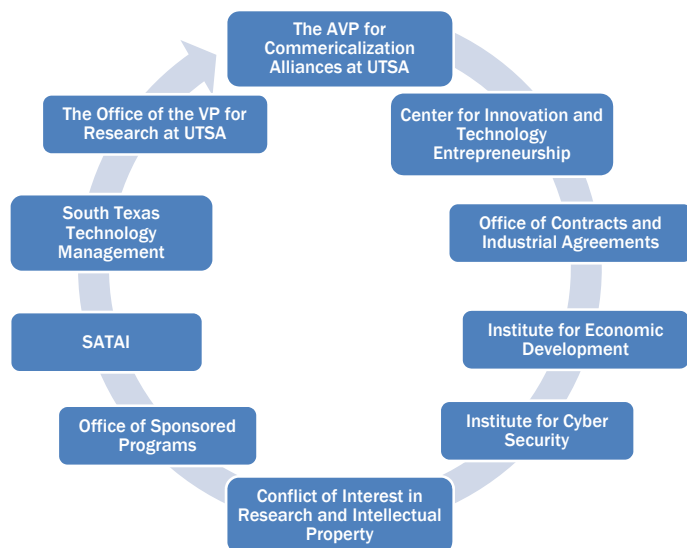
Graduate enrollment in STEM fields has increased 15 percent since 2005, adding an additional 113 students. This growth is substantially larger than UT San Antonio's overall graduate enrollment, which increased by 2 percent. The rate of increase at UTSA is considerably larger than the 9 percent increase of STEM graduate students enrolled at all UT System academic institutions while graduate enrollment for all majors increased by 4 percent.

Research & Technology Development

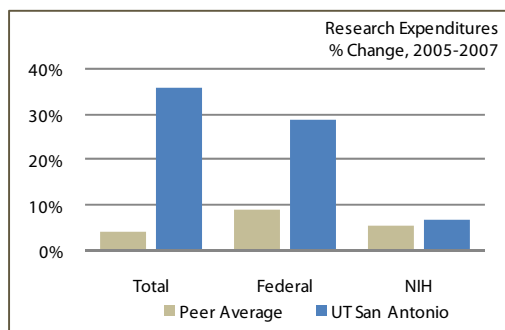
The University has invested in its research administration by recruiting experienced leaders in research administration and technology transfer. Improved organizational support for sponsored programs was established through the hiring of an experienced, nationally recognized leader as Senior Associate Vice President for Research. In addition, internal evaluations of research centers led to the development of new institutional policies, a reorganization of the centers, and a new networking framework for center directors. These substantial investments contribute to UT San Antonio's goal of becoming a premier research university.



UT San Antonio has recently implemented two internal research grant competitions to advance institutional research goals. The Collaborative Research Seed Grant Program provides up to \$30,000 per project and four projects were funded in May 2009. In addition, the Tenure-Track Research Award Competition provides \$22,000 per project and funded five projects in May 2009.



UTSA Technology Commercialization Ecosystem



Source: NSF, NIH.

Research at UT San Antonio often results in discoveries that could impact the global marketplace. UTSA is committed to enabling technology-based economic development. UT San Antonio is part of a technology commercialization ecosystem that includes pure, applied, and translational research, intellectual property creation and licensing, and company formation, funding, education, staffing, and incubation. The UTSA Commercialization Council, under the direction of the newly created position of the Assistant Vice President for Commercialization Alliances and Innovation, serves as the focal point for these activities at UT San Antonio. The diagram (left) shows how the commercialization ecosystem, through the University's Commercialization Council, works together at UT San Antonio.

These investments in organizational structure contribute to enhanced resources for faculty research projects, often tracked by the money spent to conduct the scientific investigations. Research expenditures at UTSA have increased at a significantly faster rate than peer institutions, totaling 37 percent between 2005 and 2007, while peers averaged a 4 percent increase. Research expenditures from federal sources increased 29 percent during the same time period while peers averaged a 9 percent increase. UTSA has made a commitment to becoming a premier research institution, demonstrated by increased collaborations with the UT Health Science Center at San Antonio, Southwest Research Institute, and the Southwest Foundation for Biomedical Research.

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

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. UTSA has increased the number of tenured/tenure track faculty by 8 percent since 2005. Nine of these faculty were recruited and one world-renowned faculty member was retained through the STARS (Science and Technology Acquisition and Recruitment) Program.



Dr. Ravi Sandhu was recruited from George Mason University to create and direct the Institute for Cyber Security as the recipient of a Texas Emerging Technology Research Superiority award as the Luther Brown Endowed Chair in Cyber Security and professor of computer science.

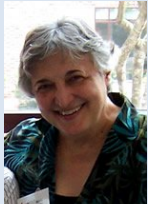
STARS FACULTY



Dr. Garry Cole, Professor and Margaret Batts Tobin Endowed Chair in Medical Mycology in the department of biology, was recruited from the Medical University of Ohio. Dr. Cole is an expert in medical mycology, or the study of fungus as related to vaccine development.



Dr. Thomas Forsthuber, professor of immunology in the department of biology, was recruited from Case Western Reserve University and studies immunology and autoimmune diseases.



Dr. Rena Bizios, Peter Flawn Professor, department of biomedical engineering, was recruited from Rensselaer Polytechnic Institute. Dr. Bizios is an award-winning researcher in cellular and tissue engineering and tissue regeneration.



Dr. Frank Chen, Lutchter Brown Distinguished Chair in Advanced Manufacturing, department of mechanical engineering and Director of the Center for Advanced Manufacturing and Lean Systems, was recruited from Virginia Tech where he founded and led the Center for High Performance Manufacturing. Dr. Chen's research is in the design and analysis of flexible manufacturing systems.



Dr. Ruyan Guo, Robert E. Clarke Endowed Professor of Electrical and Computer Engineering was recruited from Pennsylvania State University. Dr. Guo is internationally recognized for her distinguished career in electronic and optical materials research and was most recently named a SPIE fellow, the international society for optics and photonics.



Dr. Mo Jamshidi, Lutchter Brown Endowed Chair in the department of electrical and computer engineering was recruited from the University of New Mexico to serve as the director of the Autonomous Control Engineering (ACE) Center. Dr. Jamshidi's research expertise is in large-scale systems and computational intelligence, focusing on robotic mobile rovers for exploration of unstructured environments like planets. Several federal agencies have benefitted from Dr. Jamshidi's expert advice, such as the US Air Force, the Department of Energy, and NASA.



Dr. Donald M. Kurtz, Jr., Lutchter Brown Distinguished Endowed Chair in the department of chemistry, was recruited from the University of Georgia where he was Distinguished Research Professor of Chemistry and Biochemistry and Molecular Biology. Dr. Kurtz is a researcher in bioinorganic chemistry.



Dr. Efstathios Michaelides, professor and chair of mechanical engineering, was recruited from the University of North Texas. Dr. Michaelides is an expert in thermodynamics of advanced energy conversion devices, energy systems, and energy conservation and has received numerous awards for teaching excellence.



Dr. George Perry, Dean of the College of Sciences and Professor of Biology, was recruited from Case Western Reserve in 2005 and received a STARS award to stay at UTSA. Dr. Perry is a pathologist and one of the top 20 researchers in Alzheimer's disease.



Dr. Zenong Yin, Jeff and Loretta Clarke Endowed Professor of Health in the department of health and kinesiology, was recruited from the Medical College of Georgia where he served as a professor of pediatrics in the Georgia Prevention Institute. Dr. Yin is an expert in disease prevention programs in school and community settings, particularly targeting childhood diabetes.

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. UTSA increased research space by 62% since 2005, adding over 68,000 square feet. In addition, the Competitiveness Initiative funded two new facilities: the second phase of the Biotechnology, Sciences, and Engineering (BSEII) Building and renovations of the Science Facility at the 1604 Campus. The BSEII Building (right) adds 150,000 square feet of research and teaching space, featuring the most sophisticated technology for an information-intensive environment. Science Facility renovations at the 1604 Campus will improve research and teaching space at the physical science laboratory, earth and life science laboratory, and the small animal laboratory. This project is currently in the planning stages and is expected to be completed in the summer of 2010.



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. UTSA raised \$1.75 million in STEMM-specific endowments since FY 2005, including distinguished chairs to support faculty research in biology and engineering. Over \$50,000 is distributed for STEMM research and scholarships on an annual basis. STEMM-related allocations are nearly one-fifth of the total philanthropic distribution per year.

FACULTY AWARDS

The faculty at UTSA 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. For example, Dr. Rena Bizios received the 2009 Distinguished Scientist Award of the Houston Society for Engineering in Medicine and Biology for her pioneering contribution to the field of cellular engineering. Two faculty members were named Fulbright American Scholars to create effective synergies across continents through lectures, teaching, and conducting research: Dr. Richard Jones, professor of geography, was a scholar to Bolivia and Dr. Jeanne Campbell Reesman, professor of American literature, was a scholar to Greece. Five faculty received CAREER awards from the National Science Foundation, a prestigious grant in support of junior faculty who effectively integrate innovative education and research: Dr. Yufei Huang, associate professor of electrical and computer engineering; Dr. Carola Wenk, associate professor of computer science; Dr. Hai-Chao Han, associate professor of mechanical engineering; Dr. Daniel Jimenez, associate professor of computer science; and Dr. Qing Yi, assistant professor of computer science. These awards are some examples of the many ways in which UTSA's faculty are recognized for their leadership in research and education.

Incentives

UT San Antonio has worked hard to establish competitive pay scales and new faculty start up packages to attract and retain the highly talented faculty to the campus. Commercial research is also promoted as a means to increase lab funding and invigorate translational work to move research from discovery to application. UT San Antonio's license royalty sharing policy encourages faculty and staff to pursue inventions and commercialization, and in return share in the royalties generated by their innovations. Coupled with a regional entrepreneurial ecosystem, the university has established policies, processes, and facilities, networked in the community, to help innovative faculty see their ideas through to commercialization. These combined incentives will continue to draw faculty to UT San Antonio, and with growing success in these STEMM areas, will elevate the research and commercialization successes and reputation of the university. As an example, The UT System's Chancellor's Entrepreneurship and Innovation Awards recognized Dr. Mauli Agrawal for his discoveries in tissue engineering and orthopedic implants. Dr. Agrawal's inventions have enabled three spin-out companies: Osteobiologics, VidaCare, and Xilas Medical, Inc.



Dr. Mauli Agrawal

