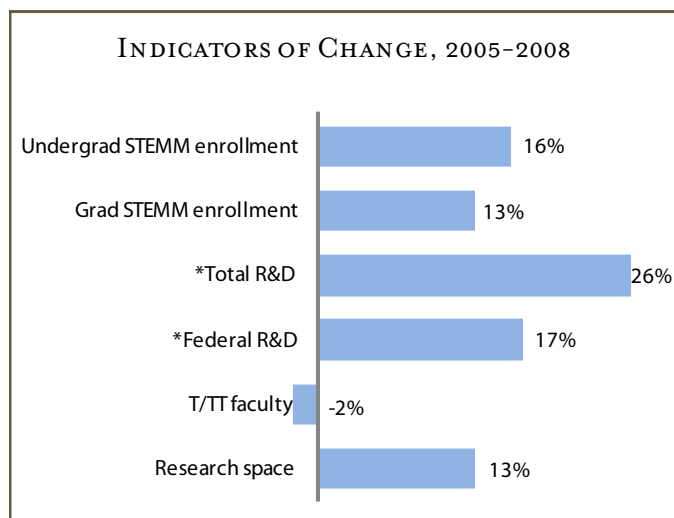


THE UNIVERSITY OF TEXAS HEALTH SCIENCE CENTER AT HOUSTON

The UT System has responded to the challenge set forth by the Rising Above the Gathering Storm (RAGS) report and has committed more than \$244 million to strengthen competitiveness at UT HSC-Houston. 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 HSC-HOUSTON AT A GLANCE

Student enrollment in STEM, 2008

Undergraduate	468
Post-baccalaureate.....	309
Graduate	3,088

STARs faculty recruited (2005-2008) 3

ETF research superiority award recipients..... 1

Physical space (square footage)

Teaching	216,000
Research	402,700
Clinical	156,000
Increase in total sq. ft. through initiative	30%

New STEM-related endowments (2005-2008) \$10.9 million

Research expenditures, 2008..... \$197 million

Federal research expenditures, 2008..... \$129 million

Intellectual property revenue, 2005-2008..... \$16.2 million

U.S. patents issued, 2005-2008..... 23

Licenses/options executed, 2005-2008..... 120

Start-up companies, 2005-2008..... 9

Education

Under the UT System Competitiveness Initiative, UT Health Science Center at Houston increased its academic physical space by 6,500 square feet. A major educational initiative has been to expand the School of Public Health by expanding physical space as well as programs offered. Many new degrees in public health are now established, with new academic tracks in biostatistics, environmental and occupational health, epidemiology, health promotion and behavioral sciences, healthcare management, and community health practice. These programs are offered at regional campuses in Houston, Austin, Brownsville, Dallas, El Paso, and San Antonio.

UT HSC-Houston offers two undergraduate degree programs in nursing and dental hygiene. Undergraduate enrollment has increased by 16 percent, or 65 students, at UTHSCH since 2005. This growth trend is due primarily to planned enrollment increases in the undergraduate nursing program and is slightly higher than the 14 percent growth in undergraduate enrollment at all UT System health institutions. Since 2007, new post-baccalaureate programs in biomedical sciences, health information sciences, medical academics, nursing, and public health have increased enrollment at UTHSCH. Over half (51%) of these post-baccalaureate students are enrolled in public health.

Graduate enrollment has decreased 3 percent since 2005, losing almost 100 students. The rate of increase at UT HSC-Houston is less than the 4 percent increase of graduate students enrolled at all UT System health institutions, which, in turn, is less than the national enrollment growth rate of 6 percent. Looking more in-depth gives a varied picture of enrollment across different levels of graduate students. Since 2005, enrollment in Master's programs has declined 24 percent, enrollment in doctoral programs has increased 10 percent, and enrollment in professional programs (e.g., dental school/academics, dental school, and medical) increased 13 percent.



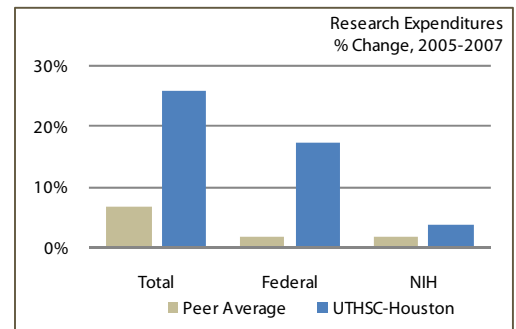
Research & Technology Development

UT Health Science Center at Houston has made major investments in cross-cutting research space and moving basic research projects into products that can benefit the public. For example, the Pioneer Fund is a seed fund to support the translation of promising research discoveries through protection and commercialization of the intellectual property. In addition, UTHSCH has established an Entrepreneurs-in-Residence Program that supports external entrepreneurs in their pursuit of UTHSCH cutting-edge technologies. The residents conduct analyses of the technologies and make selections that lead to spin-outs of new commercial entities. The UTHSCH New Ventures Development Fund assists new spin-outs with early seed dollars critical in their formative stages.



If these commercial entities need physical space equipped with laboratories, high-tech equipment, and administrative offices, they may choose to occupy the Biotechnology Commercialization Center (BCC) for one to two years. The BCC contains about 30,000 square feet of space to support the successful development of new businesses. The facility includes chemistry and high throughput screening/imaging laboratories, an animal vivarium, and office/conference room space. In fact, the BCC will have a positive impact on economic development in the Southeast Texas Region because space also is available to start-up companies based on intellectual property that was not developed at UTHSCH.

Investments in researcher and entrepreneur resources have resulted in major advances in research competitiveness indicators, often tracked by the money spent to conduct scientific investigations. Research expenditures at UT Health Science Center at Houston have increased at a significantly faster rate than peer institutions, totaling 26 percent between 2005 and 2007, while peers averaged a 7 percent increase. Research expenditures from federal sources increased 17 percent during the same time period while peers averaged a 2 percent increase. In particular, research expenditures from grants awarded by the National Institutes of Health comprise two-thirds of federal research expenditures and have increased 4 percent while peer institutions averaged a 2 percent increase. In the next few years, the NIH award described below, as well as the receipt of other competitive NIH grants, will positively impact this trend.



Source: NSF, NIH.

UTHSC-H received one of the first Clinical and Translational Science Awards (CTSA) from the NIH in 2006. The resulting Center for Clinical and Translational Sciences (CCTS) at the Texas Medical Center in Houston will foster integration of clinical and translational research at UTHSC-H, UT M.D. Anderson Cancer Center, the UTHSC-H General Clinical Research Center at Brownsville and Memorial Hermann Healthcare System. The five-year, \$36 million grant will ultimately enable researchers to provide new treatments more efficiently and quickly to patients. Other examples of UTHSC-H's leadership of grand-scale collaborations are their Gulf Coast Consortia/Keck Center for Interdisciplinary Biosciences Training, the Traumatic Brain Injury Consortium, and the Alliance for NanoHealth. Today there are four CTSA's in Texas that are united through the Texas CTSA Network initially organized by UTHSC-H. The Texas CTSA Network is an inter-institutional consortia recognized by the National Institutes of Health's National Center for Research Resources, the agency that administers the CTSA's.

One impressive example of research conducted at UT Health Science Center at Houston that has a major impact on human life is Dr. Myriam Fornage and Dr. Eric Boerwinkle's identification of a stroke gene. The international research team's discovery could lead to the development of new strategies to detect an increased risk of stroke prior to the onset of symptoms and to the creation of treatments intended to target the molecular mechanisms underlying stroke risk.

Competitive Capacity

Competitive capacity, or the resources necessary to advance academic and research goals, is a fundamental building block for institutional activities. Resources include innovative buildings with advanced research laboratories and academic spaces, world-class faculty, recognition programs to support faculty efforts, and interest from external donors. These four areas of competitive capacity are inseparable; quality, cutting-edge research requires specially-designed laboratories outfitted with advanced equipment. These labs attract world-class researchers that translate the research findings to students, the public, and into devices that affect everyday lives. The investments in competitive capacity as a result of the UT System Competitiveness Initiative are outlined below.

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. The number of tenured/tenure track faculty has remained relatively stable at UT Health Science Center at Houston since 2005. Three world-renowned faculty members were recruited through the STARs (Science and Technology Acquisition and Recruitment) Program and two received Research Superiority Program awards from the Texas Emerging Technology Fund.

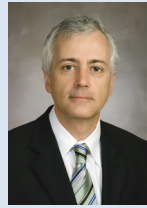
INFRASTRUCTURE

UT Health Science Center at Houston increased research space by 13 percent since 2005, adding over 47,000 square feet. In addition, the Competitiveness Initiative funded three new facilities: the Biomedical Research and Education Facility, the Dental Branch Replacement Building, and the Expansion of the Regional Academic Health Center Public Health Satellite building located at UT Brownsville's campus.

STARs FACULTY



Dr. C. Thomas Caskey, an internationally recognized geneticist, was recruited as Director, Chief Operating Officer and Chief Executive Officer-Elect of the Brown Foundation Institute of Molecular Medicine (IMM). Dr. Caskey now serves as the Director and CEO of IMM, executive vice president of molecular medicine and genetics, and the George & Cynthia Mitchell Distinguished Chair in the Neurosciences. STARs funding totaled \$3 million, matched by institutional funds totaling \$3 million.



Dr. John F. Hancock is Professor and Fondren Chair in Cellular Signaling in the Department of Integrative Biology and Pharmacology. Dr. Hancock was recruited from the University of Queensland to continue his breakthrough discoveries in underlying molecular switches important in carcinogenesis and metastatic phenomena. The STARs award for \$1.5 million was matched by institutional funds totaling \$2.5 million for equipment and \$3.2 million over five years to replace funding previously received from the Australian Government.



Dr. Eva Sevick-Muraca, a pioneer in diagnostic imaging for nodal staging in cancer, is Professor and Cullen Chair in Molecular Medicine at UTHSCH's IMM where she currently directs the Center for Molecular Imaging. Dr. Sevick-Muraca also leads the National Cancer Institute Center for Translational Research. The \$2 million STARs award will help her establish her lab at UTHSCH.

TETF RESEARCH SUPERIORITY PROGRAM



Dr. Mauro Ferrari, world class expert and pioneer in the field of nanomedicine, was recruited to lead the Alliance for NanoHealth through a Texas Emerging Technology Award for \$2.5 million. The Alliance for NanoHealth is a consortium of eight institutions to develop multidisciplinary, nanotechnology-based solutions to unresolved problems in medicine. Dr. Ferrari serves as chair of the Department of Biomedical Engineering at the UTHSCH, professor of Experimental Therapeutics at the UT M. D. Anderson Cancer Center, professor of Bioengineering at Rice University, and professor of Biochemistry and Molecular Biology at UT Medical Branch. Dr. Ferrari also heads the 42-person NanoMedicine Research Center in the Department of Biomedical Engineering.



U.S. Army Surgeon Col. John Holcomb, MD was recruited to launch the Center for Translational Injury Research (CeTIR) and assume the title of professor and chief of acute care surgery. Dr. Holcomb's \$13 million recruitment package was a collaborative partnership between UTHSCH, the Texas Emerging Technology Fund, the Memorial Hermann Healthcare System, and the University of Texas System Medical Foundation. The funds were used to establish the CeTIR and provide research funds to attract a world-class team of experts in medical research and trauma care. Dr. Holcomb also was appointed the Chancellor's Health Fellow for Trauma and Injury Programs. In this role, Dr. Holcomb will work with all 15 UT System institutions to strengthen research, educational, prevention, and treatment programs for trauma and injury.

COMPETITIVENESS INITIATIVE PROVIDES \$236 MILLION FOR CAPITAL PROJECTS AT UTHSCH



The Biomedical Research and Education Facility (BREF) and the Dental Replacement Building are located in the UT Research Park being jointly developed by UTHSCH and UT M. D. Anderson Cancer Center. The BREF consists of 170,300 gross square feet that will contain both wet and dry labs, supporting research such as neurological imaging and adult stem cell studies. The \$77 million project is 80% complete and expected to be completed in December 2009.

The Dental Replacement Building replaces a 52-year-old facility with 285,000 gross square feet of space for research labs, computerized simulators, instruction, learning resources, and patient services. The \$155 million project is the largest single-project capital outlay for the UTHSCH. The building will be connected to the BREF via hallways where the oral pathology labs and the Houston Biomaterials Research Center will be housed. Construction has begun and is expected to be completed in summer of 2012.



The expansion of the RAHC Public Health Satellite building is located on the UT Brownsville campus. An additional 15,000 square feet has been added to the existing building and a Biosafety Level 3 laboratory will support the bioterrorism research initiative. The \$4 million project was completed in 2008.

PHILANTHROPY TO SUPPORT STEMM INITIATIVES

UT Health Science Center at Houston raised almost \$11 million in STEMM-specific endowments since FY 2005, including 22 professorships or distinguished chairs to support faculty research. Almost \$300,000 is distributed for STEMM research and scholarships on an annual basis. STEMM-related allocations equal 99 percent of the total philanthropic distribution per year. An additional \$2 million in donations were raised for the new construction of the dental replacement building.

FACULTY AWARDS

The faculty at UT Health Science Center are often recognized for their significant contributions to their fields of study. For example, since 2005 the following five faculty members have been inducted to the Institute of Medicine:

- Dr. Lu Ann Aday, Lorne D. Bain Distinguished Professor Emerita in Public Health and Medicine
- Dr. Thomas Caskey, Director and CEO of IMM and George & Cynthia Mitchell Distinguished Chair in the Neurosciences
- Dr. Irma Gigli, Walter and Mary Mischer Distinguished Professor of Molecular Medicine
- Dr. Larry Kaiser, President
- Dr. Ferid Murad, Director Emeritus, Institute of Molecular Medicine Professor of Integrative Biology and Pharmacology

Other prestigious award recipients include Dr. John Spudich, Robert A. Welch Distinguished Chair in Chemistry, who was inducted into the American Academy of Arts and Sciences in 2007, and Dr. Lorraine Frazier, first holder

of the Nancy B. Willerson Distinguished Professorship in Nursing, who was inducted into the American Academy of Nursing in 2008.

Incentives

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

Dr. Steven Norris, microbiologist at the Medical School, received the UT System's Chancellor's Entrepreneurship and Innovation Award for research and innovation developed at multiple institutions. The award recognized his collaborative work with Dr. Alan Barbour, formerly at UT HSC-San Antonio and now at the University of California-Irvine, for discoveries leading to a diagnostic test for Lyme disease. The test is now commercially available from 11 companies that have obtained U.S. or international licenses.

UT HSC-Houston Office of Technology Management has developed a seed grant program to support early-stage projects that have a clearly defined path to the commercial marketplace. The seed grant program provides incentives to faculty to push their discoveries from the bench to the community.

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 program has funded two inventions at the UTHSCH.

- Dr. M. Sriram Iyengar received a TIF grant to further develop GuideView, an interactive software program that could be used, among other applications, to help non-physician care providers with step-by-step instructions for clinical guidelines in a rich format containing text, audio, images, and video animation. It supports multiple languages and runs on various devices, such as cell phones, personal digital assistants, and personal computers.
- Dr. Melvin Klegerman is using TIF funds to further develop a novel drug to dissolve blood clots for the treatment of ischemic stroke while reducing hemorrhagic side effects. The research team will demonstrate pre-clinical efficacy of the drug using rabbit models.

