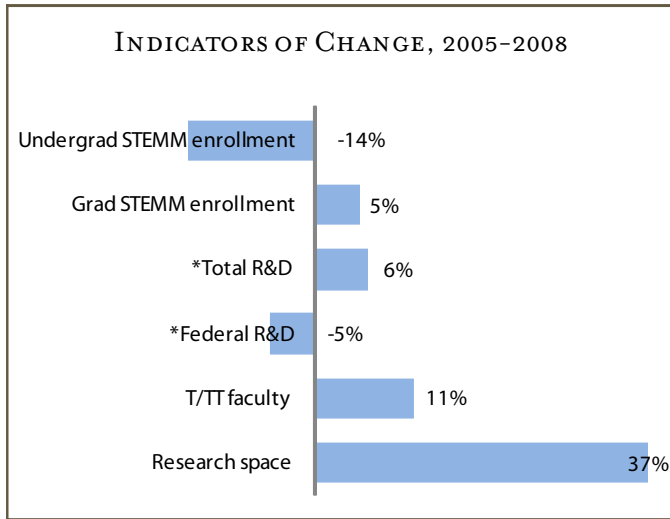


THE UNIVERSITY OF TEXAS SOUTHWESTERN MEDICAL CENTER AT DALLAS

The UT System has responded to the challenge set forth by the *Rising Above the Gathering Storm (RAGS)* report and has committed more than \$205 million to strengthen competitiveness at UT Southwestern Medical Center. 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 STEMM, 2008	
Undergraduate	90
Post-baccalaureate.....	72
Graduate	2,253
STARs faculty recruited (2005-2008)	4
Physical space (square footage)	
Teaching	126,000
Research	854,600
Clinical	118,000
Increase in total sq. ft. through initiative	24%
New STEMM-related endowments (2005-2008)	\$27 million
Research expenditures, 2008	\$371 million
Federal research expenditures, 2008	\$201 million
Intellectual property revenue, 2005-2008	\$41 million
U.S. patents issued, 2005-2008	78
Licenses/options executed, 2005-2008	157
Start-up companies, 2005-2008	5

Education



UT Southwestern Medical Center has established four new degree programs: a Bachelor of Science in Radiation Therapy, a Master of Prosthetics and Orthotics, a Master of Clinical Nutrition, and a Doctor of Physical Therapy.

Undergraduate enrollment has decreased by 14 percent, or 15 students, at UT Southwestern since 2005. This growth trend is significantly less than the 14 percent growth in undergraduate enrollment at all UT System health institutions. Enrollment in post-baccalaureate programs also decreased by 23 percent, or 21 students.

Graduate enrollment has increased 5 percent since 2005, adding 101 students. The rate of increase at UT Southwestern is slightly more 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 increased 10 percent, enrollment in doctoral programs has increased one percent, and enrollment in professional programs (i.e., medical) increased 3 percent.

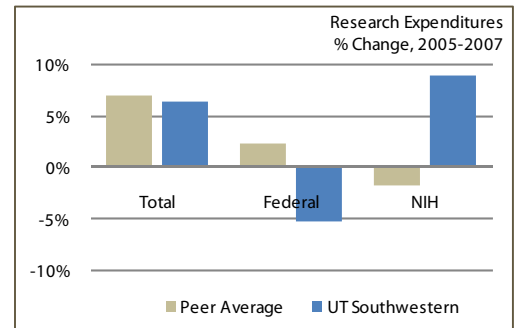
Research & Technology Development

UT Southwestern Medical Center has set as a top priority the advancement of the university's position as a leading institution of biomedical research. To help reach this goal, the institution is committed to providing necessary campus infrastructure to allow for continued, steady growth in research and clinical missions consistent with past growth.

A major institutional initiative to spur innovation in patient care and aid economic growth in the North Texas region is a new biotech park, called the BioCenter at UT Southwestern Medical District. The BioCenter is being built on 15.5 acres purchased from the city of Dallas for biomedical commercialization. BioCenter is designed to serve the entire spectrum of companies in the biotechnology and biodevice industry with its state-of-the-art facilities. It is the hub for commercial life-science in the North Texas region, an ideal home for biomedical research, product development, marketing, sales, and small-scale manufacturing—any enterprise seeking to merge scientific discovery with real-world application. The first 100,000 of 500,000 square feet of space will open in August 2009 with three similar buildings to follow. A Biomedical Acceleration/Incubator will initially occupy 8,000 square feet in the BioCenter's first building providing facilities for biomedical start-up companies to accelerate their development.



Investments in research and commercialization infrastructure have resulted in major advances in research competitiveness indicators, often tracked by the money spent to conduct scientific investigations. Research expenditures at UT Southwestern have increased at about the same rate as peer institutions, totaling 6 percent between 2005 and 2007, while peers averaged a 7 percent increase. Research expenditures from federal sources decreased 5 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 (NIH) comprise 97 percent of federal research expenditures and have increased 9 percent while peer institutions averaged a 2 percent decrease.



Source: NSF, NIH.

UT Southwestern Medical Center received a five-year, \$34 million Clinical and Translational Science Award (CTSA) from the NIH in 2007. The resulting North and Central Texas Clinical and Translational Science Initiative will include schools of allopathic and osteopathic medicine, dentistry, nursing pharmacy, public health, engineering and computer science, which had previously formed relationships supported by a NIH Roadmap award. A new department of clinical sciences, supported by faculty from all participating schools, serves as the academic home for the CTSA. Existing infrastructure and support include: a substantial financial commitment of participating institutions to the initiative; more than 200 established clinical and translational investigators who will act as faculty and mentors; and a large and medically diverse patient base cared for by established hospitals.

One impressive example of research conducted at UT Southwestern Medical Center is the identification of the most important cholesterol lowering target discovered in 20 years. Drs. Jonathan Cohen and Helen Hobbs discovered an extremely exciting novel target for cholesterol lowering drugs, nominally 'PCSK9.' In extensive genetic analysis of a population within the Metroplex area, these investigators found that mutations in the PCSK9 protein can result in marked reductions in plasma levels of cholesterol. It is expected that this will result in an entirely new class of cholesterol lowering drugs, and is already the subject of drug discovery efforts by some of the leading pharmaceutical companies in the U.S.

Major breakthroughs in cholesterol have a long history at UT Southwestern Medical Center. Drs. Michael Brown and Joseph Goldstein discovered the basic mechanism of cholesterol metabolism and won the 1985 Nobel Prize. Their research led to the development of today's cholesterol-lowering drugs that save millions of lives.

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 increased by 11 percent at UT Southwestern Medical Center since 2005, adding 42 additional faculty members. Five world-renowned faculty members were recruited through the STARS (Science and Technology Acquisition and Recruitment) program.

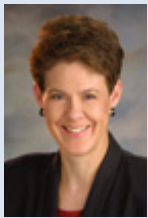
STARS FACULTY



Dr. Joel Elmquist is Maclin Family Professor in Medical Science, in Honor of Dr. Roy A. Brinkley and professor of internal medicine and Center for Hypothalamic Research. Dr. Elmquist is an expert in neuroscience, specifically focused on defining central pathways that regulate body weight and food intake and how abnormalities of these pathways contribute to obesity, insulin resistance, and type II diabetes. Dr. Elmquist's recruitment package included \$1 million from STARS, \$1.5 million from the institution, and \$1 million for an endowed chair. Dr. Elmquist was recruited from Harvard Medical School where he was associate professor of neurology and medicine.



Dr. Philipp Scherer is Gifford O. Touchstone Jr. and Randolph G. Touchstone Distinguished Chair in Diabetes Research, professor of internal medicine, and director of the Touchstone Diabetes Center. Dr. Scherer is an expert in the mechanisms involved in the development of type II diabetes and is dedicated to developing novel therapeutic approaches to improve insulin sensitivity. Dr. Scherer was recruited from the Albert Einstein College of Medicine, receiving \$1.5 million from STARS, \$7 million from the institution for lab start-up costs, and \$7 million in endowment to recruit Dr. Scherer and his lab staff.



Dr. Joan Schiller is the Andrea L. Simmons Distinguished Chair in Cancer Research and professor, chief of the hematology/oncology division of the department of internal medicine, and deputy director of the Simmons Cancer Center. Dr. Schiller is an internationally recognized expert in drug development for lung cancer and has been active in Phase I, II and III clinical trials. Dr. Schiller was recruited from the University of Wisconsin where she held the Melanie Heald Endowed Professorship. STARS funds totaled \$2 million to support Dr. Schiller's research program.



Dr. Joe Takahashi, professor and chair of neuroscience, was recruited from Northwestern University as an internationally renowned expert in circadian rhythms in mammals. In 1997, Dr. Takahashi led the team that cloned "Clock," the first mammalian circadian gene to be cloned. Dr. Takahashi received \$4 million over two years in STARS funding.



Dr. Xiadong Wang is George L. MacGregor Distinguished Chair in Biomedical Science, professor in the department of biochemistry, and Howard Hughes Medical Institute Investigator. Dr. Wang's expertise is in the biochemical pathway through which human cells complete their developmental process, which could eventually lead to new treatments for cancer, neurological disorders, and other diseases. The \$1.5 million from STARS was matched by a \$2 million endowed professorship to prevent Dr. Wang from leaving UT Southwestern Medical Center for a position as director for the National Institute for Biological Sciences in China.

INFRASTRUCTURE

New construction and renovation of state-of-the-art buildings create educational and research possibilities that drive the competitiveness initiative. UT Southwestern Medical Center increased research space by 37 percent since 2005, adding over 230,000 square feet. In addition, the Competitiveness Initiative funded two new facilities that add over 350,000 square feet of space: the Laboratory Research and Support Building and the Phase 5 construction of the North Campus.

COMPETITIVENESS INITIATIVE PROVIDES \$193 MILLION FOR CAPITAL PROJECTS AT UT SOUTHWESTERN



The Laboratory Research and Support Building will contain two floors for a pathogen-free vivarium facility to include areas for: animal holding, procedures, laboratories, cage-washing and autoclave, and associated material handling and storage. The remaining two floors will be used for research and support. The \$36.6 million project is complete and added 80,000 square feet of space, 16,000 of which was left as shell space on the fourth floor.

North Campus Phase V will add a twelve story biomedical research building, a vehicular bridge to the main North Campus entry, a pedestrian bridge connecting to the Pickens Biomedical Building, and an expansion of the North Campus Thermal Energy Plant. Four floors will be finished –out initially, including a 3,000 square foot structurally isolated microscopy laboratory. The remaining floors will be finished-out in a subsequent project. The \$156 million project is about one-third complete and is expected to be fully complete in spring 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. UT Southwestern raised almost \$27 million in STEMM-specific endowments since FY 2005, including graduate fellowships, distinguished chairs to support faculty research, and student scholarships. Almost \$770,000 is distributed for STEMM research and scholarships on an annual basis from these new endowments. In addition, UT Southwestern raised \$43 million in gifts to support the Phase V construction of the North Campus, one of the construction projects for the UT System Competitiveness Initiative.

FACULTY AWARDS

The faculty at UT Southwestern 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, since 2005 five faculty were invited into the National Academy of Sciences, three were invited into the American Academy of Arts and Sciences, and two were named Fulbright American Scholars.

Twenty faculty at UT Southwestern have MERIT (Method to Extend Research in Time) Awards from the National Institutes of Health (NIH), a true symbol of scientific achievement in the research community. MERIT awards are rare, offered to less than 5 percent of NIH-funded investigators, limited to those who have demonstrated superior competence and outstanding productivity in previous research efforts. MERIT awards provide investigators with long-term, stable research funding to foster their continued creativity without the burden of preparing frequent research grant proposals. MERIT Award recipients at UT Southwestern equal almost half of all MERIT Award recipients in the entire UT System.

Incentives

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

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 projects to commercialize 5 inventions at UT Southwestern.

- An integrated patient bed system, or “smart bed,” that enables self-contained, fully portable necessary services and therapeutic protocols to be digitally administered according to physician instructions. Wireless communications and data management allow remote/virtual control and operation.
- Xanapath, a start-up company that was formed around an UT Southwestern Medical Center invention. Researchers developed a microscope based on hyper-spectral imaging that enables simultaneous testing for many cancer types, including breast, lung, and colon. It can lead to better diagnosis by testing multiple pathologies at once.
- A treatment for solid cancerous tumors that has less severe side-effects and is more effective than existing drugs. The drug treatment is particularly useful for cancers that are resistant to radiation and chemotherapy.
- A wireless sensor to aid in the diagnosis of gastroesophageal reflux disease that operates without batteries (collaboration with UT Arlington).
- StoneMag System (collaboration with UT Dallas) is expected to enable, for the first time, a surgeon to effectively and rapidly retrieve all stone fragments from a kidney, significantly reducing operation time, treatment costs and the morbidity of stone recurrences.



Dr. Charles Pak, the Alfred L. and Muriel B. Rabiner Distinguished Academic Chair for Mineral Metabolism Biotechnology Research and professor of internal medicine, was recognized by The UT System's Chancellor's Entrepreneurship and Innovation Awards for his discoveries in the management of renal stones and management of osteoporosis. Dr. Pak has developed three FDA approved orphan drugs for kidney stones, uncovered metabolic causes for kidney stone formation, and devised a multi-test kit for individuals at risk for forming kidney stones. Dr. Pak led the development of Citracal for the prevention of osteoporosis and Urocit-K for the control of kidney stones. His research has led to more than 15 U.S. issued patents.

