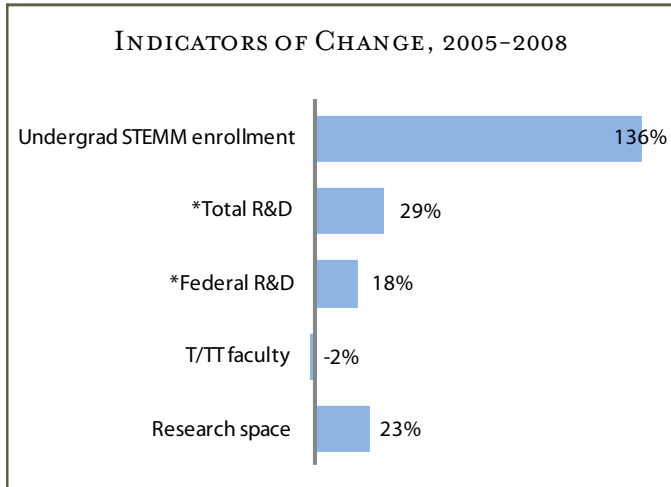


THE UNIVERSITY OF TEXAS M. D. ANDERSON CANCER CENTER

The UT System has responded to the challenge set forth by the *Rising Above the Gathering Storm (RAGS)* report and has committed more than \$887 million to strengthen competitiveness at UT M. D. Anderson (including direct support and authorization for the institution to commit and use funds). 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.

Undergraduate enrollment in STEM, 2008	203
STARs faculty recruited (2005-2008)	5
Physical space (square footage)	
Teaching	104,000
Research	712,000
Clinical	81,000
Increase in total sq. ft. through initiative	107%
New STEM-related endowments (2005-2008)	\$81 million
Research expenditures, 2008	\$489 million
Federal research expenditures, 2008	\$195 million
Intellectual property revenue, 2005-2008	\$29 million
U.S. patents issued, 2005-2008	106
Licenses/options executed, 2005-2008	111
Start-up companies, 2005-2008	10

Education

Under the UT System Competitiveness Initiative, UT M. D. Anderson Cancer Center added three degree programs that established Bachelor of Science degrees in diagnostic imaging, magnetic resonance imaging, and computed tomography.

Undergraduate enrollment increased by 136 percent (117 students) at UT M.D. Anderson Cancer Center since 2005. This increase in STEM enrollment is significantly more than the 14 percent growth in undergraduate STEM enrollment at all UT System health institutions. The increase of 117 students is due to the rapidly growing School of Health Sciences that trains students in hard-to-fill disciplines.



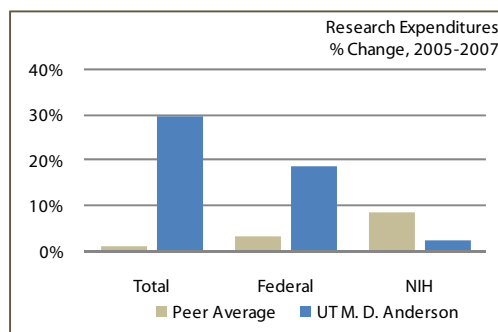
Research & Technology Development

UT M. D. Anderson Cancer Center held a series of faculty retreats over 18 months and developed a strategic plan to promote collaborative interactions across specific areas of research and development. Implementation of the strategic plan's priorities includes the creation of five institutes for: basic science, cancer prevention and risk assessment, early detection and treatment, personalized cancer therapy and cancer care excellence. These virtual institutes build around existing divisions and departments and will speed the path to discovery by collaboration among scientists with common interests, facilitate faculty enhancement strategies, funding initiatives, and philanthropic goals. The five strategic areas are also consistent with the priorities identified by the newly formed Cancer Prevention and Research Institute of Texas established by the State of Texas to fund grants for cancer research and prevention.

UT M.D. Anderson's research results in many new procedures, devices, and drugs that lead the fight against cancer. One example of a product developed by researchers at UTMDA is a biomarker for the detection of bladder cancer. As a result of this discovery, bladder cancer can be detected in a simple, non-invasive procedure using a urine sample. The next step in the commercialization process is to develop a U.S. Food and Drug Administration (FDA) approved, commercially available test.

A second example of an invention from UTMDA is the supra biliary stent. The self-expanding stent targets diseases of the liver or gall bladder and creates a new class of self-expanding stents that provide both unsurpassed strength and flexibility in one stent design. The device has received FDA approval.

These investments in excellence contribute to enhanced resources for faculty research projects, often tracked by the money spent to conduct the scientific investigations. Research expenditures at UTMDA have increased 29 percent between 2005 and 2007, while peers averaged a one percent increase. Research expenditures from federal sources increased 18 percent during the same time period while peers averaged a 3 percent increase. Research expenditures from grants awarded by the National Institutes of Health increased 2 percent at UTMDA while peers increased 8 percent.



Source: NSF, NIH.



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.

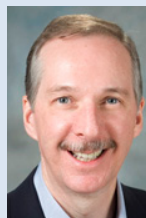
FACULTY RECRUITMENT

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. UT M.D. Anderson's number of tenured/tenure track faculty decreased by 2 percent, or 10 people, between 2005 and 2008. However, the research expenditures per tenured/tenure-track faculty member grew 45 percent during this time. The STARS (Science and Technology Acquisition and Recruitment) Program enabled UTMDA to add five faculty members and retain two professors, increasing the collection of outstanding scientists at the institution.

STARS FACULTY



Dr. Richard Behringer holds the Ben F. Love Chair for Cancer Research and is one of the most prominent mouse genetic/embryology researchers in the U.S. The \$500,000 STARS award helped retain Dr. Behringer during an aggressive recruitment offer from the University of Pennsylvania. Additional incentives included membership in the M. D. Anderson Trust, a five-year appointment funded at \$350,000 per year to encourage research.



Dr. Richard Brennan is professor and Robert A. Welch Distinguished University Chair in Chemistry in the department of biochemistry and molecular biology and adjunct professor at Rice University. Dr. Brennan is a world leader in structural and biophysical analysis of DNA binding proteins. The STARS award of \$1 million was matched with \$450,000 of institutional start-up funds and significant laboratory and support space.

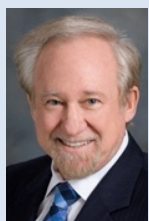
STARs FACULTY



Dr. Raymond DuBois is provost and executive vice president and professor of gastrointestinal medical oncology and cancer biology. Dr. DuBois was recruited from Vanderbilt University and is recognized for identifying a crucial link between inflammation and cancer and for his work in translational research. The \$1.1 million STARs award is matched by \$3 million of institutional funds and substantial laboratory space to recruit non-tenure track scientists, trainees, and technicians to staff Dr. DuBois' lab.



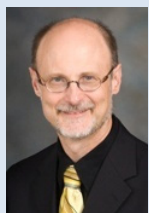
Dr. John Ladbury is the Edward Rotan Distinguished Professor in Cancer Research and professor of biochemistry and molecular biology. Dr. Ladbury received a STARs award for \$1 million to assist his recruitment from the University of London. Dr. Ladbury is part of the Genes and Development Graduate Program and is an expert in the interactions of proteins and the affinities of molecules for one another. His multidisciplinary research approach will advance UTMDA's drug development efforts.



Dr. John Weinstein is professor and chair of bioinformatics and computational biology with a joint appointment in systems biology. Dr. Weinstein received a STARs award of \$900,000 for his recruitment from the National Cancer Institute where he was head of the genomics and bioinformatics group. His more than 200 publications advance areas such as new approaches to the treatment of cancer or AIDS. Dr. Weinstein will play an important role in UTMDA's institute on personalized medicine.



Dr. Miles Wilkinson is the Ruby E. Rutherford Distinguished Professor in biochemistry and molecular biology and a leading researcher in the regulatory pathways for germ cell development and the RNA surveillance pathways that correct changes that might cause developmental or immune system defects. The \$670,000 STARs award helped counteract an aggressive recruitment effort by the University of Toronto and other institutions stimulated by a series of international presentations made by Dr. Wilkinson on his research findings. Dr. Wilkinson's retention package also included membership into the M. D. Anderson Trust, a five-year appointment funded at \$330,000 per year to encourage innovative research and additional laboratory space. However, Dr. Wilkinson has since accepted an offer from another institution.



Dr. Richard Wood is professor of carcinogenesis, with internationally-recognized expertise in DNA repair mechanisms, damage responses, and genomic stability. Dr. Wood was recruited from the University of Pittsburgh's Cancer Institute Program in Molecular and Cellular Biology and has been a visiting professor at UTMDA. Dr. Wood's work has led to significant discoveries on molecular processes disrupted in cancer.

The STARs award of \$1.5 million was matched with additional funds to total \$6.5 million over five years.

INFRASTRUCTURE

New construction and renovation of state-of-the-art buildings create educational and research possibilities that drive the competitiveness initiative. Funds from the Competitiveness Initiative have been used for an expansion of the Alkek Building, Phase I of the Bastrop Facility, the Center for Advanced Biomedical Imaging Research, the Center for Targeted Therapy Research Building, the Pickens Academic Tower, Phase I of the Smithville Facility, and the South Campus Vivarium Facility. These construction projects were made possible with \$374 million from Tuition Revenue Bonds, Permanent University Funds, and the Revenue Financing System; \$425 million from hospital revenues; and almost \$80 million from grants and gifts.

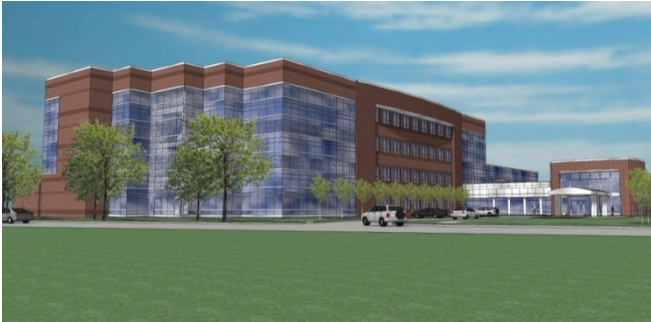
COMPETITIVENESS INITIATIVE PROVIDES \$879 MILLION FOR CAPITAL PROJECTS AT UTMDA



Alkek Building expansion includes five new inpatient floors with additional support space provided for pharmacy, nursing support, and additional beds in the post anesthesia care unit and the intensive care unit. The 517,000 square foot project will also renovate the existing 12th floor to address infrastructure issues associated with the current protected environment. Construction of the \$321 million expansion is 35 percent complete and is expected to be fully complete in January 2013.



Phase I of the Bastrop Facility consists of 75,000 square feet of basic research laboratories, education space, primate research laboratories, pathology support, and various site and infrastructure upgrades. The \$52 million project has been completed and construction has moved to Phase II.



The South Campus Research Building 3 contains the Center for Advanced Biomedical Imaging Research and will be a six story building that will contain laboratories dedicated to the development and validation of sophisticated technology and instrumentation, such as Positron Emission Tomography, Magnetic Resonance Imaging, and Optical Imaging Tracers. The \$132 million project received an award from the Texas Enterprise Fund to encourage scientists to work together to create new ways of diagnosing cancer and cardiac disease and selecting appropriate therapies. The 315,000 square foot facility is now 80 percent complete and is scheduled for completion in December 2009.

The South Campus Research Building 4 contains the Center for Targeted Therapy. It is a new six story research facility housing laboratories and offices for the Department of Experimental and Molecular Therapeutics as well as other translational research departments. The 209,000 square feet of new space will offer shared support laboratories such as environmental rooms, dark rooms, and shared equipment spaces as well as wet laboratories for translational research, a research medical library satellite, a distance learning center, and a support office complex for support services such as the Office of Technology Commercialization, Grants and Contracts, and Legal Services for intellectual property management. The Center for Targeted Therapy will develop and facilitate more effective partnerships and information exchange between health care providers, extramural researchers, academic institutions, and industry groups involved in early cancer detection and treatment. The \$95 million project is 41% complete and is expected to be fully complete in December 2010.



Phase I of the Smithville Facility includes a new 29,000 square foot research laboratory building plus site and infrastructure upgrades. The original scope of the 29,000 square foot project is complete, with a project cost of over \$30 million.





The T. Boone Pickens Academic Tower will provide 21 stories and 730,000 square feet of space for faculty and various administrative functions including executive and administrative offices. Additional amenities include food service, fitness center (future), and training center. Skybridges will connect the Tower to the Faculty Center and the Mays Clinic skybridge. The construction of the \$173 million project is being completed in phases and the first occupancy phase began in spring 2008.



The South Campus Vivarium Facility provides almost 66,000 gross square feet of new and renovated space for the animal research facilities. The Vivarium will be built in existing warehouse and vivarium space in the Physical Plant Building and adjoining the Smith Research Building. Existing animal facilities will also be renovated as part of the \$45 million project.

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 M. D. Anderson raised \$81.4 million in STEMM-specific endowments since FY 2005, including graduate fellowships, distinguished chairs to support faculty research, and student scholarships. Over \$2 million is distributed for STEMM research and scholarships on an annual basis from these new endowments.

FACULTY AWARDS

The faculty at UTMDA are unmatched as leaders in cancer research and often are recognized for their significant contributions to their areas of expertise and respective fields of study. For example, two professors were named fellows of the American Academy of Nursing and one has a NIH MERIT (Method to Extend Research in Time) Award, 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. Dr. Raymond DuBois has a MERIT award through 2013 for his research in the regulation of intestinal wall cell growth.

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) has funded projects to commercialize three inventions at the UTMDA.

- A new therapeutic platform for widespread application of genetically manipulated cells, focusing on rare diseases with high treatment costs.
- An aerosolized lung stimulant drug that promotes immune response and protects against specific infections.
- A drug that significantly decreases radiation exposure to patients with prostate cancer while increasing the accuracy of treatment, which reduces side effects and improves clinical outcomes.

