

# Profile

ON RESEARCH AND GRADUATE STUDIES



Office of the Vice President for Research  
Texas A&M University



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Admission to Texas A&M University or any of its programs are open to qualified individuals regardless of race, color, religion, sex, age, national origin or educationally unrelated handicaps.

# Overview



In October of 1876, The Agricultural and Mechanical College of Texas was founded with six students. During the past 125 plus years, Texas A&M University has grown to over 45,000 students pursuing degrees in 10 academic colleges. Texas A&M has evolved into a research university that is one of a select few in the nation to hold the triple designation as a land-grant, sea-grant, and space-grant university. A major player in research activities that have regional, national, and international influences, it also is home to the George Bush Presidential Library, a member of the National Space Biomedical Research Institute, home to the Texas Institute of Genomic Medicine, and a member of the prestigious Association of American Universities.

Texas A&M University is one of the top tier research universities in the nation with more than half a billion dollars in annual research expenditures and more than 2.5 million square feet of research space. The University has formal research and exchange agreements with about 100 institutions in about 40 countries, and more than 1,000 students participating in study abroad programs each year, ranking Texas A&M among the top 13 research universities nationally. Texas A&M also has two international centers—the Mexico City Center, the Santa Chiara Study Abroad Center in Italy, and a branch campus in Doha Qatar.

The Office of the Vice President for Research (VPR) develops and implements research policies, coordinates research activities with other Texas A&M University System agencies, develops strategies for achieving the University's research goals, and promotes a climate conducive to innovative faculty research. This office is comprised of the Academy for Advanced Telecommunications and Learning Technologies, the Center for Information Assurance and Security, the Comparative Medicine Program, the Institute for Scientific Computation, the Integrative

Center for Homeland Security, the Microscopy Imaging Center, the National Center for Foreign Animal and Zoonotic Disease Defense, the Office of Distance Education, the Office of Graduate Studies, the Office of Research Compliance, the Office of Sponsored Projects, the Proposal Development Group, the Office of Professional Development, the Technology Commercialization Center, the Technology Licensing Office, and the Texas A&M University Research Park. This report presents a profile of interesting facts, figures and comparisons, as well as a brief description of each component office.

Statistics cited in *Profile* are for Texas A&M University and The Texas A&M University System research agencies and Health Science Center headquartered in College Station, unless otherwise indicated. Awards refer to dollar amounts awarded in contracts and grants as communicated to the Office of the Vice President for Research.

Expenditures refer to dollar amounts spent on research or other projects as reported to the National Science Foundation (NSF). Figures reported to NSF are only composed of research activities in science and engineering and specifically exclude research activities in disciplines such as education, law, and public administration.

Texas A&M University and the Office of the Vice President for Research supports the highest quality faculty, research, and scholarship, while encouraging and facilitating interdisciplinary scholarship and excellence in research, and graduate studies. I am appreciative of the support and invaluable expertise that is provided in order to enhance the research vision and the quality of our institution.

A handwritten signature in black ink that reads "Richard E. Ewing". The signature is written in a cursive, flowing style.

Richard E. Ewing, Ph.D.  
Vice President for Research

# Research Facts 2004

The majority of Texas A&M's approximately 2,500 faculty members are involved in academic scholarship, creative activity, or research. Among these, more than 1,100 were involved in more than 3,300 sponsored projects that received external funding during FY 2004. Expenditures resulting from

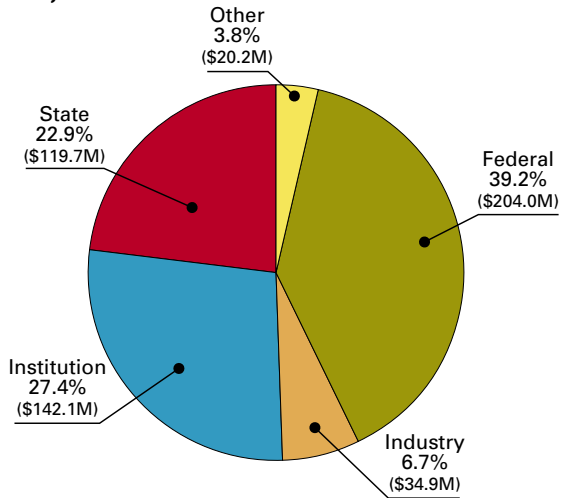
these sponsored research projects totaled \$520.9 million. Expenditures are calculated according to the definition used by NSF\*.

The University supports 11,400 acres in the Research Valley with over 2.58 million square feet of space dedicated to research†.

## Research Expenditures

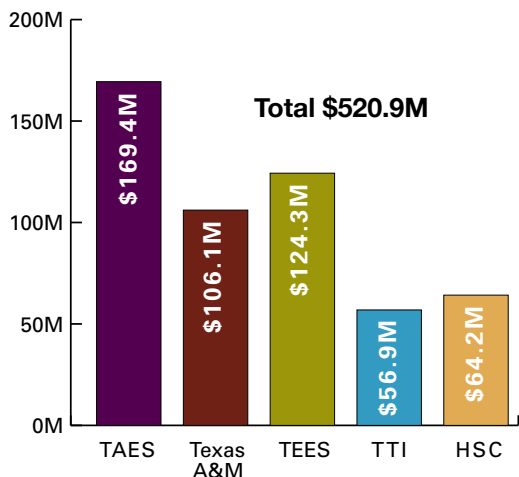
### Expenditures by Source of Funds, FY 2004

Texas A&M research expenditures originate from a variety of sources including but not limited to federal, state, industry, and institution. "Institution" includes such items as: University-funded internal grants programs; projects funded by internal funds from experiment stations; reinvestment of income into additional research projects from earned indirect cost; and cost sharing. "Other" items include support from nonprofit organizations and out-of-state and/or foreign institutions.



### Expenditures by A&M System Part, FY 2004

In FY 2004, research expenditures reported to NSF\* by Texas A&M, the research agencies, and The Health Science Center headquartered in College Station totaled \$520.9 million. The Texas Agricultural Experiment Station reported \$169.4 million. The University reported expenditures of \$106.1 million. The Texas Engineering Experiment Station reported \$124.3 million. The Texas Transportation Institute reported \$56.9 million and The Texas A&M University System Health Science Center reported \$64.2 million.



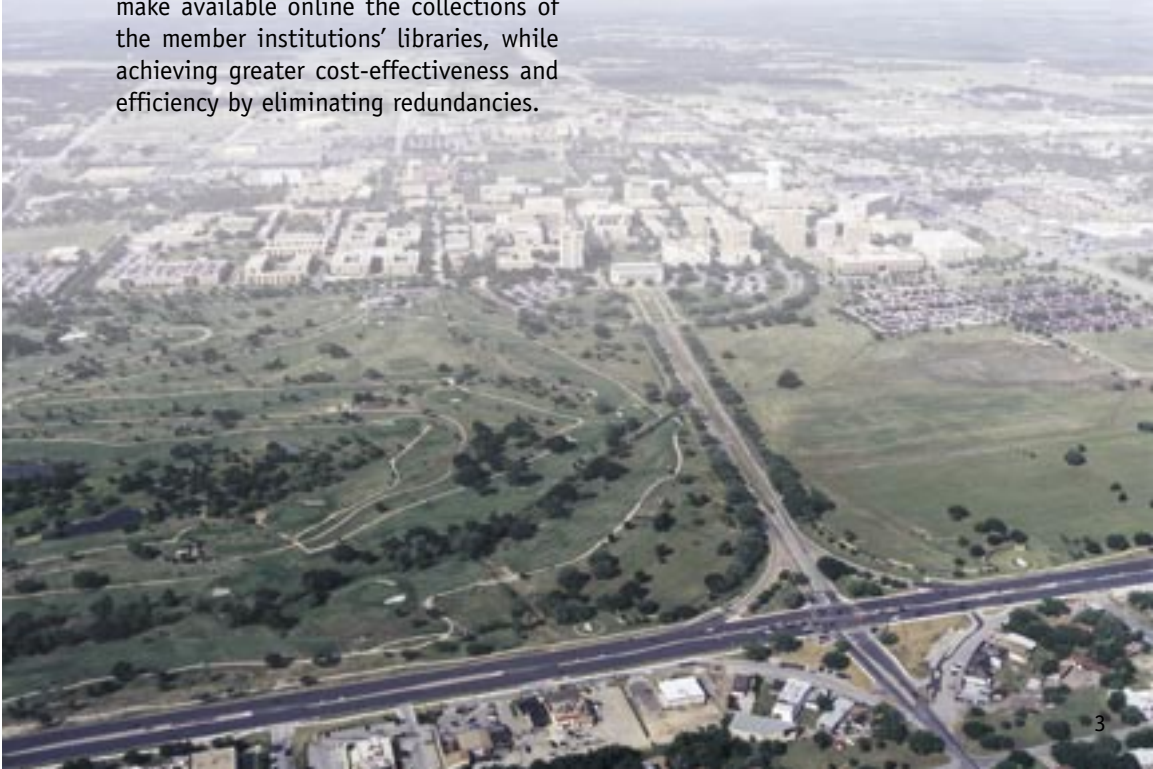
\*An explanation of expenditure calculations is included in the Overview.  
 †Space information provided is by the Office of Facilities Coordination.



## Texas A&M University Interesting Facts

### Texas A&M University:

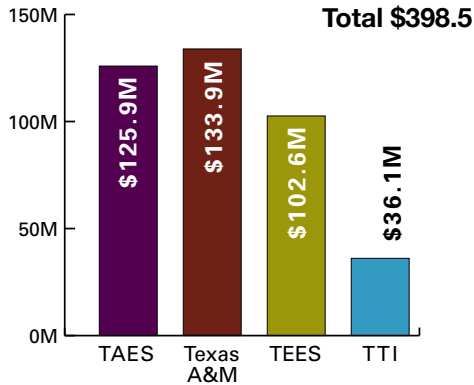
- Recently partnered with the Texas A&M University System's Health Science Center and Lexicon Genetics Inc., in the Texas Institute for Genomic Medicine. Established with a \$50 million grant from the Texas Enterprise Fund, the Institute will consist of two "libraries" containing about 350,000 sets of embryonic mouse stem cells for use in medical and other life sciences research.
- Is a member of the Giant Magellan Telescope consortium, which is building the world's largest and most powerful telescope —with more than four times the collecting area of the largest telescope now in use and roughly 10 times the resolution of the Hubble space telescope — in Chile and is expected to be in use in about 10 years.
- Established the Texas Digital Library in partnership with Texas' four other state university systems and Rice University, to make available online the collections of the member institutions' libraries, while achieving greater cost-effectiveness and efficiency by eliminating redundancies.
- Recently replaced the Texas Clipper II, Texas A&M University-Galveston's training ship since 1966, with a decommissioned 524-foot U.S. Navy combat stores ship formerly called *Sirius*. The new ship, scheduled to be christened in November 2005, displaces 16,800 tons and has a top speed of 18 knots.
- Had a total economic impact on Bryan-College Station and surrounding communities of \$2.35 billion in 2004, surpassing the record set in 2003. The total represents more than \$941 million in direct economic impact, with a standard multiplier effect applied, and includes contributions to the local economy by Texas A&M students, employees of the university and other A&M System agencies located in Bryan-College Station, and visitors.



# Research Awards

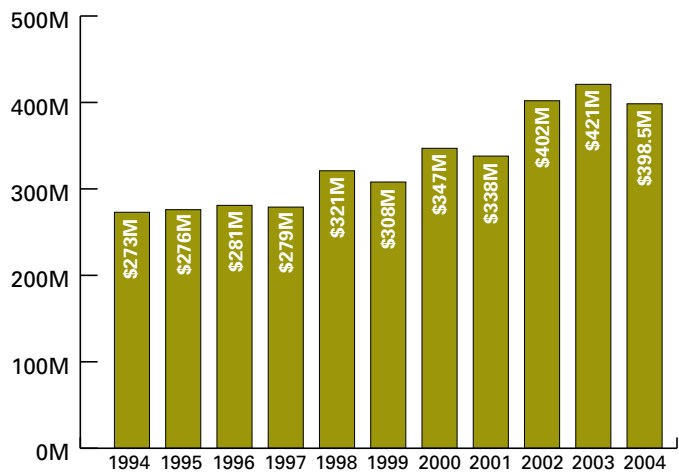
## New Research Awards by A&M System Part, FY 2004

In FY 2004, Texas A&M University and the research agencies headquartered in College Station received awards valued at \$398.5 million



## Growth in Value of New Awards, FY 1994–2004

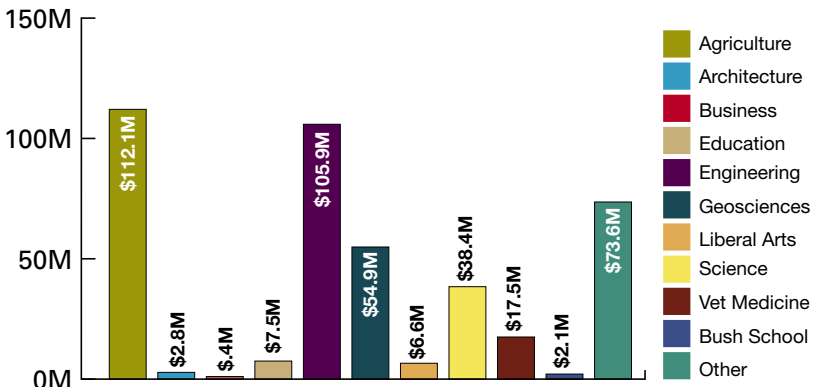
Between FY 1994 and FY 2004, the total value of sponsored project awards at Texas A&M University and the research agencies headquartered in College Station has increased steadily by over \$100 million. The new awards for FY 2004 totaled \$398.5 million.



## New Research Awards by College, FY 2004

In FY 2004, the College of Agriculture and Life Sciences received the greatest amount of new sponsored project funding, followed by the Dwight Look College of Engineering, Other, the colleges of Geosciences, Science, Veterinary Medicine, Education and Human

Development, Liberal Arts, Architecture, the George Bush School of Government and Public Service, and the Mays Business School. "Other" represents awards to projects not affiliated with a college within Texas A&M.



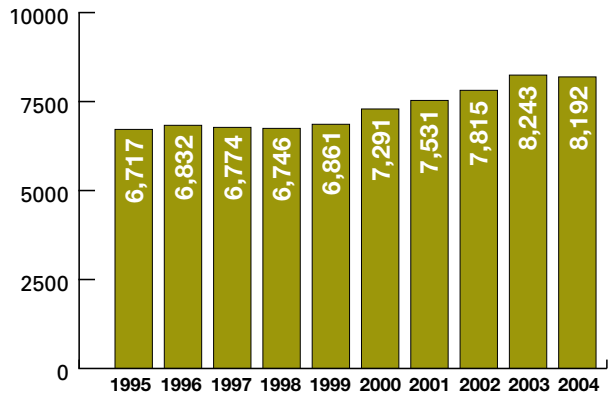
# Graduate Studies

Of the more than 45,000 students who attend Texas A&M University, approximately 8,700 students are pursuing graduate and professional education in more than 120 degree programs. Texas A&M has consistently ranked in the top 20 in number of doctoral degrees awarded to ethnic and minority students and total number of doctoral degrees awarded. The graduate program stands on the firm foundation of knowledge and encourages exploration into new realms of intellectual challenge. More than 90 percent of the graduate faculty hold doctoral degrees from virtually every state in the nation and more than 20 foreign countries. Several faculty members are also members of the National Academy of Sciences and the National Academy of Engineering.

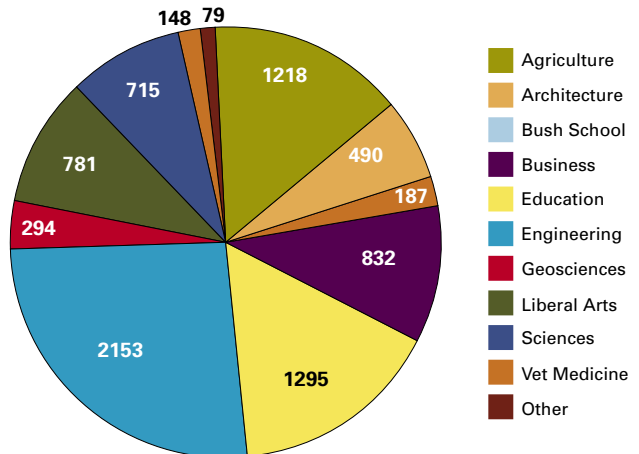
The Office of Graduate Studies (OGS) serves as the primary administrative body and overarching source of information for graduate education, providing the vision and quality control for graduate studies at Texas A&M. OGS also assists departments in recruiting efforts and provides fellowships to encourage the best students to enroll at Texas A&M. Once a graduate student is accepted by a department, OGS facilitates progression towards completion of a graduate degree through maintenance of all official documents. In addition, OGS serves as an advocate for all graduate students and assists with retention initiatives. For more information concerning graduate studies at Texas A&M, see the OGS Web site: <http://ogs.tamu.edu>

## Graduate Enrollment

Graduate enrollment at Texas A&M was 8,192 in 2004. In the past decade (1995-2004), the number of graduate students has grown by 25 percent. The number of graduate students and enrollment totals do not include professional students (i.e., those pursuing a D.V.M.). "Other" represents special populations, which include the Council of Deans, distance education, the exchange program, The Texas A&M University System Health Science Center and special programs.



## Graduate Enrollment by College Fall 2004

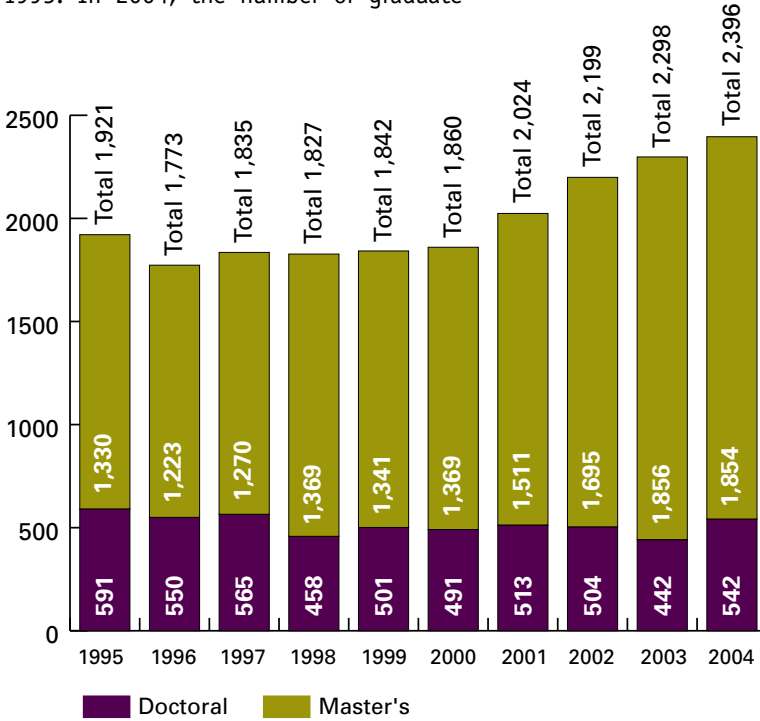


# Graduate Studies

## Graduate Degrees Awarded

Overall, the number of graduate degrees awarded has increased by 25 percent since 1995. In 2004, the number of graduate

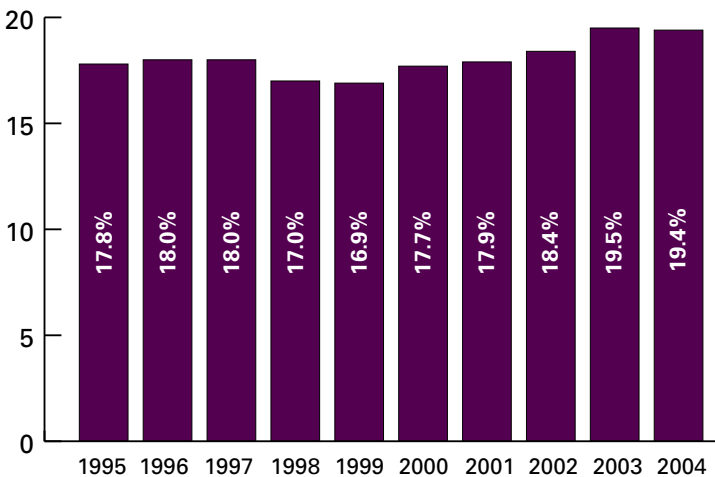
degrees awarded reached a record high with 2,396.



## Graduate and Professional Enrollment

In 2004, graduate and professional enrollment, as a percentage of total student enrollment, remained about the same as in 2003. The trend over the past 10 years has been a slight year-to-year increase in

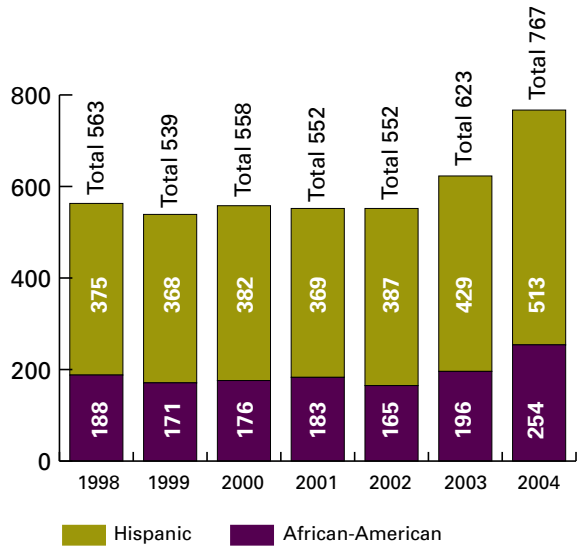
graduate and professional enrollment as a portion of the total student population moving us steadily toward the Vision 2020 goal of being 30 percent of the student body by 2020.





## Minority Graduate Enrollment

The total number of Hispanic and African-American graduate students has increased by 42 percent in the past five years, and the number of enrolled minorities is expected to continue to increase. In 2004, 513 Hispanic graduate students and 254 African American graduate students enrolled at Texas A&M University. Last year, Texas A&M was ranked 13 in *Hispanic Magazine's* annual "Top 25 Colleges for Latinos" listing.



## Two New Graduate Programs Added

During the past year, Texas A&M received approval on two graduate programs, resulting in four new graduate degrees available.

**Hispanic Studies** is a doctoral program, focusing on the transcultural and the transnational, as it explores the continuous interchanges between Spanish-speaking countries, as well as their interaction with other cultures and languages worldwide. The program is delivered in collaboration with Texas A&M-Corpus Christi, Texas A&M

International University, and Texas A&M-Kingsville.

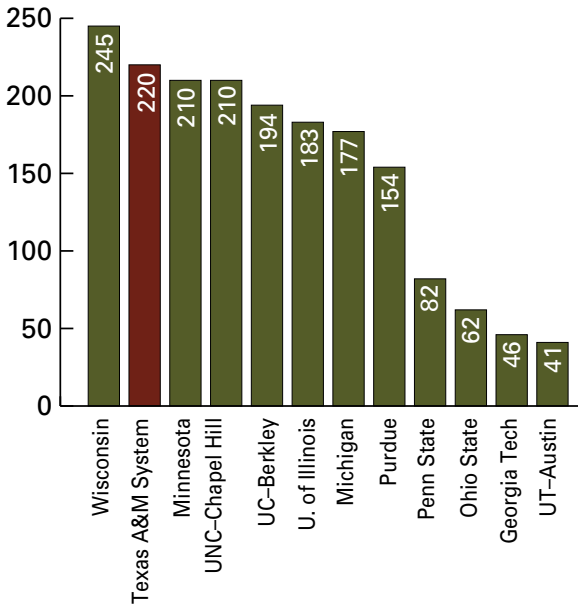
**The Water Management and Hydrologic Science Program** allows students to pursue a Ph.D, a Master of Water Management, or a Master of Science. The program addresses issues related to water, ranging from individual streams to large watersheds and regional drainage basins and from changes in water law to advances in technology that have intensified competition for water.

# Technology Licensing Office

Since its inception in 1992, the Technology Licensing Office (TLO) has continued to facilitate connections between laboratory and industry to enable maximum public benefit from innovations developed by A&M System researchers. In pursuit of that mission, TLO has executed more than

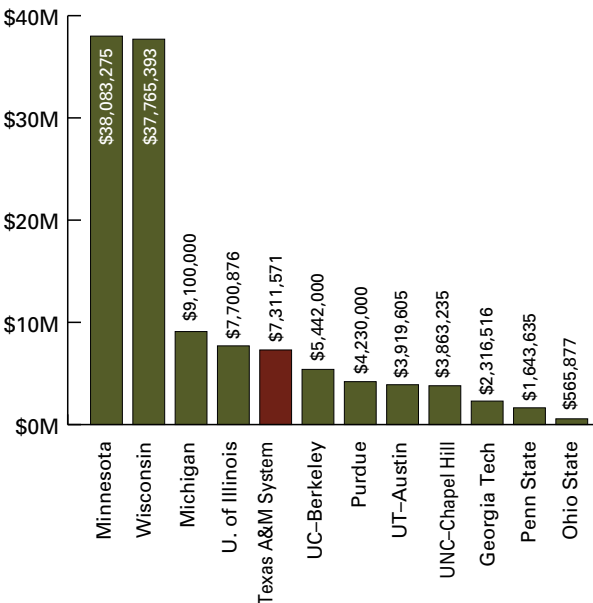
690 license agreements with commercial partners. This year, the TLO surpassed a significant milestone, exceeding \$50 million in cumulative revenues, much of which were invested in research and education within The Texas A&M University System. <http://tlo.tamu.edu>

## Number of Active Income Producing Licenses



According to the Association of University Technology Managers (AUTM) 2003 Annual Survey, The A&M System ranks first among peer institutions (as identified in Texas A&M University's Vision 2020 Plan) in the number of active license agreements generating income. The numbers of license agreements reported contain contracts executed over the years of operation of the office. The A&M System TLO is the youngest of the licensing offices on this list and has the next to the highest number of income producing license agreements.

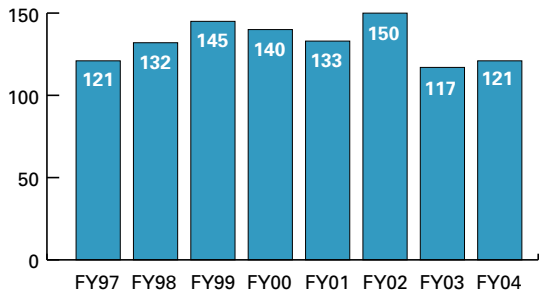
## Revenues Generated Under License Agreements



This table depicts the gross license income received for 2003, according to the AUTM Annual Survey cited above. The University of Minnesota and the University of Wisconsin are outliers in the statistics due to the "home run hits" each institution holds. Following those, the University of Michigan and the University of Illinois has greater gross license income. Again, the youngest office (A&M System) in the field of contenders is at the top in a metric of success.

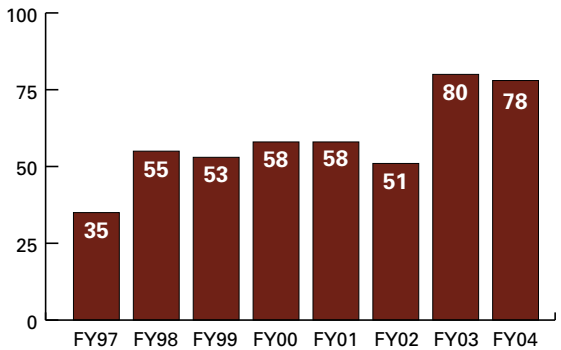
### Invention Disclosures

Faculty and research submitted 121 disclosures of invention in FY 2004.



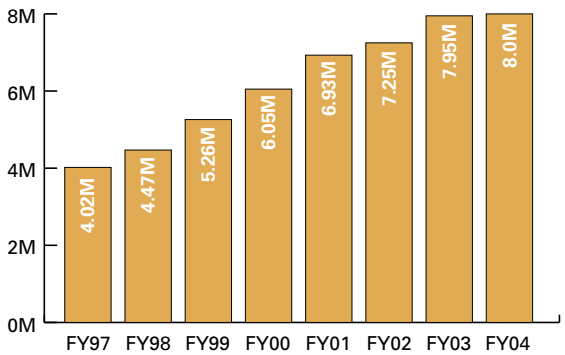
### License Agreements

During FY 2004, TLO executed 78 royalty-bearing licensing agreements with industry partners.



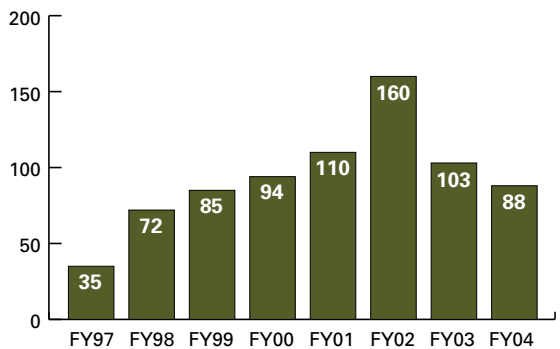
### Royalty Income

For FY 2004, TLO recorded \$8 million of income from license agreements of A&M System inventions.



### U.S. Patent Applications

TLO filed 88 U.S. patent applications for protection of intellectual property in FY 2004.



## Additional VPR Components



*Texas A&M Associate Professor of Aerospace Engineering Dr. John Valasek is researching morphing as one part of a \$15-million, five-year program to develop new technologies for intelligent air vehicles that have the ability to change shape. Inspired by the flight and movement of birds, the new aircraft will use sophisticated engineered materials, sensing, control, and actuation systems with high strength-to-weight ratios.*

### **The Academy for Advanced Telecommunications and Learning Technologies**

was established in 1996 to coordinate the many telecommunications and information technology efforts on campus; to foster collaboration among faculty and staff; and to assist in project management in this area of research. The Academy promotes collaboration for academic programs, research, development and technology implementation on campus, in the community, throughout the state of Texas, nationally and internationally.

<http://academy.tamu.edu>

### **The Center for Information Assurance and Security**

was established in May 2002 by The Texas A&M University System Board of Regents to promote training and education concerning cyberterrorism and the protection of computer and communications systems in public and private environments. The center is developing academic courses and programs dealing with security and creating a lab for education and research intended to significantly reduce the threat of cyber attacks on information systems. <http://cias.tamu.edu>

### **The Comparative Medicine Program**

is the centrally administered support service for animal research and teaching programs. Its program facilities and services are available to all Texas A&M University, College Station campus-affiliated faculty and staff who have been approved to conduct animal research by the University Laboratory Animal Care Committee. The mission of the program administration is to enhance excellence in research and teaching through the provision of high-quality animal care at an affordable cost to the faculty, consistent with standards established by the "Guide for the Care & Use of Laboratory Animals" and all pertinent local, state and federal laws.

<http://vpr.tamu.edu/cmp>

**The Texas A&M Integrative Center for Homeland Security** explores the entire range of homeland security activities, identifies educational, research, and outreach needs, and helps match them with the many world class capabilities of the Texas A&M University System. <http://homelandsecurity.tamu.edu>

**The National Center for Foreign Animal and Zoonotic Disease Defense** is designed to have the capacity and flexibility to address the range of threats presented by deliberately (or accidentally) introduced foreign animal and zoonotic diseases. The FAZD Center will harness the existing intellectual and research capacities of selected American universities, on both an immediate and sustained basis, to fill gaps in existing knowledge, thereby heightening protection of U.S. animal agriculture. Activities of the center will be leveraged by close integration of university-based assets with those of complementary National Laboratories and Federal, state, and local agencies and programs. In parallel, the center will conceive and aggressively implement educational and dissemination programs designed to augment and broaden national capabilities over time. <http://fazd.tamu.edu>

**The Institute for Scientific Computation** was established in July 1992 by The Texas A&M University System Board of Regents as a research unit within the colleges of science and engineering. The institute is a multidisciplinary research center devoted to the design and implementation of computational tools for scientific applications. Made up of internationally recognized researchers, scientists and mathematicians; the institute collaborates on major national and global research efforts with other universities, industry and government. Additionally, the institute provides an excellent training ground for undergraduate and graduate students in a variety of academic disciplines in technologies of scientific computing. <http://isc.tamu.edu>

**The Microscopy and Imaging Center** is a central research infrastructure facility that supports light, transmission and scanning electron microscopy. The mission of the center is to provide current and emerging technologies for teaching and research involving microscopy and related imaging in life and material sciences on the Texas A&M University campus and beyond, in addition to training and support services for microscopy, sample preparation, in situ analysis and digital image processing. <http://www.tamu.edu/mic>

**The Office of Distance Education** reports through the Office of Graduate Studies. Within a context of rapid technological change and shifting market conditions, the office nurtures development of distance education and use of instructional technology. As the world of higher education evolves, teachers and students are often separated by physical space, but educational technology (i.e., voice, video, data and print) bridges the gap and enhances learning. The office represents Texas A&M in state and national initiatives, develops continuing education by distance and fosters the use of technology in teaching. <http://distance.tamu.edu>



## Additional VPR Components

**The Office of Proposal Development** is designed to serve as a clearinghouse for university proposal development. The office offers Texas A&M University administrators, faculty and staff a wide range of proposal services and educational outreach activities. The office specializes in coordinating large, multidisciplinary, collaborative proposals and in connecting individual investigators to the resources they need to successfully complete grant applications. The office also offers a series of grant writing seminars and courses to help investigators learn to write competitive proposals, sponsors a speakers' series to bring funding agency representatives to campus, and organizes round table discussions to promote the formation of multi-disciplinary research groups.

*<http://vpr.tamu.edu/opd>*

**The Office of Research Compliance** by utilizing a peer driven process ensures the protection of human subjects; the welfare of animals; the safe use of recombinant DNA, pathogens and toxins; and enhances ethical conduct in research programs at Texas A&M University. The office continually monitors, analyzes and evaluates the adequacy and effectiveness of the university's system of internal controls when compared to established research standards. *<http://researchcompliance.tamu.edu>*

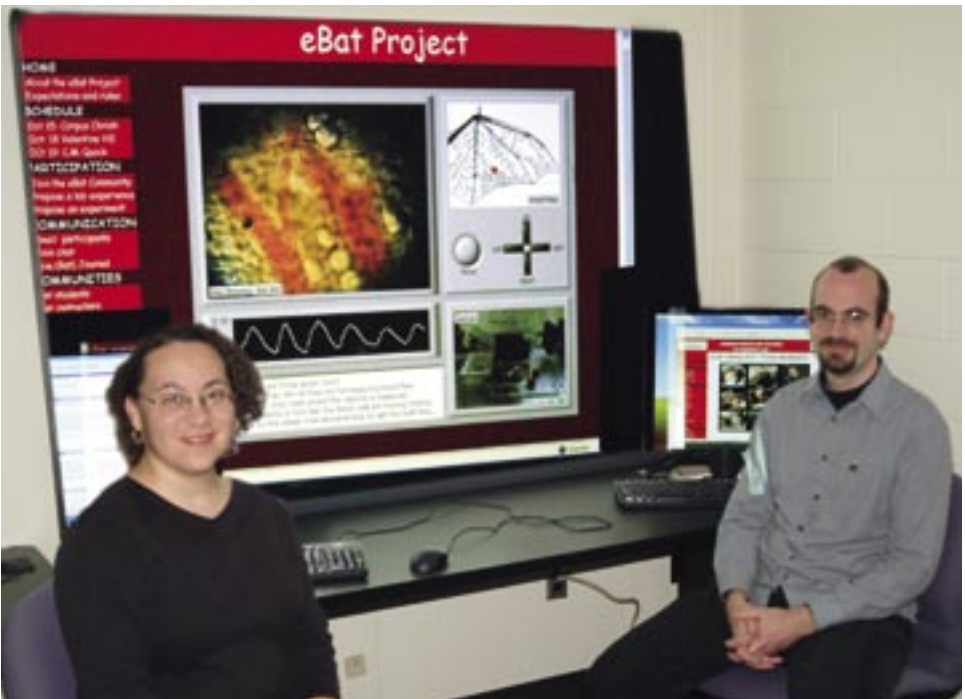
**The Office of Sponsored Projects** promotes, supports and administers sponsored research within the University through final review and approval of proposals. The office works with the Technology Licensing Office to transfer university patents, licenses and copyrights to private industry and provides information on research opportunities to faculty through the Community of Science and administers research programs funded by the state of Texas Advanced Research/Advance Technology programs and the Welch Foundation Grants Program. The office administers three of the VPR internal grant programs. These include the Scholarly and Creative Grants Program, Proposal Development Program and Travel Grant Program and reviews and approves all university proposals through the Texas A&M Research Foundation. The office compiles and reports data on research at Texas A&M to the National Science Foundation and the Texas Higher Education Coordinating Board. *<http://vpr.tamu.edu/osp>*

**The Professional Development Group** provides developmental programs for the pre-professional and continuing-education audiences. Additional resources include the state agencies attached to a land-grant university, the eight other universities in the A&M System, and A&M System headquarter's staff. The group, formerly known as the Office of Governmental Professional Development Programs, reports to the Dean of the Office of Graduate Studies and continues to provide a computer help service to the employees of the USDA's Food Safety and Inspection Service. *<http://pdg.tamu.edu>*

**The Technology Commercialization Center (TCC)** is the single point of contact between industry and other external partners and those within the Texas A&M University System interested in the commercialization of emerging technologies. TCC's mission is to accelerate technology transfer from the laboratory to the marketplace through an efficient process that combines the resources of a major university, a progressive community, and private industry. TCC is dedicated to supporting the growth of early stage technology-based businesses and serving as a clearinghouse for new technologies. The goal is to

create a significant pool of emerging technology for integration into existing companies for new market opportunities or to create new business enterprises. TCC strives to create an environment that inspires innovation and supports commercialization. <http://tccweb.tamu.edu>

**The Texas A&M University Research Park** was established to create a community conducive to scientific excellence and innovative technology. The Park's research-based companies and organizations benefit from the proximity to Texas A&M University's academic resources, while the University benefits from the enhanced facilities and productivity of research activities. Ultimately, these associations accelerate the dissemination and transfer of new technologies to commercial applications. <http://researchpark.tamu.edu>



*The Michael E. DeBakey Institute at Texas A&M University's College of Veterinary Medicine and Biomedical Sciences has the only colony of bats dedicated to microvascular research. Researchers are not only studying the intricate vascular network of bat wings -- they are planning to share their experiences globally on the Web. For more information on the eBat Project, visit <http://www.cvm.tamu.edu/cquick/ebat> or email Chris Quick at [cquick@tamu.edu](mailto:cquick@tamu.edu)*



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College Station, TX 77843-1112

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