

By the Numbers:

The Office of the Research

The University of Texas at Dallas

- Research expenditures increased by \$13 million to \$82 million (a 21% increase) from FY09 to FY10.
- Federal research expenditures increased by more than \$5 million to \$30.6 million.
- Award dollars increased by 50% to \$63.3 million from FY09 to FY10.
- Proposals submitted increased by 28% from 634 to 812 between FY09 to FY10.
- Five start-up companies began in FY2010, up from three in FY09.
- Sixty-four invention disclosures were submitted in FY2010, a 20% increase from FY09.
- Six faculty members received STARS funding in FY2010
- Thirty new faculty members joined UT Dallas in FY2010

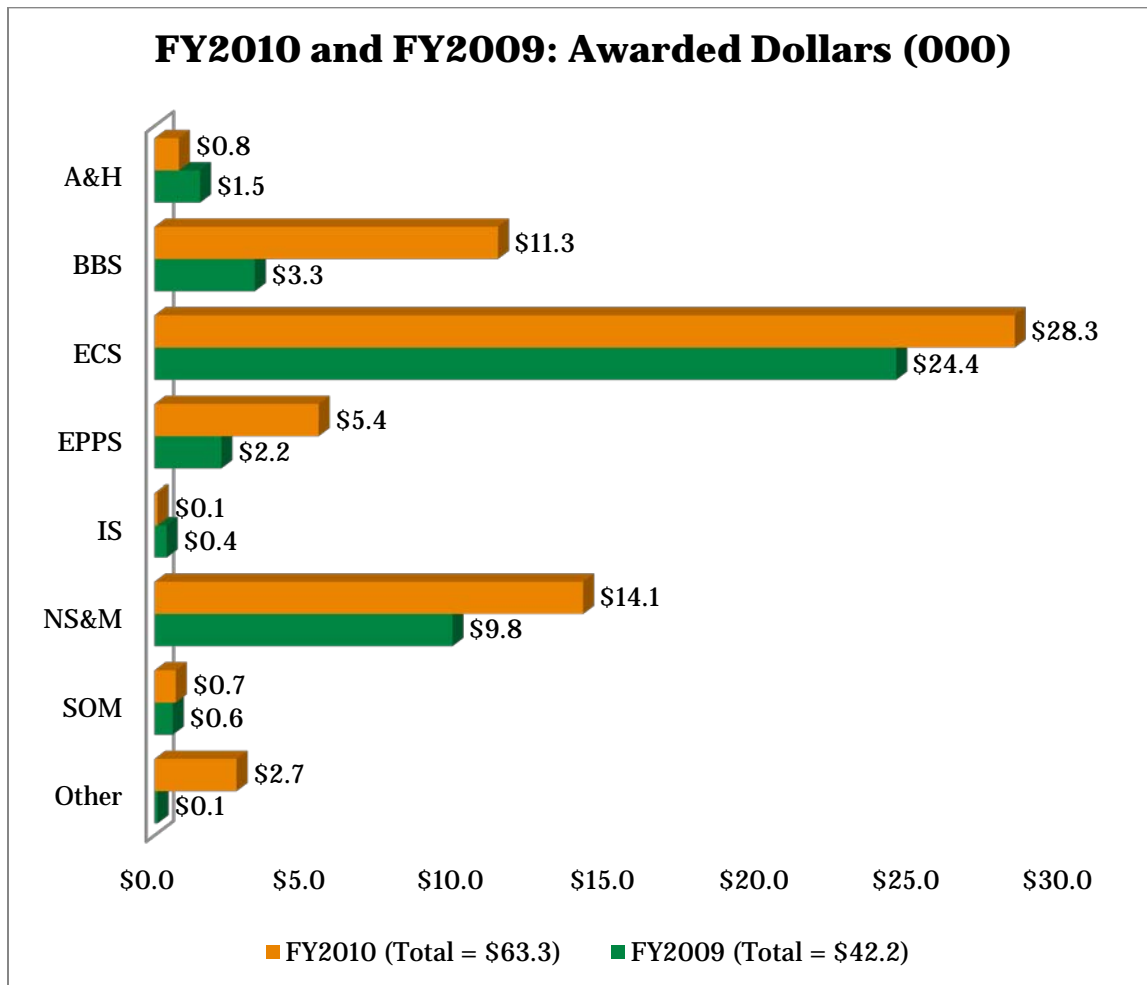
Fiscal Year 2010: Grant Dollars Awarded

The University of Texas at Dallas (UT Dallas) received 572 new grant awards during the Fiscal Year 2010, more than double the number of new awards the previous year. The number of submitted proposals increased 22 percent.

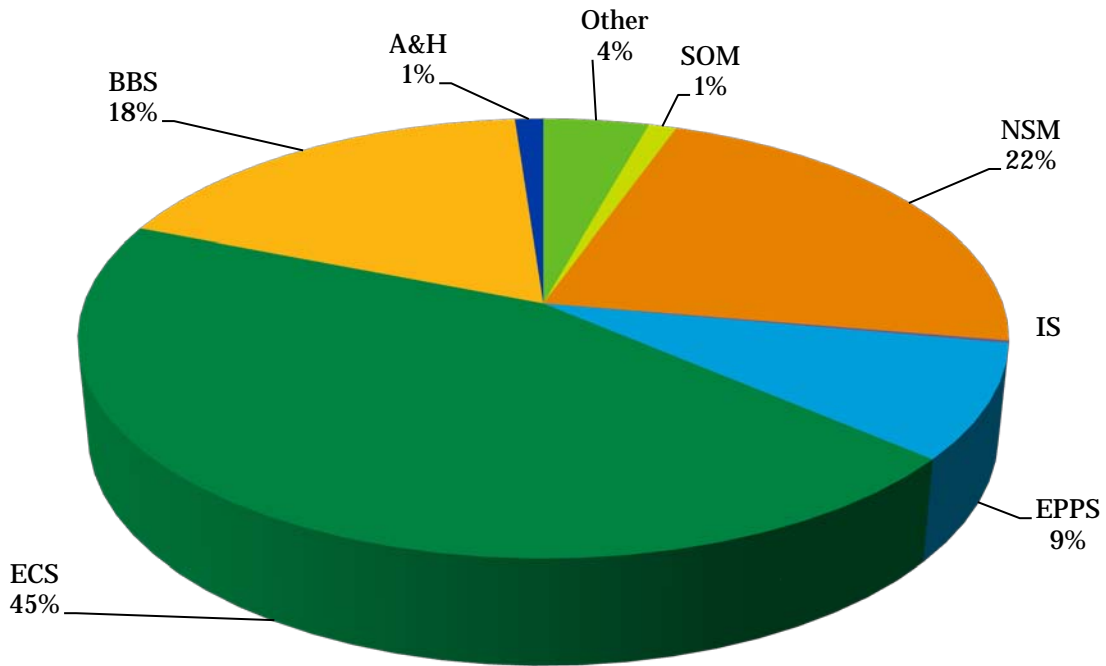
The award dollars increased by more than \$20 million to total \$63.3 million in FY2010.

The Erik Jonsson School of Engineering and Computer Science had the highest number of new awards, representing nearly half of the UT Dallas' total number of awards and slightly more than 44 percent of the total dollars awarded.

The School of Behavioral and Brain Sciences increased their total number of awards from 23 in FY2009 to 86 in FY2010 and increased their award total by \$7 million.

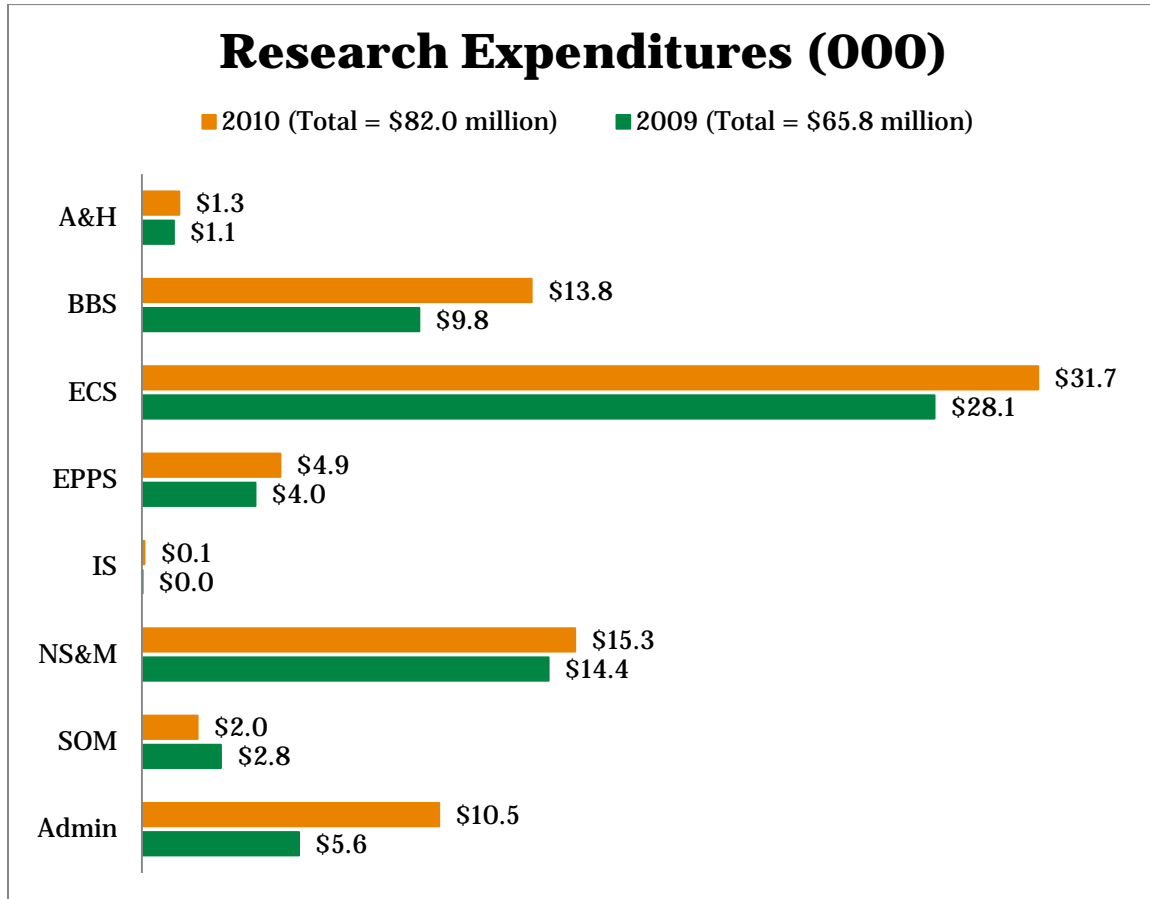


FY2010 New Award Dollars
Total: \$63,326,471



Fiscal Year 2010: Research Expenditures

Research expenditures increased 21 percent in FY2010 to \$82 million. The Federal research expenditures were more than \$30 million, an increase of \$5 million from the previous year.



Fiscal Year 2010: Technology Commercialization

The Office of Technology Commercialization (OTC) completed its second full fiscal year of operations, after having launched in April 2008. The OTC was in the initial start up phase through the first half of 2009, organizing the resources and necessary infrastructure, including systems, to achieve OTC objectives.

	FY09	FY10
Invention Disclosures	53	64
License/Option Agreements	4	8
Startups	3	5
Patents Filed	44	38
Patents Issued	5	5
License Revenue	\$75,000	\$40,000
Patent Expense Recovery	\$221,000	\$34,562
TIF Grants	3	1

FY2010 Start-ups

UT Dallas has spun off 11 companies in the past 3 years. These companies have raised a total of \$19.5M in private financing and government funding, and have created 42 high tech jobs (FTE's) to date. Three of these companies qualified to receive ETF funding (in excess of \$2.3M), four have received over \$6.5M in government grant funding, and UTD has received over \$1.2M in sponsored research funding from these companies.

Encephrx-FY10 –Neuroprotective pharmaceuticals –Alzheimers, Parkinsons therapies, highly experienced team shepherding this project (SMU-UTD derived invention)--\$100K in private funding to date.

PLBA Systems--FY10- GIS-compatible software designed to support facilities and asset management and reporting needs of US universities and similar institutions.

HygeiaTel-FY10-Telemedicine, patient monitoring using low-power, small-footprint, plug-&-play wireless sensor node patches.

Brain Health Strategies –FY10-- Virtual Reality Therapy SMART (Strategic Memory and Reasoning Training) training program to improve reasoning, problem solving, and critical thinking skills for wide spread use (students, ADHD, brain injured patients)--Hired CEO

K&S Analytics-FY10— Software for cyber-security and data mining techniques to address needs of location based services, homeland security, and medical markets.

Fiscal Year 2010: STARS Funding

The STARS program, developed by the UT System, is designed to increase the research capacity of the system schools by helping fund start-up packages for outstanding Science, Technology, Engineering and Mathematics (STEM) faculty.

During FY2010, six faculty members each received \$500,000 in funding from the STARS program:

- Massimo Fischetti: Professor of Nanoelectronics
- John Geissman: Professor of Geosciences
- Julia Hsu: Texas Instruments Distinguished Chair in Nanoelectronics
- Dongsheng Brian Ma: Texas Analog Center of Excellence (TxACE) Chair Professor
- Michael Rugg: Endowed Chair of Psychology
- Dennis Smith: Robert A. Welch Chair in Chemistry

Fiscal Year 2010: Recruiting Faculty

Efforts to recruit new faculty members were very successful. When the 2011-2012 school year began at UT Dallas, there were 30 new faculty members.

PI	Title	School	Program
Barnes, J.C.	Assistant	EPPS	Criminology
Braun, Alexander	Associate	NSM	Geosciences
Chiu, Yun	Associate	ECS	Electrical Engineering
De Frias, Cindy	Assistant	BBS	Psychology
Fahimi, Babak	Professor	ECS	Electrical Engineering
Filbey, Francesca	Assistant	BBS	Neuroscience
Fischetti, Massimo V.	Professor	ECS	Materials Sciences and Engineering
Fotopoulos, Georgia	Associate	NSM	Geosciences
Ganglmair, Bernhard	Assistant	SOM	Finance
Geissman, John W.	Professor	NSM	Geosciences
Gelb, Lev	Professor	ECS	Materials Sciences and Engineering
Goodman, Doug	Associate	EPPS	Public Affairs
Hanegan, Nikki	Assistant	NSM	Science and Mathematics Education
Hsu, Julia W.P.	Prof./Chair	ECS	Materials Sciences and Engineering

Kroener, Sven	Assistant	BBS	Neuroscience
Lary, David	Associate	NSM	Physics
Lee, Mark	Professor	NSM/ECS	Physics/Materials Sciences and Engineering
Lu, Hongbing	Prof./Chair	ECS	Mechanical Engineering
Ma, Dongsheng	Assoc./Chair	ECS	Electrical Engineering
Ma, Lan	Assistant	ECS	Bioengineering
Ozoguz, Arzu	Assistant	SOM	Finance
Patterson, David	Prof./Chair	AH	Holocaust Studies
Petrovic, Lucy	Associate	AH	Arts and Technology
Ploski, Jonathan	Assistant	BBS	Neuroscience
Rugg, Michael	Prof./Chair	BBS	Psychology
Singh, Harpreet	Assistant	SOM	Information Systems
Slinker, Jason	Assistant	NSM	Physics
Smith, Dennis	Prof./Chair	NSM	Chemistry
Song, Qiongxia Joanne	Assistant	NSM	Statistics
Xuan, Zhenyu	Assistant	NSM	Biology

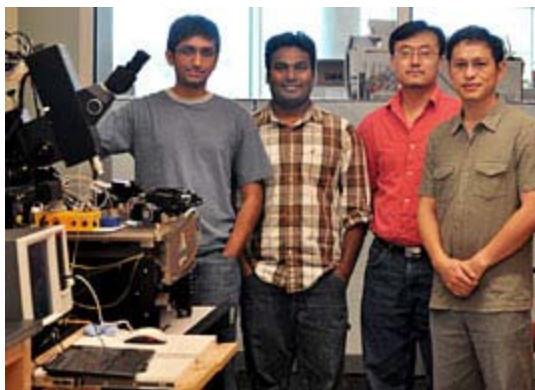
Fiscal Year 2010: Faculty Honors

Our faculty received a variety of awards and honors this year. The following faculty members received fellowships or other positions during the year:

- Gopal Gupta of ECS was named President of the International Association for Logic Programming.
- Sheila Amin Gutierrez de Pineres of EPPS was named an American Council on Education (ACE) Fellow.
- John H.L. Hansen of ECS was named an International Speech Communications Association (ISCA) Fellow.
- Paul Jargowsky of EPPS was named an Urban Institute Affiliated Scholar.
- Aria Nosratinia of ECS was named an IEEE Fellow.
- James Marquart of EPPS was named President of the Academy of Criminal Justice Sciences.
- Dennis McCuiston of SOM received an Honorary Doctor of Laws from Northwood University.
- Margaret Owen of BBS was named an Association for Psychological Science.
- Suresh Sethi of the SOM was named a Society for Industrial and Applied Mathematics (SIAM) Fellow.
- Bhavani Thurasingham of ECS was named a Distinguished Scholar of the Association for Computing Machinery.
- Anvar Zakhidov of NSM was named an American Physical Society Fellow.

From the News Desk: Biochip Work Earns NSF CAREER Award

UT Dallas nanotechnology researcher Walter Hu received a \$400,000 grant to develop an innovative and manufacturable nanoelectronic biochip that can detect individual molecules. The funding comes from the National Science Foundation (NSF), which accorded Hu one of its prestigious Faculty Early Career Development (CAREER) Awards, the fourth received by UT Dallas faculty in the past two years.



Dr. Walter Hu (right) with members of his research team (from left) graduate students Krutarth Trivedi and Suresh Regonda and postdoctoral research fellow Ruhai Tian.

“The motivation for this project came from a growing synergy between biology and electronics,” said Hu, an assistant professor of electrical engineering in the Erik Jonsson School of Engineering and Computer Science.

“In the long run, improved electronic sensors could have a considerable impact on a wide-range of disease diagnostics, in particular for point of care or future home diagnostics, overcoming the limitations of today’s optical sensors, which require bulky and expensive equipment, complex sample preparation and long processing times,” he added.

Hu’s team aims to develop a comprehensive understanding of electronic biosensing mechanisms, sensitivity and bio/non-bio interfaces down to the single-molecule level using silicon nanowire technology incorporated into standard semiconductor electronics.

“We’re investigating two basic performances for these silicon nanowires: the sensitivity and the selectivity of the sensor,” Hu said. “For example, if you’re trying to detect cancer at its early stage, the targets related to it have a very low concentration in blood. That requires the biosensor to be extremely small so it can be highly sensitive. The ultimate in sensitivity is the ability to detect a single molecule. At the same time, because you have a lot of other substances in a blood sample, you want to make your sensor selective enough so that you pick up the right target.”

Hu’s project was jumpstarted two years ago with funding from Texas Instruments for collaborative work he performed with Dr. Jinming Gao and Dr. Baran Sumer at The University of Texas Southwestern Medical Center and Dr. Moon Kim at UT Dallas.

From the News Desk: NSF CAREER Award Recognizes Rising Researcher

Dr. Mihaela C. (Iovu) Stefan has received a distinguished National Science Foundation (NSF) Career Award, given to junior faculty members who exemplify the role of teacher-scholars through outstanding research and education.

The award is for \$490,000 over five years.

Stefan, an assistant professor of chemistry and affiliate faculty in the materials science and engineering, has taught at UT Dallas since August 2007. She is an expert in polymer chemistry and organic electronics, which she uses to study renewable energy.



Dr. Mihaela C. (Iovu) Stefan is an expert on polymer chemistry and organic electronics.

“Career awards are provided by the NSF to support the most promising young faculty members in the U.S.,” said Dr. Myron Salamon, dean of the School of Natural Sciences and Mathematics. “We are delighted that Professor Stefan has been recognized as one of these elite scholars. This award will enable her to continue researching electrically conducting polymers and to incorporate her research results into her classroom teaching.”

Stefan’s funding will advance research into new semiconducting polymers – plastic electronics – with tunable energy levels. The use of semiconducting polymers in solar cells is a promising avenue of research aimed at achieving less expensive, more efficient solar cells. Stefan expects to improve the efficiency of organic solar cells by developing and testing new semiconducting polymers with tunable opto-electronic properties.

“We are very pleased with Dr. Stefan’s award,” said Dr. Bruce Gnade, vice president for research. “It is a strong validation of her research and a very positive indicator of the quality of our young faculty.”

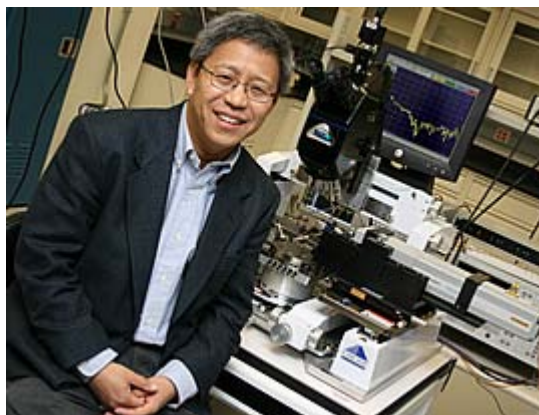
In addition to funding research, the award allows Stefan to launch an interdisciplinary research and education program at the interface between organic/polymer chemistry, materials science and semiconductor technologies.

“The funding allows me to work on developing a course in organic electronics for graduate students,” Stefan said. “The course would be designed for students in chemistry and materials science and engineering.”

From the News Desk: Center Awards \$1.7 Million to Analog Researchers

The Texas Analog Center of Excellence at UT Dallas has awarded nearly \$1.7 million in grants to Texas researchers to develop new technology for solar cells, biosensors, implantable heart defibrillators and much more.

“The primary theme of these three-year grants is to address grand challenges from the semiconductor industry’s International Technology Roadmap for Semiconductors,” said Dr. Eric Vogel, associate director of TxACE and an associate professor of materials science and engineering at UT Dallas. “Addressing the challenges in the ITRS requires circuit design research in three main areas: management and optimization of circuit power and energy, design of robust circuits and design of high-performance circuits.”



Dr. Kenneth K. O., director of the Texas Analog Center of Excellence.

All of the projects are expected to have ramifications that extend well beyond their initial focus.

“Our broad goal is to fund projects that not only address important needs in areas such as health care and power generation but also extend the state of the art in analog semiconductor technology,” said TxACE’s director, Dr. Ken O.

As an example, a \$150,000 biosensor project aims to create a means to perform computing at the cellular level that can recognize multi-gene disorders, including cancers and hereditary diseases. The resulting cellular sensing mechanism would then pass its results along to an external device, leading to “a highly selective tool for diagnosis and treatment,” according to Dr. Leo Bleris, an assistant professor of electrical engineering at UT Dallas and principal investigator for the project.

A \$180,000 defibrillator project focuses on creating ultra-low-power analog circuits that greatly extend an implanted defibrillator’s battery life. The principal investigator is Dr. Donald Lie of Texas Tech University, and the results will probably be applicable to many other implantable devices such as pacemakers.

A \$180,000 solar cell project is intended to develop new methods and integrated circuit architectures to fully integrate solar-energy-harvesting circuitry into a single chip. Led by Dr.

Arjang Hassibi of UT Austin, that should lower production costs and increase the life of solar cells.

The other six funded projects and their principal investigators are:

- “Energy Efficient Comparator Elements for A/D and High-Speed I/O,” Dr. Vojin Oklobdzija, UT Dallas.
- “A Fully-Integrated CMOS Platform for Microwave-Based Label-Free DNA Sensing,” Dr. Kamran Entesari, Texas A&M.
- “High Accuracy All-CMOS Temperature Sensor with Low-Voltage Low-Power Subthreshold MOSFETs Front-End and Performance-Enhancement Techniques,” Dr. Changzhi Li, Texas Tech.
- “Hierarchical Model Checking for Practical Analog/Mixed-Signal Design Verification,” Dr. Peng Li, Texas A&M.
- “Power-Efficient 10-20GS/s ADCs for High-Speed Communications,” Dr. Jin Liu, UT Dallas.
- “Design Techniques for Scalable, Sub-1mW/Gbps Serial I/O Transceivers,” Dr. Sam Palermo, Texas A&M.

Dedicated to help create leading-edge analog technology for both traditional electronics and emerging applications, TxACE is specifically focused on improving energy efficiency, healthcare, and public safety and security. A collaborative effort of the Semiconductor Research Corp., the state of Texas through its Texas Emerging Technology Fund, Texas Instruments Inc., the UT System and UT Dallas, TxACE has awarded more than \$7 million in research funding in its first two years and has become the largest analog research center in the world.

From the News Desk: Perry Praises Research at Center for Vital Longevity

Gov. Rick Perry and other supporters gathered in September to celebrate the UT Dallas Center for Vital Longevity and its mission to understand, maintain and improve the vitality of the aging mind.

Speakers joined Perry in praising the center's scientists, who will use cutting-edge imaging technology and advances in cognitive science to focus on one of the most important scientific challenges of the new millennium — identifying the “neural signature” of people at risk of impairment and preventing problems before symptoms can occur.

Perry lauded the center's efforts, which will involve research cooperation with UT Southwestern Medical Center and UT Arlington, in fighting for more vital lives for Texans.

“Far too many people in Texas and around the world have suffered the pain of watching a family member slip away into Alzheimer's and other cognitive disorders associated with aging,” Perry said. “This center will help draw researchers committed to the pursuit of better health into a collaborative environment of exploration and discovery that will lead to life-saving ideas.”

“I see great things in the future for the center,” Perry said.

UT Dallas President David E. Daniel said the center will create a “halo effect” that will stimulate the local economy with new businesses and further drive research efforts in Texas.

“UT Dallas has great expectations for the work that will be done by Dr. Denise Park and her colleagues at the Center for Vital Longevity. This center is tackling critical scientific problems that diminish quality of life, and working on discovering how to maintain the vitality of the mind with age. The center is expected to play a key part in bringing UT Dallas' research activity to a higher level and to form beneficial collaborative partnerships that will contribute to raising our region's profile in biomedical research,” Daniel said.

The Center for Vital Longevity is the inspiration of Park, who is serving as its first director. A world-renowned neuroscientist, she has published more than 200 peer-reviewed articles and six books on the brain and aging. She has held multiple offices in national scientific organizations,



From left: Dr. Denise Park, director of The Center for Vital Longevity; Texas Gov. Rick Perry; Provost Hobson Wildenthal; and UT Dallas President David E. Daniel.

and she is UT Dallas' Distinguished Chair in Behavioral and Brain Science, as well as a University of Texas Regents Research Scholar.

Park joined UT Dallas in 2007, working with the Center for BrainHealth (CBH). Her success in expanding the scope of her work on aging and the mind—including growth in the number of faculty on her team and an associated need for dedicated space—resulted in a University decision to establish an enterprise specifically devoted to that work and related questions. The Center for Vital Longevity was spun off of CBH in early 2010.

“We are at the moment of discovery in understanding the aging mind, and it is a thrill to lead this research center. We are recruiting the best cognitive neuroscientists in the world to the center to focus on understanding what makes a mind vital and how to keep it that way for life,” Park said.