Governor's University Research Initiative

2019 Legislative Report

Reporting Period: January 2017 - December 2018

GOVERNOR GREG ABBOTT
ECONOMIC DEVELOPMENT & TOURISM

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Overview of the Governor's University Research Initiative Grant Program

"We are beginning the process of elevating higher education in Texas to greater heights than it's ever been before. Through our Governor's University Research Initiative, Texas is making a strategic investment to vault the standings of our public colleges and universities into the top-ranked nationally. Our investment into GURI will help our universities recruit even more Nobel Laureates and National Academy members to the Lone Star State, and will serve as a catalyst for further economic development." -Governor Greg Abbott

The Governor's University Research Initiative grant program ("GURI") was enacted in 2015 by the 84th Legislature with a goal to bring the best and brightest researchers in the world to Texas colleges and universities. Through the GURI program, Texas welcomes transformative researchers who will in turn serve as economic catalysts to the Texas economy for years to come.

GURI is a matching grant program to assist eligible Texas institutions of higher education in recruiting distinguished researchers, such as Nobel Laureates and members of national honorific societies, from around the world. The program is codified in Chapter 62 of the Texas Education Code, Subchapter H and the program's administrative rules may be found in Title 10, Part 5, Chapter 190 of the Texas Administrative Code.

The GURI Advisory Board was established to assist the Office of the Governor ("OOG") with the review and evaluation of applications for funding of grant proposals under this chapter. The first application was received February 25, 2016. As of December 31, 2018, there have been 17 GURI Advisory Board meetings.

Reporting Requirements

The contents of the GURI legislative report are outlined in Section 62.168 of the Texas Government Code:

Sec. 62.168. REPORTING REQUIREMENT. (a) Before the beginning of each regular session of the legislature the governor shall submit to the lieutenant governor, the speaker of the house of representatives, and the standing committees of each house of the legislature with primary jurisdiction over economic development and higher education matters and post on the office of the governor's Internet website a report on matching grants made to eligible institutions from the fund that states:

(1) the total amount of matching funds granted by the office;

(2) the total amount of matching funds granted to each recipient institution;

(3) a brief description of each distinguished researcher recruited by each recipient institution, including any amount of external research funding that followed the distinguished researcher to the institution;

(4) a brief description of the expenditures made from the matching grant funds for each distinguished researcher; and

(5) when available, a brief description of each distinguished researcher's contribution to the state's economic competitiveness, including:

(A) any patents issued to the distinguished researcher after accepting employment by the recipient institution; and

(B) any external research funding, public or private, obtained by the distinguished researcher after accepting employment by the recipient institution.

(a-1) The report may not include information that is made confidential by law.

(b) The governor may require an eligible institution that receives a matching grant under this subchapter to submit, on a form the governor provides, information required to complete the report.

Program Activity

As of December 31, 2018, the OOG has approved $54,274,216.50 in GURI matching funds to four Texas universities:

- $37,680,000 of matching funds, in 10 awards, granted to Texas A&M University
- $9,794,216.50 of matching funds, in 4 awards, granted to the University of Houston
- $1,800,000 of matching funds, in 1 award, granted to the University of Texas at Austin
- $5,000,000 of matching funds, in 1 award, granted to Texas Tech University

Universities receiving GURI matching grant awards are required to submit quarterly status reports and reimbursement requests with supporting documentation. To date, grantee universities have submitted eighty-four quarterly reports. OOG staff reviews reimbursement requests to ensure compliance prior to disbursing funds.

Distinguished Researchers and Expenditures

The following contains a brief description of each distinguished researcher recruited by each recipient institution, in addition to a brief description of expenditures made from the matching grant funds for each researcher. All of the distinguished researchers enhance the faculty at each university, and their research and discoveries have the potential to catalyze job creation and commercialization efforts in Texas.

Texas A&M University

Girish Saran Agarwal, Ph.D.
Member of the Royal Society – UK

Dr. Girish Saran Agarwal is a pioneer in work on "slow light" and has published influential papers on phase space and master equations in quantum optics. His research will be in theoretical quantum optics focusing on the interaction of laser light with atoms. These applications will permit the identification of chemical compounds and will form the basis to detect pathogens and chemicals at a distance. Dr. Agarwal is a full-time employee of the College of Agriculture and Life Science within the Department of Biological and Agricultural Engineering at Texas A&M University. He also spearheads activities within the Center for Bio-photonics within the Institute for Quantum Science and Engineering.

Dr. Agarwal started at Texas A&M University on August 1, 2016. To date, expenditures have been made from the matching grant funds for equipment, supplies, and direct operating expenses for Dr. Agarwal.

Leif Andersson, Ph.D.
Foreign Associate of the National Academy of Sciences

Dr. Leif Andersson is among the most renowned international leaders in the genomic and molecular studies of domestic animals as models of biomedical genomics. Dr. Andersson conducts research on the genetic changes underlying phenotypic diversity in horses, pigs, dogs, and a variety of other domestic animals. Many of Dr. Andersson's discoveries in domestic animal models can be directly applied to agriculture, as he uses the latest genomic tools to reveal the genetic control of many important production traits in agricultural animals. Dr. Andersson participates in graduate education programs of the College of Veterinary Medicine at Texas A&M University.

Dr. Andersson started at Texas A&M University on October 16, 2016. To date, expenditures have been made from the matching grant funds for construction, equipment, a one-time salary supplement, supplies, and direct operating expenses for Dr. Andersson.

Richard B. Miles, Ph.D.
Member of the National Academy of Engineering

Dr. Richard B. Miles comes to Texas A&M University from Princeton University, and his research focuses on the use of lasers, electron beams, low temperature plasmas, microwaves and magnetic devices to observe, control, accelerate, extract power and precondition gas flows for subsonic, supersonic and hypersonic fluid dynamics, combustion, propulsion and homeland defense applications. One such application of his research is the development of state-of-the-art remote detection that will identify hazardous gases and dangerous contaminants such as anthrax or the Ebola virus, hidden explosives such as IEDs, and/or greenhouse gases and pollutants. Dr. Miles will establish and lead a Center of Excellence in Interdisciplinary Optical and Laser Detection Systems for National Security and Safety at Texas A&M University.

Dr. Miles started at Texas A&M University on February 15, 2017. To date, expenditures have been made from the matching grant funds for construction and equipment for Dr. Miles.

Thomas Overbye, Ph.D.
Member of the National Academy of Engineering

Dr. Thomas Overbye maintains a robust research portfolio including very large, multi-investigator energy projects such as a $22.5 million cyber security project with the Department of Energy, an ARPA-E project on synthetic data for power grid analysis, and a National Science Foundation project on the impact of geomagnetically-induced currents on power networks. In joining the work already ongoing at Texas A&M University to make the state's electric power grids operate smarter, thus called "Smart Grids," Dr. Overbye leads in the areas of improved power system operations, real-time smart grid visualization, and cyber security. These improvements will save money for the public utility companies and the state, making the state's power systems more reliable and secure. Dr. Overbye serves as a professor in the Department of Electrical and Computer Engineering and teaches on topics related to power distribution and generation.

Dr. Overbye started at Texas A&M University on January 1, 2017. To date, expenditures have been made from the matching grant funds for construction, equipment, supplies, professional and consulting services, travel, and direct operating expenses for Dr. Overbye.

George M. Pharr, Ph.D.
Member of the National Academy of Engineering

Dr. George M. Pharr is one of the top researchers in the world and the main developer of the materials characterization technique called nano-indentation. Texas A&M University will create an Excellence Cluster in "Nano-Materials Innovation and Characterization for Energy," whose focus will be on nanoscale materials for uses in high strength materials for energy production and storage, electronics, modern medicine, computer hard drives and everyday products. Dr. Pharr's nano-indentation technique serves as an instrumental tool in the development and deployment of a variety of new materials for a wide range of applications and industry needs, including national security, transportation infrastructure and vehicle reliability and optimization, and health devices and measurements.

Dr. Pharr started at Texas A&M University on December 16, 2016. To date, expenditures have been made from the matching grant funds for construction and equipment for Dr. Pharr.

M. Cynthia Hipwell, Ph.D.
Member of the National Academy of Engineering

Dr. M. Cynthia Hipwell has been at the forefront of the creation of new devices, models, and metrology from the fundamental understanding of small nanoscale and surface phenomena and nanotechnology integration. Her experience in leading interdisciplinary research and technology transfer and commercialization will benefit Texas A&M's nanoscale and surface science technology facilities. These efforts are expected to lead to new discoveries and

enhance Texas' global economic competitiveness in nano/biotechnology and manufacturing by generating new jobs and start-up companies for commercialization.

Dr. Hipwell started at Texas A&M University on September 1, 2017. To date, expenditures have been made from the matching grant funds for travel and supplies for Dr. Hipwell.

Roderic Ivan Pettigrew, Ph.D., M.D.
Member of the National Academies of Engineering and Medicine

Dr. Roderic Ivan Pettigrew was the founding Director of the National Institute of Biomedical Engineering at the National Institutes of Health. Dr. Pettigrew will build and lead the new research center of excellence on bioimaging and biomedical technology that will place Texas A&M University at the forefront of innovative diagnostic and treatment options for major medical conditions such as atherosclerosis, coronary artery disease and stroke. The establishment of this center will greatly benefit researchers and patients, and will lead to the creation of new technologies and commercial products. Dr. Pettigrew has split faculty appointments between the College of Medicine and the College of Engineering and is working to establish and lead the Engineering Health (EnMed) Initiative.

Dr. Pettigrew started at Texas A&M University on November 27, 2017. To date, no expenditures have been made from the matching grant funds for Dr. Pettigrew.

Elaine Surick Oran, Ph.D.
Member of the National Academy of Engineering

Dr. Elaine Surick Oran is considered a world authority on numerical methods for large-scale simulation of physical systems by utilizing computer modeling. She has pioneered computational technology for the solution of complex reactive flow problems, unifying concepts from science, mathematics, engineering, and computer science in a new methodology. Dr. Oran is expected to lead an Interdisciplinary Center of Excellence in Simulation and Control of Non-Equilibrium Reacting Systems at Texas A&M University. It is anticipated that her research and collaboration efforts will lead to new technologies that can be utilized by the aerospace and defense industries.

Dr. Oran is expected to start at Texas A&M University on January 1, 2019. To date, no expenditures have been made from the matching grant funds for Dr. Oran.

James Edward Hubbard, Jr., Ph.D.
Member of the National Academy of Engineering

Dr. James Edward Hubbard, Jr. began his career as an engineering officer in the U.S. Merchant Marine serving in Vietnam. Dr. Hubbard, Jr. has established a national and international reputation in smart, adaptive vehicles and sensors. He is considered an expert in smart structures and has made significant contributions in this field. At Texas A&M, Dr. Hubbard, Jr. will lead the establishment of a facility focused on advancing research and knowledge for safety technologies as well as methods and processes that support connected and autonomous

vehicle development in conjunction with the newly established Center for Infrastructure Renewal. It is anticipated that his research will lead to advancements in the automotive and transportation industries.

Dr. Hubbard, Jr. started at Texas A&M University on February 1, 2018. To date, no expenditures have been made from the matching grant funds for Dr. Hubbard, Jr.

Mark A. Barteau, Ph.D.
Member of the National Academy of Engineering

Dr. Mark A. Barteau brings extensive experience as a researcher, inventor, academic leader, and consultant for organizations around the world. His research is focused on selective oxidation catalysts for more efficient chemicals production, electrochemical energy storage, and integrated capture and conversion of carbon dioxide and other low-value resources to valuable products. Dr. Barteau is the Vice President of Research and Professor of Chemistry and Chemical Engineering at Texas A&M University. His research is expected to focus on new technologies related to large-scale batteries as well as impacting the energy and chemical industries.

Dr. Barteau started at Texas A&M University on February 15, 2018. To date, no expenditures have been made from the matching grant funds for Dr. Barteau.

University of Houston

Andrea Prosperetti, Ph.D.
Member of the National Academy of Engineering

Dr. Andrea Prosperetti comes to the University of Houston from Johns Hopkins University and is a world-renowned authority in the field of multiphase flow. Dr. Prosperetti joined the University of Houston as a Distinguished Professor of Mechanical Engineering in the Cullen College of Engineering. Dr. Prosperetti also leads the multi-disciplinary Center for Advanced Computing and Data Systems. This center represents efforts in high performance computing as it applies to important applications that will have significant impact on the State of Texas including energy, infrastructure, aerospace, health and national security.

Dr. Prosperetti started at the University of Houston on July 1, 2016. To date, expenditures have been made from the matching grant funds for a one-time salary supplement and equipment for Dr. Prosperetti.

John Suppe, Ph.D.
Member of the National Academy of Sciences

Dr. John Suppe is a world leader in structural geology and tectonics, and his research focuses on seismic tomography and new tomographic models. Dr. Suppe joined the University of Houston as a Distinguished Professor of Earth & Atmospheric Sciences in the College of Natural Sciences and Mathematics. Dr. Suppe also established and leads the multi-disciplinary Center for

Tectonics and Tomography (CTT) at the University of Houston. The center's research agenda will cover many relevant research topics such as sea-level rise, geo-hazards, stratigraphy, and petroleum and resource exploration, all of which are vital to the economy and well-being of Texas. Dr. Suppe's research is focused on seismic tomography as well as a generation of new tomographic models. His work will transform the impact of geosciences programs in the state and beyond, particularly on the natural resources industry.

Dr. Suppe started at the University of Houston on September 1, 2016. To date, expenditures have been made from the matching grant funds for travel, equipment, supplies, and direct operating expenses for Dr. Suppe.

Ganesh Thakur, Ph.D.
Member of the National Academy of Engineering

Dr. Ganesh Thakur is a pioneer and world authority in the field of integrated petroleum reservoir management. Dr. Thakur joined the University of Houston as a Distinguished Professor of Petroleum Engineering in the Cullen College of Engineering. Dr. Thakur also serves as the Director for Energy Industrial Partnerships at the University of Houston. This center represents efforts in upstream and midstream as it applies to important applications and will have an immense impact on the State of Texas in the field of energy. Dr. Thakur's research is focused on waterflood management as applied to secondary recovery of oil.

Dr. Thakur started at the University of Houston on August 1, 2016. To date, expenditures have been made from the matching grant funds for supplies and a one-time salary supplement for Dr. Thakur.

Birol Dindoruk, Ph.D.
Member of the National Academy of Engineering

Dr. Birol Dindoruk will lead the Reservoir Recovery Mechanisms Center of Excellence within the Department of Petroleum Engineering and will engage and mentor junior faculty, post-docs, and undergraduate and graduate students in the Center. He is one of the renowned experts in this domain and will bring worldwide investment to Texas and Houston to enhance understanding of reservoir recovery and behavior of fluids under high pressure and high temperature. Dr. Dindoruk will be a tenured Professor of Petroleum Engineering and teaches both undergraduate and graduate courses.

Dr. Dindoruk started at the University of Houston on September 1, 2018. To date, no expenditures have been made from the matching grant funds for Dr. Dindoruk.

The University of Texas at Austin

Joan Brennecke, Ph.D.
Member of the National Academy of Engineering

Dr. Joan Brennecke is a professor in the McKetta Department of Chemical Engineering and holder of an endowed chair. She is an internationally recognized leader in sustainable chemical process technologies and energy storage capabilities. As a member of the faculty at the University of Texas, Dr. Brennecke conducts research on energy and sustainability, including the design of ionic liquid systems for safer, more reliable and longer-lasting batteries. Dr. Brennecke works closely with the university's office of technology commercialization to facilitate technology transfer from her lab to the marketplace thus benefiting not only the university, but the entire state of Texas.

Dr. Brennecke started at the University of Texas on August 1, 2017. To date, expenditures have been made from the matching grant funds for travel, equipment, supplies, direct operating expenses, and construction for Dr. Brennecke.

Texas Tech University

Luis Rafael Herrera-Estrella, Ph.D.
Member of the National Academy of Sciences

Dr. Luis Rafael Herrera-Estrella serves as the director of the Center for Functional Genomic of Abiotic Stress at Texas Tech University with an overarching goal of understanding the control and regulation of physiological, biochemical, developmental, and growth processes in plants under sub-optimal and semi-arid environments. Dr. Herrera-Estrella is a full-time faculty member of the Department of Plant and Soil Science with primary responsibilities for research, graduate teaching, and graduate mentoring. He is expected to have a high profile role in grant-supported transformative and translational plant science research that will also serve as venue for training the next generation of high-caliber innovators and thinkers in agricultural, industrial and/or pharmaceutical plant biotechnology.

Dr. Herrera-Estrella started at Texas Tech University on October 1, 2018. To date, expenditures have been made from the matching grant funds for travel and supplies for Dr. Herrera-Estrella.

GURI Advisory Board

The following have been appointed by the Governor to serve as members of the GURI Advisory Board.

James Huffines (Chairman) of Dallas is president and chief operations officer of PlainsCapital Corporation and serves on the Hilltop Holdings, PlainsCapital Bank, and PrimeLending boards of directors.

Jacquie Baly of Sugar Land is president and chief executive officer for BalyProjects, a former member of the Sugar Land City Council, and former adjunct professor at the University of Houston.

Cindy Conroy of El Paso is first executive assistant and charitable giving coordinator at WestStar Bank.

Dr. Antonio Falcon of Rio Grande City is medical director of Family Health Center, L.L.P.

John Goodman of Frisco is founder and executive chairman of Family ER + Urgent Care Centers and is a board member, co-founder, former executive chairman, and former chief executive officer of Goodman Networks.

Wendy Gramm of Helotes is chairman of the Texas Public Policy Foundation Board of Directors.

Michael Plank of Houston is chairman and chief executive officer of The Plank Companies, Inc. and three affiliated companies: National Property Holdings, Rail Logix and Speed Shore Corporation.

Sam L. Susser of Corpus Christi is president of Susser Holdings II, L.P. and previously served as chairman of Sunoco, L.P. and Stripes, L.L.C.

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