Welcome to our annual report for fiscal year ending August 31st, 2018, focused on the research and economic activities of the faculty, students, staff, and partners at The University of Texas at San Antonio (UTSA).

Under the leadership of a new president, Dr. Taylor Eighmy, who has envisioned a bright and bold future for UTSA, our team continues to serve the needs of our research community as it has expanded dramatically. With the amalgamation of the Research Office with the Institute of Economic Development (IED), we have combined our strengths and capabilities to focus on the institution’s mission to drive San Antonio’s knowledge economy.

The past year was one of steady growth and expansion for the research community. In fiscal year 2017-2018, total research expenditures increased to US $69.6 million, with the university’s restricted research expenditures growing to US $44.1 million. In total, 303 new awards were received in FY2018, worth $54.1 million. Research expenditures are on target to meet National Research University Fund (NRUF) eligibility and Carnegie Research 1 status [as explained on the following page].

It was a record breaking year for the IED. In 2018, the IED served 43,320 existing and aspiring entrepreneurs, generating a total of $2.9 billion in direct economic impact. Of those who received advising, training and business research assistance, over 1,000 businesses were started or experienced significant growth, resulting in the creation or retention of close to 20,000 jobs. Additionally, these businesses generated $291 million in new financing and $35 million in new tax revenue, with new sales, contracts and exports valued at $2.6 billion dollars.

Our faculty, students, administrators and collaborators who are committed to discovery each and every day; we thank you for your contribution in achieving our highest results to date.

We want to encourage all, from incoming freshmen to the most seasoned faculty members, to engage in the knowledge enterprise and reach out to us for support and guidance. We are here to serve you.

As always, we welcome your feedback on all of our activities.

Regards,

Bernard Arulanandam, Ph.D., MBA
Interim Vice President for Research, Economic Development, and Knowledge Enterprise
Research Excellence

Committed to the guiding principal that great universities need great cities and great cities need great universities, UTSA is on the fast track to becoming a nationally-recognized multicultural discovery enterprise.

With a bold mandate from our president, our goal has been to aggregate the various initiatives and launch new activities to increase national and international recognition of UTSA as an institution of research excellence and to reach status as a research-intensive University. Success is measured by the criteria set forth by both the National Research University Fund and the Carnegie Classification system. Strategies are focused on increasing the institution’s annual research expenditures; expanding the pipeline and managing the success of our doctoral students; supporting UTSA’s faculty to achieve national research recognitions; and recruiting National Academy members to UTSA.

NRUF Criteria

The National Research University Fund was established by the Texas Legislature in 2009 “to provide a dedicated, independent, and equitable source of funding to enable emerging research universities in this state to achieve national prominence as major research universities.”

An institution is eligible for the fund once they meet the benchmarks in the following categories. The first two are mandatory.

1. Designated as an emerging research university in the Coordinating Board’s accountability system
2. Have expenditures of at least $45 million in restricted research minus the institution’s F&A (Facilities and Administrative) costs
3. Comply with five of the following:

<table>
<thead>
<tr>
<th>Criteria</th>
<th>As of 8/31/2018</th>
<th>Target</th>
</tr>
</thead>
<tbody>
<tr>
<td>Restricted Research Expenditures</td>
<td>$44M</td>
<td>$55M+</td>
</tr>
<tr>
<td>Endowments</td>
<td>$152M</td>
<td>$400M+</td>
</tr>
<tr>
<td>Faculty in National Academies</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>Faculty Prestigious Awards</td>
<td>2</td>
<td>&gt;7</td>
</tr>
<tr>
<td>Ph.D.s Awarded Annually</td>
<td>140</td>
<td>200</td>
</tr>
<tr>
<td>Freshman Class of High Academic Achievement</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Institutional Recognition of Research Capabilities and Scholarly Attainment</td>
<td>✓</td>
<td>✓</td>
</tr>
</tbody>
</table>

Carnegie Classification

UTSA is currently classified as an R2 “High research activity” institution by the Carnegie Classification of Institutions of Higher Education. Our goal is to be classified as an R1 Research Intensive University.

This particular classification is focused primarily on:

1. Research expenditures generated by STEM research activity
2. Research expenditures generated by Non-STEM research activity
3. Number of doctoral degrees produced yearly in the fields of STEM, humanities, social sciences and other professional fields.
4. Number of postdoctorates and non-faculty research staff with doctorates.

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Reporting Year 2015</th>
<th>Reporting Year 2018</th>
</tr>
</thead>
<tbody>
<tr>
<td>STEM R&amp;D Expenditures</td>
<td>$42.3M</td>
<td>$64.1M</td>
</tr>
<tr>
<td>Non-STEM R&amp;D Expenditures</td>
<td>$4.7M</td>
<td>$6M</td>
</tr>
<tr>
<td>Ph.D.s Awarded Annually</td>
<td>106</td>
<td>126</td>
</tr>
<tr>
<td>Postdocs/Research Staff</td>
<td>57</td>
<td>85</td>
</tr>
</tbody>
</table>
Expenditure Summary
FY 2018

Total Research Expenditures
$69.59M

$44.05M
» Restricted

$29.82M
» Federal

$14.22M
» Non-Federal

$25.54M
» Unrestricted

$11.94M
» General

$13.60M
» Designated
Top 5 Largest Awards

1. Ravi Sandhu, Institute for Cyber Security (ICS) COS
   Nicole Beebe, Cyber Center for Security and Analytics (CCSA) COB
   Jeff Prevost, Open Cloud Institute (OCI) COE
   Guadalupe Carmona-Dominguez, College of Education and Human Development
   Ram Krishnan, College of Engineering
   CREST Center for Security and Privacy Enhanced Cloud Computing (C-SPECC)
   National Science Foundation | $5,000,000

2. Gregory White, College of Sciences
   Nicole Beebe, Cyber Center for Security and Analytics (CCSA) COB
   Renewal of the Scholarship for Service Program
   National Science Foundation | $3,737,836

3. Charles Wilson, Neurosciences Institute (NI) COS
   Oscillations and Resonance in Basal Ganglia Circuits
   NIH National Institute of Neuro Disorder/Stroke | $3,307,503

4. Zenong Ying
   Erica Sosa
   Meizi He
   College of Education and Human Development
   Obesity Prevention in Head Start: The Maranos! Program
   National Institutes of Health | $3,154,923

5. Gregory White
   Natalie Granado
   Center for Infrastructure Assurance and Security (CIAS)
   State and Community Coordinated Cybersecurity Training
   US Dept of Homeland Security | $3,015,000

Restricted, Federal, and Total Research Expenditures and Total Awards

- Restricted Research Expenditures: 20.9% 15.5% 22.5%
- Federal Research Expenditures: 0% 15.5% 0%
- Total Research Expenditures: 0% 15.5% 2.5%
- Amount of Awards: 0% 0% 0%

2016 2017 2018
## Research Expenditure

### Breakdown by College/Unit

<table>
<thead>
<tr>
<th>College</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Architecture, Construction, and Planning (CACP)</td>
<td>$0.62M</td>
</tr>
<tr>
<td>Business (COB)</td>
<td>$4.25M</td>
</tr>
<tr>
<td>Education &amp; Human Development (COEHD)</td>
<td>$4.91M</td>
</tr>
<tr>
<td>Engineering (COE)</td>
<td>$13.60M</td>
</tr>
<tr>
<td>Liberal &amp; Fine Arts (COLFA)</td>
<td>$4.45M</td>
</tr>
<tr>
<td>Public Policy (COPP)</td>
<td>$1.86M</td>
</tr>
<tr>
<td>Sciences (COS)</td>
<td>$33.16M</td>
</tr>
<tr>
<td>Honors College</td>
<td>$0.02M</td>
</tr>
<tr>
<td>University (UNIV)</td>
<td>$2.91M</td>
</tr>
<tr>
<td>VP Academic Affairs (VPAA)</td>
<td>$1.21M</td>
</tr>
<tr>
<td>VP Research, Economic Development, and Knowledge Enterprise (VPREDKE)</td>
<td>$2.17M</td>
</tr>
<tr>
<td>Other (VPSS, VPSE, VPBA, VPEA)</td>
<td>$0.42M</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>$69.59M</strong></td>
</tr>
</tbody>
</table>
# Research Expenditure

## Breakdown by Research Centers & Institutes

<table>
<thead>
<tr>
<th>College</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Center for Infrastructure Assurance and Security (CIAS)</td>
<td>$3.73M</td>
</tr>
<tr>
<td>South Texas Center for Emerging Infectious Diseases (STCEID)</td>
<td>$3.54M</td>
</tr>
<tr>
<td>Center for Research and Training in the Sciences (CRTS)</td>
<td>$2.54M</td>
</tr>
<tr>
<td>Neurosciences Institute (NI)</td>
<td>$2.35M</td>
</tr>
<tr>
<td>Center for Innovation and Drug Discovery (CIDD)</td>
<td>$1.87M</td>
</tr>
<tr>
<td>Institute for Demographic and Socioeconomic Research (IDSR)</td>
<td>$1.07M</td>
</tr>
<tr>
<td>Texas Sustainable Energy Research Institute (TSERI)</td>
<td>$1.06M</td>
</tr>
<tr>
<td>Institute for Cyber Security (ICS)</td>
<td>$1.05M</td>
</tr>
<tr>
<td>Center for Simulation Visualization and Real Time Prediction (SiViRT)</td>
<td>$0.97M</td>
</tr>
<tr>
<td>Institute for Health Disparities Research (IHDR)</td>
<td>$0.79M</td>
</tr>
<tr>
<td>Center for Archeological Research (CAR)</td>
<td>$0.79M</td>
</tr>
<tr>
<td>Open Cloud Institute (OCI)</td>
<td>$0.71M</td>
</tr>
<tr>
<td>Center for Education and Research in Information and Infrastructure Security (CERI2S)</td>
<td>$0.61M</td>
</tr>
<tr>
<td>Center for Research and Policy in Education (CRPE)</td>
<td>$0.40M</td>
</tr>
<tr>
<td>San Antonio Cellular Therapeutics Institute (SACTI)</td>
<td>$0.38M</td>
</tr>
<tr>
<td>Center for Cultural Sustainability (CCS)</td>
<td>$0.24M</td>
</tr>
<tr>
<td>Center for Advanced Manufacturing &amp; Lean Systems (CAMLs)</td>
<td>$0.24M</td>
</tr>
<tr>
<td>Center for Water Research (CWR)</td>
<td>$0.21M</td>
</tr>
<tr>
<td>Center for the Inquiry of Transformative Literacies (CITL)</td>
<td>$0.13M</td>
</tr>
<tr>
<td>Bank of America Child and Adolescent Policy Research Institute (BACAPRI)</td>
<td>$0.13M</td>
</tr>
<tr>
<td>Center for Urban and Regional Planning Research (CURPR)</td>
<td>$0.10M</td>
</tr>
<tr>
<td>Team Autism Research Center (ARC)</td>
<td>$20,266</td>
</tr>
<tr>
<td>Water Institute of Texas (WIT)</td>
<td>$2,123</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>$22.92M</strong></td>
</tr>
</tbody>
</table>
# Awards

## College Awards

### Number of Awards by College

<table>
<thead>
<tr>
<th>College</th>
<th>FY 2018</th>
</tr>
</thead>
<tbody>
<tr>
<td>Architecture, Construction, and Planning (CACP)</td>
<td>12</td>
</tr>
<tr>
<td>Business (COB)</td>
<td>23</td>
</tr>
<tr>
<td>Education &amp; Human Development (COEHD)</td>
<td>38</td>
</tr>
<tr>
<td>Engineering (COE)</td>
<td>65</td>
</tr>
<tr>
<td>Liberal &amp; Fine Arts (COLFA)</td>
<td>52</td>
</tr>
<tr>
<td>Public Policy (COPP)</td>
<td>11</td>
</tr>
<tr>
<td>Sciences (COS)</td>
<td>70</td>
</tr>
<tr>
<td>University College (UNIV)</td>
<td>2</td>
</tr>
<tr>
<td>VP Research, Economic Development, and Knowledge Enterprise (VPREDKE)</td>
<td>18</td>
</tr>
<tr>
<td>VP Strategic Enrollment (VPSE)</td>
<td>7</td>
</tr>
<tr>
<td>Other (VP Academic Affairs, VP Business Affairs, Library)</td>
<td>5</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>303</strong></td>
</tr>
</tbody>
</table>
## College Awards

### Amount Awarded by College

<table>
<thead>
<tr>
<th>College</th>
<th>FY 2018</th>
</tr>
</thead>
<tbody>
<tr>
<td>Architecture, Construction, and Planning (CACP)</td>
<td>$0.39M</td>
</tr>
<tr>
<td>Business (COB)</td>
<td>$1.55M</td>
</tr>
<tr>
<td>Education &amp; Human Development (COEHD)</td>
<td>$4.94M</td>
</tr>
<tr>
<td>Engineering (COE)</td>
<td>$6.98M</td>
</tr>
<tr>
<td>Liberal &amp; Fine Arts (COLFA)</td>
<td>$4.12M</td>
</tr>
<tr>
<td>Public Policy (COPP)</td>
<td>$0.85M</td>
</tr>
<tr>
<td>Sciences (COS)</td>
<td>$26.68M</td>
</tr>
<tr>
<td>University College (UNIV)</td>
<td>$0.74M</td>
</tr>
<tr>
<td>VP Research, Economic Development, and Knowledge Enterprise (VPREDKE)</td>
<td>$5.47M</td>
</tr>
<tr>
<td>VP Strategic Enrollment (VPSE)</td>
<td>$1.66M</td>
</tr>
<tr>
<td>Other (VP Academic Affairs, VP Business Affairs, Library)</td>
<td>$0.66M</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>$54.05M</strong></td>
</tr>
</tbody>
</table>

### Award Percentage by College

- **0.7%** CACP
- **2.9%** COB
- **9.2%** COEHD
- **12.9%** COE
- **7.6%** COLFA
- **1.6%** COPP
- **49.4%** COS
- **1.4%** UNIV
- **10.1%** VPREDKE
- **3.1%** VPSE
- **1.2%** Other (VPAA, VPBA, Library)
PROPOSALS

Proposal Submissions

SUBMISSION BY SPONSOR TYPE

<table>
<thead>
<tr>
<th>Sponsor Type</th>
<th>Submitted Requests</th>
</tr>
</thead>
<tbody>
<tr>
<td>Federal Government</td>
<td>374</td>
</tr>
<tr>
<td>State Government</td>
<td>160</td>
</tr>
<tr>
<td>Private</td>
<td>188</td>
</tr>
<tr>
<td>Federal Pass Through</td>
<td>137</td>
</tr>
<tr>
<td>Foundation</td>
<td>12</td>
</tr>
<tr>
<td>Local Government</td>
<td>32</td>
</tr>
<tr>
<td>Other Government</td>
<td>7</td>
</tr>
<tr>
<td>Business</td>
<td>4</td>
</tr>
<tr>
<td>Development &amp; Gifts</td>
<td>6</td>
</tr>
<tr>
<td>Development &amp; Gifts for Endowments</td>
<td>1</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>921</strong></td>
</tr>
</tbody>
</table>

SUBMISSION PERCENTAGE

BY SPONSOR TYPE

- **40.5%** Federal Government
- **17.4%** State Government
- **20.5%** Private
- **15.0%** Federal Pass Through
- **1.2%** Foundation
- **3.5%** Local Government
- **0.7%** Other Government
- **0.4%** Business
- **0.7%** Development & Gifts
- **0.1%** Development & Gifts for Endowments
## Proposal Submissions

### Submission by College

<table>
<thead>
<tr>
<th>College</th>
<th>Submitted</th>
<th>Amount Requested</th>
</tr>
</thead>
<tbody>
<tr>
<td>Architecture, Construction, and Planning (CACP)</td>
<td>26</td>
<td>$1.31M</td>
</tr>
<tr>
<td>Business (COB)</td>
<td>59</td>
<td>$13.88M</td>
</tr>
<tr>
<td>Education &amp; Human Development (COEHD)</td>
<td>95</td>
<td>$30.19M</td>
</tr>
<tr>
<td>Engineering (COE)</td>
<td>287</td>
<td>$111.18M</td>
</tr>
<tr>
<td>Liberal &amp; Fine Arts (COLFA)</td>
<td>83</td>
<td>$22.31M</td>
</tr>
<tr>
<td>Public Policy (COPP)</td>
<td>21</td>
<td>$5.17M</td>
</tr>
<tr>
<td>Sciences (COS)</td>
<td>301</td>
<td>$163.23M</td>
</tr>
<tr>
<td>Other (VPAA, VPBA, VPSE)</td>
<td>17</td>
<td>$5.86M</td>
</tr>
<tr>
<td>Graduate School</td>
<td>2</td>
<td>$0.21M</td>
</tr>
<tr>
<td>VP Research, Economic Development, and Knowledge Enterprise (VPREDKE)</td>
<td>21</td>
<td>$9.18M</td>
</tr>
<tr>
<td>Library</td>
<td>2</td>
<td>$3.04M</td>
</tr>
<tr>
<td>University College (UNIV)</td>
<td>7</td>
<td>$1.20M</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>921</strong></td>
<td><strong>$366.76M</strong></td>
</tr>
</tbody>
</table>

### Submission Percentage by College

- **CACP**: 0.4%
- **COB**: 3.8%
- **COEHD**: 8.2%
- **COE**: 30.3%
- **COLFA**: 6.1%
- **COPP**: 1.4%
- **COS**: 44.5%
- **UNIV**: 0.3%
- **VPREDKE**: 2.5%
- **Library**: 0.8%
- **Other (VPAA, VPBA, VPSE)**: 1.6%
- **Graduate School**: 0.06%
Office of Commercialization & Innovation

The Office of Commercialization and Innovation (OCI), continued to expand UTSA’s commercialization programs, build partnerships with industry and the grow the innovation ecosystem. The number of NSF Innovation Corps (I-Corps) teams participating at the national level doubled over the previous two years combined, with six teams advancing to further refine their business models for their new technologies, putting UTSA in the top 6 percent of participating institutions. The office also recognized 30 members of the UTSA research community at their annual Innovation Awards.

2017 Innovator of the Year

UTSA mechanical engineer Bing Dong was named the 2017 UTSA Innovator of the Year, in recognition of his drive to develop and launch the startup Leaptran in order to provide a way to make buildings more energy efficient and responsive to their occupants. His lab, Built Environment Science & Technology/BEST, is interdisciplinary, combining mechanical engineering, artificial intelligence, electrical engineering, and social science research. In 2017, he received the UTSA Faculty Research Award for Highest Funding as Principal Investigator and a Distinguished Service Award from the International Energy Agency.

Smart city innovation, Leaptran, Inc., launches out of UTSA

A spinout from OCI, Leaptran, Inc., is bringing to market products that will optimize whole building energy use while providing room-level comfort for individuals. Using artificial-intelligence and smart building features, these integrated hardware and software products will optimize energy use among micro-grid distributed energy resources (DERs) such as solar power generation and battery energy storage systems (BESS).

Leaptran’s technologies are licensed from UTSA and are based on co-founder and UTSA Assistant Professor Bing Dong’s more than ten years of research in building energy efficiency, occupant behavior, big data analytics, intelligent building operation and optimization, measurement and verification, and buildings-to-grid integration research. Recent UTSA Entrepreneur-in-Residence and energy storage expert, Jeff Xu, founder of Leaptran, identified and evaluated these technologies and recognized their synergy with his skills as a great commercial opportunity.

Through UTSA, the Leaptran team received a $50,000 award to participate in the National Science Foundation’s I-CorpsTM program to optimize their product and market development focus. Whilst as a UTSA New Venture Incubator member, they then landed a SBIR Phase I award of $149,991, funded by the Department of Energy’s Office of Energy Efficiency and Renewable Energy (EERE) through the Small Business Innovation Research (SBIR) program.
Commercialization Activity Summary

Technology innovation and commercialization are major focuses of the UT System and other Tier One universities throughout the state and nation. The office establishes UTSA procedures and policies for technology transfer and commercialization, and provides training to faculty, staff, and students. It also spearheads a commercialization council that connects UTSA with regional technology commercialization partners.

<table>
<thead>
<tr>
<th>Activity</th>
<th>FY 14</th>
<th>FY 15</th>
<th>FY 16</th>
<th>FY 17</th>
<th>FY 18</th>
</tr>
</thead>
<tbody>
<tr>
<td>Commercial Agreements (Contract, SRA, MOU, NDA, &amp; MTA)</td>
<td>84</td>
<td>105</td>
<td>143</td>
<td>109</td>
<td>102</td>
</tr>
<tr>
<td>New Invention Disclosures</td>
<td>56</td>
<td>41</td>
<td>53</td>
<td>62</td>
<td>51</td>
</tr>
<tr>
<td>Patents Filed</td>
<td>75</td>
<td>69</td>
<td>71</td>
<td>53</td>
<td>67</td>
</tr>
<tr>
<td>Copyrights &amp; Trademarks</td>
<td>3</td>
<td>3</td>
<td>4</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>New License/Options Signed</td>
<td>5</td>
<td>7</td>
<td>3</td>
<td>8</td>
<td>6</td>
</tr>
<tr>
<td>Technologies Licensed/Optioned</td>
<td>8</td>
<td>7</td>
<td>3</td>
<td>10</td>
<td>7</td>
</tr>
<tr>
<td>Companies Incubated (New Venture Incubator)</td>
<td>15</td>
<td>15</td>
<td>15</td>
<td>7</td>
<td>7</td>
</tr>
</tbody>
</table>

5-YEAR (‘14–’18) INVENTION DISCLOSURES

2018 INVENTION DISCLOSURE BY COLLEGE

BY COLLEGE

- College of Engineering: 62%
- College of Sciences: 32%
- Other (All other UTSA college units): 12%

BY COLLEGE

- College of Engineering: 47%
- College of Sciences: 24%
- Other (All other UTSA college units): 34%
Innovation Disclosures

An automated system designed for cancer detection and Gleason scoring of different cancer tissue using artificial intelligence
Sos Agaian, Foram Mahendra Sanghavi
COE Electrical & Computer Engineering

A proposed system that allows for efficient development of data collection and intervention campaigns by researchers
David Akopian, Sahak Igor Kaghyan, Jafet Aaron Morales, Devasena Inupakutika, Girish Natarajan
COE Electrical & Computer Engineering
Non-UTSA Inventor: Deborah Parra-Medina

A pneumatic air technology application integrated into a knee brace
Alejandra Barraza, Paola Natalya Casas, Alejandro Lucio Betancourt
COE Biomedical Engineering

A technique to design a data system for applications to detect surface conditions for roads or pavements
Shuza Binzaid, Wasim Hafiz Dipon
COE Electrical & Computer Engineering

A low-cost method to provide a significant enhancement of polarization ratio and high power tolerance polarizers
Andrey Chabanov
COS Physics & Astronomy
Non-UTSA Inventors: Ilya Vitebskiy, Igor Anisimov, Nicholas Limberopoulos, Carl Pfeiffer

A material that excludes ethane from ethylene under ambient condition
Banglin Chen, Ruibiao Lin
COS Chemistry

A streamlined protocol process that gains deeper insight into data with little effort
Kim Kwang Raymond Choo, Naga Vemprala, Zhichao (Charles) Liu
COB Information Systems & Cyber Security

A protocol that can ensure the security of data communication
Kim Kwang Raymond Choo
COB Information Systems & Cyber Security
Non UTSA Inventor: Debiao He

An efficient and secure two-party distributed signing protocol to ensure the security of communication
Kim Kwang Raymond Choo
COB Information Systems & Cyber Security
Non UTSA Inventor: Debiao He

A mobile rehabilitation application that provides metrics for better understanding of a patient’s condition
Delano Covarrubias, Alexander Paul, Cynthia Perez
COB Finance

An integration method that reduces energy cost, and load variation for residential buildings
Bing Dong, Amin Mirakhorli
COE Mechanical Engineering

A device that is used to increase the performance of football blocking techniques
Michael David Erwin, Ari Andrew Richtberg, Zachary Daniel McKee, Stephanie Morgan Meier
COE Mechanical Engineering

An improved handpiece design for a novel emergency medical suction device
Yusheng Feng, Robert Lyle Hood, Forhad Akhter, Austin Richard Schoppe, Omar Navarro
COE Mechanical/Biomedical Engineering
Non UTSA Inventors: Bruce Adams, Robert A DeLorenzo

A compact and portable medical suction device with modified structure developed with the constraints on first-responders and military combat medics
Yusheng Feng, Robert Lyle Hood, Forhad Akhter, Austin Richard Schoppe, Omar Navarro
COE Mechanical/Biomedical Engineering
Non UTSA Inventors: Bruce Adams, Robert A DeLorenzo

Software to import schedule files as baselines into an existing schedule
Yilmaz Hatipkarasulu
CACP Construction Science

A device that provides treatment to shoulder injuries through various mechanical and electrical methods
Robert Lyle Hood, Corinne Nawn, Zach Stelle Fallon, Mark Kevin Sparkman
COE Biomedical/ Mechanical Engineering

A transdermal device for efficient transfection of genetic material and cell transformation
Robert Lyle Hood, Forhad Akhter
COE Mechanical Engineering
Non UTSA Inventor: Lingqian Chang

An antigen useful for diagnosis and immunization against Valley fever infection
Chiung-Yu Hung, Gary R. Ostroff, Natalia Castro-Lopez
COS Biology
A diagnosis antigen for detecting Coccidioides infection  
Chiung-Yu Hung, Jieh-Juen Yu  
COS Biology

An experiential educational program in which undergraduate students perform internships, community service, and urban engagement  
Sean Kelly, Kathryn Jill Fleuriet  
Honors College

A high-performance computing system that can perform smart automated monitoring using vision based system in real-time  
Mo Jamshidi, Patrick Jennings Benavidez, Berat Alper Erol, Abhijit Majumdar, Divya Bhaskaran, Arman Rezakhani  
COE Electrical and Computer Engineering  
Non UTSA Inventor: Benjamin Factor

A method to improve AES encryption implementation  
Eugene Britto John, Alekhyaa Muthineni  
COE Electrical & Computer Engineering

Software that detects fraud anomalies in broad areas such as security, malware classification, credit cards, insurance, and health care  
Daijin Ko, Nicole L Beebe  
COB Information Systems & Cyber Security/ Management Science and Statistics

A web-based tool which assists users in determining the appropriate statistical test for a given set of parameters  
H. Paul LeBlanc  
COLFA Communication

A framework that isolates and detects faulty or malicious devices in the IoT system  
Junghee Lee, Kim Kwang Raymond Choo  
COE Electrical and Computer Engineering and COB Information Systems & Cyber Security

Hardware that provides a high level of security by combining security features  
Tongping Liu, Hongyu Liu, Sam Albert Silvestro, Tianyi Liu  
COS Computer Science

A device for fistula treatment which targets all sections of gastrointestinal tract  
Solaleh Miar, C. Mauli Agrawal, Anson Joo Leng Ong, Teja Guda  
COE Biomedical Engineering  
Non UTSA Inventor: Sandeep Natvarlal Patel

A lighting fixture that dramatically changes the surface appearance between lit and unlit states  
Taeg K. Nishimoto  
CACP Architecture

A series of lamps that changes the appearance of colors on the surface when the light is turned on  
Taeg K Nishimoto  
CACP Architecture

A bioink to enable the 3D printing of biomaterials  
Joseph Pearson, Teja Guda, Jasmine Paulette King  
COE Biomedical Engineering

Implantable microcomputer with embedded sensors for the management of diseases or medical monitoring of patients  
Chunjiang Qian, Joseph John Paul, Paul Morton  
COE Electrical & Computer Engineering

A methodology of analyzing a biomarkers fluorescence spectral shape  
Kirk Schanze, Zhiliang Li  
COS Chemistry  
Non-UTSA Inventor: Yun Huang

A low-cost method which reveals the potential of fluorescence spectrum shape analysis in screening and cancer diagnosis  
Kirk Schanze, Zhiliang Li  
COS Chemistry  
Non-UTSA Inventors: Yun Huang, April Risinger

A technology that can prevent a formation that leads to corrosion in pipelines  
Heather Shipley, Gisella Lamas-Samanamud  
COE Civil and Engineering  
Non-UTSA Inventors: Tony Elven Reeves, Kenneth Lange, Jonathan Bohmann, Michael Tidwell

A platform to sell and buy energy generated from local sources  
Ahmad Taha, Shen Wang  
COE Electrical & Computer Engineering  
Non UTSA Inventor: Jianhui Wang

An application method that it can be used as a potential therapeutic to treat obesity and cardiovascular diseases  
Francis K Yoshimoto  
COS Chemistry
The Office of Research Support offers a variety of internal awards to encourage faculty to seek out new research ideas and expand scholarly works. The seed grant programs support the knowledge enterprise by awarding faculty members funding to explore new areas of research. Faculty can work out new ideas, create new collaborations, either in a different or complementary fields or obtain preliminary data that can be cited in applications for extramural funding, all to enhance the breadth of scholarly and creative activity on campus.

**RETURN ON INVESTMENT**

In fiscal year 2017, the VPR awarded:

- **38** Seed Grant Awards
- Totaling **$807,494**

**AS OF SPRING 2019**

VPREDKE tracks two years of research output. Return on seeding research for FY 2017 Awardees generated:

- **33** Grant Submissions
- **17** Awards
- **71** Submitted Publications
- **47** Undergraduate Students
- **75** Graduate Students
- **12** Postdoctoral Scholars
- **6** Visiting Scientists Engaged
- **53** Other Scholarly Works

**RESULTED IN A RETURN ON INVESTMENT TOTALING:**

**$3,176,791**

**FY 2018 Award Totals**

<table>
<thead>
<tr>
<th>Program</th>
<th>Awards</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>CACP</td>
<td>2</td>
<td>$25,000</td>
</tr>
<tr>
<td>COB</td>
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<tr>
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<td>COEHD</td>
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</tr>
<tr>
<td>COS</td>
<td>1</td>
<td>$10,000</td>
</tr>
</tbody>
</table>

**Total $340,000**

**GREAT**

Grants for Research Advancement and Transformation

**09.01.2017 - 08.31.2018**

$140,000 awarded: $20,000 per researcher x 7 new projects

The GREAT program provides seed grants to support new areas of research for faculty at UTSA, to assemble preliminary data that can be used to seek extramural funding and advance UTSA’s goal of reaching Tier One status.

**College of Architecture, Construction & Planning**

*Construction and Planning / Architecture*

*Jae Yong Suk*

Investigation of Street Lighting’s Physical Characteristics and Their Impacts on Public Safety at Night

**College of Engineering**

*Biomedical Engineering*

*Teja Guda*

Scaffolds with Soft Zones for Bone Regeneration

**Mechanical Engineering**

*Wei Gao*

Advanced Materials Based on Two-dimensional Building Blocks – Computational Design Based on Chemistry and Topology

**R. Lyle Hood**

An Improved Cystoscopic Approach for 3D Imaging of Intrabladder Cancers

**College of Liberal & Fine Arts**

*Anthropology*

*Sonia Alconini*

The Kingdom of Metals: Inka Frontier Colonization and Expansion

**College of Public Policy**

*Criminal Justice*

*Kellie R. Lynch*

Threat Appraisal and Help Seeking in High-Risk Intimate Partner Violence Victims: The Application of Protection Motivation Theory

**College of Sciences**

*Biology*

*Yufeng Wang*

Temporal-spatial Dynamic Interactions between the Fungal Pathogen Fusarium Graminearum and Maize
The CONNECT Program is a joint effort between The UTSA and the Southwest Research Institute (SwRI). The program encourages interaction between investigators in support of the acquisitions of established extramural, peer-reviewed research funding. This agreement provides unprecedented opportunities for researchers to work together in addressing issues of mutual interest and need.

The Connect program was founded to enhance scientific collaboration between SwRI and UTSA and increase their research funding base. The two selected projects will investigate biofilm corrosion in pipelines and an ultrasound drug delivery methodology.

**Mechanical Engineering**

- **Brendy Rincon Troconis, UTSA**
- **James Dante, SwRI**

Effects of Triazine-Based H2S Scavenger Byproducts on the Film Composition and Cracking of Carbon Steel in Oilfield Applications

**Civil Engineering**

- **Samer Dessouky, UTSA**
- **Jerome Helffrich, SwRI**

Promoting Sustainability and Safety for Texas Rural Roadways Through Self-Powered Sensing and Detection Systems

**College of Architecture, Construction, and Planning**

- **Shelley Roff**
- **Dina V. Krasikova**

**College of Business Management**

- **Meghan Thornton-Lugo**
- **Mehdi Beyhaghi**
- **Saerom Lee**
- **Guan Saw**
- **Kara Styck**
- **Eunhee Chung**

**College of Education and Human Development**

- **Martha Sidury Christiansen**
- **Guan Saw**
- **Eunhee Chung**
- **Sara Oswalt**

**College of Liberal & Fine Arts**

- **Robert Hard**
- **Christopher Hajek**
- **Catherine Komisaruk**
- **Omar Valerio-Jimenez**
- **Malgorzata Oleszkiewicz-Peralba**
- **Kristen Pellegrino**
- **John Drew Stephen**
- **Joshua Thurow**

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- **Kristen Pellegrino**
- **John Drew Stephen**
- **Joshua Thurow**

**College of Education and Human Development**

- **Sara Oswalt**

Where Two Roads Meet: Lived Experiences of Mother-Students Balancing Home and School
Institute for Economic Development

Founded in 1979, the UTSA Institute for Economic Development generated $2.9 billion in direct economic impact nationwide in FY2018. Comprised of nine centers, the Institute provides professional business advising, technical training, research, market analysis, and strategic planning for entrepreneurs, business owners and community leaders to strengthen economies locally, nationally and internationally.

The UTSA Institute also leads the expansion of the Small Business Network of the Americas. This international initiative has guided 23 western countries to adopt the UTSA Small Business Development Center methodology, which has evolved over the last 40 years at universities and colleges across the nation. Today, over 250 centers operate in Central America, Latin America and the Caribbean. They have collectively advanced more than 60,500 entrepreneurial projects. Chile and Colombia lead the adaptation process with 51 and 126 Centers, respectively.

The Institute is committed to creating jobs, growing businesses and fostering economic and community development. With an emphasis on scale-up growth industry clusters and technology commercialization, the Institute’s core strengths include business start-up, manufacturing competitiveness, high-growth minority businesses, international trade and investment, government contracting and corporate supply chains, rural development, applied economics and development policy research, and shale energy economic research. iedtexas.org
Areas of Research Excellence

SELECTED GRANT AWARDS

Cloud, Cyber, Computing & Analytics
Dwayne Williams and Keith Harrison
Center for Infrastructure Assurance and Security (CIAS)
College of Sciences
International Cyber Assessment and Defense Competition/Cyber Competition Metrics
US Department of Homeland Security | $3,047,863

Advanced Materials
Marcelo Marucho
Physics & Astronomy
College of Sciences
Polyelectrolyte Nature of Cytoskeleton Filaments
NIH National Institute of General Medical Sciences | $1,486,946

Integrated Biomedicine
Chiung-Yu Hung
South Texas Center for Emerging Infectious Diseases (STCEID)
College of Sciences
1R01AI135005-01A1: Development of a multivalent vaccine against Coccidioides infection
NIH National Institute of Allergy/Infectious Diseases | $1,899,426

Social and Educational Transformation
Heather Shipley, University College
Mark Appleford, College of Engineering
Jorge Solis, College of Education and Human Development
Juliet Langman, College of Education and Human Development
Kelly Nash, College of Sciences
Harry Millwater, College of Engineering
Krystel Castillo Villar, College of Engineering
Building Capacity: Transforming STEM Undergraduate Education through Academic Literacy, Mentoring and Professional Development
National Science Foundation | $1,500,000

Sustainable Communities and Critical Infrastructure
Brian Laub and Janis Bush
Center for Research and Training in the Sciences (CRTS)
College of Sciences
UTSA Roof Top Harvesting and Storm Water Disbursement over the Edwards Aquifer Recharge Zone: a Retrofit for Treatment of Previously Untreated Cover
San Antonio River Authority | $1,057,401