

AGENDA ITEM BRIEFING

Submitted by: Mark A. Welsh III, Interim President
Texas A&M University

Subject: Establishment of the Insurance Institute for Construction Safety and Research

Proposed Board Action:

Establish the Insurance Institute for Construction Safety and Research (IICSR) at Texas A&M University (Texas A&M).

Background Information:

Texas A&M's School of Architecture proposes to create a transdisciplinary and interdisciplinary research organization to advance construction safety and the built environment in partnership with other academic units across the university. This institute would be known as the Insurance Institute for Construction Safety and Research (IICSR). As envisioned, IICSR would be the first of its kind anywhere in the world. IICSR's primary mission is to eliminate personal injury and property damage claims associated with the construction and operation of facilities in the built environment. Future plans include establishing industry partnerships for creating a new physical home for the IICSR that would provide a location for interdisciplinary research in state-of-the-art laboratories.

Faculty researchers across Texas A&M and The Texas A&M University System (A&M System) from departments, colleges and schools as diverse as Architecture; Construction Science; Engineering; Performance, Visualization & Fine Arts; Geology and Geophysics; Business; Government & Public Service; Psychological and Brain Sciences; and Law would collaborate to create the innovations necessary to revolutionize the safe delivery and operation of constructed buildings and facilities. Initial research activities of the IICSR will include redefining safety, sustainability, quality, and risk management in constructed facilities for the global architecture-engineering-construction industry and its many stakeholders.

IICSR will be successful because of the strong partnerships that exist amongst its researchers, visionary individuals and leading companies in the U.S. and around the world. In particular, insurance and reinsurance companies possess amongst the best visibility and leverage to transform safety performance in the built environment. IICSR and its affiliated research sponsors will forever impact not just the facilities that comprise our modern world, but the lives of everyone working to construct them as well.

A&M System Funding or Other Financial Implications:

The IICSR will initially be supported by current faculty and staff, with additional operations expanded only as additional funding from gifts is provided by individual and corporate donors. To date, fundraising has been successful, with \$1,225,000 in received and committed gifts which will support the initial costs of establishing IICSR. Once established, IICSR will be self-supporting through sponsored research, continuing education and training, industry consortia, and

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demonstration projects in the built environment. Ongoing fundraising activity will be leveraged to support the future expansion and growth of IICSR. For example, a \$4,000,000 cash gift, a \$6,500,000 in-kind gift of machinery and a gift of a modular construction building are currently being finalized.

Strategic Plan Imperative(s) this Item Advances:

Establishing IICSR will advance A&M System strategic imperatives 4, 5, and 7. IICSR will increase the prominence of the A&M System's research portfolio by directly impacting infrastructure development nationally and globally in support of strategic imperative 4. The design and construction industry improves peoples' standards of living through the stewardship it provides for the built environment. Consistent with strategic imperative 5, innovations created through the applied research efforts at IICSR can be licensed and deployed to provide increasingly safe, productive, resilient, and economically viable solutions for the built environment in Texas and beyond.

From energy and education to healthcare and transportation, any improvement in society's way of life usually requires an addition to, or modernization of, the built environment. Consequently, IICSR will create numerous partnerships and novel programs with industry and government to address challenging problems in the built environment such as safety, ecological impact, and affordability. As the largest academic program in construction in the U.S., Texas A&M is well-positioned to reinforce its leadership by pursuing pioneering and progressive concepts at IICSR that improve our world in support of strategic imperative 7.

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TEXAS A&M UNIVERSITY
Office of the President
August 15, 2023

Members, Board of Regents
The Texas A&M University System

Subject: Establishment of the Insurance Institute for Construction Safety and Research

I recommend adoption of the following minute order:

“The Insurance Institute for Construction Safety and Research is hereby established as an organizational unit of Texas A&M University.”

Respectfully submitted,

[ORIGINAL SIGNED BY]

Mark A. Welsh III
Interim President

Approval Recommended:

Approved for Legal Sufficiency:

[ORIGINAL SIGNED BY]

John Sharp
Chancellor

[ORIGINAL SIGNED BY]

Ray Bonilla
General Counsel

[ORIGINAL SIGNED BY]

Billy Hamilton
Deputy Chancellor and
Chief Financial Officer

[ORIGINAL SIGNED BY]

James R. Hallmark, Ph.D.
Vice Chancellor for Academic Affairs

TEXAS A&M UNIVERSITY
 Insurance Institute for Construction Safety and Research

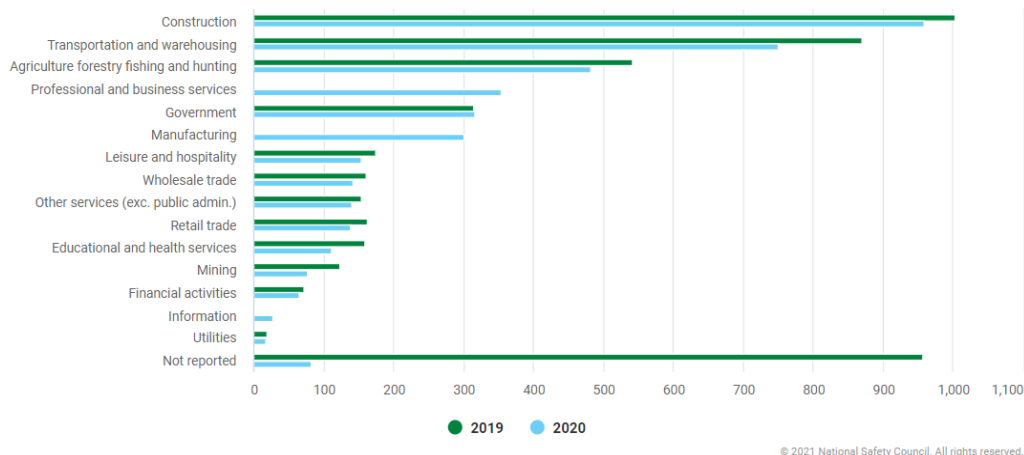
EXECUTIVE SUMMARY

1. Rationale for the Creation of the Institute

The problems and limitations inherent to the built environment are rooted in an inefficient commercial environment that prevents technological advances from taking hold. Instead of researching the symptoms of this dysfunction, the Insurance Institute for Construction Safety and Research (IICSR) will address the commercial and technical domains of design and construction holistically. As a result, IICSR will go to work with integrated teams with deep domain expertise in law, finance, supply chain, public policy, ecology, sociology, actuarial statistics, and industrial safety in addition to customary management, engineering, architecture, and construction disciplines. The institute will benefit from the financial capability of the previously neglected insurance and reinsurance industry which has suffered sizeable losses and become acutely aware of the need for new advancements amongst built environment stakeholders. They have also demonstrated a willingness to fund research at IICSR.

The time is right for IICSR. Current advances in technology (telematics, visualization, simulation, robotics, etc.) are creating new avenues of research and derivative products capable of eliminating accidents in construction. Although safety performance in the industry has plateaued in the past 15 years, the increase in “nuclear verdicts” stemming from jury awards in personal injury cases has skyrocketed. IICSR will reverse these trends by helping eliminate construction and transportation accidents and the majority of personal injury claims. In addition, IICSR will improve the resiliency of built environment facilities to eliminate latent defects that, over time, will greatly reduce property damage claims related to interior air quality, mold, water intrusion, and structural failure.

Number of preventable fatal work injuries by industry sector, 2019–2020



Between 2015 and 2019, the average verdict in National Law Journal’s Top 100 Verdicts more than tripled from \$64 million to over \$214 million. This trend is notable in transportation where a 1,000% increase in large verdicts involving truck crashes (from \$2.3 million to \$22.3 million) has occurred over the past nine years. Construction is a major user of trucking and is therefore impacted by this trend. These verdicts are part of a larger trend that includes increases in class

action suits and “litigation funding” in which third-party investors such as hedge funds and private equity firms are assuming all or part of the cost of a lawsuit in exchange for an agreed-upon percentage of the settlement. According to Bloomberg, “litigation funding” is now a \$39 billion global industry. IICSR is therefore a critical component in the effort to combat these trends by establishing a different trajectory for the built environment.

Most importantly, research done at IICSR will save lives. For decades, the construction industry has had the highest number of fatal injuries of any industry. This is unacceptable, especially when construction injuries and fatalities are preventable. For companies involved in creating and maintaining the built environment, safety is also good business. The Occupational Safety and Health Administration (OSHA) has estimated that construction companies save \$4 to \$6 for every \$1 invested in safety programs and research. The combination of technology, revitalized delivery practices, training, and behavioral science at IICSR will forever change what constitutes safety in the world’s largest industry.

As a land-, sea- and space-grant university, Texas A&M is committed to its tradition of strong research, education and extension programs. The creation of IICSR bolsters the capabilities of The Texas A&M University System (A&M System) to directly and meaningfully expand its impact and reach participants in the built environment with new findings, products and services. Given the global footprint of the insurance industry, IICSR’s outreach will be truly global in scale.

2. Mission, Vision and Goals

IICSR will reside in Texas A&M’s School of Architecture under the direction of its Department of Construction Science, but its network will be broad and far-reaching. Besides having the largest and most respected construction program in the nation, the A&M System possesses a world-class research environment at its RELIS campus. With nearly \$1 billion of infrastructure investment in the past five years, RELIS is an ideal place to locate IICSR’s 12 labs and 20 research spaces after sufficient funds are raised for capital projects. Importantly, IICSR can leverage intellectual capital now before any capital expenditures. In the future, high-bay buildings and testing facilities on the RELIS campus will fit in with the innovation and speed-to-market tech transfer mindset at other entities located at the RELIS campus like the Center for Infrastructure Renewal (CIR) and the Texas A&M Transportation Institute (TTI), amongst others.

The ***mission*** of IICSR is to build on the collective expertise of Texas A&M to revitalize the commercial ecosystem for design and construction. In doing so, IICSR will create a more responsible and sustainable industry capable of eliminating the personal injury and property damage claims currently associated with facilities in the built environment.

The ***vision*** of IICSR is to be the standout world leader in research innovations capable of redefining safety, resilience, quality, affordability, and risk management for constructed facilities. IICSR will lead the effort to provide the design and construction industry with the research infrastructure and educational programs needed to create breakthrough outcomes for the built environment.

The ***goal*** of IICSR is to plan and execute projects in the built environment with utmost ecological responsibility using 50% less capital in 50% less time. Indeed, this has been an unrealized industry theme since the Business Roundtable published its landmark study “More Construction for the Money” over 40 years ago. IICSR will succeed where previous efforts have not precisely because of IICSR’s new focus and the widespread collaborations across Texas A&M.

3. Faculty Associated with IICSR

IICSR will have the financial resources to enable widespread collaborations with many existing centers and institutes across the A&M System and several system members. The nature of IICSR research, deployment and educational activities necessitates the involvement of faculty, staff and students engaged in the following entities:

- 1) Center for Infrastructure Renewal (CIR)
- 2) Texas A&M Engineering Extension Service (TEEX)
- 3) Texas A&M Institute for Data Science (TAMIDS)
- 4) Center for High Performance Computing
- 5) Texas A&M Transportation Institute (TTI)
- 6) The Real Estate Research Center (at the Mays Business School)
- 7) Texas A&M AgriLife Research
- 8) Texas A&M AgriLife Extension
- 9) Texas A&M Forest Service
- 10) Texas Division of Emergency Management (TDEM)
- 11) Center for Housing and Urban Development (CHUD)
- 12) Institute for Sustainable Communities
- 13) Texas A&M University Center for Hazard Reduction and Recovery

Interdisciplinary and collaborative research will be the hallmark of innovations created at IICSR. In this regard, the institute will feature research projects with faculty and students from the following colleges, schools and departments at (and affiliated with) Texas A&M:

- 1) School of Architecture [Departments of Construction Science, Architecture and Landscape Architecture and Urban Planning (LAUP)]
- 2) Mays Business School
- 3) School of Law
- 4) Bush School of Government & Public Service
- 5) College of Agriculture and Life Sciences
- 6) College of Arts & Sciences (Departments of Mathematics, Psychological and Brain Sciences, Geology and Geophysics, and Geography)
- 7) School of Public Health (Department of Environmental and Occupational Health)
- 8) School of Performance, Visualization & Fine Arts
- 9) College of Engineering
- 10) Texas A&M University Higher Education Center at McAllen (Construction Science)
- 11) Blinn College (Construction Management and Science)

4. Transformational Impact and Activities: Education, Research, and Outreach

IICSR will lead the way in redefining research and education that benefits stakeholders and participants in the creation, modernization and operation of the built environment.

IICSR will facilitate an environment where industry can access the innovative technologies and talent required in the future. Each of the institute's 12 labs (detailed in section 7) will be supported by industry consortia that will fund various research projects, educational courses and training

efforts. Much of this activity will be done in collaboration with existing extension capabilities across the A&M System.

5. Broader Societal Impacts

Nearly one-third of Americans recently polled by Gallup indicated that they have very little or no confidence in big business, continuing a downward trend in the public perception of corporations over the past four decades. Changing cultural attitudes toward companies combined with increasingly aggressive plaintiff attorneys and “litigation funding” are driving unprecedented growth in liability verdicts. Even the cost of adjusting and managing claims in construction has jumped nearly 20% in the last year according to a recent American Property Casualty Insurance Association report. Today, the best response to these major trends remains the drastic reduction or elimination of claims related to personal injury and property damage. The need for IICSR at Texas A&M has never been greater to improve safety in construction. Several key facts and figures illuminate this need:

- 1) Total workplace injury costs in construction exceed \$170 billion each year.
- 2) 20% of worker deaths in the U.S. are in construction, although construction workers make up only 6% of the U.S. labor force. This disparity emphasizes the need for a continued push to improve safety on the job for those working in construction.
- 3) Falls, struck by an object, electrocution or caught in (or in between) an object account for over 60% of all construction-related deaths, all of which are preventable.
- 4) Workers’ compensation claims for nonfatal falls account for \$2.5 billion annually.
- 5) Insurance companies underwriting policies in the U.S. paid more than \$62 billion in workers' compensation claims in 2020.

It is a well-known issue that higher education globally has suffered from a lack of attention paid to the issue of industrial safety. With over 1,300 students, Texas A&M’s Construction Science program is the largest in the nation and is expected to grow to 2,500 students by 2027. The university’s ability to educate and inform a large number of future leaders in the built environment is compelling. Thus, IICSR provides an avenue for Texas A&M to not just create a leading position in construction safety, but further reinforce its impressive credentials in industrial safety research, education, and training overall.

6. Resource Requirements

The initial establishment of IICSR will not require additional financial resources to be provided by the A&M System. The IICSR will initially be supported by current faculty and staff, with additional operations expanded only as additional funding from gifts is provided by individual and corporate donors. To date, fundraising has been successful with \$1,225,000 in received and committed gifts which will support the initial costs of establishing IICSR. Ongoing fundraising activity will be leveraged to support the future expansion and growth of IICSR. For example, a \$4,000,000 cash gift, \$6,500,000 in-kind gift of machinery, and a gift of a modular construction building being finalized.

Once established, IICRS will continue fundraising to support the construction of new facilities, which will be the subject of future requests for Board of Regents approval once funding is available. In addition to the funds for IICSR’s new facilities, IICSR will raise funding sufficient to purchase needed research equipment as well as create endowments to help attract leading faculty

to Texas A&M to lead as many as seven of the planned IICSR laboratories. In particular, the Department of Construction Science is anticipating hiring up to 37 new faculty at all ranks over the next few years to accommodate its anticipated growth. Aside from facility and faculty endowments that will be received over time, each of IICSR's planned 12 laboratories will be funded by a consortium of industry companies with a specific interest in the work of each lab. This funding source will sustain the initial years of each IICSR lab.

Due to the commercialization potential of research done at IICSR's 12 laboratories, the institute is a unique case where the direct financial benefit to corporate donors greatly exceeds the capital contribution. IICSR will provide new licensing opportunities to the A&M System, especially as companies commercialize new technologies and financial products. Faculty in the School of Architecture have met with individuals in Texas A&M Innovation regarding licensing and commercialization opportunities. Indeed, the A&M System's posture on intellectual property is the main reason why U.S. and global insurance and reinsurance companies will comprise the largest group of donors to IICSR as they develop and bring to market new financial products. This is also why the companies who donate to IICSR intend to be highly supportive of the activities of the institute.

7. Sources and Future Expectations of Financial Support

IICSR is positioned to be the premier research facility that will provide the innovations and breakthroughs needed to eliminate personal injuries and property damage claims currently inherent in construction. It is envisioned that advancements at IICSR will be made through the research of 12 laboratories, each supported in the longer term primarily through a combination of industry consortia funding and research grants from government agencies. The first-of-a-kind facilities that will be constructed over time will provide a tremendous competitive advantage for Texas A&M researchers pursuing state and federal research grants.

The lack of an integrated research facility purposely constructed to improve the performance of built environment facilities has been a major deterrent to the faculty's ability to generate significant research funding. IICSR is designed to remedy this deficiency both in its collaborative research model and through its shared space concepts. Collectively, the IICSR labs will work to ensure the transition from research to commercially viable products and financial services. Each currently planned IICSR laboratory is described below:

1) Trimble Technology Lab

An existing lab supported by Trimble Corporation, Trimble Technology Lab opens avenues for positioning research such as locating potential work-related hazards in the virtual and real worlds. Geospatial technologies elevate safety interfaces among workers.

2) Architecture Research Laboratory

The lab will focus on advanced design to reduce onsite assembly and exposure to hazards. Evaluation of new building materials and systems will promote reduced facility enclosure problems and claims.

3) Construction Data Actuarial Studies Laboratory

Through this lab, Texas A&M can collect data and provide impartial and compelling underwriting information.

4) Housing Innovations Laboratory

The lab's focus will be to eliminate accidents in residential construction and build high-quality homes with materials and practices that promote resiliency and post-disaster repair and recovery.

- 5) Sustainable Materials and Circular Economy Laboratory
Research in the lab will center on evaluating sustainable and safe materials and methods of construction. Long-term building performance through advanced fabrication techniques will also be examined.
- 6) Laboratory for Accelerated Capital Project Formation
The lab's objective will be to reduce rampant transactional costs that comprise 41% of overall costs through new forms of risk allocation, smart contracts and blockchain.
- 7) Trucking and Heavy Equipment Operations Laboratory
The world's largest industry requires extensive logistics and the operation of trucks and heavy machinery. The lab will be focused on eliminating accidents through technology and training.
- 8) Advanced Fabrication and Assembly Technologies Laboratory
Perfect safety is the byproduct of dedicated planning, design, fabrication, and assembly in the digital twin and real worlds. Eliminating variance in the field will eliminate accidents and promote quality.
- 9) Construction Simulation and Robotics Laboratory
The lab will examine robots to replace human workers on tasks with large safety risk profiles.
- 10) Built Environment Resilience and Hazards Laboratory
Long-term performance monitoring of facilities will aid improvements and lower claims.
- 11) Built Environment Urban Analytics Laboratory
Holistic planning for improvements in populated areas will improve safety and quality.
- 12) Crane Safety Research Laboratory
The lab will be poised to make crane safety breakthroughs using telematics and advanced computation. Full-motion simulators and crew resource management innovations will reduce crane accidents.

Once established, IICSR will be self-supporting through sponsored research conducted in the above labs, continuing education and training across the industry, industry consortia, and demonstration projects in the built environment. Each lab will establish an industry consortium, with each member paying base annual dues that will provide financial support for the operations and research in the lab. Demonstration projects will be done in partnership with developers and corporations in Texas, the U.S. and beyond. This may often take the form of economic development assistance where a region's infrastructure improvement is a prerequisite for business and industry growth. Recently, many of these forms of economic assistance require the inclusion of a leading research university. Companies and regional governments continue to show willingness to work with members and components of the A&M System on these significant grants and development projects. IICSR will be ideally positioned to assist with these types of opportunities to improve the built environment.

8. Governance and Advisory Structure

IICSR will be led by a director and an operations coordinator. Dr. Stephen Mulva will serve as the founding director of IICSR. Dr. Mulva was a strategic hire for the School of Architecture in August 2022, having previously directed the Construction Industry Institute (CII) at the University

of Texas at Austin since 2015. Dr. Mulva will report quarterly to the dean of the School of Architecture to highlight IICSR successes and potential improvements. In addition to responsibility for management and oversight of the IICRS, the director will lead the outreach effort with sponsoring companies and individuals to ensure the overall relevance and fiscal sustainability of the institute. Reporting to the director, the operations coordinator will work with the 12 laboratory directors to maintain progress toward the IICRS vision and mission, with responsibility for ensuring fiscal discipline and reporting, ensuring compliance and coordinating service delivery (e.g., educational and outreach programs) across the 12 laboratories.

The proposed IICSR Advisory Board will include seven people. Meetings will be held twice each year. Advisory Board members will serve staggered three-year terms. The composition of the initial IICSR Advisory Board is proposed as follows:

- | | |
|---|----------------------|
| 1) IICSR Director (serves as Chair) | Dr. Stephen Mulva |
| 2) Texas A&M Administration Member (at large) | TBD |
| 3) Texas A&M School of Architecture Dean | Dr. Patrick Suermann |
| 4) Texas A&M Dean or Department Head | TBD |
| 5) IICSR Industry Affiliate Position 1 | TBD |
| 6) IICSR Industry Affiliate Position 2 | TBD |
| 7) IICSR Industry Affiliate Position 3 | TBD |

9. Mechanisms for Periodic Review

IICSR will be reviewed at least once every three years in accordance with policies established for institutes and centers (i.e., A&M System Policy [11.02, Creation of Centers and Institutes, A&M System Regulation 11.02.01 Management and Evaluation of Center and Institutes](#), and Texas A&M Standard Administrative Procedure [11.02.99.M0.01, Centers and Institutes](#)). This review will provide feedback to the dean of the School of Architecture and the department head of the Department of Construction Science regarding the institute's effectiveness in meeting its mission.

A Review Committee will be established in accordance with the guidelines of the School of Architecture in effect at the time of each periodic review. The Review Committee will be comprised of at least three people, two of whom will be current members of the IICSR Advisory Board. The Review Committee will provide recommendations to the dean, the department head of Construction Science and the IICSR director about IICSR's performance. These findings will be made available to the donors and to the Texas A&M Foundation. The review report will also be submitted to the vice president for research along with a memorandum in which the results of the review are summarized and recommendations about the continued effective operation (continuation, revision or dissolution) of the institute are made in consultation with all relevant parties (IICSR director, department head, dean, and vice president for research or their designees).

AGENDA ITEM BRIEFING

Submitted by: Mark A. Welsh III, Interim President
Texas A&M University

Subject: Establishment of the Texas A&M Drug Discovery Center

Proposed Board Action:

Establish the Texas A&M Drug Discovery Center (TAMDDC) within the College of Arts & Sciences at Texas A&M University (Texas A&M).

Background Information:

Although many researchers at Texas A&M have produced high-quality research in the life sciences, translation of these studies into effective therapeutics has been hindered by poor accessibility to drug discovery services that are focused on the identification of small molecule drug candidates that can become effective therapeutics and demonstrating their preclinical efficacy, such as in animal disease models. Texas A&M, together with the legacy College of Science and the Department of Chemistry, initially addressed this issue by supporting the creation of the Texas A&M Drug Discovery Laboratory in 2019 which was directed by Dr. Wenshe Ray Liu, Professor of Chemistry. Initial funds allowed for the acquisition of several different instruments to advance drug discovery research and these were essential in the identification of a variety SARS-CoV-2 antivirals that are currently undergoing preclinical assessments for the treatment of COVID-19. However, the current abilities and resources of the Texas A&M Drug Discovery Laboratory have limited the opportunities for collaboration across the university and with external partners. Thus, Texas A&M proposes to elevate and expand the laboratory by establishing the TAMDDC within the College of Arts & Sciences in order to allow for the expanded resources to support and translate basic research discoveries at Texas A&M and to facilitate drug discovery campaigns. The center's mission is to consolidate and expand existing resources in the College of Arts & Sciences and School of Medicine to create a comprehensive and integrated platform for early-stage drug discovery and development. The TAMDDC will provide a dedicated infrastructure to foster multidisciplinary research and development that will give researchers and students valuable opportunities to engage in high-impact, hands-on work in therapeutic development.

A&M System Funding or Other Financial Implications:

Current projects from the proposed center are funded through drug screening and synthesis service fees, grants, contracts, and other revenue sources. To support the center, the College of Arts & Sciences and the Department of Chemistry have committed to providing \$3.9 million in funds for equipment and personnel over a five-year period. The funds will be allocated as follows: \$1.8 million in year one, \$1.2 million in year two, and \$300,000 in years three through five. It is expected that at the end of year five, the center will be self-sustaining through extramural funding, revenue from service fees and industry sponsorships. To support the transition of the laboratory to a self-sustaining drug screening and discovery center, the College of Arts & Sciences will also

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provide \$375,000 (\$75,000 per year for five years) for a laboratory managerial position to assist in the day-to-day operations of the center.

Strategic Plan Imperative(s) this Item Advances:

The establishment of TAMDDC will advance The Texas A&M University System (A&M System) strategic imperative 4 – The A&M System will increase its prominence by building a robust and targeted research portfolio. TAMDDC will create a highly collaborative environment to advance research efforts in drug discovery across multiple disciplines. This will lead to more productive research, and the discoveries will have a greater impact and promote Texas A&M to be a leader in drug discovery research. TAMDDC will also address strategic imperative 5 – The A&M System will provide services that respond to the needs of the people of Texas and contribute to the state's economy. TAMDDC will create novel solutions to address prominent diseases affecting our society. Also, the center will inspire collaborations with pharmaceutical companies and encourage the establishment of biotech companies in the Bryan/College Station area.