The University-Government R&D Partnership in the 21st Century: Shared Opportunities and Responsibilities for New Investments, Efficiencies, and World-Changing Impacts

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Chairman Brooks and distinguished members of the Subcommittee on Research Science and Education, I thank you for your leadership and for the chance to present testimony on the challenges facing the nation's research universities.

My name is Dr. Jeffrey R. Seemann. I am vice president for research at Texas A&M University and chief research officer for The Texas A&M University System. I will use my testimony as an opportunity to identify what I believe are some *immediate* ways that we—the academy and government, as *partners* in the nation's R&D success—can improve and strengthen our collaboration.

In the 21st century, it has become increasingly evident that the once clear understanding of the essential connection between the country's outstanding research universities and the present and future prosperity of the nation is in question. There was a time in recent history, however, when that was not the case—shortly following World War II, the nation's leaders identified our institutions of higher education as *the* rooted and ready-made growth-vehicles for moving the nation forward, especially in the arena of strategic research and development (R&D).

As a result of the federal government's decision to make public and private universities the primary state and regional hubs for major, post-war R&D investments, a first-in-class physical and human infrastructure was developed that gave us the computer, radar, MRIs, rocket fuel, and synthetic insulin, to name just a few world-changing innovations. Today, this infrastructure—buttressed by state and federal funding and by partnerships with industry and philanthropy—remains the most productive and well-equipped R&D network in the world, with the finest human talent and physical capacity for solving the grand scientific, technological, and societal challenges of our time.

The release of the *Future of America: Ten Breakthrough Actions Vital to Our Nation's Prosperity and Security* by the National Research Council (NRC) offers a vitally important opportunity to re-open the university-government dialogue in a serious and highly engaged way, with a chance to balance the political, economic, and social priorities and sensitivities of our time with the historical context of how and why we joined in and created this partnership—and how and why it must continue.

Echoing many of the recommendations of the report, I believe there exists no more important R&D opportunity and responsibility facing the nation than to recommit to and reinvest in our university-government partnership. It is time for *both* partners to engage in a serious dialogue, initiate thoughtful internal self-analysis, and commit to a shared decision-making process that can lead to bold,

focused, and efficient investments for solving the important challenges of our time. We owe it to our predecessors, to our current citizens, and to our successors not to forsake or neglect the first-in-class R&D infrastructure that we have built together. Otherwise, I believe we could cede our current leadership in innovation to other countries and at best see a plateau in our competitiveness.

I want to focus on four, interlinked areas where we can achieve *immediate* gains and improvements, all of which are reflected in the NRC report:

- *Research universities* must take bold and aggressive actions to collectively and strategically focus on grand research challenges and areas of key national interest—by breaking down traditional academic and organizational barriers in order to solve the complex problems of our time and by prioritizing investments of existing internal resources and new external resources.
- *Federal agencies* must continue, if not increase, their support for our shared research priorities with significant and ongoing strategic investments—particularly with targeted grant monies and support of infrastructure development (physical and human) that crosses the spectrum from fundamental to applied research, and recognizes the importance of the social sciences in solving complex problems.
- *Research universities* must utilize resources efficiently and transparently, aggressively eliminating unnecessary and redundant administrative activities and obstacles in order to optimally focus limited resources on the pursuit of critically important research.
- *Federal agencies* and federal regulators must reduce and/or eliminate unnecessary, overly burdensome, and/or redundant regulatory and reporting obligations for universities and their faculty—without sacrificing accountability and safety—in order to maximize investments more directly into research priorities and allow faculty time to be optimally utilized.

The outcomes of these actions will help focus and accelerate the R&D pipeline, heighten impacts and innovation (i.e., provide solutions to grand research challenges), and increase return-on-investment (ROI) for our citizens' tax dollars.

The Partnership At Work at Texas A&M University—and the Extended Innovation Window

As vice president for research at Texas A&M University, I would like first to cover just a few examples at my institution that demonstrate our partnership at work and how it has built specialized capacities for pursuing major advances in research.

Last week, the U.S. Department of Health and Human Services (HHS) and its Biomedical Advanced Research and Development Authority (BARDA) announced a $285 million contract for the establishment of a Center for Innovation in Advanced Development and Manufacturing at Texas A&M. This center is designed to enhance our nation's emergency preparedness against emerging infectious diseases, including pandemic influenza and chemical, biological, radiological, and nuclear threats.

The establishment of this center at Texas A&M provides a perfect example of how some of the primary components of the post-WWII university-government pact continue to operate as designed, paying dividends for the American people and building on years of human and physical research-infrastructure development:

- From the beginning, the U.S. government designed its R&D investment process to fuel advancements at locations where scientific research would be best positioned to succeed. Whether the investment is $50,000 or many millions of dollars, the proposal and peer-review process is rigorous. Texas A&M's long history of involvement in national service and security—combined with our more recent commitment to research in the biomedical, life, and health sciences and commercial collaborations in biopharmaceuticals and national biosecurity—make us, along with our numerous industry, non-profit, and academic partners, an ideal candidate to lead this center. Our specialized infrastructure and expertise was built over a period that extends back to the University's founding.

- By directing resources into institutions focused on *knowledge generation* and *student mentoring and preparation*, the government's investments do double-duty: supporting areas of key national interest while helping train tomorrow's leaders and scientists (the problem-solvers of the future). Texas A&M, like many things in our state, is big, with approximately 50,000 students. In other words: If you want to establish a pipeline of influence and impact that reaches younger citizens, research universities—and especially large public universities like Texas A&M—are the best bang for your buck. In 2010, universities nationwide enrolled 10.4 million undergraduates and 2.9 million graduate students; projections for 2021 are 11.8 million and 3.5 million, respectively (http://nces.ed.gov). The new HHS BARDA center at Texas A&M will help train the next generation of scientific, engineering, medical, and policy professionals who will one day assume national leadership roles.

- Finally, the original backbone of our university-government partnership formed around the *joint* responsibility behind our R&D pursuits: It was agreed that the costs of conducting research and of tending to infrastructure development would always be shared. Texas A&M was able to compete and secure the BARDA opportunity due to specialized capacity and infrastructure built through funding from the state of Texas and through focused and strategic investments on campus. The contract, with a duration of up to 25 years, also builds on support from The Texas A&M University System, Brazos County, and the state of Texas in growing new jobs in the burgeoning biopharmaceuticals industry. Not to mention, our many industry, non-profit, and academic partners in the new center contribute intellectual and physical expertise of their own, which was built over many years.

This award would not have been possible without the shared commitment of the university, the state of Texas, and the federal government—past, present, and future. Together, we have equipped ourselves to meet the challenge of rapid-response to biological threats.

The strong foundation that made Texas A&M successful in competing for the BARDA contract extends back to our post-Civil War origins, when universities and state and federal governments engaged in our original partnership to solve real-world problems: The Morrill Act, approved by the U.S. Congress in July 1862, enabled the creation of the nation's land-grant institutions, a deliberate and collective focus on areas of key national interest. The colleges and universities who owe their origins to the Act—Texas A&M and 76 other institutions that serve the nation, states, and our underrepresented populations—are rooted in practical application of learning and research, bringing both to the masses. The university-government land-grant partnership laid the groundwork for the democratization of public higher education. This year marks the 150th anniversary of that milestone—yet another cause for reflection and perspective-gathering on the state of the nation's research universities.

Texas A&M did not begin its own evolution into "research university" status until the late 1960s and 1970s, relatively later than many of our peers. Since that time, the institution's rise from a small, all-male military school to a comprehensive research university has been meteoric: Texas A&M University now stands among the nation's top 20 institutions in terms of total research expenditures, as measured by the National Science Foundation (NSF). Like the success mentioned above, that rise can be linked directly to the strong foundation provided by the state of Texas, our land-grant roots, and the work ethic and service tradition that is part of the fabric of our Aggie community.

How did we get here? Under the leadership of Major General Earl Rudder beginning in the 1960s, Texas A&M realized that new opportunities available through the federal government's R&D focus could serve as a tremendous boon to the state and the nation. Rudder recognized that with the right resource infusions, Texas A&M could leverage its unique strengths to purse major basic and applied research challenges.

But even a true visionary like General Rudder could not have predicted Texas A&M's eventual leadership and activities in fields within engineering, agriculture, the sciences, architecture, liberal arts, government, business, education, geosciences, and veterinary medicine—much less imagined an announcement akin to last week. (The term "biotechnology" had not yet entered scientific parlance during his time.) By setting in motion a vision that built on our land-grant heritage, Texas A&M is now realizing what was once unimaginable.

General Rudder also could not have predicted the myriad future impacts of one of Texas A&M's most significant early additions to its research enterprise. With funds from the Atomic Energy Commission in 1964, Texas A&M built an "atom smasher" on campus. The establishment of the cyclotron was not without controversy and required a major leap of faith for the state of Texas, who complemented the U.S. government's multi-million dollar investment with a supplementary multi-million dollar contribution of its own. Once constructed, cancer patients traveled great distances for treatment with the cyclotron, creating an immediate fit with the practical application and outreach of our land-grant mission.

More importantly, through the investment in the cyclotron and a commitment to national priorities, Texas A&M became a leading university-based center in the U.S. for nuclear studies: basic nuclear science and forensics, energy applications and sustainability, environmental impact determination, nuclear threat reduction, biomedical applications and social impact measurements, and nuclear policy. The commitments around the cyclotron were critical in paving the way for Texas A&M to build the largest nuclear engineering program in the U.S.; to become a center for pursuing and testing experimental treatments in cancer and medical conditions; to grow infrastructure (e.g., two nuclear reactors) integral to the education of future nuclear scientists and engineers; and to attract expertise and talents in the social sciences and public policy that would help build capacity to focus on human impacts of nuclear use, security, and non-proliferation. As such, the investment was important to the eventual build-up of expertise in political and social sciences at the George Bush School of Government and Public Service.

A more recent example of our university-government partnership at work occurred in 2004, when Texas A&M President Robert Gates had the vision and commitment to invest in a facility (Texas A&M's Interdisciplinary Life Sciences Building (ILSB) designed to bring together researchers in the biological, chemical, and life sciences. It was a major investment and also not without its

skeptics. Built largely through funding from the state of Texas, the $100 million-plus facility provided Texas A&M with a much-needed resource: a space thoughtfully designed to bring faculty and students together in ways that transcend their respective disciplines and research interests, stimulating the collaborations necessary to solve critical scientific problems.

Today, because of the ILSB, we are attracting top researchers in structural biology, neuroscience, and bioinformatics to Texas A&M and—with the help of institutional, state, and federal funding—outfitting their labs with the most state-of-the-art equipment. Scientists like Texas A&M's Dr. James Sacchettini can now pursue the cutting-edge research necessary for contributing to breakthroughs in areas of national and global significance. Dr. Sacchettini uses crystallized proteins to design and deliver "structure guided drugs" to treat critical global diseases, including tuberculosis, a resurgent bacterium that now infects approximately one-third of the Earth's population. With the research labs and facilities in the ILSB, combined with federal research funding from the National Institutes of Health and Department of Defense, researchers at Texas A&M are looking for new ways to more effectively combat this disease.

In the end, the true fruits of Bob Gates' vision, coupled with the large investment from the state of Texas that resulted in the construction of the ILSB, will not be seen until well into the future. But I can assure you that researchers like Dr. Sacchettini are the nation's best hope to pursue the novel preventions, vaccines, and cures for the world's most insidious diseases.

Over a period of six decades, the nation's research universities and our state and federal governments have erected a human and physical infrastructure for solving problems of national priority that is second to none. The current "less than ideal" economic climate, at both the state and federal levels, along with other short-term crises, have pushed both partners into concerns over research productivity and capacity for future innovation—concerns that we could be in danger of ceding our leadership to other universities in other countries. To prevent this, it is imperative that we not take our accomplishments for granted, nor allow our important partnership to erode. We should recommit to this epoch-making collaboration, acknowledge the shared opportunities and responsibility to face important research challenges, and invest limited resources effectively and efficiently to achieve our goals.

The Need for Research Universities to Take Bold Institutional Actions Around Grand Research Challenges

To renew the university-government R&D partnership in the most meaningful way, I believe that the nation's research universities must begin by taking bold and transparent steps—intellectually and physically—to focus their respective research priorities on the grand scientific, technological, and societal challenges of our time. Those challenges include the "national goals" outlined in the NRC report (pages 25-27), including advances in medicine and healthcare, energy, security, and improved standards of living. More importantly, each research university must leverage its respective assets and capacities to pursue those challenge areas that best fit their strengths—then aggressively adjust investments and priorities around their home-field advantages.

Questions to guide the prioritization process could include: What are the most significant challenges that humanity will face in the foreseeable future, especially in the next 25-50 years? Where do my institution's strengths lie in relation to those challenges? What are the areas where my institution can truly achieve worldwide impact for research excellence and develop top-tier educational programs for students?

An aggressive university-based focus on grand research challenges would bring administrative and faculty leaders together to set institution-wide, research-related goals and establish investment priorities consistent with those goals. Each university could better position itself as a competitor for public and private research funding, for state support, and for philanthropic giving—as a united community dedicated to clear priorities and common principles.

I believe the NRC report provides a necessary opportunity to engage in a serious dialogue on how to maintain momentum and see our partnership flourish in the 21st century. Today, complex, real-world problems of national significance must be tackled by teams of individuals from a variety of academic disciplines. The nation's "One Health Initiative" is a perfect example of such an important effort: One Health is designed to focus on increased nationwide academic and industrial collaborations and communications in all aspects of health care for humans, animals, and the environment. The end goal is the advancement of health care for the 21st century and beyond by accelerating biomedical research discoveries; enhancing public health efficacy and wellness; and expanding the scientific and engineering knowledge base.

Texas A&M's distinct approach to "One Health"—what we call "One Health Plus," with the "plus" signifying expert infusions of research and resources focused on safe food and water supplies—seeks to leverage our many unique institutional capacities and commercial partnerships in this arena.

It is imperative that we not rest upon the laurels of our renown and expertise in this or any grand-challenge arena where we claim the aptitude and capacity to solve global problems (energy, biosecurity, etc.). Like all research universities, Texas A&M must ensure that the administration and infrastructure that formed around our traditional areas of excellence do not hinder future progress.

We must therefore take active steps to ensure that our federal, state, philanthropic, and corporate partners receive exceptional value in return for their investment in our shared university-government research priorities:

- 1) *Break down barriers to innovation in scientific research.* To increase innovation and productivity in our research programs, research universities must make strong commitments to realign and break down academic and administrative barriers. For example, faculty incentives and rewards could reflect an institutional focus on pursuing grand research challenges. Such an effort might include the reconsideration of promotion and tenure policies for early-career faculty in ways that encourage greater participation in research teams that cross disciplinary and administrative boundaries (e.g., departments and colleges) and allow a greater focus on research in areas of key national priority. Another example would be the consideration of industry collaborations in tenure proceedings, in addition to credit for faculty who secure patents and licenses for their innovations.

- 2) *Evaluate and reform existing structures to match 21st century realities.* Research universities must be aggressive in revising existing structures and entities on campus to match the realities of the 21st century and transforming dormant or dated infrastructure to make it part of the problem-solving R&D pipeline of the future. For example, at Texas A&M we are currently in the process of implementing a new vision for our industry-focused Texas A&M Research Park (developed in the 1980s) to create an environment that allows faculty to interact and innovate in new ways and increase connections between researchers and private industry. In essence, we are transforming an old park model—based on the anticipation of real-estate development and large industry involvement—into a modern, place-based innovation strategy that will help provide significant intellectual and economic return to Texas A&M, the local community, and the state of Texas. On another front, the University is considering a dramatic reorganization of our capacities in the biomedical, life, and health sciences in order to position the institution for even greater competitiveness in this arena.

- 3) *Align institutional initiatives with national priorities.* Universities must align program and infrastructure development around initiatives that resonate with the demands of resource providers, including private industry, non-profits, and public and private philanthropy. Collaborators and contributors (and taxpayers and companies) seek real impact. They want to know that their efforts will result in something meaningful, today and for generations to come. In higher education, donors specifically want to solve societal problems. Consequently, as Texas A&M prepares for a third comprehensive capital campaign, we are moving to a model that emphasizes challenge-areas where the University can have major impact (e.g., sustainable food and water supply for the world, energy independence in the U.S., policies and practices to strengthen democracy). At the same time, we will leverage unique traditions and core institutional values in ways that link donor passions with new institutional priorities—namely in solving societal problems.

The examples above represent three ways in which Texas A&M and its research-university peers can embark on immediate action to focus on areas of key national interest. Research universities must commit to instituting the internal prioritizing mechanisms and processes that allow us to keep up our end of the university-government partnership.

The Need for Federal Agencies to Invest in Shared Research Priorities

The price of doing groundbreaking research is not cheap, and research universities have been doing more with less for more than a decade. As part of our university-government dialogue, we should acknowledge this reality. And as universities like Texas A&M make hard-charging efforts to focus on grand research challenges, federal agencies must in turn commit to supporting our shared research priorities with significant and ongoing strategic investments.

Targeted grant monies and strategic infrastructure support are critical to the epoch-making advances in science and technology that have become the hallmark of our university-government collaboration. To properly leverage our existing intellectual and physical capacity, research universities must tend to the front lines and ensure that our equipment and laboratories remain first-rate and that our faculty do not depart for apparently greener pastures elsewhere.

- 1) *Support of physical infrastructure matters.* To push the cutting edge of scientific research, universities need the telescopes, microscopes, lasers, optical equipment, and latest in computer storage and processing equipment. State-of-the-art research equipment does not come cheap, and staying in front of new advances is an ongoing challenge. But for

the U.S. to remain the world's R&D leader, we cannot neglect the need for capacity-building in our science-, technology-, and cyber-infrastructure. Earlier, I referenced Texas A&M's cyclotron and ILSB: These represent shared commitments by the state and federal government and by the university to support substantial and cutting-edge facilities and capacities. They lead to important world-changing discoveries, help attract and bring together the top researchers, and provide uncommon educational opportunities for undergraduate and graduate students. The cyclotron demands continuous upkeep, funding for which was recently provided by the Department of Energy (DOE) and Robert A. Welch Foundation. The full potential of the ILSB continues to be realized through physical enhancements provided by the National Institutes of Health. In the end, our partnership and responsibility in maintaining the nation's R&D infrastructure is a never-ending enterprise.

- 2) *Creating new opportunities for our best and brightest researchers is critical.* To maximize our state-of-the-art physical resources, we must attract and support the top researchers to utilize the equipment and conduct research in our facilities. The federal government's support of Young Investigator Awards is critical to that equation. In times of limited funding, it is crucial to maintain and expand programs that help younger researchers put their considerable time, talents, and energy toward solving our most pressing national problems. At Texas A&M, some of our recent early-career awardees are doing important work on cybersecurity and on a molecular compound that dissolves the HIV virus on contact. These pioneering researchers deserve our continued support.

- 3) *Funding for cutting-edge frontiers is vital to push the boundaries of science.* Targeted funding for innovative research projects can help America solve national and global problems. The Advanced Research Projects Agency- Energy (ARPA-E) recently funded projects at Texas A&M that have the potential to make large, game-changing impacts in energy research. Dr. Mladen Kezunovic's research will provide new methods for controlling the power grid and associated electricity markets during sudden interruptions caused by the intermittent availability of renewable generation (wind and solar), cascading faults caused by extreme operating conditions and malicious attacks. Dr. Joe Zhou's ARPA-E-funded research is developing new materials that could reduce the energy required to adsorb carbon dioxide, creating a technology that greatly reduces carbon emissions in everything from transportation devices to power plants. A Texas-based startup has already licensed this technology to pursue commercial applications.

By supporting the nation's research universities in solving important national problems, federal agencies will continue their critical contributions to our long-standing partnership. And when federal agencies fund research at our universities, they not only help solve today's problems, they help train the next generation of researchers. Together, we have built the best apprentice program in the world: All research awards to universities deliver double bang for your buck, since a portion of every dollar ends up going to educate and train the undergraduate and graduate students who become our future researchers, business leaders, entrepreneurs, and teachers.

Also, as we continue to build our nation's scientific and technological competitiveness and train the next generation, it is crucial that we not overlook the huge pool of human and intellectual resources currently under-represented, especially in the Science, Technology, Engineering, and Math (STEM) fields. Young Investigator Awards are critical to this pipeline. Likewise, funding for programs that encourage the participation and success of underrepresented individuals within the academy, like the NSF Advance Program, help support the development of female and minority talent that will be necessary for the U.S. to stay competitive.

Recently, through our long and enduring relationship with the National Aeronautics and Space Administration's (NASA) Johnson Space Center, Texas A&M's Dr. John Giardino, along with research partners at Oklahoma State University, received an award that is designed to support and advance STEM education, motivate new generations of students to enter STEM careers, and promote a culture of life-long learning and interest in STEM knowledge. With efforts like this, Texas A&M has seen significant increases in the numbers of underrepresented students and faculty over the past few years, and we feel that support of similar initiatives, along with our institutional commitment to diversity, will result in further advances on this front.

To conclude, in order to be successful and move forward aggressively with new initiatives and efficiencies, research universities must know that strategic resource infusions from our federal agencies and partners—investments that have paved the way for the basic and applied scientific breakthroughs of the past—will continue in the future.

Need for Efficiency and Transparency on Both Sides

As we recommit to our university-government partnership and collectively focus on the grand research challenges of our time, it is absolutely critical that we become more efficient and effective R&D collaborators.

I have described ways in which research universities must take aggressive steps to retool internal structures and priorities around areas of key national interest.

There are two additional ways that both partners can take *immediate* steps to improve and strengthen our partnership:

- research universities must eliminate redundant and duplicative administrative structures and activities; and
- federal agencies and regulators must reduce unnecessary and overly burdensome regulatory and reporting obligations.

These shared commitments to greater financial efficiencies and the elimination of unnecessary activities will result in more time and resources that can be focused on solving important scientific, technological, and societal problems.

It is incumbent for institutions like Texas A&M to take a hard look at these realities, and then take the corrective steps that can strengthen our shared focus on key national priorities and increase productivity. We must be aggressive in cost-cutting in low-priority areas, eliminate unnecessary administrative activities, and move toward greater consolidation to achieve economies of scale. The resources gained can then be re-invested into research initiatives of national significance.

Through this process, universities will undergo some painful decisions. But they will be no less painful than the decisions that our elected representatives make when considering whether to fund the federal program to support healthcare today versus the scientific breakthrough that could solve national health problems 50 to 100 years from now.

As universities take aggressive steps to maximize and track efficiencies and optimize the impact of government investments, federal agencies and federal regulators must simultaneously reduce unnecessary and overly burdensome regulatory and reporting obligations.

As the costs of doing research have gone up and universities have had to do more with less, overreaching regulatory requirements have further strained already-lean resources. A report prepared for the U.S. Commission on the Future of Higher Education stated that, "there may already be more federal regulation of higher education than in most other industries." The NRC report's newly released recommendation on this matter—reducing regulations that are unnecessary and establishing more consistency across federal agencies—are right on target. We must pull together federal, state, and university experts to find the correct balance in all areas where regulatory and reporting requirements affect the conduct of research: research with human subjects and/or animals, export controls, effort reporting, financial reporting, conflict of interest/research integrity, select toxins and agents, hazardous materials, and the list goes on.

An oft-cited statistic from the 2007 Federal Demonstration Partnership Faculty Burden Survey found that 42 percent of faculty time was devoted to administrative activities, not active research (http://sites.nationalacademies.org/PGA/fdp/index.htm). As others have noted, part of the problem is that research universities have not been seriously engaged in how to solve this problem.

The NRC's report offers a golden opportunity to face this challenge head-on, together. Otherwise, we run the risk of impeding progress on important research and slowing the R&D pipeline.

Rest assured, research universities understand the fundamental importance of ensuring the safety of students, faculty, staff, and the public, as well as the need for accountability assurances. However, the relative costs of complying with certain regulations that go above and beyond what is required to ensure safety and security can come at too great a cost. The research is simply too important, the resources too scarce, and taxpayer dollars too precious. If we are serious about creating a successful partnership that can face and solve truly grand research challenges, the current regulatory burdens faced by our principal investigators and graduate students are unacceptable. We owe it to them to do better.

Recommitting to our University-Government Partnership

In conclusion, now is the time for the nation's research universities and the federal government to recommit to a forward-looking partnership, building on an already-strong foundation and history of success. The National Research Council's report has provided us with an opportunity to reaffirm our mutual respect and shared responsibility. As the vice president for research at a large Tier 1 research university, I am excited by the prospect of engaging in a serious and game-changing dialogue about how to improve and strengthen our research collaborations. The creativity and innovation spurred by our top-notch education system draws the best and the brightest from all over the world to our institutions of higher education. If universities and the government together focus on national grand challenges and prioritize our investments around them, I think we will be amazed at what we will continue to achieve.

With the government's strategic support of research initiatives at universities in the form of human and physical infrastructure, we will generate new discoveries and technologies that can help improve the nation's prosperity and security. These investments are the fuel for the American economy and the very essence of American competitiveness.

We recognize that times are tough and resources are lean, which is why research universities must act aggressively in maximizing efficiencies and increasing transparency. At the same time, the federal government can expect a much higher level of achievement from its university partners by reducing and eliminating overly burdensome regulations and reporting requirements that can slow important innovations.

By working together to capitalize on new investments and efficiencies, we will ensure that today's undergraduate and graduate students will inherit the tools, freedom, and encouragement to face the grand research challenges of tomorrow, safeguarding a strong STEM workforce and furthering the nation's global R&D leadership.

Texas A&M University, with our long history of public service and a research enterprise that serves the national interest, looks forward to reaffirming our commitment to this partnership and to working diligently on areas of key national interest.