August 21, 2015

The Honorable Cory Gardner
Committee on Commerce, Science
and Transportation
U.S. Senate
Washington, DC 20510

The Honorable Gary Peters
Committee on Commerce, Science, and
Transportation
U.S. Senate
Washington, DC 20510

Dear Senators Gardner and Peters:

We applaud your leadership in moving forward with a COMPETES bill and your call for input from the scientific community as you and your fellow Senators craft legislation to authorize a number of our nation’s critical research funding agencies. As co-chairs of the committee that produced the American Academy of Arts & Sciences report, Restoring the Foundation: The Vital Role of Research in Preserving the American Dream, we are pleased to respond to your specific questions (enumerated below), and strongly recommend that the following be viewed as national priorities: 1) Secure America’s leadership in science and engineering research—especially basic research—by providing sustainable federal funding and setting long-term investment goals; 2) Ensure that the American people receive the maximum benefit from federal investments in research by relieving burdens that limit the productivity of its nation’s researchers; and 3) Regain America’s standing as an innovation leader by establishing a more robust national government-university-industry research partnership.

1. What functions should the federal government, academia, and the private sector be encouraged to perform in driving the U.S. “innovation ecosystem” and how can they strengthen their partnerships to ensure the U.S. position as a global innovation leader?

The partnership among government, universities, and industry is critical for progress in research and development in the United States, and for economic growth. Recapturing American competitiveness in innovation will require more basic research performed by universities, increased investment from both the government and private sector, and revised university and federal policies. Continued strengthening of cross-sector cooperation should be a national priority. It is imperative that these sectors work together to overcome barriers that threaten America’s position as a global innovation leader.

To foster a thriving innovative ecosystem, the federal government should work to lower barriers to university-industry partnerships and raise the potential to effectively create life-changing technologies. Specifically, Restoring the Foundation recommends a bipartisan effort to help academic institutions overcome impediments to experimenting with new technology transfer policies that would promote innovation and job creation while reducing the time and cost of licensing. Certain amendments to the tax code would
encourage closer university-industry cooperation. Congressional action to permanently extend the R&E tax credit would encourage American corporations to strengthen their investments in long-range research. Legislation that incorporates these suggestions would increase intellectual exchange across the research community and enhance American competitiveness.

Additionally, research universities should continue to focus on basic research while taking advantage of opportunities to partner with the private sector. Corporate boards and CEOs should make it a higher priority to communicate and work with university presidents and boards to form new partnerships.

2. **How can the federal government best structure, coordinate, and/or prioritize its R&D investment portfolio to provide predictability for research initiatives, facilitate the discovery of new knowledge, drive lasting economic growth, and address critical emerging challenges?**

Federal funding of basic research must be a priority for the nation. Basic research fuels new knowledge and ideas that lead to technological advancements that benefit the American people and strengthen the economy. The federal government is the primary funder of basic research in this country, and the only reliable source of support for basic research at this scale. But unpredictable funding trends make strategic planning all but impossible for universities, medical schools, national laboratories, and the companies they collaborate with.

The competitiveness of our research institutions relies on steady, sustainable funding. To maintain America’s global leadership, *Restoring the Foundation* recommends establishing a sustainable 4% annual growth rate for the federal investment in basic research, with a long-range target of reaching 0.3% of GDP (roughly one-tenth of the goal for national R&D investment) over 15-20 years. *Restoring the Foundation* also recommends establishing a more strategic, multiyear approach to funding that better reflects the long-term nature of basic research, possibly through a rolling 5-10 year plan. Multiyear appropriations should be prioritized for agencies that primarily support research and graduate STEM education to strengthen the future research workforce. Finally, the federal government should implement a strategic capital budget process for federal R&D, particularly the construction of research instrumentation and facilities that take many years to plan and build.

3. **What steps can the federal government take to maximize the research obtained for each dollar of federal investment?**

A skilled ST&E workforce is an immediate return on federal investment; therefore, it is imperative that scientists and engineers dedicate their time in the laboratory to research and to developing products that drive America’s innovation ecosystem. However, this is currently not the case. Added rules and regulations have divested researchers’ time and focus from their research and unnecessarily supplemented administrative overhead. The
National Science Board report, *Reducing Investigators' Administrative Workload for Federally Funded Research*, reveals that federally supported researchers spend, on average, 42 percent of their time on associated administrative tasks. *Restoring the Foundation* agrees that the federal government should initiate practices to streamline the regulatory process of federally funded research, including the grant process.

As stressed previously, the government must also strive for a steady, long-term approach towards sustainable research funding. The current strategy for federal research funding relies on annual budget cycles, eliminating the long-term planning required to successfully execute groundbreaking research, and resulting in wasted time, energy, and money.

4. **What principles should guide federal agencies in ensuring adequate transparency, oversight, and rigor in the process of funding, conducting, reviewing, and reproducing research?**

Peer review is a process that has been upheld by scientists for many decades as the gold standard for ensuring honesty, competitiveness, and excellence. *Restoring the Foundation* strongly recommends that Congress reaffirms this practice, that the criteria for granting research funding should be left solely to the discretion of the agencies, and that the evaluation of the scientific merit of the research be left to experts in the field.

5. **How can the results and value of federally-funded research be better communicated across the research community and to the private sector and general population?**

No one understands the significance and impact of research better than scientists and engineers in academia and industry. It is therefore essential that key players in these sectors lead the effort in communicating to policy-makers and the public the scientific, economic, and social impact of their discoveries and innovations. *Restoring the Foundation* suggests that a new mechanism is required for providing up-to-date data, analysis, and policy recommendations to non-research communities. It encourages a bipartisan approach to stakeholder engagement, which includes paying attention to the many forward-thinking policy recommendations issued by respected organizations representing all sectors of the research system, such as those presented in the National Academies’ *Rising Above the Gathering Storm* report chaired by Norm Augustine and many other insightful reports from the National Academies, the American Academy of Arts and Sciences, PCAST, and other organizations and councils. There is also great value in Congressional resolutions in support of research, as well as in policy-makers discussing the benefits of research with the public.

Meaningful progress in this realm will depend on a concerted, nation-wide effort among government, universities, and industry. Recently, nine CEOs of major companies and hundreds of universities, organizations and industries across the country voiced their support of these recommendations by signing-on to “Innovation: An American Imperative,” a strong statement that underscores the findings presented in *Restoring the*
Foundation. America is permitting itself to fall behind globally by failing to make competitive, sustainable long-term federal investments in research and by allowing burdensome regulations on researchers and potential industry partners to persist. To that end, we specifically recommend: 1) sustainable 4% real growth in federal funding of basic research and a long-term investment goal of 0.3% of GDP; 2) relieving burdens that limit the productivity of America’s researchers; and 3) encouraging more robust research partnerships among federal and state governments, public and private universities, and industry. As the Innovation statement says, “Now is not the time to rest on past success.”

We value your leadership, and we the undersigned look forward to serving as a resource to the Senate Committee on Commerce, Science, and Transportation.

Sincerely,

Norman R. Augustine
Co-chair, Restoring the Foundation
Retired Chairman and CEO,
Lockheed Martin Corporation
Former Under Secretary, U.S. Army

Neal F. Lane
Co-chair, Restoring the Foundation
Senior Fellow for Science and Technology Policy, Rice University’s Baker Institute
Former Director, White House Office of Science and Technology Policy
Former Director, National Science Foundation