



ASSOCIATION OF AMERICAN UNIVERSITIES

August 18, 2015

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Washington University in St. Louis
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The Honorable Cory Gardner
United States Senate
Committee on Commerce, Science
and Transportation
512 Dirksen Senate Office Building
Washington, D.C. 20510

The Honorable Gary Peters
United States Senate
Committee on Commerce, Science,
and Transportation
427 Hart Senate Office Building
Washington, D.C. 20510

Dear Senators Gardner and Peters:

On behalf of the Association of American Universities (AAU), I would like to thank you for the opportunity to provide comments to the Committee on Commerce, Science, and Transportation on the reauthorization of the America COMPETES Act. I would also like to thank you for the invitation to participate in the July 29 Roundtable Discussion on Improving STEM Education. It was a substantive, candid, and wide-ranging discussion about undergraduate STEM education.

As an organization that includes 60 leading public and private research universities in the United States, AAU focuses primarily on research, research policy, and graduate and undergraduate education. Given our intense focus on research and higher education, AAU is very interested in legislative efforts to reauthorize the America COMPETES Act. We believe the National Academies' *Rising Above the Gathering Storm* Report (RAGS) and the subsequent 2007 and 2010 COMPETES Acts set an important and sustainable path for funding America's research and innovation enterprise. In order to remain the global leader in science, technology, and innovation, the nation must continue to invest in basic scientific research. Both RAGS and COMPETES reinforce the value and the necessity of the government-university-industry partnership. Other nations are attempting to replicate this extremely successful model, a model which has kept the United States at the forefront of scientific and technological innovation and has enhanced our country's economic and national security.

As the Committee begins to draft the America COMPETES Act of 2015, I bring to your attention the American Academy of Arts and Sciences (AAA&S) Report, "[*Restoring the Foundation: The Vital Role of Research in Preserving the American Dream.*](#)" This report makes clear that inadequate federal support for scientific research, particularly at a time when our economic competitors are devoting ever-increasing resources to research, will create an innovation deficit that eventually deprives our country of its global leadership role in science and innovation.

I would also like to bring to your attention the [2013 Guiding Principles for the America COMPETES Reauthorization Act](#). These principles were endorsed by over 100 business, academic, and scientific organizations because of the recommendations they made concerning basic scientific research, STEM education, and regulatory reform.

Below are AAU's recommendations to the Committee for areas that directly affect research universities: maximizing basic research, improving STEM education, and Translating Federal Research Results into Innovative Commerce Applications.

Topic #1: Maximizing Basic Research

Federal Research Investments: The 2013 Guiding Principles for the America COMPETES Reauthorization Act recommend that COMPETES Act legislation: provide federal funding across all disciplines in scientific research and make federal funding for scientific research a national priority; provide steady and sustainable real growth for federal research agencies, such as the National Science Foundation (NSF), the Department of Energy’s Office of Science (DOE-OS), and the National Institute of Standards and Technology (NIST); and support federal funding increases without offsets.

The bipartisan Senate COMPETES Energy bill -- which is sponsored by six U.S. Senators, including Senators Alexander and Coons -- is a five-year authorization bill with a four-percent annual growth rate for the COMPETES agencies. The Senate Energy title is in line with the recommendation made by “Restoring the Foundation,” referenced above. The AAA&S report recommends sustainable real growth (at four percent) in the federal investment in basic research.

Recommendation: AAU recommends that funding and programs at NSF, NIST, and DOE-OS be authorized for five years, at a four-percent real growth rate.

Regulatory Reform: The 2013 Guiding Principles for the America COMPETES Reauthorization Act recommends that COMPETES Act legislation reduce or eliminate unnecessary or duplicative federal regulations and reporting requirements that increase research costs, impede research activity, and needlessly divert researchers’ time from directly conducting scientific research and monitoring students. Similar recommendations to reduce the costs and burdens of research-related regulations have been made by the AAA&S [Restoring the Foundation](#) report and the National Research Council in its 2012 [Research Universities and the Future of America](#) report.

The National Science Board report, “Reducing Investigators’ Administrative Workload for Federally Funded Research (2014),” makes important recommendations concerning the reduction and harmonization of federal regulations in order to reduce regulatory burden. The NSB’s recommendations include the following:

- Establish a central office within Office of Management and Budget (OMB) or the Office of Information and Regulatory Affairs (OIRA) to oversee the development and coordination of agency regulations, policies, guidance, and reform efforts specific to federally funded academic research and development. The office should have a mandate to:
 - Standardize regulations, policies, guidance, systems and forms across federal agencies that regulate and fund academic R&D.
 - Periodically reassess policies and major guidance that apply to federally supported academic R&D (current efforts generally do not apply to the policies and guidance developed by key research funding agencies).
 - Reduce agencies’ overreliance on guidance functioning as regulation.
 - Ensure that agencies provide the research community a meaningful opportunity for substantive engagement on policies and major guidance prior to and in the course of formal rulemaking. Implement reforms recommended by the National Academies, the National Science Board and other organizations and stakeholders.

- A permanent high-level, inter-agency, inter-sector committee led by OSTP, OMB, and/or OIRA, with stakeholder representation, to harmonize, streamline, and eliminate duplicative federal regulations and reporting requirements and minimize the regulatory burden on U.S. institutions of higher education and investigators performing federally funded research (as recommended by the National Science Board and proposed in H.R. 1119). The committee could be charged with assisting in the implementation of reforms recommended by the National Academies, the National Science Board, and other organizations and stakeholders and advise OIRA on an ongoing basis to ensure that new regulations or changes to existing regulations that affect researchers, research institutions, and other stakeholders are efficient, performance-oriented, and harmonized.
 - The committee could be charged with conducting an evaluation of the regulations, policies, guidance, best practices, and FAQs of all regulatory, independent, and certification bodies governing animal research in order to identify policies and guidance that increase administrative work without improving the care and use of animals.
- An Act and Office to assist with advocating for burden reduction for research institutions and investigators similar to the Small Business Regulatory Enforcement Fairness Act (SBREFA) and the Office of Advocacy of the U.S. Small Business Administration.

In keeping with the National Science Board recommendations, in May 2015 the House of Representatives approved the Research and Development Efficiency Act (H.R. 1119), sponsored by Rep. Barbara Comstock (R-VA). This bill requires the Director of the Office of Science and Technology Policy to establish a working group under the National Science and Technology Council to review federal regulations that affect researchers and research universities. The working group is tasked with making recommendations on how to harmonize, streamline, and eliminate duplicative federal regulations and reporting requirements, and making recommendations on how to minimize the regulatory burden on research institutions.

Recommendation: AAU encourages the Committee to consider the recommendations made by the National Science Board as you draft legislation to reauthorize the America COMPETES Act. The Board’s recommendations should be applied not only to NSF but to other federal research agencies as well. In line with this recommendation, we encourage the Committee to include the language from the House-approved Research and Development Efficiency Act (H.R. 1119) in the Senate COMPETES bill.

Major Research Instrumentation and Facilities: The AAA&S “Restoring the Foundation” report recommends establishment of a capital budget process to fund major research instrumentation and facilities. A capital budget process would allow for planning and funding the construction and operation of major instrumentation and facilities, especially those used by researchers supported by multiple agencies. The implementation of this recommendation should be assigned to the Office of Science and Technology Policy.

Recommendation: In order to conduct cutting-edge research that will continue to advance innovative ideas, products, and services, Congress needs to continue to make investments in facilities and instruments. AAU concurs with the recommendation made in the AAA&S report, and encourages the Committee to include language in the COMPETES Act that calls on OMB to

establish a capital planning process for major research instrumentation and facilities. The construction and maintenance of the nation's research infrastructure should be a national priority.

Invest in High-Risk, High Reward Research: The American Academies of Arts and Sciences report, [“Investing in Early Career Scientists and High-Risk, High Reward Research \(2008\)”](#), recommends a culture shift among federal officials, such as program officers and scientists who serve on peer-review panels to increase their appreciation of high-risk, high-reward research. Similarly, the 2005 RAGS report recommended that at least eight percent of budgets for federal research agencies be set aside for discretionary funding managed by technical program managers in those agencies in order to catalyze high-risk, high-payoff research.

Recommendation: AAU encourages the federal government to continue to support high-risk, high-reward research by allocating between 5 to 10 percent of a federal research agencies budget towards high-risk-high reward research. AAU's recommendation is in line with an earlier recommendation made in the RAGS report.

Government-University-Industry Partnership: The AAA&S “Restoring the Foundation” report recommends a Summit on the Future of America's Research Enterprise. The summit could address issues such as: strengthening the government-university-industry partnership; the role of philanthropy in funding research; and seeking a common national vision for American science, engineering, and technology.

Recommendation: AAU supports the idea of a Summit on the Future of America's Research Enterprise.

Topic #2 Improving STEM Education and Best Practices

Leveraging NSF Broader Impacts as a means to improve Undergraduate STEM Instruction: The 2013 Guiding Principles recommends that COMPETES Act legislation support innovative and effective education programs that promote broad-based scientific literacy to equip all citizens with scientific and technical knowledge. To further the goal of this recommendation, the federal government should continue to provide steady and sustainable funding for STEM education programs at federal research agencies, such as the National Science Foundation's Education and Human Resources Directorate.

Recommendation: Section 526 of the 2010 American COMPETES Act concerning Broader Impacts Review Criterion makes it clear the one means to achieve broader impacts is to “improve undergraduate education.” We urge the committee to clarify either in bill or report language that this includes the adoption and implementation of improvements to the quality of undergraduate classroom instruction, using evidence-based practices proven to enhance undergraduate learning and understanding of a scientific discipline.

Topic #3 Translating Federal Research Results into Innovative Commerce Applications:

Commercialization of Research: To complement the existing National Science Foundation Innovation Corps (I-Corps) program, we recommend the creation of a new early stage proof-of-concept research program at NSF. Such a program would greatly help researchers at universities, non-profit research organizations, and federal laboratories to increase the number and quality of high tech start-ups/small businesses and technology licensing agreements, and otherwise move their ideas closer to commercial development. A 2009 paper by Krisztina Holly, [IMPACT: A Proposal for Realizing the Economic Potential of University Research](#), provides a more comprehensive rationale, as well as a description, for such a new NSF program.

Recommendation: AAU recommends that proof-of-concept provisions be included in the legislation to reauthorize the America COMPETES Act. A National Institutes of Health grant program, the “NIH Research Evaluation and Commercialization Hub (REACH),” could be used as a model for an NSF program. For \$5-\$10 million in annual federal funding, NSF could provide a number of grants to universities that would support proof-of-concept research and evaluation.

Recommendation: AAU recommends that the committee includes language from the [Manufacturing Universities Act of 2015 \(S. 771\)](#) in COMPETES Act legislation. This bipartisan bill would create a new program overseen by the National Institute of Standards and Technology that would designate 25 schools as manufacturing universities. Each school would receive \$5 million annually to address specific goals such as, focusing on engineering programs, establishing and building new partnerships with manufacturing firms, and fostering manufacturing entrepreneurship.

Again, thank you for the opportunity to provide comments to the Committee on such an important piece of legislation. AAU and our member institutions stand ready to assist you as this legislation moves forward. We look forward to working with you and your staff.

Sincerely,

A handwritten signature in black ink that reads "Hunter R. Rawlings III". The signature is written in a cursive style with a small flourish at the end.

Hunter R. Rawlings III
President
Association of American Universities