



April 12, 2018

The Honorable Jerry Moran
Chairman
Subcommittee on Commerce, Justice,
Science, and Related Agencies
Committee on Appropriations
Room S-128, The Capitol
Washington, D.C. 20510

The Honorable Jeanne Shaheen
Ranking Member
Subcommittee on Commerce, Justice,
Science, and Related Agencies
Committee on Appropriations
Room S-128, The Capitol
Washington, D.C. 20510

The Honorable John Culberson
Chairman
Subcommittee on Commerce, Justice,
Science, and Related Agencies
Committee on Appropriations
H-305, The Capitol
Washington, D.C. 20515

The Honorable Jose Serrano
Ranking Member
Subcommittee on Commerce, Justice,
Science, and Related Agencies
Committee on Appropriations
1016 Longworth House Office Building
Washington, D.C. 20515

Dear Chairman Moran, Ranking Member Shaheen, Chairman Culberson, and Ranking Member Serrano:

The Coalition for National Science Funding (CNSF) – a broad-based group of professional organizations, universities, businesses, and scientific societies that advocates for robust and sustained federal support for science – appreciates the nearly 4 percent increase to the National Science Foundation (NSF) budget in the FY 2018 omnibus and thanks the Committees for recognizing the important role that the agency plays in our country’s global competitiveness. **For FY 2019, CNSF recommends an appropriation of \$8.45 billion.** The Coalition believes this level of funding would help set right the agency’s budget, which has been underfunded for many years. Since FY 2011, the average annual change in NSF’s budget has been 1.7 percent, which in some years has not even kept up with inflation.

CNSF stands by a recommendation included in the American Academy of Arts and Sciences [Restoring the Foundation](#) report: that to secure America’s leadership in science and engineering and to ensure a growing economy, federal science agencies should be funded at an annual increasing rate of 4 percent real growth – that is, 4 percent plus inflation. [Innovation: An American Imperative](#) – a clarion call-to-action supported by more than 500 organizations and several top corporate leaders – reiterates this recommendation. CNSF believes this is the level of funding we should be advocating for on an annual basis; however, to safeguard our

place in the global competitiveness race, we must first advance the NSF budget to a level that moves us closer to the starting line, rather than outside the stadium. Therefore, we strongly recommend an appropriation of \$8.45 billion for FY 2019.

As a pillar of America's scientific research enterprise, NSF-funded research has proven to be vital to the nation's economic growth, national security, and overall global competitiveness in science, engineering, technology development, innovation, and educational research. NSF-funded projects have produced scientific discoveries that have in turn created new industries, products, and services, and enhanced our quality of life. To give just a few recent examples, NSF-supported breakthroughs in nanotechnology, 3-D printing, and micro-electromechanical systems have had a transformative effect on manufacturing. NSF-funded research has substantially improved threat detection systems at U.S. ports, allowing for rapid scanning of cargo ships. Finally, a pair of NSF-supported researchers has developed a non-invasive technology to detect and eliminate malware in implanted, wireless medical devices. These and a wealth of other examples are available in the second edition of [Transforming the World Through Science](#), recently published by the agency.

By appropriating \$8.45 billion for NSF in FY 2019, Congress would make federal funding for fundamental scientific research a national priority.

Why should NSF be a priority?

- ❖ **NSF-funded research has advanced our knowledge and understanding and promoted the progress of science across the scientific disciplines.** NSF funds research in the physical sciences, biology, mathematics, economics, computer science, geosciences, social and behavioral sciences, engineering and education research. Robust and sustained federal investment in fundamental scientific research is essential if the U.S. is to remain a leader at the forefront of scientific, technological, and innovative discoveries.
- ❖ **Competitor nations such as China are rapidly improving their global position in science and technology due to their significant investment in R&D.** According to the [2018 Science and Engineering Indicators Report](#), the U.S. investment in R&D of \$497 billion was closely followed by China at \$409 billion – accounting for 26% and 21%, respectively, of R&D funding worldwide. China's investment in R&D has resulted in the rapid growth of its high-technology industries. For example, China's high-tech manufacturing output now ranks number two in the world, trailing only the U.S. China is not alone—other countries are increasing investments in R&D and education to compete with the U.S. If current trends continue, the National Science Board (NSB) expects China to surpass the U.S. in R&D investments by the end of this year.

- ❖ **NSF is integral to the preparation of tomorrow's American STEM workforce.** For the last 60 years, NSF has supported education at all levels, from K-12 STEM education, to undergraduate, graduate, and postdoctoral training. The NSB recently issued a publication entitled, [“Our Nation’s Competitiveness Relies on Building a STEM-Capable U.S. Workforce.”](#) This publication clearly and correctly addresses the need for the U.S. to tap into our most important asset – the American people. As the areas of science and technology development become more competitive, it becomes even more important for the U.S. to continue to invest in STEM education, research and training programs, informal education programs, and programs to increase the number of skilled technical workers in the U.S.

What might NSF achieve with \$8.45 billion in appropriations?

- ❖ **More research and a greater reach.** Currently, only 22 percent of competitive NSF grant proposals are funded. Out of the 50,000 grant proposals NSF expects to receive in FY 2019, it will only fund 11,000 proposals. As NSB Chair Maria Zuber pointed out in a recent Congressional hearing, if NSF funded every unfunded grant proposal rated “very good” or “excellent,” it would require an additional \$3.92 billion. More federal funding for NSF could result in more research projects being funded, research that could lead to new knowledge, new discoveries, and possibly products, services, and new industries.
- ❖ **Investing in Ten Big Ideas.** NSF recently focused its vision on [Ten Big Ideas](#), which are bold, cross-cutting ideas that touch all areas of science. These ideas are designed to identify areas of future investment and position the U.S. on the cutting edge of global science and engineering leadership. Hence, additional funding for NSF could lead to the realization of the novel ideas, tools, and approaches that NSF is proposing with the Ten Big Ideas.
- ❖ **Commercialization of research.** For decades, NSF-funded research has led to scientific innovations, commercial products and services, and new industries. In fact, NSF-funded research can be directly connected to the establishment of well-known technology companies such as Symantec, Qualcomm, and Google. Continued federal funding for fundamental scientific research, as well as programs such as the Small Business Innovation Research program and NSF Innovation Corps, will lead to the translation of ideas from the university laboratory to the marketplace.
- ❖ **Unexpected successes.** Last year’s Nobel Prize winners in physics were central to the observation of gravitational waves through LIGO, a project that NSF supported for more than four decades, ultimately with groundbreaking, headline-generating results. In fact,

all eight American scientists who won Nobel Prizes in the fields of physics, economics, biology and chemistry received NSF support at some point in their careers. And 11 of 18 winning teams of the [Golden Goose Award](#), which celebrates odd or obscure research that has since gone on to have enormous societal impact, have been funded by NSF.

We thank Congress for passing a bipartisan budget agreement for FY 2019 and believe that now is the time to invest in our country's future by supporting NSF with an appropriation of **\$8.45 billion**.

Sincerely,
Coalition for National Science Funding (CNSF)

Afterschool Alliance	American Society for	Association of Public and
American Anthropological	Engineering Education	Land-grant Universities
Association	American Society for	Association of Research
American Association for	Microbiology	Libraries
Dental Research	American Society of	Association of Science-
American Association of	Agronomy	Technology Centers
Geographers	American Society of Civil	Battelle
American Association of	Engineers	Biophysical Society
Physics Teachers	American Society of	Boise State University
American Astronomical	Mechanical Engineers	Bose Washington Partners,
Society	American Society of Plant	LLC
American Chemical Society	Biologists	Boston University
American Educational	American Sociological	Brandeis University
Research Association	Association	Brown University
American Geophysical Union	American Statistical	California Institute of
American Geosciences	Association	Technology
Institute	Arafune Government	Cavarocchi Ruscio Dennis
American Institute for	Relations, LLC	Associates, LLC
Medical and Biological	Archaeological Institute of	Computing Research
Engineering	America	Association
American Institute of	Associated Universities, Inc.	Consortium for Ocean
Biological Sciences	Association for Psychological	Leadership
American Mathematical	Science	Consortium of Social Science
Society	Association for Women in	Associations
American Physiological	Mathematics	Consortium of Universities
Society	Association of American	for the Advancement of
American Political Science	Medical Colleges	Hydrologic Science Inc.
Association	Association of American	Cornell University
American Psychological	Universities	Council of Graduate Schools
Association		

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Council on Undergraduate
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Crop Science Society of
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America
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Behavioral & Brain Sciences
Florida State University
Geological Society of
America
George Mason University
Georgia Institute of
Technology
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Ergonomics Society
Incorporated Research
Institutions for Seismology
Indiana University
Institute of Electrical and
Electronics Engineers-USA
Lehigh University
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Massachusetts Institute of
Technology
Materials Research Society
Mathematical Association of
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Michigan State University
Michigan Technological
University
Museum of Science, Boston

National Association of
Marine Laboratories
National Communication
Association
National Postdoctoral
Association
National Science Teachers
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The Optical Society
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College Park
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Vanderbilt University
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West Virginia University
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Cc: House and Senate Appropriations Committees
House and Senate Leadership