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Federation of American Societies for Experimental Biology
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Testimony of
Judith S. Bond, PhD, President-Elect
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On
FY 2013 Appropriations for the National Science Foundation
Before the
House Committee on Appropriations
Subcommittee on Commerce, Justice, Science, and Related Agencies
Congressman Frank Wolf, Chair
Congressman Chaka Fattah, Ranking Member

Chairman Wolf, Mr. Fattah, and members of the Subcommittee:

Thank you for the opportunity to testify today. My name is Judith Bond. I am President-Elect of the Federation of American Societies for Experimental Biology (FASEB). My organization represents 26 biomedical research societies with a combined membership of over 100,000 individual scientists and engineers, making it the largest life science organization in the United States. **On their behalf, I request a fiscal year (FY) 2013 budget of at least \$7.3 billion for the National Science Foundation (NSF).** This funding level matches the recommendation made in the President's FY 2013 budget request. As you know, NSF funding in recent years has failed to reach the levels authorized in the *America COMPETES* Acts of 2007 and 2010. FASEB's broader goal is to support sustainable growth and a return to a funding trajectory reflective of the *COMPETES* reauthorization.

For the last 20 years I have been Professor and Chair of Biochemistry and Molecular Biology at Penn State College of Medicine in Hershey, PA. One of my first external sources of research funding was an NSF grant, and a number of researchers within my department at Penn State currently receive NSF funding. Today I come before you not in support of biology alone, but to promote investment in all fields of science. As a biomedical scientist, I recognize that research in the life sciences is tremendously enriched by discoveries in physics, mathematics, chemistry, and engineering – fields supported by NSF. With just four percent of the federal research and development budget, NSF sponsors 40 percent of federally-funded basic academic research in the physical sciences and serves as the primary federal funding source for research in disciplines such as computer science, non-health-related biology, and the social sciences.

At a time when the U.S. faces many challenges, scientific and technological advances are the key to keeping our nation globally competitive and protecting our standard of living. The broad

portfolio of fundamental research supported by NSF expands the frontiers of knowledge, fuels future innovation, and creates a well-developed research infrastructure capable of supporting paradigm-shifting research projects. NSF grants, awarded to projects of the highest quality and greatest significance in all 50 states, are selected using a rigorous merit-review process that evaluates proposals on both scientific and societal value. For example, one recent NSF research project utilized mathematics and computer modeling to understand structural characteristics of stents used to treat coronary artery disease. The results of this research will allow manufacturers to optimize stent design and help doctors determine the best kind of stent for each patient and medical procedure. Another team of NSF-funded scientists is studying the unique properties of sundew plants to develop new materials with potential medical applications. Adhesive fibers, like those secreted by the plant, could one day be incorporated into bandages that accelerate tissue repair or applied to artificial hip and knee replacements to stimulate compatibility with human tissue. NSF researchers are also exploring scientific questions that reveal the nature of our universe. Using new data collection capabilities not available a few years ago, astronomers recently discovered the most massive black holes ever observed in outer space.

Over the course of my career, I have mentored over 40 researchers and have been actively involved in efforts to improve graduate education. As someone who strongly believes in the importance of training the next generation of researchers, I deeply value NSF's mission to strengthen science, technology, engineering, and mathematics education nationwide. NSF supports a wide variety of programs aimed at preparing science teachers, developing innovative curricula, and engaging students in the process of scientific inquiry. One of many NSF efforts to prepare future scientists and engineers, the Graduate Research Fellowship Program (GRFP) annually awards approximately 2,000 three-year fellowships to outstanding graduate students pursuing advanced degrees in science, technology, engineering, or mathematics. NSF graduate research fellows are making important scientific contributions, and past GRFP award recipients have gone on to become leading scientists and Nobel Prize winners. Through its education and training initiatives, NSF ensures the development of a workforce well prepared to advance knowledge and achieve new breakthroughs in science and engineering.

NSF-funded research has produced revolutionary discoveries and innovations through its broad-based, long-term investment in R&D. These are the types of investments that no individual or private business could afford to undertake. If the public did not support it, it would not be done. The recently released National Science Board *Science and Engineering Indicators 2012* report indicates that while growth of U.S. R&D expenditures has slowed in recent years, China's R&D expenditures have risen sharply, increasing by 28 percent in 2009. Failure to build on prior investments in NSF would slow the pace of discovery, sacrifice our position as the global leader in innovation, and discourage young scientists and engineers. Strong and sustained NSF appropriations enable the groundbreaking research and training critical to the future success and prosperity of the United States. Thank you for the opportunity to offer FASEB's support for NSF.

FASEB is composed of 26 societies with more than 100,000 members, making it the largest coalition of biomedical research associations in the United States. Celebrating 100 Years of Advancing the Life Sciences in 2012, FASEB is rededicating its efforts to advance health and well-being by promoting progress and education in biological and biomedical sciences through service to our member societies and collaborative advocacy.