Testimony of

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Chairman Rockefeller, Ranking Member Hutchison, and Members of the Committee, I am pleased to appear before you this afternoon.

My testimony will focus principally on NSF's FY 2011 Budget Request. In doing so, however, I will highlight those aspects of the Request that have direct bearing on the upcoming reauthorization of the America COMPETES Act (ACA). Since its enactment in August 2007, the ACA has informed the priorities and investment strategies at NSF. There are countless aspects of the FY 2011 request – from the commitment to young investigators to new approaches to fostering high-risk, high-reward research – that directly reflect the ACA.

This begins with the bottom line: The National Science Foundation (NSF) proposes a fiscal year 2011 investment of $7.42 billion, an increase of $552 million – or 8 percent – over the fiscal year 2010 amount. This increase reflects the Administration's continued resolve to double funding for three key science agencies, including NSF.

The National Science Foundation is the only federal agency dedicated to the support of basic research and education across all fields of science and engineering. For 60 years, we have been exploring the frontiers of scientific knowledge and extending the reach of engineering by encouraging, identifying, and funding the best ideas and most promising people. The high-risk, potentially transformative investments we make generate important discoveries and new technology, create and train a dynamic workforce, and spark the curiosity and creativity of millions. Our investments in research and education help ensure that our Nation remains globally competitive, prosperous, and secure.

An investment in the National Science Foundation is a direct investment in America's economic security. In fact, without a solid basic research foundation for our high-tech economy, no economic security is possible. Basic research underpins all of the technology that constitutes the

lifeblood of today's global market. America's sustained economic prosperity is based in part on technological innovation resulting from previous fundamental science and engineering research. Innovation and technology are engines of the American economy, and advances in science and engineering provide the fuel.

While the United States still far outpaces the world in its level of public and private R&D investment and research output, our counterparts around the globe are well aware of the importance of funding R&D. As is highlighted in the just released 2010 Science and Engineering Indicators, the world's R&D expenditures have been on an 11-year doubling path, growing faster than total global economic output. While the growth of annual U.S. R&D expenditures averaged around 6 percent, China, for example, has invested in R&D at an annual growth of over 22 percent during the same period of time.[1]

Most recently, Norman Augustine, former CEO of Lockheed Martin, released a follow-up to "The Gathering Storm" report entitled, "Is America Falling Off the Flat Earth?" His message is clear: "Unless substantial investments are made to the engine of innovation – basic scientific research and development – the current generation may be the first in our country's history to leave their children and grandchildren a lower sustained standard of living."[2]

For sixty years, NSF has been a steward of the nation's science and engineering enterprise. NSF investments in discovery, learning, and innovation have been important to increasing America's economic strength, global competitiveness, national security and overall quality of life.

With its relatively small size, NSF delivers an enormous "bang for the buck" of federal government research and development (R&D) investment. NSF represents just four percent of the total federal budget for research and development, but accounts for over sixty percent of Federal support of non-life science basic research at academic institutions. For example, NSF's share of Federal support for basic research in computer sciences at academic institutions in FY2008 was over 80%. NSF is the research funding lifeline for many fields and emerging interdisciplinary areas at the frontiers of discovery. In fact, NSF is the only federal agency that supports all fields of basic science and engineering research.

NSF-funded research is characterized by its breadth. NSF prioritizes the integration of education into its research programs, and takes into account the broader societal impacts of the work it funds, such as the training that students and young researchers receive in the research process, and the educational opportunities the work and its people can then provide to the larger community of K-16 students and teachers and the general public.

NSF's comprehensive and flexible support of meritorious projects with broad societal impacts enables the Foundation to identify and foster both fundamental and transformative discoveries within and among fields of inquiry. NSF has the latitude to support emerging fields, high-risk ideas, interdisciplinary collaborations, and research that pushes, and even transforms, the very frontiers of knowledge. In these ways, NSF's discoveries inspire the American public—and the world.

[1] http://www.nsf.gov/statistics/digest10/global.cfm#4
[2] Augustine, Norman. Is America Falling off the Flat Earth? National Academies Press

NSF's organization mirrors science and engineering. Its portfolio spans the biological sciences, computer and information science and engineering, engineering, geosciences, mathematics and physical sciences, and social, behavioral, and economic sciences – encompassing both research and education in these areas. NSF also carries out specific national responsibilities for polar programs, cyberinfrastructure, international science and engineering, and a range of responsibilities related to the nation's overall capabilities in science and engineering, including statistical resources on the overall U.S. and international R&D enterprise. The 25-member National Science Board sets the overall policies of the Foundation.

The cornerstone of NSF is the merit-based, competitive process that fosters the highest standards of excellence and accountability – standards that have been emulated at funding agencies around the world.

2011 Budget Request Highlights

At NSF, we understand that new discoveries are a driving force behind societal progress. As the nation's premier funding agency for basic research, our mission is to advance the frontiers of knowledge, where high-risk, high-reward research can lay the foundation for revolutionary technologies and tackle complex societal problems. The NSF budget for 2011 reflects this vital agenda, and I'm pleased to present it to you today.

Let me begin with the big picture. As noted earlier, the President is requesting $7.42 billion for the NSF in FY 2011. That's an increase of almost $552 million, or 8 percent above the current 2010 appropriated amount. While it seems like a large increase, this level is necessary to fulfill the President's vision for doubling the National Science Foundation's budget. This increased investment will reinforce NSF's leadership in basic science and engineering and allow us to preserve America's preeminence in the global technology economy.

In this year's proposed budget, funding levels increase for every NSF appropriations account. Research and Related Activities investments increase by 8.2 percent, and our Education and Human Resources account is increased by 2.2 percent. We need rapid progress in these areas to stimulate the discoveries in research we need to maintain our standing in the global marketplace, and to keep our students engaged and ready to perform in the global workforce. Our budget includes increases for every Directorate and Office within NSF. But, as with any budget, the FY 2011 Request reflects tough choices and clear priorities. It recognizes NSF's unique national responsibility for supporting basic research, our catalytic role in education, and the ongoing need for investments in stewardship.

Here are highlights of some of the key investments we are emphasizing in our 2011 budget.

NATIONAL INNOVATION STRATEGY

NSF's contribution to the Administration's *A Strategy for American Innovation*, announced by the President in September 2009, stems from its longstanding role in strengthening the building blocks of American innovation. This begins with investing in fundamental research and educating the next generation of scientists and engineers. It also includes more focused research on topics that advance vital capabilities – such as sustainability, secure networks, and leading-edge technologies – and fostering and facilitating partnerships that reach across today's global innovation enterprises.

Maintain American Leadership in Fundamental Research. Since innovation depends on the foundation of earlier investments, NSF's foremost responsibility in innovation is to continue to support fundamental research and education in all fields of science and engineering. The President's Plan for Science and Innovation aims to double the federal investment in three key basic research agencies over FY 2006 levels. This investment will be vital to the effort to increase national R&D investments to 3 percent of Gross Domestic Product.

Educate the Next Generation with 21st Century Knowledge and Skills While Creating a World-Class Workforce. Two NSF programs described in this Request support the Strategy's educational goals.

- **The Graduate Research Fellowship (GRF)** program, (16.4 percent increase to $158.24 million); an Administration priority, supports the development of the Nation's future scientists and engineers. FY 2009 marked the beginning of a growth trajectory to triple the number of new awards made each year to 3,000 by FY 2013.
- **RE-gaining our ENERGY Science and Engineering Edge (RE-ENERGYSE)**, ($19.37 million) is located at the intersection of energy, environment, and human factors. It is a partnership between the Department of Energy (DOE) and the National Science Foundation that will help the nation regain its leadership position in science and engineering by attracting and educating future scientists in the clean energy field. By 2015, RE-ENERGYSE would prepare up to 8,500 highly educated young scientists and engineers for clean energy careers and provide training for thousands of skilled clean energy technicians.

Support Research for Next-Generation Information and Communications Technology, and Secure Cyberspace. While nobody can predict which of today's fundamental discoveries will become tomorrow's new products and processes, a number of NSF programs support the Strategy's goal to promote innovation. These include:

- **Science and Engineering Beyond Moore's Law (SEBML)**, (50.3 percent increase to $70.18 million). In 10 to 20 years, current silicon technology will reach the limits of Moore's Law – the empirical observation that computing power doubles roughly every 18 months. SEBML's transformational activities accelerate innovation and create partnering opportunities with the private sector and national laboratories.
- **Cyber-enabled Discovery and Innovation (CDI)**, (2.8 percent increase to $105.48 million) CDI supports transformative, multidisciplinary science and engineering research made

possible by innovations and advances in computational concepts, methods, models, algorithms, and tools. CDI breakthroughs advance one or more of the three themes: From Data to Knowledge; Understanding Complexity in Natural, Built, and Social Systems; Building Virtual Organizations.

- **Cybersecurity**, (10.6 percent increase to $144.55 million). NSF's basic research into usability, theoretical foundations, and privacy supports the aims of the Comprehensive National Cybersecurity Initiative.

Encourage High-Growth and Innovation-Based Entrepreneurship, and Create Competitive Communities By Promoting Regional Innovation Clusters

Partnerships for Innovation (PFI), (108.8 percent increase to $19.19 million). PFI brings together colleges, universities, state and local governments, private sector firms, and nonprofit organizations. Initiated in FY 2000, PFI connects new knowledge created in the discovery process to learning and innovation, while broadening the participation of people and institutions in NSF activities. PFI activities include research, technology transfer, building infrastructure for innovation, and workforce education and training. In FY 2011, $12.0 million will be invested in a new "NSF Innovation Ecosystem" component, which aims to: increase the engagement of faculty and students across all disciplines in the innovation and entrepreneurship process; increase the impact of the most promising university innovations through commercialization, industry alliances, and start-up formulation; and develop a regional community that supports the "innovation ecosystem" around the university. It will draw on the individual entrepreneurial spirit of university faculty and students, as well as on the proven strengths of established technology centers such as Science and Technology Centers, Engineering Research Centers, Industry University Cooperative Research Centers, and others that link higher education institutions with investment and industry sectors. The Innovation Ecosystem initiative will focus on ways to maximize the innovation potential of scientific and engineering discovery in the university system and accelerate the technological innovation process with robust partnerships with the private sector.

Grant Opportunities for Academic Liaison with Industry (GOALI), (0.4 percent increase to $18.58 million). GOALI seeks to increase partnerships between the academic and industrial communities and provide opportunities to accelerate innovation by strengthening the discovery knowledge base for a quicker translation of discovery to societal benefit. The program leverages its budget with support from other NSF academic research programs by a factor of four to one.

Centers programs, (8.9 percent increase to $313.78 million). NSF supports over 100 centers in seven interdisciplinary program areas. Centers exploit opportunities in science, engineering, and technology in which the complexity of the research problem or the resources needed to solve the problem require the advantages of scope, scale, duration, equipment, facilities, and students. Centers often leverage their activities through partnerships with academic institutions, national laboratories, industrial organizations, and/or other public/private entities, and via international collaborations, as appropriate.

LEARNING AND WORKFORCE DEVELOPMENT

For America to continue to lead the world in science and technology innovation, it must have the most knowledgeable and skilled science, technology, engineering, and mathematics (STEM) workers in the world. The National Innovation Strategy includes programs that support scientists and engineers at the beginning of their careers, prepare the next generation of Americans to understand and meet environmental challenges, and educate the next generation with 21st century knowledge and skills while creating a world-class workforce. This is not just the smart thing to do – it is the right thing to do for our country. By drawing on the spectrum of talents and backgrounds of America's diverse populace, we can bring new approaches to scientific discovery, new vantage points to engineering design, and new insights to innovation. This is essential as we increasingly find ourselves in competition with scientist and engineers and entrepreneurs from all corners of the globe, and as we strive to remain competitive in the diverse international marketplace.

Administration Priority Programs

The FY 2011 budget maintains strong levels of support for four key Administration priority programs which were strongly supported in the FY 2010 Budget Request. The Graduate Research Fellowship (GRF) Program and the Faculty Early Career Development Program (CAREER) support the most promising students and early-career researchers in order to cultivate the next generation of STEM knowledge workers. Climate Change Education (CCE) targets learning at all levels and is designed to develop the next generation of skilled, educated, and climate-savvy Americans. Advanced Technological Education (ATE) supports new and enhanced two-year college programs that educate technicians for the high-technology workforce.

- **The Graduate Research Fellowship (GRF)** program supports the development of the Nation's future scientists and engineers. As noted earlier, FY 2009 marked the beginning of a growth trajectory to triple the number of new awards made each year to 3,000 by FY 2013.
- **The Faculty Early Career Development Program (CAREER)** develops the future scientific and technical workforce through support of young faculty who are dedicated to integrating the excitement of research with inspired teaching and enthusiastic learning.
- **Climate Change Education** is designed to develop the next generation of skilled, educated, and climate-savvy Americans. It catalyzes activity at the national level in four strands of STEM education: preparation of a climate science professional workforce; public understanding and engagement; resources for learning; and local and national STEM education policy.
- **Advanced Technological Education (ATE)** supports new and enhanced two-year college programs that educate technicians for the high-technology workforce. It is on a growth trajectory begun in FY 2010 to increase the program's funding to $100 million by FY 2013.

LEARNING AND BROADENING PARTICIPATION

The integration of research and education has been a hallmark of NSF since its inception. The Foundation's investments do double duty – generating new knowledge and producing the next generation of scientists, technologists, engineers, mathematicians, and educators. Preparing a STEM workforce ready to lead innovation and address national needs requires the involvement of the full range of talent and diversity in the Nation, specifically students from traditionally underrepresented groups. This is not just the right thing to do – it is the smart thing to do for our country. By drawing on the spectrum of talents and backgrounds of America's diverse populace, we can bring new approaches to scientific discovery, new vantage points to engineering design, new insights to innovation. This is essential as we increasing find ourselves in competition with scientist, engineers, and entrepreneurs from all corners of the globe, and as we strive to remain competitive in the diverse international marketplace.

The FY 2011 Budget maintains strong support for agency-wide efforts to bring a fuller array of perspectives and participants to advancing discovery and innovation. Investments across NSF seek to broaden participation among people, institutions, and geographical regions.

Comprehensive Broadening Participation of Undergraduate Institutions in STEM (CBP-UI), ($103.10 million). With an FY 2011 investment of $103.10 million, NSF will implement a new consolidated program, which realigns and builds on existing programs: Historically Black Colleges and Universities Undergraduates program (HBCU-UP), Louis Stokes Alliances for Minority Participation (LSAMP), Tribal colleges and universities (TCUP), and Hispanic-serving institutions. This new program's objective is to help build sustainable partnerships and alliances among institutions with strong track records in producing underrepresented STEM graduates, thereby building capacity for the STEM field across a range of institutions. These comprehensive partnerships will increase the institutions' competitiveness by:

- strengthening STEM curricular offerings, enhancing STEM faculty development, and increasing competencies and competitiveness of students
- Transforming infrastructure, operations, and resources
- Increasing support for and engagement in frontier scientific research and access to advanced research instrumentation, and maximizing undergraduate research opportunities
- Facilitating expanded collaboration between scientists and educators at minority-serving institutions with those at majority institutions
- Stimulating innovation and creativity from the nation's education and research enterprise through support of effective collaborations between minority–serving and majority institutions, especially research-intensive universities with NSF Science and Technology Centers (STC), Materials Research Science and Engineering Centers (MRSEC), and Engineering Research Centers (ERC).

Experimental Program to Stimulate Competitive Research (EPSCoR), (4.9 percent increase to $154.36 million) NSF remains a leader in efforts to broaden participation in science and engineering in all states and regions. EPSCoR's goal is to stimulate sustainable improvements in research participation from institutions in geographical areas that are underrepresented in NSF activities. Strategies include supporting research infrastructure improvement, co-funding of disciplinary and interdisciplinary research, and conducting outreach and workshops. This growth mirrors the overall growth for the R&RA account for FY 2009 through FY 2011.

Government-wide Strategy for STEM Education. In addition to its support for the programs and priorities already mentioned, NSF is actively engaged as a leading participant in the coordinated, government-wide strategy for STEM education. NSF is poised to build on previous and emerging collaborations with the U.S. Department of Education, and to use NSF's unique experience and knowledge base in STEM education to identify research and evaluation priorities and to consider appropriate standards of evidence for various stages of research and development cycles. The agencies are embarking jointly on possible collaborations and complementary initiatives to help states improve K-12 student learning in STEM by building and sharing knowledge of effective curricular and instructional practices, and how they can be implemented at scale.

NSF K-16 Stem Education Priorities

An overarching commitment in all of NSF's K-16 investments is to address current and emerging educational challenges that have bearing on the preparation of a STEM workforce and a STEM-literate society. In particular, NSF K-16 investments are intended to catalyze innovation that improves learning, to validate what we think we already know, to scale what works, and to build a knowledge base through research and evaluation about how to improve STEM learning for all. These investments are made through several core programs that address K-16 education.

NSF has the following four priorities for K-16 education:

- improving K-16 education through increased research and evaluation to allow for more strategic efforts to increase STEM learning, support the creation of effective assessment tools and approaches (including tools for measuring teacher knowledge) that enable teachers and instructors to examine and improve student learning across the K-16 level; and
- supporting topical areas of national importance, namely climate and energy science, into the K-16 educational enterprise;
- preparing the STEM workforce (including teachers) to be the innovators of tomorrow by: improving recruitment, retention, and program completion of undergraduates in two- and four-year institutions; improving undergraduate instruction on the basis of research evidence; and providing scholarships and fellowships. A particular focus here is on specific strategies and programs for increasing the participation of underrepresented minority students in STEM;
- exploring the potential of cyberlearning to enable new avenues of science, technology, engineering, and mathematics (STEM) education and to create new ways of studying the learning process itself.

With the President's clearly stated emphasis on the importance of improving STEM education, NSF will be a willing partner in working with other Federal agencies and departments to more effectively leverage our efforts. This is a great opportunity for us to work together, and to learn

from each other in moving toward the goal the President has established – American students moving from the middle to the top of the pack within a decade.

INVESTMENT PORTFOLIOS

A portfolio investment strategy specifically addresses our role in addressing national challenges, such as stimulation of economic growth, promotion of innovative energy technologies which can help mitigate the impact of climate change, training of a world-class STEM workforce, and nurturing a scientifically literate population.

A wide range of ongoing NSF investments contribute directly to energy technologies, understanding and mitigating climate change, and promoting green jobs. The FY 2011 Request presents a new framework for coordinating and enhancing these investments. To leverage NSF's strengths towards addressing the challenges we face, NSF proposes to focus on the full portfolio of activities in two key areas of national importance.

Science, Engineering, and Education for Sustainability (SEES), (16 percent increase to $765.5 million) will integrate NSF's efforts in climate and energy science and engineering to generate the discoveries and capabilities needed to inform societal actions that lead to environmental and economic sustainability. SEES addresses recommendations from the August 2009 report from the National Science Board, *Building A Sustainable Energy Future*, which emphasized systems approaches to research programs, education and workforce development, public awareness and outreach, and the importance of partnerships with other agencies, states, universities, industry, and international organizations.

Cyberlearning Transforming Education (CTE), (63 percent increase to $41.3 million). This new multidisciplinary research program is intended to fully capture the transformative potential of advanced learning technologies across the education enterprise. CTE will enable wholly new avenues of science, technology, engineering, and mathematics (STEM) learning for students and for workforce development. Collaborating with the Department of Education to bring advances in technology to learners at all educational levels will advance the Nation's ability to study the learning process itself.

INTERAGENCY ACTIVITIES

Networking and Information Technology Research and Development (NITRD), (7 percent increase to $1.170 billion). NITRD coordinates the unclassified networking and information technology research and development investments across thirteen federal agencies. These agencies work together to develop a broad spectrum of advanced networking and IT capabilities to power federal missions, economic competitiveness, and science, engineering, and technology leadership. NSF is a leader in the program and NITRD activities represent 16 percent of NSF's FY 2011 budget. Funding foci for FY 2011 include large scale networking, cybersecurity and information assurance, high confidence software and systems, human-computer interaction and information management, and software design and productivity.

National Nanotechnology Initiative (NNI), (4 percent decrease to $401.3 million). NSF actively participates in the NNI, which coordinates nanotechnology research and development with 25 departments and agencies across the federal government. Nanotechnology encompasses the systematic understanding, organization, manipulation, and control of matter at the atomic, molecular, and supramolecular levels in the size range of 1 to 100 nanometers. NSF's investment in this activity increases in two key areas in FY 2011: nanomanufacturing (44 percent increase to $32.2 million) and Environmental, Health and Safety (11 percent increase to $33.0 million).

NSF contributes to the three NNI Signature Initiatives focusing on:

- Nanoelectronics for 2020 and Beyond (in partnership with DOD, NIST, DOE, DNI);
- Sustainable Nanomanufacturing (in partnership with NIST, DOE, EPA, NIH); and
- Nanotechnology Applications for Solar Energy (in partnership with DOE, NIST, DOD, DNI, USDA/NIFA).

Additionally, NSF will further emphasize (beyond current support) the environmental, health and safety implications of nanotechnology, including development of predictive toxicity of nanomaterials, primarily through the support of three dedicated multidisciplinary centers and through support for approximately 60 additional research groups.

The budget request includes, for example, further support for advanced manufacturing with an emphasis on nanomanufacturing, support for Science and Engineering Beyond Moore's Law (an integral aspect of nanoelectronics for 2020 and beyond), and support for new and innovative means for addressing energy challenges (such as solar energy) through the SEES initiative.

STEWARDSHIP INVESTMENTS

Since 2001, the number of proposals submitted to NSF has increased by over 50 percent. In that time, staffing has increased by only 19 percent. To support NSF's excellence in science and engineering research and education, NSF must invest in expanding and developing its workforce and resources to maintain a capable and responsive organization.

The FY 2011 Request includes $468.8 million (+$39.1 million) for activities aimed at assuring that NSF will be able to effectively and efficiently manage its operations. Funds will support:

- **Staff,** 40 additional full-time equivalents (for a total of 1,350 FTE) and eleven additional IPAs are requested;
- **IT investments,** such as the expansion of Research.gov, modernization of the NSF financial system, and improvements in the reliability and security of NSF's operational IT systems; and
- **Acquisition,** ($2.0 million). This increase is part of the government-wide effort to strengthen the acquisition workforce. A key priority for NSF is improving capabilities in the pre-solicitation phase of major acquisitions.

A specific emphasis in FY 2011 is promoting strong, independent evaluation that can inform policy decisions, program management, and performance assessment across NSF. NSF

participates in the Administration's government-wide initiative to strengthen program evaluation and performance measurement, and shares its commitment to post the status and findings of this and other important publicly available evaluations online.

- **High-Priority Performance Goal:** NSF's goal for the end of FY 2011 is to develop evaluation and assessment systems for STEM education and workforce programs that can provide findings leading to program re-design or consolidation.
- **Foundation-wide planning, analysis, and evaluation.** $1.0 million will support additional staff and associated resources for the establishment of a centralized NSF capability for assessment and evaluation. This would bring greater attention and analysis to such areas as comparing different types of programmatic investments and identifying the most effective means for continuous improvement across the NSF portfolio.

Concluding Remarks

Mr. Chairman, I've touched on just a handful of programs found in NSF's diverse and vibrant portfolio. NSF's research and education activities support the nation's innovation enterprise. America's present and future strength, prosperity and global preeminence depend directly on fundamental research. This is not merely rhetoric; the scientific and economic record of the past 30 years is proof that an investment in R&D is an investment in a secure future.

NSF may not be the largest agency that funds science and engineering research, but our size serves to keep us nimble. Our portfolio is continually evolving as we identify and pursue new research at the frontiers of knowledge. An essential part of our mission is to constantly re-think old categories and traditional perspectives. This ability is more important than ever, as conventional boundaries constantly shift and disappear – boundaries between nations, between disciplines, between science and engineering, and between what is basic and what is applied. NSF, with its mandate to support all fields of science and engineering, is uniquely positioned to meet the needs of researchers exploring human knowledge at these interfaces, whether we're organizing interdisciplinary conferences, enabling cyber-sharing of data and information, or encouraging new collaborations and partnerships across disciplinary and national borders. No other government agency comes close to our flexibility in STEM education and basic research.

In today's high-tech economy, the supply of new jobs is inextricably linked to the health of the nation's innovation endeavor. NSF is involved in all aspects of innovation; NSF not only funds the discoveries that directly become the innovations of tomorrow, we also fund discoveries that lead to still more discoveries that lead to the innovations of tomorrow, and, perhaps most critically, we train the technologists who dream up the discoveries that lead to the discoveries and innovations of tomorrow.

Industry continues to rely upon government support for high-risk, high-reward basic research. It is no accident that our country's most productive and competitive industries are those that benefited the most from sustained federal investments in R&D – including computers and communications, semiconductors, biotechnology, and aerospace.

As we look to the century ahead of us, we face the reality that the other nations in this world are eager to create jobs and robust economies for their citizens. In this context, "globalization" is shorthand for a complex, permanent, and challenging environment that calls for sustainable, long-term responses, not just short-term fixes.

Despite some of the more pessimistic forecasts of some observers, I believe that America can continue to be on the leading edge of ideas and research. Through strong federal leadership, we can maintain the standing of our businesses and universities. We must not only maintain our position, we must actively seek to increase our strengths: leadership in fundamental discovery, including high-risk, high-reward transformational research, state-of-the-art facilities and infrastructure, and a world-class S&E workforce. With a firm commitment to these fundamental building blocks of our high-tech economy, we can solidify America's role as the world leader in innovation.

Mr. Chairman and members of the Committee, I hope that this brief overview has given you a taste of just how very important the National Science Foundation and its activities are to the future prosperity of the United States. I look forward to working with you in months ahead, and I am happy to answer any questions you may have.