

UNITED STATES
National Science Foundation

FY 2013

BUDGET REQUEST TO CONGRESS

MISSION: To promote the progress of science; to advance the national health, prosperity, and welfare; and to secure the national defense.

—From the National Science Foundation (NSF) Act of 1950

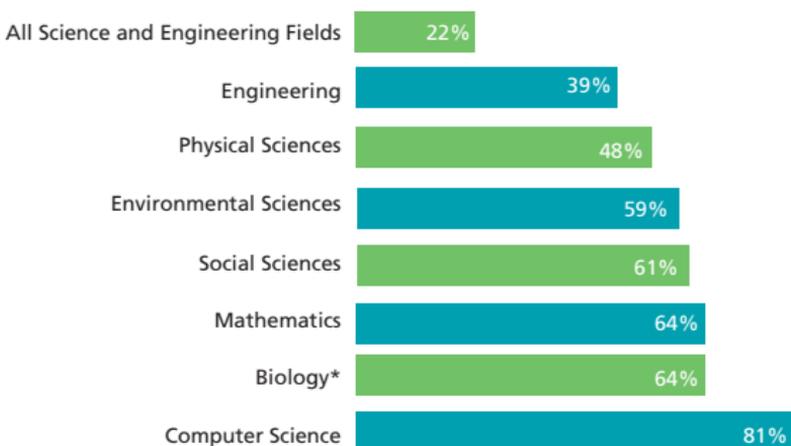
VISION: NSF envisions a nation that capitalizes on new concepts in science and engineering and provides global leadership in advancing research and education.

—From *Empowering the Nation Through Discovery and Innovation: NSF Strategic Plan for Fiscal Years (FY) 2011-2016*

ABOUT NSF

- Created by Congress in 1950 as an independent federal agency to promote American science and engineering (S&E)
- Funds basic research and education across all fields of S&E and at all levels of S&E education—the only federal agency to do so
- Seeks high-risk, potentially transformative projects that will generate path-breaking discoveries and new technologies
- Funds advanced instrumentation and facilities
- Supports Arctic and Antarctic research, science operations, and other related activities for the U.S. polar research program
- Supports cooperative research between universities and industry and U.S. participation in international scientific efforts
- Allocates 90 percent of research funding through a merit review process as grants or cooperative agreements to individual researchers and groups at colleges, universities, academic consortia, nonprofit institutions, and small business
- Supported 196 Nobel laureates, including 22 in the last 5 years

NSF Support of Academic Basic Research in Selected Fields (as a percentage of total federal support)



Note: Data shown is for FY 2008, the most recent available at this time.
*Includes Biological Sciences and Environmental Biology; excludes NIH.
Source: NSF/National Center for Science and Engineering Statistics, Survey of Federal Funds for Research & Development.

Empowering the Nation Through Discovery and Innovation

FY 2013 BUDGET REQUEST

NSF Budget by Appropriation (dollars in millions)

	FY 2011 Actual	FY 2012 Estimate	FY 2013 Request	Change Over FY 2012 Estimate	
				Amount	Percent
Research and Related Activities	\$ 5,608.38	\$ 5,689.00	\$ 5,983.28	\$ 294.28	5.2%
Education and Human Resources	861.04	829.00	875.61	46.61	5.6%
Major Research Equipment and Facilities Construction	125.37	197.06	196.17	-0.89	-0.4%
Agency Operations and Award Management	299.29	299.40	299.40	-	-
National Science Board	4.47	4.44	4.44	-	-
Office of Inspector General*	14.00	14.20	14.20	-	-
TOTAL	\$ 6,912.55	\$7,033.10	\$ 7,373.10	\$ 340.00	4.8%

Note: Totals may not add due to rounding.

*Includes FY 2011 obligations from funds appropriated through the American Recovery and Reinvestment Act of 2009.

OneNSF

NSF is an agency that works seamlessly across disciplinary, organizational, institutional, and national boundaries to promote global leadership in advancing research, education, and innovation

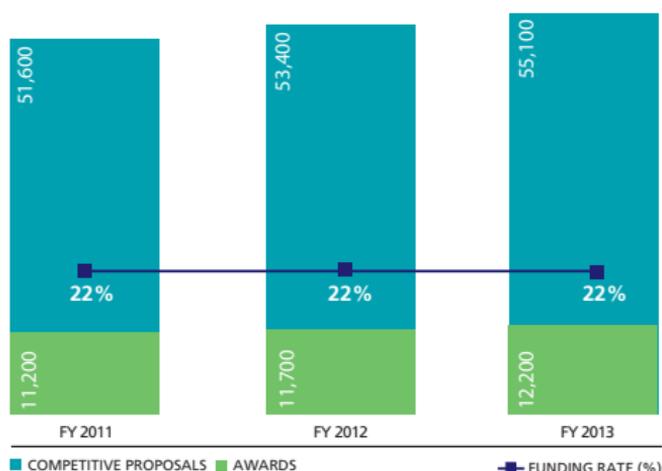
OneNSF is a comprehensive vision for NSF, as it operates in partnership with the science and engineering community for the benefit of society. It empowers the Foundation to respond to new challenges in a changing global environment, leverage resources and opportunities for maximum impact, and provide leadership to establish innovative practices, programs, and paradigms that advance scientific knowledge and science, technology, engineering, and mathematics (STEM) education. In FY 2013, the OneNSF framework will encompass a set of investments that create new knowledge, stimulate discovery, address complex societal problems, and promote national prosperity. Priorities include:

- Cyber-enabled Materials, Manufacturing, and Smart Systems (CEMMSS): \$257 million
- Cyberinfrastructure Framework for 21st Century Science and Engineering (CIF21): \$106 million
- Expeditions in Education (E2): \$49 million
- NSF Innovation Corps (I-Corps): \$19 million
- Integrated NSF Support Promoting Interdisciplinary Research and Education (INSPIRE): \$63 million
- Science, Engineering, and Education for Sustainability (SEES): \$203 million
- Secure and Trustworthy Cyberspace (SaTC): \$110 million

OTHER FY 2013 INVESTMENT HIGHLIGHTS

- Core Fundamental Research Grant Programs: \$3.2 billion
- Advanced Manufacturing: \$149 million
- Science and Technology Centers: \$74 million
- Enhancing Access to the Radio Spectrum (EARS): \$51 million
- Research at the Interface of the Biological, Mathematical, and Physical Sciences (BioMaPS): \$30 million
- STEM Education
 - K–16 Math Education: \$30 million
 - Widening Implementation and Demonstration of Evidence-based Reforms (WIDER) program: \$20 million

NSF Funding Profile, FY 2011–FY 2013 (Estimates)



NSF By The Numbers

\$7.4 billion	FY 2013 Budget Request
1,875	Colleges, universities, and other institutions receiving NSF funding
51,600	Proposals evaluated through a competitive merit review process
11,200	Competitive awards funded
262,000	Proposal reviews conducted
276,000	Estimated number of people NSF supports directly (researchers, postdoctoral fellows, trainees, teachers, and students)
44,000	Students supported by NSF Graduate Research Fellowships since 1952

Figures other than Budget Request represent FY 2011 actuals for key merit review indicators.

AGENCY PRIORITY GOALS

NSF has set three priority goals for accomplishment in FY 2012 and FY 2013. These goals cover the range of programmatic activities that NSF supports, from basic research to training of the science and engineering workforce to education of the general public. The goals will require agency-wide coordination to make progress, and NSF is leveraging its experiences with FY 2010–FY 2011 Priority Goal achievement towards this end. NSF also participates in cross-agency Federal Priority Goals (see www.Performance.gov).

- **Access to Digital Products of NSF-funded Research:** Increase opportunities for research and education through public access to high-value digital products of NSF-funded research. By September 30, 2013, NSF will have established policies for public access to high-value data and software in at least two data-intensive scientific domains.
- **Undergraduate Programs:** Develop a diverse and highly qualified science and technology workforce. By September 30, 2013, 80 percent of institutions funded through NSF undergraduate programs document the extent of use of proven instructional practices.
- **Innovation Corps:** Increase the number of entrepreneurs emerging from university laboratories. By September 30, 2013, 80 percent of teams participating in the Innovation Corps program will have tested the commercial viability of their product or service.

For More Information:

NSF FY 2013 Budget Request to Congress
www.nsf.gov/about/budget

Research and Education Results Supported by NSF
www.nsf.gov/discoveries

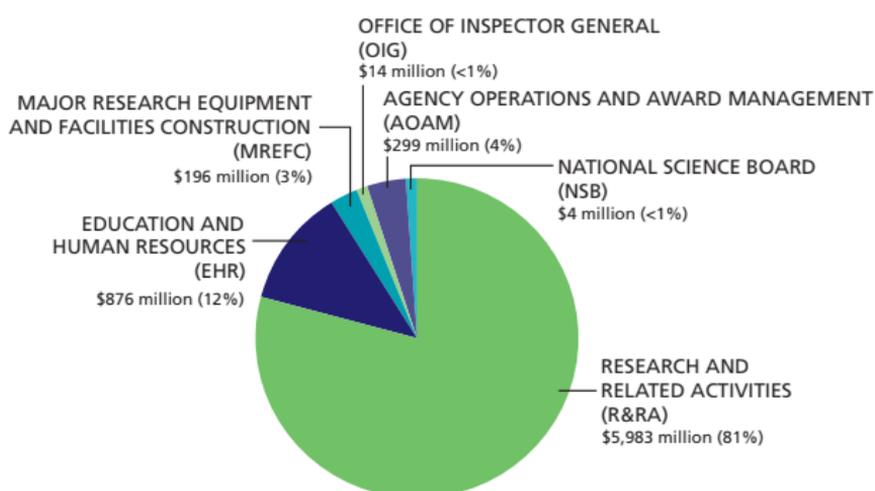
NSF Budget and Performance
www.nsf.gov/about/performance

Empowering the Nation Through Discovery and Innovation: NSF Strategic Plan for Fiscal Years 2011-2016.
www.nsf.gov/news/strategicplan

Driving Federal Performance
www.Performance.gov

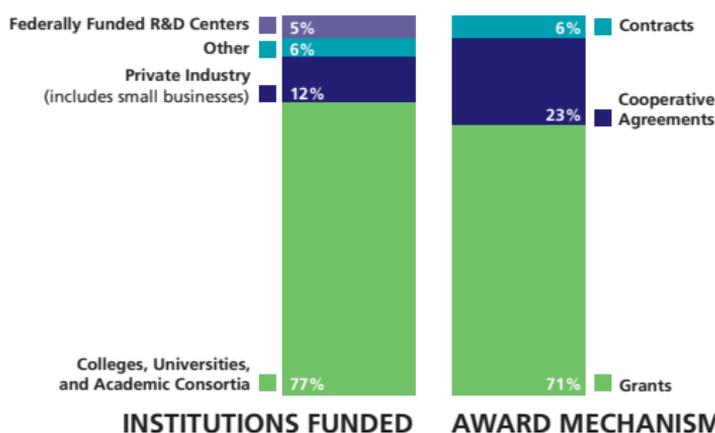
FOLLOWING THE MONEY

FY 2013 NSF Budget Request by Account—\$7,373 million



Note: Totals may not add due to rounding.

Obligations for Research and Education Programs



This chart shows the distribution of NSF's obligations by institution type and funding mechanism. While the data shown are based on FY 2011, the relative shares should provide a good indication of the FY 2013 distribution.

Notes: NSF Research and Education Programs include Research & Related Activities, Education & Human Resources, and Major Research Equipment & Facilities Construction appropriations. Other institutions funded include federal, state, and local governments; nonprofit organizations; and international organizations.



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RESEARCH AND EDUCATION HIGHLIGHTS

At the Forefront of Cybersecurity Research



Credit: DETER Testbed

From advances in operating systems, software, and hardware to understanding the underlying motives of attacks, NSF-funded research is helping to ensure the security, reliability, availability, and overall trustworthiness of information technology resources. The Team for Research in Ubiquitous Secure Technology (TRUST), established as an NSF Science and Technology Center, is a university and industry consortium that supports cybersecurity research and education. TRUST, led by the University of California Berkeley, addresses technical, operational, privacy, and policy challenges via interdisciplinary projects that combine fundamental science and applied research to deliver breakthrough advances in trustworthy systems. Cybersecurity experiments require secure testbeds, such as the cyber-Defense Technology Experimental Research (DETER) testbed, which provides a safe venue to explore cybersecurity vulnerabilities since it is isolated from the outside internet.

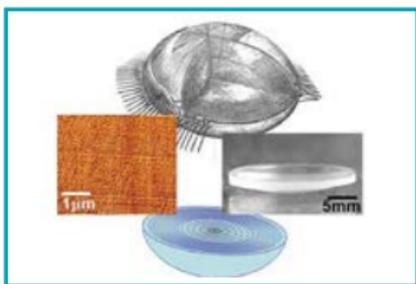
Harvesting Fuel from Green Algae



Credit: Zhijian Pei, Kansas State University

Based on observations of algae growth on solid materials, researchers at Kansas State University have developed a cost-effective way to harvest renewable fuels from algae grown in the sea. In this technique, algae are restricted from moving and attached to a solid carrier material for growth. Immobilizing the algae increases their concentration at harvest and facilitates extraction of the generated fuel. This research will allow for future advances in harvesting large quantities of algae as an alternative energy source.

Polymer Research Leads to New Commercial Technologies



Credit: Professor Eric Baer, Case Western Reserve University

Cutting-edge research—the result of collaborations within NSF’s multi-institution Center for Layered Polymeric Systems (CLiPS) at Case Western Reserve—has led to two new U.S. start-up companies, one dedicated to improving water filtration systems and the other to advances in surveillance systems and solar cell equipment. The first company, Advanced Hydro, seeks to extend the lifetime and cost efficiency of membrane-based water filtration systems. It uses “bio-inspired,” multilayer, polymer coatings that interact favorably with water. The second company, PolymerPlus, is dedicated to developing a new class of light-weight, polymer lenses with improved optical performance to be used in miniaturized surveillance and solar-cell devices. PolymerPlus will use a technique developed by CLiPS that produces films with hundreds or even thousands of layers.