



UNITED STATES
NATIONAL
SCIENCE
FOUNDATION

FY **2017**
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 (P.L. 81–507)

VISION: A Nation that creates and exploits new concepts in science and engineering and provides global leadership in research and education.

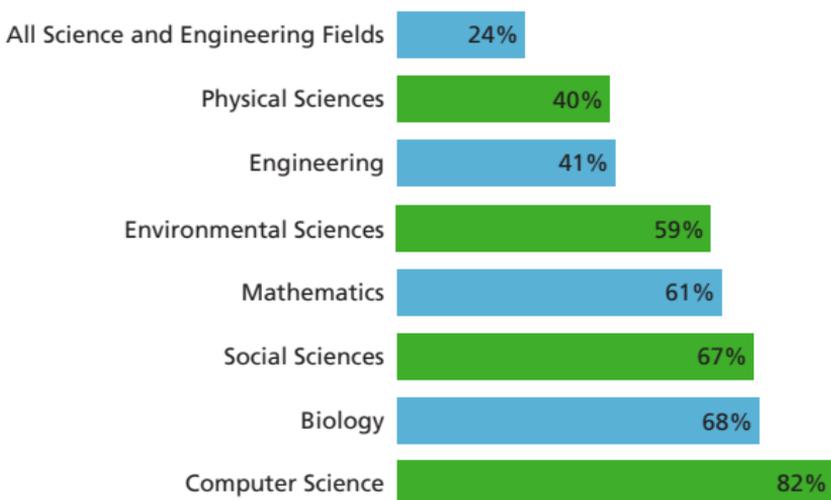
—From Investing in Science, Engineering, and Education for the Nation's Future: NSF Strategic Plan for 2014–2018

ABOUT NSF

- Established by Congress in 1950 as an independent federal agency to promote American science and engineering (S&E).
- The only federal agency that funds basic non-biomedical research and education across all fields of S&E and at all levels of education.
- Invests in the basic research and people who make discoveries that transform our future by driving the U.S. economy, enhancing our Nation's security, and giving the United States the competitive edge to remain a global leader.
- Funds advanced instrumentation and facilities, Arctic and Antarctic research and operations, cooperative research between universities and industry, and U.S. participation in international scientific efforts.
- Allocates nearly 90 percent of research funding through a competitive merit review process as grants or cooperative agreements to individual researchers and groups at colleges, universities, academic consortia, nonprofit institutions, and small businesses.
- Has supported 217 Nobel Laureates since its inception.

NSF Support of Academic Basic Research in Selected Fields

(as a percentage of total federal support)



Note: Biology includes Biological Sciences and Environmental Biology; excludes National Institutes of Health.

Source: NSF/National Center for Science and Engineering Statistics, Survey of Federal Funds for Research & Development, FY 2014

Investing in Science, Engineering, and Education for the Nation's Future

FY 2017 BUDGET REQUEST

NSF Budget by Appropriation (dollars in millions)

	FY 2015 Actual	FY 2016 Estimate	FY 2017 Request	Change Over FY 2016 Estimate	
				Amount	Percent
Research and Related Activities	\$6,041.57	\$6,033.65	\$6,425.44	\$391.79	6.5%
Education and Human Resources	\$886.33	\$880.00	\$952.86	\$72.86	8.3%
Major Research Equipment and Facilities Construction	\$144.76	\$200.31	\$193.12	-\$7.19	-3.6%
Agency Operations and Award Management	\$306.56	\$330.00	\$373.02	\$43.02	13.0%
National Science Board	\$4.15	\$4.37	\$4.38	\$0.01	0.2%
Office of Inspector General	\$14.60	\$15.16	\$15.20	\$0.04	0.3%
TOTAL	\$7,397.97	\$7,463.49	\$7,964.02	\$500.53	6.7%

Totals may not add due to rounding.

The FY 2017 Request for NSF is \$7,964.02 million, of which \$7,564.02 million is discretionary funding and \$400.0 million is new mandatory funding. New mandatory funding is \$346.01 million in Research and Related Activities and \$53.99 million in Education and Human Resources.

FY 2017 CROSS-FOUNDATION INVESTMENTS

- Understanding the Brain (UtB): \$142 million.
- Risk and Resilience: \$43 million.
- Innovations at the Nexus of Food, Energy, and Water Systems (INFEWS): \$62 million.
- Inclusion across the Nation of Communities of Learners of Underrepresented Discoverers in Engineering and Science (NSF INCLUDES): \$16 million.

ONGOING NSF-WIDE PRIORITIES

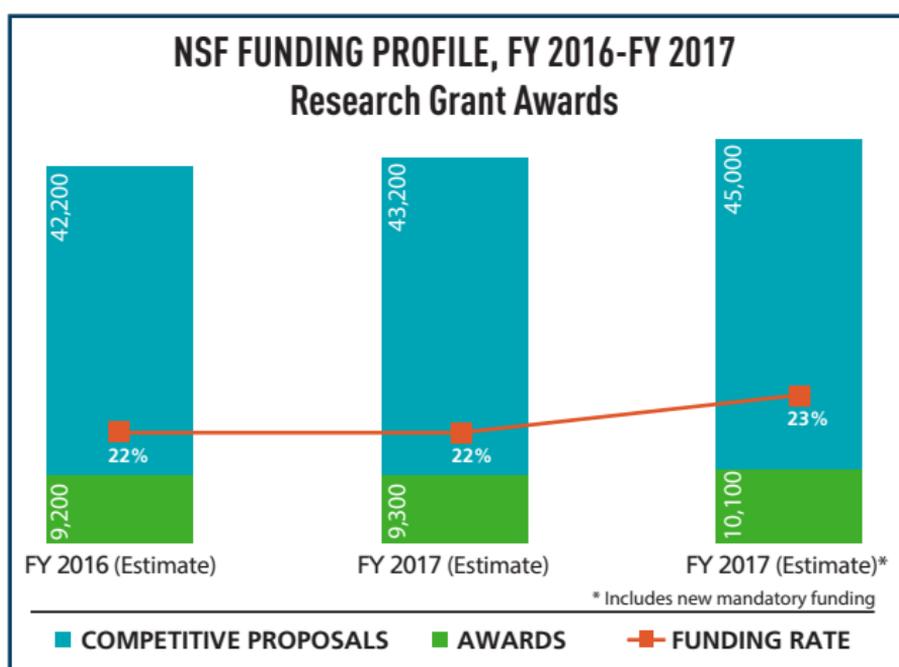
- Clean Energy: \$512 million
- Cyber-enabled Materials, Manufacturing, and Smart Systems (CEMMSS): \$257 million
- Cyberinfrastructure Framework for 21st Century Science, Engineering, and Education (CIF21): \$100 million
- NSF Innovation Corps (I-Corps™): \$30 million
- Research at the Interface of Biological, Mathematical, and Physical Sciences (BioMaPS): \$30 million
- Science, Engineering, and Education for Sustainability (SEES): \$52 million
- Secure and Trustworthy Cyberspace (SaTC): \$150 million

NSF by the Numbers

\$8.0 billion	FY 2017 Budget Request
1,859	Colleges, universities, and other institutions receiving NSF funding in FY 2015
49,600	Proposals evaluated in FY 2015 through a competitive merit review process
12,000	Competitive awards funded in FY 2015
231,000	Proposal reviews conducted in FY 2015
350,000	Estimated number of people NSF supported directly in FY 2015 (researchers, postdoctoral fellows, trainees, teachers, and students)
51,800	Students supported by NSF Graduate Research Fellowships since 1952

ADVANCING INNOVATION AND ENABLING TOMORROW'S DISCOVERIES

- New 1-year mandatory funding of \$400 million will support NSF's core research activities that contribute to the Nation's science and technology enterprise.
- Funding will support more scientists and engineers early in their careers to quicken the pace of discovery and advance the leading edge of research and education.
- Funds will allow for about 800 new research grants, increasing NSF's FY 2017 funding rate to an estimated 23%.
- Funds will impact approximately 20,600 additional people, including senior researchers, postdocs, graduate and undergraduate students, and K-12 students and teachers.



For More Information:

NSF FY 2017 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

Investing in Science, Engineering,
and Education for the Nation's Future:
NSF Strategic Plan for 2014–2018
www.nsf.gov

Driving Federal Performance
www.performance.gov

FY 2017 PERFORMANCE GOALS

For FY 2017, NSF has set nine performance goals that will enable the agency to strategically monitor and oversee progress being made towards its larger aims. NSF also assesses progress through an annual process of strategic reviews of the objectives in its strategic plan. In FY 2017, NSF will perform strategic reviews and monitor the following goals.

Goal	Goal Statement
Agency Priority Goal: Improve Graduate Student Preparedness	Improve STEM graduate student preparedness for entering the workforce.
Agency Priority Goal: Invest Strategically in Public Participation in STEM Research (PPSR)	Build the capacity of the Nation to solve research challenges and improve learning by investing strategically in crowdsourcing and other forms of public participation in science, technology, engineering, and mathematics research.
Ensure that Key Program Investments are on Track	Monitor the progress of four investments using a set of common milestones and indicators: NSF INCLUDES; INFEWS; Risk and Resilience; and UtB.
Ensure that Infrastructure Investments are on Track	Ensure program integrity and responsible stewardship of major research facilities at varying stages of their lifecycle. In FY 2017, this goal involves monitoring the performance of construction projects.
Use Evidence to Guide Decisions	Use evidence-based reviews to guide management investments.
Make Timely Award Decisions	Inform applicants whether their proposals have been declined or recommended for funding within 182 days, or six months, of deadline, target, or receipt date, whichever is later.
Foster a Culture of Inclusion	Foster a culture of inclusion through change management efforts resulting in change leadership and accountability.
Evaluate NSF Investments	Enable consistent evaluation of the impact of NSF investments with a high degree of rigor and independence.
Increase the Percentage of Panelists Participating in Merit Review Virtually	Increase the percentage of proposal review panelists that participate virtually while maintaining the quality of the merit review process.

Note: STEM—Science, Technology, Engineering, and Mathematics

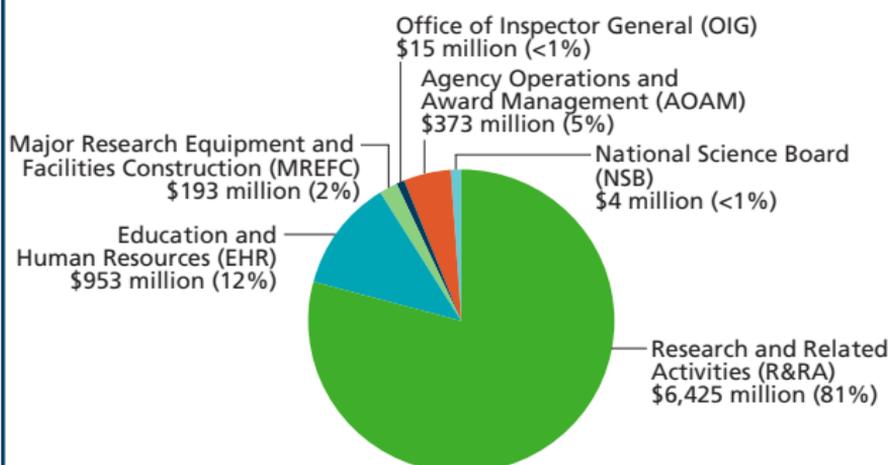


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FOLLOWING THE MONEY

WHERE IT COMES FROM

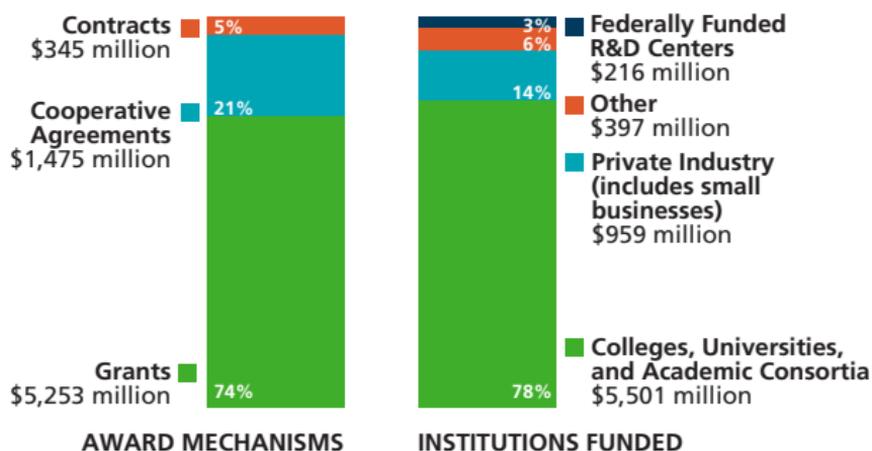
FY 2017 NSF Budget Request by Account—\$7,964 million



Note: The FY 2017 Request for NSF is \$7,964 million, of which \$7,564 million is discretionary funding and \$400 million is new mandatory funding. Totals may not add due to rounding.

WHERE IT GOES AND HOW IT GETS THERE

Obligations for Research and Education Programs—\$7,073 million



This chart shows the distribution of NSF's obligations by institution type and funding mechanism. While the data shown are based on FY 2015, the relative shares should provide a good indication of the FY 2017 distribution.

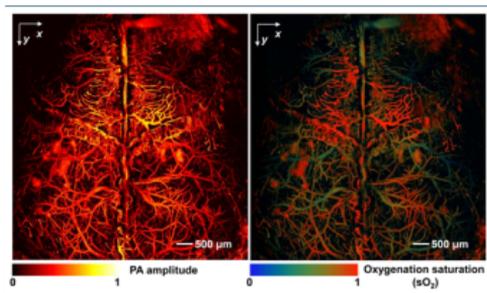
Note: NSF Research and Education Programs include R&RA, EHR, and MREFC appropriations. Other institutions funded include federal, state, and local governments; nonprofit organizations; and international organizations.
R&D=Research & Development.
Totals may not add due to rounding.

About the cover: This cover shows two of the winning images from The Vizzies Visualization Challenge available at http://www.nsf.gov/news/special_reports/scivis/. They are (top) a photograph of microscopic crystals found in a sea urchin's tooth and (bottom) an image showing the connectivity of a cognitive computer based on the macaque brain.

Cover image credits: Pupa U. P. A. Gilbert and Christopher E. Killian, University of Wisconsin, Madison (top); Emmett McQuinn, Theodore M. Wong, Pallab Datta, Myron D. Flickner, Raghavendra Singh, Steven K. Esser, Rathinakumar Appuswamy, William P. Risk, and Dharmendra S. Modha (bottom).

RESEARCH AND EDUCATION HIGHLIGHTS

Imaging the Brain in Real Time



Credit: Junjie Yao and Lihong Wang, WUSTL

NSF-funded researchers at Washington University in St. Louis (WUSTL) use laser light to peer into the brain to unprecedented depths (nearly 3 inches). The approach they pioneered, termed photoacoustic imaging, combines laser light and sound

waves. The technique allows the study of biological material, from cells to tissues and organs, in its natural environment, free of imaging agents. It detects single red blood cells as well as fats and proteins. The researchers are integrating the technique into a system to capture images every 1/1,000th of a second.

Hunting for Gravitational Waves

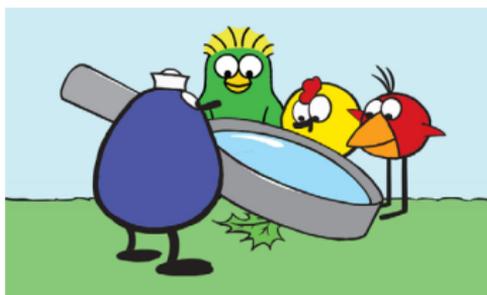


Credit: Cfoellmi via Wikimedia Commons

In May 2015, NSF dedicated the Advanced Laser Interferometer Gravitational-Wave Observatories (LIGO) in Washington state. Researchers using the facilities seek to observe and record gravitational waves for the first time. The Advanced LIGO

project represents a major upgrade expected to enhance the sensitivity of LIGO's instruments by a factor of at least 10 and can see a volume of space more than 1,000 times greater than the initial LIGO. The existence of gravitational waves is a crucial prediction of the General Theory of Relativity.

PBS Series Engages Latino Children in Math and Science



Credit: WGBH

Peep and the Big Wide World, an NSF-funded Emmy award-winning Public Broadcasting Service (PBS) series, developed an outreach campaign to encourage greater family involvement in children's exploration of math and science. A Spanish-speaking

character was added to the animated cast, and parents, including Spanish speakers, are now featured in the live-action videos. A study found that Spanish-speaking parents who used *Peep* resources with their preschool-age children were better equipped to facilitate science and math exploration. The parents reported feeling more inclined to do math and science activities with their preschoolers and said the resources are easy to understand, fun, and help them learn science alongside their children.