UNITED STATES

National Science Foundation

FY 2013 Performance and Financial Highlights

Who We Are and What We Do

- The mission of the National Science Foundation (NSF) is to promote the progress of science; to advance the national health, prosperity, and welfare; and to secure the national defense.
- NSF's vision is a nation that capitalizes on new concepts in science and engineering and provides global leadership in advancing research and education.
- NSF supports research and workforce development programs that help drive future economic growth, global competitiveness, and the creation of high-wage jobs for American workers.
- NSF seeks high-risk, potentially transformative projects that will generate pathbreaking discoveries and new technologies.
- NSF funds advanced instrumentation and facilities that enable state-of-the-art research, Arctic and Antarctic research and operations, and cooperative research between universities and industry as well as United States participation in international scientific efforts.

NSF BY THE NUMBERS	
$6.9 billion	FY 2013 Appropriations (does not include mandatory accounts)
1,922	Colleges, universities, and other institutions receiving NSF funding in FY 2013
49,000	Proposals evaluated in FY 2013 through a competitive merit review process
10,800	Competitive awards funded in FY 2013
233,000	Proposal reviews conducted in FY 2013
299,000	Estimated number of people NSF supported directly in FY 2013 (researchers, postdoctoral fellows, trainees, teachers, and students)
47,800	Students supported by NSF Graduate Research Fellowships since 1952

From the Director

Credit: Sandy Schaeffer

For more than 60 years, NSF's investments in science and engineering have led to important innovations that have been an indispensable driver of economic prosperity and increased national security. In FY 2013, discoveries and research outcomes supported by NSF include several outstanding "firsts," including the first indication of high-energy neutrinos from outside the solar system and the first successful drilling through the Antarctic ice sheet to reach a subglacial lake. The year also saw cloud-based computing advances that will allow for significant efficiencies in cancer research, as well as materials research innovation such as the first carbon nanotube computer. Recent applications of NSF-funded research include: the bionic eye, which won FDA market approval in 2013; new ways to rapidly detect infectious disease agents in the field or at home; and tools and activities designed to promote STEM education.

Like all federal agencies, in FY 2013, NSF was challenged by the funding constraints resulting from sequestration. While NSF was able to largely mitigate the impact of sequestration on agency activities and operations, we nevertheless remain deeply concerned about the agency's long-term ability to appropriately support U.S. science and engineering research and education should these constraints persist. The programmatic impact of sequestration was seen principally in a reduced number of new awards. On the management front, the agency pursued a range of operational efficiencies.

NSF's *Annual Performance Report*, which is included in the agency's *FY 2015 Budget Request to Congress*, includes a full discussion of NSF's progress toward its annual performance goals. In FY 2013, NSF achieved 9 of its 18 performance goals, including all three priority goals. As in past years, all NSF peformance information has been reviewed by an independent, external consultant using guidelines for completeness and reliability from the Government Accountability Office. I refer you to NSF's *FY 2013 Agency Financial Report* and web site (www.nsf.gov) to learn more about the Foundation and the exciting results from our investments in science and engineering research and education.

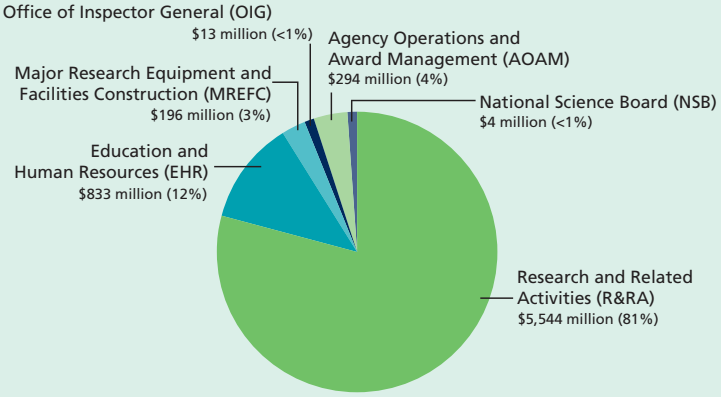
Cora B. Marrett

Cora B. Marrett
Acting Director

Following the Money

WHERE IT COMES FROM

FY 2013 Appropriations by Account—$6,884 million

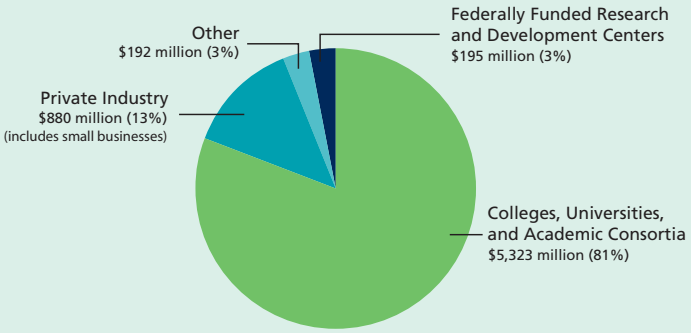


Note: Major Research Equipment and Facilities Construction includes a transfer of $12.5 million from the Research and Related Activities account. Agency Operations and Award Management includes a transfer of $13.4 million from the Research and Related Activities account and a transfer of $2.0 million from the Education and Human Resources account. These transfers were authorized by P.L. 113-6, *Consolidated and Further Continuing Appropriations Act, 2013*. Totals may not add due to rounding.

WHERE IT GOES

INSTITUTIONS FUNDED BY NSF

FY 2013 Obligations for Research and Education Programs—$6,590 million

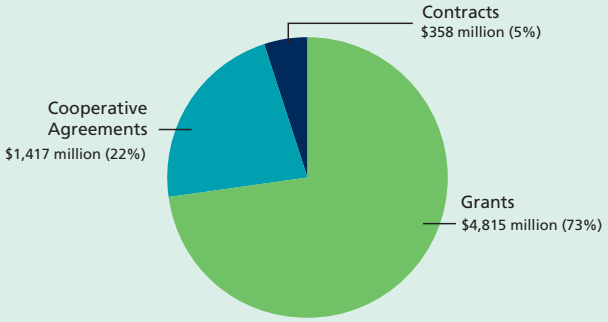


Note: NSF Research and Education Programs include Research and Related Activities, Education and Human Resources, and Major Research Equipment and Facilities Construction appropriations. Other institutions funded include federal, state, and local governments; nonprofit organizations; and international organizations. Totals may not add due to rounding.

HOW IT GETS THERE

NSF AWARD MECHANISMS

FY 2013 Obligations for Research and Education Programs—$6,590 million



Note: NSF Research and Education Programs include Research & Related Activities, Education and Human Resources, and Major Research Equipment and Facilities Construction appropriations. Totals may not add due to rounding.

- NSF is funded primarily through six congressional appropriations, which totaled $6,884 million in FY 2013. R&RA, EHR, and MREFC fund the agency's programmatic activities and account for 95 percent of NSF's total appropriations. The AOAM appropriation provides funds to administer and manage those programmatic activities. Separate appropriations are provided to support the activities of the OIG and NSB.

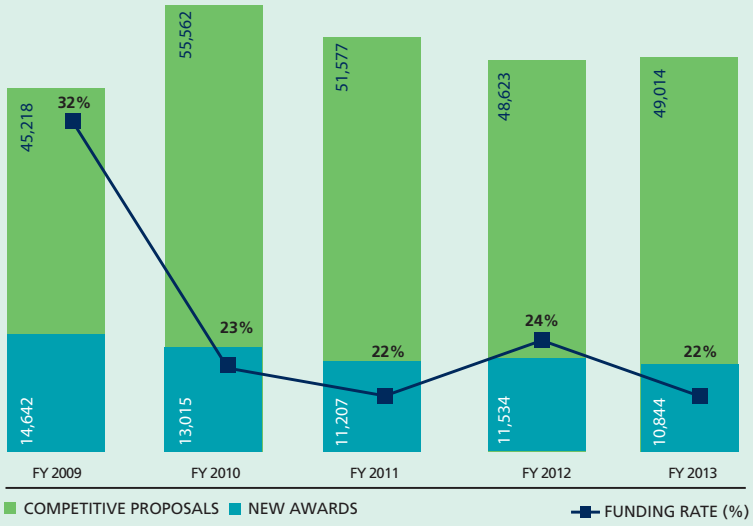
- In FY 2013, 89 percent of research funding was allocated based on competitive merit review. Nearly 37,000 members of the science and engineering community participated in the merit review process as panelists and proposal reviewers. Awards were made to 1,922 institutions in 50 states, the District of Columbia, and 3 U.S. territories. These institutions employ America's leading scientists, engineers, and educators and train the leading-edge innovators of tomorrow.

- Eighty-one percent of NSF awards were to academic institutions, including colleges, universities, and academic consortia. Awards were also provided to federally funded research and development centers and private industry, including small businesses. Other recipients include federal, state, and local governments; nonprofit organizations; and international organizations. A small number of awards are for international research collaborations that add value to the U.S. scientific enterprise.

- Most NSF awards (95 percent) were funded through grants or cooperative agreements. Grants can be funded either as standard awards, in which funding for the full duration of the project is provided in a single fiscal year, or as continuing awards, in which funding for a multi-year project is provided in increments. Cooperative agreements are used when the project requires substantial agency involvement (e.g., research centers, multi-use facilities). Contracts are used to acquire products, services, and studies (e.g., program evaluations) required primarily for NSF or other government use.

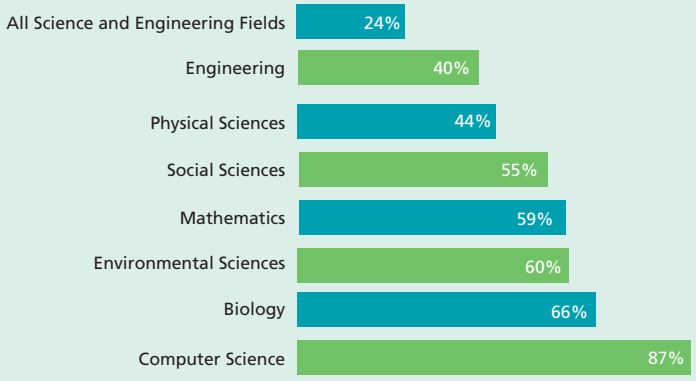
HOW IT'S SPENT

NUMBER OF NSF COMPETITIVE PROPOSALS, NEW AWARDS, AND FUNDING RATES



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 2011

- In FY 2013, the number of proposals competitively reviewed by NSF increased by almost 400, from 48,623 in FY 2012 to 49,014.
- The number of new awards decreased by 6 percent (690) to 10,844. The number of new awards is the lowest since FY 2006. This decrease is in line with the overall reduction of 2.1 percent in total NSF funding from FY 2012 to FY 2013.
- The decrease in new award actions coupled with an 0.8 percent increase in the number of competitive proposals resulted in a funding rate of 22 percent.
- It is estimated that in FY 2013, 299,000 people were directly involved in NSF programs and activities, receiving salaries, stipends, or participant support. Moreover, NSF programs indirectly impact millions of people. These programs reach K-12 students and teachers, the general public, and researchers through activities including workshops; informal science activities such as museums, television, videos, and journals; outreach efforts; and dissemination of improved curriculum and teaching methods.
- NSF's accounts for 24 percent of the total federal budget for basic research conducted at U.S. colleges and universities, and this share increases to 60 percent when medical research supported by the National Institutes of Health is excluded. In many fields NSF is the primary source of federal academic support.

FY 2013 FINANCIAL MANAGEMENT PERFORMANCE RESULTS

	RESULTS
Financial Statement Audit*	
• Unqualified opinion (16th consecutive "clean" opinion)	Yes
• Material weaknesses	None
Management Assurances	
• Effective internal control over financial reporting (FMFIA §2)	Yes
• Effective internal control over operations (FMFIA §2)	Yes
• Conformance with financial management system requirements (FMFIA §4)	Yes
• Compliance with FFMIA: system requirements, accounting standards, and U.S. General Ledger at transaction level	No noncompliances noted
Timely financial reporting (Treasury/Financial Management Service Quarterly Scorecard)	Yes
Improper Payments Elimination and Recovery Act of 2010	Partial compliance**
Number of grant payments processed in FY 2013	27,649

*NSF's FY 2013 Independent Auditors' Report can be found in NSF's *FY 2013 Agency Financial Report*.
**See NSF's *FY 2013 Agency Financial Report*, Appendix 2.
FMFIA: Federal Managers Financial Integrity Act of 1982
FFMIA: Federal Financial Management Improvement Act of 1996

How We Are Doing: Performance Results

In FY 2013, NSF tracked progress toward its 3 strategic goals using 15 annual performance goals, and toward 3 priority goals. All program activities within the agency were covered by the 15 goals used to monitor the 3 strategic goals. Out of the total of 18 goals in FY 2013, 9 were achieved and 9 were not achieved. NSF's *FY 2013 Annual Performance Report* provides a comprehensive discussion about each of the agency's performance measures, including descriptions of the metrics, methodologies, results, and trends, along with a list of relevant external reviews. For more information about the three priority goals, see the federal performance website at www.goals.performance.gov.

PRIORITY GOAL	STATUS/FY 2013 MILESTONES ACHIEVED
Undergraduate Programs: By September 30, 2013, 80 percent of institutions funded through NSF undergraduate programs will document the extent of use of proven instructional practices.	**This goal was achieved.** At the start of FY 2013, there were 933 institutions funded through NSF undergraduate programs with active awards. Of these, 808 (86.6 percent) documented the use of proven instructional practices, defined as "methods of teaching and instruction, primarily for STEM disciplines, that have been researched and tested, and have resulted in successful learning outcomes, on a repeated basis, by subject matter experts and authoritative sources."
Innovation Corps (I-Corps): 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.	**This goal was achieved.** The 80 percent goal was met for each cohort that went through the program, for an overall completion rate of 98.7 percent. By the end of FY 2013, 233 teams—699 individuals—had received training in entrepreneurship.
Access to Digital Products: 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.	**This goal was achieved.** NSF identified a number of testbed projects that increase opportunities for research and education through different approaches to public access. NSF determined that at least two testbeds, DataONE (www.dataone.org) and nanoHUB (nanoHUB.org), have made significant contributions to their scientific domains and increased opportunities for access to high-value digital products of NSF-funded research.

STRATEGIC GOAL			FY 2012–FY 2013 PERFORMANCE GOAL*	RESULTS
	Transform the Frontiers	1	T-1.1 **INSPIRE.** Strengthen support of unusually novel, potentially transformative, interdisciplinary research.	Not Achieved
		2	T-2.1 **Priority Goal, Undergraduate Programs.** Develop a diverse and highly qualified science and technology workforce.	Achieved
		3	T-2.2 **Career-Life Balance.** Promote Career-Life Balance policies and practices that support more fully utilizing the talents of individuals in all sectors of the American population.	Not Achieved
		4	T-3.1 **International Implications.** Increase proportion of new NSF solicitations, announcements, and Dear Colleague Letters that have international implications.	Achieved
		5	T-4.1 **Construction Project Monitoring**. For all MREFC facilities under construction, keep negative cost and schedule variance at or below 10 percent.	Not Achieved
		6	T-4.2 **Priority Goal, Access to Digital Products.** Increase opportunities for research and education through public access to high-value digital products of NSF-funded research.	Achieved
	Innovate for Society	7	I-1.1 **Priority Goal, Innovation Corps.** Increase the number of entrepreneurs emerging from university laboratories.	Achieved
		8	I-1.2 **Industrial Innovation and Partnerships.** Identify the number and types of partnerships entered into by Industrial Innovation and Partnerships Division grantees.	Achieved
		9	I-2.1 **Public Understanding and Communication.** Establish a common set of evidentiary standards for programs and activities across the agency that fund public understanding and communication of science and engineering activities.	Not Achieved
		10	I-2.2 **K-12 Scale-up.** Establish a common set of evidentiary standards for programs across the agency that fund activities with K-12 components.	Not Achieved
		11	I-3.1 **Innovative Learning Systems.** Integrate common language about, or goals for, innovative learning research into programs across the agency that fund innovative learning tools, structures, and systems.	Not Achieved
	Perform as a Model Organization	12	M-1.1 **Model EEO Agency.** Perform activities necessary to attain essential elements of a model EEO agency as defined by the Equal Employment Opportunity Commission, and contribute to the drafting of NSF's first Diversity and Inclusion Strategic Plan.	Achieved
		13	M-1.2 **IPA Performance Plans.** Include assignees on temporary appointment to NSF under the Intergovernmental Personnel Act (IPAs) under an NSF performance management system.	Not Achieved
		14	M-1.3 **Performance Management System.** Use findings from assessments to guide improvement of NSF's employee performance management systems.	Not Achieved
		15	M-2.1 **Assess Developmental Needs.** Enhance NSF capabilities to provide training of staff for their current positions.	Not Achieved
		16	M-3.1 **Financial System Modernization.** Upgrade NSF's financial system.	Achieved
		17	M-3.2 **Time to Decision.** Inform applicants whether their proposals have been declined or recommended for funding within 6 months of deadline, target date, or receipt date, whichever is later.	Achieved
		18	M-3.3 **Virtual Panels.** Expand the use of virtual merit review panels.	Achieved

STEM: Science, Technology, Engineering, and Mathematics; INSPIRE: Integrated NSF Support Promoting Interdisciplinary Research and Education; EEO: Equal Employment Opportunity.
*More detailed information about the goals and results can be found in NSF's *FY 2013 Annual Performance Report.*

Management Challenges

For FY 2013, the NSF Office of Inspector General (OIG) identified eight management and performance challenges facing the agency, several repeated from the prior year: Establishing accountability over large cooperative agreements, improving grant administration, strengthening contract administration, ensuring proper stewardship of American Recovery and Reinvestment Act funds, managing the U.S. Antarctic Program, implementing recommendations to improve workforce management and the workplace environment, encouraging the ethical conduct of research, and managing programs and resources in times of budget austerity. The OIG's memorandum on FY 2013 Management Challenges can be found in NSF's *FY 2012 Agency Financial Report*. Management's report on the significant activities undertaken in FY 2013 to address these challenges is included in NSF's *FY 2013 Agency Financial Report*.

For more information

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

NSF FY 2013 Agency Financial Report
www.nsf.gov/pubs/2014/nsf14002

NSF FY 2013 Annual Performance Report
www.nsf.gov/about/budget/fy2015
(see Performance chapter))
www.goals.performance.gov/agency/nsf

Report to the NSB on NSF's Merit Review Process, FY 2012
www.nsf.gov/nsb/publications/pub_summ.jsp?ods_key=nsb1333

NSF Research and Education Highlights and Discoveries
www.nsf.gov/discoveries

NSF FY 2013 Progress Report on OIG Management Challenges
www.nsf.gov/pubs/2014/nsf14002 (see Appendix 3B)

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

Investing in Science, Engineering, and Education for the Nation's Future, NSF Strategic Plan for 2014-2018
www.nsf.gov/about/performance/strategic_plan.jsp

FY 2013 NSF Senior Management

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Kelvin K. Droegemeier, Vice Chair

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John C. Wingfield, Assistant Director

Directorate for Computer and Information Science and Engineering
Farnum Jahanian, Assistant Director

Directorate for Education and Human Resources
Joan Ferrini-Mundy, Assistant Director

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Office of the General Counsel
Lawrence Rudolph, General Counsel

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Allison C. Lerner, Inspector General

Office of International and Integrative Activities
Wanda Ward, Office Head

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Judith Gan, Office Head

Office of Budget, Finance and Award Management
Martha A. Rubenstein, Office Head

Office of Information and Resource Management
Eugene Hubbard, Office Head

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Martha A. Rubenstein (Office of Budget, Finance and Award Management)

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José Muñoz

Chief Information Officer
Amy Northcutt (Office of Information and Resource Management)

NSF Affirmative Action Officer
Claudia J. Postell (Office of Diversity and Inclusion)

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Massachusetts Institute of Technology

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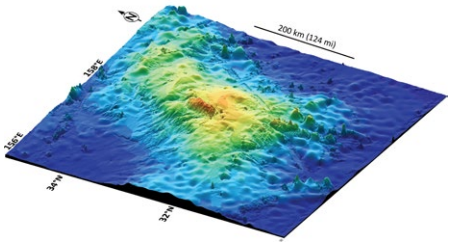
Acting Director, National Science Foundation

Michael L. Van Woert,
Executive Officer and Director
National Science Board Office

Research and Education Highlights

Largest Single Volcano on Earth: Scientists in 2013 confirmed that the Northwest Pacific is home to the largest single volcano yet documented on Earth. Covering an area roughly equivalent to the British Isles or the State of New Mexico, Tamu Massif is nearly as big as the giant volcanoes of Mars, placing it among the largest in the solar system. The researchers used several sources of evidence, including core samples and data collected on board the JOIDES Resolution. This research sheds new light on the nature of oceanic volcanos, how oceanic plateaus form, and the mantle-crust system. For more information see www.nsf.gov/news/news_summ.jsp?cntn_id=128991.

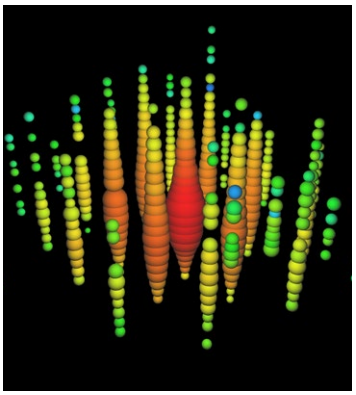


Credit: Will Sager

Credit: TACC

Stampede: In 2013, NSF dedicated a world-class supercomputer called Stampede. Even before the official launch, the computer had enabled research teams to predict where and when earthquakes may strike, how much sea levels could rise, and how fast brain tumors grow. Stampede is a cornerstone of NSF's investment in an integrated advanced cyberinfrastructure, which empowers America's scientists and engineers to share advanced computational resources, data, and expertise. For more information, see www.nsf.gov/news/news_summ.jsp?cntn_id=127194.

South Pole Observatory Detects High-Energy Neutrinos: Researchers using the IceCube Neutrino Observatory, a massive particle detector buried in Antarctic ice at the U.S. Amundsen-Scott South Pole Station, have opened a new era in astrophysics, with what *Physics World* magazine named as the 2013 "Breakthrough of the Year." The NSF-funded, international IceCube Collaboration announced the observation of 28 very high-energy neutrinos, constituting the first observational evidence for astrophysical neutrinos from cosmic accelerators, a development that has long been anticipated by theorists and experimentalists. Because they rarely interact with matter, neutrinos, nearly mass-less subatomic particles, can carry information about the workings of the highest-energy and most distant phenomena in the universe. Far rarer are neutrinos from the outer reaches of the Milky Way or beyond, which have long been theorized to provide insights into the powerful cosmic objects, such as black holes, where high-energy cosmic rays may originate. For more information see www.nsf.gov/news/news_summ.jsp?cntn_id=128248 and https://icecube.wisc.edu.



Credit: IceCube Collaboration

Credit: University of Kansas

SHIFT Inspires Biofuels Innovation: To help teachers relate lessons to real-world needs, the University of Kansas developed the Shaping Inquiry from Feedstock to Tailpipe (SHIFT) program. The summer program engages high school and community college educators in the topic of biofuels—everything from how biofuels are made to how they burn and their impact on the environment. Participants create and share lesson plans and activities and each participant receives a $100 tool kit to teach the new activities. Throughout the year, the teachers continue to collaborate on the lessons, which are inspiring students to seek new opportunities in biofuels research. One student group's energy exhibit won first place—and a $50,000 award—in the Burns and McDonnell "Battle of the Brains" competition, and a Kansas City-based science center is developing a hands-on exhibit based on their work.

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We welcome your comments on how we can make this report more informative. Please submit them to *Accounta@nsf.gov*.