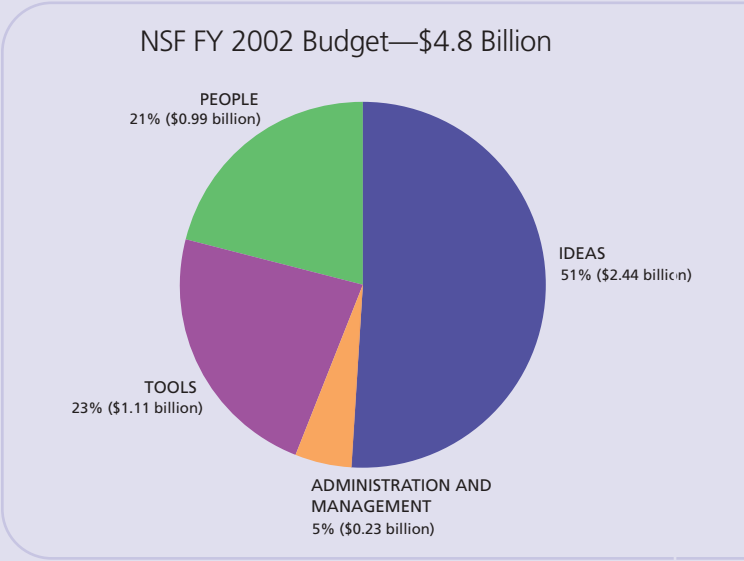
Expanding Frontiers

The National Science Foundation (NSF), as steward of America's science and engineering enterprise, promotes and advances the progress of science and engineering in the United States. Although NSF represents only 4 percent of the total federal budget for research and development, it accounts for 20 percent of total federal funding of basic research and 40 percent of federal support for nonmedical basic research at colleges and universities.



For more than 50 years, NSF has had an extraordinary impact on America's scientific and engineering knowledge and capacity. NSF investments have helped train generations of outstanding researchers and educators, among them scores of Nobel laureates; advanced knowledge across the frontiers of all science, mathematics, and engineering disciplines; fueled innovation; contributed to productivity gains and economic growth; and enhanced the quality of the environment as well as the quality of human health and well-being.

Moreover, in the aftermath of the events of September 11, 2001, investments to promote and support research and development are critical for achieving America's highest priority—to reduce vulnerability to terrorism and make the nation safer. Research can lead to better equipment for rescue workers, such as more protective gear and sensors to alert them to chemical or other hazards in disaster areas. Research can also lead to improved critical infrastructures such as city water reservoirs, communications networks, and transportation systems that can better thwart sabotage; and buildings can be re-engineered to be more blast and fire resistant. Not since World War II have NSF's efforts to catalyze progress in science and engineering been more important for securing the nation's future.

People. Ideas. Tools.

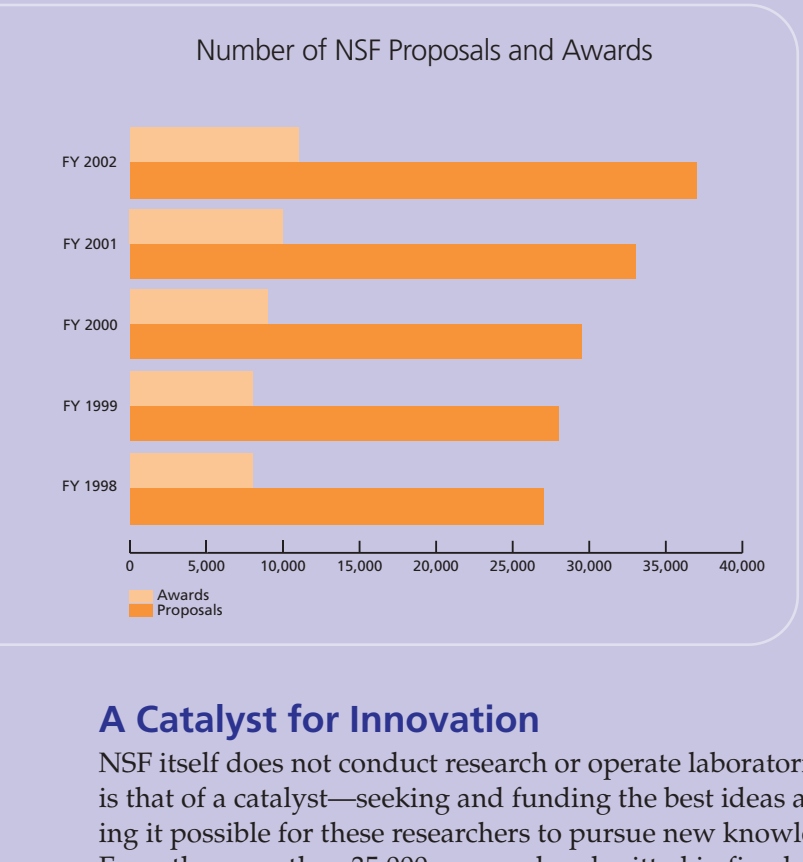
To promote the progress of science, NSF invests in three strategic areas.

People: NSF facilitates the creation of a diverse, internationally competitive, and globally engaged workforce of scientists, engineers, and well-prepared citizens by supporting efforts to improve formal and informal science, mathematics, engineering, and technology education at all levels.

Estimated Number of People Involved in NSF Activities in FY 2002	
Senior Researchers	28,000
Other Professionals	11,000
Postdoctoral Associates	6,000
Graduate Students	26,000
Undergraduate Students	32,000
K–12 Students	11,000
K–12 Teachers	84,000
TOTAL	198,000

NSF also supports public science literacy projects that engage people of all ages in lifelong learning. NSF investments support nearly 200,000 people, including students, teachers, researchers, postdoctorates, and trainees.

Ideas: Investments in ideas support cutting-edge research and education that yield new and important discoveries and promote the development of new knowledge and techniques within and across traditional boundaries. These investments help ensure that America's academic institutions remain at the forefront of the science and engineering enterprise.



Tools: NSF investments provide state-of-the-art tools for research and education, such as instrumentation and equipment, multiuser facilities, digital libraries, accelerators, telescopes, research vessels and aircraft, and earthquake simulators. NSF also supports large surveys and databases, as well as computation and computing infrastructure for all fields of science, engineering, and education. Support for these unique national facilities is to advancing U.S. research and education.

A Catalyst for Innovation

NSF itself does not conduct research or operate laboratories. Instead, the Foundation's role is that of a catalyst—seeking and funding the best ideas and the most capable people, making it possible for these researchers to pursue new knowledge, discoveries, and innovation. From the more than 35,000 proposals submitted in fiscal year (FY) 2002, more than 10,400 awards were made to about 1,800 colleges, universities, and other public and private institutions throughout the United States.

Nearly 90 percent of NSF funding is allocated through a merit-based competitive process that is critical to fostering the highest standards of excellence and accountability—standards for which NSF is known the world over. Reviewers focus on two primary criteria—the intellectual merit of the proposed activity and its broader impacts, such as on teaching, training, and learning. Reviewers also consider how well the proposed activity fosters the integration of research and education and broadens opportunities to include a diversity of participants, particularly from underrepresented groups.

Doing Business Efficiently and Effectively

NSF is recognized as a well-run agency with a long record of success in managing the resources entrusted to it. Pursuing more effective and efficient core management operations is a long-standing priority for the agency. Although NSF's budget has nearly doubled in the past 10 years, the agency's staffing level has remained relatively constant. Maintaining operations overhead at 5 percent of the agency's budget is an ongoing challenge, as workload has grown more complex with involvement in more multidisciplinary, partnership, and international activities, as well as new large research facility projects. The agency has accommodated its increased funding and programmatic responsibilities by leveraging its agile, motivated workforce and continuing to re-engineer business processes to enhance productivity. NSF is a recognized leader in financial management, particularly in its use of advanced information technologies to improve internal operations and business transactions with the academic research community. Currently, NSF is the only federal research agency routinely receiving and processing virtually all its proposals electronically.

President's Management Agenda Scorecard	Baseline 9/30/2001	Status 9/30/2002	Progress FY 2003 Qtr 1
Human Capital	R	R	G
Competitive Sourcing	R	R	R
Financial Management	G	G	G
Expanding E-Government	Y	G	G
Budget and Performance Integration	R	R	Y

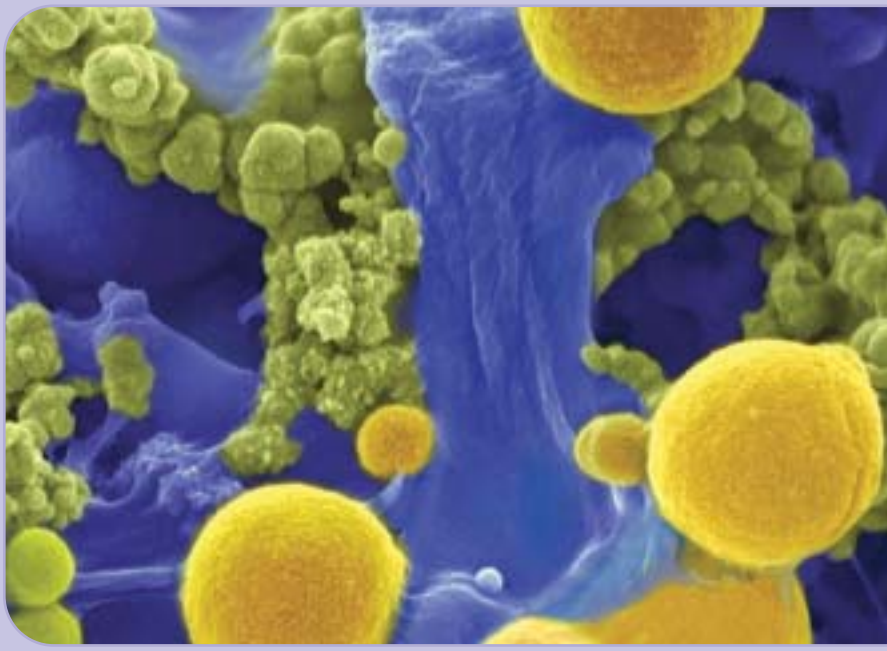
Note: Green represents success; yellow is for mixed results; and red means unsatisfactory. Ratings were issued by the Office of Management and Budget. For more detailed information on the standards of success for each of the President's Management Agenda initiatives, see *www.whitehouse.gov/omb/budget/fy2003/msr06.html*.

Last year, the President's Management Agenda (PMA) launched a government-wide effort to improve the management, performance, and accountability of federal agencies. An Executive Management Scorecard is now issued quarterly by the Office of Management and Budget (OMB) to track the progress of agencies in meeting specific criteria under the initiatives that constitute the PMA. At year-end, NSF maintained its "green" successful status for Financial Performance and received a second "green" for E-Government. For the second consecutive year, NSF remains the only federal agency to receive a green rating for any of the PMA initiatives. Although NSF did not fully meet the standards for success for the Strategic Management of Human Capital, Competitive Sourcing, and Budget and Performance Integration initiatives, it has made progress and has worked with OMB to develop a framework for "getting to green" in future years. NSF's newly developed *Strategic Plan for Administration and Management* will serve as the blueprint for achieving success in all five PMA initiatives.

Doing more with less and working smarter by instituting more efficient and cost-effective business processes have always been hallmarks of the Foundation. In FY 2002, NSF retooled a number of business processes, which yielded significant cost savings. Conservative estimates put the savings from these cost efficiencies at more than $500,000. These new business processes included electronic dissemination of information, which resulted in significant savings in both printing and mailing costs. The use of electronic signatures, videoconferencing, and implementation of an online self-booking travel tool resulted in considerable savings as well.

NSF also focused considerable efforts on enhancing customer service. In FY 2002, 94 percent of all NSF program announcements were available at least three months before the proposal due date and 74 percent of proposals were processed within six months of submission. Both results were significant accomplishments that represented a yearlong focused effort by staff across the Foundation.

In FY 2002, NSF also made significant progress in awards management and in the management and oversight of large facilities. NSF developed a risk-based awards monitoring program and a best practices guide for managing and overseeing large facilities projects. Also, in anticipation of upcoming accelerated reporting requirements, NSF re-engineered its GPRA (Government Performance and Results Act) reporting and assessment process. A new Advisory Committee for GPRA Performance Assessment was established and met in the fall to evaluate FY 2002 strategic outcomes. The committee's final report called the new process "a positive and welcome change," suggested improvements in the process, and recommended that the committee continue to evaluate the results of NSF's investments.



Biofilms of sulfate-reducing bacteria (blue) growing in dilute groundwater (~ 1 ppm dissolved zinc) produce ZnS nanoparticles that aggregate to form micron-diameter spheres (green and gold). This process contributes to groundwater remediation and may play a role in ore deposit formation. This research is funded by NSF and the U.S. Department of Energy.

Photo courtesy of *Science*, Volume 290, Number 5497 (December 1, 2000) and J.F. Banfield, S.A. Welch, M. Diman, and M. Labrenz