

Right: Results of a new study provide the first clear proof that global warming is causing outbreaks of an infectious disease that is wiping out entire frog populations and driving many species to extinction.

Published in the January 12, 2006, issue of the journal *Nature*, the study reveals how the warming may alter the dynamics of a skin fungus that is fatal to amphibians. The climate-driven fungal disease, the authors say, has hundreds of species around the world teetering on the brink of extinction or has already pushed them into the abyss.

According to NSF-funded researcher J. Alan Pounds, the study's lead scientist affiliated with the Tropical Science Center's Monteverde Cloud Forest Preserve in Costa Rica, climate change-induced disease is killing the frogs. Pounds notes that global warming is wreaking havoc on amphibians and soon will cause staggering losses of biodiversity. According to Bruce Young, a zoologist at NatureServe who took part in the study, the good news is that these new findings open up avenues of research, which could provide scientists with the means to save the amphibians that still survive.

For more information:

www.nsf.gov/news/news_summ.jsp?cntn_id=105707&org=OISE&from=news



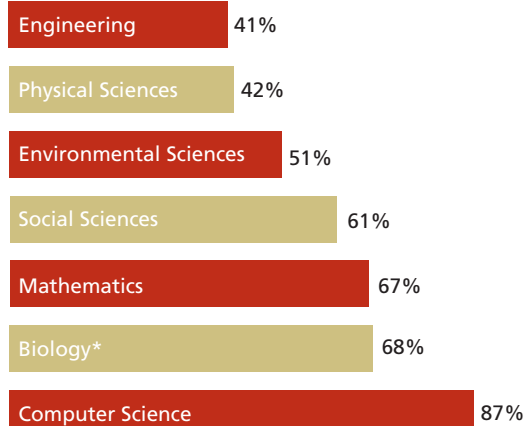
ADVANCING THE FRONTIER

The National Science Foundation (NSF) is the steward of America's science and engineering enterprise. Our mission is to promote and advance the progress of research and education in science and engineering in the United States by supporting all fields of fundamental science and engineering. While the agency's \$5.6 billion budget represents only about 4 percent of the total federal budget for research and development, NSF provides nearly half of the federal support for nonmedical basic research at the nation's academic institutions.

In many fields, including computer science, mathematics, environmental sciences, the social sciences, and nonmedical biology, NSF is the primary source of federal academic support for basic research. The support of academic research is critical to sustaining future generations of world-class scientists and engineers who will develop the ideas and research tools needed to address the challenges we face now and in the future. Although NSF does not directly fund medical research, its support of basic research benefits

medical science and related industries, leading to advances in diagnosis, regenerative medicine, drug delivery, and pharmaceutical design and processing.

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



*Excludes the National Institutes of Health

Public Benefits of a Strong Science and Technology Enterprise

The results of U.S. investments in science and technology have long driven economic growth and improved the quality of life for successive generations. Science and technology have generated new knowledge and industries, created new jobs, provided new sources of energy, developed new modes of communication and transportation, and improved medical care. This process of scientific discovery and innovation has been critical to increasing the nation's productivity and sustaining economic growth. Today, more nations follow our lead in investing in science and technology, so the United States, in keeping with the President's American Competitiveness Initiative, must maintain its leadership in scientific discovery and new technologies in order to remain globally competitive.

NSF's unique task is to search out the frontiers of science and engineering and to foster high risk endeavors that will generate important discoveries and new technology. Despite its small size, NSF has had an extraordinary impact on the nation's scientific knowledge and capacity. NSF has funded the groundbreaking research of nearly 200 Nobel Prize winners and numerous other distinguished scientists and engineers. Moreover, not since World War II have advances at the frontiers of knowledge been more critical for national security. Advanced capability in materials science research, sensors and sensor network architecture, genomics, cyber-security, and data mining, as well as knowledge of human and social dynamics, have a direct impact on present and future homeland security systems and capacity.

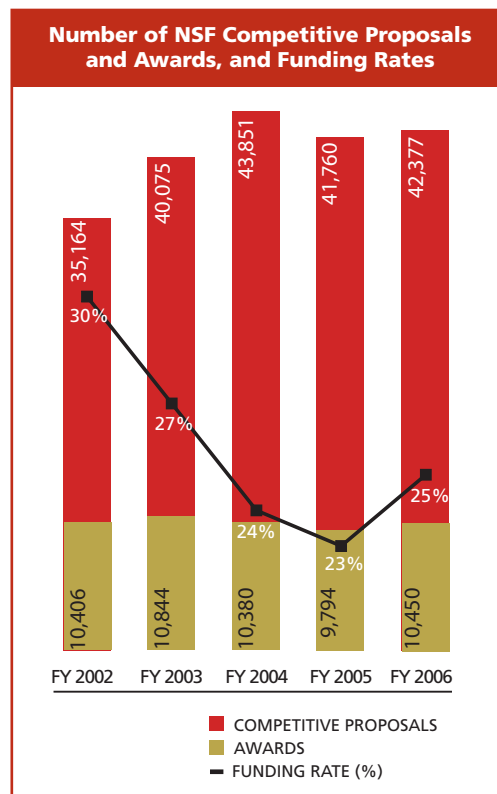
In the "Where Discoveries Begin" sidebars throughout this report are examples that illustrate the impact and success of NSF's investments in discovery, innovation, and education. The results of many of NSF-supported projects appear long after the initial investment; the discoveries highlighted here are the outcome of long-term support of research and education projects that emerged and were reported in FY 2006.

A Catalyst for Innovation

NSF directly supports scientists, engineers, and educators through their home institutions, usually colleges and universities. With the exception of polar operations, NSF does not maintain its own facilities or laboratories. Rather, NSF is a catalyst for innovation, seeking and funding the best ideas and most capable people and making it possible for them to pursue new knowledge, discoveries, and innovation.

In FY 2006, NSF received 42,377 proposals and funded 10,450 new awards to more than 1,700 colleges, universities, and other public institutions throughout the country. Nearly 90 percent of NSF funding was allocated through a merit-based competitive process that is critical to fostering the highest standards of excellence. NSF's merit review process is recognized throughout the federal government as the gold standard for responsible use of public funds. Each year, 42,000 members of the science and engineering community serve as panelists and proposal reviewers.

In FY 2006, NSF awards directly involved nearly 170,000 people, including senior researchers, postdoctoral associates, teachers, and students from kindergarten through graduate



INTERNATIONAL POLAR YEAR



A concerted worldwide effort is underway to plan scientific and educational activities for the upcoming International Polar Year (IPY). Scheduled to officially begin in March 2007, IPY promises to advance our understanding of how the Earth's remote polar regions impact global climate systems, to bring about fundamental advances in many areas of science, and to fire the enthusiasm of young men and women for future careers in science and engineering.

The photograph above shows Aurora Australis, the Southern lights, over NSF's station at the South Pole. This image shows the atmospheric phenomenon over a wing of the new station that NSF is building. The new station, adjacent to the existing station, will replace the aluminum dome that has housed NSF's scientific facilities since the 1970s.

For more information:
www.us-ipy.gov/
www.nsf.gov/dir/index.jsp?org=OPP

WETLANDS RESTORATION



To assist managers in assessing the tradeoffs among different wetland restoration projects, an interdisciplinary team at the University of Rhode Island has developed a method to estimate the public benefits of each one.

The team, which included both social scientists and natural scientists, worked in close collaboration with state officials. They first linked how the physical attributes of wetlands contribute to habitat functions for various species, and then identified public values associated with changes in salt marsh functions. Public values were assessed regarding habitat, mosquito control, recreational access, and cost. Based on their results, the team created a web-based application that can be used by decision makers and the public to assess and prioritize restoration actions.

For more information:
<http://simlab.uri.edu/saltmarsh/>

school. NSF's investment portfolio is a rich mix of programs and partnerships that reach broad and diverse segments of the science and engineering research and education community, as well as the general public. NSF also supports a variety of informal science educational projects that reach millions of children and adults through films, museum exhibits, innovative television programs, radio shows, and web-based resources.

Commitment to Excellence

NSF is widely acknowledged as a high performing organization with a reputation for responsible stewardship of the nation's investments in science and engineering. The Foundation has a long record of success in leveraging its agile, motivated workforce, management processes, and technological resources to enhance productivity and effectiveness. Historically, about 95 percent of NSF's budget supports the conduct of research and education, with administrative overhead accounting for only about 5 to 6 percent.

People Involved in NSF Activities (estimated numbers for FY 2006)	
Senior Researchers	32,000
Other Professionals	11,000
Postdoctoral Associates	5,000
Graduate Students	26,000
Undergraduate Students	27,000
K-12 Students	8,000
K-12 Teachers	59,000
TOTAL	168,000

NSF's commitment to excellence is evident in a number of achievements in FY 2006. The President's Management Agenda (PMA) is a government-wide effort to improve the management, performance, and accountability of federal agencies. In the fourth quarter of FY 2006, NSF was one of only five agencies to achieve "Green" status in four or more of the five primary initiatives. NSF was also one of only three agencies to achieve "Green" status on the Eliminating Improper Payments initiative. As a result of reporting low improper payments in FY 2004 and FY 2005, the Office of Management and Budget (OMB) has moved NSF from an annual to a three-year reporting cycle. In OMB's annual review of federal programs using the Program Assessment Review Tool (PART), all the NSF programs that have been evaluated under the FY 2006 strategic plan are among the 15 percent government-wide that have received the highest "Effective" rating.

NSF has long been recognized as a leader in the use of information technology, actively promoting simpler, faster, more accurate, and less expensive electronic business solutions. Virtually all of NSF's business interactions with the external grantee community have been conducted electronically since 2000. In a review of federal agency IT security practices conducted by the U.S. House Committee on Government Reform in March 2006, NSF was among five agencies that received an "A" rating. After co-chairing the Grants Management Line of Business (GMLoB) task force to develop a government-wide solution to support end-to-end grants management activities, OMB selected NSF as one of three initial "Consortia" service providers.

Meeting Future Opportunities and Challenges

NSF is well positioned to maximize the opportunities and face the challenges of the future. The President's American Competitiveness Initiative (ACI) outlines a 10-year doubling of investments in NSF and other agencies that are the principal supporters of the physical sciences and engineering. To fulfill its ACI obligations, NSF will direct its funding toward generating fundamental discoveries that produce valuable and marketable technologies, providing world-class facilities and infrastructure that will transform research and enable discovery, and helping the nation's science, technology, engineering, and mathematics workforce prepare for the 21st century while improving the quality of math and science education in U.S. schools.

As it pursues these activities, NSF will seek partners and nurture cooperation among government, industry, and academia. With discoveries emerging in many countries, it is essential that



U.S. scientists and engineers have the opportunity to interact with other top researchers, to lead major international collaborations, and to have access to the best research facilities throughout the world. With offices in Paris, Tokyo, and Beijing (the Beijing office was established in the spring of 2006), NSF can more effectively participate in the international arena and facilitate education initiatives that will help build greater capacity for multinational collaboration. As the lead federal agency for the National Nanotechnology Initiative, NSF will continue to provide critical support for efforts in fundamental nanoscale science and engineering. As the lead federal agency for the International Polar Year project that runs from March 2007 to March 2009, NSF will head an interagency, international effort to understand the Earth's extreme latitudes at scales from the global to the molecular. Of highest priority is the support of frontier research that meets pressing national needs in security, energy, the environment, and health.

The ongoing quest for organizational excellence will direct management's focus to a number of opportunities and challenges. The rise in multidisciplinary collaborative projects, international activities, and major research facility projects has increased the complexity of the workload, and although NSF's budget has increased 70 percent over the past 10 years, staffing has increased less than 10 percent. In addition, meeting new external administrative, oversight, and accountability requirements is an additional burden on limited staffing and funding resources. This year's establishment of a new internal control process to meet OMB's revised A-123 guidance was a major undertaking that will continue for the next 2 years as NSF works toward achieving an unqualified management assurance statement. In addition, NSF will remain actively engaged in supporting numerous other e-Gov activities, including GMLoB, e-Human Resources, the Integrated Acquisition Environment, e-Authentication, and the Lines of Business initiatives.

President's Management Agenda Scorecard			
	Baseline	Status	Progress
	9/30/01	9/30/06	
Strategic Management of Human Capital	●	●	●
Competitive Sourcing	●	●	●
Improving Financial Performance	●	●	●
Expanded Electronic Government	●	●	●
Budget and Performance Integration	●	●	●
Other Agency Initiatives: Eliminating Improper Payments	N/A	●	●
<small>Note: Green represents success, yellow is for mixed results, and red is for unsatisfactory. Ratings are issued quarterly by the Office of Management and Budget. N/A indicates not applicable</small>			