



A MESSAGE FROM THE DIRECTOR



The National Science Foundation (NSF) is pleased to present its *Agency Financial Report* for Fiscal Year (FY) 2017. The past year has been exciting at NSF, a time during which we have watched our investments produce remarkable results. Notably, the NSF-supported Laser Interferometer Gravitational-Wave Observatory (LIGO), in coordination with its European Virgo partners and some 70 ground- and space-based telescopes, made the first direct detection of gravitational waves from the collision of two neutron stars. Researchers are only beginning to understand the scope of this discovery's implications.

LIGO offers the possibility of many more groundbreaking discoveries to come, and its NSF-supported leaders have already received one of the highest plaudits in science: the Nobel Prize in Physics. These laureates understand the importance of large-scale, collaborative research, noting to the Nobel Committee that LIGO was a group effort – thousands of researchers analyzed the data that made its findings possible. Bold and visionary from its inception, LIGO is a stunning example of how vital NSF investments are toward the advancement of progress in science and engineering.

The Nobel Committee also, for the first time since 2003, recognized NSF-supported researchers in all four science-related categories – Physics, Chemistry, Physiology or Medicine, and Economics. In total, the Nobel Committee has named more than 230 NSF-supported researchers as laureates since 1951, including eight in 2017. Like the Nobel Prize-winning LIGO researchers, NSF provided these laureates with support long before their work carried the promise of guaranteed rewards; NSF gave them opportunities and resources to perform research that was later recognized as revolutionary. In FY 2017, NSF directly supported about 353,000 researchers, graduate and undergraduate students, postdoctoral fellows, trainees, and K-12 teachers and students. The potential for those NSF-backed researchers to produce work that will transform industries, enhance entire fields of research, and receive recognition including the Nobel Prize is impossible to overstate.

NSF's mission is to promote the progress of science; to advance the national health, prosperity and welfare; and to secure the national defense. For nearly seven decades, NSF has invested in scientific and engineering research and education that drives the nation's economy, strengthens national security, enhances the well-being of millions of Americans, and positions the nation as a global leader in discovery and innovation.

As the only agency with a research portfolio that spans the full spectrum of science and engineering disciplines, NSF helps cultivate the U.S. role as a worldwide leader in the scientific enterprise. To this end, NSF continues to pursue a set of Big Ideas – bold, long-term research agendas that represent new frontiers for guiding the agency's investments. The Big Ideas provide innovative approaches for solving today's major research challenges, including innovating at the human-technology frontier; harnessing large data sets; and developing new quantum-inspired technologies for sensing, computing, modeling, and communicating. Underlying these ideas is convergence, the blending of scientific disciplines, necessary to foster deep connections among scientific fields and innovative partnerships across industry, academia, and government.

Today, outcomes from basic research across multiple scientific disciplines are transforming entire industries, from transportation and computing to manufacturing and agriculture. In January 2017, I presented the keynote address at the Washington Auto Show. The exciting future of self-driving cars has benefitted from NSF-funded research in areas such as sensing, real-time data analytics, computer vision, and system verification technologies. NSF investments enable researchers across various disciplines to investigate methods for ensuring sustainable supplies of food, energy and water, and identifying novel ways to protect the ecosystems that are essential for humankind. NSF serves as a major player in the rapidly growing field of nanotechnology, helping transform U.S. industry through advances in manufacturing, electronics, medical instrumentation, and materials science. NSF investments in some of the world's most powerful and sophisticated telescopes allow scientists to peer into space to detect gravitational waves, survey distant galaxies, detect cosmic particles, and monitor the sun's magnetic field and solar flares.

This past year, researchers supported by NSF continued a long history of working to understand, prepare for, and respond to extreme events such as tornados, floods, earthquakes, and landslides. In the wake of the 2017 hurricane season, NSF called for proposals related to rapid-response research on natural disasters. NSF research has led to the deployment of underwater rescue robots for safeguarding emergency workers, the development of real-time flood-potential models, and the investigation of long-term psychological impacts resulting from natural disasters. In addition, NSF-supported researchers are working to address another major challenge facing modern society: the need for computing and communication systems that can resist cyberattacks and other vulnerabilities while preserving privacy and trust. Over the years, NSF has funded cutting-edge social and technical research in cybersecurity, such as research that strengthens cryptography, limits vulnerabilities in software, builds tools to help individuals and business work safely online, and helps educate and train a cybersecurity workforce.

People are the backbone of the nation's science and engineering enterprise, and NSF is a leader in the preparation of the future science, technology, engineering, and mathematics (STEM) workforce. Researchers and educators in STEM disciplines, along with a well-informed public, are key to that future. To sustain U.S. STEM leadership and excellence and to meet the high-technology workforce needs of today and tomorrow, NSF invests in the development of STEM talent. NSF INCLUDES, one of our Big Ideas, is part of an integrated, national initiative to develop STEM talent from all sectors and groups in society by increasing STEM participation of underrepresented groups in K-12, undergraduate, and graduate students.

In FY 2017, NSF funded fundamental research and education across all fields of science and engineering, reaching all 50 states, the District of Columbia and three U.S. territories through grants to 1,800 colleges, universities and other institutions. NSF evaluated 49,400 proposals requesting funding through our highly-acclaimed merit review process, and while thousands more were fundable, the Foundation made about 11,500 new awards.

If you would like more information on NSF's performance management process and the complete results of our FY 2017 annual goals under the Government Performance and Results (GPRA) Modernization Act of 2010, I invite you to read NSF's *Annual Performance Report*, which will be released with NSF's *FY 2019 Budget Request to Congress*. In keeping with government-wide requirements, NSF's GPRA data are subject to a rigorous verification and validation review by an independent, external management consultant, based on guidance from the U.S. Government Accountability Office.

With the publication of the FY 2017 Agency Financial Report, I am pleased to report that NSF received its 20th consecutive unmodified opinion from an independent audit of its financial statements. The Independent Auditors' Report identified no material weaknesses or significant deficiencies. In addition, NSF provides reasonable assurance that the agency is in compliance with the Federal Managers' Financial Integrity Act, and that internal control over financial reporting is operating effectively to produce reliable financial reporting.

As stewards of American taxpayer dollars, our goal is to build and sustain public trust through transparency and accountability. We remain committed to ensuring NSF funds are used effectively so we may continue as a champion of U.S. basic research and spark the creativity of the men and women performing research. Their curiosity, inventiveness, and bold ideas will shape the future.

Thank you for your interest in the National Science Foundation, where discoveries and discoverers begin.

/s/

France A. Córdova

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