

BUDGET REQUEST

TO CONGRESS

FY2024



FISCAL YEAR 2024 BUDGET HIGHLIGHTS

The U.S. National Science Foundation's \$11.314 billion Fiscal Year 2024 Budget Request will carry out the NSF Director's vision expressed in three pillars that point to opportunities to continue building on recent investments, particularly those enabled by the "CHIPS and Science Act" and by the "Fiscal Year 2023 Omnibus Appropriations Bill" and "Disaster Relief Supplemental Appropriations Act." These are:



STRENGTHENING ESTABLISHED NSF

Continues NSF's central focus to accelerate discovery and enhance state-of-the-art research capabilities.



INSPIRING MISSING MILLIONS

Continues NSF's commitment to provide STEM opportunities to every demographic and socioeconomic group in every geographic region of the country.



ACCELERATING TECHNOLOGY AND INNOVATION

Continues NSF's investments in breakthrough technologies and innovation, fostering partnerships and nurturing talent so the U.S. can remain a global leader in STEM.

These three pillars are intertwined in four major themes:

- **Create Opportunities Everywhere:** This whole-of-NSF strategy incorporates all directorates and offices and surpasses prior efforts by striving to ensure equity in program delivery, while building on the concept of the "Missing Millions." It focuses on expanding access and inclusion in STEM along individual, institutional and geographic lines.
- **Build a Resilient Planet:** The impacts of a changing climate and the growing need for clean, reliable, sustainable energy demand an accelerated and integrated NSF-wide approach to engage scientists and engineers across disciplines through convergent research that addresses societal needs and integrates research and education. Funding will focus on action to meet the urgent demands of the climate crisis on people, places and economies.
- **Advance Emerging Industries for National and Economic Security:** As the U.S. faces intensifying global competition for science and technology leadership, NSF will strengthen and scale investments in breakthrough technologies, innovation and translation by expanding support for basic research, nurturing technology transfer and empowering new approaches to potential application of research breakthroughs.
- **Strengthen Research Infrastructure:** NSF investments in science and engineering have stimulated the design and development of novel infrastructure, giving rise to new and different forms of research infrastructure. Investments in FY 2024 will support modernization of existing research infrastructure and the development of new infrastructure.

WHO WE ARE, OUR MISSION AND VISION

Who We Are: The U.S. National Science Foundation is an independent federal agency created by Congress in 1950, with an FY 2023 enacted budget of \$9.9 billion. NSF is the only federal agency that supports research across all fields of science and engineering and STEM education at all levels. NSF invests in curiosity-driven, discovery-based explorations and use-inspired, solutions-focused innovations that spur new technologies, are critical to our economic and national security, and cultivate the diverse STEM workforce of tomorrow.

Mission: To promote the progress of science; to advance the national health, prosperity and welfare; to secure the national defense; and for other purposes.*

Vision: A nation that leads the world in science and engineering research and innovation, to the benefit of all, without barriers to participation.

* From the National Science Foundation (NSF) Act of 1950 (P.L. 81-507).

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DRIVING RESULTS AND INNOVATION, BENEFITING SOCIETY

Over the past seven decades, NSF has funded research and researchers, innovations and innovators, and infrastructure, resulting in transformational technologies and incredible benefits to the nation. Each year, NSF investments touch approximately 352,000 people from roughly 1,800 institutions in every state and territory. Many of the technologies and industries that are at the root of U.S. economic competitiveness and sustainability — artificial intelligence, quantum information science and engineering, advanced manufacturing, advanced wireless, biotechnology, microelectronics and semiconductors — are grounded in sustained NSF support. The internet, Qualcomm, 3D printing, economic theory underpinning spectrum auctioning and kidney exchanges, and even the polymerase chain reaction testing technique that was critical in the fight against COVID-19, have come to fruition through NSF inputs. NSF strives to keep America at the cutting-edge of science and engineering by:

- Building a diverse STEM workforce capable of addressing society's most pressing challenges that draws on the talents of all Americans, wherever they are found.
- Investing in high-risk, potentially transformative research projects that lead to ground-breaking discoveries and new technologies.
- Supporting emerging industries across all geographic regions of the country.
- Funding advanced instrumentation, infrastructure and facilities.
- Increasing innovation at speed and scale through public-private partnerships to build stronger bridges between discovery, innovation and commercialization.

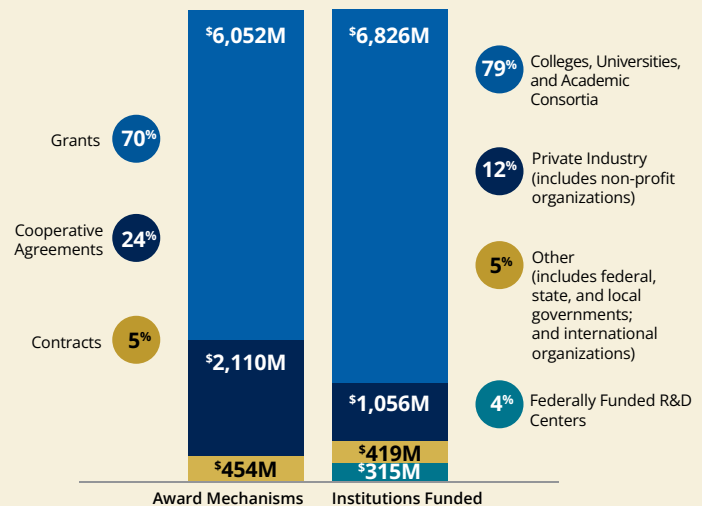
CHIPS AND SCIENCE ACT

With the passage of the “CHIPS and Science Act of 2022,” Congress put in place a roadmap to help the U.S. remain a global leader in innovation while also creating opportunities in communities throughout the country. The law positions NSF to capitalize on the American research ecosystem — including academia, private industry, the federal government and other partners — to quickly translate research into impacts that benefit the nation. Funding for NSF will be key to ensuring that the agency expands regional innovation; invests in domestic STEM talent; strengthens the lab-to-market pipeline; and increases funding for the basic science and engineering research that lays the foundation for the future. Continued investment in NSF will be critical to achieving these goals and unlocking science and technology breakthroughs to drive our economy and national security for decades to come. More information about the impacts of the “CHIPS and Science Act” on NSF can be found at <https://beta.nsf.gov/chips>.

WHERE IT GOES AND HOW IT GETS THERE:

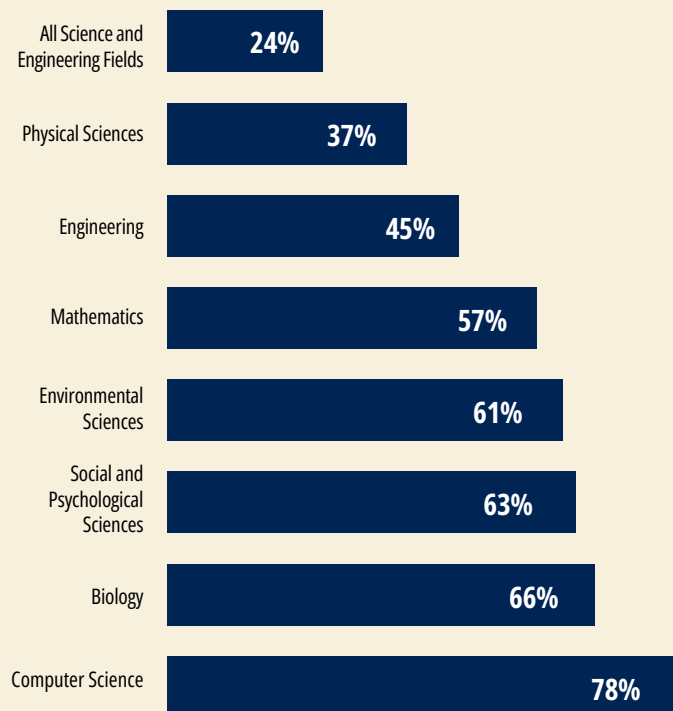
FY 2022 Obligations for Research and Education Programs:

\$8,616 Million



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

NSF SUPPORT OF ACADEMIC BASIC RESEARCH IN SELECTED FIELDS (as a percentage of total federal support)

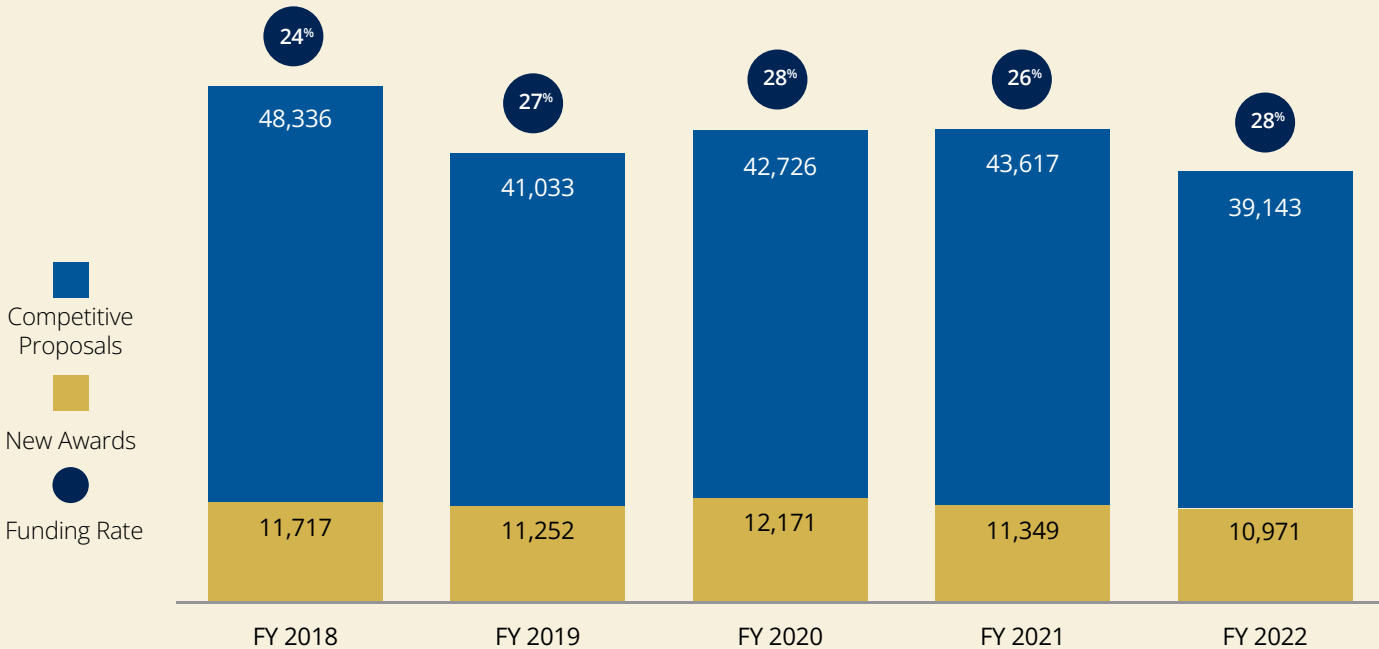


Notes: Biology includes Biological Sciences and Environmental Biology. Biology and Psychological Sciences exclude National Institutes of Health. Source: NSF/National Center for Science and Engineering Statistics, Survey of Federal Funds for Research and Development, FY 2020.

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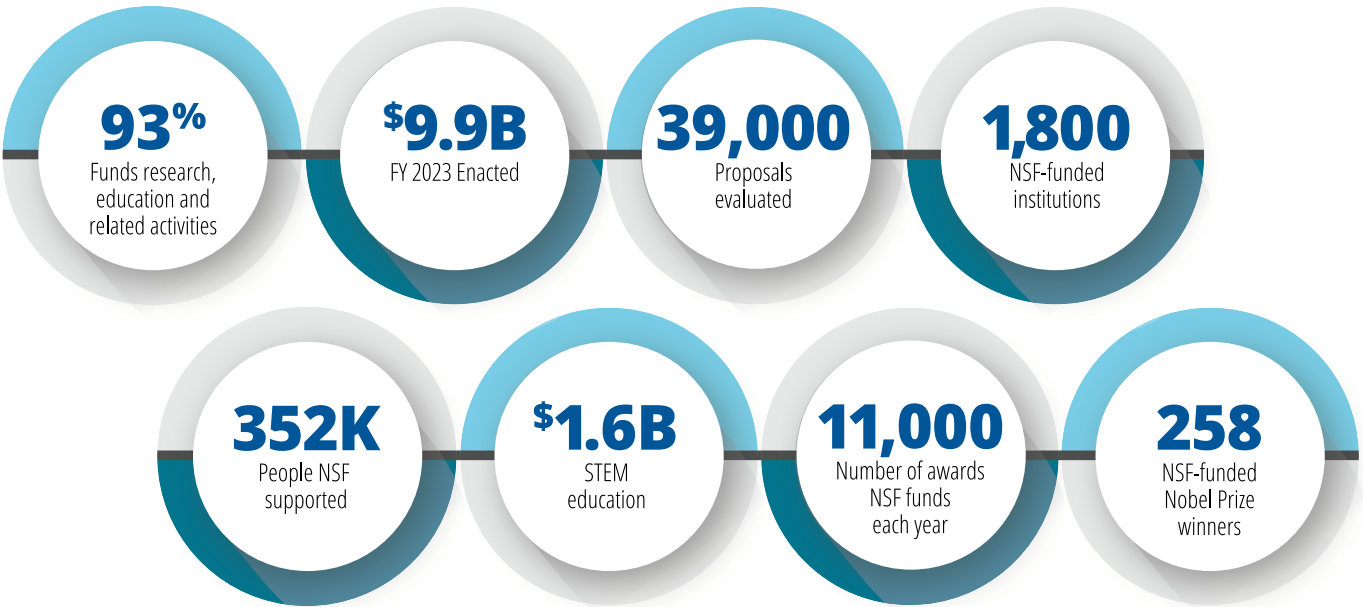


NUMBER OF NSF COMPETITIVE PROPOSALS, NEW AWARDS, AND FUNDING RATES



Note: The number of new awards is a subset of the total number of competitive proposals.

NSF BY THE NUMBERS



Data represents FY 2022 Actuals unless otherwise indicated.

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RESEARCH AND EDUCATION HIGHLIGHTS



Transforming discoveries into cutting-edge solutions: NSF's lab-to-market programs like Partnerships for Innovation and NSF Innovation Corps (I-Corps™) are helping breakthrough technologies make the leap from research to commercialization. In 2011, NanoView Biosciences' co-founders received a Partnerships for Innovation grant to develop a prototype for diagnostic technology capable of rapidly detecting exosomes — messenger particles in blood, serum and other samples that provide information about diseases. After completing I-Corps training in 2013, they received a SBIR Phase I award in 2015, followed by a SBIR Phase II award in 2018. In 2022, NanoView Biosciences was acquired by Unchained Labs, a leading life sciences company that is now transforming NanoView's research into cutting-edge solutions for gene therapy, biologics and diagnostics.



Partnership with the Semiconductor Research Corporation: NSF and the Semiconductor Research Corporation, or SRC, recently signed a five-year memorandum of understanding to support hands-on research opportunities for undergraduate students in research areas related to semiconductors. This partnership will advance the fundamental science and engineering of semiconductors and the development of a diverse science and engineering workforce for an area of high national priority. Under the new agreement, NSF and SRC will jointly support awards through the NSF Research Experiences for Undergraduates program for REU sites on semiconductor-related topics.



National AI Research Institutes: NSF will increase support for foundational research in AI, including machine learning and deep learning, natural language technologies, knowledge representation and reasoning, robotics and computer vision, along with fairness, accountability, transparency, explainability, safety, security and robustness across all areas of AI. NSF will also support use-inspired research, education and workforce development, and access to data and advanced computing research infrastructure that collectively enhance AI. In addition, NSF will emphasize AI research, education and workforce development, and infrastructure activities at minority-serving institutions.



Extreme weather research: NSF-funded research on the economic impacts of Hurricane Katrina and Superstorm Sandy can improve climate resilience planning for cities anticipating severe weather events. By focusing on the populations that experienced the most economic harm from the storms and why, Illinois Institute of Technology social scientist researchers hope to understand how to mitigate future economic losses caused by extreme weather, especially among lower-income households.



Human-machine systems for physical rehabilitation: The NSF Research Traineeship, or NRT, program at Cleveland State University trains graduate students to work on transdisciplinary research teams in direct collaboration with the disability community. This NRT program hopes to establish a new model for engineers, psychologists and urban experts to collaborate with therapy professionals and the disability community to deliver future technologies for the most complex rehabilitation challenges.

NSF Innovation Corps program: Credit: NSF.

REU student working with mentor and supervisor in the lab: Credit: Arka Majumdar, University of Washington.

National AI Research Institutes: Credit: NSF.

Damage and destruction to houses in Biloxi, Mississippi, from Hurricane Katrina: Credit: FEMA/Mark Wolfe.

A person controls a robot to feed himself: Credit: Cleveland State University Center for Human-Machine Systems.