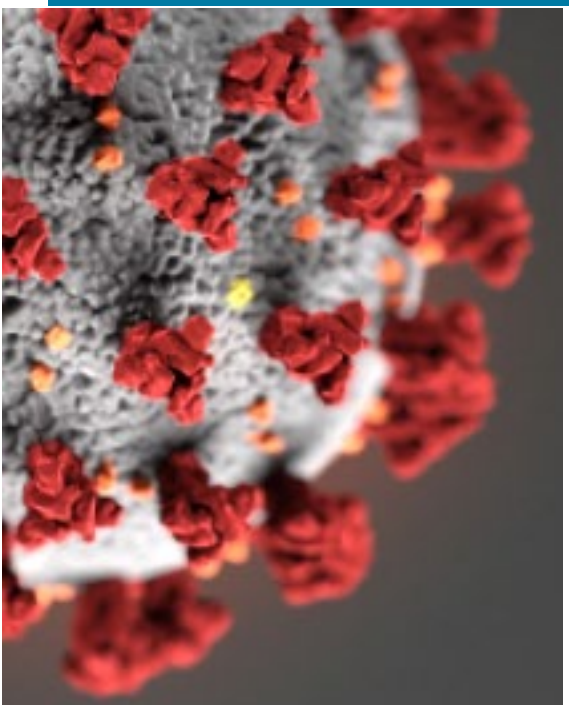


American Rescue Plan & COVID-19 Response Update

Updated August 9, 2021

FACTS

$112,449,652
ARP Research Recovery Funds Mobilized

365 Awards Funded

OVERVIEW

As part of the national effort to recover from the COVID-19 pandemic, the National Science Foundation (NSF) continues to fund important research as well as recovery efforts to help the United States science, engineering and STEM education communities rebound. From equipment delays and reagent shortages to lost training time and missed field research, the pandemic has strained research projects in unique ways. With the continued support from Congress and the Administration, including the $600 million provided in the American Rescue Plan, NSF is able to support groups of individuals and institutions most strongly affected by the pandemic as well as those at vulnerable transition points in their research careers.

The funds are being invested consistent with the below guiding principles:

MOST STRONGLY AFFECTED GROUPS. The pandemic has exacerbated existing disparities and has had disproportionate impacts on specific groups of individuals. These strongly affected groups include:

- Women researchers, who have disproportionally taken on the duties associated with increased child-care and other family-related responsibilities.
- Underrepresented groups. Programs that support these students and researchers have been subject to disruption due to the pandemic.
- Early-career faculty. The early part of a research career represents a critical time for research productivity, building and funding a research program, and preparing for potential tenure and promotion.

INDIVIDUALS AT VULNERABLE CAREER TRANSITION POINTS. It is well established that attrition from STEM or higher education altogether frequently occurs at certain educational and career transition points, and the pandemic has intensified this threat. These individuals/transition points include:

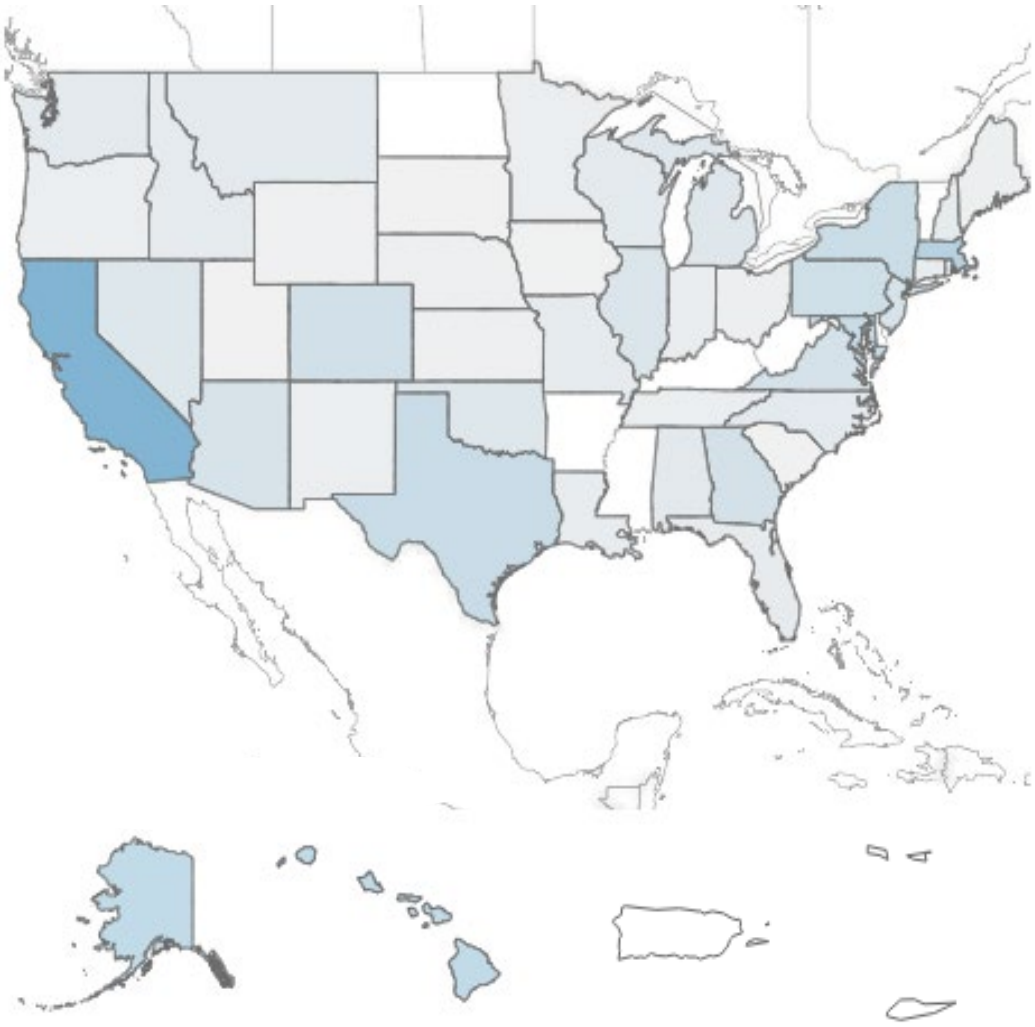
- Undergraduates preparing to finish their degrees and attend graduate school.
- Graduate students, particularly those nearing the end of their research careers.
- Post-doctoral fellows, research trainees, and graduate fellows.
- Early career faculty.
- Mid-career faculty, who are often called upon to do greater service in light of pandemic impacts.

BROAD DISTRIBUTION. To ensure a broad distribution of funding and in further pursuit of the funds reaching those most impacted by the pandemic, NSF is using these funds towards an expansive research portfolio that prioritizes disproportionately affected persons at every institution as well as all persons at disproportionately affected institutions, such as:

- Minority-serving and less-affluent institutions, which may lack strong research administration infrastructure or the financial resources to support STEM students and faculty.
- Institutions in EPSCoR jurisdictions, which have not benefited from robust federal funding yet support a significant number of STEM students and faculty across the nation.

AWARDS

	American Rescue Plan funds	Research Recovery (FY21 funds)	COVID-19 Research (CARES Act + FY20 + FY21)
Number of Awards	365	2156	1,243
Funding Deployed	$112,449,652	$426,814,067	$226,812,156



ARP awards by state, shade of blue correlates to number of awards

NSF Support

This update spotlights recent awards funded by the American Rescue Plan and research programs stood up by NSF to support the scientific research community. It is a snapshot of the essential research and support NSF is able to invest in thanks to the support from Congress and the Administration.

NSF PROGRAM FEATURE

DIRECTORATE FOR BIOLOGICAL SCIENCES

Research Experience for Post-Baccalaureate Students (REPS) in the Biological Sciences

FY2021 Funds

NSF has invested $11.7 million on 253 supplements to current research awards as part of its Research Experience for Post-Baccalaureate Students (REPS) in the Biological Sciences Supplemental Funding Opportunity. These awards make it possible for post-baccalaureate students whose research opportunities were cut short by the pandemic to participate in mentor-guided, independent research for a period of up to 12 months. For undergraduate students, this kind of research experience is an important steppingstone in their career trajectories to graduate school or jobs in STEM. Link to Dear Colleague Letter (DCL).

DIRECTORATE FOR COMPUTER AND INFORMATION SCIENCE AND ENGINEERING

Computing Innovation Fellows Project 2021

FY2021 Funds

With funding by NSF and implemented by the Computing Research Association and the Computing Community Consortium, the CIFellows 2021 program offers two-year postdoctoral opportunities in computing to support recent and soon-to-be PhD computing graduates whose job search was hampered by the continued disruption COVID-19 has had on academic job hiring practices and the economy. The 2021 cohort is comprised of 69 researchers, of which 52 percent are women, 23 percent come from underrepresented groups in computing, and 16 percent have a disability. Ten Minority Serving Institutions are involved in the 2021 cohort, including universities from which participants are receiving their PhDs, and host universities where participants will conduct their post-doctoral CIfellowship. Information on the CIfellows receiving support and about this impactful investment in the computing workforce can be found at cifellows2021.org.

AWARD HIGHLIGHTS

DIVISION OF GRADUATE EDUCATION
American Rescue Plan $3,184,625

Title CyberCorps Scholarship for Service: Secure Embedded Systems

Institution Morgan State University; Baltimore, MD

Research & Recovery There is a growing need for cybersecurity professionals prepared to protect connected embedded systems from hackers and other threats. To address this need, Morgan State University (MSU) will provide students with a unique educational program in secure embedded systems that integrates active learning experiences and mentoring and help invest in the country's cybersecurity workforce.

In addition to addressing a pressing national workforce need, this funding will strengthen capacity at a minority-serving institution and support the degree aspirations of students who have been disproportionately impacted by the pandemic.

DIVISION OF RESEARCH ON LEARNING IN FORMAL AND INFORMAL SETTINGS
American Rescue Plan $2,400,000

Title Ujima (Collective Work and Responsibility) Girls in a Robotics Leadership Project

Institution University of California, Davis

Research & Recovery Research shows that Black girls and women, regardless of their academic achievements and STEM interests, often encounter academic under-preparation, social isolation, exclusion, and race-gender discrimination that negatively impacts their ongoing engagement and retention in STEM. This project will provide innovative, culturally relevant learning environments to middle and high school Black girls to counter these negative trends. Using hands-on coding and robotics activities, project participants will develop positive attitudes toward science, technology, engineering, and mathematics (STEM).

The project is a three-year collaborative effort between the University of California Davis C-STEM Center, the Umoja Community Education Foundation, and the 66 affiliated California community colleges, industry partners, and school districts in California. Over 2,000 participants will be recruited through the Umoja Community Education Foundation by promoting the project through its partnership with 66 community colleges.

DIVISION OF ASTRONOMICAL SCIENCES
American Rescue Plan $8,946,650

Major Facilities Support

Title Advanced Technology Solar Telescope (ATST) Construction under the Major Research Equipment and Facilities Construction (MREFC) Account

Institution Association of Universities for Research in Astronomy, Inc.; Washington, DC

Research & Recovery Completion of integration, testing, and commissioning of the telescope optics and instrumentation for the Daniel K. Inouye Solar Telescope or DKIST (formerly ATST), which is currently 96 percent complete, has been delayed because of continuing COVID-19 impacts, in particular travel and social-distancing restrictions that slowed the integration and commissioning of instrumentation. In addition to funds that NSF previously awarded from regular appropriations to address these pandemic impacts, this award made from American Rescue Plan funds will support the recovery effort to finish the telescope construction by the end of 2021.

DIVISION OF EARTH SCIENCES
American Rescue Plan $118,665

Title Collaborative Research: Timescales and drivers of floodplain disequilibrium at climatic transitions

Institution Dartmouth College; Hanover, NH

Research & Recovery Floodplain morphologies are expected to undergo major changes as Earth's climate warms. Through this award, researchers will deepen our understanding of how floodplains have responded to different magnitudes and timescales of climatic changes in the past by studying ~14,000 years of floodplain data. This will enhance our ability to understand and predict how floodplains will change in the future.

ARP funding for this project will support an early career female scientist and an undergraduate research project. This project will help to broaden participation in STEM through a summer workshop on landscape evolution for middle school girls from historically underrepresented groups, an accessible undergraduate virtual field project on terrace formation, and a community field workshop to share project results.

OFFICE OF ADVANCED CYBERINFRASTRUCTURE
American Rescue Plan $399,983

Title CC* Compute: A HPC Cluster for Science Research and Education at Tennessee Tech University

Institution Tennessee Tech University; Cookeville, TN

Research & Recovery Researchers at Tennessee Tech University (TN Tech) are making significant upgrades to the campus computing infrastructure that will significantly improve the university researchers' and students' ability to perform, enhance, and expand their research activities. This new cluster will help TN Tech build a regional resource for computational capacity and workforce development expanding opportunities to underrepresented groups throughout the southeast region.

This award will help students and researchers of Tennessee Tech and resource limited institutions from the surrounding states that serve rural and underrepresented groups. These groups are often isolated from computational resources, particularly during the current pandemic situation, and the modern cluster will help undergraduate students of Tennessee Tech and other resource deficient small universities use the cluster for remote pre-degree course (PDC) education, and researchers and students at these institutions to perform the computational aspects of their research remotely.

DIVISION OF INTEGRATIVE AND COLLABORATIVE EDUCATION AND RESEARCH
American Rescue Plan $1,596,980

Title DISES: Conservation incentives and the socio-spatial dynamics of water sustainability

Institution University of Oklahoma; Norman, OK

Research & Recovery Researchers will study how incentive-based programs may help create more sustainable freshwater systems. This project focuses on water systems in areas with extensive agricultural use. The findings will be relevant for understanding the dynamics of incentive programs for other types of natural resources (e.g., marine fisheries, energy, waste, forestry).

ARP funding will provide support to researchers at disproportionately affected institutions, namely a public university in an EPSCOR state. Additionally, the project team will work with tribal organizations to recruit Native American undergraduate and graduate students with strong connections to local tribal nations.

DIVISION OF SOCIAL AND ECONOMIC SCIENCES
American Rescue Plan $305,012

Title Collaborative Research: RUI: Collaborative Research and Education Architecture for Transformative Engagement with STS (CREATE/STS)

Institution James Madison University; Harrisonburg, VA

Research & Recovery With pervasive and increasingly complex ethical and social issues related to emerging science and technology, undergraduate STEM students need better interdisciplinary preparation to address these societal challenges in their professional careers. The field of Science and Technology Studies brings unique perspectives, tools and insights for facilitating such preparation through interdisciplinary practices of teaching and learning that build on the field's deep engagement with the ethical and societal dimensions of science, technology and innovation. This project implements and evaluates a new model for collaboratively developing science and technology studies-focused teaching methods with a cohort of faculty and undergraduate students.

A cohort of ten undergraduate students are supported by the award and will receive training and mentorship through the project. Additionally, one postdoctoral research assistant and two graduate student research assistants are supported by the project. Thus, this award supports individuals who are at vulnerable career transition and who have been disproportionately impacted.

DIVISION OF EARTH SCIENCES
American Rescue Plan $328,696

Title Collaborative Research: How roots, regolith, rock and climate interact over decades to centuries — the R3-C Frontier.

Institution University of Kansas; Lawrence, KS

Research & Recovery This project will examine how the interaction of climate, the physical and chemical characteristics of the bedrock, and the action of vegetation, control the movement and storage of water and carbon on Earth's surface. Human activities can change these pathways, and this research will enable the forecasting of the possible impacts upon the Earth-surface environment. To achieve this goal requires synthesizing existing datasets, collecting new data, and training teams of people in the fields of water science, geochemistry, soil science, geophysics, ecology, and Earth system modeling.

ARP funding will allow continuing education, mentoring, and training for students at critical transition points in their academic pursuits. The research team actively recruits first-generation undergraduate students. This award will provide broad access to teacher training and educational materials via

workshops, curricula, and other on-line resources.

DIVISION OF CHEMISTRY / DIVISION OF CHEMICAL, BIOENGINEERING, ENVIRONMENTAL AND TRANSPORT SYSTEMS / DIVISION OF CIVIL, MECHANICAL AND MANUFACTURING INNOVATION
FY2021 $1,210,500

Title Underrepresented Minority Internships for Chemists, Chemical/Environmental/Mechanical Engineers, and Civil Engineers

Institution The National GEM Consortium; Alexandria, VA

Research & Recovery This project works to illustrate and provide pathways for advanced STEM education and careers for students from underrepresented groups. Promoting progress in science and building a globally competitive workforce, a core part of the National Science Foundation's mission, requires increasing diversity in science, technology, engineering and mathematics (STEM).

This project provides training pathways for both Ph.D. and Master's level students in the STEM fields of Chemistry, Chemical and Environmental Engineering, Transport and Fluid Mechanical Engineering, and Civil and Mechanical Engineering. A total of 52 students will be supported through this effort. These students also participate in a paid internship that GEM helps to arrange, which enables students to build a career network and provides them with work experience. These students and others supported through GEM will be part of a long term evaluation on the effectiveness of this approach.

DIVISION OF ATMOSPHERIC AND GEOSPACE SCIENCES
American Rescue Plan $327,532

Title P2C2: Integrating Multiproxy Records of Tropical Cyclone Activity over the Last Millennia to Contextualize 21st (twenty-first) Century Events in the Northern Gulf of Mexico

Institution University of Alabama; Tuscaloosa, AL

Research & Recovery Researchers will build a database of tropical cyclone activity in the northern Gulf of Mexico during the last 150 years. They will use tree ring and sediment core data to reconstruct cyclone activity. The data will be used to improve predictions of cyclones, to improve coastal ecosystem resiliency, and to better understand impacts from cyclone activity.

ARP funding will ensure that the project leads, all early-career scientists, can continue developing their academic careers. This project will help vulnerable communities mitigate and manage impacts of tropical cyclones.

Related NSF Research News

Science Matters blog: Research from the field of science and technology studies offers strategies for broadening participation in STEM
Science Matters blog: From Camden, South Carolina, to Chelsea, Massachusetts, behavioral science helps community leaders save lives
Science Matters blog: Sparking scientific curiosity and recruiting talent for the benefit of our nation
Science Matters blog: 10 years of I-Corps: NSF entrepreneurship training program impacts the economy and shapes careers
Research news: Making cities naturally safe from supply chain shocks
Research news: Scientists developing inhalable COVID-19 vaccine spray