COVID-19 RESPONSE FUNDING UPDATE

APRIL 24-30, 2020

# FACTS

**$38,853,732
Funds Mobilized**

269 Grants Funded

OVERVIEW

In response to the COVID-19 virus, the National Science Foundation (NSF) is mobilizing funding from the FY2020 budget and supplemental appropriations through the Coronavirus Aid, Relief, and Economic Security (CARES) Act. CARES Act funding supports a wide range of research areas to help the country fight and recover from the COVID-19 crisis through several research funding mechanisms, including Rapid Response Research (RAPID), a fast-tracked grant process to accelerate critical discoveries.

AWARDS
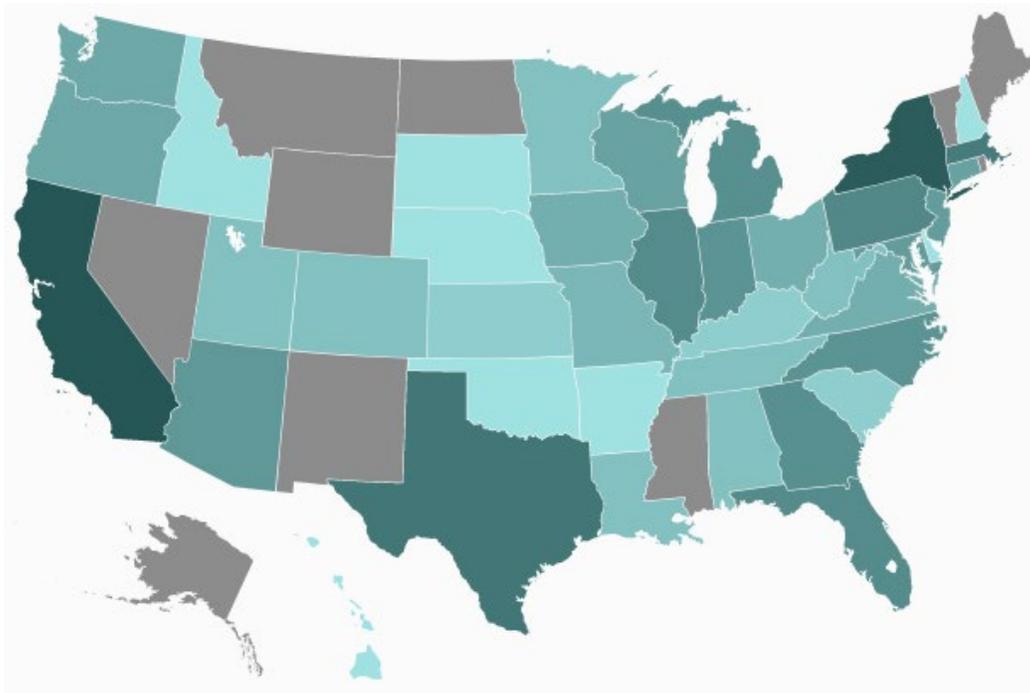
COVID-19 related awards by state, shade of blue correlates to number of awards.

	CARES Act	All COVID-19
Number of Awards	185	269
Funding Deployed	$27,183,055	$38,853,732

This update spotlights several recent awards, just a snapshot of the essential work NSF is funding through the CARES Act and FY2020 appropriations. You can explore all of the COVID-19 related research grants awarded through the National Science Foundation at this link.

DIVISION OF CHEMICAL, BIOENGINEERING, ENVIRONMENTAL AND TRANSPORT SYSTEMS
CARES Act $99,884

Title RAPID: Impact of Coronaviridae lipid, protein and RNA interaction on copper, zinc, and their derivatives coated personal protective equipment surfaces and viral infectivity

Institution Kansas State University; Manhattan, KS

What Researchers are drawing on interdisciplinary methods from materials science, biochemistry, biophysics, and virology to understand how copper and copper-zinc oxide nanoparticle surface coatings deactivate the coronavirus.

Why Surface coatings that deactivate the virus will help enhance Personal Protective Equipment (PPE) to better protect frontline workers, especially in high-risk environments like hospitals. Through this research, surfaces that present a risk of harboring coronavirus can be transformed into surfaces that help fight the spread.

DIVISION OF MATHEMATICAL SCIENCES
CARES Act $169,924

Title RAPID: Collaborative Research: Operational COVID-19 Forecasting with Multi-Source Information

Institutions University of Texas at Dallas; Dallas, TX
Research Triangle Institute; Research Triangle Park, NC

What Researchers are developing a new deep learning framework to predict the spread of COVID-19 that improves existing epidemiological models. The framework will draw on multiple sources of information including public health statistics as well as atmospheric data, social media indicators, effectiveness of public health responses, anecdotal information, and other sources.

Why Even highly reliable models for predicting the spread of COVID-19 can be limited by slow or insufficient data. Deep learning approaches provide a complementary tool that learns from those models while integrating multiple sources of information for a framework that can predict trends and developments sooner.

DIVISION OF SOCIAL AND ECONOMIC SCIENCES
CARES Act $199,574

Title   RAPID: Collaborative Research: Adjustment and Effectiveness of Rapid Transition to Remote Work

Institutions   University of South Florida; Tampa, FL
University of Georgia; Athens, GA

What   Working remotely is critical for continuing essential business functions during the COVID-19 pandemic. However, many organizations and businesses are unprepared to accommodate a remote workforce. This collaboration seeks insight on how to improve remote workforce productivity and well-being by examining characteristics of organizations, individuals, technologies and supervisors.

Why   The current pandemic has created a vast need for remote work, but we lack key information on what makes such work productive and sustainable. This project will provide best practices that small and large businesses can use during future pandemics and other emergencies—as well as during normal operations—to enhance productivity.

DIVISION OF CHEMICAL, BIOENGINEERING, ENVIRONMENTAL AND TRANSPORT SYSTEMS
CARES Act $100,000

Title   RAPID: Tracking the Coronavirus in municipal wastewater

Institution   Oregon State University; Corvallis, OR

What   This project is developing an alternative to individual testing by measuring SARS-CoV-2 in municipal wastewater systems. Specifically, the goal is to determine the onset, duration, termination, and location of outbreaks through wastewater surveillance.

Why   Scaling testing capacity remains a major challenge to tracing viral outbreak. Wastewater surveillance is a new detection method that can help identify community outbreaks, hotspots, and intervention efficacy to help slow and stop the virus.

DIVISION OF BIOLOGICAL INFRASTRUCTURE
CARES Act $200,000

Title   RAPID: Large-scale functional analysis of antibody repertoires elicited by SARS-CoV-2

Institution   Texas A&M University; College Station, TX

What   Some antibodies have the power to neutralize a virus and block infection, but identifying those specific antibodies is challenging and time consuming. The researchers will develop a novel microfluidic lab-on-a-chip system as a fast, direct, functional test to identify and isolate cells that produce SARS-CoV-2 neutralizing antibodies.

Why   This project will deliver the first functional lab-on-a-chip system to isolate cells, detect and identify antibodies that neutralize SARS-CoV-2 and the viral structures to which they bind. This has implications for recognizing how antibodies neutralize the virus and identifying the optimal set of antibodies to be elicited by potential vaccines.

DIVISION OF UNDERGRADUATE EDUCATION
CARES Act $149,712

Title   RAPID: Collaborative Proposal: Effects of Institutional Responses to the COVID-19 Pandemic on Undergraduate Faculty and Students Across STEM Disciplines

Institutions   Embry—Riddle Aeronautical University; Daytona Beach, Fl
University of Central Florida; Orlando, FL

What   A research collaboration is pursuing answers to questions on how the pandemic is disrupting undergraduate STEM education in the US. How do COVID-19 policies impact STEM teaching and learning? How do they influence faculty and student attitudes, perceptions, behaviors? What teaching and learning resources are most helpful to undergraduate STEM faculty and students?

Why   Findings will result in actionable recommendations on crisis communications, teaching practices, and checklist resources for higher education institutions. The STEM workforce is critical to the U.S. economy—this project could help support the next generation of STEM workers to be resilient and globally competitive.

Title	RAPID: Addressing Equity when STEM Teaching and Learning Go Remote
Institution	Digital Promise Global; Washington, D.C.
What	Research in online educational environments suggests students with fewer socioeconomic resources face a learning disadvantage. This is an inquiry on that systemic divide—it seeks insight on the specific challenges to online STEM learning for low-income, underrepresented minority, and rural students.
Why	Results could provide insight for more equitable outcomes as higher education institutions and policy makers address the current crisis, as well as how to incorporate lessons learned in STEM education after the pandemic.

Related NSF Research News

- KCUR: **How Missouri students are learning about the virus that has them stuck at home**

- An NSF-funded COVID-19 outbreak model is making news around the country
    - **RAPID Award to Columbia University**
    - New York Times: **What 5 coronavirus models say the next month will look like**
    - Washington Post: **Antibody tests support what's been obvious: Covid-19 is much more lethal than the flu**

- **Biologists using supercomputer simulations to analyze the coronavirus**

- **Chemically modified mask design could potentially slow the spread of viruses**

- **Researchers developing one-step COVID-19 diagnostic tool**

- **AI accelerating drug discovery to fight COVID-19**