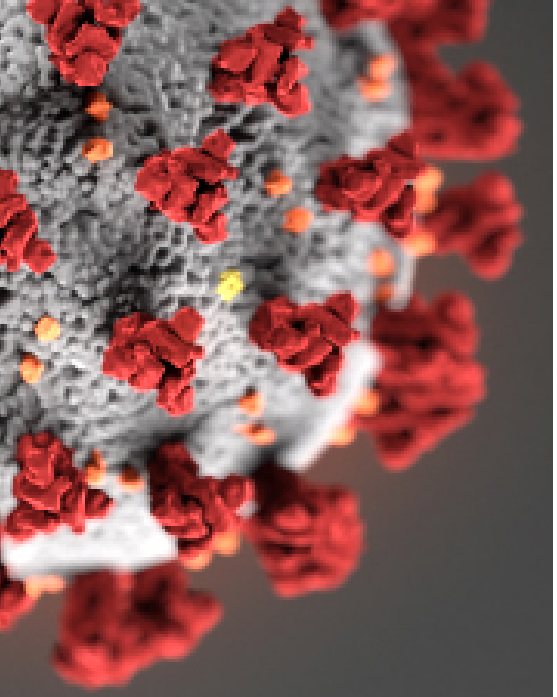


COVID-19 RESPONSE FUNDING UPDATE

APRIL 17-23, 2020

FACTS

$24,367,607
FUNDS MOBILIZED

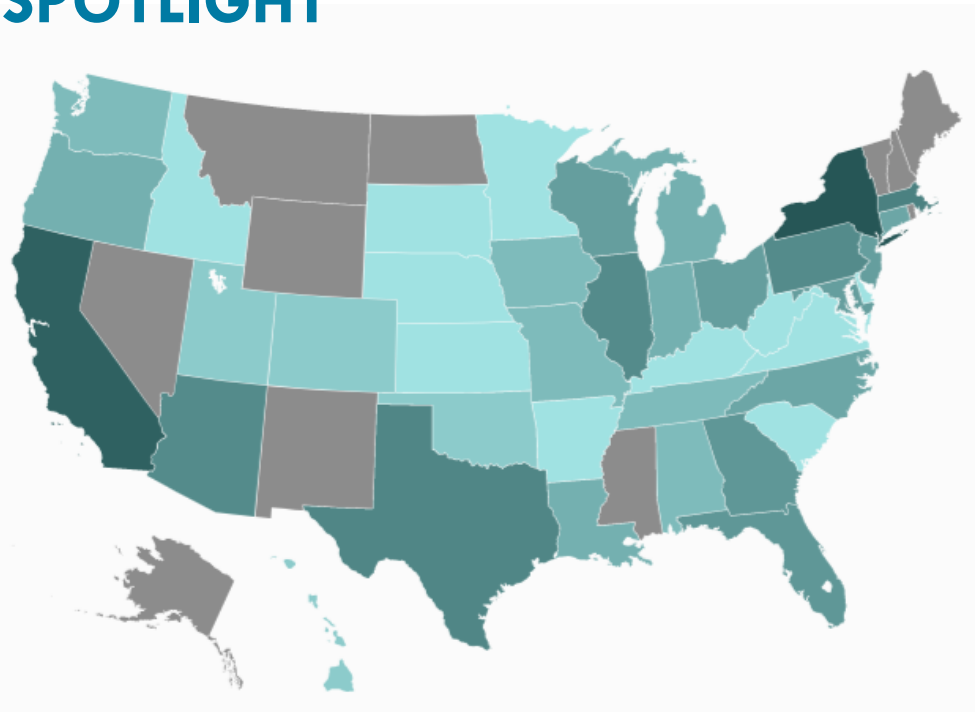
163 GRANTS
FUNDED

Image credit: CDC

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 discovery.

AWARDS SPOTLIGHT



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

	CARES Act	All COVID-19
Number of Awards	94	163
Funding Deployed	$14,022,596	$24,367,607

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 here.

MOLECULAR AND CELLULAR BIOSCIENCES
CARES Act $200,000

Title RAPID: A multiscale approach to dissect SARS-CoV-2 attachment to host cells and detect viruses on surfaces

Institution Washington University in St Louis; St. Louis, MO

What This multidisciplinary collaboration focuses on how the virus that causes COVID-19 attaches to human cells and will use experimental techniques and computational modeling to try to develop a test that can quickly detect SARS-CoV-2 in environmental samples.

Why To better understand, detect and take proactive measures against coronaviruses that could cause pandemics, greater knowledge of viral receptors is necessary.

CIVIL, MECHANICAL AND MANUFACTURING INNOVATION
CARES Act $100,000

Title RAPID: Scalable Manufacturing of a Microneedle Coronavirus Vaccine Delivery System

Institution University of California San Diego; La Jolla, CA

What This multidisciplinary collaboration takes an advanced nanomanufacturing approach to vaccine development using unique biomaterials.

Why A vaccine developed with this technology wouldn't require cold chain supply and distribution, can be massively scaled, and has the potential for self-application in the form of a patch.

CHEMICAL, BIOENGINEERING, ENVIRONMENTAL, AND TRANSPORT SYSTEMS
CARES Act $195,621

Title RAPID: Prediction of Cardiac Dysfunction in COVID-19 Patients Using Machine Learning

Institution Johns Hopkins University; Baltimore, MD

What The project aims to develop a machine learning (ML) approach to identify COVID-19 patients at risk for cardiac dysfunction and sudden cardiac death. Such an ML classifier will be distributed to any interested healthcare institution.

Why Up to one in every five COVID-19 patients suffers acute cardiac injury—this approach could reduce mortality by providing early warning and therapeutic intervention.

DIVISION OF MATHEMATICAL SCIENCES
CARES Act $199,009

Title RAPID: Epidemiological and Phylogenetic Models for Contact-Based Control of COVID-19

Institution University of Louisiana at Lafayette; Lafayette, LA

What This project will develop new disease outbreak models to better understand the role of contact tracing in mitigating the COVID-19 virus spreads. The models will predict how to best implement contact-based measures for efficiently containing the outbreaks by integrating case and phylogenetic data.

Why Increased case detection, contact tracing and information technology, along with social distancing measures, have been vital in slowing down COVID-19 outbreaks. The combined phylodynamic and epidemic model analysis will better quantify disease spread and contact-based control efficacy to help advise public health authorities.

CHEMICAL, BIOENGINEERING, ENVIRONMENTAL, AND TRANSPORT SYSTEMS
CARES Act $187,858

Title RAPID: Molecular Imprinting of Coronavirus Attachment Factors to Enhance Disinfection by a Selective Photocatalytic "Trap-and-Zap" Approach

Institution Rice University; Houston, TX

What A nanotechnology-based "trap-and-zap" approach to absorbing and deactivating antibiotic resistant genes could be modified into a new method for viral disinfection that is fast, reliable, and chemical-free.

Why Because the COVID-19 virus and other pathogenic foes are transported in air and sewage, a new sanitization method could help secure infrastructure like airducts, wastewater treatment plants and bathroom pipes.

INFORMATION AND INTELLIGENT SYSTEMS
CARES Act $150,000

Title	RAPID: Collaborative Research: The effects of evolutionary adaptations on the spreading of COVID-19
Institutions	Princeton University; Princeton, NJ Carnegie Mellon University; Pittsburgh, PA
What	Researchers are applying recent advances in mathematical modeling that will enhance epidemiological models of COVID-19 to more accurately account for potential coronavirus mutations, changes in environmental factors like temperature and humidity, and public health measures.
Why	Small changes in how the coronavirus spreads—due to mutations, seasonal weather patterns, or changes to public health guidelines—could have big implications. This research enhances epidemiological models by more accurately accounting for those factors, enhancing the tools available to public health officials.

Related NSF Research News

- **Water quality could be altered in buildings closed during COVID-19 pandemic**
- **College using 3D printers to make face shields for regional hospital**
- **New app for personal tracking of social distancing in the Memphis area**