COVID-19 RESPONSE FUNDING UPDATE

Aug 11, 2020

FACTS

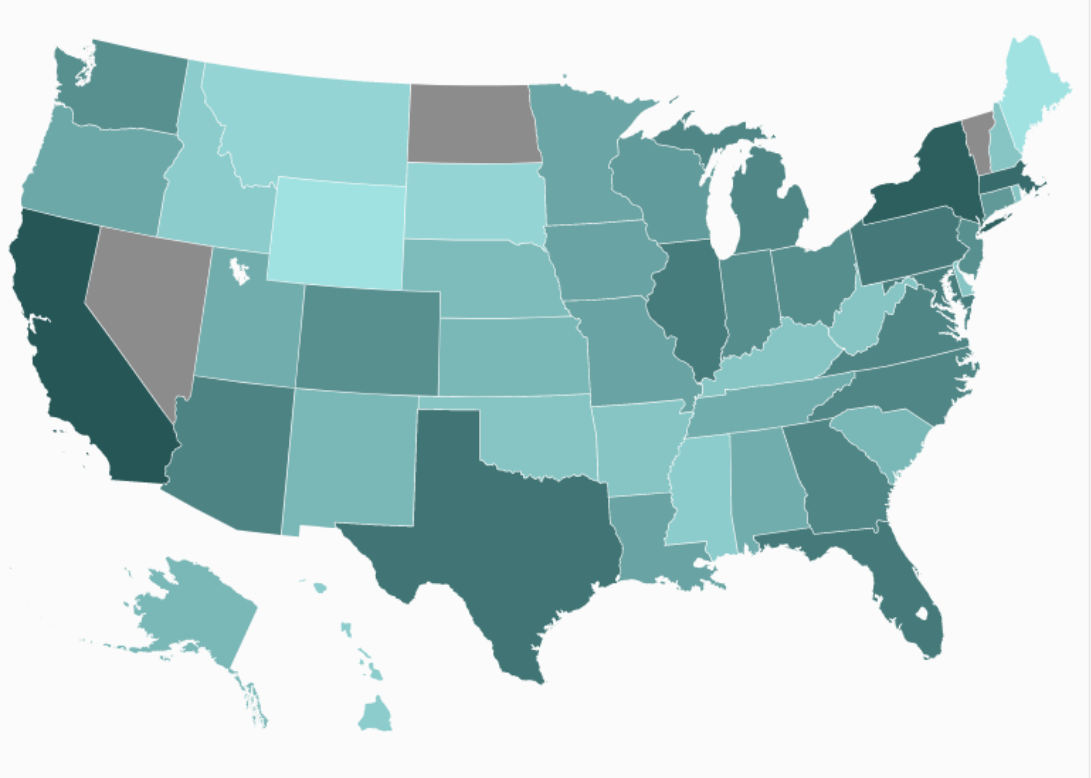
$163,569,276
Funds Mobilized

1047 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	526	1047
Funding Deployed	$74,999,266	$163,569,276

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.

Research News

News from August

Study reveals contamination of air and environment near patients with COVID-19 [CARES Act]

A study by University of Nebraska Medical Center researchers provides new evidence of infectious SARS-CoV-2 throughout the environment and in air samples collected in COVID-19 patient care areas. The scientists, funded by a National Science Foundation rapid response grant, found viral contamination on all commonly used surfaces in the rooms, and very high levels of the virus in the air grates.

News from June

For university classrooms, are telepresence robots the next best thing to being there?

A study supported by the National Science Foundation and led by Naomi Fitter of the OSU College of Engineering examined the experiences of university students attending classes in three formats: in person; through a telepresence robot; and through distance learning tools such as livestreaming, recorded lectures and calling into class with questions.

Researchers use machine learning to predict heart damage in COVID-19 victims [CARES Act]

Using machine learning, scientists are working to identify which COVID-19 patients are at risk of adverse cardiac events such as heart failure, sustained abnormal heartbeats, heart attacks, cardiogenic shock and death. Increasing evidence of COVID-19's negative impacts on the cardiovascular system highlights a great need for identifying COVID-19 patients at risk for heart problems, the researchers say. However, no such predictive capabilities currently exist. The Johns Hopkins University scientists recently received a Rapid Response Research grant from the National Science Foundation for the work.

News from May

Professor developing medical equipment decontamination system to battle COVID-19

As caregivers struggle with shortages of medical equipment during the COVID-19 pandemic, George Washington University engineering professor Michael Keidar is helping to develop a "plasma brush" that could help decontaminate protective masks, gloves and other necessary gear for reuse. The National Science Foundation awarded the team a Rapid Response Research grant (RAPID).

New process considers numerous coronavirus models to reduce uncertainty

A new process to harness multiple disease models for outbreak management has been developed by a team of researchers. The team describes the process in a paper appearing in the journal Science. The researchers have been awarded a Rapid Response Research grant (RAPID) from the National Science Foundation to continue their work on COVID-19.

Immunity of recovered COVID-19 patients could cut risk of expanding economic activity

Dubbed "shield immunity," the anticipated protection against short-term reinfection could allow recovered patients to expand their interactions with infected and susceptible people, potentially reducing overall transmission rates when interactions are permitted to expand. New National Science Foundation-funded modeling of the virus' behavior suggests that an intervention strategy based on shield immunity could reduce the risk of allowing the higher levels of human interaction needed to support expanded economic activity.

Researchers to measure 'coronavirus slide' in kids' reading skills [CARES Act]

The new research project, funded by the National Science Foundation, will measure the negative impact on reading caused by widespread school closures as a result of the COVID-19 pandemic. It will also determine whether the use of remote learning tools can prevent the loss of reading skills in young students, particularly students in underserved communities or with special needs.

National Science Foundation-funded scientists developing more accurate statistical models of COVID-19 [CARES Act]

Armed with a rapid response research grant from the National Science Foundation, University of Oregon biologist Stilianos Louca and his colleagues are mining public databases for genomic and associated data on the coronavirus that causes COVID-19. Unlike the on-the-ground approach scientist John Snow used in the mid-1850s to find the source of a cholera outbreak in London, Louca is working on computers. His hope is to model a phylogenetic tree with predictive power to help guide medical decisions and public policies on the disease.

Telemedicine transforms response to COVID-19 pandemic at NYU

A rapid increase in "virtual" medical visits during the COVID-19 pandemic could transform the way physicians provide care in the United States, according to a new National Science Foundation-funded study led by researchers at New York University's

Grossman School of Medicine.

News from April

Researchers developing one-step COVID-19 diagnostic tool [CARES Act]

Like a pregnancy test, the tool uses one sample to provide an easy-to-read negative or positive result. By simplifying testing, the researchers could put diagnostics into the hands of people everywhere -- without the need for expensive laboratories or expertise -- possibly providing the large-scale testing required for ending stay-at-home orders, reopening the economy or preparing for a predicted virus resurgence in the fall. The team is working to develop and optimize the test so that it will take a single step to perform, provide a result in less than an hour, and cost less than a dollar to manufacture. The project received a rapid response research grant from the National Science Foundation.

AI accelerating drug discovery to fight COVID-19

A project using some of the most powerful supercomputers on the planet -- including the National Science Foundation-funded Frontera and Longhorn supercomputers at the Texas Advanced Computing Center and Comet at the San Diego Supercomputer Center -- is running millions of simulations, training a machine learning system to identify the factors that might make a molecule a good candidate, and doing explorations of the most promising results.

Chemically modified mask design could potentially slow the spread of viruses

A Northwestern University researcher has received funding to develop a new self-sanitizing medical face mask that deactivates viruses on contact. The project received a rapid response research grant from the National Science Foundation.

Biologists using supercomputer simulations to analyze the coronavirus

Two University of Delaware researchers have been awarded a National Science Foundation grant to study the novel coronavirus that causes COVID-19. They're using the kinds of high-tech supercomputing tools that previously led them to new insights into other viruses, such as those that cause AIDS and Hepatitis B.

Water quality could be altered in buildings closed during COVID-19 pandemic

The researchers began their study with a Rapid Response Research grant from the National Science Foundation. The work involves monitoring water quality in buildings during a period of extended vacancy and upon the return of occupants. It's part of a national effort to advise public health officials, building owners and water utilities on how to safely recommission buildings with low or no occupancy because of the pandemic.

COVID-19: Researchers to model coronavirus for spread mitigation

To help mitigate the effects of the deadly COVID-19 virus, Penn State researchers are developing a new method of analyzing its spread and impacts on policy, with the goal of creating better prepared and more resilient health care systems. The team, involving researchers from Penn State's College of Engineering, College of Health and Human Development, and the Penn State Milton S. Hershey Medical Center, received a Rapid Response Research grant from the National Science Foundation.

College using 3D printers to make face shields for regional hospital

Somerset Community College, in Somerset, Kentucky, is putting its 3D printers to work to create face shields that will help Lake Cumberland Regional Hospital amid a supply shortage in the fight against COVID-19. The work is supported through an award from the National Science Foundation's Advanced Technological Education program to educate technicians for advanced-technology fields such as 3D printing, also known as additive manufacturing.

Mucus and the coronavirus: What is its role in spread of the virus?

As the lethal COVID-19 coronavirus propagates around the globe, we know a sneeze, a cough or simply touching a surface carrying the virus can spread the infection. What researchers don't know is what role different compositions of mucus, the slimy substances on human tissue, might play in the transmission of coronaviruses. Nor do they know why some people known as "super-spreaders" transmit the disease more than others. Now University of Utah biomedical engineer Jessica Kramer is researching how mucus plays a part in transferring coronaviruses from person to person. Kramer has received a Rapid Response Research (RAPID) grant from the National Science Foundation for the study.

Researchers track interactions with surfaces likely to carry COVID-19

Researchers in New York City are collecting detailed 3D data on human movements and behaviors -- particularly around medical facilities, public transportation systems, and other essential services -- to document the complex landscape of "surface vectors" and thus opportunities for COVID-19 transmission. Working under a National Science Foundation Rapid Response Research (RAPID) grant, a team from New York University is advancing epidemiological analysis beyond the concept that has been in use since 1854, when John Snow first mapped cholera cases to identify contaminated wells as the infection sources of

a local outbreak in London.

Coronavirus simulations completed on supercomputer

Scientists are preparing a massive computer model of the coronavirus they expect will provide new insights into how the virus infects the body. National Science Foundation-funded biochemist Rommie Amaro at the University of California, San Diego and her team are leading efforts to build the first complete all-atom model of the envelope -- the exterior component -- of the SARS-CoV-2 coronavirus.

News from March

Physicists test coronavirus particles against temperature, humidity

One of the biggest unknowns about the coronavirus is how changing seasons will affect its spread. Now physicists at the University of Utah have received a National Science Foundation grant to tackle the question.

NSF Science Matters blog

#NSFstories: Leading an army of citizen scientists in the fight against COVID-19 [CARES Act]

To address the challenges of scaling Folding@home so quickly in the wake of the COVID-19 pandemic, Bowman and his team relied on support from industry partners such as Microsoft, Nvidia, AMD, as well as an NSF Rapid Response Research (RAPID) grant. RAPID awards enable the agency to quickly process and fund research that addresses an urgent need, like COVID-19 research. Previous RAPID awards have helped advance our understanding of the Ebola and Zika disease outbreaks as well as measures to contain them.

RAPID responders: How NSF support is enabling the fight against COVID-19 in real time

When a disaster or emergency strikes, first responders answer the call. The COVID-19 global pandemic has shown that scientists and engineers are part of this essential group. Everything from vaccine development to social distancing procedures and sterilization methods for personal protective equipment relies on researchers collecting data and acting quickly. In such urgent cases, the National Science Foundation provides researchers with the support they need to get out in the field or into the lab faster than would normally be possible through the Rapid Response Research program, or RAPID awards. These awards allow scientists and engineers to quickly study all aspects of a crisis and help develop solutions.

Small business, big impact: How NSF-funded startups are joining the fight against COVID-19

In the fight against COVID-19, the world faces a new and elusive enemy. To confront the challenges posed by the current global pandemic, National Science Foundation-funded small businesses and startups are joining federal and local efforts to develop effective treatments and a potential vaccine. These private-public partnerships foster innovation and economic development, while also ensuring development of safe and effective solutions. Even NSF-funded companies that were not created to specifically respond to COVID-19 are joining the fight. Their efforts demonstrate how early investments in new technologies can create a firm foundation from which researchers can quickly draw to develop new applications that address critical issues, like the pandemic, as they arise.