

Update from the National Science Foundation



F. Fleming Crim
Chief Operating Officer
National Science Foundation

Spring Meeting
Space Studies Board

June 11, 2020



NSF Mission

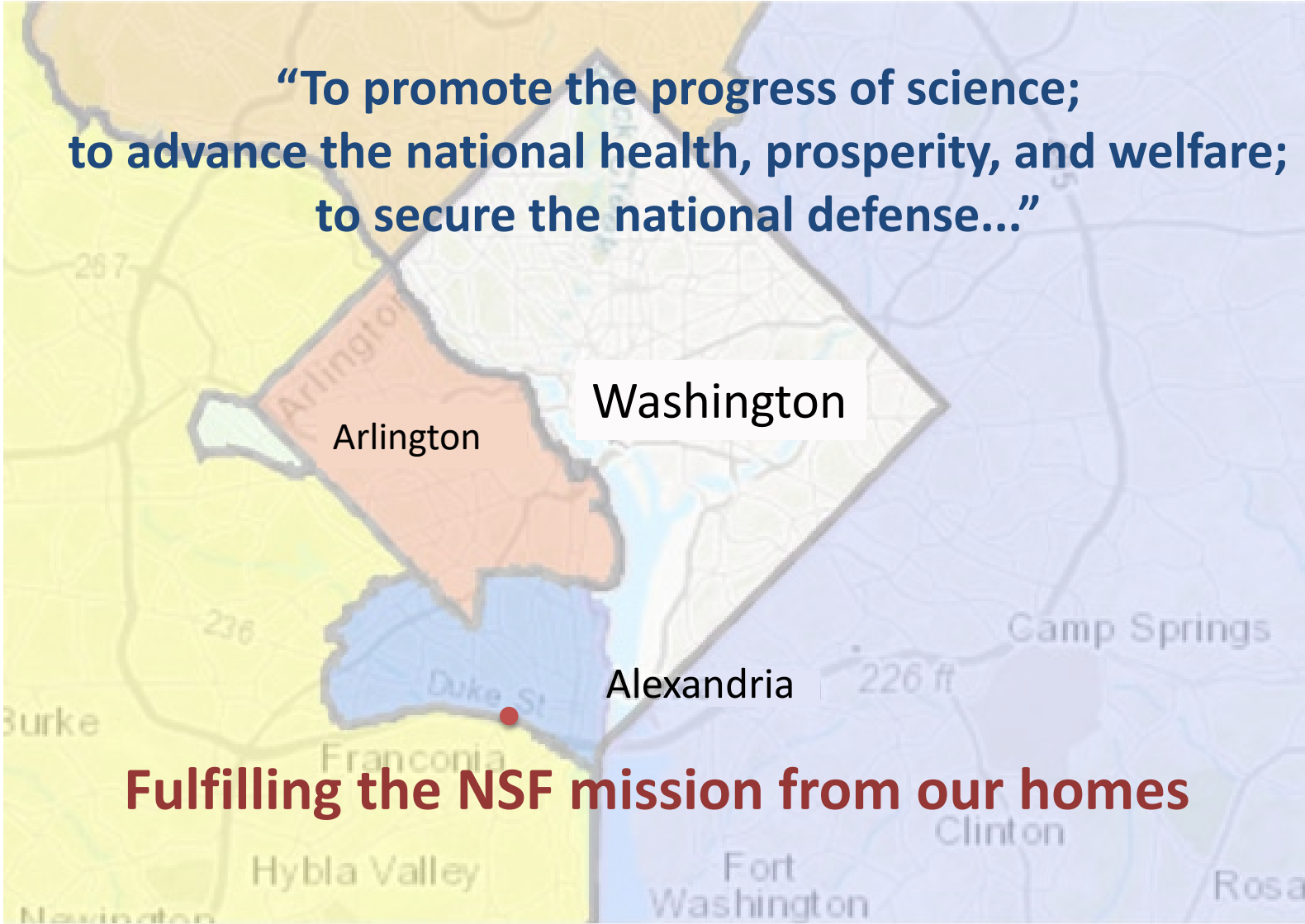
“To promote the progress of science;
to advance the national health, prosperity, and welfare;
to secure the national defense...”



National Science Foundation

NSF Mission

**“To promote the progress of science;
to advance the national health, prosperity, and welfare;
to secure the national defense...”**



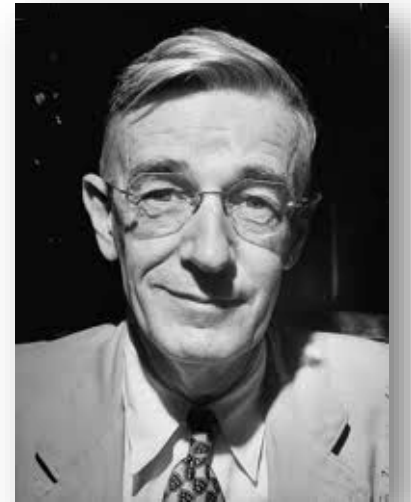
Fulfilling the NSF mission from our homes



Supporting Basic Research

Basic research ... provides scientific capital. It creates the fund from which the practical applications of knowledge must be drawn. ... **Today, it is truer than ever that basic research is the pacemaker of technological progress.** ... A nation which depends upon others for its new basic scientific knowledge will be slow in its industrial progress and weak in its competitive position ...

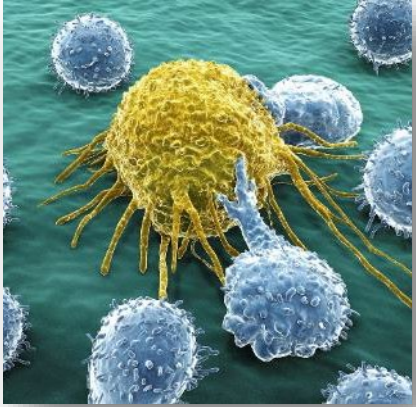
Vannevar Bush, *Science, The Endless Frontier* (1945)



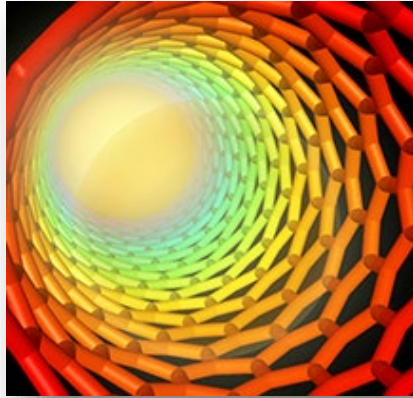
NSF 70 years



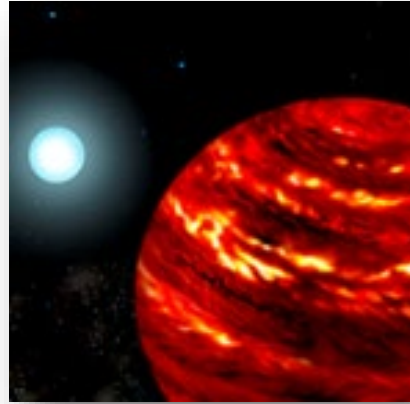
NSF Funds All Fields of Science and Engineering



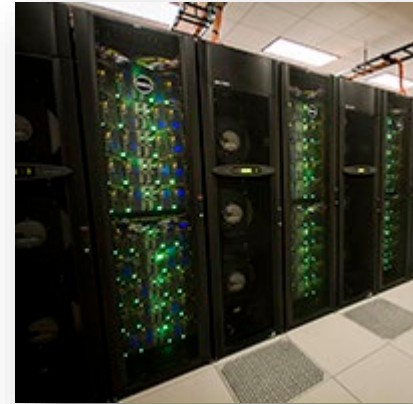
Biological Sciences



Engineering



Mathematical and
Physical Sciences



Computer and Information
Science and Engineering



Geosciences and
Polar Programs



Integrative
Activities



Education and
Human Resources



Social, Behavioral, and
Economic Sciences

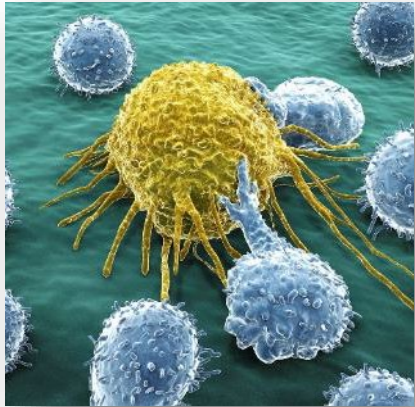


International Science
and Engineering

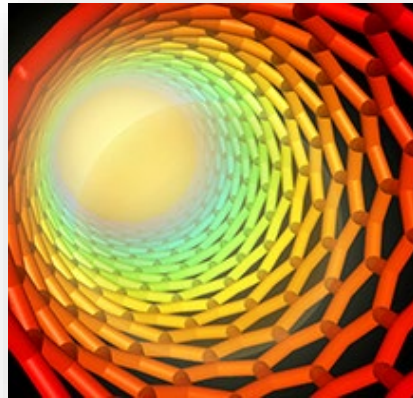


National Science Foundation

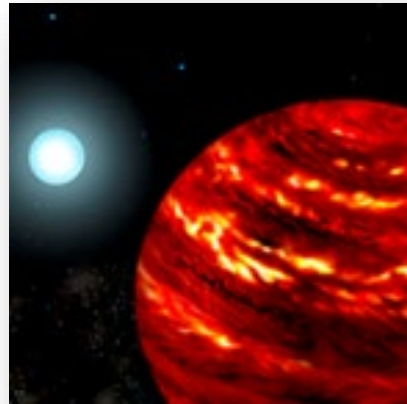
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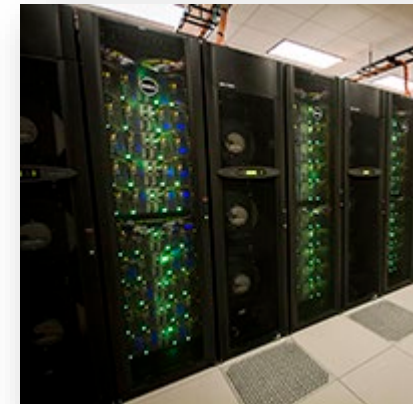
Biological Sciences



Engineering



Mathematical and
Physical Sciences

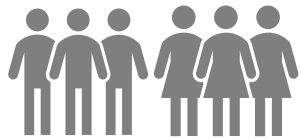


Computer and Information
Science and Engineering



Geosciences and
Polar Programs

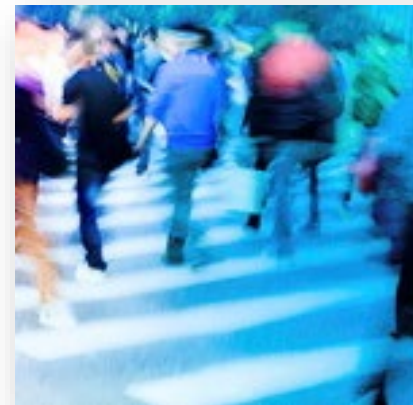
\$8.3 B



360,000 people



Education and
Human Resources



Social, Behavioral, and
Economic Sciences

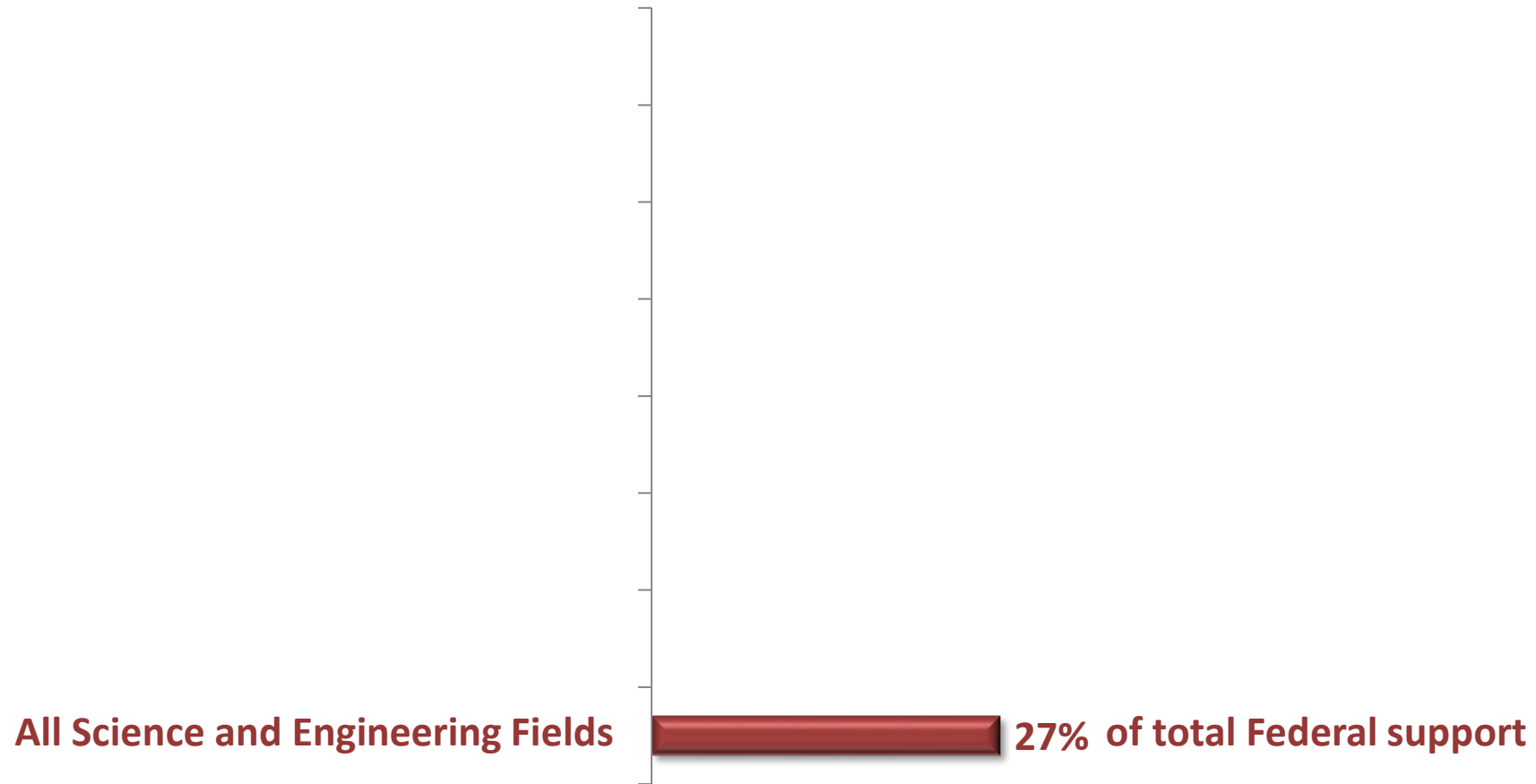


242 Nobel Laureates

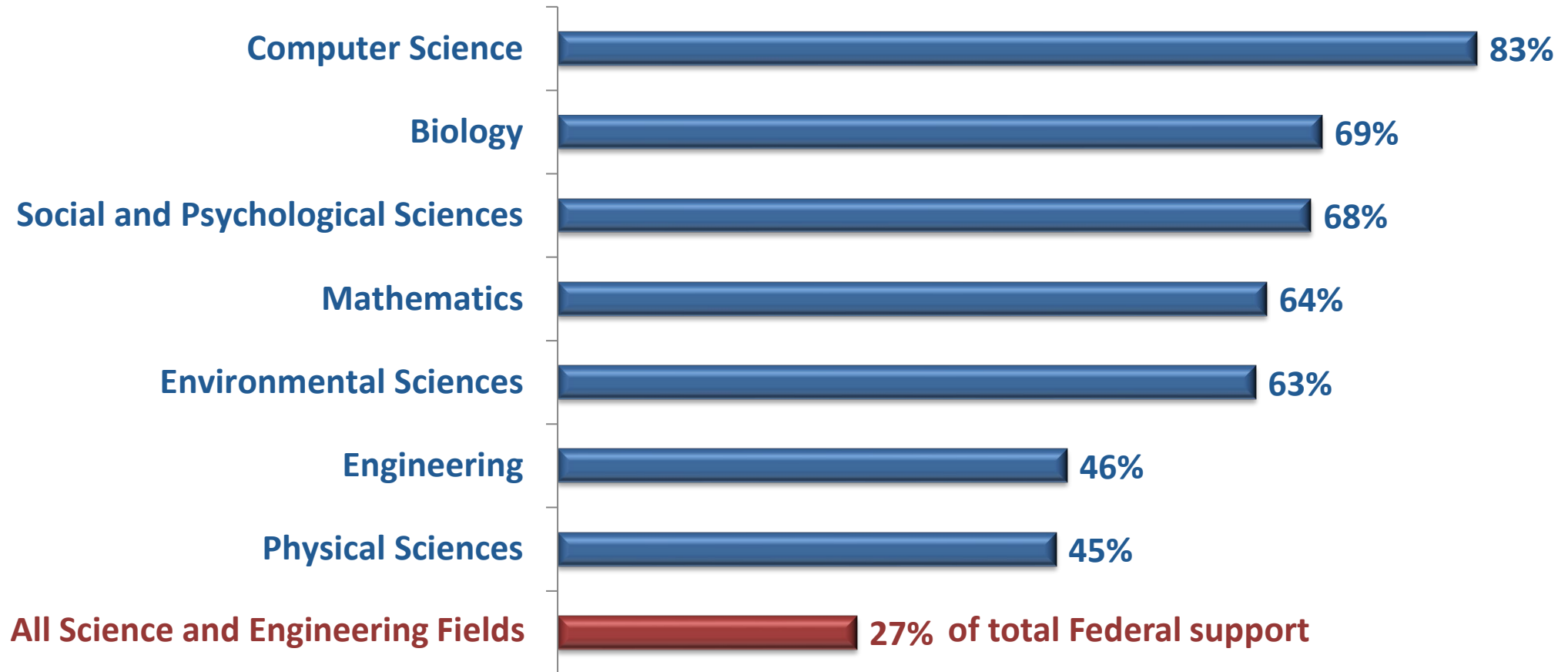


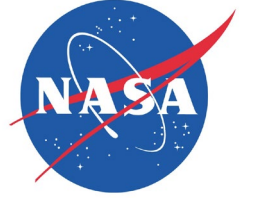
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NSF Supports Academic Basic Research



NSF Supports Academic Basic Research





NSF – NASA Mission Parallels



Support development of advanced engineering technology



Enhance the innovation ecosystem



Expand knowledge of the Universe

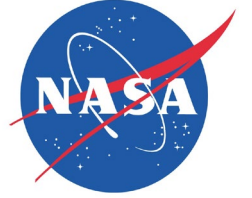


Understand Earth systems





NSF – NASA Mission Parallels



Support advanced engineering technology

Future Manufacturing – Cyber, Eco, Bio
Transport phenomena research



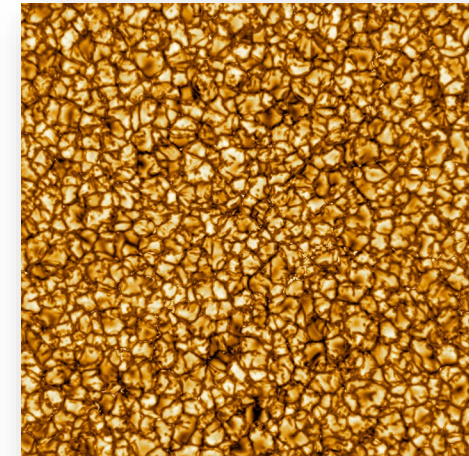
Enhance the innovation ecosystem

Convergence Accelerators
Small Business Innovation Research
Spectrum Innovation Initiative



Expand knowledge of the Universe

Major observatories
LIGO, ALMA, VLA, Gemini, DKIST, Rubin, ...
2020 decadal survey recommendations

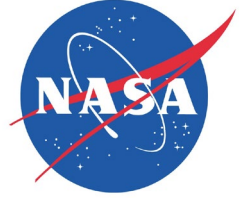


NSO/NSF/AURA



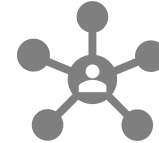


NSF – NASA Mission Parallels



Support advanced engineering technology

Future Manufacturing – Cyber, Eco, Bio
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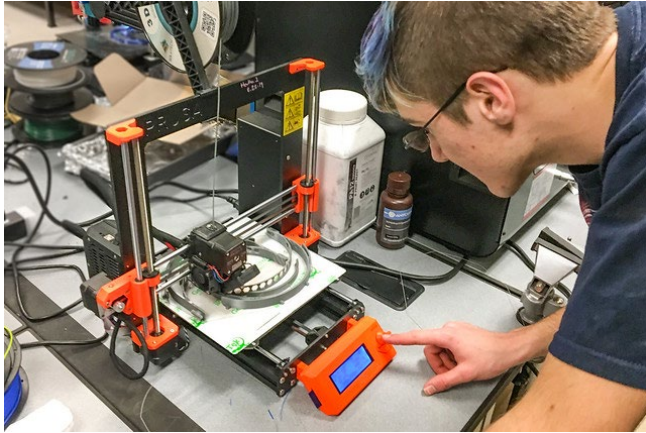


Understand Earth systems

Geodetic Facility for the
Advancement of Geoscience
(GAGE)



RAPID Response to COVID-19



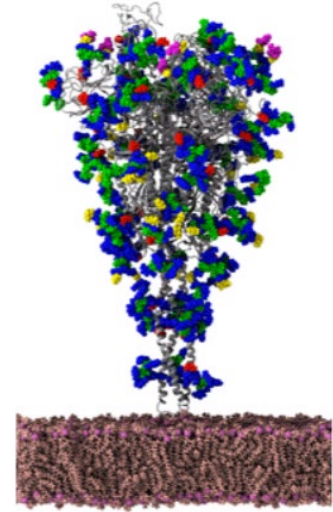
Somerset Community College, KY

**Rural Development Project
PPE using
additive manufacturing**

**\$78.3 M RAPID funds
deployed**

**554 RAPIDs awarded
since mid-March**

**\$75 M received
through CARES Act**

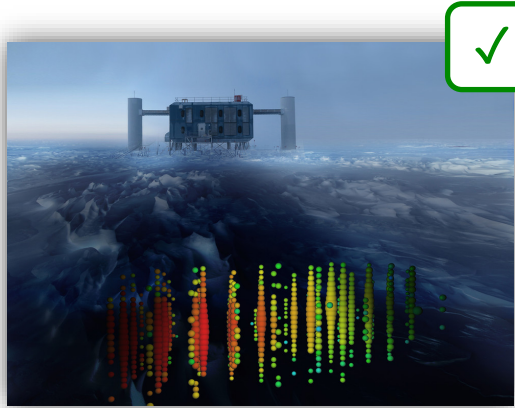


TACC, Rommie Amaro, UC San Diego

**Simulated SARS-CoV-2 spike
protein of the coronavirus**



COVID-19 Impact on Existing Facilities



IceCube Neutrino Observatory



NCAR Cheyenne



TACC Frontera



Very Large Array

March 10

Most Facilities

April 3

Some Facilities

June

Partial Operations

Science Operations Suspended

Partially Resumed



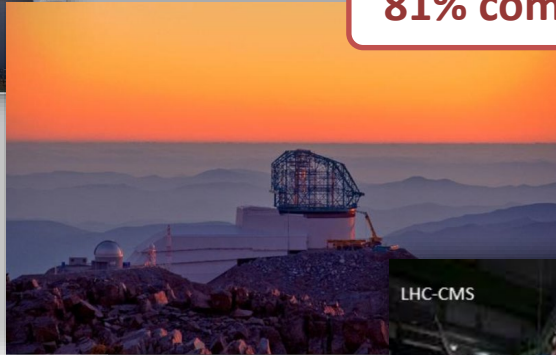
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COVID-19 Impact on Facilities under Construction



96% complete

Daniel K. Inouye Solar Telescope (DKIST)



81% complete

Vera C. Rubin Observatory



< 1% complete

High-Luminosity LHC

Antarctic Infrastructure Modernization for Science (AIMS)



16% complete

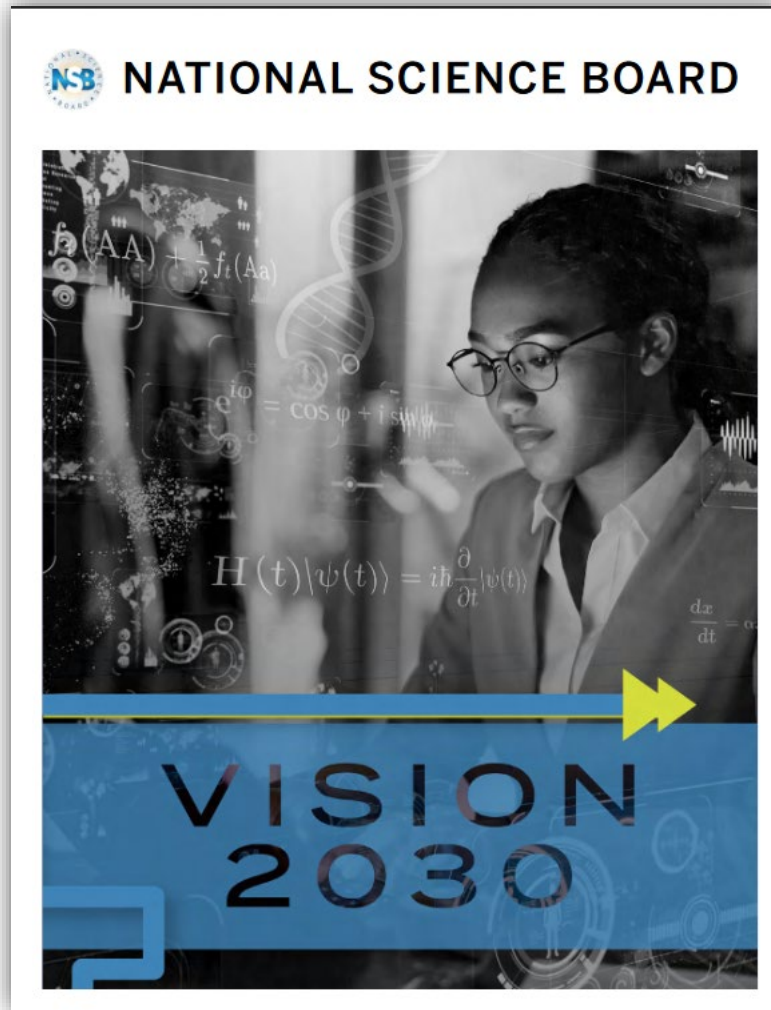


25% complete

Regional Class Research Vessels (RCRV)



NSB Vision 2030



**Upholding US
science and
engineering
ecosystem**



**Globalization
of
science and engineering**



**Growth of
knowledge- and
technology-intensive
industries**



**Demand for STEM
talent**



Industries of the Future (IoTF)

Artificial Intelligence (AI)

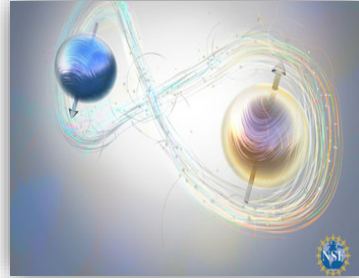


\$ 534 M



AI Research
Institutes

Quantum Information Science (QIS)

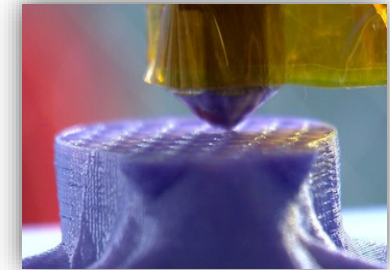


\$ 143 M



Quantum Leap
Challenges Institutes

Advanced Manufacturing



\$ 319 M



Future Manufacturing

Research Security



NSDD-189 defines fundamental research



NSF staff restricted from foreign talent recruitment programs



Rebecca Keiser



NSF Leadership Transition



France A. Cordova
Director
2014 - 2020



Kelvin Droegemeier
Acting Director
April 2020 -



Sethuraman Panchanathan
Nominated
Dec. 18, 2019



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