April 19, 2021

The Honorable Rosa DeLauro
Chair
Committee on Appropriations
U.S. House of Representatives
Washington, DC 20515

The Honorable Kay Granger
Ranking Member
Committee on Appropriations
U.S. House of Representatives
Washington, DC. 20515

The Honorable Patrick Leahy
Chair
Committee on Appropriations
U.S. Senate
Washington, DC 20510

The Honorable Richard Shelby
Vice Chair
Committee on Appropriations
U.S. Senate
Washington, DC 20510

Dear Chair DeLauro, Ranking Member Granger, Chair Leahy, and Vice Chair Shelby:

As a broad community of research organizations, professional societies, universities, and private companies, we write to urge you to provide the highest possible fiscal year (FY) 2022 allocation for the Commerce-Justice-Science (CJS) Appropriations Subcommittees in order to robustly fund the basic and applied research programs in the CJS portfolio. Significant growth is urgently needed for CJS programs, which are vital to the advancement of science, technology, economic development, and criminal justice. These include the National Science Foundation (NSF), the National Aeronautics and Space Administration (NASA), the National Oceanic and Atmospheric Administration (NOAA), the National Institute of Standards and Technology (NIST), the Office of Science and Technology Policy (OSTP), the Department of Commerce statistical agencies, and the Department of Justice (DOJ) Office of Justice Programs.

Investments in research and education, including the departments and programs in the CJS bill, lead to innovations and new technologies that improve our health, grow our economy, and enhance our quality of life. The U.S. was once the uncontested leader in science and technology but has seen our advantage erode as other nations have dramatically increased their investments in research. In particular, China has continued to dramatically increase its investments in science and technology, which have grown by 13 percent annually between 2010 and 2017.[1] It is likely that China has now surpassed the U.S. in total R&D expenditures.[2] While U.S. R&D expenditures have increased modestly over the last decade, total R&D spending as a percentage of GDP has not grown in over 30 years.[3] Moreover, due to discretionary spending constraints over the last decade, U.S. research capacity has been eroded significantly. Due to the limits

[1] Research and Development: U.S. Trends and International Comparisons. Science and Engineering Indicators, National Science Board, January 2020
[2] Widener, A. China may have pulled ahead of U.S. in race for top spot in global science R&D. Chemical and Engineering News, 15 January 2020
[3] The Perils of Complacency: America at a Tipping Point in Science and Engineering. American Academy of Arts and Sciences Report Brief, 2020

imposed by the Budget Control Act, federal R&D spending is approximately $200 billion less than it would have been if agency expenditures had maintained the same annual rate of growth as they had prior to 2011.[4] If the U.S. is to remain at the forefront of fields such as artificial intelligence, space exploration, quantum computing, and other critical technologies, the nation must recommit to strong investments in R&D, including CJS programs. In both the short and long term, such investments are critical both to our prosperity and global leadership.

Research and education programs within the CJS portfolio are also vital for addressing national emergencies. Notably, basic and applied science programs supported by CJS agencies including NSF, NIST, and NASA have been an invaluable part of the nation's efforts to address the COVID-19 pandemic. Harnessing the nation's scientific expertise, CJS agencies have funded groundbreaking research on airborne viral transmission, monitoring SARS-CoV-2 in wastewater, studying possible COVID-19 seasonality, and developing more sensitive and accurate COVID-19 tests.[5,6,7] Moreover, decades of federal investments across agencies built a foundation of scientific knowledge that allowed the nation to rapidly develop technologies to counter COVID-19. For example, research projects sponsored by NSF beginning in the 1980s contributed to the development of cryo-electron microscopy, a molecular imaging technique now widely used by researchers around the world. This technology was instrumental in studying the structure of SARS-CoV-2 and in the development of vaccines that target the virus's spike protein.[8,9] Robust and sustained funding for the CJS research agencies is therefore critical both to end the current crisis and to ensure that we have the scientific and technical capacity to address the next public health emergency.

Agencies within the CJS portfolio have key roles in addressing the threat of climate change and other environmental challenges. CJS agencies support research to model global warming, understand its effects on the Earth's ecosystems, advance mitigation and adaptation efforts, and develop clean energy technologies.[10,11,12,13] NSF, NASA, and NOAA together fund over 60 percent of our nation's federal investment in environmental research, as well as funding a large portion of our civilian observational capabilities. CJS agencies also collaborate with others across the federal government to help advance coordinated efforts to assess and address the effects of climate change on all aspects of our society and effective strategies to become a climate-ready nation.[14] For example, disaster resilience research headed by NIST, including investment in post-disaster impact research and pre-impact mitigation, help address threats from

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[4] Hourihan, M. The Budget Control Act may have cost over $200 billion in federal R&D. AAAS News, 19 January 2021
[5] NSF COVID-19 Response Funding Update, January 2021.
[6] Could COVID-19 Have Seasons? Searching for Signals in Earth Data. NASA Earth Observatory. 14 July 2020
[7] NIST and COVID-19.
[8] NSF Statement on Nobel Prize in Chemistry 2017
[9] Moore, J.P. and I.A. Wilson. Decades of basic research paved the way for today's 'warp speed' Covid-19 vaccines. STAT, 5 January 2021
[10] Climate Prediction, NOAA National Center for Environmental Information
[11] Global Climate Modeling, NASA Goddard Institute for Space Studies
[12] Disaster Resilience Research Grants (NSF and NIST joint program)
[13] NIST Alternative Energy
[14] U.S. Global Change Research Program

high-winds, fire, or flood. Research programs supported by the CJS bill are central to addressing global environmental threats.

A robust CJS allocation will allow the Commerce Department to fund programs that are vital to the U.S. economy and our economic recovery. Commerce Department programs, including the Bureau of Economic Analysis, produce detailed analyses that are indispensable for understanding our multitrillion-dollar economy. Although the 2020 Census has concluded, ongoing programs such as the American Community Survey, continue to collect high quality socioeconomic and demographic data that scientists and policymakers use to inform basic, clinical, and applied research and research training activities.[15,16]

CJS research programs also play an important role in advancing equity and racial justice. As our nation continues to struggle with structural and systemic racism, research supported by DOJ, including the National Institute of Justice, informs policies related to prison and sentencing reform and policing strategies. These research programs provide vital data and complement other efforts across the government to address racial prejudice and other injustices in our society. In addition, DOJ research programs are exploring other questions with important societal implications, including police response to homelessness and the prevention of domestic terrorism.[17]

In sum, the federal government has a unique role in funding the R&D crucial for our national needs, but the federal share of R&D spending remains at or near its lowest point since the 1950s.[18] The CJS bill is singularly responsible for the majority of the nation's annual investment in non-biomedical, non-defense research – the very research that is essential for our long-term economic growth, security, and prosperity.

Given the importance of federal support for R&D and the central role of the CJS Subcommittees in funding the nation's research enterprise, we respectfully urge you and your colleagues to provide a robust CJS 302(b) allocation. With sufficient resources, the Subcommittees will be able to make the R&D investments necessary to meet our nation's challenges and opportunities.

Sincerely,

The Census Project
Coalition for Aerospace and Science
Coalition for National Science Funding
Crime and Justice Research Alliance
Friends of NOAA
The NIST Coalition

African American Health Alliance
American Anthropological Association

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[15] Bureau of Economic Analysis
[16] American Community Survey
[17] National Institute of Justice, Current Funding Opportunities, Accessed March 2021
[18] Research and Development, Science and Engineering Indicators, 2020

American Association for the Advancement of Science
American Association of Geographers
American Association of Physics Teachers
American Astronomical Society
American Chemical Society
American Educational Research Association
American Geophysical Union (AGU)
American Institute for Medical and Biological Engineering
American Institute of Biological Sciences
American Mathematical Society
American Physical Society
American Physiological Society
American Psychological Association
American Society for Pharmacology and Experimental Therapeutics
American Society of Agronomy
American Society of Civil Engineers
American Society of Plant Biologists
American Sociological Association
American Statistical Association
Association for Psychological Science
Association of American Universities
Association of Population Centers
Association of Public & Land-Grant Universities
Association of Public Data Users (APDU)
Association of Science and Technology Centers
Biophysical Society
Boston University
Brown University
California Institute of Technology
Carnegie Mellon University
Computing Research Association
Consortium for Ocean Leadership
Consortium of Social Science Associations
Cornell University
Council of Professional Associations on Federal Statistics (COPAFS)
Council on Undergraduate Research
Crop Science Society of America
Duke University
Ecological Society of America
Entomological Society of America
Federation of American Societies for Experimental Biology
Federation of Associations in Behavioral and Brain Sciences
Florida State University

Free Government Information
Geological Society of America
Government Information Watch
Incorporated Research Institutions for Seismology
Indiana University
Lewis-Burke Associates LLC
MACS - Minnesotans for the ACS
Materials Research Society
Mathematical Association of America
Michigan State University
Natural Science Collections Alliance
New Mexico State University
Nielsen
Northeastern University
Northern Illinois University
Northwestern University
Population Association of America
Princeton University
Prison Policy Initiative
Prostasia Foundation
Research!America
SAGE Publishing
Seismological Society of America
Silicon Valley Leadership Group
Society for American Archaeology
Society for Industrial and Applied Mathematics
Society for Industrial and Organizational Psychology
Society for Neuroscience
Soil Science Society of America
SPIE, the international society for optics and photonics
Stanford University
Stevens Institute of Technology
Stony Brook University
TAO
The Gerontological Society of America
Tufts University
UCLA
University of California, Berkeley
University of California, Davis
University of California, Riverside
University of California, San Diego
University of California, Santa Cruz
University of California System

University of Hawai'i System
University of Maine
University of Maine System
University of Michigan
University of North Carolina at Chapel Hill
University of North Carolina System
University of North Carolina Wilmington (UNCW)
University of Oregon
University of Pennsylvania
University of Pittsburgh
US Ignite
Vanderbilt University
Wayne State University
Woods Hole Oceanographic Institution
Yale University