

# Fund American Science

***The National Science Foundation (NSF) and the Department of Energy's Office of Science (DOE SC) conduct research and development critical for the U.S. to remain at the forefront of science and innovation in areas such as artificial intelligence, quantum science, wireless technologies, and medical diagnostics. Funding for these agencies is vital to the nation's economic and national security.***

In 2022 Congress acknowledged America's critical needs in domestic semiconductor manufacturing by passing the CHIPS and Science Act. That legislation authorized – but did not appropriate -- significant funding increases to NSF and the DOE SC to keep the United States globally competitive and stimulate growth and innovation across the country. It is time to fulfill the vision for science set forth in the act. ***We urge Congress to follow through on the promise of CHIPS and Science and support robust funding for NSF and DOE SC programs in research, education, scientific equipment, and infrastructure as it considers its future budget priorities.***

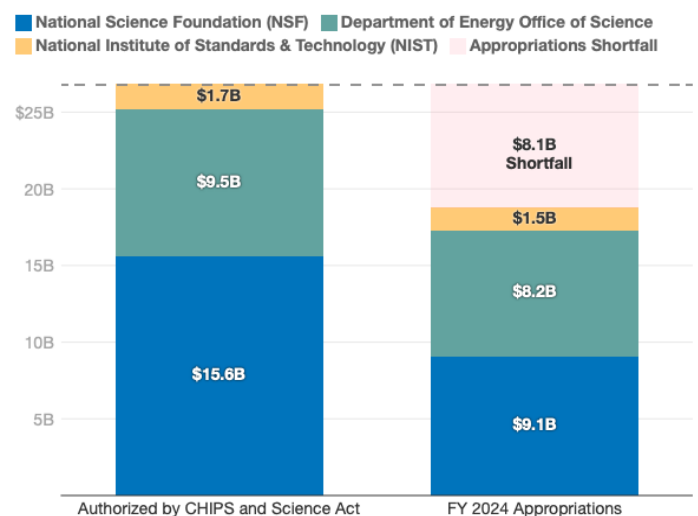
**What's at stake: The United States risks losing its status as the global leader in science and innovation.**

The foundational knowledge that these science agencies produce undergirds the nation's economic and national security. NSF and DOE SC support critical areas of scientific research, including artificial intelligence, robotics, quantum information sciences, cybersecurity, microelectronics, nuclear fusion, energy sciences, and biotechnology. These research activities also train people to have the necessary skills to support the manufacturing workforce for semiconductors and other areas.

Past research and scientific facilities supported by these two research agencies have resulted in critical breakthroughs such as the Internet, Magnetic Resonance Imaging (MRI), GPS, search engine technology, and new drugs and medical diagnostic tools. These and other scientific and technological advances have fueled our economy, improved public health, and underpinned our national security for the last 70-plus years. The investments made in research at these agencies have also been critical for training the future STEM workforce that will be essential if the United States is to maintain its global competitiveness.

But we cannot rest on our laurels as competitor nations step up. ***The United States is at a 45-year low in our investments in R&D as a share of GDP.*** Even as U.S. government funding for fundamental scientific research has dropped significantly, other nations have increased their investments in research.

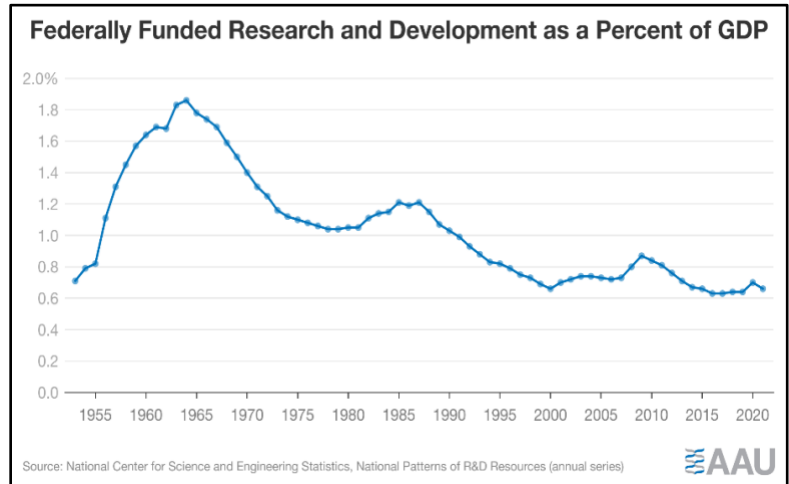
**FY2024 Appropriations Fall Short of CHIPS and Science Authorizations**



Source: AAAS R&D Appropriations

## Key Facts:

- In the mid-1960s, the overall share of GDP that the federal government invested in R&D was approximately 2%. Since then, this share has declined to less than 1%; at the same time other countries such as China have increased their R&D investments as a share of GDP. While our economy has grown, our country has not valued federal R&D as we did historically.



- From 2000 to 2020, China has had the highest rate of growth of any country in public and private R&D spending at an astounding 1,669%.
- From 2000 to 2020, China's share of total global R&D expenditures (public and private) rose from 4.9 percent to 24.8 percent; during the same period, the U.S. share fell from 39.9 percent to 30.7 percent. We are in critical danger of losing dominance in many emerging technology sectors. China is already pushing the United States in wireless communications, advanced materials, quantum sensing, biotechnology, advanced robotics and other key areas.
- The latest [National Science Board Science and Engineering Indicators report](#) shows China's annual increase of R&D spending has averaged 10.6% over the last decade, while the United States' annual average increase was only 5.4% over the same period.
- Despite the vision put forward in the CHIPS and Science Act to increase government investments in American science, actual FY 2023 funding levels fell almost \$3 billion dollars short of the science funding targets set forth in CHIPS and Science. FY24 looks even worse, with proposals so far in both chambers falling more than \$7 billion short of the law's authorized amounts.
- The United States is facing a significant shortage of technicians, computer scientists, and engineers, with a projected shortfall of 67,000 of these workers in the semiconductor industry alone by 2030 and a gap of 1.4 million such workers throughout the broader U.S. economy.
- The United States must grow its domestic talent base. Currently more than half of doctoral students in key science and engineering fields are foreign-born. One of America's great strengths is our ability to attract the best and brightest students from abroad, but we also need to make sure that we are leveraging our home-grown talent through investments in education and research.

***Now is the time for Congress to prioritize investments in NSF and DOE SC research and educational programs. Resources provided to these agencies are essential to ensuring America's future economic competitiveness and national security.***