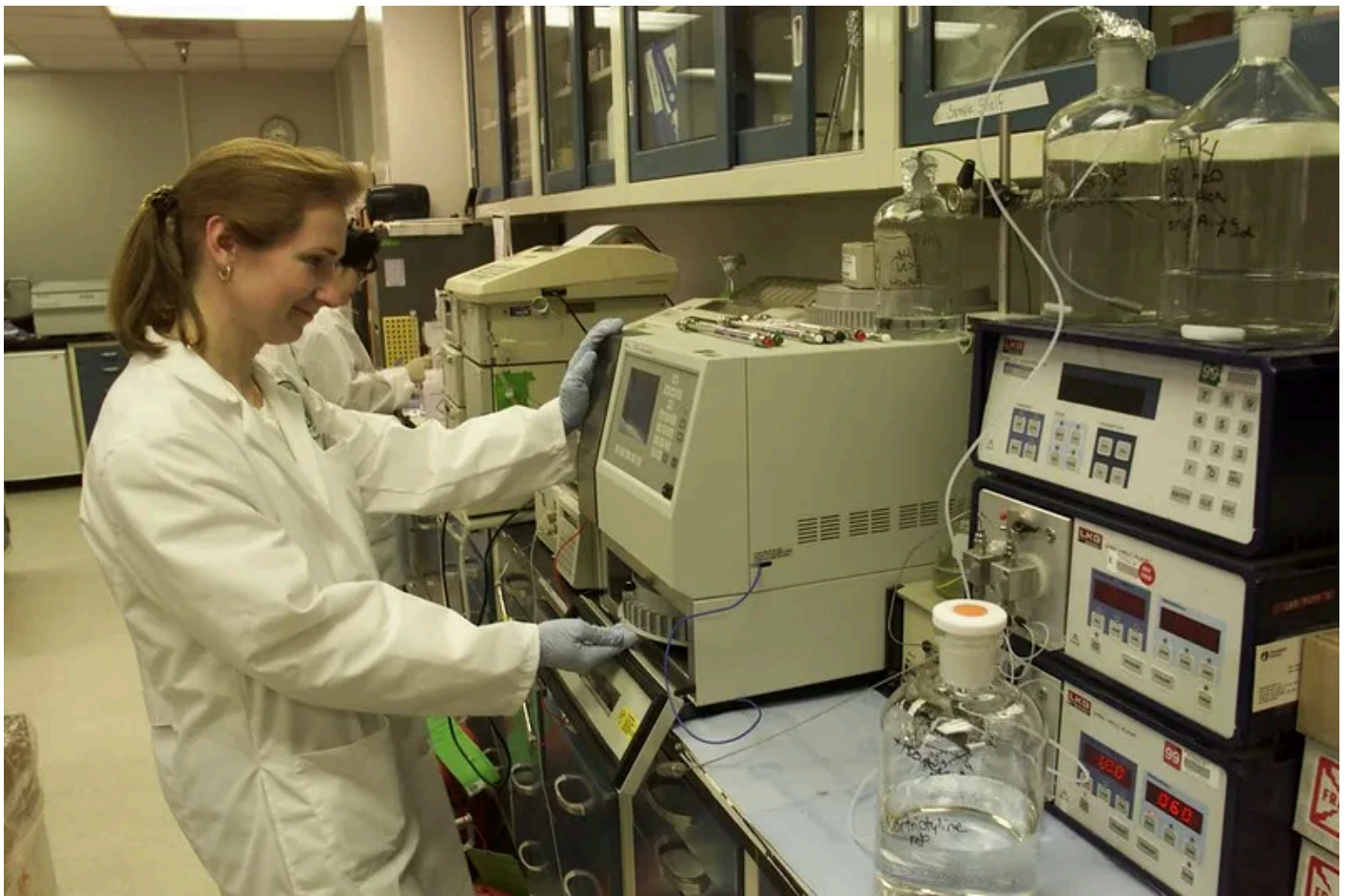


Time for Congress to save American science ... and the nation

By John P. Holdren, Neal Lane | June 6, 2025



Laboratory personnel in the NIH Clinical Center. Public domain Image courtesy of NIH/NIH photographers Bill and Ernie Branson.

Trump's tariffs and deportations continue to command the lion's share of headlines, but his perverse campaign against American science continues apace, with impacts likely to be profound. The rapidly growing damage to the scientific pillar of American well-

being and influence requires that Republican members of Congress stand up to rein Trump in.

Consistent federal support for science over the past 75 years has underpinned the advances that, converted to practice by the private sector, have given the United States the world's strongest economy, most productive farms, most effective biomedical technology, most robust environmental protection, and most capable military. But Trump's vicious attacks on science, which started on Inauguration Day, are putting these advantages at serious risk.

Brutal cuts in staffs and budgets have devastated not only vital scientific and science-centered work carried out inside the government, but also science at colleges, universities, and nongovernmental research centers across the country that depend on federal funding. The businesses that support the decimated offices and programs are likewise being impacted. The immense profusion of US companies that work to convert the advances flowing from government-supported science into societal benefit will suffer, too.

We view these matters as scientists who have had senior responsibilities in overseeing science and technology in the US government. Both of us had good working relationships in those roles with members of Congress on both sides of the aisle. That was to be expected, given the longstanding bipartisan consensus on the importance of the government's support for basic and early-stage applied research to the economy, public health, and national security.

But what is happening now exceeds our worst fears. Consider, first, the **National Science Foundation** (NSF), one of the brightest jewels in the crown of US science in the public interest. It was established by Congress in 1950 with the mission "to promote the progress of science...", and it's the nation's largest single funder of university basic research in fields other than medicine. Basic research, of course, is the seed corn from which future advances in applied science and technology flow: In its 75 years of existence and continuous support across administrations and Congresses, the NSF has funded research underpinning the internet, the Google search engine, magnetic-resonance imaging, laser eye surgery, 3-D printing, **CRISPR gene-editing technology**, and much more. The gold-standard, expert, peer-review process governing its grant-making has been the envy of the world. No fewer than 262 of its grantees have received Nobel Prizes.

But the NSF became one of the early targets of the Trump administration's purported search for so-called "fat" in the Federal budget. Initial staff cuts of about 10 percent were temporarily reversed by court order, but internal documents indicate that the administration is aiming ultimately for cuts in staff of 30 percent or more, and **Trump's preliminary budget for Fiscal Year 2026** would reduce the agency's funding by 55 percent. Much of what the NSF does has been drastically slowed already by the cuts to date and the other restraints placed on the agency. The NSF has only made half the number of the grants normally awarded by this time of year.

NSF's co-stars in the Federal research ecosystem are the **National Institutes of Health** (NIH)—the country's largest funder of basic and applied research combined, essentially all of it focused on biomedicine and public health—and the Department of Energy (DOE), with basic and applied research investments spanning the physical and environmental sciences and engineering.

The NIH, by far the world's biggest funder of biomedical research, spends about 83 percent of its nearly \$48 billion **annual budget** on competitive grants, selected using expert peer review, supporting over 300,000 researchers across all 50 states. Another 11 percent of the NIH budget supports nearly 6,000 scientists at the agency's own laboratories. NIH-funded research addresses causes, diagnosis, prevention, and cures for cancer, heart disease, diabetes, Parkinson's, Alzheimer's, and more. The findings over the years have contributed importantly to a **decrease in the death rate** in the United States from all causes by about 35 percent between 1970 and 2020. Its work was instrumental in enabling the production of COVID-19 vaccines in record time.

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The Trump administration's disruptions to the work of the NIH have included **significant staff cuts**, a funding freeze that has largely persisted despite court orders to the contrary, **termination of existing grants** deemed not to meet the Trump administration's priorities, and a proposed reduction in the "overhead" portion of research grants to universities drastic enough to imperil the survival of many biomedical research programs. (A district court has **blocked** the implementation of the overhead cut, but the Trump administration is expected to appeal.) **In response**, a number of major US

research universities have frozen faculty and staff hiring, many have stopped or reduced PhD admissions, and some have initiated layoffs. Staff cuts at the NIH are expected to reach **25 percent**, and Trump's preliminary Fiscal Year 2026 budget would **slash the agency's funding** by a debilitating \$20 billion.

Of the Energy Department's \$50 billion budget in **Fiscal Year 2024**, about \$15 billion went to non-defense research and development. About \$7 billion went to R&D on energy-supply options (nuclear, fossil, and renewable) and energy efficiency, and \$8 billion went to basic research supported by the agency's Office of Science. That office, the nation's largest funder of basic research in the physical sciences, supported 25,000 researchers (including students) at 300 institutions around the country, including 17 Department of Energy national laboratories; that work **included** advanced scientific computing, basic energy sciences, biological and environmental research, fusion energy sciences, high energy physics, and nuclear physics.

Leaked documents indicate that the administration considers only **56 percent** of the Energy Department's 16,000 employees "essential." President Trump's preliminary **FY2026 budget** would cut \$2.5 billion from the Office of Energy Efficiency and Renewable Energy, and \$15.2 billion in support for renewable energy, energy efficiency, and climate in the Infrastructure Investment and Jobs Act. In addition, the Department of Energy has followed the NIH's example in trying to **cut drastically** the indirect-charge rate for research grants to universities, an estimated \$400 million annual hit on the grantee institutions.

Cuts at other major science-centered agencies—especially those focused on climate, other environmental science, and public health and safety—have also been brutal.

The National Oceanic and Atmospheric Administration (NOAA)—which performs and funds much of the nation's research and data analysis essential to predicting the weather, managing ocean fisheries, understanding climate change, and building resilience against it—has suffered significant **staff cuts**, with more expected. The entire **research division at NOAA** is being shut down. NASA, whose instrumentation and science programs focus not only outward to space but also on the workings of Earth's biological and geophysical systems, has fired its chief scientist and is slated for a 50 percent budget cut in its Earth science programs.

The Environmental Protection Agency (EPA), proposed for a 55 percent budget cut overall, is in the process of closing its R&D division, whose work underpins the

regulations that protect public health from pollutants of all kinds. The United States Agency for International Development, or USAID—which performed significant research related to nutrition and health but, just as importantly, applied the best science with great effectiveness in its indispensable support for millions of the world’s most vulnerable populations—has been **shut down**, with just a few of its former responsibilities transferred to the US State Department.

Similar stories abound across virtually all of the federal government agencies that perform scientific research and apply it in the public interest. **Courageous judges** have ordered pauses on a number of the Trump administration’s broad-brush assaults, but their success at slowing the impacts has been limited so far and the prospects for court-ordered restraint in the longer term are uncertain. No matter how these cases turn out, a considerable amount of damage will have been done, and the United States will look less and less like a leader in an increasingly competitive world where strength in science, technology, and innovation are critical.

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China, which was already challenging US scientific, technological, and economic leadership globally, surely sees the wounds the Trump administration is inflicting on science as an **unexpected gift**. It’s no surprise that China, as well as a number of European countries, have quickly moved to offer positions to US scientific talent being fired or dispirited by the Trump administration. At the same time, the recruitment of foreign science and technology talent—so important to US progress over the decades—is being made vastly more difficult by the Administration’s actions.

The nation’s research universities, moreover, are at risk not only from the loss of research funding; they also face attack for maintaining policies and academic programs that do not comport with the administration’s preferences. Fines in the form of multi-hundred-million-dollar funding cuts have been imposed on a number of major universities for such alleged infractions, sending a chilling message to other universities across the country and adding to the discouragement of young people from pursuing university studies in science and technology.

While our own professional experience has prompted our focus here on the damage being done by the administration to the US science enterprise, that is only a part of a constellation of federal actions undermining the roles of evidence and fact-based analysis in our society. The other elements include chronic misrepresentation and misdirection by high government officials and their spokespersons, **termination** of access to thousands of federal databases and informational websites, **firing inspectors general** across federal agencies, **criminalization of speech** critical of administration policies, threats to **defund** public radio and television, **intimidation** of other mainstream media, **disparaging judges** who have ruled against administration excesses, and **punishing law firms** that have displeased the President.

What to do? (Here we speak not as scientists but simply as two long-time observers of the American political scene.)

Some who oppose the president's policies and actions **say the best option**, lacking the votes in Congress to generate restraints from that quarter, is to lay low until widespread dissatisfaction over the growing damage to voters' interests reshapes the Congress in the 2026 midterm elections. The danger in this strategy is that the damage to democracy's guardrails—including disempowering the Congress, taking control of the armed forces, and attempting to intimidate the judiciary—may be so complete by then as to make the 2026 midterms irrelevant.

Others argue that the **courts** are the best bet for democracy's preservation. That is surely a better bet than simply waiting for the midterms, but the president's attorneys are experts at endless appeals, the ultimate outcome from any given court case is not predictable, and all of the courts—including the Supreme Court—are limited in their capacity to enforce their rulings.

We believe the best hope for saving science and, perhaps, saving our form of democracy, is convincing at least a couple dozen Republican members of Congress that it's up to them—that the stakes require exercising the prerogatives of the Congress to constrain excesses by the Executive Branch and resuming the serious conversations, debates, and compromise across the aisle and between the branches that used to be the way policy was made.

If just a modest fraction of Republican House Members and Senators would decide to honor their solemn oaths to defend the Constitution and their obligation to protect the well-being of everyday Americans, they could join like-minded Democrats in protecting

the flow of benefits from Federal support of science to Americans in every county, city, and state of the United States of America. And they'd be protecting, at the same time, the respect for reasoned argument and civil discourse that a functioning democracy requires.

To get this result, it will be essential that all who recognize the current danger stand up and say, with one voice, that lying low and hoping for the best is a prescription for further disaster.