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Democracy Dies in Darkness

Opinion

Trump is undermining U.S. science. Here's why that's dangerous.

Science has played a crucial role in making the United States great and powerful.

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The Trump administration's reckless assaults on U.S. science are endangering the nation. If allowed to continue, they will lead to the destruction of a grand but politically vulnerable edifice that has been the envy of the world for decades.

The evisceration of the National Science Foundation (NSF) — including wholesale firings, budget-slashing and arbitrary elimination of grants — is especially worrisome to those of us who understand the crucial role science has played in making America a great and powerful nation. Congress must act soon to halt this devastating attack.

Established in 1950 at the outset of the Cold War, the NSF was the realization of a concept envisioned by Vannevar Bush in his famous 1945 report, "Science: The Endless Frontier." Focused on basic research in the physical sciences, the agency grew slowly but steadily during the 1950s, experiencing a burst of political support and funding growth after the launch of the Soviet Union's Sputnik I satellite shocked the nation in 1957.

At its heart was a management ethos borrowed from successful wartime research: the idea that knowledgeable scientists could identify the most fruitful topics and the best ways to pursue them. The NSF usually recruits experienced scientists to manage its programs, bringing them from universities and research institutes to its Virginia headquarters for a few years' duration. Thousands of other scientists have served on its peer-review panels.

The agency played a leading role in bringing the internet and World Wide Web to a broad spectrum of users. Its NSFNET computer network, originally intended for the academic and educational pursuits of scientists at U.S. universities, was opened to public and commercial use in 1991, serving as the internet's "backbone." The first widely available Web browser — Mosaic, the prototype of many subsequent browsers — was developed by two programmers at the NSF-funded National Center for Supercomputing Applications at the University of Illinois. And during the mid-1990s, NSF supported Stanford University's Digital Library Initiative, in which graduate students Larry Page and Serge*y* Brin developed the guts of their Google search engine.

Another outstanding NSF contribution is the Laser Interferometer Gravitational- Wave Observatory (LIGO), which has recorded incredibly faint space-time ripples triggered eons earlier by cataclysmal black hole mergers. Its program managers' risk-taking and patience were rewarded by this breakthrough, for which three LIGO scientists received the 2017 Nobel Prize in physics. The NSF's farsighted management of this project, sustained over three decades, has also stimulated advances in laser and quantum technologies.

The foundation has also supported cutting-edge research in microbiology — for example, that of Jennifer Doudna, who shared the 2020 Nobel Prize for the discovery of the gene-editing technology that is now the primary tool for research in molecular biology.

These striking examples underscore the benefits and wisdom of allowing NSF scientist-managers sufficient freedom to support long-term basic-research projects whose outcomes cannot be anticipated. That was the management ethos followed by Bush and his World War II-era Office of Scientific Research and Development, which led to many decisive weapons technologies.

In the past, the NSF has usually enjoyed bipartisan support from both presidents and members of Congress. But the ravages currently being inflicted upon the agency may bring a truly golden era of American science to a halt. The February dismissal of 168 "probationary" NSF employees included career scientists newly arrived from academic positions to work as program managers familiar with the scientific disciplines they were to oversee. Though some have been reinstated by court order, the chilling uncertainty this ill-considered action instills in the NSF workforce and its grantees can seriously harm U.S. science.

The Trump forces now directing the NSF have been terminating existing grants at a record pace — especially in such areas as climate science and educational diversity, but also in chemistry, physics and materials sciences. In 2025, as compared with recent years, the NSF has so far awarded just under $1 billion in new grants, barely half the normal pace. Such cutbacks are uniquely damaging to younger scientists, who often depend on NSF fellowships and grants to launch their scientific careers. They represent the future of American science.

What's worse, the 2026 fiscal year Trump budget calls for slashing $5 billion from the current $9 billion NSF budget. That would be the death knell of the storied agency as it has been known for decades — coming at the very time when China is increasing its support of basic research. The Trump forces want to engineer a tremendous reduction in personnel and focus NSF activities narrowly on applied research.

But where is the basic and early-stage research, for which the NSF is world renowned? Such a limited, myopic scheme will severely damage U.S. science — perhaps beyond repair.

We urge Congress — particularly Senate Republicans — to awaken to what has been happening and reassert its statutory authority over NSF funding, direction and management, as well as over the other federal agencies involved in scientific research. The future of U.S. science, technology, economic well-being and national security depends on it.