

Case No. 25-2230

**In the United States Court of Appeals
For the First Circuit**

PRESIDENT AND FELLOWS OF HARVARD COLLEGE,

Plaintiff-Appellee,

vs.

UNITED STATES DEPARTMENT OF HEALTH AND HUMAN SERVICES; NATIONAL INSTITUTES OF HEALTH; ROBERT F. KENNEDY, in his official capacity as Secretary of the United States Department of Health and Human Services; UNITED STATES DEPARTMENT OF JUSTICE; TODD BLANCHE, in his official capacity as Acting Attorney General of the United States; UNITED STATES DEPARTMENT OF EDUCATION; LINDA MCMAHON, in her official capacity as Secretary of the United States Department of Education; GENERAL SERVICES ADMINISTRATION; EDWARD FORST, in his official capacity as Administrator of the United States General Services Administration; UNITED STATES DEPARTMENT OF ENERGY; CHRISTOPHER WRIGHT, in his official capacity as Secretary of the Department of Energy; NATIONAL SCIENCE FOUNDATION; BRIAN STONE, in his official capacity as Acting Director of the United States National Science Foundation; UNITED STATES DEPARTMENT OF DEFENSE; PETER HEGSETH, in his official capacity as Secretary of the United States Department of Defense; NATIONAL AERONAUTICS AND SPACE ADMINISTRATION; JARED ISAACMAN, in his official capacity as Administrator of the National Aeronautics and Space Administration; UNITED STATES DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT; SCOTT TURNER, in his official capacity as Secretary of Housing and Urban Development; UNITED STATES DEPARTMENT OF AGRICULTURE; BROOKE L. ROLLINS, in her official capacity as Secretary of Agriculture,

Defendants-Appellants.

**On Appeal from the United States District Court for the District of Massachusetts;
Judge Allison Burroughs, Case No. 1:25-cv-11048-ADB**

**BRIEF OF *AMICI CURIAE* OF U.S. COLLEGES AND UNIVERSITIES IN
SUPPORT OF PLAINTIFF-APPELLEE AND AFFIRMANCE**

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CORPORATE DISCLOSURE STATEMENT

Pursuant to Rule 26.1(a) of the Federal Rules of Appellate Procedure, *amici curiae*, listed in Appendix A, hereby disclose that *amici* have no parent corporations and that no publicly held corporation owns 10% or more of *amici*'s respective stock.

Dated: July 22, 2026

/s/ Donald B. Verrilli, Jr.
Donald B. Verrilli, Jr.

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INTEREST OF *AMICI CURIAE*¹

Amici curiae are U.S. research universities and colleges. For decades, these institutions have competed for and received federal funding to support scientific research by their professors, postdoctoral fellows, research scientists, and students. They have leveraged those federal resources, along with investments of their own, to advance scientific knowledge in ways that have made, and continue to make, Americans more prosperous, healthy, and secure. This historic collaboration dates back to World War II. It has fueled progress and sustained America's position in the world ever since. The federal government's partnership with America's research universities and colleges is one of the Nation's greatest advantages in the fight to maintain global competitiveness, and *amici* submit this brief to illustrate the magnitude of the harm that will result if it is compromised.

INTRODUCTION

For over 80 years, the federal government has made substantial investments in scientific research at U.S. universities and colleges. Federal funding has underwritten American security, prosperity and leadership at home and abroad,

¹ In accordance with Federal Rule of Appellate Procedure 29(a)(4)(E), *amici* certify that (1) this brief was authored entirely by counsel for *amici curiae* and not by counsel for any party, in whole or part; (2) no party or counsel for any party contributed money to fund preparing or submitting this brief; and (3) apart from counsel for *amici curiae*, no other person contributed money to fund preparing or submitting this brief. No party opposes its filing.

yielding radar technology that helped the Allies win World War II, computer systems that put humans on the Moon, and a vaccine that saved millions of lives during a global pandemic. Many of these life-changing and history-altering innovations emerged from scientific research that had an entirely different initial focus, including from “basic research”—that is, inquiry that aims to expand knowledge with no immediate practical or commercial application in mind. Because it can be difficult to foresee the possible profitable uses for such research, there is little incentive for the private sector to support it. Yet basic research can ultimately yield transformative practical benefits that its investigators never anticipated, including lifesaving cancer drugs. For their part, universities and colleges generally cannot support robust basic research programs on their own. Simply put, academic research generates breakthroughs that save and improve lives, build economies, and foster human flourishing. And it requires federal funding to do so.

Draconian cuts to federal research funding endanger this longstanding, mutually beneficial relationship between institutions of higher learning and the American public—especially when funding is terminated or withheld for reasons wholly unrelated to the merits of funded research. Funding terminations disrupt ongoing projects, ruin experiments and datasets, snuff out the careers of aspiring scientists, and deter investment in the long-term research that only the academy—

with federal funding—can pursue, threatening the pace of progress and undermining American leadership in the process. The district court appropriately recognized both the vital importance of the decades-long partnership between these research institutions and the federal government, and the risk that arbitrary funding terminations pose to that partnership. *Amici* urge that its ruling be affirmed.

ARGUMENT

I. America Has Long Advanced Scientific Research in Partnership with Universities and Colleges

Since the Civil War, if not earlier, the United States government has collaborated with institutions of higher education to advance scientific progress. *See* Morrill-Land Grant College Act, 7 U.S.C. §§ 301-305 (1862). Federal support was initially quite limited. *See* Daniel P. Gross & Bhaven N. Sampat, Nat’l Bureau of Econ. Rsch., *Inventing the Endless Frontier* 4 (2020) (“Gross & Sampat”). That changed in the run up to World War II, as it became increasingly clear to the Nation’s leaders that our scientific capabilities lagged well behind those of our adversaries. *Id.* at 4-5, 5 n.1. To close the gap, President Roosevelt established the Office of Scientific Research and Development (OSRD). *Id.* at 5-6.

OSRD’s investments in university and college research played a pivotal role in securing America’s victory in the war. For example, OSRD worked with MIT to establish a laboratory to study radar. *See* T.A. Saad, *The Story of the M.I.T. Radiation Laboratory*, 5 IEEE Aerospace and Electronic Systems Magazine at 46

(Oct. 1990). MIT's advances played a major role in stymieing German air attacks, guiding bombers over the beaches at Normandy, and neutralizing the U-boats that had previously decimated Allied ships. *Id.* at 49. Indeed, radar technology was so crucial that it is often said that while the atom bomb ended the conflict, "radar won the war." *Id.*²

Those experiences taught the Nation's political leadership the vital lesson that investing in academic scientific research was "essential" to the Nation's ability to "maintain a position of world leadership." Vannevar Bush, *Science, the Endless Frontier* 8 (July 5, 1945), reprinted in *Science, the Endless Frontier: 75th Anniversary Edition* (Nat'l Sci. Found. 2020).

Accordingly, Congress created new agencies, like the Atomic Energy Commission, and reconfigured existing ones, like the National Institutes of Health ("NIH"), to prioritize academic scientific research and forge a symbiotic partnership with America's research universities and colleges. See Jeffrey K. Stine, Task Force on Sci. Pol'y Comm. on Sci. & Tech., 99th Cong., *A History of Science Policy in the United States, 1940-1985*, at 27-30 (Comm. Print 1986). The federal

² Of course, the atom bomb itself also derived from a partnership between government and academia: The Manhattan Project emerged from federally funded research at the University of Chicago, UC Berkeley, and Columbia University. Gross & Sampat, *supra*, at 6 n.5.

government identifies projects that are vital to the national interest.³ Agencies award funding for those initiatives, usually on a competitive basis, selecting recipients based on scientific merit and their ability to create value for the American people.⁴ In exchange, the country’s top scientists harness federal resources to achieve breakthroughs in fields from nuclear power to biomedicine to computer science. *See infra* at pp. 5-10.

II. The Academic-Government Partnership Has Made America a Global Leader

The federal government’s sustained investment in research universities and colleges has delivered enormous long-term benefits to the American public—contributing to everything from nuclear reactors to cancer treatments to Google.⁵ Indeed, *amici* institutions have advanced scientific progress in countless ways—from a pathbreaking study that identified the common causes of cardiovascular

³ See Carole LaBonne, *Universities and the Government: Which Needs the Other More?*, Wash. Post (June 3, 2025), <https://www.washingtonpost.com/opinions/2025/06/03/government-universities-partnership-innovation-prosperity/> (“LaBonne”); Homer A. Neal et al., *Beyond Sputnik: U.S. Science Policy in the 21st Century* 21-22 (2008) (“Neal”).

⁴ See LaBonne, *supra*; Neal, *supra*, at 17.

⁵ George W. Bush Presidential Ctr., *The Innovation Impact of U.S. Universities*, 23-24 (2020), <https://www.bushcenter.org/publications/the-innovation-impact-of-u-s-universities>.

disease (Boston University)⁶ to the first automated DNA sequencer (Caltech)⁷ to pioneering hurricane forecasting (Colorado State)⁸ to the development and deployment of millions of blight-resistant apple trees (Cornell)⁹ to the technology behind the pacemaker and GPS navigation (Johns Hopkins)¹⁰ to the invention of the telephone and computer (MIT)¹¹ to new methods for protecting the power grid (Oregon State)¹² to the first cloning of a vertebrate (Oregon)¹³ to vital discoveries

⁶ NIH, Off. of Sci. Pol’y, *The Framingham Heart Study*, <https://www.framinghamheartstudy.org/files/2021/07/FHS-Laying-the-Foundation-from-NIH.pdf>.

⁷ Robert Tindol, *Caltech and the Human Genome Project*, Caltech News (June 26, 2000), <https://www.caltech.edu/about/news/caltech-and-human-genome-project-406>.

⁸ Stacy Nick, *The nexus of hurricane research*, Colo. State Univ. (July 11, 2024), <https://source.colostate.edu/how-did-the-preeminent-hurricane-research-center-arrive-at-a-landlocked-university>.

⁹ Federal Laboratory Consortium, *New productive, disease-resistant apple trees* (2015), <https://federallabs.org/flc-highlights/awards/new-productive,-disease-resistant-apple-trees-49f6c4e96a7d8405635e063aacfa466c>

¹⁰ *Innovations and Breakthroughs*, Johns Hopkins Univ., <https://www.jhuapl.edu/about/history/innovations-and-breakthroughs> (last visited June 8, 2025).

¹¹ Ed Pilkington, *The MIT factor*, Guardian at 2 (May 17, 2011), <https://www.theguardian.com/education/2011/may/18/mit-massachusetts-150-years-genius>.

¹² Michelle Klampe, *OSU researchers complete electrical mapping project critical to protecting the U.S. power grid*, OSU News (Aug. 14, 2024), <https://news.oregonstate.edu/news/osu-researchers-complete-electrical-mapping-project-critical-protecting-us-power-grid>.

¹³ Off. of the Vice President for Rsch. & Innovation, *Zebrafish*, Univ. of Or., <https://research.uoregon.edu/zebrafish> (last visited July 21, 2026).

in computer security and climate science (Princeton)¹⁴ to the left-ventricular heart bypass device (Rice)¹⁵ to deepfake detection software (Rutgers)¹⁶ to recombinant DNA technology (Stanford)¹⁷ to making the first life-sustaining liver transplant possible (University of Pittsburgh).¹⁸ Federal funding made all of those discoveries possible.

The Internet provides yet another clear example. It was not the product of a single creator's lightbulb moment. Instead, it emerged from a decades-long

¹⁴ Scott Lyon, *Internet researchers reach beyond academia to close major security loophole* (Oct. 14, 2024), <https://engineering.princeton.edu/news/2024/10/14/internet-researchers-reach-beyond-academia-close-major-security-loophole>; Liz Fuller-Wright, Off. of Commc'ns, Princeton Univ., *'Great fun': Manabe wins Nobel Prize in physics for modeling climate change* (Oct. 5, 2021), <https://www.princeton.edu/news/2021/10/05/great-fun-manabe-wins-nobel-prize-physics-modeling-climate-change>.

¹⁵ B.J. Almond, *Rice engineers help design a pulse-less pump for heart replacement*, Rice Univ. News & Media Rels. (June 27, 2008), <https://news2.rice.edu/2008/06/27/rice-engineers-help-design-a-pulse-less-pump-for-heart-replacement/>.

¹⁶ Trevor Rutledge-Leverenz, *Rutgers Office for Research Executes Exclusive License with Startup Steg.AI*, Rutgers Univ. Off. for Rsch. (Mar. 29, 2023), <https://research.rutgers.edu/news/rutgers-office-research-executes-exclusive-license-startup-stegai>.

¹⁷ James Labosier & John Rees, *Stanley N. Cohen Papers Open for Research*, Nat'l Lib. of Med. (Jan. 24, 2019), <https://circulatingnow.nlm.nih.gov/2019/01/24/stanley-n-cohen-papers-open-for-research>.

¹⁸ Univ. of Pittsburgh Med. Ctr., *Transplant Pioneer Thomas E. Starzl Receives National Medal of Science from President George W. Bush* (Feb. 13, 2006), <https://www.upmc.com/media/news/starzl-medal-science>.

collaboration among academia, government, and industry. Early work on computer networking was done in the 1960s by J.C.R. Licklider, an MIT scientist. Barry M. Leiner et al., *A Brief History of the Internet* (1997), reprinted in 39 Comput. Commc’n Rev. No. 5, at 23 (2009) (“Leiner”). His work evolved thanks to researchers like Robert Kahn (a Princeton Ph.D. and former MIT professor) and Vinton Cerf (then of Stanford University), who published a seminal paper on the Internet’s design in 1974. *See id.* at 24-25. And with federal support, universities and colleges have made breakthrough after breakthrough—the Transmission Control Protocol/Internet Protocol (TCP/IP),¹⁹ the browser,²⁰ and more. Each helped the Internet develop into what it is today. And the nature of the researchers’ funding facilitated these discoveries. At the outset, few could imagine the modern Internet. And researchers surprised even themselves—for example, they discovered email as a byproduct of a different goal.²¹ The Internet became reality only because the federal government made a decades-long investment in these projects, despite the uncertainty of the undertaking.

¹⁹ TCP/IP enables devices to communicate across networks. Leiner, *supra*, at 25-26. Federal funding supported efforts to implement TCP/IP at Stanford and other institutions. *Id.* at 26.

²⁰ David C. Mowery & Timothy Simcoe, *Is the Internet a US invention?*, 31 Rsch. Pol’y 1369, 1378 & n.16 (2002) (“Mowery”).

²¹ *The Federal Research Portfolio: Capitalizing on Investments in R&D: Hearing Before the S. Comm. on Com., Sci. & Transp.* (July 17, 2014) (written testimony of Vinton G. Cerf).

Federal funding is critical to those discoveries because the basic research universities and colleges conduct is so fundamental that it is hard to predict how it might be put to practical use, making the prospect of private commercial support for such research unlikely. Take the work of Princeton Chemistry Professor Edward Taylor, who started out studying butterfly wing pigment.²² It is hard to imagine a topic with fewer clear practical uses (and thus less likely to receive private support). Yet precisely because Professor Taylor pursued deep scientific understanding of biochemical structures rather than a predetermined commercial endpoint, he uncovered insights no applied research program at the time would have been designed to find. Professor Taylor's findings led him to develop a revolutionary lung cancer drug and he credits that discovery to the "freedom" Princeton gave him to "work 'way out in left field,'" which would have been "impossible in industry."²³

Even when practical applications are less difficult to envision, federal funding remains crucial for the Nation's most ambitious research. That is certainly

²² Karin Dienst, Off. of Commc'ns, Princeton Univ., *Princeton chemist Edward C. Taylor, inventor of anti-cancer drug, dies at 94* (Nov. 29, 2017), <https://www.princeton.edu/news/2017/11/29/princeton-chemist-edward-c-taylor-inventor-anti-cancer-drug-dies-94>.

²³ *From Butterflies to Tomorrow's Chemists* (Apr. 22, 2016), <https://alumni.princeton.edu/stories/butterflies-tomorrows-chemists-professor-emeritus-ted-taylor-helps-discovery-take-flight>.

true of the federal government’s decision in 1988 to create a \$3 billion, 15-year project to sequence the human genome. This foundational undertaking has made possible new treatments—and even cures—for genetic conditions, including sickle cell anemia and vision loss.²⁴ It has also opened the door for personalized gene editing, which just last year cured an infant of a deadly condition for the first time.²⁵ And yet because the project required substantial upfront funding and years of study, it is unlikely that private entities would have pursued it.²⁶ In a similar vein, federal funding was critical to one of the most monumental scientific achievements in recent memory. When the coronavirus swept the globe in 2020, a vaccine was discovered, developed and released in record time thanks to federally supported research conducted by scientists at the University of Pennsylvania.²⁷

²⁴ See, e.g., Mayo Clinic, *Gene Therapy* (April 23, 2024), <https://www.mayoclinic.org/tests-procedures/gene-therapy/about/pac-20384619>.

²⁵ Gina Kolata, *Baby Is Healed With World’s First Personalized Gene-Editing Treatment*, N.Y. Times (May 15, 2025), <https://www.nytimes.com/2025/05/15/health/gene-editing-personalized-rare-disorders.html>; see Kiran Musunuru et al., *Patient-Specific In Vivo Gene Editing to Treat a Rare Genetic Disease*, 392 New Eng. J. Med. 2213 (2025).

²⁶ See Rebecca Mandt et al., *Federal R&D funding: the bedrock of national innovation*, 1 MIT Sci. Pol’y Rev. 44, 48 (Aug. 20, 2020) (industry declines to fund basic research due to its “risk-reward profile and timeline to commercial relevance”) (“Mandt”).

²⁷ Nat’l Inst. of Dental & Craniofacial Rsch., *NIDCR Funded Winner of 2023 Nobel Prize in Physiology or Medicine*, NIDCR News (Oct. 16, 2023), <https://www.nidcr.nih.gov/news-events/nidcr-news/2023/nidcr-funded-winner-2023-nobel-prize-physiology-or-medicine> (“NIDCR”).

The underlying academic work had previously attracted no private investment because its practical uses were deemed too speculative.²⁸ Without the federal government’s investment, development of the COVID-19 vaccine likely would have languished for years, if not decades. *See* NIDCR, *supra*. Thus, as these examples vividly confirm, it is often the boldest research—with the greatest potential to redound to humanity’s benefit—that most requires public investment.

The federal government’s partnership with academia propelled the United States to preeminence on the world stage. American scientific investment is unique—in its scale, its reliance on academia, and its support for basic research. Mowery, *supra*, at 1382-83. In information technology, for example, countries such as Britain and France invested less, failed to facilitate collaboration among government and academia, or focused on promoting specific technologies and commercialization instead of basic research. *Id.* Thanks to these dynamics, by the end of the twentieth century, the United States “held a commanding lead” in the field.²⁹

²⁸ Ting Yu, *How Scientists Drew Weissman (MED ’87, GRS ’87) and Katalin Karikó Developed the Revolutionary mRNA Technology Inside COVID Vaccines*, Bostonia (Nov. 18, 2021), <https://www.bu.edu/articles/2021/how-drew-weissman-and-katalin-kariko-developed-mrna-technology-inside-covid-vaccines>.

²⁹ Nat’l Rsch. Council, *Evolving the High Performance Computing and Communications Initiative to Support the Nation’s Information Infrastructure* 13 (1995); *see id.* at 16.

The same is true of medicine. Researchers have connected the ingenuity of America’s biotechnology sector to the outsized role played by universities and colleges.³⁰ And they have concluded that the “strength of the public research base” in the field is “surely among the most important” reasons America “lead[s] the world.”³¹ It is no surprise, then, that other countries have come to see the U.S. research enterprise as something to emulate. *See* Neal, *supra*, at 17.

Federal investment in U.S. universities and colleges has also been a powerful driver of America’s economic growth. University-generated research has created and expanded industries and produced some of the Nation’s largest companies. A National Science Foundation (“NSF”) grant supported the research that ultimately led to Google.³² And by 2010, the human genome project had generated \$796 billion in economic output, including \$244 billion in income—a

³⁰ *See* Iain M. Cockburn & Rebecca M. Henderson, Nat’l Bureau of Econ. Rsch., *Publicly Funded Science and the Productivity of the Pharmaceutical Industry* 23-25, in 1 *Innovation Policy and the Economy* (2001).

³¹ *Id.* at 4; *see* Andrew A. Toole, *The impact of public basic research on industrial innovation*, 41 Rsch. Pol’y 1, 9 (2012) (finding a “systematic relationship” between NIH basic research grants to universities and “pharmaceutical industry innovation.”).

³² NSF, *On the Origins of Google* (Aug. 17, 2004), <https://www.nsf.gov/news/origins-google>.

massive return on its \$3.8 billion price tag.³³ The evidence is not just anecdotal. In 2024, each dollar the NIH invested in research yielded \$2.56 in economic activity nationwide.³⁴ Increased funding for higher education is also associated with more successful local startups.³⁵ And as of 2020, nearly a third of recently filed patents cited research that the federal government had funded. Mandt, *supra*, at 48.

Breakthroughs also create positive feedback loops. Each advance allows a future researcher to stand on the shoulders of those who have come before, fueling further innovation and growth.

III. Arbitrary Funding Cuts Imperil America's Economic Strength and Status in the World

Extensive and arbitrary cuts to federal research funding to universities and colleges threaten much of what has made the U.S. research enterprise a juggernaut of growth and prosperity. As the facts in this case pertaining to Harvard show, the wholesale termination of federal research funding at just one leading university can have devastating effects on scientific progress and the public welfare. But the

³³ See Simon Tripp & Martin Grueber, Battelle Mem'l Inst., *Economic Impact of the Human Genome Project* 15 (May 2011), <https://www.battelle.org/docs/default-source/misc/battelle-2011-misc-economic-impact-human-genome-project.pdf>.

³⁴ United for Med. Rsch., *NIH's Role in Sustaining the U.S. Economy* 1 (2025), https://www.unitedformedicalresearch.org/wp-content/uploads/2025/03/UMR_NIH-Role-in-Sustaining-US-Economy-FY2024-2025-Update.pdf.

³⁵ See Valentina Tartari & Scott Stern, Nat'l Bureau of Econ. Rsch., *More than an Ivory Tower* 6-7 (2021), <https://www.nber.org/papers/w28846>.

problem does not end there. Even schools whose funding is not cut will suffer. Scientists work across institutions; grants issued to one institution frequently support researchers from others. And cutting-edge research is often conducted via collaboration. For example, the NIH has funded work by a group of institutions including Harvard, MIT, and Princeton to generate wiring diagrams of the brain and use artificial intelligence to analyze the results. This project would shed light on the mechanisms of memory dysfunction and could yield tools to treat Alzheimer's disease. But the cuts at Harvard threaten it. The work cannot continue at individual sites; MIT cannot use machine learning to uncover patterns, for example, without data from Princeton and Harvard. The withdrawal of federal support at even one institution is thus a blow to the entire ecosystem and deters the long-term investment necessary for scientific and technological progress.

Even temporary cuts have permanent effects. As Princeton Professor Yibin Kang has noted, academic “[r]esearch is not like a faucet you can turn on and off.”³⁶ Many projects cannot pause; they will end, squandering years of work and funding. If samples are spoiled, data lost, or clinical trials cut short, researchers will have to start at square one even if funding is restored, while other countries

³⁶ Liz Fuller-Wright, Off. of Commc'ns, Princeton Univ., *The partnership that drives America's leadership in medical discovery* (Feb. 18, 2025), <https://www.princeton.edu/news/2025/02/18/partnership-drives-americas-leadership-medical-discovery-how-it-works-and-whats>.

poach scientists and overtake American progress. For example, fusion energy researchers are making tremendous advances toward an inexhaustible source of clean energy.³⁷ Federal funds have also driven progress in artificial intelligence and quantum science.³⁸ The United States leads the world in these areas—for now. But without the resources and backing of the federal government, it is far from guaranteed that America will maintain its edge.³⁹

Widespread cuts would also gut the next generation of U.S. scientists. Research gives budding scientists opportunities to cultivate skills, build confidence, and learn from senior scholars. Young scientists need that training to succeed, whether they ultimately go on to industry, government, or academia. Funding cuts would erode the pipeline and pressure these talented scientists to

³⁷ MIT, *American Innovation*, <https://understanding.mit.edu/american-innovation> (last visited June 8, 2025); Princeton Univ., *Princeton Plasma Physics Laboratory*, pppl.gov (last visited June 8, 2025).

³⁸ See, e.g., Whitney Clavin, *Proving Quantum Computers Have the Edge*, Caltech News (Apr. 9, 2025), <https://www.caltech.edu/about/news/proving-quantum-computers-have-the-edge>; Jaimie Patterson, *Sepsis Detection Platform Prevents Thousands of Deaths*, Johns Hopkins Univ. (Apr. 23, 2025), <https://hub.jhu.edu/2025/04/23/nsf-funding-suchia-saria-sepsis-detection>.

³⁹ See Tom Clynes, *Is China Pulling Ahead in the Quest for Fusion Energy?*, IEEE Spectrum (Apr. 29, 2025), <https://spectrum.ieee.org/china-nuclear-fusion-reactor>; Mark Kennedy, Wilson Ctr., *Red Flags in the Tech Race* (Jan. 14, 2025), <https://www.wilsoncenter.org/article/red-flags-tech-race-america-must-act-now-preserve-its-innovation-edge>.

change fields or move abroad. In short, the government's actions here imperil innovation both today and tomorrow.

Amici understand that budgetary constraints and shifting economic or national security priorities will inevitably affect the federal government's decisions about whether and at what levels to fund existing university and college research, and about how to prioritize new research projects. But it is one thing for the federal government to terminate funding based on a decision that federal resources should be redirected to other research that the government has determined to be more important. It is quite another for the government to target scientific research for termination based on ideological objections to a university's faculty hiring, course offerings or other rationales that bear no relation to the value of scientific research being terminated, or to impose sweeping terminations of all funding based on an Administration's concern about a single particular aspect of the university's conduct—even if that concern is justified. As the district court in this case correctly recognized, constitutional principles and federal statutory constraints protect against the harms that such actions would cause to the institutions at issue and to the public interest. In so doing, federal law also protects the reasonable reliance interests of research universities and colleges. *Amici* and similar institutions will be deterred from making the kinds of substantial long-term commitments of their own resources and faculty talent to government-supported

initiatives if they fear that federal funding can be yanked away from them without any meaningful procedural safeguards and based on arbitrary judgments that are unrelated to either the goals of the funded research or legitimate government fiscal constraints.

In sum, terminating funding to universities and colleges jeopardizes American innovation and economic growth by severely limiting their ability to play their vital, longstanding roles in expanding scientific knowledge. These cuts to research funding risk a future where the next pathbreaking innovation—whether it is a cure for cancer or Alzheimer’s, a military technology, or the next Internet—is discovered beyond our shores, if at all.

CONCLUSION

For the foregoing reasons, the judgment of the District Court should be affirmed.

Dated: July 22, 2026

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Respectfully submitted,

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CERTIFICATE OF SERVICE

I hereby certify that on July 22, 2026, I electronically filed the foregoing document with the United States Court of Appeals for the First Circuit by using the CM/ECF system. I certify that all parties or their counsel of record are registered as ECF Filers and that they will be served by the CM/ECF system.

Dated: July 22, 2026

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Donald B. Verrilli, Jr.

CERTIFICATE OF COMPLIANCE

1. This brief complies with the type-volume limitation of Fed. R. App. P. 29(a)(5) and Fed. R. App. P. 32(a)(7)(B) because this brief contains 3,614 words, excluding the parts of the brief exempted by Fed. R. App. P. 32(a)(7)(B)(iii).

2. This brief complies with the typeface requirements of Fed. R. App. P. 32(a)(5) and the type style requirements of Fed. R. App. P. 32(a)(6) because this brief has been prepared in a proportionally spaced typeface using Microsoft Word in Times New Roman 14-point font.

Dated: July 22, 2026

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Appendix A

American University
Arizona State University
Boston University
Brandeis University
Brown University
California Institute of Technology
Carleton College
Carnegie Mellon University
Colorado State University
Columbia University
Cornell University
Dartmouth College
Georgetown University
Johns Hopkins University
Massachusetts Institute of Technology
Michigan State University
Middlebury College
Oregon State University
Princeton University
Rice University
Rutgers University
Smith College
Stanford University
Tufts University
University of California
University of Denver
University of Maryland, Baltimore
University of Maryland, College Park
University of Michigan
University of Oregon
University of Pennsylvania
University of Pittsburgh
University of Rhode Island
University of Vermont
Wesleyan University
Yale University