BRAIN GAIN:
HOW CANADA CAN SUPPORT U.S. MEDICAL & SCIENTIFIC TALENT IN CRISIS

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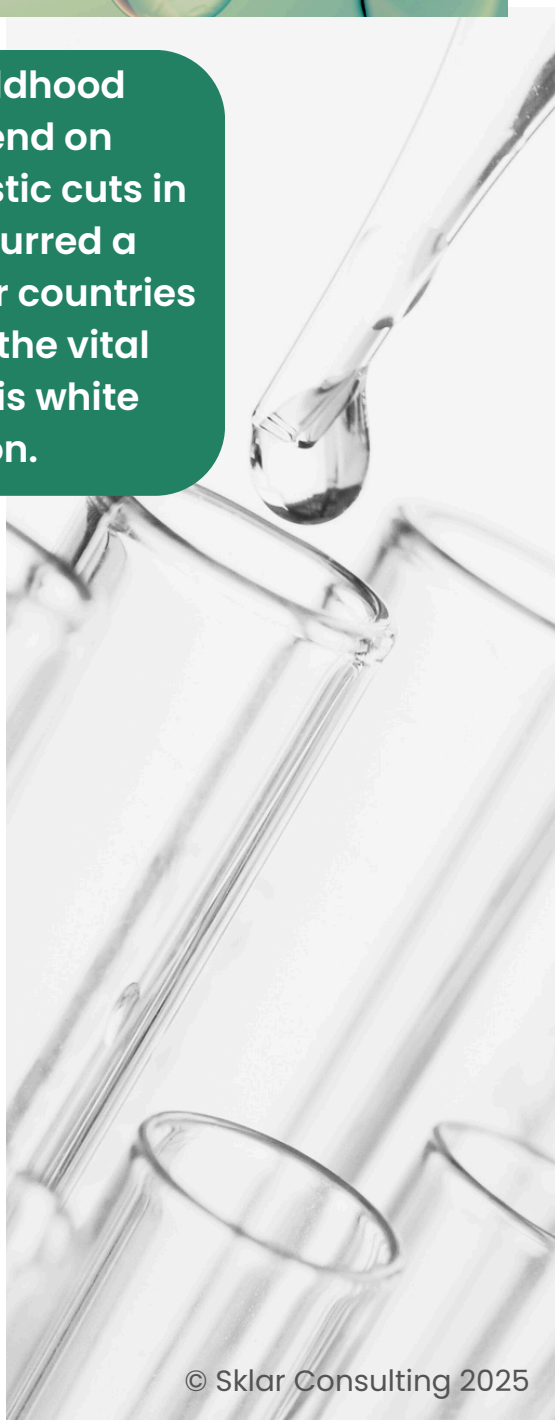
From effective treatments for genetic diseases and childhood cancers to sustainable energy alternatives, we all depend on advances in health care, technology and science. Drastic cuts in funding and restrictions on research in the U.S. have spurred a crisis in medical and scientific fields. Canada and other countries must step in to fill this unprecedented gap, supporting the vital advancement of knowledge and driving innovation. This white paper details strategies for federal and provincial action.



Introduction

The medical and scientific research community is facing an unprecedented crisis in the United States due to drastic funding cuts and research restrictions initiated by the Trump administration. These have received relatively little press because of the chaos and flurry of other sea changes in foreign policy, immigration, trade, intelligence and more. Still, these disruptions to research carry enormous significance – and opportunity - for governments, universities, and businesses in Canada and worldwide. In this article, I draw attention to the generational blow to the advancement of science in the U.S. and propose ways countries such as Canada can offer this skilled talent a safe, supported, and productive haven to continue their work advancing scientific knowledge.

A chill on medical research in the United States

On January 27th, an executive order suspended National Institutes of Health (NIH) grant funding, effectively freezing a substantial portion of its $47 billion budget. Although legal challenges temporarily blocked this order, the administration exploited a loophole by withholding the publication of the agency's meeting plans in the Federal Register, thereby continuing the freeze. On February 7th, the NIH announced a cap on indirect cost reimbursements at 15% of a grant's value. A March 5th ruling barred the Trump administration from implementing the proposed cuts to NIH research funding, specifically addressing the cap on indirect cost reimbursements. It is unclear whether these funds will be released. Healthcare agencies and programs have been decimated, including mass layoffs at the NIH and CDC, terminating 16 of the 24 Laboratory Leadership Service program fellows, a program designed for early career scientists to address testing shortcomings of the CDC.

Indirect costs are critical to how medical and scientific research has always been conducted in the U.S. The NIH funds indirect costs at universities and hospitals to support the essential infrastructure, services, and support for biomedical research such as clinical trials. While direct costs cover expenses like salaries, lab supplies, and equipment directly tied to a project, indirect costs (sometimes called overhead) fund the broader institutional resources that enable research to happen effectively. These typically range from 30% to 70% and cover essential expenses such as facility maintenance and utilities. This reduction represented a significant loss of funding for research institutions, potentially leading to layoffs, hiring freezes, and the termination of research projects.

Other new restrictions on research are equally as worrying; the American Association for the Advancement of Science (AAAS)'s mandate states "Scientific freedom is the freedom to engage in scientific inquiry, pursue and apply knowledge, and communicate openly." Nevertheless, the Trump administration ordered the CDC to stop working with the World Health Organization (WHO). Data on LGBTQ+ health has been either removed or falsely labelled as "extremely inaccurate" on CDC website pages. Publication of the Morbidity and Mortality Weekly Report (MMWR) was halted for the first time since its inception in 1960, a move described by the president of the Infectious Diseases Society of America (IDSA) called this pause a "disaster."[2]

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Indirect costs at Duke average 61%.[3] Like other universities and colleges across the country, the university responded with hiring freezes, postponed expansion projects, anticipated staff layoffs and reduced research activities if the situation persisted. These policy shifts prompted widespread concern within the scientific community. For example, Duke University, which received $580 million in NIH

grants in the previous fiscal year faces potential losses of hundreds of millions due to the proposed cap on indirect costs.

A *Guardian* article on the cuts quoted associate professor of psychiatry and Alzheimer's disease researcher Ann D. Cohen, describes struggling to deal with three million dollars in delayed funding that threatens her work: "Our clinicians and our staff are really highly trained, highly skilled people, and to lose them would be devastating," said Cohen, who spoke in her personal capacity. She is based at the University of Pittsburgh's Alzheimer's Disease Research Center.

uncertainties and operational challenges for research institutions across the United States. The combination of grant freezes and reduced indirect cost reimbursements has significantly impacted the capacity of these institutions to conduct ongoing and future research. Fewer Master's and Ph.D. students will be admitted this coming September to universities nationwide because there will likely be substantially less funding to support them. Scholarships and fellowships (such as the Fulbright) have been paused or cancelled as institutions struggle to understand their financial position.

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Legal challenges have been and continue to be mounted to these orders, but it will take some time before appeals and decisions are rendered and impacts are made clear. The government has also forbidden NIH staff from submitting meeting notices to the *Federal Register*,[6] the official journal of the United States Federal Government, which effectively means new NIH grants cannot be reviewed or awarded. This stalls approximately 16,000 applications vying for $1.5 billion in funding.[7]

In the meantime, these administrative actions have caused substantial financial

In a piece in the *Journal of the American Medical Association* (JAMA), researchers from Boston University describe the Project 2025 playbook on which the current Trump administration is apparently basing their medical and scientific policies as "an antiscience, antidata, and antimedicine agenda."[8]

Challenges to scientific research

Scientific research has been attacked in other ways by this administration. As part of this effort, the National Science Foundation (NSF) was expected to lay off 25-50% of its workforce.[5] Mass firings have

also taken place or been threatened at many other scientific agencies, including the U.S. Department of Agriculture (USDA), the Food and Drug Administration (FDA), the National Oceanic and Atmospheric Administration (NOAA), the Department of Health and Human Services, the Environmental Protection Agency (EPA), the Federal Aviation Administration (FAA), and the Department of Energy (including the National Nuclear Security Administration, where officials reportedly scrambled to rehire key technical staff—but couldn't reach them because their government emails had been disconnected).

The NSF established an internal list of specific terms that, if present in research papers, grant applications, or related documents, would trigger a review and potentially jeopardize funding.[10] The list of more than 200 targeted terms was purported to align with DEI principles and included words like women, female, gender, disability, historically, trauma, LGBT, hate speech, and BIPOC (Black, Indigenous, and people of colour). This policy led to significant implications for research funding: a U.S. Senate report identified over $2 billion in NSF funding for projects containing DEI-related terminology. Although subsequent rulings have rescinded this order, travel bans for some researchers, and resumed some grant reviews, these policies have sent a chill throughout the entire system expected to lead to restrictions and self-censorship on the kinds of projects and research likely to be proposed. Whether the U.S. government will abide by judges' rulings against these policies is unclear.

Scientific disruptions will have long-term impact

This means cohorts of brilliant scientists, researchers, engineers, physicians, and laboratory support staff have lost their positions and opportunities for the foreseeable future. The top scientific research institutions in the U.S., from Harvard to the NASA Jet Propulsion Laboratory, have seen their ranks decimated. Incredibly, because of these cuts and this uncertainty, there are few employment options open to them across the United States. A *Guardian* investigation reports that this chaos is going to have drastic impacts "for decades to come." [11]

Top research institutions, from Harvard to the NASA Jet Propulsion Laboratory, have seen their ranks decimated. Because of these cuts and this uncertainty, there are now few - if any - positions left for for experts across the U.S.

The funding cuts are the most obvious threat to the scientific talent pipeline, but

Case study: How Trumpism threatens research into childhood cancers

Less than 4% of all federal funds for cancer research goes to those studying cancer in children.[12] Nevertheless, the 2025 U.S. federal budget contained surprise provisions to cut acts explicitly designed to support pediatric research and accessibility:

- **Accelerating Kids' Access to Care Act** - cuts bureaucratic red tape that keeps kids from accessing time-sensitive care across state lines.
- **Creating Hope Reauthorization Act** - incentivizes critical pediatric research.
- **Innovation in Pediatric Drugs Act** - ensures pediatric studies for possible new treatments are completed on time.
- **Give Kids A Chance Act** - allows researchers to study combinations of new cancer drugs, potentially unlocking new cures.
- ·**RARE Act** - ensures pediatric drug research isn't locked out from newly approved drugs that don't impact pediatric populations.[13]

A federal judge blocked the administration from implementing the funding reductions, noting that the abrupt policy changes posed an "imminent risk of halting life-saving clinical trials, disrupting the development of innovative medical research and treatment, and shuttering research facilities, without regard for current patient care."[14] It is unclear at the time of writing whether the administration will respect this ruling.
"This will likely mean that fewer experimental treatments will get to children," Charles Roberts, the head of the cancer center at St. Jude Children's Research Hospital, told the *New Yorker*. "More children will die."[15]

there are others, including radical changes to immigration policies and visas, threats of deportations and punitive measures against campuses with "illegal" protests, and a climate of fear and instability that have taken root across the country.

In addition to jeopardizing research, these funding cuts and restrictions also threaten the pipeline of new researchers, physicians, and scientists. Lack of funding at universities and research hospitals severely limits the number of graduate students who can be admitted to incoming classes in September 2025.[16] We have begun seeing reports of admission offers at premier institutions being withdrawn for this reason.[17]

One NSF employee told *Axios*, "The pipeline that gets young talent into big tech and startups is in many cases coming from NSF funding grants. It's enabling a whole host of computing talent to eventually staff American tech companies."

"I want parents who have children to know that opportunities for your kids, if they aspire to be scientists or engineers, are being stripped away right in front of you."[18]

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-NSF employee

Talent attraction benefits for Canada 2016-2020

During the first Trump administration, Canadian universities experienced several benefits from U.S. immigration policies, particularly those restricting international student and skilled worker mobility into the United States. Key impacts included increased international student enrolment, growth in STEM and research talent, the expansion of cross-border collaborative partnerships, and accelerated tech industry momentum. Canadian institutions also saw gains in attracting high-calibre faculty and postdoctoral researchers in fields like AI, biotechnology, and climate science.

The travel bans and heightened visa restrictions of the first administration, along with rhetoric perceived as hostile to immigrants were counterposed against Canada's inclusive and welcoming culture, post-graduation work opportunities, and pathways to permanent residency.

applications from affected groups.[18] This influx bolstered Canada's talent pool in STEM fields. Canada's more open immigration stance allowed it to address high-tech worker shortages effectively, fostering growth in related industries. The Strategic Innovation Fund (SIF) established in Canada in 2017, consolidated various business innovation programs to stimulate economic growth. It supported sectors like medical research and technology by providing significant investments, such as a $49.3 million contribution to General Fusion in 2018 for energy research.[19] This helped ensure funding was there to attract skilled workers in these fields, considering more welcoming alternatives to the United States.

These strategies appeared to have benefitted Canada; a *Vox* article citing a 2019 Envoy study reported 63% of employers surveyed increased their presence in Canada during that time by sending more workers north of the border, hiring foreign nationals in Canada or both.[20]

"I've spent most of my career watching a brain drain away from Canada. This is the first time I've seen a brain gain."

The successful implementation of the Global Skills Strategy streamlined visa processing for high-skilled workers, attracting talent that might have otherwise settled in the U.S.

Stricter U.S. immigration policies, especially concerning H-1B visas, led to a rise in skilled professionals seeking opportunities in Canada. A Bank of Canada research report showed a 10 percentage point increase in H-1B denial rates corresponded to a 30% increase in Canadian permanent residence

"I was a serial entrepreneur and I spent most of my career watching a brain drain from Canada," Yung Wu, the CEO of MaRS Discovery District, a tech-innovation hub based in Toronto that includes 1,300 entrepreneurial ventures, explained to *Vox*. "This is the first time in my career I've seen a brain gain." [21]

Wu also told the *Vox* reporter that his companies recorded a more than 100% increase in jobs created in 2017 compared to

the year before, along with a nearly 200% increase in revenue, for cumulative sales of $3.1 billion. “There’s a really strong correlation between talent and innovation,” Wu said.

While U.S. immigration restrictions posed challenges for American universities, Canadian institutions capitalized on this shift by promoting open immigration policies, strengthening research partnerships, and enhancing their reputation as global education hubs. This strategy helped Canada grow its knowledge economy and expand its influence in global research networks. These advancements fuel important developments that entrepreneurs and businesses can take to market, creating new jobs and strengthening economic diversification.

Canadian Workforce Strategy: Supporting & Attracting Scientific Talent

The first weeks of the second Trump administration have destabilized long-held geopolitical and economic trends, threatening other countries in direct and unanticipated ways; for Canada, this includes the chaotic whiplash seesawing on real and threatened tariffs and actual threats to annex the country and dispute border lines that have been undisputed for well over a century.[22] As the country contends with these crises, it is also worth considering how the massive disruptions and uncertainties south of the border offer potential opportunities to universities, institutions, businesses, and communities, who are poised to attract highly skilled Americans left out in the cold by an administration taking action against its own scientists.

“Without scientific progress, no amount of achievement in other directions can insure our health, prosperity, and security as a nation.”

-Vannevar Bush, head of the U.S. Office of Scientific Research and Development, 1941

Canada must take strategic steps to build on its strengths and address the urgent concerns of displaced talent to maximize its attractiveness to scientists, researchers, and graduate students seeking alternatives to the second Trump administration’s anti-science policies and layoffs. A variation of this evidence-backed pitch should also be used to attract and retain businesses with a STEM (science, technology, engineering and mathematics), such as life sciences, med tech, sustainable energy alternatives, green tech, AI development, and more.

For inspiration, Canadian federal lawmakers and economic developers can look to the massive progress that resulted from supporting European scientists fleeing the Second World War. President Franklin Roosevelt’s Office of Scientific Research and Development offered safety, a welcoming society, institutions and funding to spur their work. The *New Yorker* describes the result: “In the span of a few years, the agency spurred development of an antimalarial drug, a flu vaccine, techniques to produce penicillin at scale, and, less salubriously, the atomic bomb.”[23]

A Canadian Blueprint for Medical & Scientific Workforce Attraction

As the U.S. backs away from its position as a driver of scientific progress, countries like Canada must be able to step in to pick up the baton. Here are some of the ways visionary Canadian lawmakers can do so:

Promote Fast Track Immigration Pathways for Researchers

- Enhance and expand the Global Talent Stream (GTS) to expedite visa processing for scientists, postdoctoral researchers, and STEM professionals.
- Introduce a dedicated Research Talent Visa that offers accelerated entry and work authorization for those with proven research backgrounds.
- Provide sources of bridge funding for researchers who lost U.S. grants or positions, ensuring continuity in their work.

Enhanced Funding for Science & Innovation

- Increase investment in federal research programs through bodies like the Natural Sciences and Engineering Research Council (NSERC) and the Canadian Institutes of Health Research (CIHR). Canada's research funding relative to GDP currently stands at around 1.6%, well below the Organisation for Economic Co-operation and Development (OECD) average of 2.7%.[24]
- Establish a Science Stability Fund to support displaced U.S. researchers looking to relocate their projects to Canadian institutions.
- Prioritize funding for key fields affected by U.S. cuts, such as climate science, sustain-able transportation engineering systems, public health, and social sciences.

Strengthening University Partnerships & Recruitment

- Develop targeted recruitment programs at major U.S. research hubs, encouraging affected faculty, postdocs, and students to relocate.
- Launch a "Science Safe Haven" campaign, promoting Canada as a stable, inclusive environment for evidence-based research.
- Partner with U.S. universities to facilitate dual appointments or visiting scholar programs for scientists facing instability.

Industry Collaboration & Private Sector Incentives

- Incentivize tech companies, biotech firms, and research institutions to expand Canadian operations, positioning Canada as a global innovation hub.
- Offer tax credits for companies that hire displaced U.S. scientists or launch research partnerships with Canadian institutions.
- Build on Canada's strengths in AI, quantum computing, and clean energy to attract top global talent.

Support for Graduate Students & Early-Career Researchers

- Expand Vanier Canada Graduate Scholarships and Banting Postdoctoral Fellowships to attract displaced U.S.-based talent. Additional new scholarships and fellowships can be directed at key areas.
- Establish an Emergency Fellowship Fund to provide immediate support for graduate students impacted by U.S. funding cuts.

- Create mentorship programs that connect displaced researchers with Canadian industry leaders.

Promoting Inclusion and Diversity

- Emphasize Canada's commitment to diversity, equity, and inclusion as a core value in its research landscape.
- Develop tailored support programs for scientists from marginalized communities who may be disproportionately affected by U.S. policy shifts.

Highlighting Canada's Stability and Global Leadership

- Promote Canada's long history of political stability and global role in peacekeeping
- Promote the Canadian record of leadership in evidence-based policymaking, environmental science, and public health.
- Promote the country's universal healthcare, social safety nets, and progressive research environment as key quality-of-life benefits.

Marketing & Communication Tactics

By emphasizing stability, funding opportunities, and inclusiveness, Canada can attract top-tier scientific talent while strengthening its own innovation ecosystem in response to U.S. policy disruptions.

- Launch a targeted online marketing campaign in U.S. academic journals, tech hubs and on LinkedIn.
- Organize virtual events directed at researchers, scholars and graduate students at universities and research hospitals across the United States, promoting Canada and offering information about scholarships, fellowships, employment opportunities, and visas.
- Host outreach events at U.S. universities affected by funding cuts.
- Work with the provinces and key institutions to establish a Scientific Relocation Task Force to guide displaced researchers through the immigration, funding, and integration process.

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