Health Research:
A Bold Ambition to Secure Canada's Economic Future

Written Submission to the Pre-Budget Consultations
in Advance of the 2024 Budget

RESEARCH CANADA
An Alliance for Health Discovery
RECHERCHE CANADA
Une alliance pour les découvertes en santé

OUR RECOMMENDATION

That the Government of Canada reinvest in both research and people by immediately doubling research funding to the Tri-Agency and committing to:

a. **a predictable annual increase** that will keep pace with inflation and global benchmarks; and
b. **the development of equitable, inclusive and accessible research systems, cultures and practices** in order to engage and empower Canada's diverse population.

INTRODUCTION

The Government of Canada has made clear its ambition to make Canada "the location of choice for new investment"[1] in innovative technologies and industries, making a number of key investments to help advance this goal, such as the establishment of a new Canadian Innovation Corporation. Successful industrial policy "that is competitive on the global stage hinges first and foremost on being able to effectively support and retain Canada's top research talent and build a research enterprise that fosters discovery of new knowledge through investigator-initiated research."[2] Yet we are falling short on both fronts.

Canada's health research and innovation ecosystem has faced two decades of stagnating investment, leaving it woefully underfunded. Previous federal investments, including Budget 2018's historic investment of nearly $4 billion, have since plateaued and been erased by the effects of inflation. As a result, our ability to generate innovative health solutions, respond to future health emergencies, retain a robust science, technology, engineering and mathematics (STEM) workforce and remain globally competitive is being hindered, jeopardizing Canada's status as an innovation nation.

We recognize the difficult fiscal situation facing the Government of Canada and Canadians writ large and understand the tough choices that need to be made. **We also believe that this is precisely the time when we must be ambitious, advancing and investing in a bold, forward-thinking vision for Canadian health research and innovation.** Only an ambitious approach will

[1] Government of Canada. Budget 2023: A Made-in-Canada Plan. P. 18
[2] Innovation, Science and Economic Development Canada. Report of the Advisory Panel on the Federal Research Support System, 2023. P. 10

establish Canada as a globally competitive innovation nation, fulfill the potential of the Government's industrial and economic policies, strengthen Canada's health security in the face of serious global health threats, and allow Canadians to benefit from the economic prosperity, societal resilience and health impact that a thriving health research and innovation ecosystem can uniquely deliver.

About Research Canada: Research Canada is a national alliance whose mission is to improve the health and prosperity of all Canadians by championing Canada's global leadership in health research and innovation.

INVESTMENT IN HEALTH RESEARCH IS CRITICAL TO CANADA'S FUTURE

Investments in health research are critical to achieving many of the federal government's long-term ambitions, particularly as they relate to Canada's economic growth, global competitiveness and industrial policy. The Government of Canada has demonstrated its ambition for Canada to be a strong industrial and innovation nation through important measures such as the Biomanufacturing and Life Sciences Strategy and the establishment of the Canada Innovation Corporation.

However, the development and growth of new health-related industries and companies in Canada depends on a robust and thriving health research and innovation ecosystem. The discoveries made in our academic institutions and research hospitals are what lead to the establishment of new life sciences companies that in turn generate jobs, attract foreign direct investment (FDI) and stimulate economic activity. Without investment in health research, the talent, creativity, novel discoveries, intellectual property and commercialization that are the products of a well-nourished ecosystem and fundamental to a competitive life sciences and biomanufacturing industry will not be there to support it.[3]

Other countries that are known for their strong industrial policy and for being top-tier destinations for life sciences companies invest heavily in research. For example, the U.S., Japan, South Korea, Germany and Switzerland—all countries with thriving life sciences industries[4]—have consistently invested in R&D as a percentage of GDP well above the OECD average for the past two decades.[5] These countries all recognize the critical relationship between research investment and successful industrial policy. The European Union's industrial strategy, for example, explicitly recognizes "the importance of research and innovation in providing the technological foundation to transform and strengthen industrial chains."[6] Similarly, Australia's

[3] As expressed by BioCanRx, Submission to the Standing Committee on Science and Research, March 2022.
[4] Investment Monitor. The US remains the world's leading life sciences investment destination, March 9, 2022.
[5] OECD. Gross domestic spending on R&D.
[6] European Commission. Research and innovation: Industrial policy.

biotechnology sector has grown by more than 60% since 2017,[7] and while the country saw a decrease in R&D spending after 2008[8] the Australian government has since reinvigorated its commitment to medical research funding, stating that "basic research and discovery processes are at the core of a biotechnology ecosystem."[9]

In the U.S., the CHIPS and Science Act of 2022 provided an historic investment in R&D, roughly doubling the budget of research agencies and directing $280 billion in spending over the next ten years, with the bulk for scientific R&D. Similarly, to achieve its ambitions of being a science superpower and deliver on its innovation strategy, the U.K. government recently committed record levels of investment in its world-leading research base between 2022 and 2025, with R&D spending set to increase by £5 billion to £20 billion per annum by 2024-2025 – a 33% increase in spending over 2021-2022.[10]

CANADA'S RESEARCH AND INNOVATION ECOSYSTEM IS FALLING BEHIND

Canada is fortunate to have world-leading talent and great potential in R&D, but we have already embarked on a pathway which is squandering this excellence, hindering our global competitiveness and risking our economy and Canadians' health. In 2021, Canada invested just 1.7% of our GDP on R&D compared to the U.S. at 3.5%, Japan at 3.3%, Germany at 3.1%, the U.K. at 2.9% and Australia at 1.8%.[11] Canada is the only nation in the G7 whose R&D spending as a percentage of GDP shrank over the past two decades, and the gap continues to widen as other countries pick up the pace.[12,13]

The contrast is especially stark when we look to our southern neighbour. The U.S. spends $196.23 (Canadian dollars) per capita on health research funding via its National Institutes of Health (NIH).[14] Canada's per capita spending is $31.80 through the Canadian Institutes of Health Research (CIHR).[15] Even our Tri-Agency spending, encompassing all research at $78.41 per capita, is eclipsed by the U.S. NIH alone.[16]

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[7] AusBiotech. Australian Biotechnology Sector Snapshot, 2022.
[8] OECD. Gross domestic spending on R&D.
[9] Australian Government, Department of Health. Biotechnology in Australia: Strategic plan for health and medicine, 2022. P. 18.
[10] gov.uk. Government announces plans for largest ever R&D budget, March 14, 2022.
[11] OECD. Gross domestic spending on R&D.
[12] Ibid.
[13] Standing Committee on Science and Research. Success, Challenges and Opportunities for Science in Canada, June 2022. P. 10-11.
[14] Combining data from Congressional Research Service. National Institutes of Health Funding: FY1996-FY2023, updated March 8, 2023, and United States Census Bureau. U.S. and World Population Clock.
[15] Combining data from CIHR Grants and Awards Expenditures, 2021-22 and Canada's population estimates, first quarter 2023.
[16] Ibid and data from NSERC Investments across Canada in 2019-20 and Social Sciences and Humanities Research Council.

Canada's underfunding of research means we are also failing to provide emerging research talent with a living wage. This problem is only compounded for researchers from Indigenous, Black, and other underrepresented and marginalized communities who typically face additional social, economic and structural barriers and challenges. Annual stipends provided to PhD candidates by their institution are largely funded by their supervisors through Tri-Agency project grants, but as a result of insufficient project grant funding, these stipends are generally under $30,000 annually,[17,18] an amount that is insufficient for the average one-bedroom rental across Canada.[19] Federal scholarships and fellowships can help to supplement trainees' wages, but these too have stagnated.[20] Moreover, these awards are few and far between, meaning they benefit only a small fraction of Canada's young research talent.

Consequently, Canada is experiencing a brain drain, with a recent study[21] suggesting that one in four STEM graduates opt to work outside of Canada due to better financial supports for research and researchers available in other countries. The majority of STEM graduates that leave Canada go to the U.S. where they can make, on average, between 20% and 30% more than they would in Canada. The loss of this research talent to other, more competitive countries also means that we will not have the STEM workforce necessary to support a flourishing life sciences industry in Canada, including a biomanufacturing sector essential to the public health challenges climate change is affecting now. This loss is making Canada even less attractive for FDI.

By failing to sufficiently invest in research and talent, we are critically weakening our health research and innovation ecosystem and depriving Canadians the health, social and economic benefits this ecosystem can deliver. Increases in research funding through federal scholarships and fellowships and, importantly, through Tri-Agency project grants is critical to reversing the brain drain, attracting foreign research talent to Canada and protecting the strength of our health research and innovation ecosystem.

THE OPPORTUNITY FOR CANADA IS NOW

We urge the Government of Canada to seize the opportunity to become a world-leading economic and innovation nation. Maximizing the impact of recent—and future—investments in biomanufacturing and realizing the objectives of industrial and economic policies and investments hinge on the existence of a robust and properly funded health research ecosystem. Reinvestment in health research is urgently needed to develop and retain diverse, world-class

[17] Based on a review of current minimum stipends for PhD students at Top 50 Research Universities (Research Infosource, 2022)
[18] Howe, Erin. December 20, 2022. Temerty Medicine Increases Graduate Student Stipends.
[19] Canadian Centre for Policy Alternatives (July 2023). Can't afford the rent: Rental wages in Canada 2022
[20] Crawley, Mike (CBC). December 24, 2022. Canada's grants for master's, PhD students haven't increased since 2003. These researchers want that changed.
[21] Spicer, Z., Olmstead, N. and Goodman, N. (2018). Reversing the Brain Drain: Where is Canadian STEM Talent Going?

talent and a strong, highly skilled STEM workforce. It is vital to promoting health security and to attracting FDI that will lead to new health innovations and a globally competitive economy.

Reinvestment in health research is also critical to ensuring that health innovations and the future of health care reflect the needs and priorities of all Canadians. Novel discoveries and research programs that deliver impact to a wide range of communities depend on nurturing and developing the broadest and brightest talent pool within the health research ecosystem.

Many communities have historically been, and continue to be, underrepresented and systemically disadvantaged within our health research and health care systems: Indigenous Peoples, Black people and other underrepresented and equity-deserving groups. As a result, these communities are often underrepresented in research and clinical trials and are therefore being underserved by a system which is supposed to serve them equally. It cannot be this way. We must develop and nurture a truly diverse and inclusive STEM workforce to ensure that *all* Canadians are able to benefit from the health, social and economic benefits of our health research and innovation ecosystem.

Reinvestments in research are first and foremost investments in people. Increasing Tri-Agency budgets will inevitably improve conditions for marginalized and underrepresented people within the health research and innovation ecosystem and will help to ensure a diverse and inclusive STEM workforce, but it is just the first step towards developing equitable, inclusive and accessible research systems, cultures and practices to engage and empower Canada's diverse population.

CONCLUSION

This is a signal moment for health research and innovation in Canada. We cannot afford not to be ambitious—we can either choose to lead in the global innovation economy, or we decide to lose. Investment in research *now* is necessary to pave the way for a strong, diverse STEM workforce and for a globally competitive biomanufacturing and innovation sector. Canada's economic success depends on it.