

# University of Toronto Submission to the Standing Committee on Science and Research

Study on the Distribution  
of Federal Government Funding  
Among Canada's Post-Secondary Institutions

**May 21, 2024**



## Strengthening Canada's Research Capacity

**Canada's universities differ in mandate, mission and capabilities.** As noted by the Higher Education Quality Council of Ontario (HEQCO), universities categorically differ. They range from mostly undergraduate universities that serve as important regional anchor institutions to larger comprehensive institutions that help meet the needs of existing labour markets, and to research-intensive universities that drive economic relevance and growth. HEQCO notes that even among these, the University of Toronto is in a category of its own.<sup>1</sup>

**The University of Toronto is Canada's largest and most highly ranked university.** It hosts over 97,000 students and employs more than 12,000 faculty, staff and researchers. With an operating budget of \$3.52B annually, over \$1.49B in research revenue and \$380 million in student financial support, the university is unique in its combination of scale, excellence, and accessibility to domestic students.<sup>2</sup>

**The university is recognized globally for its quality programs.** U of T is ranked 21 in the world in the Times Higher Education World University Rankings, and second only to University of California, Berkeley in North America among public universities. It is one of only six universities among the top 30 institutions worldwide in all 11 subjects in the World University Rankings by Subject (Times Higher Education) ranking, demonstrating the depth and breadth of the university's excellence. Proudly, U of T [ranks first in Canada](#) and 12th in the world for graduate employability, according to THE.

**The university provides a competitive advantage to Canada.** U of T provides an anchor for Canada's economic and labour-force investments in artificial intelligence, advanced materials, bio-innovation, climate mitigation, data sciences, engineering, humanities, business, economics and public policy.

**Private sector partnerships, entrepreneurship and ecosystems are central considerations.** With its 320 private sector partners, U of T is a major contributor to private sector growth. It has spun off more than 650 startups during the past decade, which have attracted more than \$3B in investment. The university is second only to the Massachusetts Institute of Technology (MIT) in the creation of new, research-based startup companies among North American universities. Its research and commercialization programs generated about 140 invention disclosures in 2023 and more than 1,000 patents in the past decade.

**Research advances economic activity.** The 2024 federal budget invested \$3B in renewed research support for the tri-council agencies and emerging researchers, recognizing that research drives "innovation, growth, and productivity across the economy." With this investment, U of T will continue to deliver positive outcomes for Canada, including:

- ensuring Canada remains a global magnet for top talent and capital,
- protecting Canadians' economic security and health in a shifting global environment,
- educating a specialized workforce for the knowledge-based economy.

**U of T research develops solutions to Canada's challenges.** Over the past decade, universities have increasingly mobilized and collaborated with governments to advance economic strategies, develop human capital, and respond to urgent challenges to ensure the health security of Canadians.

**The university supports Canada in addressing productivity and growth.** With consistent support and co-ordination of research funding goals and mechanisms, U of T will continue to advance Canada's success in key economic sectors as well as overall prosperity by:

- bolstering industrial strategies,
- advancing the foundations of innovation through discovery research, and
- responding to societal needs by mobilizing its research community to meet priority and mission-driven grant competitions.

**The university is a powerhouse of knowledge generation and translation.** Researchers at U of T account for 48 per cent of major international awards won by Canadian university researchers. U of T is ranked among the top 10 per cent of universities globally in the impact of research publications, as measured in the number of publication citations.

**Supports for research-based startups help turn research into new products and companies.** U of T is ranked in the world's top five university business incubators. It graduates one in seven of Canada's PhDs, assisting the Greater Toronto Area (GTA) to be one of North America's top tech labor markets and helping address the need for highly qualified personnel (HQP) at scale.

**Research funding supports Canadian competitiveness in science and technology sectors.** As an example, U of T's research ecosystem is the foundation of a dynamic technology sector propelling Canadian leadership in:

- **Advanced materials.** In April 2023, the U of T-hosted Acceleration Consortium (AC) was awarded the most significant Canada First Excellence Research Fund (CFREF) grant in the history of the competition (\$200 million), with an interdisciplinary, multi-institutional, initiative that is revolutionizing the speed of materials discovery. The landmark support is already translating into faster identification of new pathways for the delivery of cancer therapies, increasing treatment efficacy. The AC has also developed a global network of researchers, trainees, and industry partners, including Merck KGaA, Amgen and the A3MD industrial and research initiative.
- **Artificial Intelligence and Machine Learning.** U of T is home to the multi-institution Vector Institute, supported since 2017 by the governments of Canada and Ontario, and by industry investment through the Pan Canadian Artificial Intelligence Strategy. It has helped anchor Canada's talent cluster and AI sector that today boasts more than 140,000 employees, and attracted \$8.7 billion in venture capital funding in 2023, and supported more than 670 startups.<sup>3</sup>

AI and associated technologies are critical to industrial applications. For instance, global pharmaceutical company Roche is exploring computational drug formulation technologies and clinical trials, while home-grown Xanadu stands among Canada's quantum computing leaders and recruits the university's talent.

Geoffrey Hinton's research and mentorship on neural networks and machine learning are also the foundations of a global boom in generative AI companies, based in the GTA. Notable U of T-linked companies like Cohere, Waabi, and Xanadu, along with global AI research centers from Nvidia, Unilever, and Microsoft, are all located in the region. This research also shapes evidence-based regulatory frameworks, supported by the Schwartz Reisman Institute for Technology and Society.

- **Health and life sciences.** U of T and its fourteen partner hospitals in the Toronto Academic Health Science Network propel the region as a leading global research hub. This concentration of talent has allowed researchers to focus on achieving greater health security and outcomes for Canadians.

The university and its partner research-hospitals are ranked as the second most productive centre globally in health sciences research output, as determined by the Nature Index 2023. The hub also ranks second only to Boston in the number of hosted clinical trials and leads in Canada in the number of patents granted to researchers. In addition, more than one-third of venture capital investment in life sciences in the GTA is targeted to startups affiliated with the university. This ecosystem supports initiatives such as:

- The Medicine by Design (MbD) network, initiated in 2015 with a \$114 million CFREF award, traces its roots back to James Till and Ernest McCulloch's 1961 discovery of blood stem cells. With over \$700 million in leveraged investments, 520 patents, and 42 startups, MbD shows the continuum from discovery to commercialization.
- Daniel Drucker's discovery of the actions of the GLP-1 hormone has been applied to GLP-1-based medicines that are transforming treatment of diabetes and obesity (Ozempic). Science magazine declared GLP-1 therapies for weight loss its 2023 Breakthrough of the Year. The discovery of insulin at U of T in 1921 – 2 paved the way for the university's leadership in diabetes research.
- The establishment of the Canadian Hub in Health Intelligence and Innovation in Infectious Diseases: Supported by the Canada Biomedical Research Fund, this coalition of academic, hospital, and industry partners aims to bolster biomanufacturing capacity and respond to infectious disease health threats. Under the leadership of U of T professors Molly Shoichet and Gilbert Walker, and Darius Rucker of Toronto Metropolitan University, the hub has launched initiatives to provide health data and talent training for biomanufacturing jobs through the Biomanufacturing Hub Network.

## Conclusion

**Research funding is a durable public policy priority that supports Canada’s establishment of robust talent clusters, commercialization opportunities and employment outcomes for Canadians.**

The impact of U of T’s research demonstrates the merit of peer-reviewed, strategic investments and re-investments in the research ecosystem at Canada’s top universities.

The importance of this ecosystem will continue to grow. Recognizing the unique and differentiated role of universities, supporting their strengths and building on their successes is crucial for Canada to make the most of its investments in research.

New economic strategies that aim to create shorter supply chains that are resilient to geopolitical and economic shocks require research infrastructure and talent to develop home-grown solutions and sustainable materials, from EV batteries to semiconductors to critical minerals.

Recognition of the contribution of the research enterprise to national industrial policy is evident in the research strategies of Canada’s closest allies. For example, the United Kingdom has developed a UK Life Sciences strategy, while the U.S. CHIPS and Science Act is supporting research universities to advance domestic production of semiconductor manufacturing.

Canada’s current research distribution predates the current revival of national industrial policy. For example, the Canada First Research Excellence Fund was launched in 2014 to “promote long-term economic advantage for Canada,” and requires applicants to demonstrate exceptional current research strength and the potential to be “among the top 10 percent of centres of academic excellence globally.” A decade later, U of T’s community welcomes Budget 2024’s renewed investment in the three granting agencies and the next generation of research talent.

These programs have been a foundation for national priority and mission-driven research agendas that align with economic strategy, concentrate highly qualified personnel and support market-driven ecosystems for business and industrial development.

<sup>1</sup> [The Differentiation of the Ontario University System: Where are we now and where should we go? Higher Education Quality Council of Ontario \(heqco.ca\)](#)

<sup>2</sup> [www.utoronto.ca/news/u-t-budget-invests-teaching-research-and-student-well-being-sector-s-challenges-mount](http://www.utoronto.ca/news/u-t-budget-invests-teaching-research-and-student-well-being-sector-s-challenges-mount)

<sup>3</sup> [www2.deloitte.com/content/dam/Deloitte/ca/Documents/press-releases/ca-national-ai-report-2023-aoda-en.pdf](http://www2.deloitte.com/content/dam/Deloitte/ca/Documents/press-releases/ca-national-ai-report-2023-aoda-en.pdf)

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