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August 4, 2017

# Canada's Global Moment

Universities Canada submission to the  
House of Commons Standing Committee on Finance



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## Introduction

Canada's universities are committed to working with all Parliamentarians to enhance the country's productivity and competitiveness, and we welcome the House of Commons Standing Committee on Finance's pre-budget consultations on this theme. Discovery, innovation and creativity are all at the heart of the university mission. The knowledge, capacity, talent and networks of Canada's universities make our sector a vital asset in improving Canada's global competitive advantage.

At a time of closing borders and closing minds, Canada's universities are working hard to ensure that our country remains open to the world and succeeds as an international leader. This is Canada's global moment. And seizing this moment means investing to ensure Canada can lead in higher education, research and innovation.

The report of the Fundamental Science Review Panel is the most comprehensive assessment of Canada's research innovation system in four decades. It signals a once-in-a-generation opportunity for Canada to become a global research powerhouse and provides a clear roadmap to get there. The report highlights the important role of federal government funding in helping universities achieve global excellence in research and innovation. Nine eminent Canadians devoted nine months to develop a data-driven case for why the Canadian research ecosystem urgently needs revitalization and re-investment.

Fundamental science produces the discoveries that fuel an innovative economy and helps find solutions to the most pressing challenges facing our world. A well-funded research ecosystem is essential to creating economic growth, supporting innovation and creating jobs for middle-class Canadians. The science review panel clearly identifies this link; quite simply, if you don't have well-resourced fundamental science at the front end, you're not going to have the downstream benefits in entrepreneurship and innovation.

Meanwhile, uncertainty around possible cuts to science funding in the United States and Brexit's disruption of the United Kingdom and European research community are creating an unprecedented opportunity for Canada to attract the world's top research talent.

If we are to become a destination of choice, however, Canada must provide the funding to support a healthy research system. As the science review report states, Canada's place in research funding within the OECD has fallen significantly in the last decade, as has the federal government's share of funding to research. In order to become a global research powerhouse, Canada must invest more in its research ecosystem and infrastructure. Right now, we have a singular opportunity to act with ambition for a generation.

Universities Canada's Budget 2018 priorities focus on Canada's global competitiveness, highlighting three pivotal aspects of federal support for university research excellence. We strongly urge that all financial recommendations of the fundamental science review panel be implemented, with most urgent attention to the following three priorities:



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1. sustained increases in direct support for **discovery research** through the federal granting councils;
  2. a dedicated support fund for **international research collaboration**; and
  3. support for research infrastructure through the **Canada Foundation for Innovation**.

### **Improving competitiveness through discovery research**

Universities Canada welcomed the important investments in innovation and skills made in Budget 2017. Universities will play a leading role in meeting Canadians' needs for lifelong learning and upskilling, advancing Indigenous student access to higher education, driving global excellence in the field of artificial intelligence and partnering with the private sector in the Innovation Superclusters Initiative. These measures will help universities contribute to Canada's productivity and competitiveness in the years ahead. Our talented students and faculty advance these goals every day as part of their teaching, learning, research and entrepreneurship activities, as well as through extensive collaboration in their communities with the private sector, municipalities and the non-profit sector.

Research funding must be addressed as a foundational piece of the productivity and competitiveness puzzle, and Budget 2018 is the ideal time to do so.

When researchers first embark on a curiosity-driven project, no one knows exactly what the outcomes might be. But curiosity-driven research has been behind some of the most lucrative and life-saving discoveries of the past century, such as the laser, vaccines, disease-fighting drugs, improvements in crop yields, and the development of radio and television.

In recent years, the federal government has funded priority-driven research at the expense of fundamental discovery research. As a result, young scientists are being dissuaded from pursuing their work, as shown in a new report from the Global Young Academy. It found that 40 per cent of Canadian scientists changed the direction of their research program in the past 10 years, away from basic science.

In order to foster innovation and optimize the recent investments in the last budget, we need to let discovery research lead. Doing so will lead us to new companies, socially innovative programs and medical technologies – advances that create good middle-class jobs, foster economic growth and improve the lives of Canadians.

Research funding support from the federal government is essential for the discoveries so critical for Canada's inclusive and innovative future. As noted in the science review panel report, federal investment in real per-capita funding for independent or investigator-led research has fallen by 30 per cent over the last 10 years. Moreover, federal support for R&D in higher education makes up less than 25 per cent of total spending —making Canada an international outlier.



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The science review report offers a blueprint for sustained excellence in investigator-led research across disciplines to help Canada take its place on the global stage. It also proposes a plan to better support Canada's next generation of research leaders. Increased and sustained research funding will enhance opportunities for early- and mid-career researchers and advance Canada's efforts to improve gender equity and diversity in science.

Constant, significant investment in research is the only way to ensure that Canada's innovation pipeline is consistently flowing; that is, producing results that address today's issues while getting ahead of the issues of tomorrow.

Canada cannot afford to let this flow of ideas stall and lose a generation of top researchers due to lack of support. It's not enough to say that, as Canadians, we believe in science. We have to provide the infrastructure, tools, time, space and room on the agenda to explore the challenges facing Canada and the world. Fundamental science - the curiosity-based research that asks "what if?" and looks so far down the road that its applications go beyond imagination - is the stuff that builds Canada's future and puts us ahead internationally.

This is the kind of basic research done for 30 years by Geoffrey Hinton that has led to cutting edge applications today in artificial intelligence. It's the research that nurtures Canada's greatest thinkers such as Nobel laureate Arthur McDonald and Herzberg Gold Medalist Victoria Kaspi. They did not start at the top. They had the funding to pursue their inquiry and the support of high-level researchers who inspired and trained them. Today's students need the same. Supporting top talent provides exceptional learning opportunities for future researchers, as well as our future leaders of industry, government and entrepreneurship.

**Universities Canada recommends** that the federal government provide significant increases in direct support for discovery research through the federal granting councils, which will have system-wide benefits across the research ecosystem, particularly for the next generation of talented young researchers.

### **Global competitiveness through international research collaboration**

International research collaboration comes in many forms. The recruitment of top scholars from all corners of the world fosters connections to vastly wider networks of knowledge, infrastructure and research partners. The federal government recognizes this, as demonstrated by the creation of the new Canada 150 research chairs program and the Global Skills Strategy in Budget 2017. These measures show that Canada is serious about recruitment of global talent at a time when many nations are turning inwards. New support and a more robust mechanism for international research collaboration will buttress this investment. The science panel report calls for dedicated funding to strengthen international partnerships in discovery and innovation.



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Canada's universities have a strong foundation upon which to build. In increasing numbers, Canadian faculty have studied abroad and built networks far beyond their own campuses and communities. As a result, they are among the most collaborative in the world. However, they lack the needed funding to optimize and increase their collaboration, to solve issues of global scale that require the contributions of a wide pool of expertise and talent.

The world's most pressing challenges – including poverty, inequality, climate change and disease – do not stop at borders, and neither does the pursuit of solutions. It is through leveraging our international partnerships and embracing diverse ideas, perspectives and experiences that we tackle these problems best. Increasingly, Canada is being courted for major research collaboration partnerships with partners such as the European Union, the United Kingdom, China, Germany, France and Israel. To capitalize on this interest, Universities Canada is leading several missions of university presidents to a number of these countries to enhance our global engagement over the next two years. The world is turning to Canada for leadership, and Canada's universities need to respond with resources required to pursue international research collaboration at scale.

**Universities Canada recommends** that the federal government invest in a dedicated support fund for international research collaboration to capitalize on Canada's global moment and increasingly strong position as a research partner of choice.

The international mobility of our students is another significant way for Canada to seize this global moment. There are no greater emissaries than our students for positioning Canada as a global leader, and universities are offering new and innovative ways for Canadian students from a range of backgrounds to learn abroad. As Canada looks to increase global trade through the new Canada-European Union Comprehensive Economic and Trade Agreement, and with key countries such as China, Japan, India and Mexico, we need our next generation of leaders to have the global competencies necessary to help these trade relationships succeed. Partner countries are looking for a greater flow of Canadian students to deepen our two-way talent exchange. As Canada prepares to host the G7 in 2018, we call on the federal government to be ambitious in its support of young Canadians studying abroad.

### **Building on world-class research infrastructure**

As recommended in the science panel report, a sustained plan to fund state-of-the-art infrastructure is needed through the world-class Canada Foundation for Innovation (CFI). To ensure Canada can produce world-leading results, attract the world's top talent, and keep our best young researchers here, the most advanced research facilities and equipment are needed.

This science infrastructure helps foster collaboration among academic, private, public and non-profit sectors on a range of projects and across disciplines. The solid platforms of



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research infrastructure established at Canadian institutions also serve to support business innovation and private-sector research and development.

The science review report recognizes research infrastructure provided through CFI as the fourth pillar of a healthy research ecosystem, along with the three federal granting councils. Universities Canada fully endorses the panel's call for regularized support for research infrastructure and its operation and maintenance with an annualized budget allocation for CFI.

This predictable funding model will promote effective long-term planning and strengthen the ability of universities to plan research strategies and create an investment horizon to support the discovery-based research that fuels innovation. Regularized funding will also optimize previous federal investments by ensuring that funds are available to support researchers and equip research spaces that have been created through federally funded mechanisms, including the Canada Excellence Research Chairs program, the Canada First Research Excellence fund and the Post-Secondary Institutions Strategic Investment Fund.

**Universities Canada recommends** that the federal government invest in stable and predictable funding for the Canada Foundation for Innovation to support long-term research infrastructure planning, development and operations.

## Conclusion

The science review panel report sets the stage for government to build on recent strategic investments in research, innovation and skills. At a time when Canada's brand is rising globally, a significant response to these recommendations will be crucial in enabling Canada's universities to drive productivity, increase Canadian competitiveness and seize our global moment.

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