UNIVERSITY OF
TORONTO

Pre-Budget Submission

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Executive Summary

The Government of Canada is committed to placing innovation at the centre of its plan for inclusive growth, and Canada's universities stand ready to support this vision. Universities are creating the country's most sophisticated talent and the solutions our enterprises will need to see our innovation networks thrive in the decades ahead.

The University of Toronto recommends the Government of Canada use Budget 2017 to launch its program of innovation-based growth for the benefit of our businesses, our communities and all Canadians. In particular, the University of Toronto recommends:

- Reinvesting in the **Granting Councils** and **Research Support Fund** to drive growth in basic research.
- Providing stable funding and assigning a lead agency to coordinate **Large Science Infrastructure** initiatives.
- Continuing to embrace **Talent-centric Immigration Policies and Border Practices** to support innovation.
- Establishing an effective national **Clusters Strategy** that recognizes the role of anchoring research institutions.

Introduction

In January, Prime Minister Justin Trudeau used his platform at the World Economic Forum in Davos to speak about the *Canadian Opportunity*. With our diverse and creative population, the Prime Minister said, "Canada is poised to embrace the fourth industrial revolution, and as long as our growth policies are designed inclusively, all Canadians stand to prosper."

Canada's universities will be key to fulfilling this vision. Universities raise hundreds of thousands of students into the middle class every year, and impart to young and new Canadians the skills and ambition to capitalize on the changes transforming the global economy. Our researchers, meanwhile, are creating the knowledge and technologies that underpin this global change, as well as the solutions to ensure Canada meets the great challenges of our times head on.

Helping Canadians

The University of Toronto's researchers are tackling on some of the most pressing challenges facing our society that will affect the lives of Canadians now and for generations to come. For instance, more than 200 of our faculty members are working to solve problems in energy and the environment, including climate change. U of T students and faculty continue to directly inform United Nations research and policy as active participants on the Intergovernmental Panel on Climate Change. The University has also recently launched a cleantech challenge to encourage environment- and energy-related entrepreneurship, and to help faculty and students identify climate-change research and learning opportunities.

Helping Businesses

The University of Toronto cultivates strong industrial partnerships and works with businesses to help solve their toughest R&D challenges. For instance, the recently launched Toronto Institute of Advanced Manufacturing (TIAM) at U of T brings together a multidisciplinary group of researchers with expertise in advanced materials, processing methods and knowledge-based manufacturing. TIAM strives for global leadership by translating lab-based technologies into commercial, scaled-up processes and by contributing to the education and training of highly skilled personnel in the manufacturing sector. TIAM's collaborators include many important industrial leaders, such as Magna International, BlackBerry, Pratt and Whitney, Bombardier, GE Digital Energy and Celestica.

Helping Communities

Founded in 1827, The University of Toronto has grown with the City of Toronto and continues to innovate ways to collaborate with the city. With 86,000 students and 552,000 alumni, the University's impact is felt primarily through those who have passed through our halls. Our graduates are active in every sector, leading in business and the public service, innovating as scientists and increasingly as entrepreneurs. In recent years, U of T has made enormous investments to help empower students to take charge of their careers and to apply their education purposefully to ventures with visible commercial and social impact. Our students and faculty spun off 61 new research-based startups last year, many through our nine on-campus accelerators. Recent initiatives like the JLABS incubator, a joint project with Johnson & Johnson Innovation, allow the University to connect the city and local innovators with global market opportunities.

Budget Recommendations

The University of Toronto welcomes the recent announcement of Minister Bains' Innovation Agenda and Minister Duncan's Review of Federal Support for Fundamental Science and looks forward to engaging in these consultations. The University of Toronto also welcomes the work underway of the Advisory Council on Economic Growth focused on a robust growth strategy for Canada. We are certain that many of the ideas presented here will be duly considered by the esteemed panels of experts, and are confident that the Government will act on the resulting recommendations in the near term. More generally, we are confident the panels will conclude that innovation-based economic growth cannot proceed without advances in fundamental science.

Granting Councils and Research Support Fund

The University of Toronto believes the most important step the Government can take to strengthen basic research is to make a meaningful reinvestment in the Granting Councils. The Granting Councils, comprised of the CIHR (Canadian Institutes of Health Research), NSERC (Natural Sciences and Engineering Research Council), and SSHRC (Social Sciences and Humanities Research Council), are the bedrock of Canadian research, but their budgets have declined in real terms since the financial crisis. Competition for basic research grants is intense, and success rates have fallen across many core funding programs, resulting in diminished potential of our most highly skilled talent.

Many of those shouldering the burden of declining success rates have been new faculty members. Early researchers in the first years of their careers are finding it increasingly difficult to launch their research programs due to lack of resources. Early momentum is critical in academia, and there is now a growing sense that research funding opportunities for young researchers are dwindling in Canada.

Limited funds are also impacting our ability to build new global research networks and international collaborations. Research excellence is key to Canada's attractiveness to outside partners, but so too is its ability to react nimbly to seize opportunities as they arise. Unfortunately, researchers seeking operating funds to establish new partnerships are often constrained by a lack of flexibility in current Granting Council programs, whose limited budgets cannot easily accommodate such extraordinary opportunities.

The Government's Budget 2016 investment of an additional $95million in the Granting Councils is very welcome. We urge the Government to continue to recognize the importance of the basic research through an additional reinvestment in the Granting Councils.

- ➢ The University of Toronto recommends the Government of Canada support basic research through a meaningful investment in the **Granting Councils** that allows Canadian researchers to remain internationally competitive.

Similarly, the Research Support Fund, which assists universities with the institutional costs of research, has not kept pace with the growth in costs or in Canadian research capacity. As a result, a growing burden of costs associated with externally funded research has been borne by universities' increasingly strained operating budgets.

➢ The University of Toronto recommends the Government of Canada invest in the **Research Support Fund**, to better align the level of funding with the full costs of research.

Large Science Infrastructure Facilities

While the Granting Councils fund a large proportion of Canada's research, many disciplines depend on additional assets, including a range of large science infrastructure facilities that have historically been managed without the oversight of any specific agency. Facilities like the Thirty Metre Telescope, TRIUMF, and Canada's advanced research computing platforms have been created, maintained and funded individually, but not always with a coordinated approach.

➢ The University of Toronto urges the Government of Canada to establish stable funding and to consider assigning a lead agency to coordinate the ongoing maintenance of Canada's **Large Science Infrastructure** facilities. Better coordination is necessary for system-wide planning and priority setting.

Talent-Centric Immigration Policy and Border Practices

Universities are developing the most skilled members of Canada's workforce. In today's global and knowledge-based economy, universities have become essential contributors to our long-term prosperity and quality of life. Moreover, demographic projections indicate that within a decade immigrants will account for 100% of net labor force growth (source: Citizenship and Immigration Canada 2012). Many developed countries share this challenge, and competition for the world's best talent has grown dramatically.

The flow of top talent into Canada whether on a short-term or permanent basis enhances research and innovation outcomes for the country. Every year thousands of international students, visiting academics, and experts come to the University of Toronto to study, collaborate, and exchange knowledge. Border practices and immigration policies that welcome those who seek opportunities to contribute to Canada's success are necessary to ensure that Canada has the specialized talent our regions will need in the new economy. As Canadian companies grow to scale and access global markets, international connections and expertise become even more important. Minister McCallum has recently made some encouraging announcements with respect to easing the path for international students seeking citizenship and permanent residency for spouses of Canadians.

➢ The University of Toronto urges the Government of Canada to continue to recognize the need for **a talent-centric immigration system and border practices** that align with the talent needs of the Innovation Agenda.

Innovation-Based Clusters Strategy

The University of Toronto has a long history of city-building and nurturing the broader innovation ecosystem beyond our campus. The MaRS Discovery District, Canada's lead regional innovation centre, aims to provide a place where science, technology and social entrepreneurship can meet to build Canada's next generation of technology companies. Our eastern Scarborough campus has a vibrant partnership with the East Scarborough Storefront, where students and

faculty research and create the social innovations that will make their community stronger and healthier. Our Mississauga campus recently opened the Innovation Complex in partnership with the City of Mississauga as a space for students to interact with and learn from local industry and government partners while developing entrepreneurial and leadership skills.

The relationship between urban regions and educational and research institutions is symbiotic: cities foster the development of world-class research institutions while universities and research institutions foster world-class cities. Leveraging this relationship creates a mutual advantage, leading to prosperity for both partners. North America's lead innovation ecosystems have grown up around strong universities—Silicon Valley around Stanford University, and the Boston cluster around MIT and Harvard.

The same dynamic holds true in Toronto. The University of Toronto is Canada's leading and largest research university. Together with our fully affiliated research hospitals, we attract over $1.1 billion in sponsored research funding a year, produce more scholarship than any other institution in Canada, and lead the country's universities in the creation of spin-off companies. It is because of this critical mass that Toronto's biomedical industry is rated as the third largest life sciences cluster in North America, with over 700 companies and over 80,000 employees. In addition, with Canada's top-ranked computer science department, U of T also helps to anchor Toronto's lead Information & Communications Technology cluster, which is home to 35% of the country's technology firms. Finally, U of T innovations in smart grid, electric vehicles, green buildings, clean air/water technology, solar and wind power, and waste technology also help to ground a burgeoning Toronto cleantech cluster that now employs some 36,000 people.

This strength extends into the Toronto-Waterloo-Hamilton cluster where similar research universities act as anchors to help drive cluster growth. Further investments in the Toronto Region will help foster connections and talent development that will help move this vibrant city region to become competitive with other city regions such as Boston and San Francisco.

- ➢ The University of Toronto recommends that the Government of Canada recognize the critical role of research-intensive universities as it drafts its new **Clusters Strategy**. Effective technology clusters depend on strong R&D networks, which in turn depend on world-class research institutions.

Conclusion

The University of Toronto fully supports the Government's plan to place innovation at the heart of its plan for inclusive economic growth. We strongly believe this strategy requires significant re-investment in basic research upon which innovation rests, and recognition that innovation networks can only flourish in proximity to globally-connected research-intensive universities. In the months ahead, the University of Toronto looks forward to discussing with the Government's expert panels how it can best continue to serve Canadians.