



# University of Toronto's Submission to Canada's Fundamental Science Review

## Introduction

The University of Toronto welcomes the Government of Canada's Fundamental Science Review as an opportunity to set an ambitious, coordinated and cohesive narrative for research in Canada. We share the Government's goal of making support for fundamental research coherent, effective and agile and giving researchers the tools, training, and support needed to excel globally.

Research-intensive universities are essential in the global knowledge economy, and play a key role in contributing to our prosperity and quality of life. New discoveries and innovations made by our scholars are laying the groundwork for paradigm-shifting technologies and policies that support the improvement of Canadian productivity and wellbeing. Scholars in universities address fundamental issues that affect our communities, our nation and our planet, ranging from topics such as terrorism to climate change. Universities serve as anchors in local and regional innovation ecosystems, supporting public and private sector partnerships.

The research community at the University of Toronto is broad and complex, spanning the breadth of disciplines and working to provide answers to some of the world's most important questions. Our researchers are highly productive, and collectively rank 7<sup>th</sup> in the world for highly cited papers. Most of this work is done with graduate students and trainees who are poised to become Canada's next research leaders and innovators.

Based on our experiences with the Granting Councils and other funding organizations, and through consultations with our researchers and administrators, we have identified the following key themes:

### **1. Continued support of investigator-driven research excellence through peer review**

Scholars at the forefront of their disciplines are best placed to pose the questions that have the greatest potential interest. Some questions may have immediate relevance, while others advance knowledge without any direct application known at the time the research is initiated. Support for a diverse array of investigator-driven research excellence is essential. Peer review remains the best mechanism for ensuring excellence and should include researchers with subject expertise and experience fitting the complexity of the proposed work.

### **2. Reinvestment in Granting Councils and the Research Support Fund to drive growth in fundamental science**

The Granting Councils are the bedrock of the Canadian research funding system, but their budgets have declined in real terms since 2007. A meaningful investment in the Granting Councils that allows Canadian researchers to remain internationally competitive is required. We also recommend the Government of Canada invest in the Research Support Fund to better align the level of funding with the full costs of research borne by institutions.

### **3. Increased inter-agency communication and coordination, along with simplification of the research funding system**

Over the past several decades, the federal research funding landscape has evolved to support multiple funding entities and programs addressing different areas of focus. New investments have been welcome, but there has been an increase in complexity across the system. The system's performance would improve through more streamlining and coordination of programs and administrative processes across funding agencies.

### **4. Planning and coordination for Big Science and platform technologies**

The University of Toronto participates and supports several Big Science and platform technology initiatives, both within Canada and as part of leading international consortia. These initiatives have been created, maintained and funded individually, but not always with a coordinated approach. Better coordination is necessary for long-term system-wide planning and priority setting.

### **5. Inclusive consultations regarding research policy and governance**

As funding agencies develop policies that govern programs to support research, it is essential that they engage in timely, open and transparent consultations with the research community and institutions. All funding agencies should have open and transparent governance processes with appropriate engagement of the research community.

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## Response to the Panel's Questions

In the responses that follows we have primarily highlighted key issues of significance to the University of Toronto and do not necessarily replicate observations in collective submissions from organizations such as the U15.

### **1. From the perspective of research, are Canadian universities keeping pace internationally? If not, what changes or new programs are needed to close the gap?**

As noted in the Science Technology Innovation Council's [2014 report](#), government funding for research and development has remained unchanged since 2008 while other countries have increased their investments. Critically, the Granting Councils' budgets have declined in real terms since 2007. Funding announced in Budget 2016 is positive and welcome, however, in order to bring Canada back into the levels of top competitor nations' resourcing for research and innovation, funding needs to grow.

#### Recommendations:

- ❖ Reinvest significantly in the Granting Councils to internationally competitive levels to drive growth in science and innovation.
- ❖ Augment the Research Support Fund to better align the level of funding with the full costs of research. Research and discovery cannot occur without adequate administrative and physical infrastructure and essential resources such as library facilities.
- ❖ Review funding for the Canada Research Chairs (CRC) program. While this program has been a welcome source of support for research personnel, funding per CRC has not changed since the program was launched in 2000. An incremental increase is critical as Canadian universities are competing globally for the best scholars.

## **2. Is the federal funding ecosystem meeting the needs of researchers in your institution(s)? As the needs change, is the ecosystem able to adapt and accommodate?**

The federal funding ecosystem has supported thousands of world-leading research efforts over the past number of decades, but at the same time it has grown overly complex. For example, University of Toronto researchers are funded through 300 separate federal programs. As needs change, the ecosystem often adapts and accommodates by creating new programs. This is not a sustainable model and sometimes becomes overly prescriptive and narrow.

Particularly challenging for researchers is the fragmentation of funding across different programs and agencies to support operating costs, personnel support and infrastructure. Programs can have different timeframes and processes increasing administrative burden and reducing time for scholarship.

### **Recommendations:**

- ❖ The funding system should be designed from a researcher-centric perspective in a simple and flexible manner, enabling funding for all aspects of an investigator's research program through a unified application, or through closely coordinated programs. (The coordination between the CRC program and the CFI's John Evans Leadership Fund is one such example.)

## **3. Does the federal science funding community (e.g. the granting councils, the CFI and other agencies or organizations distributing federal funds for research) consult institutions to ensure that their programs are aligned to the needs of administrators? If so, how? If not, should it and how should it?**

We fully support and encourage open and transparent consultations with the research community regarding research programs, policies and guidelines. Proactive consultative processes allow representatives from the research community an opportunity to provide meaningful input based on their expertise and experience. The governance of funding agencies should be open and transparent and actively engage the research community.

In the past, consultation has been variable across the federal research funding vehicles with some agencies and councils showing a greater engagement with institutions than others.

### **Recommendations:**

- ❖ Adopt a common standard to consultation planning, implementation and follow-on action with active and meaningful engagement of institutional administrators and researchers. For instance, the Canada Foundation for Innovation (CFI) undertakes regular, meaningful dialogue through a number of mechanisms to ensure that program design and, particularly, delivery is informed by the experience of their "client" community. CFI also assigns a liaison officer to each eligible institution which permits the effective exchange of information between the organization and university.
- ❖ Create an arm's length research board with resources to consult and conduct research and analyses. This board could provide a sound, stable basis for long-term planning across federal funding agencies and provide a focal point for interaction with institutions.
- ❖ Engage experienced researchers to help design and implement funding programs. Researchers could be seconded to work at the Councils similar to the model at the National Science Foundation.
- ❖ Create interchange programs for exchange of funding agency staff with those working in institutional research offices.
- ❖ There is a wealth of experience across the research services offices in Canada that could be consulted to provide specific advice on program delivery. Guidance from these offices should be

considered to work through meaningful “on the ground” enhancements, many of which related to standardization that would render significant efficiencies. Some examples include:

- Development and adoption of open standards by all users of research (management) information as promoted by the [CASRAI](#) organization
- Standardization of websites across funding bodies to facilitate navigation (and reduce duplication of design costs)
- Standardization of timing and format of competition results to enable institutions to undertake timely analysis of performance relative to national results.
- Adoption of a common approach to defining which institutions are eligible to administer funds, (e.g. NSERC does not recognize hospitals, some programs require applications and/or funds to flow through universities to hospitals )

#### **4. Comment on the coordination between the programs being provided by the granting councils and other funding organizations, provinces, and/or amongst themselves. Are there areas for improvement?**

The current funding ecosystem is complex and would benefit from simplification. Many of these programs have independent timelines, mandates, accountability requirements, boards and selection processes. For researchers, especially early-career researchers, assessing the array of programs and requirements is daunting and requires valuable time and effort to navigate, reducing the time available to conduct research. This complexity also inflates the institutional costs of supporting research and creates administrative inefficiencies for the funding bodies.

There can be challenges with coordination with the provinces on cost-shared programs as program criteria, timelines and review processes can vary significantly. Particularly difficult are multi-jurisdictional projects where several provincial funding bodies can be engaged along with a federal agency.

There have been some very successful models for cost-shared programs. For example, CIHR has conducted some special programs where cost-sharing partners have contributed up front creating a single pool for applicants.

#### **Recommendations:**

- ❖ Explore how to enhance inter-agency communication and coordination to simplify and streamline the federal funding ecosystem.
  - For instance, through aligning funding envelopes and grant management. One example of a successful partnership is the Canada Research Chairs and Canada Foundation for Innovation’s John R. Evans Leadership Fund program where applicants can submit to both programs in a coordinated fashion.
  - Technological solutions might include further IT enhancements, standardization of online forms, common CV, and other researcher-facing portals.
- ❖ Work with the provinces to align programs and processes in a coordinated manner.

**5. Could the application processes for funding be improved? If so, what would you suggest? Are there issues with the matching programs associated with various funding programs? If so, how could this be improved?**

Along with the proliferation of programs there has been a rise in application processes with differing requirements, timelines and formats. It is difficult for researchers and institutions to manage these varying processes. Some structured forms are too prescriptive forcing researchers to narrowly define their proposals which may stifle innovation and the proposal of new lines of inquiry.

**Recommendations:**

- ❖ Make resolution of the common CV issues a priority.
- ❖ Broaden programs that are flexible and can meet changing requirements and new areas of research as they arise.
- ❖ Simplify the number of envelopes and improve coordination between funding agencies.
- ❖ Integrate common administrative services between the granting councils to increase efficiencies.

The proliferation of matching programs is understandable given a sense that cross-institutional/sponsor/sector networks will encourage the mobilization of knowledge and, notionally, increase the impact of any one sponsor's dollar investment. However, such programs can have a serious impact on researchers and institutions as they devote time to securing matching funding and increase accountability and reporting requirements.

With respect to matching provisions under CFI, Ontario is fortunate that its government normally provides a dollar-to-dollar match. For most projects securing the remaining 20% through other sources has been feasible. However, the provincial program does not always align with CFI and can sometimes leave projects unfunded. Particularly challenging are national collaborative projects involving multiple provinces where some provinces provide a match and others do not, or international collaborations where no province is willing to provide a matching component.

**Recommendations:**

- ❖ Further administrative streamlining of CFI and the Ontario Research Funding program to save researcher and administrator time. For example, there are opportunities to coordinate reporting requirements across the two programs that will reduce researcher and institutional administrative burden as well as for the funding organizations.
- ❖ Establish partnerships with cost-sharing organizations to establish a single pool of funds for researchers, particularly for multi-jurisdictional projects.

**6. Is there a need for the federal government to improve the balance across funding elements (e.g. investments in principal researchers, funding of research staff and other direct costs of research, funding of infrastructure and equipment operations and maintenance, and reimbursement of indirect costs)? If so, how can this balance be achieved? What is the appropriate federal role in supporting infrastructure operating costs? Do CFI and granting councils programs work in a complementary fashion?**

The most critical area of the balance of funding elements is support for indirect costs. The increase to the Research Support Fund (RSF) in Budget 2016 was welcome. However, even with this new investment, RSF has not kept pace with the growth of activity at Canadian research intensive universities.

Across other elements of funding, researchers do have access to support for direct costs, infrastructure and other areas, but these programs can be fragmented and have different timelines that increase time spent on proposal development and review, and can lead to situations where one element is funded, but not others.

### Recommendations:

- ❖ Significantly increase the Research Support Fund that assists universities with the institutional costs of research. Currently the University of Toronto's reimbursement rate is 17.7% for indirect costs, while our true costs are closer to 50%. An increase would allow the university to better support important activities such as knowledge mobilization as well as covering the basic utilities and administrative costs of the university research ecosystem and supporting essential resources such as the library.
- ❖ Better coordinate funding opportunities so researchers can gain access to multiple funding elements for their research program through single or coordinated applications.

### **7. What should the balance be across funding risky, novel, or emerging research areas and research with important established lines of inquiry? Do current programs and review processes achieve the right balance?**

High quality peer review processes are integral to excellence and must be inclusive of researchers with subject expertise and, depending on the research proposed, researchers with a broader range of knowledge and reviewers with experience in complex projects. That said, peer review processes should not create a culture of conservatism that inhibits the development of research in novel or emerging areas.

Timelines for review and decisions regarding applications are often too long, especially for novel or emerging research opportunities. Canada risks lagging behind other countries if investigators cannot launch their new research quickly enough.

### Recommendations:

- ❖ Identify transformative research at the earliest stages, and provide support as the research advances to minimize risk. For instance, by creating supports that scale as research yields significant results.
- ❖ Consider programs similar to NSERC's Discovery for other disciplines to provide funding packages with significant time and freedom to follow novel and emerging research.

### **8. What should the balance be across funding of research to meet broad government priorities and having research priorities determined primarily by the ideas of the research community? Do current programs and review processes achieve the right balance?**

The Federal Granting councils should primarily remain investigator-driven agencies. Direct government needs for research are best met through contract research, government science departments and other means that engage partners such as universities. Canadian university researchers can also play a role in the research needs of the government through such mechanisms as collaborations with government scientists.

## Recommendations:

- ❖ Ensure investigator-initiated partnership programs are supported through the Granting Councils.
- ❖ Separate partner-driven research from the Granting Councils. For example, [Sustainability Development Technology Canada](#) (SDTC) offers funding for Canadian CleanTech development and demonstration projects.
- ❖ Increase opportunities for engagement of government scientists with university researchers.

### **9. Do current federal programs encourage and support domestic collaboration? Is there sufficient flexibility in federal funding programs for participation in international collaborations? Are there particular research areas where more emphasis on international collaboration is needed?**

In general, current programs such as the Networks of Centres of Excellence (NCEs) are highly supportive of domestic collaboration. As for programs to support international collaboration, we believe there are more opportunities than are currently possible within the current funding regime.

The University of Toronto invests considerable resources in developing partnerships with universities around the world with the aim of developing collaborations between researchers. Fifty percent of papers published by U of T researchers result from collaborations with peers at institutions outside of Canada, but we could do more. Canadian researchers would benefit from tools and programs tailored to support international collaboration, especially to fund opportunities that arise outside of the tri-agency granting cycle timelines.

On the domestic front there is a large suite of NCE programs that support domestic and industry partnerships. The funded NCEs result in large administrative burdens for host and participating institutions. They also involve creating multiple corporate structures, with independent boards, that generate additional and often redundant activity.

## Recommendations:

- ❖ Establish flexible funding programs for international collaborative research programs.
- ❖ Establish federal support programs to encourage partnered funding with international agencies, universities and research institutes.
- ❖ Review the structure of partnership programs such as the NCEs and related programs like Centres of Excellence for Commercialization and Research (CECRs). Ensure that they best enable collaborative research and partnerships and minimize administrative burden.

### **10. Are current federal programs supporting the needs of multidisciplinary research programs? If not, how can the situation be improved? Does the funding ecosystem (funding councils and other agencies) work collaboratively and effectively across disciplines?**

Barriers between disciplines have been shifting and falling for decades. Federal programs have responded to an extent, but boundaries persist within and between granting councils that impede multidisciplinary research.

Increased inter-agency communication and coordination, along with simplification across the research funding system will assist multidisciplinary research initiatives. Broader, program based funding

schemes could also benefit such initiatives. Peer review structures need flexibility to accommodate and respond effectively to multidisciplinary applications.

An example of an area that is impacted by current funding programs is the Scholarship of Teaching and Learning (SoTL). Often multidisciplinary in nature (e.g. engineering education, physics education, humanities education) this type of research largely falls into the gap between Granting Councils. As a result, there are significantly fewer options and less funding for this research than we see in other countries. The United States, as an example, has heavily invested in research of all kinds on university level education within STEM disciplines.

### Recommendations:

- ❖ Review current practices and rules within and across Granting Councils to ensure that implicit barriers are not artificially restricting multidisciplinary research.
- ❖ Ensure peer reviewers appointed by Granting Councils are well positioned to assess multidisciplinary research, especially in areas that may cut across various disciplines (e.g., humanities research in bioethics, social science research in health and illness, teaching and learning research in sciences).
- ❖ Establish multidisciplinary review panels with a wider range of reviewer expertise, and include individuals with experience working on more complex multidisciplinary projects.

### **11. Does your institution participate in major science initiatives or “Big Science,” including large international collaborations and facilities? Why or why not? If your institution does participate, how is your participation funded? Are there challenges in identifying or securing funding sources?**

The University of Toronto participates in, and supports, several Big Science and platform technology initiatives, both across Canada and in partnership with international consortia. Examples include the Thirty Metre Telescope, Square Kilometre Array, TRIUMF, CERN, SNOLAB, and the Structural Genomics Consortium. These initiatives require long-term planning horizons and multi-year funding commitments that are not currently coordinated nor consistently adjudicated through an arms-length process.

Platform technologies would benefit from coordinated and scheduled review. For example, the use of High Performance Computing (HPC) platforms (software, hardware, high speed/volume internet connection) has been thought of as specialized infrastructure, but is now integral to many areas of research. The platforms are evolving rapidly and some tools are becoming available through commercial providers. The means by which such essential tools are supported needs to be able to evolve to fit the changing environment.

Funding for Big Science initiatives and platform technologies varies considerably. Many are funded through CFI. This can result in challenges with provincial cost-share for national facilities or international collaborations. Other large facilities are funded through agencies such as the National Research Council (NRC), and some are funded directly as part of Federal budgets. The governance and structure of such initiatives also varies considerably. Some are stand-alone entities, others owned by a single or multiple institutions. The result is a very complex ecosystem that makes coordination increasingly difficult.

It is also important to recognize that there are other areas of scholarship which require significant collaborative investments that are not well supported through traditional funding approaches. While not traditionally thought of as “big science” these areas are “big scholarship”. Examples include support for large longitudinal population studies, of significant value for health and social science research and technological infrastructure for the digital humanities. These and other areas may also require open



access to data, and the maintenance of major research databases. The University of Toronto is committed to open data as it represents a rich and valuable source for a variety of researchers, particularly researchers in the social sciences and humanities who rely on government data and do work that improves government policy and programs which directly impact the lives of Canadians. Special consideration should be given to improving access to government data and modernizing the regulations that govern important sources of government data, such as Statistics Canada regional data centres. We should ensure that data is collected and stored in ways that make these resources available to researchers.

### Recommendations:

- ❖ Establish stable funding and 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.
- ❖ Review the coordination and funding of HPC and the appropriateness of a cost-shared funding model for such a platform technology.
- ❖ Develop mechanisms to support long-term, large-scale research programs such as longitudinal cohort studies.
- ❖ Support development and access to data from a broad range of sources.

### **12. What is the best way to fund areas of strategic interest such as emerging, transformative or potentially disruptive technologies, and/or areas of broader societal interest? Are granting councils well placed to fund/support these areas or are separate mechanisms required?**

As noted in question 8, Granting Councils should remain focused on investigator-driven research which is the foundation for developing transformative or disruptive technologies. Support for targeted research in areas of strategic interest would be best facilitated through separate mechanisms.

### Recommendations:

- ❖ Ensure Granting Councils avoid overly predetermined areas and competitions and focus on excellence through peer review.
- ❖ Support areas of strategic interest through separate programs that are appropriately structured and funded.

### **13. Identify the unique barriers that the following groups face in obtaining support for investigator-led research. Do current programs address these barriers? What else could be done to address these barriers?**

- a) students, trainees, and early career researchers**
- b) women**
- c) aboriginals and other underrepresented groups**

The University of Toronto believes that excellence flourishes in an environment that embraces the broadest range of people, that helps them to achieve their full potential, that facilitates the free expression of their diverse perspectives through respectful discourse, and in which high standards are maintained. We strive to reflect the diversity of our community, and believe this diversification of ideas and perspectives enriches our scholarship, teaching and other activities.

The University of Toronto strongly believes that peer review is foundational to excellence based research. That said, we acknowledge the need for the scholarly community to interrogate existing biases and share best practices to overcome barriers facing underrepresented groups. We also acknowledge that peer review processes can demonstrate implicit and explicit biases towards certain groups.

It is equally important to ensure that students and trainees are supported by Canada's research funding ecosystem. Federal funding to support graduate students and post-doctoral fellows is essential to the recruitment and retention of the best and brightest emerging research talent in Canada and from around the world. Funding for principal investigators to support students and trainees is also a draw for top international talent encouraging international collaboration and crucial for our faculty to conduct their research.

### Recommendations:

- ❖ Consider following the lead of the United Kingdom Research Councils, which now provide unconscious-bias training for every decision maker involved in the peer review process.
- ❖ Adopt broader plans at the Granting Councils to address barriers for Indigenous and racialized scholars and women including looking at the evaluative language used in peer reviews of the applications from researchers in these groups. Academic institutions and researchers, particularly those from affected constituencies should be consulted for advice and feedback.
- ❖ Continue and expand federal funding for students and trainees to continue the development of the next generation of Canadian research and innovation leaders.
- ❖ Ensure there is a sequence of funding supports across the entire career ladder for traditionally underrepresented groups.

### 14. Are there international programs, structures, models, or best practices that Canada should consider adopting? If so, please explain why these should be considered.

We recommend examining models that prioritize the coordination of funding and collaboration in Big Science Projects including:

- **Conseil Européen pour la Recherche Nucléaire (CERN):** CERN has emerged as one of the world's pre-eminent nuclear research organizations. The CERN model is based on consensus, collaboration, and competition. In addition to having long-term strategies, CERN has a rolling five-year plan which helps the facility to avoid fiscal cliffs and aid seamless financial management. CERN brings all the funding agencies to the table to agree on a plan and oversee its execution. The key to CERN's success is how it accommodates the needs of diverse communities with different levels of resources, different needs, and different priorities.
- **U.S. Office of Science, Department of Energy (DOE):** Unlike the National Science Foundation in the U.S., which is proposal-driven, DOE is mission-driven and top-down, but managed by individual institutions.
  - The agency will not support a project unless all stakeholders are on board
  - DOE conducts upfront reviews of management and their experience as part of a systematic review process;
  - To ensure stable and ongoing funding, DOE uses a Total Project Cost (TPC) system, which takes into account inflation, labour, and contingency costs—the latter can cost 30-35% for large projects
  - Funding is not given without accountability: each lab's Performance Evaluation and Measurement Plan (PEMP), based on such criteria as operations, safety, and efficiency, is appraised and graded, with annual report cards made publicly available.

Perhaps the central message from the DOE model is that it is important for a country to develop a vision and a roadmap for big science that sees big science facilities working together as a unit and being more mission-driven.

### Recommendations:

- ❖ Examine funding agencies that have developed systems to ensure that the full cost of research, including indirect costs, are funded. For example, the United States federal granting agencies reimburse indirect costs at a pre-negotiated rate, or the Australian block grants for operating costs based on a time allocation survey of researchers.
- ❖ Consider block grants that allow institutions to determine their own priorities and funding systems such as those in place in Australia and the United Kingdom. Such systems should be grounded in funding excellent research determined through peer review and should minimize administrative burdens.

### **15. What should the vision be for Canadian science? If we imagine an even more successful future for Canadian science, what does success look like and how should it be measured?**

For centuries, economic growth has been rooted in scientific progress. We believe this will continue well into the future, and that Canada must continue to place fundamental science at the centre of its economic agenda in order to adapt to the challenges of the 21<sup>st</sup> century and to benefit from its unforeseen opportunities.

Universities play a pivotal role in this enterprise. No other institutions in Canadian society have the depth of expertise or breadth of tools at their disposal to advance the frontiers of knowledge. As such, universities are an integral part of the innovation landscape. Universities are eager partners in the task of fostering the people and ideas that will allow Canada to lead in the decades ahead. Universities also drive the dynamism and resilience of local economies, while providing an important stabilizing force. University research is also essential to understanding ourselves and our societies – it is critical that we support research across all domains.

The University of Toronto believes that in the context of government support, fundamental “science” must be inclusive of the breadth of investigator-initiated research and scholarship and inclusive of research across the continuum from discovery and insight research to applied research. Research excellence should be supported wherever it is found, from the lab to the library. Researchers should be rewarded for generating and preserving knowledge as well as for its applications in society working with industry, government, non-governmental, and community organizations.

### Recommendations:

- ❖ Articulate a clear vision for Canadian science that is bold and imaginative and broadly shared.
- ❖ Encourage a curiosity and innovation culture across society and particularly in our youth.
- ❖ Develop appropriate measures for assessing the success of investments in Canadian science.

### **16. Are there any other issues or questions that you would like to raise and address?**

A key theme in U of T’s submission is the need for intra- and inter-agency coordination and communication to streamline programs and better support researchers. This need applies to other government bodies outside those directly related to research funding. We highlight two such areas here.

## **Immigration**

Canada needs highly qualified talent to further its innovation and entrepreneurship goals. The recent changes made through Bill C-6 to the Citizenship Act are helpful in reducing some of the barriers to entry and the path to permanent residency. Further improvements could be made to our processes to support Canada's ability to attract and retain talent from around the world. International partnerships and collaborations are also impacted by barriers to entry by visiting scholars.

### **Recommendations:**

- ❖ Refine the permanent residency Express Entry point system for scholars, and international students who obtained a degree in Canada.
- ❖ Improve communication of policy and regulatory objectives to frontline government officials to minimize recent challenges faced by temporary visitors crossing the border for the purposes of scholarship.
- ❖ Exempt visiting researchers who will not be gainfully employed in Canada from the requirement to hold a work permit.

## **Regulatory Coordination**

Audit and reporting requirements have rightly become an integral part of research accountability. In 2015 alone, U of T underwent 85 external audits, submitted 7,000 financial reports, and 100 post-approval reviews and visits, in addition to our own review of 1,750 ethics protocols. Many of the agencies conducting or receiving these reports required the same statements from the University. Our experience indicates that audit and accountability requirements and processes could be enhanced and streamlined if information could be shared and coordinated through inter-agency coordination and communication, including coordination at the inter-ministerial level.

While the Granting Councils have streamlined their reporting processes to make it less burdensome for researchers, the approach taken for is not risk-based (e.g. tighter controls for higher risk expenditures). This uniform approach can be administratively burdensome to the researcher where, for example, the purchase of a beaker needs as much scrutiny and compliance work as a \$100,000 piece of equipment.

Research oversight and regulation involves multiple agencies and bodies across government. Some examples include biosafety through the Public Health Agency of Canada (PHAC) and the Canadian Food Inspection Agency (CFIA), use of controlled substances through Health Canada, nuclear safety through the Canadian Nuclear Safety Commission (CNSC), chemical safety through Health Canada and the Ministry of Labour in Ontario, genetically modified organisms through Environment and Climate Change Canada (ECCC)/Health Canada or animal care through Canadian Council on Animal Care (CCAC). Each of these bodies has its own rules and regulations and reporting and review requirements. Better coordination and sharing of information would tremendously reduce administrative burden.

### **Recommendations:**

- ❖ Reform research accountability so that audits and reviews of institutions are coordinated across agencies.
- ❖ Improve inter-ministerial coordination of regulatory functions.