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Submission to the Science and Technology Consultation, Industry Canada
From the Canadian Consortium for Research (CCR)
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The Canadian Consortium for Research (CCR) is the largest umbrella advocacy organization in Canada whose primary concerns are the funding of research in all disciplines and support for post-secondary education. CCR (http://en.ccr-ccr.ca/) consists of 18 organizations that represent more than 50,000 researchers and 500,000 students in a wide range of disciplines across Canada.

CCR's Input on Consultation Questions

How might Canada build upon its success as a world leader in discovery-driven research?
To build upon its success as a world leader in discovery-driven research, the CCR recommends that investments in base funding to the granting councils be increased and ideally, restored to previous levels. In addition, the CCR recommends supporting various building blocks of Canada's national research infrastructure, including but not limited to Library and Archives Canada (LAC) and Statistics Canada. Investing in Library and Archives Canada (LAC) and Statistics Canada lays the foundation for the creation of all kinds of research in a variety of fields and for many sectors, leading to broad economic, social, and environmental benefits. Such an investment would enhance LAC's capacity to collect and preserve the country's rich documentary heritage, while investing in Canada's internationally renowned data collection agency furthers researchers' ability to generate reliable knowledge and inform policy.

Researchers, graduate students, policy makers, historians, genealogists, Aboriginal communities, and the general public benefit from the important artistic, historical, and cultural heritage collected and made available by Library and Archives Canada. Statistics Canada's surveys are crucial not only to the research community and enhance researchers' work, but government, industry, business, not-for-profits, municipalities and communities depend on these surveys to develop reliable, informed decisions and policies.

Is the Government of Canada's suite of programs appropriately designed to best support research excellence?
Canada's granting councils are widely admired internationally and form the bedrock of support for basic research in Canada. Yet very many researchers rated highly by international standards of excellence still cannot be funded; in health research for example, only about 20% of such researchers are typically funded while selection committees deem about two-thirds worthy of funding. Increased investments in basic, medical research will improve explorations of illness and prevention, which is crucial as Canada's population ages. Implementing open access policies would also enable wider dissemination of Canadian

research. Similarly, success rates for NSERC's Discovery grant program and SSHRC's Insight grant program have fallen in recent years as a result of decreased funding levels when adjusted for inflation.

The CCR recognizes that the current Federal government has continued to make investments in Canada's federal granting councils; we appreciate that in a time of fiscal constraint, increases in research funding may be seen as challenging. Nonetheless, base funding for the granting councils is down by 7.5% since 2007 when adjusted for inflation. To bring funding levels back to that of 2007 requires an immediate investment of $200 million. At the same time, any new funding in recent budgets has been targeted at academic-industry partnerships. To improve the balance, the CCR therefore recommends that new investments go to NSERC Discovery grants, CIHR Open Operating grants, and SSHRC Insight grants.

How can Canada continue to develop, attract and retain the world's top research talent at our businesses, research institutions, colleges and polytechnics, and universities?

The CCR recommends investing in core funding to expand graduate scholarships and internships. For example, expanding the Canada Graduate Scholarships by $25 million would fund an additional 1,250 students. Increasing internship initiatives by $5 million so that graduate students can intern with not-for-profit organizations would fund an additional 125 internships per year. Supporting graduate-level teaching, research, and experience is critical to build a foundation for economic and social development, while highly skilled and trained workers drive innovation.

The prospect of lower student debt will encourage Canadians to pursue graduate-level education, while real-world experience will help them find meaningful research jobs or other high-quality employment. These investments are particularly important for key industry sectors as Canada's rate of private-sector innovation continues to lag behind that of comparable countries. Particular regions that would benefit from increased funding include Atlantic Canada, southwestern Ontario, and Saskatchewan where growing high-tech centres require more employees with graduate-level skills and training.

Canada's continued high youth unemployment rate necessitates a more robust active labour market policy. Increased funding for graduate scholarships and internships would benefit Canadians and employers across Canada, while also establishing stable, well-paid employment that would in turn boost economic growth. The broad impacts are better jobs and higher productivity; further, investing in doctoral students would help close the gap in graduation rates vis-à-vis those in peer countries.

Another aspect of research infrastructure that is key to the attraction and retention of the best research talent is the development, maintenance, and access to regional, national, and international shared facilities that are competitive with the best in the world. While the CFI has made valuable contributions in this regard, it is nonetheless important to support the long-term operational and maintenance requirements of such facilities and their accessibility to researchers. NSERC's Research Tools and Instruments (RTI) funding has been used very effectively for timely funding of smaller scale equipment and equipment needed to pursue rapidly emerging research directions in individual laboratories. Recent reductions in funding of the RTI program, from an average of $35M/year in 2003 to an expected $6-10M/year in 2013, and changes in program priorities have made it increasingly difficult for established researchers to maintain critical infrastructure of laboratories. The CCR strongly recommends reversing recent changes to the funding level of this program.

What actions could be taken, by the government or others, to enhance the mobilization of knowledge and technology from government laboratories and universities, colleges and polytechnics to the private sector?

One of the most important determinants of effective academic/private sector knowledge transfer is the quality and breadth of the research that is pursued in academic settings. Sustaining Canada's capacity to innovate and compete internationally is dependent on its commitment to support all research, from that with long-term significance to targeted research with short-term applications. While highly targeted research can address specific issues in existing commercial enterprises, it is basic research, characterized by longer timelines and unexpected discoveries, that will generate new technologies and approaches, and provide solutions to existing problems.

A particularly important mechanism for transferring knowledge from academic research efforts to the private sector is the flow of highly qualified trainees into private sector careers. It is essential that the private sector has the capacity to employ highly qualified graduates. This is in part because of the direct effect on knowledge transfer, but also because trainees' willingness to pursue given career paths depends on the existence of meaningful career opportunities in the private sector.

Lastly, most scientists would agree that, although knowledge mobilization is a worthy goal, connecting with those who have the expertise and the networks required to translate basic research into accessible language and distribute it widely is difficult and can be time consuming. One way to increase knowledge mobilization is by providing a funding mechanism for national professional associations to partner with researchers at the grant proposal stage to formulate and implement plans for enhancing the economic, social, and technological impact of the research.

Building on the advice provided by the Expert Panel on Federal Support for Research and Development, what more can be done to improve business investment in R&D and innovation?

To improve business investment in R&D and innovation, the Canadian government must continue its investment in programs and initiatives that create quality jobs and lay the foundations for the long-term economic, social and cultural development of Canada. As previously noted, the CCR recommends that the Government of Canada ensure there is sufficient core funding for basic research through SSHRC, NSERC, and CIHR. Investing in independent peer-review research will serve the public interest by advancing knowledge and innovation, which facilitates the current economic recovery underway and assures Canada's long-term prosperity. Making this investment in research will contribute to more and better-paying jobs, new inventions and patents, boost productivity, increase government revenues over the medium- to long-term, increase the standard of living for Canadians, and secure Canada's identity as an international destination that will foster research innovation and skills development. Highly trained and skilled workers are essential to economic prosperity and innovation.

Investments in universities and colleges across Canada, along with research facilities in various types of venues (e.g. hospitals), will also help Canadians pursue and complete higher studies and acquire new skills. These investments will also foster the next generation of researchers who will tackle the many economic, social, and cultural challenges, as a key role of basic research is precisely to educate, inspire, and unleash the creativity of the next generation of researchers and their ability to make ground-breaking discoveries.

On behalf of the Canadian Consortium for Research (CCR), we thank the Government for welcoming input into discussions about the future of the Canadian Science and Technology agenda. We would welcome the opportunity to answer any questions or provide any other input as needed (contact info: 613-237-2144 ext. 323 or executiveoffice@cpa.ca).

Sincerely,

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