



Written Submission for the Pre-Budget Consultations in Advance of the 2021 Federal Budget

By: The Canadian Association for
Neuroscience



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Recommendations of the Canadian Association for Neuroscience to the Department of Finance

Recommendation 1: That the government of Canada provide a one-time **25% increase in investment in the Canadian Institutes of Health Research (CIHR), the Natural Sciences and Engineering Research Council (NSERC) and the Social Sciences and Humanities Research Council (SSHRC) for research restart and recovery** from the setback of the COVID-19 pandemic to research laboratories in Canada.

Recommendation 2: The government should commit to providing robust and reliable funding for basic discovery research to sustain and grow Canada's scientific community. Funding to the Canadian Institutes of Health Research (CIHR), the Natural Sciences and Engineering Research Council (NSERC) and the Social Sciences and Humanities Research Council (SSHRC) should be **increased by at least 10% yearly**, until commensurate with other G7 countries. This recommendation is in accordance with the Fundamental Science Review and will ensure Canada's research ecosystem is healthy and resilient to face any future challenge.



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Recommendation 1 Background: One-time 25% stimulus package for CIHR, NSERC and SSHRC

The government of Canada has rapidly responded to the COVID-19 pandemic by providing over \$2 billion in Research and Development for COVID-19. This response has allowed Canadian researchers to make meaningful discoveries, notably leading to candidate treatments and vaccines which are now undergoing clinical trials. These discoveries are of crucial importance in the recovery from COVID-19.

However, the majority of Canadian health research is focused on non-COVID disease, and this research system is facing a major challenge. Due to the pandemic, the majority of research laboratories were shut down for a minimum of 3 months, causing a tremendous setback to Canada's research ecosystem. We recently ran a survey (<https://can-acn.org/covid-impact-survey>) that asked Canadian scientists to tell us how the pandemic has impacted their research programs. The survey revealed the closure of the majority of laboratories not only brought research on other topics to a standstill, it has actually been **an important setback for many researchers**, who have lost highly qualified and trained personnel, research materials developed during long-term experiments (multi-month and even multi-year projects), and must now rebuild their research capacity. Further, researchers have lost funding opportunities and trainees have lost direct funding for their salaries. Things are not back to normal as most labs have significant ground to make up just to get to where they were pre-COVID. Setbacks like these are bad for Canadians because they will delay or prevent the critical research necessary to stimulate scientific discoveries that lead to innovation, new medicines and therapies.

Our survey also revealed that research labs will require a minimum of 25% of their annual budgets for the research restart. **Therefore, we are recommending a 25% stimulus package which should be allocated to labs funded by tricouncil grants to accelerate the restart of research, which will help boost recovery back to pre-COVID levels.**

This is an **investment in the recovery of the Canadian economy** – Scientific research generates the innovation that will drive economic recovery. Investing in scientific research also means the creation of jobs for highly qualified personnel within scientific research laboratories. The survey of Canadian scientists revealed that over **60% of funds** given to laboratories through CIHR, NSERC and SSHRC grants are used to pay for salaries of trainees, research assistants, technicians and post-doctoral fellows that perform research activities in Canada. Therefore, the 25% requested restart funds are key to getting people

back to work within research laboratories and contributing to the restart of the Canadian economy.

Recommendation 2 Background: 10% yearly increase in funding to the CIHR, NSERC and SSHRC to sustain scientific innovation, scientific preparedness and promote economic growth

The COVID-19 pandemic has highlighted the importance of scientific research in Canada in times of crisis. We need now, more than ever, to build on the scientific discoveries of Canadian scientists to ensure we win the fight against COVID-19 in the immediate future. Furthermore, new evidence is surfacing that COVID could have major long-term consequences in the brain and nervous system of patients who have “recovered” from the acute phases of the disease. While the one-time 25% stimulus will help to bring Canadian research back online to pre-COVID levels, additional long-term research funding needs is necessary if we are to meet these new challenges. Additional investments will help to sustain a healthy research ecosystem, respond to health emergencies, while also pursuing other important research avenues such as non-COVID diseases. This will help to further develop Canada’s within-country expertise, and not depend on other countries, as the COVID-19 pandemic has clearly demonstrated the need for.

Robust and sustained increases in funding are required to restore Canada’s competitiveness in scientific and medical innovation.

Canadian neuroscience laboratories that perform basic fundamental research rely mainly on funding provided by the Canadian Government through the tri councils. However this funding is insufficient as only ~15% of applications are successful in securing operating funds from the CIHR for new scientific projects.

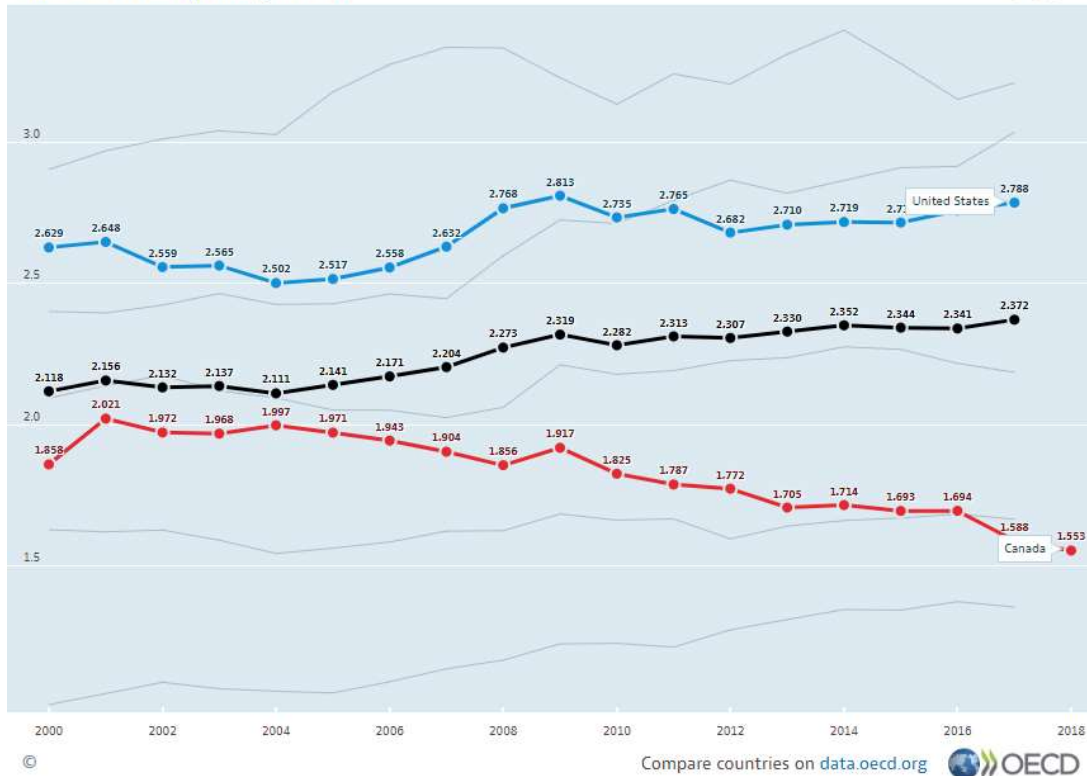
According to the latest data from the OECD (Organisation for Economic Co-operation and Development <http://www.oecd.org/>), Canada is the **only country in the G7 whose investment in Research and Development have steadily declined in the last 15 years**



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Gross domestic spending on R&D Total, % of GDP, 2000 – 2018



OECD Data on Gross Domestic spending on Research and Development - Canada compared to other countries of the G7. Dark black line is OECD average.

OECD (2019), Gross domestic spending on R&D (indicator). doi: 10.1787/d8b068b4-en (Accessed on 11 October 2019) <https://data.oecd.org/chart/5HLk>

This data shows Canada ranks second to last of the G7 countries in terms of Gross Domestic spending on Research & Development, spending only 1.5% of its GDP on R&D. This low investment level also places Canada well below the average of OECD countries, at 2.4%, and well below the US, which invest 2.8% of its GDP in R&D. While increases in research investment have been made in Canada, they have not kept up with the inflation rates.

Significant increases in science investments need to be made this year and in coming years to redress this fact. **Canada's Fundamental Science Review**, published in 2017 by the government of Canada and available at sciencereview.ca offers a clear path to reinvest in scientific research through the three main granting councils. Our recommendations are in line with the recommendations of the Science review and are supported by the Canadian scientists we surveyed.



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Therefore, we recommend a yearly 10% increase in funding to help laboratories maintain scientific innovation and growth, and contribute to economic growth.

The increase in funding should target Canada's three main granting agencies, CIHR, NSERC and SSHRC – collectively known as the tri-councils, because Canadian research and innovation is interdependent. Research funded by NSERC, on vaccine delivery or understanding virus propagation in populations, and that funded by SSHRC on the impact of the pandemic on indigenous populations are equally important for recovery as the research funded by CIHR to understand the development of the disease and its impact on the brain. These projects highlight the need to fund tri-councils as a whole. Having a strong Canadian research ecosystem ensures that the best and brightest ideas, including those that will fight future pandemics, develop medicines or technologies for urgent or chronic medical conditions, have a chance.

Economic recovery and restart will depend on scientific research in Canada

Made-in-Canada scientific discoveries are the fuel that drive the economy through innovation. Investing in research flows directly into the economy by promoting the development of new economic opportunities. Investing in Scientific research is an investment in job creation and economic growth.

The COVID-19 pandemic has also clearly demonstrated how the economy depends on the health of the population. COVID-19 has a profound impact on the Canadian economy and will continue to do so until a vaccine is developed. This shows why Canada cannot afford not to fund health research.

Another important challenge for Canada is that posed by neurological disorders – disorders that affect the brain and nerves – which are the leading cause of disability and the second leading cause of death worldwide (Feigin et al. Lancet Neurol. 2019;18(5):459-480. doi:10.1016/S1474-4422(18)30499-X). The burden of neurological disorders has substantially increased over the last 25 years with ageing of the population and has had a growing impact on the economy. Brain research offers our best chance to reduce this burden and to improve the quality of life of Canadians. Healthier Canadians are also more productive Canadians.

Canada must build its national intellectual capital and its scientific readiness today to ensure Canada is ready to face the challenges of today and tomorrow. **Our scientists are ready and motivated to work for Canada**, and to contribute to Canada's recovery and economic restart. Investing in research today will ensure we can meet new challenges and remain competitive in a changing economy.



Robust investments in the Canadian Institutes of Health Research (CIHR), the Natural Sciences and Engineering Research Council (NSERC) and the Social Sciences and Humanities Research Council (SSHRC) are essential for improving health, investigating scientific frontiers, contributing to economic restart and recovery in Canada.