

August 2018

Investing in health research to diversify and strengthen Canada's economy, create good jobs and keep Canadians healthy.

Budget 2019 Submission for the Pre-Budget Consultations to the House of Commons Standing Committee on Finance

From:

The Canadian Association for Neuroscience

<https://can-acn.org>

Recommendation 1:

Invest in health research funded by Canada's granting councils

We recommend that the government of Canada increase investments in non-targeted programs managed by the three main granting councils of Canada, the Canadian Institutes of Health Research (CIHR), the Natural Sciences and Engineering Research Council of Canada (NSERC) and the Social Sciences and Humanities Research Council (SSHRC). The objective of this recommendation is to meet the recommendations of Canada's Fundamental Science Review.

Specifically, we recommend doubling the increase in investments for 2019 from \$155 M to \$310M, and to commit to investing \$405M more in 2020 and \$405M in 2021.

Recommendation 2:

Invest in the next generation of scientists

We recommend that the government of Canada increase investments in scholarships and fellowships to support the next generation of scientists.

Specifically, we recommend the Government invest \$105M in 2019, \$105M in 2020 and \$140M in 2021, to reach the targets defined in Canada's Fundamental Science Review.



Health research is one of the most valuable investments the Canadian government can make to reach its objective of **Economic Growth: Ensuring Canada's Competitiveness**. Canadians support health research because they stand to benefit from discoveries that contribute to maintaining or restoring their health, but we also argue that our country will benefit from building **Canada's evidence-based health research economy**.

The Canadian Association for Neuroscience (CAN) encourages the Government of Canada to increase investment in the three major Governmental Science Funding Agencies supporting health research: CIHR, NSERC, and SSHRC in Budget 2019.

Health research helps build today's knowledge-based economy

Knowledge and technological advances are the building blocks of the modern economy. Health researchers in Canada are making discoveries today that lead to the development of new tools, technologies and treatments for diseases and conditions that affect the health of Canadians. New economic opportunities arise to market these Canadian-made discoveries and inventions.

Research funded by CIHR improves health, contributes to society by driving economic growth, and expands our knowledge about health and disease, for the benefit of all Canadians.

In the USA, the National Institutes of Health, which is the world's largest public funder of biomedical research, has a 2018 budget of \$37 billion. The NIH reports that "discoveries arising from NIH-funded research provide a foundation for the U.S. biomedical industry, which contributed \$69 billion to the US GDP." The NIH also drives economic growth in other ways, for example, "NIH investments in research focused on a particular area stimulate increased private investment in the same area. A **\$1.00 increase in public basic research stimulates an additional \$8.38 of industry R&D investment after 8 years**. A **\$1.00 increase in public clinical research stimulates an additional \$2.35 of industry R&D investment after 3 years**." <https://www.nih.gov/about-nih/what-we-do/impact-nih-research/our-society>

Stronger support of the Canadian equivalent of NIH, CIHR, will similarly drive economic growth in Canada.

Health research sharpens Canada's competitive edge

As the current news cycle demonstrates, Canada is not protected from trade wars, even with our closest economic ally. The knowledge-based economy expands Canada's economic exchange opportunities and makes us more competitive in the global economy.

Today's health research creates emerging technologies and takes advantage of developing ones, such as artificial intelligence, to reach new markets and provide a competitive edge to its workers and developers, which is of crucial importance in today's economy. The Organisation for Economic Co-operation and Development (OECD) recently released a very positive report about our country, stating:

“Canada is one of the OECD economies delivering the best outcomes for its citizens. Canada scores highly in all dimensions of the OECD’s [Better Life Index](#) [...]

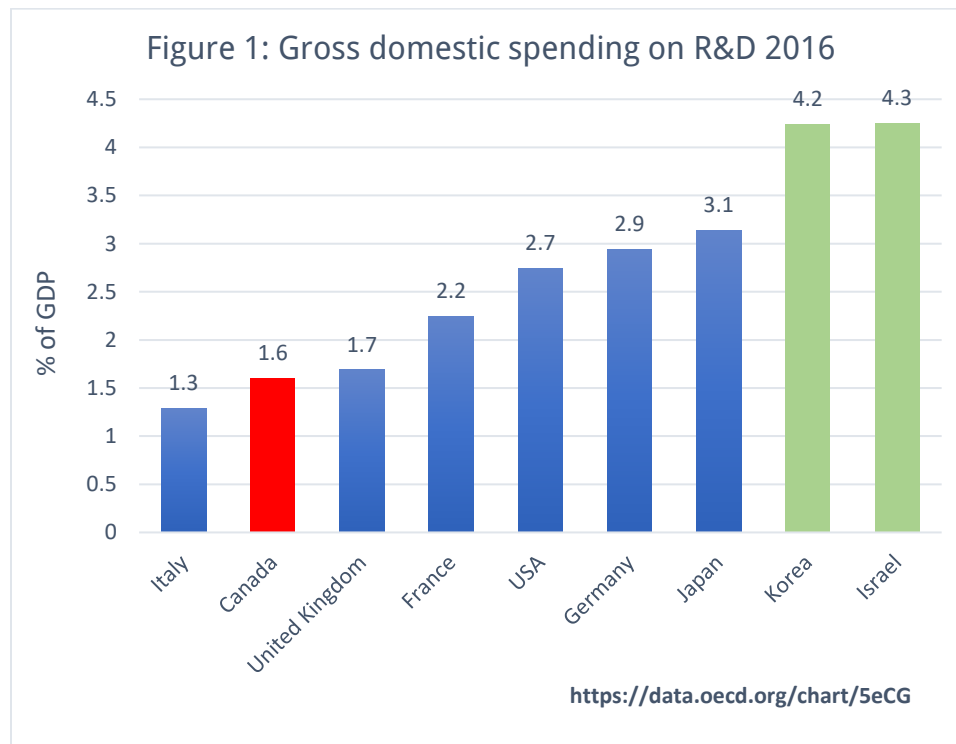
The 2018 OECD [Economic Survey of Canada](#) finds the macroeconomic situation to be broadly favorable, with low unemployment, inflation on target and growth expected to remain solid over 2018-19.

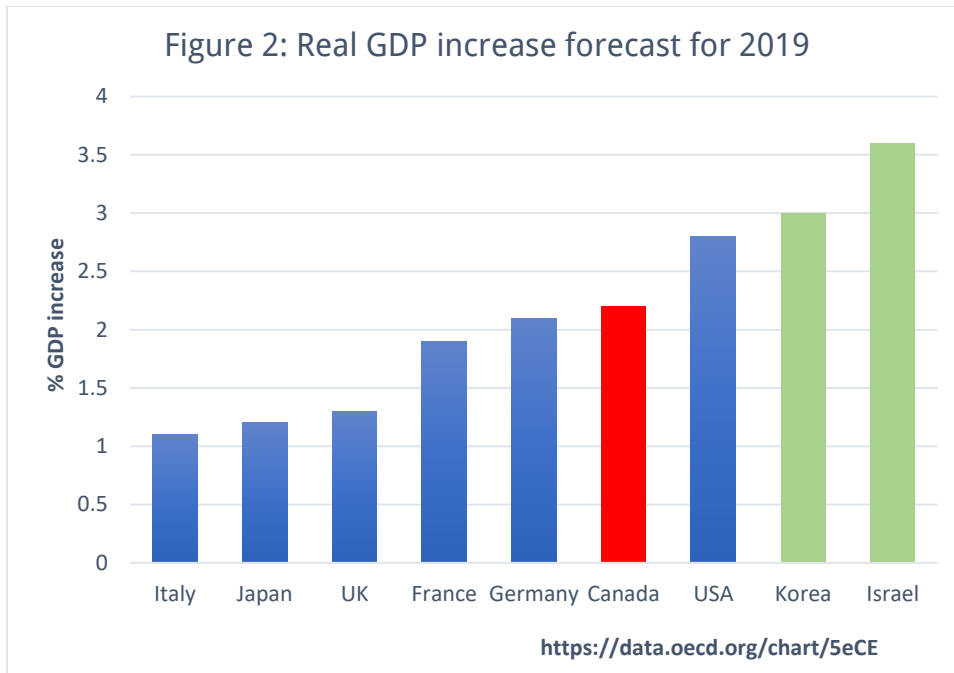
The greatest uncertainty weighing on the growth outlook stems from the possibility of new trade restrictions, principally in relation to the ongoing renegotiation of the North America Free Trade Agreement. The Survey points out that outcomes will depend on political decisions, notably in the United States, while showing that business investment is already being negatively affected. ”

<http://www.oecd.org/newsroom/canada-recording-solid-growth-but-trade-and-housing-market-pose-risks.htm> July 23, 2018

A diversified economy can alleviate the uncertainty caused by unpredictably changing trade tariffs and rules. While natural resources, such as oil and wood, are amongst Canada’s most valuable assets, so are its people. For example, Canada is a known leader in artificial intelligence and neuroscience. Investing today in Research and Development (R&D) to further diversify Canada’s economy makes sense today more than ever.

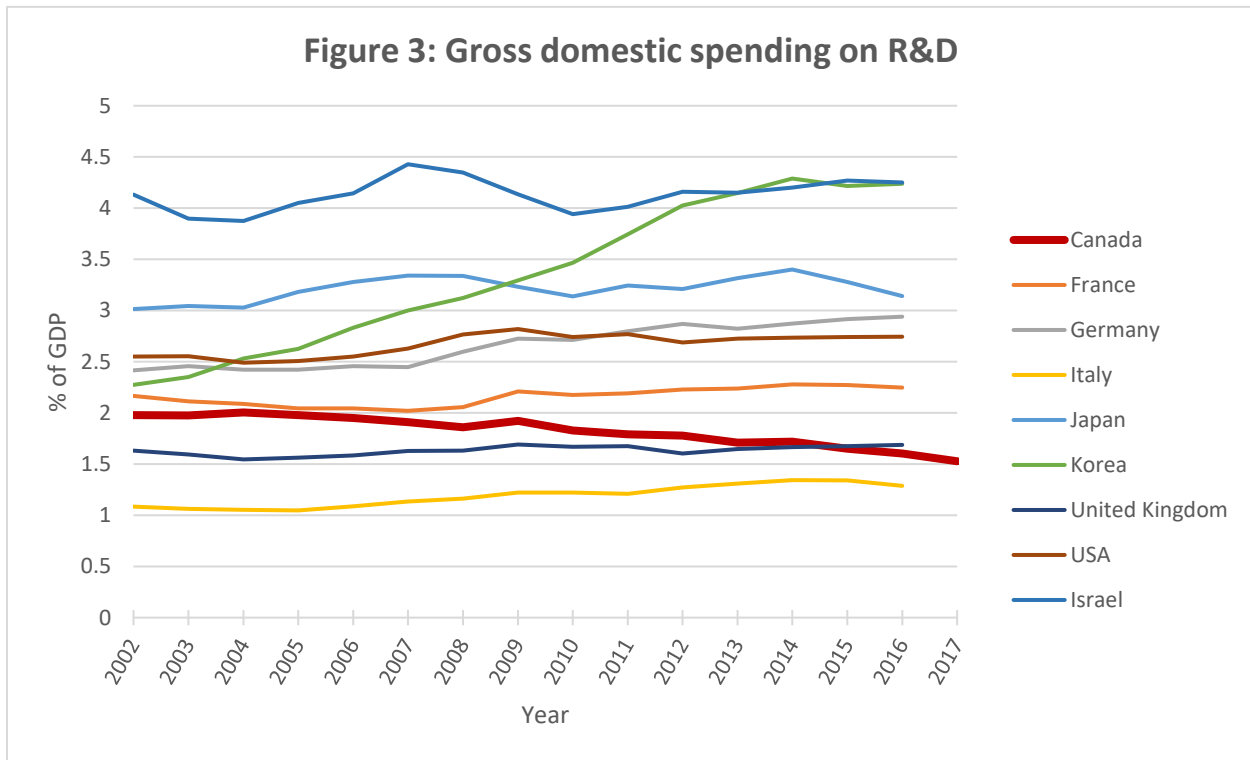
OECD statistics show that countries that invest massively in R&D, such as Korea and Israel, have rates of GDP growth that are higher than all G7 countries (figures 1 and 2).





Sustained increases in investment are required to support health research in Canada

According to the latest data from the OECD, **Canada is the only country in the G7 whose investment in Research and Development have steadily declined in the last 15 years** (Figure 3).



<https://data.oecd.org/chart/5eCA>

While significant and historical investments were announced in 2018, the investments in this one budget cannot redress the damage done by the lack of investment in R&D in Canada over the last 15 years. Through repeated investments and commitment over many budgets, Canada can take its place as a leader in science support.

Canada must better support the next generation of scientists.

The number of Canada Graduate Scholarships has not increased since 2007 despite major increases in graduate enrolments and their value has not changed since 2003. The government of Canada should better support the next generation of scientists through scholarships and fellowships for trainees as a capacity-building investment in our country's future.

Health research trains highly qualified personnel for the jobs of the future

Each research laboratory in Canada is a training ground for highly qualified personnel that will use the skills they acquire to find jobs in Canada's health and technology market. Investments in health research supports the training of Canadians that launch companies that employ thousands of Canadians in high-quality and stimulating jobs.



The job searching website indeed currently lists over 7000 jobs in the health research sector, in cities and towns such as Antigonish, Saguenay, Saskatoon, Montreal, Toronto, Calgary and Vancouver (<https://ca.indeed.com/Health-Research-jobs>). Health research needs will increase dramatically over the coming years, with the ageing of the Canadian population and the new health challenges we must face.

Initiatives such as the non-profit organization MaRS Innovation in Toronto help bring discoveries made in university laboratories to market. In eight years, MaRS Innovation's team has created 60 companies, and of these, 52 are growing in Canada. Collectively, they've attracted \$160 million in external investment with \$95 million coming from outside of Canada, and have created over 400 direct jobs. <http://marsinnovation.com/portfolio/>

Health research provides solutions to Canada's current health issues

The opioid crisis, cannabis legalization, an aging population, post-traumatic stress and chronic pain are examples of health issues that the Canadian government must address. Neuroscience research has implications for autism, dementia, healthy aging, mental health including depression and more. Health research, by providing a better understanding of these conditions and issues, will lead to new solutions to improve the health and well-being of all Canadians.

How much should Canada invest in Health research?

The report of Canada's Fundamental Science Review (FSR) outlined a multi-year plan to strengthen the foundations of Canadian Research. Its recommendations closely parallel the concerns our members have expressed in surveys the Canadian Association for Neuroscience and other scientific organisations have conducted in the last years. It described a need for increased investment:

- in the three major Governmental Science Funding Agencies (CIHR, NSERC, SSHRC),
- in fundamental research and
- in investigator-initiated projects.

We applauded the partial implementation of the thoughtful recommendations of this report in budget 2018, and we now urge the Canadian government to fully meet the targets defined in this report.

Progress made in Budget 2018

As stated in the budget, the 2018 budget

“includes more than \$1.7 billion over five years to support the next generation of Canadian researchers through Canada's granting councils and research institutes, and would provide the single largest investment in fundamental research in Canadian history. It also includes over \$1.3 billion over five years for investments in the laboratories, equipment and infrastructure researchers rely on every day. ”

These 3 billion dollars in increased investment are indeed historic relative to flat-lined investments of previous years, and were rightly applauded. Budget 2018 included historic investments of \$925 million over five years, and \$235 million per year ongoing in the granting councils of Canada, in addition to \$275 million for a new tri-council fund.

These investments showed the government's commitment to supporting Canada's research community and improving Canada's economy, competitiveness, health and well-being.

However, Budget 2018 did not reach the objectives defined in the Fundamental Science Review (FSR) for non-targeted funding.

To make a direct comparison between these recommendations and the budget announcements, we compare below the investments over 4 years, from 2018 to 2020.

The table below looks at the support for open operating grants, which are the highest priority investment identified in the FSR, and in surveys of our membership that we conducted in the past years.

Non-targeted granting council investments – in millions of dollars

	2018-2019	2019-2020	2020-2021	2021-2022	4-year total
Budget 2018: Non-targeted granting council investments	115	155	185	235	690
FSR Recommendation: Investigator-led Direct Project Funding	135	270	405	405	1215

FSR report target	Budget 2018 announcement	% target reached
1215	690	57%

Scholarships and Fellowships for trainees – in millions of dollars

	2018-2019	2019-2020	2020-2021	2021-2022	4-year total
Budget 2018:	0	0	0	0	0
FSR recommendation: Scholarships and fellowships	35	70	105	140	350

Sources:

Budget 2018 –page 122 <https://www.budget.gc.ca/2018/docs/plan/budget-2018-en.pdf>

Canada's Fundamental Science Review report, page 154 and xxi <http://www.sciencereview.ca>

Budget 2018 did not include any direct increase in scholarships and fellowships for trainees.

Opportunities for Budget 2019

Created in 2000, the mission of the Canadian Institutes of Health Research is to create new scientific knowledge and to enable its translation into improved health, more effective health services and products, and a strengthened Canadian health care system.

As stated in the report from Canada's Fundamental Science Review,

"In 2015 the federal Advisory Panel on Healthcare Innovation compared CIHR's mandate with those of sister organizations abroad, and cautioned that CIHR's mandate was unduly broad relative to its resources.

[...]

CIHR has a broader mandate than the U.S. National Institutes of Health (NIH). Moreover, the U.S. funds a significant fraction of applied research in healthcare innovation and healthcare quality through two other federal agencies with a combined operating budget of close to US\$1.50 billion per year. In 2016-17 the NIH budget was US\$30.62 billion, while the CIHR budget was C\$1.03 billion, including its share of spending contained in the relevant tri-council programs. **The thirty-fold difference contrasts with a nine-fold difference in population.** Adjustments for GDP per capita or purchasing power have only a minor influence on such large discrepancies."

[http://www.sciencereview.ca/eic/site/059.nsf/vwapj/ScienceReview_April2017-rv.pdf/\\$file/ScienceReview_April2017-rv.pdf](http://www.sciencereview.ca/eic/site/059.nsf/vwapj/ScienceReview_April2017-rv.pdf/$file/ScienceReview_April2017-rv.pdf) (page 81)

Building on the investments made in budget 2018, Canada now has an opportunity to

- Increase its support of the federal funding agencies, including CIHR, to better support its health researchers.
- Increase its investments in the next generation of scientists

Canada's economic growth will depend on the diversification of its economy to compete in a changing world. Supporting health research and the next generation of scientists are some of the highest-yield investments in Canada's future that any government could make.

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