



THE ASSOCIATION OF FACULTIES
OF MEDICINE OF CANADA

L'ASSOCIATION DES FACULTÉS
DE MÉDECINE DU CANADA

2018 Pre-Budget Consultations

**Submission to the House of Commons
Standing Committee on Finance**

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SUMMARY

The Association of Faculties of Medicine of Canada (AFMC) is the academic partnership of Canada's 17 Faculties of Medicine. An overarching goal of the AFMC is to ensure better health and healthcare for Canadians through better health research by training and supporting researchers. This will foster innovation and lead to sustained economic benefits for Canada.

The AFMC commends the current federal government for mandating the Fundamental Science Review. Re-investment in fundamental science is essential for Canada to regain a leading role in research and innovation on the world stage and strengthen our economy. The AFMC strongly supports the recommendations in the Report. Given the recent erosion in research funding over the last several years, **the AFMC urges the federal government to make the following investments recommended by the Fundamental Science Review:**

- **an increased investment of \$485M over four years for funding investigator-led research;**
- **stable funding at \$300M per year for the CFI;**
- **enhanced support for Doctoral Students, Postdoctoral Fellows, and Research Chairs; and**
- **new support for small capital grants as well as for the costs associated with federally-funded research.**

In addition, a particular concern for the AFMC is the decision under the previous government to cut the Canadian Institutes of Health Research (CIHR) MD/PhD program in 2016. MD/PhD students are the future leaders of medical research in Canada. Not having federal funding means fewer students will enroll in the MD/PhD program, and research and innovation in Canada will suffer.

The AFMC calls on the federal government to support fundamental science and innovation in health research by

- **immediately restoring the \$2.6 million annual funding for the CIHR MD/PhD Program.**

HEALTH RESEARCH AND INNOVATION AS AN ECONOMIC DRIVER

The AFMC in-depth report on the economic impact of Canada's Faculties of Medicine and their health science partners¹ clearly indicate how the investment in research and innovation stimulates our economy, creates jobs and generates tax revenues that benefit all Canadians.

Study Highlights:

- Faculties of Medicine and their teaching hospitals account for \$66.1 billion in total economic impact. This represents 3.5% of GDP in Canada.
- Faculties of Medicine and their teaching hospitals create more than 295,000 jobs throughout Canada. This figure includes Canadians who are directly employed by medical faculties and teaching hospitals as well as those whose jobs depend on academic health science networks.
- One in 60 jobs in the country is attributable to faculties of medicine, their teaching hospitals and other health science partners, representing 1.7% of all employment in the country.
- Faculties of Medicine and their hospital affiliates generate more than \$13.9 billion in government tax revenue. This figure is in addition to the \$66.1 billion contribution to Canada's GDP.

Research carried out in medical faculties spans the domains of fundamental biomedical science, clinical, health systems and population health including societal, cultural and environmental determinants of health². Faculties of Medicine are essential for boosting innovation in health research, and training highly qualified physicians and

scientists. These contributions have provided an incredible return on investment for Canada as revealed by the following:

- Stewardship for \$3 billion in biomedical and healthcare research revenues;
- 3,260 MSc and 866 PhD degrees awarded;
- 17,651 current graduate and post-doctoral trainees³.

HEALTH RESEARCH IMPROVES THE LIVES OF CANADIANS AND BRINGS CANADA TO THE WORLD STAGE

Advances by Canadian medical researchers have made a substantial impact on the health and lives of Canadians. In fact the most important outcome of health research is the maintenance of a high quality health delivery system. This is illustrated by the following examples:

Global pandemics

The HIV, SARS and Ebola epidemics have constituted the most serious global public health concerns of the recent times. The prevention therapy for HIV developed in Canada revolutionized world-wide treatment of this condition. Canadian researchers developed the drug to treat SARS and the first vaccine for the Ebola virus.

Drug Discovery

Canada has been a leader in discovering drug treatment such as lamivudine, the first drug to treat Hepatitis B which affects 350 million people worldwide, and cyclosporine which stops rejection of transplanted tissue. These made in Canada discoveries are now on the World Health Organization's List of Essential Medicines.

Stem Cell Therapy

Canadian researchers established these therapies for bone marrow transplantation to treat leukemia and recent work in Canada has great promise for the development of treatments for heart disease and neurological conditions such as Alzheimer's disease.

Molecular Biology and Medical Genetics

Age-standardized prevalence of Diabetes in our Canadian Indigenous population has risen to 30%⁴. Research conducted in Canada led to transformative applications in biotechnology to produce better insulin for these patients. This research laid the foundation for better treatments of cystic fibrosis. As a result life expectancy for children with cystic fibrosis, which was only 20 years in 1980, was 51 years in 2013⁵.

These outstanding contributions were possible because of government funded research. According to the Council of Canadian Academies publication on Research Performance and International Reputation⁶, Canada's research output decreased from 4th in 2010 to 9th in 2014. Over this same period of time the funding available per researchers to undertake investigator led research declined by 35 %⁷. The Federal Government must reverse this trend by re-investing in research and innovation.

FUNDAMENTAL SCIENCE ESSENTIAL TO FOSTER INNOVATION AND STIMULATE THE ECONOMY

The Federal Government can have a significant impact on the health of Canadians through investment in fundamental science, health research, and enhanced training of the next generation of scientists.

Fundamental research is ultimately the source of most innovations and innovations drive economic output to the benefit of Canadians. As the Federal Government considers how to grow Canada's economy, the AFMC strongly urges consideration of the importance of innovation and research.

Given the recent erosion in research funding over the last several years, the following investments recommended by the Fundamental Science Review are urgently needed:

- An increased investment of \$485M over four years for funding investigator-led research;
- Stable funding at \$300M per year for the CFI;
- Enhanced support for Doctoral Students, Postdoctoral Fellows, and Research Chairs; and
- New support for small capital grants as well as for the costs associated with federally-funded research.

FUTURE OF DISCOVERY AND INNOVATION IN CANADA: OUR YOUNG RESEARCHERS AND TRAINEES

Physician scientists are individuals who have undergone additional research training, devote the majority of their time to research, and play an important role in closing the gap between research and clinical practice⁸. They are uniquely positioned to translate fundamental new knowledge with advances in health care and health policy in a timely manner. The translation gap, however, is growing as support for the physician scientist is diminishing. A key group of physician scientists, MD/PhDs have been shown to be the most successful in developing robust research that has led to innovation and better care for Canadians. MD/PhD Programs should be supported as they are developing the future leaders of medical research in Canada.

CIHR MD/PhD program

Under the previous government, the Canadian Institutes of Health Research announced it was cutting federal funding for the MD/PhD program beginning in April 2016. Losing this funding will significantly compromise Canada's ability to train future physicians to innovate in the competitive global field of health research.

The need for a program that trained clinician scientists was recognized in the early 1980s, when students expressed interest in earning a PhD during their medical education. These students were faced with significant administrative and financial burdens and most ended up not starting a graduate degree.

As a result, the CIHR, as per their mandate to support health research trainees, created the MD/PhD program to target students, who wanted to go to medical and graduate school, but needed reassurance that they would be supported during their long educational journey. Money from the MD/PhD Program is meant to support students during their training.

Facts

- There are currently 162 students enrolled in the MD/PhD program across Canada.
- The MD/PhD program trains physician scientists who are experts in both the scientific and the clinical sides of medicine.

- It takes 14 years or more to train physician scientists and the earlier they enter the MD/PhD program, the better the outcome.
- Close to 65% of MD/PhD graduates are employed in health research. This is significantly higher than scientists with a PhD alone.
- The MD/PhD program received \$2.6 million annually from CIHR. Under this model the CIHR administered vouchers worth \$20,000/year for six years to MD/PhD students to help cover their living expenses while at school. It fell short of the cost of living in most cities and did not cover their entire time in the program, but it did represent guaranteed funding.

Consequences of Losing Federal Funding

- The MD/PhD program has produced world-class researchers and resulted in important innovations to Canada's health system. Without federal funding, Canada's ability to do innovative research in the healthcare field and translate this knowledge to improved patient care will suffer.
- Medical Schools are now scrambling to finance all of their MD/PhD students, but moving forward, some schools will be forced to cut the number of students they admit by as much as 50%. Others will shut down their programs completely and this will further increase regional disparity of highly qualified physician-scientists in Canada.
- Federal involvement in any research is seen as a gold seal of approval by other potential funders. The loss of federal funding for the MD/PhD program will make it more difficult to secure other sources of funding, including private donors, corporate funding, and provincial funding.

The AFMC calls on the federal government to support fundamental science and innovation in health research by immediately restoring the \$2.6 million annual funding for the MD/PhD Program.

CONCLUSION AND RECOMMENDATIONS

Canada has outstanding researchers who have made impactful discoveries and contributed to a very strong track record in research and innovation which has recently been eroded by a regression in research funding and inattention to fostering young researchers and researchers in training. Considering the current world stage, a strong research and innovation environment in Canada will ensure that we maximize this opportunity to bring in the best and brightest minds to stimulate our research and innovation.

The AFMC strongly supports Fundamental Science Review Report and urges the federal government to make the following investments recommended by the Fundamental Science Review:

- **an increased investment of \$485M over four years for funding investigator-led research;**
- **stable funding at \$300M per year for the CFI;**
- **enhanced support for Doctoral Students, Postdoctoral Fellows, and Research Chairs; and**
- **new support for small capital grants as well as for the costs associated with federally-funded research.**

The AFMC also calls on the federal government to support fundamental science and innovation in health research by

- **immediately restoring the \$2.6 million annual funding for the CIHR MD/PhD Program.**

We thank the Finance Committee for the privilege of providing a submission and look forward to any opportunity to meet with the Committee as appropriate.

¹ Umbach T, *The Economic Impact of Canada's Faculties of Medicine and Health Science Partners*, The Association of Faculties of Medicine of Canada, August 2014,

https://afmc.ca/pdf/Economic_Impact_Study_Report_FINAL_EN.pdf

² *A Re-Envisioning of Health Research in Canada*, The Association of Faculties of Canada, June 30, 2016,

https://afmc.ca/sites/default/files/documents/AFMC_Research_Position_Paper_EN.pdf

³ *Canadian Medical Education Statistics 2016*, Volume 38, The Association of Faculties of Canada, 2016.

⁴ *Diabetes in Canada: Facts and figures from a public health perspective*, Public Health Agency of Canada, 2011,

<http://www.phac-aspc.gc.ca/cd-mc/publications/diabetes-diabete/facts-figures-faits-chiffres-2011/chap6-eng.php>

⁵ Stephenson AL, et al., "Survival Comparison of Patients with Cystic Fibrosis in Canada and the United States: A Population-Based Cohort Study", *Ann Intern Med*, 2017, 166(8): 537-546, DOI: 10.7326/M16-0858.

⁶ *Preliminary Data Update on Canadian Research Performance and International Reputation*, The Council of Canadian Academies, 2016,

http://www.scienceadvice.ca/uploads/eng/assessmentpublicationsnewsreleases/stird2016/st_interimdataupdate_en_web.pdf

⁷ Canada's Fundamental Science Review, *Investing in Canada's Future: Strengthening the Foundations of Canadian Research*, 2017, <http://www.sciencereview.ca/eic/site/059.nsf/eng/home>

⁸ Strong MJ, et al., "The rising challenge of training the Physician Scientist: Recommendations of the Canadian Consensus Conference" *Academic Medicine*, 2017, in press.