

Brief for the Standing Committee on Science and Research (SRSR)

From 166 Concerned Scientists

AN AMBITION OF EXCELLENCE

The Science and Research Committee addresses the important challenges that face all Canadians in every province and territory. The committee has already received excellent submissions and presentations that indicate the problems and offer solutions.

We suggest that amongst the most crucial issues we face is the financial situations of our young researchers, graduate students and postdoctoral trainees who are the pool of talent for the next generation who will energize Canada's knowledge economy, its scientific institutes, pharmaceutical enterprises, and universities. Canadians should be mortified to learn that our students are currently abandoned to live in poverty. The finest amongst them will leave Canada for greener pastures of our competitors absent a dramatic and rapid response by the Government.

Canada's excellent international reputation is being crushed.

We wish to bring to your attention the statements and information from sage observers to support our forthright claim.

We start with an article in the Times Higher Education entitled "[Canada hesitates to join global research race](#)",¹ from the Editor Paul Basken who writes:

"Scientific community counts nation's economic losses from two decades of underinvestment but can't budge Trudeau government.... Yet, as the Bouchard team finished its work, the government seemingly ignored it, almost simultaneously issuing a 2023 budget that offered no increases in research spending or in support for graduate and postdoctorate scholarships that the advisory panel also highlighted as urgent."

In a follow up article that will appear shortly, the Editor asks the following:

"Is it, as some have suggested, a reflection of a Canadian national personality that is generally averse to openly competing and bragging and pursuing top rankings? Or is it more of a strategic calculation, as others have said, in which Canada feels it makes the most economic sense to let its bigger and wealthier neighbor shell out billions of dollars to achieve scientific breakthroughs, and then carefully figure out ways to exploit that, such as adapting discoveries or providing the lucrative behind-the-scenes partnering relationships?"

"Does Canadian higher education risk becoming known among the world's young and talented budding scientists as a "safe" place where you can go and likely live a nice comfortable life but not really play in the big leagues? And would that be a bad thing?"

The Editor observes:

"Dr Bouchard's seven-member Advisory Panel on the Federal Research Support System also urged the creation of a new governmental science agency to handle project-centred

¹ Basken, P. *Canada hesitates to join global research race*. <https://www.timeshighereducation.com/news/canada-hesitates-join-global-research-race> : accessed 06 June 2023.

interdisciplinary research and to coordinate international collaborations, so that the three existing funding councils could focus on investigator-driven science.”

Is it possible that we are once again witnessing another fiasco of decisions described by [Sean Jones regarding Fisheries Canada](#)² that led to the disappearance of cod fishing?

“Senior bureaucrats cherry picked the best numbers, presented them in the best light and quashed the dissent of any employee who dared to say otherwise.”

Why should this SRSR committee champion the ambition of excellence?

The message sent would be a legacy unsurpassed in its consequences for knowledge creation, and by extension will *spur* applications to Canada’s economic development in this new century. From forestry to fisheries to health, psychology, quantum technology, AI, engineering, math, physics, chemistry, astronomy, law, and the humanities--only the Tri-Councils enable long term gains in knowledge and investments in solutions.

This committee has studied the Fundamental Science Review and the recent Bouchard Report with their clear recommendations for increased funding from the Federal government for grad students, other trainees and investigator driven research. Canada’s scientific community has been disheartened and demoralized by the lack of response in the last federal budget, despite these important call to action. We are at a tipping point. More specifically, what are the funds needed for the Tri-Councils? The bottom line is an immediate increase to the annual base budgets of \$1 billion followed by a commitment of annual increases of \$1 billion dollars for each of the next four years.

For grad students and post docs, a detailed proposal was submitted to the last pre-budget consultation by the Support Our Science initiative energized by thousands of Canadian students and led by Professor Marc Johnson :³

Recommendation #1: That the government provides funding to the Tri-Council agencies so that the value of graduate student scholarships for master’s students (e.g., NSERC CGS-M) are increased by 48% to address inflation since 2003. Tri-Agency masters student scholarships are currently valued at \$17,500 per year and would increase to \$25,900 per year.

- NSERC CGS-M: \$8,400 per award x 840 existing awards = \$7.06M
- SSHRC CGS-M: \$8,400 per award x 1280 existing awards = \$10.8M
- CIHR CGS-M: \$8,400 per award x 886 existing awards = \$7.4M

Recommendation #2: That the government provide funding to the Tri-Council agencies to equalize the values of NSERC and SSHRC Post-Graduate Scholarship Awards (e.g., PGS-D) to the Canada Graduate Scholarships for Doctoral students (e.g., CGS-D) at \$35,000 per year.

- NSERC PGS-D: value would increase from \$21,000 per year to \$35,000 per year.
- Increase of \$14,000 per award x 342 existing awards = \$4.79M
- SSHRC PGS-D: value would increase from \$20,000 per year to \$35,000 per year.

² Jones, S. *Committee report sounds alarm bells about DFO science.* https://www.hilltimes.com/ht_author/sean-jones/ : accessed 06 June 2023.

³ House of Commons, Canada. Pre-budget consultations in advance of the 2023 budget: Support our Science Joint Brief Submission (November 28, 2022). <https://www.ourcommons.ca/Committees/en/FINA/StudyActivity?studyActivityId=11712535> : accessed 06 June 2023.

- Increase of \$15,000 per award x 430 existing awards = \$6.5M
- CIHR PGS-D: NA

Recommendation #3: That the government provides funding to the Tri-Council agencies so that the value of Postdoctoral Fellowships awards is increased by 48% to address inflation since 2003.

- NSERC PDF: value would increase from \$45,000 per year to \$59,200 per year.
- Increase of \$14,200 per award x 150 existing awards = \$2.13M
- SSHRC PDF: value would increase from \$45,000 per year to \$59,200 per year.
- Increase of \$14,200 per award x 151 existing awards = \$2.14M
- CIHR PDF: value would increase from \$45,000 per year to \$59,200 per year.
- Increase of \$14,200 per award x 158 existing awards = \$2.24M

Recommendation #4: That the government implements a policy to provide on-going funding to the Tri-Council agencies to index award values to inflation based on a long-term average of 2.1%.

Recommendation #5: That the government provide additional funding to the Tri-Council agencies to increase the number of post-graduate scholarships provided annually by 50%.

- NSERC: from 1524 awards to 2226 awards, increased cost per year: \$22.85M
- SSHRC: from 2140 awards to 3210 awards, increased cost per year: \$24.10M
- CIHR: from 1227 awards to 1841 awards, increased cost per year: \$17.4M

Recommendation #6: That the government provide additional funding to the Tri-Council agencies to double the number of Postdoctoral Fellowships awarded annually.

- NSERC: \$59,200 x 150 new awards = \$8.88M
- SSHRC: \$59,200 x 150 new awards = \$8.88M
- CIHR: \$59,200 x 150 new awards = \$8.88M

To summarize:

- Increase the value of Tri-Agency graduate scholarships and postdoctoral fellowships by 50%
- Increase the number of Tri-Agency graduate student scholarships by 50%
- Increase the number of Tri-Agency postdoctoral fellowships by 100%

Please note that most grad students and postdocs are funded directly through the research grants awarded via the Tri-Councils to their supervisors. Therefore, we must provide internationally competitive funding to investigators of the Tri-Councils and permit them to compete at the highest levels. This action would send an immediate message that the federal government is committed to the ambition of world class excellence for discovery research.

Why does supporting Canadian science matter?

Our discovery research saves lives. Past presentations to this committee have already passionately documented specific examples such as the mRNA-based COVID-19 vaccines. Less well-known are the Canadian contributions to the discoveries for novel treatments for type 2 diabetes and weight loss drugs embraced globally today.

What about our present focus on commercialization?

If we look south of the border and examine the life sciences, the discovery research organization funded 100% by the American taxpayer is the NIH. Its [annual budget is currently \\$47 billion USD](#).⁴ It has been documented that over a 5-year time of analysis, [100% of all US FDA approved drugs and therapeutics were from NIH basic science discoveries](#).⁵ These discoveries are handed to US based big pharma and Biotech that are now using their own funds and [spending over \\$72 billion USD per year on further research and clinical trials](#)⁶ with zero financial burden to the US taxpayer.

In Canada, the CIHR budget is \$1.2 billion CDN pa—that is, over 52 times less than that of the NIH. [The budget will decrease further over the next 2 years](#).⁷ Since 2015 all of [preclinical research labs of pharma have left Canada](#).⁸ All have relocated to where they believe the talent lives. This will soon exclude Canada.

Amongst other things, the recent biomanufacturing initiative for Canada of \$2.2 billion will struggle to find the research talent and pharma partners to reap the rewards of the high risk bet by the Canadian taxpayer.

Another example is the new vaccine facility known as the [Biologics Manufacturing Centre](#).⁹ Thus far the sole vaccine manufacturer with a contract for this facility is [undergoing the financial threat of bankruptcy](#).¹⁰ The cost of \$126 million to build the facility has been paid for by the Canadian taxpayer.

In 2011 Canada was 8th globally in researchers per 1000 population. [By 2019, Canada was ranked 18th](#).¹¹

Should investment in the Tri-Councils and the talent of our grad students and postdoctoral trainees be a priority?

Canada will need to respond to the challenges of climate change, the next pandemic, the devastating diseases of cancer, Alzheimer's, heart, and liver disease and the care needed for our

⁴ Science News Staff. *Research gets a boost in final 2023 spending agreement*. <https://doi.org/10.1126/science.adg3948> : accessed 06 June 2023.

⁵ Cleary, EG, Beierlein, J M and Khanuja, NS (2018) *Contribution of NIH funding to new drug approvals 2010-2016*. PANS 115 (10): 2329-2334. <https://doi.org/10.1073/pnas.1715368115> : accessed 06 June 2023.

⁶ PhRMA Research. *2022 PhRMA annual membership survey*. https://phrma.org/-/media/Project/PhRMA/PhRMA-Org/PhRMA-Refresh/Report-PDFs/P-R/PhRMA_membership-survey_2022_final.pdf : accessed 06 June 2023.

⁷ Canadian Institutes of Health Research. *2022-23 Departmental plan*. <https://cihr-irsc.gc.ca/e/52738.html> : accessed 06 June 2023.

⁸ Webster, PC. *How big pharma got the better of Ottawa*. <https://www.theglobeandmail.com/report-on-business/rob-magazine/where-did-all-the-white-coats-go/article27007234/> : accessed 06 June 2023.

⁹ Government of Canada. *Biologics manufacturing centre*. <https://nrc.canada.ca/en/research-development/nrc-facilities/biologics-manufacturing-centre> : accessed 06 June 2023.

¹⁰ Macroaxis. *Novavax probability of bankruptcy*. <https://www.macroaxis.com/invest/ratio/NVAX/Probability-Of-Bankruptcy> : accessed 06 June 2023.

¹¹ Wells, P. *Building pyramids from the top down: The useful mission creep of a government panel on research*. <https://paulwells.substack.com/p/building-pyramids-from-the-top-down> : accessed 06 June 2023.

aging population. We should be ready to reap the innovations of AI, quantum computing and exciting ideas for photosynthesis and nitrogen fixation for agriculture.

This standing committee has the opportunity to champion and support an ambition of excellence and to improve the health of our citizens and also assure commercialization of its products through sustained investment in the eager young talent of our students and postdocs.

This Standing Committee on Research is the only group that can budge our decision makers. Only the SRSR can act as a catalyst to support our talent. We urge you to respond.

Concerned Scientists

We are 166 Concerned Scientists that have argued for increased funding for Science and Research for the Tri-Councils and for our trainees.