



Canadian Society for Molecular Biosciences

Promoting and advancing molecular understanding of biology

## Boosting Investment in Scientific Research: An Important Tool for Post-COVID 19 Economic Recovery Readiness and for Meeting Future Challenges

Submission to the Finance Committee's Pre-Budget Consultations

Prepared by:

The Canadian Society for Molecular Biosciences (CSMB)

## RECOMMENDATIONS

That the Government commit to appropriately funding Canada's best and brightest in science and research, by:

**Recommendation 1:** That the Government significantly increase investments in the budgets of the tri-councils – the Canadian Institutes of Health Research (CIHR), the Social Sciences and Humanities Research Council (SSHRC), and the Natural Sciences and Engineering Research Council (NSERC) – by 30%. This amount would be in line with the recommendation of the Fundamental Science Review, and accounting for inflation since 2017.

**Recommendation 2:** That the Government increase the level of support for recipients of the Canada Graduate Scholarship (Masters program) and Postgraduate Scholarship (Doctoral program), through each of the tri-councils, by 48% to account for inflation since 2003.

**Recommendation 3:** That the Government increase investment in training of the next generation of scientists, over 4 years, to an additional \$140M per year (increases at \$35M per year, via the tri-councils).

**Recommendation 4:** That the Government increase its investment in the Research Support Fund, over 4 years, to an additional \$478M to help institutions across Canada to support their researchers as effectively and efficiently as possible.

Conceived in 1957, the [Canadian Society for Molecular Biosciences \(CSMB\)](#) is a professional association of scientists involved in Biochemistry, Cell Biology, Molecular Biology and Genetics. Our members are primarily from universities and academic research institutions from across the country and are the scientists responsible for investigator-driven research. Their work generates new knowledge that fuels innovation and discoveries, and trains the next generation of scientists who will continue to innovate and contribute to our knowledge-based economy through academic, industry, and business opportunities.

On behalf of the CSMB, we would like to thank the Finance Committee for the opportunity to provide our recommendations for Federal Budget 2023. Alongside the rest of Canada's scientific community, we are calling for significant and sustained investments in science and discovery research, so that we can continue to recover from the COVID-19 pandemic, as well as build a better and more resilient tomorrow.

### **The Impact of Sustained Support for Science and Research, Illustrated by the Pandemic**

As Canada continues to cope with the challenges brought on by the pandemic, science,

undertaken by Canadian scientists, has been a guiding light of hope amid the darkness of a few difficult years. Through immense cross-disciplinary collaboration and a spirit of scientific ingenuity, Canada's scientific community, including CSMB, has risen to the challenge, such as through involvement with mRNA vaccine development.

But as the light at the end of this pandemic appears brighter everyday, it is vital for us to consider the foundational work that has produced the pandemic-ending scientific achievements, and how COVID-19 has shifted Canada's science policy landscape, as well as that of our counterparts.

Government investment in scientific research has been especially highlighted in the past number of years as public dollars played an essential role in getting vaccine research, development and manufacturing off the ground, based on decades of research that allowed this leap. The pandemic illustrated the necessity of supporting fundamental research on an ongoing basis, and the ability to apply that research to new and emerging challenges quickly, which would not be possible without the existing groundwork.

### **The Need to Increase Support for Science and Research: An Investment in our Long-Term Future**

Momentous change has been the biggest constant of the 21<sup>st</sup> century, and nowhere is that more evident than with climate change. From flash flooding to increasingly devastating hurricanes, the climate crisis has become a leading threat to our shared economic and ecological future. Solving this crisis will be one of the greatest challenges of our lifetimes, and investing in science is the key to getting there. From large-scale renewable energy generation to carbon capture and storage, scientific innovation, which always start with basic research, can pave the way to a safe climate future – but only if investments are made to realize this potential.

Canada's allies and competitors have taken note of these pandemic learnings, challenges and emerging science policy realities, and this is best embodied by the commitments of the new Biden administration. The new President's first budget request to Congress reflected his administration's broad, bold and ambitious science and research agenda, including funding to expand education and workforce training programs and support next-generation science talent.

To illustrate this – in 2022, the budget of the Canadian Institutes of Health Research (CIHR) was a mere 2.38% when compared with the budget of the United States National Institutes of Health (NIH) budget – and will only be 2.06% of its budget in 2023 without major investments. Given that the US population is 8.7 times that of Canada, they invest 5 to 6 times as much in biomedical research per capita, compared to us. The United States is only one of several countries that has identified science and research as a way to deal with global challenges, and has matched this with adequate funding.

The current level of operational support at the tri-councils is insufficient to support Canadian researchers at internationally competitive rates. The erosion of the funding base has been slowly forcing many promising biomedical research laboratories across the country to reduce their research efforts or close entire research programs, release highly trained personnel, and stop training the next generation of scientists. This fundamentally threatens our preparedness for the next pandemic, as basic science training is foundational to so many aspects of public health, medicine and biomedical research into therapies.

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This investment would address the steady decline in research funding in Canada thereby positioning Canada to innovate and discover on the global stage, promote greater international collaboration, create interdisciplinary opportunities, and lead to high-risk ventures that will ensure Canada is ready to face the next global challenges ahead, health or otherwise.

### **The Need to Increase Support for our Best and Brightest: An Investment in the Talent Needed for Tomorrow**

As the pandemic highlighted the need for a highly skilled workforce with a background in biosciences – which feeds into the fields of epidemiology, virology, vaccine development, public health, pharmaceutical innovation, and more – is more important than ever, and Government action is needed to ensure that we have enough qualified Canadians to meet the needs of a rapidly growing sector. As Canada looks towards making our economy more innovative and production, it remains vital that any government strategy retain a laser focus on a significant hurdle for the science and research sector: a lack of support for next generation science talent, leading to a skills shortage – which is incredibly problematic for a sector that is so highly skilled.

Government financial support for science and research is primarily made through investments in infrastructure, such as for university-based laboratories, in addition to grant funding for researchers through the tri-councils (CIHR, NSERC, SSHRC) which grad students rely heavily on. Ongoing, and sustained, increases in the amount of grant funding available for basic science researchers is crucial to ensuring that our best and brightest can continue to perform research, and that they do not seek more compelling opportunities elsewhere.

Today, scholarship amounts are not increasing with inflation – and in fact, amounts have not increased since the early 2000's. For example, during the 2021-2022 fiscal year, Master level students were eligible for a one-time scholarship of \$17,500, the poverty line for a single individual living in an urban area with a population greater than 500,000 was \$22,060.

At the same time, the competition for grants and funding is highly competitive. For example, from the CIHR's Fall 2021 project grant results, of the 525 applications submitted by early career researchers, only 25.9% of applications were funded. Of the 726 mid-career applications submitted by mid-career investigators, only 31.7% of applications were funded. These low success rates mean that many of Canada's researchers spend hours writing grant applications, yet many of their applications are unsuccessful.

We would be remiss if we did not acknowledge that the science and research sector is, like many other sectors, competing for talent. Faced with low success rates for funding support, as well as a perception that Canadian scientists and researchers do not have access to a livable wage, our current cohort of talent may be leaving the field - not because they don't love it, but because they can't afford to stay in it. At the same time, opportunities within the sector, but abroad, may appear far more attractive than those offered domestically, leading to instances of "brain drain".

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### **The Need to Increase Support for Research Enterprise: An Investment in Infrastructure**

Cutting-edge discovery research such as the Canadian scientific teams searching for a COVID-19 vaccine, takes place in universities, hospitals and research institutes across the country and their infrastructure is increasingly in need of upgrades. Our scientists require state of the art infrastructure to continue to innovate, discover and create new knowledge.

The Research Support Fund assists Canadian post-secondary institutions with the costs associated with managing their research enterprise, helping them to maintain a world-class research environment. Grants through the Fund can be used to maintain modern labs and equipment, provide access to up-to-date knowledge resources, and more. However, despite its significant impact, the Fund is lacking in the investments needed to ensure that our research infrastructure is operating as efficiently as we need it to.

***Recommendation 4:*** *That the Government increase its investment in the Research Support Fund, over 4 years, to an additional \$478M to help institutions across Canada to support their researchers as effectively and efficiently as possible.*

### **Conclusion**

Canada's scientists have been at the forefront of the response to COVID-19. Because of the investments that have been made by governments, provincial, territorial and federal, to support the scientific community thus far, Canada has fared better than it otherwise would have. A commitment to basic science helped us to understand and apply knowledge to the problems Canadians faced, such as the novel vaccines developed over the past years. Similarly, a sustained commitment and increased investment in basic science will help us to understand the root causes of many other problems that Canadians face, or might face in the future – diseases

like cancer, diabetes, and dementia, and challenges such as climate change, natural disasters, antibiotic resistance and contaminated drinking water, to only name a few.