

Minister of Innovation,
Science and Industry



Ministre de l'Innovation,
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Ottawa, Canada K1A 0H5

The Honourable Kirsty Duncan, P.C., M.P.
Chair
Standing Committee on Science and Research
House of Commons
Ottawa, Ontario K1A 0G6

Dear Colleague:

Pursuant to Standing Order 108(2) of the House of Commons, I am pleased to submit on behalf of the Government of Canada (the Government) the response to the first report by the Standing Committee on Science and Research (the Committee) entitled *Successes, Challenges, and Opportunities for Science in Canada*, which was presented to the House of Commons in June 2022.

The Government recognizes the importance of investing in science and research to drive discoveries and innovative breakthroughs that generate social, health, and economic benefits for Canada and the world. The COVID-19 pandemic has particularly demonstrated the significant real-world benefits of investing in fundamental research. As Canada emerges from the COVID-19 pandemic, science and technology will continue to play a decisive role in addressing society's most pressing challenges. The Government is committed to supporting science and research in Canada to tackle emerging challenges facing Canada and the world, such as climate change, green energy, sustainable growth and lagging competitiveness.

The Government extends its gratitude to the members of the Committee for their work in undertaking the study, developing the report, and preparing recommendations. The Government also wishes to extend its gratitude to the numerous witnesses who provided expert testimony and to the organizations that submitted written briefs to share their advice, providing the Committee with a diversity of perspectives on Canada's strengths, challenges, and opportunities in science and research. These insights are invaluable to informing how the Government carries out its responsibilities to invest in Canada's science and research ecosystem.

The Government Response is the product of collaboration between Innovation, Science and Economic Development Canada (ISED) and Health Canada (HC). The Government has carefully considered the Committee's report and its recommendations, and will respond along five themes: 1) optimizing the research ecosystem; 2) maintaining robust

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and competitive research funding; 3) supporting research in colleges, CEGEPS, and institutes; 4) supporting talent and equity, diversity and inclusion; and 5) improving health data sharing.

Optimizing the Research Ecosystem (Recommendations 2, 3, 4)

To remain globally competitive, it is critical that the Government has the optimal structures in place to not only drive life-changing discoveries but also to be positioned to draw on the best available science to support evidence-based policy and decision-making.

The Government supports Canada's world-class research enterprise through the three federal research granting agencies—the Canadian Institutes for Health Research (CIHR), the Natural Sciences and Engineering Research Council (NSERC), and the Social Sciences and Humanities Research Council (SSHRC) – and the Canada Foundation for Innovation (CFI). These organizations play a pivotal role in supporting research, training, and research infrastructure at Canada's post-secondary institutions. The roughly \$4 billion annual federal investment via these organizations feeds the pipeline of novel discoveries and highly qualified talent that underpin and drive innovation. These investments are complemented by a number of other research funding mechanisms and initiatives supported by the federal government, including support to a number of third-party science organizations.

To realize the full potential of these investments, the federal research support system must be responsive to the needs of the modern research enterprise. As research becomes increasingly complex, collaborative, and multi- and inter-disciplinary, and as the need for science to inform the advancement of government policy objectives grows, the federal research support system must be cohesive – with strong, strategic coordination and collaboration across funders – and have sufficient agility to respond to emerging challenges and capitalize on new opportunities.

The Government has made progress in recent years towards addressing challenges within the federal research support system, building on the findings and recommendations of Canada's Fundamental Science Review – an independent review of federal support for fundamental science that released its final report in 2017.

To allow for greater predictability and stability of research infrastructure planning and investments, the Government granted the CFI permanent and ongoing funding in Budget 2018. Prior to this, the CFI had been supported through a series of individual federal budget injections every two to three years. Budget 2018 also made improvements to the CFI's Major Science Initiatives (MSI) fund. In implementing the new funding, the Government provided the CFI with more flexibility in program delivery, which has allowed the CFI to be more agile and responsive to the evolving and emerging needs of the research community it serves. It now has more power to decide the best allocation of funds for its various programs based on anticipated demands, including new demands

generated by changes to the granting agencies' programming. The CFI is expected to look for opportunities to further collaborate with the granting agencies as it designs and delivers its programs.

To strengthen coordination within the research support system, the Government created the Canada Research Coordinating Committee (CRCC) in 2017, mandating it to achieve greater harmonization, integration and coordination of research-related programs and policies, and to address issues of common concern to the granting agencies and the CFI. Its members include the presidents of the three granting agencies and the CFI, the Deputy Ministers of ISED and Health Canada, the president of the National Research Council, and the Chief Science Advisor.

Since its creation, the CRCC has made progress to better align programs and policies in various areas. For example, under the CRCC's leadership, the granting agencies developed tri-agency Action Plans on Equity, Diversity, and Inclusion (EDI) and Early Career Researchers (ECR) to guide common efforts in these areas. These plans have resulted in greater harmonization in a number of areas, including harmonized data collection and reporting on EDI and ECRs across flagship programs, a tri-agency statement on EDI committing them to common objectives, adoption of a tri-agency definition of ECR, and a common commitment to balanced funding for ECRs in certain programs relative to the number of ECR-led applications received. In January 2020, the CRCC released *Setting new directions to support Indigenous research and research training in Canada 2019-2022*, a plan co-developed with First Nations, Inuit and Métis Peoples that sets out four strategic directions to inform the development of new models of support for Indigenous research and training to advance reconciliation. Implementation of the plan is ongoing, with key steps to date including the formation of a Reference Group for the Appropriate Review of Indigenous Research, and the creation of an Indigenous Leadership Circle in Research to advise the granting agencies and the CFI on the implementation of the plan. Under the CRCC's oversight, the granting agencies and the CFI also developed an integrated calendar of funding opportunities to make it easier for research teams to work together across disciplines by providing a single view of funding opportunities, including deadlines and links to application information.

The Government has also continued to integrate programming by expanding and improving the suite of tri-agency programs - major programs for which the agencies have joint responsibility. These programs have a wide range of objectives, such as supporting interdisciplinary and international research, attracting and retaining top-tier research talent, and building world-leading research capacity in areas of strategic importance to Canada. In 2018, the New Frontiers in Research Fund (NFRF) was launched to support world-leading interdisciplinary, international, high-risk/high-reward transformative research. In its first four years, the NFRF has awarded a total of \$332.6 million in funding. In Budget 2021, as part of *Canada's Biomanufacturing and Life Sciences Strategy*, the Government provided a total of \$750 million to create the new tri-agency Canada Biomedical Research Fund and CFI Biosciences Research Infrastructure Fund. The bulk of this funding is being delivered through an integrated competition administered by the tri-agencies and the CFI for research, training, and research

infrastructure proposals. Budget 2022 committed to examine the CRC program, following an extensive evaluation, with a view to modernizing the program. As a final example, in advance of the 2022 competitions of the Canada First Research Excellence Fund (CFREF) and the Canada Excellence Research Chairs (CERC) program, modifications were made to the design and delivery of the two programs to maximize their effectiveness and ensure that they align with the Government's science, technology and innovation priorities.

The granting agencies have also continued to collaborate on a growing number of joint policies and initiatives in recent years. Work has been underway since 2019 to develop a modern, harmonized grants management system to provide a more efficient and user-friendly experience for applicants, administrators and reviewers. They have engaged the research community via a number of co-design workshops to understand user needs and requirements throughout the grants management lifecycle, from program design to end-of-grant reporting, in order to develop user-centric solutions. In April 2020, the agencies adopted the *Tri-Agency Guide on Financial Administration* to streamline and harmonize (to the extent possible) the administration and use of federal research grant funds using a principles-based approach. In March 2021, they launched the *Tri-Agency Research Data Management Policy* to promote sound research data management and data stewardship practices. This policy is being implemented incrementally. As well, in May 2021, the granting agencies launched the Tri-agency Interdisciplinary Peer Review Committee as a one-year pilot to provide a robust mechanism to review interdisciplinary research proposals submitted to certain individual agency programs. The pilot was well received by the research community, and its term was extended for another year in May 2022.

Despite these efforts, the Government recognizes that challenges remain within the federal research support system. The Committee's report noted complexity for researchers in navigating the federal research support system, with different rules and timelines across programs and funding agencies, and particular challenges in seeking funding for interdisciplinary research projects. It also underscored the importance of strategic approaches to marshal Canada's research strengths into impact. The Committee heard from witnesses that strategic leadership and coordinated, system-wide approaches are needed to build on a strong base of fundamental research and talent and focus efforts and resources towards solving key economic and societal challenges that Canada faces.

That is why the Prime Minister has mandated the Minister of Innovation, Science and Industry, in collaboration with the Minister of Health, to develop a plan to modernize the federal research support system to maximize the impact of investments in both research excellence and downstream innovation, with particular focus on the relationships among the granting agencies and the CFI. To support the development of this plan, the Government established an external Advisory Panel on Modernizing the Federal Research Support System in September 2022, to provide independent, expert advice to Ministers. The Panel, composed of thought leaders in the science, research and innovation spheres, will review and recommend improvements to the structure, governance, and management of the federal research support system to better respond to

government priorities and the needs of the modern research enterprise. We look forward to receiving the Panel's advice by winter 2022.

The Committee's report also noted challenges with respect to funding for, and governance of, major research facilities. The Government is currently examining how it could address the challenges facing major research facilities by being more strategic about how federal investments are made, building on the work of the Chief Science Advisor (CSA). Major research facilities contribute significantly to scientific discovery, education, and innovation in Canada, by attracting and retaining top talent, connecting our scientists to leading international research networks, and promoting Canada's interests through science diplomacy. Considerable investments in major research facilities continue to be made by the federal government, yet there is little coordination in terms of the strategic management or funding for these facilities over their full lifecycle. The Government is exploring ways to provide greater predictability and coherence in federal funding to maximize the benefits of these facilities and enable longer-term planning. We will be conducting targeted engagement with key stakeholders in fall 2022 to solicit their views. The Advisory Panel on Modernizing the Research Support System may be leveraged to provide advice on future directions. As the Government considers a more strategic national approach to major research facilities, we look forward to the Committee's study on Big Science this fall.

Structures and mechanisms to draw on the knowledge and expert advice of the research community are also critical components of a well-functioning research ecosystem. The Government must be able to draw from the best available science, including from within the federal science community, to inform decision-making that improves the health, economic and social well-being of Canadians.

That is why the Prime Minister appointed a CSA in 2017 to provide advice on how to ensure that scientific analyses are included in the Government's decision-making process, that government science is fully available to the public, and that scientists are able to speak freely about their work.

As CSA since 2017, Dr. Mona Nemer has provided critical advice to the Government to ensure that decision-making is informed by science. The functions of the CSA proved invaluable in quickly marshalling advice from the research community during the COVID-19 pandemic, building on early efforts by the CSA to promote positive and productive dialogue among academic and government scientists in Canada and abroad and to expand and shape the fledgling network of departmental science advisors as the foundation of a robust advisory function. The CSA convened a dozen expert panels and task forces during the pandemic to access the latest and most reliable scientific information on key topics. She also collaborated with departmental science advisors, the U15 Group of Canadian Research Universities, Compute Ontario and the University of Toronto to launch CanCOVID, a Canada-wide network of health, science and policy researchers to facilitate COVID-19 research collaboration.

The Government of Canada spent \$6.7 billion in 2021–22 on science and technology activities within federal departments and agencies, which conduct research that helps keep Canadians safe, pushes the frontiers of knowledge and translates discoveries into policies and innovative products. The CSA plays an important role in promoting the highest standards of integrity and quality in the conduct and communication of federal science, and ensuring that federal science is openly accessible to Canadians to maximize its benefits. The CSA worked collaboratively with the Treasury Board Secretariat and the Professional Institute of the Public Service of Canada to develop the Model Policy on Scientific Integrity to assist departments and agencies in developing their own policies in this area. The policy was released in 2018 and has now been implemented by 22 federal departments and agencies. To help ensure that federal science is fully available to the public, the CSA published the Roadmap for Open Science in 2020, which provides a step-by-step pathway for applying open science principles to federally funded science and research. The CSA is continuing to lead science-based departments and agencies across key milestones of the Roadmap.

The CSA's functions also include actively promoting public dialogue around scientific issues, and engaging in international science diplomacy to share Canada's scientific expertise internationally with its chosen partners and advance mutual interests. Dr. Nemer has been active in the international promotion of scientific cooperation and collaboration, briefing members of Canada's foreign service, participating in state visits, and leading delegations to major international scientific conferences. She has also established a youth council to help mentor Canada's next generation of scientists.

The CSA's mandate was renewed on July 11, 2022, for a two-year term, effective September 25, 2022. Her mandate was previously renewed on October 1, 2020. The government will continue to study whether to enshrine the Chief Science Advisor position in legislation.

Taken together, these efforts to optimize the research ecosystem will help to strengthen the foundation for world-class Canadian science and ensure that the best available science is brought to bear on the challenges and opportunities facing Canada.

Maintaining Robust and Competitive Research Funding (Recommendations 5, 6, 8, 9, 12)

The Government of Canada recognizes that world-class research is critically dependent on stable funding, and that robust and competitive research funding models are essential for an agile research ecosystem to support long-term economic and social innovation. Accordingly, the Government has consistently invested in science and research, including supporting fundamental research through the federal granting agencies and the CFI.

In 2016, the Government launched the Fundamental Science Review to take stock of the steps required to preserve Canada's world-class standing and ensure that federal support for research is coherent, strategic, effective and agile to keep pace with the dynamic

nature of contemporary science. Led by an independent panel of distinguished research leaders and innovators, this was the first review of its kind in Canada in over 40 years. The panel's 2017 report (the Naylor report) charted the course for unprecedented levels of investments in fundamental research, building on Budget 2016 which provided the largest investment in the base budgets of the granting agencies in more than a decade (\$95 million per year ongoing).

In response to the Naylor report, Budget 2018 provided more than \$1.7 billion over five years through the granting agencies to support the next generation of Canadian researchers and research institutes. This included the single largest investment in fundamental research in Canadian history of \$925 million over five years, and \$235 million per year ongoing. This investment also included increases to a number of tri-agency programs, such as the Canada Research Chairs (CRC) program and the College and Community Innovation Program (CCIP), as well as the creation of the new tri-agency NFRF, to support international, interdisciplinary, fast-breaking, and high-risk research. Budget 2018 also provided \$462 million per year by 2023–24 to establish permanent, stable funding for the CFI to support research infrastructure in Canada.

Further investments in federal scholarships were made in Budget 2019, with \$114 million over five years, and \$26.5 million ongoing, allocated to the Canada Graduate Scholarships program to create over 600 additional scholarships at the master's and doctoral levels. Budget 2019 also invested \$37.4 million over five years, and \$8.6 million ongoing, to expand paid parental leave for federally funded graduate students and postdoctoral fellows.

Since March 2020, as the world grappled with the COVID-19 pandemic, the Government made additional investments in science and research to strengthen Canada's capacity to respond to the current and potential future pandemics, to advance critical research priorities to build on the unique competitive advantages of the Canadian economy, and, to ensure that Canada is well positioned to meet the demands of the next century. The Government investments have ranged from supporting diagnostics and potential treatments to public health responses and communication strategies to supporting cutting-edge life sciences research and biotechnology, social sciences, and humanities research. Since the start of the pandemic, the Government has invested approximately \$414 million, funding 965 grants.

In Budget 2021, the Government invested almost \$900 million in bio-innovation research, talent development, and research infrastructure as part of Canada's Biomanufacturing and Life Sciences Strategy, as well as committed \$1.2 billion for pan-Canadian strategies on artificial intelligence, quantum science and genomics. Budget 2022 invested in science across a range of themes, including \$47.8 million over five years and \$20.1 million ongoing for a new lab-to-market platform for researchers and graduate students to bring their work to market; \$20 million over five years to support additional research on the long-term effects of COVID-19; \$20 million over five years to support research on dementia and brain health; and, \$100 million over six years to support post-secondary research in developing technologies and crop varieties that will

allow for net-zero emission agriculture. The Government's investment approach recognizes the need to balance ongoing investments in fundamental research, which delivers long-term benefits to Canada, with targeted investments that advance the Government's priorities and respond to the challenges and opportunities facing Canada.

The Government remains committed to assisting post-secondary institutions and their affiliated research hospitals and institutes with a portion of the indirect costs associated with federally-funded research. The main mechanism through which the Government supports indirect costs of research is the tri-agency Research Support Fund (RSF). Between 2015–16 and 2021–22, the Government increased the annual funding for the RSF by more than 25 percent, to approximately \$429 million. Budget 2022 announced a further investment of \$125 million over five years, and \$25 million ongoing, to the RSF to build capacity within post-secondary institutions to identify, assess, and mitigate potential risks to research security. In addition to the RSF, several tri-agency programs allow institutions to utilize a portion of the award towards indirect costs associated with the research – typically in the range of 20–25 percent. Finally, with respect to CFI-funded research infrastructure, institutions receive support through the CFI's Infrastructure Operating Fund to cover the operating and maintenance needs for each project. The CFI's MSI Fund also provides support for the ongoing operating and maintenance needs of research facilities of national importance that serve a critical mass of users distributed across the country.

Upholding research excellence must remain at the core of decisions related to allocating and awarding federal research funding. The federal granting agencies and the CFI are committed to ensuring that their assessment of excellence is inclusive of the full diversity of Canada's researchers and research institutions. Through the Tri-Agency EDI Action Plan, and as signatories to the San Francisco Declaration on Research Assessment, they are taking steps to re-examine research excellence and ensure that a wide range of research results and outcomes are considered and valued as part of the assessment process.

Excellence in research is not limited to large institutions in major Canadian cities. Federal research funders have introduced various measures to better support small and medium-sized institutions, many of which are located outside of major cities, to support their capacity to conduct high-quality research while maintaining a commitment to merit. Since 2000, the tri-agency CRC program has included a special allocation of Chairs to support research at smaller, regional universities. At present, there are 137 Chairs allocated to institutions that received one percent or less of total agency funding (over the three years prior to the year of the allocation). The CFI has made changes to its John Evans Leaders Fund to ensure that small institutions in Canada have a fair and equitable chance at receiving support, by allowing them to access dedicated additional funding through the Small Institution Fund, offering greater flexibility to address growth potential. The RSF uses a progressive funding formula that awards higher rates of funding to institutions that receive the least amount of money from the federal research granting agencies, in order to help smaller institutions provide adequate support to their research programs and strengthen their research capacity.

The Government recognizes the importance of continuity of funding for conducting research, which must be balanced with fair and transparent award processes based on the criteria of excellence to ensure support for the highest-quality research, including in new and emerging areas. Recent competitions in some large-scale programs, such as the CERC and CFREF programs, have placed greater emphasis on how institutions are planning for sustainability to ensure that they can maintain the strength built with the support of these awards, while also making way for these programs to support new, innovative initiatives that may bring long-term economic and social benefits to Canada. Continuity must also be balanced with allowing for evolution in the program suite to respond to changing priorities and needs of the research community. While programs such as the Networks of Centres of Excellence (NCE) are sunsetting, the granting agencies maintain a number of key programs, including CIHR's Project grants, NSERC's Discovery program and SSHRC's Insight program, which change minimally from year to year and provide predictable and sustained support for research excellence. The Government's new Strategic Science Fund (SSF) also provides the potential for continuity of funding for third-party science and research organizations, which may include organisations that had previously received funding through the NCE program.

The Government appreciates the Committee's attention to these important issues concerning research funding levels, models, and approaches. We recognize the importance of maintaining internationally competitive research funding and investment levels, and of ensuring that federal funding approaches are aligned with the needs of the research community. In order to maximize the impacts of current and future investments and ensure that federal support for Canada's academic research enterprise is coordinated and cohesive, responsive to the modern research context, and sufficiently agile to seize new opportunities and address emerging challenges, funding levels and approaches must be considered in concert with efforts to modernize the research support system.

Supporting Research in Colleges, CEGEPS and Institutes (Recommendations 10, 11)

The Government recognizes the important role of community-based innovation to the Canadian economy and society. Colleges and CEGEPs play a fundamental role in Canada's skills and innovation ecosystem: training students, driving regional economic development, and providing applied research services to companies and community organizations. Indeed, all college-based research is applied research and is driven by the needs of external partner organizations in local communities. These partners participate in the research projects, own the intellectual property, and use research results for new and improved products and services. An increasing number of partner organizations are working with colleges, with a 21.6 percent increase between 2016 and 2020, growing from 2,243 to 2,727 partners.

As highlighted by the Committee, over 95 percent of Canadians live within 50 kilometres of a college, making Canada's colleges key touch points for small and medium sized enterprises (SMEs) and other organizations wishing to receive advice and assistance on

applied research initiatives. The CCIP supports Canada's colleges to partner with local organizations from the private, public, health and not-for-profit sectors, including with SMEs on applied research and innovation activities, and with community organizations on issues of social importance.

The CCIP is administered by NSERC, in collaboration with CIHR and SSHRC. Since 2019, NSERC has engaged extensively with the college community to gather perspectives on the CCIP and how it could better address the changing needs of a mature, diverse and growing college sector, and meet the needs of partner organizations. Based on these consultations and further analysis by NSERC, key themes emerged that have driven the recent evolution of the program and have been incorporated into the suite of new and updated grants that now comprise the CCIP: simplifying program processes through the consolidation of nine grant types into five; broadening partnership eligibility from the previous focus on industry partners to include not-for-profit organizations across all grant types and health sector partners for some grants; placing more emphasis on student skills training including incorporating student training as an integral component of research activities; and, including a requirement to consider EDI in the composition of research teams and student training.

Under the newly redesigned program, the different CCIP grants provide direct funding for well-defined applied research and development projects, as well as funding to enable colleges to design a strategic approach to applied research and allow them to support partners' research and development needs.

The Applied Research and Development grants (ARD) support projects that respond to an applied research challenge, and are led by college researchers in partnership with private sector, public sector, or not-for-profit organizations, while encouraging collaboration with universities and/or other colleges. According to program data, partners organizations report that 61 percent of short-term (six months) and 65 percent of longer term (one to three years) projects have led to at least one new product or service developed from the research. Other reported benefits of ARD projects include improved competitiveness and enhanced skills and knowledge of personnel. College and Community Social Innovation Fund (CCSIF) grants foster innovation by connecting colleges to the research needs of community organizations to address challenges in community innovation. CCSIF projects bring together researchers, students and partners to address challenges in community innovation in the social sciences, humanities, health sciences, natural sciences and engineering research fields. The CCSIF was integrated within the CCIP in 2017 after a successful pilot. A limited number of grants have reached their end date, however preliminary data show a high percentage of successful results, as well as demonstrate strong student participation.

As an enabler for applied research, the newly created Mobilize grants provide long-term flexible funding to support a strategic and systematic approach to college-wide applied research activities that are focused on the evolving research and development needs of college partners. For example, colleges can apply for the funding they need to establish a new applied research program, enhance an existing program, or undertake a number of

short, time-critical applied research projects, without having to submit applications for individual project grants. The five-year term of Mobilize grants allows the sector to plan its activities and adjust to new opportunities as these emerge. New partners and projects may be identified throughout the life of the grant, versus at the time of application.

Technology Access Centres (TACs) grants remain a key award under the CCIP. These specialized centres provide applied research services to the college's community clients to generate business, social and health benefits. Each TAC's area of specialization is chosen for the value the centre can add to the innovation capacity of the sector or region and the potential for the centre to play a significant role in the innovation of the client organizations in its community. TACs enable community organizations to take advantage of colleges' expertise, technology and equipment, leading to beneficial business, social and health outcomes for communities and Canada.

Finally, Applied Research Tools and Instruments (ARTI) grants will support the purchase of research equipment and installations to foster and enhance the capacity of colleges to undertake applied research, innovation and training in collaboration with local organizations. The ARTI grants have yet to be launched under the redesigned CCIP.

As stated earlier, the Government is committed to assisting post-secondary institutions with a portion of the indirect costs associated with federally funded research. Specific to colleges, in response to feedback from the sector, all CCIP grants now allocate twenty percent of funds to support indirect costs of research. Of note, with the longer time horizon afforded by Mobilize grants, colleges will have increased latitude to plan for how they invest in indirect costs, in support of new projects and partners as these are identified during the life of the grant.

The importance that the federal government places on support for the colleges has been demonstrated in a series of investments in recent years. Following a successful pilot, Budget 2017 invested \$10 million over two years in the CCSIF starting in 2017–18. Budget 2018 announced \$140 million over five years and \$30 million per year ongoing for the CCIP. Of note, as a result of this investment, the CCIP was able to double the number of TACs, from 30 to 60. Budget 2021 provided CCIP with \$46.9 million over two years to fund Applied Research and Technology Partnership grants. These grants were designed to foster applied research partnerships between colleges and SMEs to help businesses address real-world challenges by applying the latest applied research, knowledge and technologies to creating new products and services. Finally, Budget 2021 provided an investment of \$5.7 million over two years, to provide more businesses with access to the National Research Council's Industrial Research Assistance Program's Interactive Visits, where firms can access equipment, facilities, and expertise at college-affiliated TACs. As indicated above, additional funding must be considered in concert with efforts that are underway to modernize the federal research support system.

Supporting Talent Development and Equity, Diversity and Inclusion
(Recommendations 7, 13)

The Government values the critical role of the research community, including graduate students and trainees – Canada’s future researchers – as well as researchers at all career stages, in producing the knowledge, discoveries, and innovations that help build a strong future for Canada and the world. Nurturing and sustaining talent is integral to Canada’s research and innovation ecosystem. The Government recognizes that graduate students and trainees are facing increasing financial hardships and that the rising cost of living, exacerbated by the COVID-19 pandemic, presents a significant barrier to pursuing graduate-level studies.

Successive Budgets have prioritized funding to help support academic careers in research and science. With new funding provided in Budget 2018 for the CRC program, an additional 285 Chairs were created, of which 250 were for exceptional emerging researchers, and a new \$20,000 annual research stipend for first term Chairs who are early career researchers was created. Indeed, CRC program data show that approximately 39 percent of Chairs are established researchers, while approximately 61 percent of Chairs are emerging researchers who are earlier in their career and who are acknowledged by their peers as having the potential to lead in their field.

Federal scholarships and fellowships play a critical role in the career progression of Canada’s top talent, providing those who hold awards with increased financial security and independence along with greater control over their research direction. Budget 2019 provided \$114 million over five years with \$26.5 million per year ongoing, to the granting agencies to create 500 more master’s level scholarship awards annually and 167 more three-year doctoral scholarship awards annually through the Canada Graduate Scholarship program. Budget 2019 also allocated \$37.4 million over five years and \$8.6 million per year ongoing, to the federal granting agencies to expand parental leave coverage from six months to 12 months for students and postdoctoral fellows who receive granting council funding. The investment has helped young researchers, especially women, better balance work obligations with family responsibilities, such as childcare.

Building further on these investments, Budget 2022 provided \$38.3 million over four years, starting in 2023–24, and \$12.7 million ongoing, for the federal granting agencies to add new, internationally recruited CERCs in the fields of science, technology, engineering, and mathematics. This targeted investment helps reinforce Canada’s competitive advantage as a destination of choice for world-class researchers and to further attract and retain top-tier global research faculty in science and technology. Moreover, programs like CERC and CFREF support the training environment at institutions and strengthen training capacity for the development of highly qualified personnel.

As the Committee noted in its report, the COVID-19 pandemic has been difficult for the

research community. Indeed, in the early days of the pandemic in 2020, many researchers lost access to research facilities and resources. To sustain the talent pipeline during this challenging time and reduce the impact on students, trainees, and research support personnel funded through research grants, the three granting agencies coordinated efforts to ease the financial burden for researchers and help safeguard Canada's next generation of research talent. In April 2020, the Government announced \$291.6 million to maintain income support for research trainees (students and postdoctoral fellows). As a result, 2,889 students and postdoctoral fellows were supported through extensions to their research scholarships or fellowships and an additional 15,901 student researchers and research support staff through supplements to existing grants for faculty researchers who employed trainees. In addition, the Canada Research Continuity Emergency Fund (CRCEF) was established as a temporary program in 2020 to help sustain the research enterprise at Canadian universities and affiliated health research institutions affected by the COVID-19 pandemic. Core to the CRCEF was \$323 million in wage support for approximately 32,000 research-related personnel, of which 29 percent were students and 10% were postdoctoral fellows.

The Government has heard the calls from the research community to increase the value of the scholarships and fellowships, and will continue to work with the three federal granting agencies and the research community to explore ways in which we can better support our next generation of researchers and top talent.

Looking forward, to deliver an equitable, accessible, and effective suite of scholarships and fellowships that help support and prepare a diverse population of students and post-doctoral fellows for careers in research across all sectors of society, the Government, through the work of the CRCC, is developing a Tri-agency Training Strategy. The Strategy aims to be trainee-centric, evidence-based, and transparent, while communicating a shared vision among the tri-agencies and upholding the principles of equity, diversity and inclusion.

The Government appreciates the Investing in People section of the Committee's report, which underscores that Canada has an exceptional ability to compete globally, provided that it gives itself the means to do so. Ensuring diverse cultural and social perspectives helps improve the scientific impact of research and highly diverse teams outperform in innovation, critical and creative thinking, productivity, and overall performance. We remain committed to advancing key policy and program measures to strengthen Canada's research culture and look forward to the Standing Committee's forthcoming report on Top Talent, Research, and Innovation to help inform the direction of Canada's ongoing investments in talent.

Under the leadership of the CRCC, the federal granting agencies launched a comprehensive Tri-Agency EDI Action Plan with measures to increase equitable and inclusive access to granting agency funding. Through this Action Plan, the granting agencies are committed to ensuring that all policies, plans, programs and processes related to allocating granting agency support are equitable and inclusive, and mitigate bias against underrepresented groups, including selection processes. For example, EDI is

one of the core evaluation criteria used to assess all applications for funding under the NFRF, giving consideration to a research team's commitment to fostering EDI in the research environment. As well, leading up to the competitions currently underway, changes to the CERC and CFREF programs were made to better integrate EDI into program design, with the CERC program now including EDI and Indigenous research considerations in terms of project design and research team composition, and the CFREF requiring the inclusion of experts from diverse backgrounds on governance and advisory bodies, and that institutions develop an EDI action plan for their proposed initiative.

The granting agencies have also worked with institutions to develop the Dimensions: equity, diversity and inclusion Canada pilot program in 2019, a made-in-Canada adaptation of the internationally recognized Athena SWAN program. Dimensions aims to improve EDI by providing a structure for universities and colleges to transform research culture. Additionally, the granting agencies have funded over \$10 million in EDI capacity-building grants to support institutions to tackle challenges in addressing underrepresentation of specific groups in science and research.

Recognizing that Black researchers are underrepresented in the awarding of grants, scholarships, and fellowships, Budget 2022 provided \$40.9 million over five years and \$9.7 million ongoing to the granting agencies to support targeted scholarships and fellowships for Black student researchers.

As Canada continues its work to promote equity, diversity, and inclusion to tap into the country's full range of talent, it is critical to build new models for Indigenous research and research training informed by First Nations, Inuit, and Métis peoples. Budget 2019 announced support for additional bursaries and scholarships for First Nations, Inuit, and Métis students through a \$9 million investment in Indspire – an Indigenous-led charitable organization that helps Indigenous students attend post-secondary institutions and find good jobs. In addition, the CRCC and the granting agencies partnered with Indigenous peoples to develop the strategic plan *Setting New Directions to Support Indigenous Research and Research Training in Canada 2019–2022*. The plan lays the groundwork to establish a national research program in partnership with Indigenous peoples to advance reconciliation, in response to Truth and Reconciliation Commission Call to Action 65. Furthermore, in 2022, the granting agencies established an Indigenous Leadership Circle in Research to advise them on the implementation of the strategic plan and provide guidance on how to enhance support for Indigenous research and training.

Improve Health Data Sharing (Recommendation 1)

The Government of Canada remains committed to ensuring that health research and health-related data in Canada are effectively accessed, analyzed, linked, used, and preserved to advance knowledge, expand research opportunities, and improve health services, products and outcomes. Rather than the creation of a pan-Canadian health data repository, the Government of Canada's focus is on supporting the ability to conduct pan-Canadian research in a timely and effective manner while respecting

provincial/territorial autonomy of their health data.

The Tri-Agency Research Data Management Policy supports research excellence by promoting sound research data management and data stewardship practices. The policy includes data deposit guidelines requiring grant recipients to deposit into digital repository all digital research data, metadata and code that directly support the research conclusions in journal publications and pre-prints that arise from agency-supported research.

The Government, through the Canadian Institutes of Health Research (CIHR), has enabled Canadians to develop world-class interactive data and analytics platforms through a series of CIHR-funded data platforms such as the Strategy for Patient-Oriented Research's Canadian Data Platform (led by Health Data Research Network Canada) which supports improved access to pan-Canadian data, automation of data analysis, and ongoing engagement with the public, patients, and Indigenous communities. It brings together provincial, territorial and pan-Canadian health data centres, networks and initiatives. CIHR also funds a number of other data platforms such as the Canadian Longitudinal Study on Aging (CLSA); the Canadian Research Data Centre Network (CRDCN); the International Health Epigenetics Consortium (IHEC) Data Portal; the Ontario Child Health Support for People and Patient-Oriented Research and Trials (SUPPORT) Unit's searchable Child Health Datasets inventory; and Population Data BC (PopData).

In addition, CIHR supports several policies that undertake to foster sound data management and stewardship practices. Since January 1, 2008, recipients of CIHR funding have had to comply with the data deposit requirements included in the Tri-Agency Open Access Policy on Publications. These requirements, which are specific to bioinformatics, atomic, and molecular coordinate data ensure immediate uploading of data into the appropriate public database upon publication of research results and the retention of all original datasets for a minimum of five years post-grant on all data whether published or not.

Conclusion

The Government of Canada will continue to support science and research from coast to coast to coast. A well-connected, agile and interdisciplinary research ecosystem is imperative to tackle major horizontal issues facing Canada and the world, such as climate change, sustainable growth, or lagging competitiveness. As the Government considers approaches for modernizing the research ecosystem, the Government will take into account the Committee's recommendations for supporting science and research and would like to reiterate its thanks to members of the Committee for their dedication to undertaking this review and commitment to science and research.

It is our collective responsibility to properly leverage science, research, and technological innovation for our social, health, economic and political systems. The Government looks

forward to working with Canadian post-secondary institutions, Canada's established and emerging researchers and Canadians writ large, toward establishing Canada as a global leader in research and innovation, including leveraging the expertise of researchers and research outcomes to generate health, social, technological, environmental and economic benefits for Canadians and ensuring a supply of well-trained researchers to work across all sectors of the economy. Our coordinated efforts today will be a critical factor in strengthening the pipeline of new technologies and talent of tomorrow. Purpose-driven translation of fundamental research into applications and commercial products will lay a solid foundation for long-term socio-economic recovery and enduring resilience for Canada – an endeavour for which we all have to work together.

This is important work that we are honoured to do on behalf of Canadians.

Sincerely,

A handwritten signature in black ink, appearing to read 'F. Champagne', with a stylized flourish at the end.

The Honourable François-Philippe Champagne, P.C., M.P.