

Written Submission for the Pre-Budget  
Consultations in Advance of the 2021 Budget

McMaster University

**Recommendation 1:** The Government of Canada should continue to invest in knowledge mobilization and skills development to support the researchers who are developing the next generation of technologies, advancing innovation, and increasing economic development across the country.

**Recommendation 2:** The Government of Canada should invest in university infrastructure to accelerate Canada's economic and social recovery.

**Recommendation 3:** The Government of Canada should focus investments to leverage expertise in infectious disease research to mitigate the risk of future outbreaks, and position Canada as a leader in developing innovative solutions to this global challenge.

**Recommendation 4:** The Government of Canada should ensure international students can study in Canada.

**Recommendation 5:** The Government of Canada should support the development of new commercial opportunities in radiopharmaceuticals, neutron scattering and small modular reactors (SMRs).

## Introduction

McMaster has been a proud partner in the collective fight against the COVID-19 pandemic. Our researchers have conducted critical research that has included isolating the virus, redesigning ventilators, testing new N95 masks, undertaking the country's largest trial on convalescent plasma treatment, and developing new and innovative methods to detect the virus and treat the disease. The University acted quickly to donate our PPE supplies to our local hospitals and have provided our residences to house medical residents who needed a safe place to quarantine. For our students, we put forward more than \$800k in emergency funding and launched the McMaster COVID-19 Fund to provide additional relief and fund COVID-19 research projects.

As Canada moves from the immediate effects of the pandemic and looks towards recovery, McMaster looks forward to contributing to its rebuild. By providing quality education, including opportunities for the reskilling and upskilling that many workers will need in the 'new normal', McMaster is poised to work with government to ensure Canada is well positioned to emerge from the pandemic even stronger than before. We are grateful for the Government of Canada's \$9B framework to support post-secondary students and recent graduates. This will help students continue their educational journey.

In addition to being Canada's most research-intensive university, McMaster is also number one in the country in industry sponsored research. The financial impacts of COVID-19 on our institution are significant and will be felt for some time. McMaster believes there are important investments the government should make to support the country's academic institutions and to continue our efforts to respond effectively to this pandemic, specifically in:

- Research, commercialization and skills development support
- University infrastructure
- Infectious disease research
- Safe arrival of international students
- Nuclear capabilities

In addition to this submission, McMaster also supports the submissions of the U15 and Universities Canada. McMaster's world-leading research will continue to develop technologies, products, and services that will position Canada as a world leader. We thank the Committee for its work and for the opportunity to present our recommendations in advance of Budget 2021.

***Recommendation 1:*** *The Government of Canada should continue to invest in knowledge mobilization and skills development to support the researchers who are developing the next generation of technologies, advancing innovation, and increasing economic development across the country.*

The research undertaken at universities plays an important role in creating new technologies, establishing new companies, and contributing to the economic development of their regions, provinces, and the country. As a result of the COVID-19 pandemic, many countries around the world are increasing their investments in research and innovation. It is imperative that the Government of Canada continue to invest in research and innovation to help spur our country's economic growth.

Universities Canada data shows that in 2018, Canada's higher education institutions performed \$14.1 billion in research and development and conducted \$1.1 billion in research for business. In Hamilton alone, research from McMaster has resulted in the establishment of numerous small and medium enterprises, the employment of hundreds of highly skilled people, and has drawn in hundreds of millions of dollars in private investment.

Government investment in research can lead to untold advancements in our economic and societal well-being. A prime example is that of Fusion Pharmaceuticals, a biopharmaceutical company founded at McMaster University. In 2019, Fusion Pharmaceuticals secured \$105M (USD) in private financing to help advance a new approach to cancer therapy based on its ground-breaking research. Fusion researchers who started at McMaster received support through federal grants and funding. That funding has directly resulted in the creation of companies, new medical discoveries, and ensured that highly skilled jobs remain in Canada. They have recently raised an additional \$200M in private financing.

Increased investment from the federal government in knowledge mobilization through the Granting Councils and CFI will result in greater economic gains across the country. In addition, universities are a critical component of the skills development ecosystem. Additional supports for upskilling and reskilling opportunities at postsecondary institutions will help Canadians adjust to a changing economy.

***Recommendation 2: The Government of Canada should invest in university infrastructure to accelerate Canada's economic and social recovery.***

Prior to COVID-19, infrastructure needs at universities were at critical levels, and deferred maintenance liabilities were rising at every institution. Universities are key contributors to their local economies. Through capital investments made over the past five years, McMaster alone has contributed over \$600 million to Canada's GDP and created over 5,550 jobs. This includes construction of new facilities, renewal of existing facilities and purchases of furniture and equipment.

Together, Canada's universities have approximately \$7 billion in shovel ready infrastructure projects. Many of these projects are dedicated to green infrastructure and energy efficiency, meeting the government's longstanding commitment to mitigating the effects of climate change. Now is the time to invest in university infrastructure which will stimulate the economy, support students, lower carbon emissions, and help build university campuses that will be able to adapt to future disruptions.

***Recommendation 3: The Government of Canada should focus investments to leverage expertise in infectious disease research to mitigate the risk of future outbreaks, and position Canada as a leader in developing innovative solutions to this global challenge.***

The COVID-19 pandemic has reminded the world of its vulnerability to infectious diseases. This awareness had waned since the last pandemic in 1918, reinforced by the eradication of diseases such as smallpox, and minimization of childhood diseases like polio and the measles. Pathogens like SARS-CoV-2 that can cause pandemics remain unknown and unstudied until they pose an immediate danger. The successful response to future pandemics relies on the commitment to work on understudied areas, with the capability to rapidly expand capacity, improve productivity and pivot quickly to address and ameliorate emerging disease.

McMaster researchers drew international attention when they were among the first in Canada to isolate the COVID-19 virus, but researchers from all six Faculties also moved immediately to respond to COVID-19 challenges. This included partnering with manufacturers retooling to produce PPE and was enabled by a cross-disciplinary approach and infrastructure unique to McMaster. McMaster's deep expertise in health systems, policy analysis, data collection, modelling and synthesis allowed teams to mobilize quickly to initiate clinical trials and model data to provide evidence for governments to make informed and urgent decisions.

Canada should make strategic investments in infectious disease research and infrastructure. This foundation is needed to better prepare for future pandemics and ensure that Canada is well positioned in the search for vaccines and treatments, and has the knowledge to inform public health measures and other aspects of pandemic response.

***Recommendation 4: The Government of Canada should ensure international students can study in Canada.***

International students play an important role in Canada. They bring diverse perspectives and experiences to our campuses and contribute to Canada's talent pipeline. From an economic perspective, international students contribute \$21.6 billion a year to the economy and create 170,000 jobs annually. The positive impact for local communities is significant, with international students at McMaster contributing more than \$27M annually in living expenses alone in the Hamilton area.

International student fees have become crucial sources of revenue for Canada's universities. A severe decrease in international enrollment would cause significant and long-lasting impacts for McMaster and our peers across the sector. The continued arrival of international students is more critical in the face of the current COVID-19 pandemic than ever before, as the economic downturn has already had negative impacts on the financial stability of institutions. As the country works towards recovery, the economic and social benefits that international students bring to Canada will be crucial, particularly at a time when other avenues of much needed immigration will be slowed.

Over the past few months, McMaster has safely quarantined international graduate students upon arrival in Canada, as well as housed medical residents, clinical and research fellows training in Hamilton who have been exposed to the virus or needed somewhere to stay. This was successfully done in collaboration with Hamilton Public Health and involved establishing supports for safe isolation, cleaning, contactless meal delivery, and the protection of staff. McMaster has established a quarantine plan that will allow for the safe quarantine of international students and assist with integration into the local community.

We request that the federal government prioritize and approve processing of new student visas to allow international students to come to Canada in order to maintain the social and economic benefits they contribute. The lack of a clear corridor for international students puts Canadian universities at risk of increased deferrals and the resulting financial impacts that would follow.

***Recommendation 5: The Government of Canada should take full advantage of McMaster's role as Canada's nuclear university to support the development of new commercial opportunities in radiopharmaceuticals, neutron scattering and small modular reactors (SMRs).***



Amid the COVID-19 pandemic, the McMaster Nuclear Reactor (MNR) continued to produce much-needed and rare medical isotopes used to treat prostate and other forms of cancers, while providing other services critical to health care, the nuclear industry and the economy. While our health care system needed to be laser focused on the COVID-19 pandemic, other patients rely on medical isotopes in their battles with cancer, and as one of the world's only suppliers of I-125, our technicians and operators stepped up to ensure these life-saving cancer treatments could continue.

McMaster University is Canada's nuclear university, home to unique nuclear facilities and expertise not found elsewhere in the world. Assets include a 5MW Reactor, the Centre for Advance Nuclear System (CANS), the McMaster University Cyclotron Facility, and numerous other facilities. The McMaster Nuclear Reactor is the only reactor in the world based at a university that is fully self-sustained through commercialization activities and business contracts, many of which have led to the creation of local businesses and hundreds of local jobs. The medical isotopes produced at McMaster are currently saving 70,000 lives per year.

One of the most important aspects of addressing climate change is the development and implementation of new green technologies. Small Modular Reactors will be a key element in reducing greenhouse gas emissions and moving Canadian communities away from fossil fuels. We encourage the Government of Canada to continue to support the development of Small Modular Reactors and call for greater investment in these emerging technologies.

The Government of Canada's SMR Roadmap (2018) found that Canada has all the elements required to lead in the development and deployment of SMR technology and is one of the world's most promising domestic markets for SMRs. McMaster's expertise in this field, our track record of nuclear operations, research experience and training, and our exceptional nuclear facilities, uniquely position us to study, innovate and lead in all aspects of SMR development in Canada.

Together, McMaster and the Government of Canada can make new discoveries, ensure Canada maintains its place as a tier one nuclear nation, combat climate change and disperse Canadian technology across the world.