



**Canadian Consortium for Research
Consortium Canadien pour la Recherche**

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**A Brief to the House of Commons
Standing Committee on Finance**

Presented by the:

**Canadian Consortium for Research
Consortium Canadien pour la Recherche**

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About us

The Canadian Consortium for Research consists of 18 organizations representing more than 600,000 researchers, students and practitioners from the humanities and the natural, health and social sciences. Our members are from the public and private sectors and engage in basic and applied research for the benefit of Canadians and the global community.

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Canadian Association of University Teachers
Canadian Federation for the Humanities and Social Sciences
Canadian Federation of Biological Societies
Canadian Federation of Students
Canadian Psychological Association
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Summary:

In the global knowledge economy, the next generation of creative minds and novel products will come from basic research. The creation, transfer and application of knowledge to all sectors of society require a vibrant research capacity to churn out ideas and discoveries that fuel the innovation pipeline.

Nations around the world recognize the value of basic research to society and to economic welfare, and they increasingly invest in discovery. The United States, Japan and Switzerland devote a significant portion of their science investment to basic research. Recognizing the

unprecedented mobility of scientific talent and the impact of basic research on innovation and competitiveness, the European Union is also allocating significant funding to pure, investigative research at the frontiers of science and technology.

As a result of increased demand on the budgets of the granting councils, too many new researchers and innovative proposals cannot be adequately funded. This is hurting Canada's ability to compete long-term in the global knowledge economy. Striving to offer a world-class research and training environment, universities are forced to offset most of the indirect costs of research. This is putting a strain on their ability to attract top researchers and students.

The Canadian Consortium for Research recommends that:

The federal government strengthen Canada's capacity for innovation by increasing, at 5-8% above the rate of inflation, its investment in the direct and indirect costs of basic research in the natural sciences, engineering, health sciences, humanities and social sciences through the granting councils and government science-based departments and agencies.

When our grandchildren and their children look back at Canada in the early 21st Century, what will they see? What will they think of our public institutions and collective choices? What will they say about our actions as custodian of a rich and diverse country? How will they judge our response to complex social and environmental issues? How will they regard our capacity to mobilize ideas and people to innovate and create a better, healthier, more prosperous society?

A global race

In the global race to build an innovation-based economy, Canada faces increasing competition from both established and newly emerging economies with excellent post-secondary education systems and large numbers of skilled people. To succeed in this increasingly competitive arena, Canada needs a strong capacity to develop its own supply of people, ideas and technologies. It must also create the necessary conditions to attract, retain and develop the talent and creative minds for addressing complex scientific and social issues, ensuring its position at the forefront of innovation, and being an effective partner in the international scientific community.

In its Science and Technology Strategy adopted in 2007, the Government of Canada sets out to mobilize S&T to Canada's long-term economic and social advantage. The federal strategy defines knowledge, people and entrepreneurial advantages to translate ingenuity and ideas into products, services and technologies that generate environmental, health, social and economic benefits. But to achieve the goals set out in the strategy, Canada needs a healthy research capacity—one that churns out new ideas and discoveries that fuel the innovation pipeline.

A vital component to a healthy research capacity

Strength in science and technology is essential to a modern country's ongoing capacity to innovate and compete. That connection between S&T and innovation begins with discovery. Nearly all technologies, products and achievements that have led to economic and commercial success and/or concrete improvements to quality of life are rooted in basic research. In addition to fuelling the development of new products, services and technologies, basic—or discovery—research provides evidence for the development of sound public policy and sets the stage for future advances in S&T.

Many regard discovery in terms of long-term research horizons. While it has been the reality in years past, this is no longer necessarily true. As nations increase their ability to generate ideas, the pace of discovery quickens and so too does the rate of commercial applications. In Canada, one only has to look at the BlackBerry phenomenon that took over the world in less than 15 years, revolutionizing technology, the way we work and even social interactions. Sound environmental management and sustainable development—primary concerns of Canadians—are largely the result of basic research in climatology, oceanography and atmospheric physics. The care of the elderly, the impact of climate change on Arctic communities, and public and Aboriginal health are but a few areas where basic research in anthropology, economics, languages and demographics leads to practical solutions and a better quality of life. In an increasingly complex world, relevant science requires that the full spectrum of disciplines be mobilized—from engineering and humanities to the health, social and natural sciences.

Our country is in a global race for talent. A solid capacity to conduct basic research is critical to ensure that Canadian universities and research institutions—both public and private—can offer a world-class research and training environment that attracts and retains the best creative minds in every discipline. It is well within Canada's reach to achieve this—but only if adequate resources are made available. Investing in this critical capacity then becomes a strategic tool to create a competitive advantage for Canada.

Discovery research is essential to developing talent, as well as attracting it. For graduate students and fellows, the only way to acquire knowledge and mastery in their field is by having the opportunity to work with professors and senior researchers of international stature and in world-class facilities. By conducting research in a thriving discovery environment, a new generation of Canadians acquires skills and capabilities that they will use throughout their careers and transfer to all sectors of the economy.

Canadian universities are striving to offer a top-notch research and training environment, yet they have to offset most of the indirect costs of research themselves. At present, universities are only partially reimbursed for the institutional costs of operating and maintaining research facilities, complying with regulatory and safety requirements, and maintaining the highest levels of accountability. This is putting an obvious strain on their ability to compete globally. Many graduate students carry large debts incurred during their university years. Additional funding for the granting councils would help ensure that resources are available to increase the number of scholarships they offer and enable recipients of research grants—many of whom are engaged in discovery research—to use a portion of their funds to hire more promising students and expose them to research and innovation.

There is an undeniable impact of basic research and adequate funding on the ability to innovate, on national competitiveness and growth, and on the overall well-being of society. But after several years of progress and reinvestment in the budgets of the granting councils and in the indirect costs of research, the federal investment has slowed down. This is indeed worrisome—especially considering how other countries support discovery.

A look abroad

Today's most successful economies recognize the importance of basic research to their national innovation system. In the United States, for instance, basic research is carried out by about 150 universities where talent and resources are concentrated and that attract most of the available private and public funding. In 2006, the United States performed an estimated \$62 billion in basic research, most of it (59%) federally funded.* **1**

For a long time, Japan was almost absent from the international basic research arena and was confined to acquiring and adapting technologies developed elsewhere. This is no longer the case, as it has considerably increased its effort in basic research. The result? A spectacular rise in the

number of Japanese Nobel Prize winners: four Nobel Prizes for science between 2000 and 2002, whilst the country could only boast of three prizes since the award was created over 100 years ago. *2

In its Seventh Framework Programme (FP7), which covers the years 2007–2013, the European Union recognizes the strategic importance of basic research and its value to society's economic and social welfare. FP7 bundles all research-related EU initiatives together under a common roof, playing a crucial role in reaching the goals of growth, competitiveness and employment. A significant portion of the FP7 budget has been allocated to specifically support discovery through the Ideas Program and the newly established European Research Council—the first European funding body set up to support investigator-driven frontier research. In fact, it is the first time that an EU Framework research program has funded pure, investigative research at the frontiers of science and technology, independently of thematic priorities.

The notion of a knowledge-intensive economy is of relatively recent vintage but has taken a powerful hold on governments in many parts of the world. The OECD describes basic research as the foundation of long-term innovation. Investment in basic research relative to GDP indicates differences in national priorities, traditions and incentive structures with respect to S&T. Among OECD countries with available data, in 2003–04, Switzerland had the highest basic research to GDP ratio at 0.8%, significantly above the United States and Japan, which stood at 0.5% and 0.4%, respectively. Switzerland devoted almost 30% of its R&D to basic research in 2004. This small, high-income country boasts the highest number of Nobel Prize winners, patents and science citations per capita worldwide and an industrial R&D share comparable with that of the United States and Japan.*3

Unlike these and many other countries, Canada does not keep track of its investment in basic research.

On being a global player

Canada and the global community are faced with complex challenges that transcend nations and borders. AIDS, climate change, air quality, human rights, water access, aging or displaced populations, and emerging economies are some of the many pressing issues that require collaborative and interdisciplinary approaches in the search for answers. Canadians are active participants in many international discovery initiatives that help strengthen our research capacity at home and our ability to succeed in the global community.

Canada's granting agencies strive to increase the impact of Canadian research within the global research community and enhance the training of young researchers. In recent years, the Canadian Institutes for Health Research, the Natural Sciences and Engineering Research Council, the Social Sciences and Humanities Research Council and the Canada Foundation for Innovation have worked together to encourage increased collaboration and networking among Canadian researchers. They have also adopted strategies to encourage the researchers they fund to engage in international collaboration and exchange. These strategies aim to help Canadian researchers seize emerging research opportunities where Canada has the potential to become a leader or in response to needs identified by the government. Their implementation, however, will require that new federal funds be allocated to the granting councils to ensure that no funds are shifted from existing programs.

Today's scientific talent knows unprecedented mobility. They are part of the global creative class on which nations and communities reshape their economies and prosper. Already at the forefront of existing research areas, they are now exploring new scientific frontiers that promise to make Canada one of the world's innovation leaders.

As a result of the federal reinvestment in S&T in the past decade, Canada has developed a vibrant research and training environment. Still, our country risks losing its best creative minds and competitive advantage. Because of the granting councils' limited budgets, too many young researchers do not receive adequate funding—just as they enter the most productive phase of their career. The funding crunch is also exacerbated by the success of such programs as the Canada Foundation for Innovation and the Canada Research Chairs in attracting and retaining productive research leaders in every discipline. If, because of inadequate funding, young researchers can't find at home the type of careers for which they trained, they will look abroad for opportunities no longer available in Canada. Just as global competition intensifies, is our nation willing to risk losing our young talent and precious intellectual capital?

The creation of the Canada Excellence Research Chair is a step in the right direction, but more needs to be done. The demand on the granting councils' budgets is at an all-time high. This seriously compromises our ability to retain our highly skilled people, to innovate and to compete in the knowledge economy.

Federal science-based departments and agencies are both creators and users of knowledge that directly benefits Canadians. Departments responsible for developing policies that affect us everyday require the scientific capacity to work with the research community to obtain sufficient data and evidence for developing sound public policy. Over the years, government laboratories have played a critical role in advancing and transferring knowledge, particularly in such areas of primary importance as the environment, telecommunications and public safety. More than ever, their contribution is needed to maintain the quality of life and well-being of Canadians.

Therefore, in order to sustain our long-term ability to compete in the global knowledge economy and to build a more effective innovation capacity, the Canadian Consortium for Research recommends that the Government of Canada increase, at 5-8% above the rate of inflation, its investment in the direct and indirect costs of basic research in the natural sciences, engineering, health sciences, humanities and social sciences through the granting councils and government science-based departments and agencies.

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