

Submission to the Science and Technology Consultation, Industry Canada
From the Canadian Council of University Biology Chairs
January 28, 2014

The Canadian Council of University Biology Chairs (CCUBC) represents over 50 Departments of Biology and Biological Sciences across the country. CCUBC's objectives are "to encourage exchange of information among Chairs of biology and related departments across Canada and to promote research and teaching of biology at universities, among the general public and at provincial and federal government levels." Under the direct umbrella of CCUBC, are more than 1000 faculty members, 4000 graduate students, and 800 administrative and technical staff. The goal of these individuals is to provide academic training of the highest quality in the Life Sciences, to undergraduate students numbering well into the tens of thousands, and to perform world-class research, from discovery to application while training the next generation of Life Scientists. These goals are intertwined: research is intrinsic to quality training, and trainees are major contributors to research.

The CCUBC presents the following points for discussion:

1. Scientific Research falls within a continuous spectrum from discovery to application. The research enterprise is compromised if this spectrum is constrained at either end or interrupted, mid-range. Future application only results when the spectrum from discovery research is continuous. Neglect of discovery research imperils future applications, from commercialization to health.

2. Discovery research cannot, by definition, be driven by industrial priorities. Private-sector companies are driven by their need to make profit and provide returns for investors and shareholders. Quite rightly, their interests are short-term and risk-averse, and must be nimble; that is, if an initiative is not likely to be profitable in the short term, it should not be financed. Discovery research on the other hand, only succeeds in the long term. Particular discoveries are high risk in the financial sense, but form the basis for tomorrow's economic drivers at national and international levels. While the likelihood of economic return from any single discovery project is unpredictable, stable investment in discovery research is virtually certain to result in a "home-run" application over time, opening a new economic sector, refining a method in the workplace or bringing a new treatment or cure. Nobel Prize-winner Michael Smith from University of British Columbia made a discovery that would never have been funded under a partnership or applied research program. Yet, it revolutionized modern Biology and enabled the whole Biotechnology sector, pumping an unquantifiable amount of money and employment into the economy for decades.

3. For immediate concerns of economic stimulus and job creation, we argue that discovery research is at least as good, and quite probably better, than investment in private sector partnerships. An NSERC Discovery Grant or CIHR Open Operating Grant brings direct employment to numerous laboratory personnel from undergraduate and graduate students to technicians and managers. Indirectly, such grants support the major

academic enterprise through employment of faculty and staff, and deliver the high-quality experiential training essential to tomorrow's leaders in business and society. Such opportunities *simultaneously* foster high-level skills, invest in our future and enhance the health of our research-policy climate.

4. We are grateful that the current Federal government is protecting funding to the federal granting councils. In view of cuts to most other government operations, CCUBC fully understands that any increase in that funding (important though it would be) is very challenging. However, we suggest that the present and future economic interests of Canada would be served by directing a greater proportion of the current Tri-council funding towards discovery research: NSERC Discovery Grants and CIHR Open Operating Grants. The pattern of linking Tri-council grant funds to partnerships or industry-targeted areas has introduced unintended atrophy at the discovery end of the research spectrum, essentially separating discovery from applications that bring economic stability. Re-balancing this pattern toward discovery will strengthen the future foundations of the economy and the training and retention of future scientists in Canada

On behalf of CCUBC, we thank the Government for welcoming input into discussions about the future of the Canadian Science and Technology agenda. We will embrace enthusiastically the opportunity to answer any questions or provide any further insights that might be helpful.

For CCUBC:

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