November 1, 2017

**Symposium: The Role of Academic Research in the Development of Highly Qualified Personnel (HQP)**

Organized by: Queen’s University

Speakers: Cathleen Crudden, Tier 1 Chair in Metal Organic Chemistry, Queen's University; Marc Fortin, Vice-President Research Partnerships Directorate, NSERC; Art McDonald, Professor Emeritus, Queen’s University, 2015 Nobel Laureate in Physics; Sean Mercer, Environmental R&D Program Leader, Imperial Oil; Lisa Powell, Distinguished Professor and Director, Health Policy and Administration, University of Illinois at Chicago, Dan Sinai, Senior Executive, Innovation, IBM Canada; Jesse Vincent-Herscovici, Acting Vice-President, Business Development, Mitacs Inc.; Daniel Woolf, Vice-Chancellor, Queen’s University.

Moderator: Ted Hsu, former MP for Kingston and the Islands and former Liberal opposition critic for Science and Technology and Post-Secondary Education

**Takeaways and recommendations**

Effective training models

* NSERC’s Collaborative Research and Training Experience (CREATE) Program has been effective in changing the culture of the academic department it operates in by introducing millennial researchers who challenge the status quo, inject diversity and don’t display the risk aversion of their older colleagues. CREATE program budget should be significantly increased as it is an effective mechanism for enhancing soft skills.
* Mitacs has emerged as a major player in HQP training. Its internships act as an effective conduit or human bridge between academia and industry.
* HQP training must include emerging fields of expertise such as artificial intelligence, blockchain, augmented reality and high-performance computing.
* Universities and colleges have augmented their HQP training with regional innovation centres, incubators and cutting-edge research infrastructure supported by the Canada Foundation for Innovation, which is a huge change from 20 years ago.
* The U.S. National Institutes of Health has introduced a Next Generation Researchers Initiative to address longstanding challenges faced by researchers embarking on and sustaining independent research careers, as well as promoting the growth, stability and diversity of the biomedical research workforce.

Policy considerations

* The appetite for HQP by smaller firms and start-ups is staggering and outstrips supply. Universities must do a better job of conveying to undergraduate students the range of jobs available to them.
* Canada needs an honest assessment of its support for inter-disciplinary and international expertise.
* Key ingredients above and beyond disciplinary expertise must include critical thinking and the ability to effectively collaborate.
* Change STEM (science, technology, engineering and math) to STEAM (science technology, engineering, arts and math).
* Post-secondary HQP policy should include an emphasis on attracting women into STEAM by including mandatory gender training to redress the shortfalls of past hiring practices.
* HQP is at the top of the priority list for the OECD’s G20 Training Strategy.
* HQP training would benefit Canada in the areas of climate change and clean energy as a key measure to close the innovation gap with other countries and remain internationally competitive. Training and professional development should be part of national policy.
* HQP training must include exposure to global value chains, an area where Canada is currently weak.
* The Fundamental Science Review’s recommendation to boost support to the granting councils by $1.3 billion is a major opportunity to increase and enhance HQP training.