

Submission to the Standing Committee on Science and Research Study on Top Talent, Research and Innovation



May 26, 2022

BioCanRx
Canada's Immunotherapy Network
Le réseau canadien d'immunothérapie

Submission to the Standing Committee on Science and Research Study on Top Talent, Research and Innovation

On behalf of BioCanRx

The COVID-19 pandemic painfully highlighted the gaps in Canada's domestic biomanufacturing capacity, with much attention being paid to our inability to develop and manufacturer vaccines at scale. In response, the Federal Government has made key investments to build up Canadian capacity, including through the announcement of the 2021 Biomanufacturing and Life Sciences Strategy. While these investments are essential, building out infrastructure in which to carry out biomanufacturing under Good Manufacturing Practices (GMP) is only one part of a very complex equation.

To ensure that investments in Canada's biomanufacturing capacity reap benefits, it is will be paramount to recognize that access to talent with requisite skills is essential to Canada's success.

Biomanufacturing is a complex process. Due to the specific expertise and equipment required, it is often inaccessible and expensive in Canada, frequently outpricing academic and start-ups. At the front-end, the entire biomanufacturing ecosystem is underpinned by talent – but a very specialized talent that requires continuous re-skilling, skilling-up, and the right kinds of entry-level programs to support the skills and knowledge development needed to work under GMP.

Without the right supports and ecosystem conditions throughout both education programs curriculum and subsequent training, talent will seek to go to other countries where educational opportunities and ensuring labour market for their skill set is better supported and funded. This indicates that we not only need coordination among the federal and provincial governments when it comes to providing training, but also among post-secondary institutions, non-government organizations, and companies requiring specific skill-sets.

And it isn't just scientific talent. It is specialized talent, like entrepreneurs and regulatory experts, clinical and financial experts – talent required at every level of the biomanufacturing and life science ecosystem to advance a promising therapeutic. The key to the sustainability of biomanufacturing facilities is their ability to attain the highly qualified personnel required to be doing the work to make these therapies. We don't currently have as robust of a pool of talent to draw on, and need to take a deeper look at skilling to ensure that we have the right workforce required for the sector.

Training programs need to be in lock-step with the sector. An increase in interest and attractiveness in the sector, in part due to the attention the sector received throughout the COVID-19 pandemic, or because of recent international recognition for advanced therapeutics such as CAR T-cell therapy, will lead to a higher demand for training programs at all levels. Thus far, the programs offered have not been moving in lock-step with the current sectoral demand, and there are no existing formal programs to train people that can step into a biomanufacturing facility and work within these facilities with knowledge of the GMP system.

BioCanRx's innovative approaches to strategic training

BioCanRx's targeted approach to talent starts young, at the high-school level. When it comes to these students, the goal for BioCanRx is to get these students interested in a career in cancer immunotherapy early. The organization works with Let's Talk Science to offer hands-on lessons, lab tours, and host workshops in high schools with researchers to talk about what they do and engage the students. To date, BioCanRx has engaged more than 10,000 high-school students in these activities.

The Summer Student Internship program is another flagship program that engages students early in their education. This 14-week paid internship program allows undergrad students to do hands-on research in a lab, along with everything else that entails, like lab meetings and presentations. To date, the vast majority of students that have participated in the program have elected to pursue graduate studies in the area of cancer immunotherapy and medicine.

BioCanRx also offers training in the steps involved in translational research, including understanding the preclinical development process, engaging with regulators, setting up a clinical trial and more. Project team participants to this program have been successful in rapidly advancing their products through our translational research pipeline. BioCanRx develops these training opportunities based upon the needs identified by project teams and also, in anticipation of the next stage of development the teams are approaching.

BioCanRx also develops training opportunities based on the needs identified by organizations, one of which is a partnership with the Ottawa Hospital Research Institute (OHRI) and Ottawa's Algonquin College to develop a microcredential in Good Manufacturing Practices (GMP).

This micro-credential program complements another training program, a partnership between BioCanRx and program originator OHRI and Turnstone Biologics, called the Canadian Partnership for Research in Immunotherapy Manufacturing Excellence or CanPRIME. CanPRIME brings together the complementary offerings of college (Algonquin College) and university (University of Ottawa) training, with invaluable industry expertise, to generate fit-to-purpose highly qualified personnel through paid, hands-on internships in a GMP biomanufacturing environment over a period of eight months. To date, it is the only hands-on biomanufacturing internship program in Canada within a GMP facility.

BioCanRx is now leading the programs' expansion from the regional to the national level with CanPRIME 2.0, which will leverage the organization's point-of-care biomanufacturing initiative to provide access to this unique training program for upwards of 30 participants over the next three years at one of the four partner, point-of-care facilities across Canada. Importantly, CanPRIME 2.0 will create a much-needed pipeline of highly qualified personnel armed with invaluable experience and marketability for future employment opportunities within the biomanufacturing sector.

Recommendations:

1. Ensure that the right talent and skills are available – both biomanufacturing and therapeutic development is incredibly complex and requires a specialized talent that needs continuous re-skilling and up-skilling.
2. First of its kind programs, such as the Mitacs-funded CanPRIME program, which provides GMP biomanufacturing internships at highly specialized biomanufacturing sites, must obtain greater investments if they are to be duplicated across the country to meet demand.

About BioCanRx

BioCanRx is Canada's Immunotherapy Network. We are a mission-driven organization focused exclusively on harnessing the enormous expertise in clinical and scientific cancer immunology from across Canada to bring forward the most promising novel cancer immunotherapies to patients through clinical trials. We are the only national not-for-profit network composed of academic health centres across the country focused on connecting required expertise and infrastructures to bring the most promising life-saving cancer immunotherapies to patients through clinical trials.