



Opinion

Canada's biomedical brain drain is reversing. Let's continue that trend

We must look beyond the lab and build a thriving ecosystem to make sure Canadian biomedical treatments are developed here and benefit Canadians.

Michael May & Allison Brown

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Every Canadian family has been touched by cancer, heart disease, diabetes, or Alzheimer's disease. Facing these diseases as a patient or a loved one will become a grim reality for even more families as the baby boom generation ages.

The good news is that Canadian regenerative medicine innovators in universities, hospitals, and startups are advancing revolutionary therapies for these common and devastating afflictions.

These discoveries aren't conventional treatments that address symptoms only, but rather have the potential to cure certain cancers and chronic diseases such as Type 1 diabetes and heart disease by regenerating the body on the cellular or genetic level.

These discoveries are starting to reach clinics and hospitals. The question is whether Canadians will also receive the economic benefits of these innovations such as jobs, state-of-the-art infrastructure, return on



To shepherd breakthroughs, we need a framework that allows stakeholders to share research, development, manufacturing, and entrepreneurial expertise, write Michael May and Allison Brown. *Photograph courtesy of the National Cancer Institute*

investment in startups, and new tax income for governments.

There is only one way to make sure Canadian biomedical treatments are developed here and benefit Canadians: we must look beyond the lab and build a thriving ecosystem that catalyzes access to risk capital, develops world-class talent, drives commercialization, builds manufacturing capability, and quickly facilitates adoption and patient access.

In 1964, Canadian philosopher and telecommunications guru Marshall McLuhan coined the famous phrase "the medium is the message," meaning that how we share information has a greater impact than the infor-

mation itself, and that the evolution of communication from print to radio to TV represented ever more sophisticated forms of human collaboration. The content was secondary.

Similarly, Canada can only become a true hub for biomedical excellence if we have a well-co-ordinated "medium"; that is, a sustainable biotechnology sector or ecosystem. Individual scientific discoveries are important, but to shepherd breakthroughs from discovery to clinical trials, regulatory approval, and the patient bedside we need a framework that allows stakeholders to share research, development, manufac-

turing, and entrepreneurial expertise.

The University of Toronto (UofT) was lauded recently as the No. 2 research university in the world behind Harvard University. Boston is a mature, successful ecosystem for spinning out and scaling cutting-edge biotech companies, built upon the world-class research undertaken at Harvard and MIT, and many other research institutions around the world.

But Boston didn't randomly become the best place in the world to commercialize medical discoveries. Strategic investments were made by its universities, state government, and business community to build an ecosystem where venture capital, industry, and entrepreneurs could efficiently scale for success.

Twelve years ago, the Centre for Commercialization of Regenerative Medicine (now CCRM) was launched to leverage Canada's strengths in the science of regenerative medicine into global leadership and health and economic benefits for Canadians. Eight years ago, a \$114-million grant established a hub for Toronto's regenerative medicine research community—UofT's Medicine by Design—with CCRM as its commercialization partner.

Strategic public-private partnerships like this were established in recognition that Toronto, despite its impressive biomedical research output, had not kept pace with Boston and other centres in developing an ecosystem capable of turning academic innovation into Canadian-owned, commercial-scale biotechnology companies.

Indeed, 10 years ago, new companies, talent, and Canadian IP often headed to places like Boston for commercialization. But more recently, we have seen that trend starting to reverse, demonstrating that strategic development of the ecosystem can attract and retain global investment, companies, and talent to Canada.

The foundation of any innovation strategy begins with a well-funded, collaborative research community such as UofT and its 10 partner research hospitals including the University Health Network, one of the most successful medical commercialization centres in North America. At the heart of a good ecosystem development strategy is the assumption that it can only be built if companies, both home-grown and attracted, are able to

find opportunity here. This strategy to develop “stickiness” involves developing manufacturing capability, increasing access to capital and developing talent.

For example, CCRM’s launch of OmniaBio Inc., which is building one of North America’s largest commercial scale cell and gene therapy manufacturing facilities in Hamilton, Ont., is the latest critical step toward building domestic manufacturing capability.

It is through these important investments that dozens of regenerative medicine startups have been established in Toronto in the past decade, employing hundreds of people. The era of “brain drain” and companies heading to Boston is coming to an end.

The time to continue this trend and solidify our commitment to public-private partnerships has never been more crucial, not only for the benefit of our health-care

system, but also for the well-being of every Canadian. Let us seize this opportunity and make Canada a true hub for biomedical excellence, recognizing that in this context, “the ecosystem is the product.”

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