

CANADA'S UNIVERSITIES: Drivers of Innovation



Mo Elbestawi
Vice-President, Research &
International Affairs
McMaster University

While once considered solely a place for higher learning, Canada's universities are now widely regarded as centres of innovation. Their collective output is far more than highly qualified graduates, universities now play an integral role in keeping Canada competitive, working hand-in-hand with industry and governments to move research out of the labs and into the marketplace.

According to the Association of Universities and Colleges of Canada, universities – the country's second largest performer of research behind the private sector – are now a \$34 billion enterprise, undertaking some \$11.9 billion worth of research activities last year. Moreover, some 55 to 60 percent of that funding came from external sources, with the federal government alone investing some \$3.1 billion.

The investment is, without doubt, providing research that is excellent, novel and relevant. The challenge, however, is finding a direct path to innovation. The question remains, how do we, collectively, transfer that research – the knowledge – into value that benefits the economy? How do we bridge the innovation gap between basic research done at universities and the more applied needs of businesses and industries that are competing on the global stage?

The Jenkins Report paid tribute to Canada's strong foundation to

building success in the knowledge economy, but also noted that we lag behind other developed countries in business innovation. To bridge this innovation gap, our universities have a vital role to play.

Universities need to be the anchor for technology development, education and workforce training. As the knowledge creators, they need to work with their partners in government and industry to create the kinds of innovation clusters that will drive Canadian competitiveness.

Thankfully, we are seeing more and more of these clusters developing around the country. In Hamilton, for example, the McMaster Automotive Resource Centre (MARC), at the McMaster Innovation Park, has become the go-to place for automotive industries to tap into the expertise of McMaster's research community, allowing our students to engage in real-world R&D projects. It's ideally located next to the country's premier materials research facility, CANMET, contributing to

our critical mass of expertise in this area.

Universities need to create and embrace a culture of innovation. While that sounds rather simple and obvious, the practical aspect is somewhat more cumbersome, as it requires a cultural shift in thinking and doing.

We need to develop programs that encourage entrepreneurship at every level – from undergraduate students to tenured faculty and everyone between. But it's far more than changes to the curriculum; we need to work with our community partners to develop the entire innovation ecosystem, including funds, mentors and incubation and accelerator space. Many universities and communities are finding success in this type of model.

At McMaster, we're seeing the benefits first-hand through our work with the Innovation Factory, our Regional Innovation Centre. And, we're expecting more success with The Forge – a campus linked accel-

erator funded, in part, by the Province of Ontario – a dedicated space that will fast-track the growth of new ventures contributing to the local economy and producing the next wave of technology-driven companies.

Partnerships with industry and governments have become commonplace for Canadian universities over the past couple of decades, but we need a more concerted focus on international partnerships, which are proving to be of critical importance. At McMaster, we've spent considerable time identifying targeted areas where collaborations make sense for all parties, where there are mutual benefits in terms of talent, training, R&D, and technology and knowledge transfer.

Case in point: in a unique collaboration with Germany's Fraunhofer IZI, and with support from government partners, we are building a state-of-the-art biomedical engineering and advanced manufacturing research centre (BEAM), focusing on cell therapy manufacturing and

diagnostics. It's yet another example of using university research for economic and social benefit.

But the benefits don't end there. These types of collaborations allow both our graduates students and researchers exceptional opportunities, giving them access to the latest technologies, best practices and international markets.

The role of Canada's universities in research and development on the international stage cannot be underestimated. We are the conduit to connecting the knowledge producers with those who have the infrastructure and capacity to commercialize our knowledge and, ultimately, with the end users – the global consumer.

The funding programs are in place – from traditional granting agencies, to the Canada Foundation for Innovation, to FedDev and provincial programs alike. It's up to universities to capitalize on these programs, to build on our research excellence and create the requisite cultures of innovation and entrepreneurship.