

ACTION FILE

Commercialization



Association of Universities
and Colleges of Canada



Association des universités
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Commercialization

Through research, intellectual property protection and management, securing venture capital, marketing and prototype development, Canada's universities play a key role in commercializing university research. As the source of one-third of all research and development activity in Canada and a third of all R & D jobs, Canadian universities and their knowledge transfer activities are vital to Canada's prosperity.

The continued growth of Canada's knowledge-based economy will require collaboration and investments in university research by the public and private sectors and university partners. This is especially important for Canada, which leads G-7 countries in terms of industry-funded R & D work subcontracted to universities and has \$1.3 billion in federal research funding.

In recent years, the importance of supporting the commercialization of university research has been recognized by the federal government and many provincial governments. For their part, university presidents have committed through the Association of Universities and Colleges of

Canada to triple their commercialization performance, assuming appropriate levels of support and complementary actions from government and industry. In particular, the federal government must deliver on its commitment to increase funding for research through the granting agencies and increase support for the indirect costs of research to a level of 40 percent of the direct costs of research. Likewise, the private sector must address the challenge of developing its receptor capacity, especially among small and medium-size enterprises.

Canadian university presidents believe that they can collectively achieve their goal of tripling performance because they have already invested significant resources in commercialization activities and are beginning to reap the benefits of these long-term investments. In many respects, Canadian universities are already achieving impressive results even when compared to their American counterparts, which benefit from a more receptive business environment and a longer history of engagement in commercialization activities.

This document illustrates the wide range of actions that universities are taking and will need to pursue in order to build on their collective success in commercializing university research. While the scope and intensity of these

actions may differ according to each institution's evolution and priorities, together these actions enhance the quality and quantity of commercialization of university research across the country. In general, the actions fall into five categories: 1) investing in technology transfer infrastructure; 2) developing expertise and communicating the benefits of commercialization; 3) promoting the disclosure

of intellectual property; 4) bringing that intellectual property to market; and 5) communicating results and assessing progress. The commercialization of university research is one among many elements of knowledge transfer to which universities are firmly committed. Other vital elements of knowledge transfer include university graduates, community engagement, public policy engagement and consulting services.

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Note on data:

2001 data are drawn from a draft of the Statistics Canada 2001 Survey of Intellectual Property Commercialization in the Higher Education Sector.

1999 data are drawn from Statistics Canada's Survey of Intellectual Property Commercialization in Higher Education Sector, 1999, released in May 2000.

Investing in technology transfer infrastructure

Canadian universities are making significant investments in the physical and human resources required to manage the intellectual property developed by researchers and students on their campuses. In 2001, 77 universities and university-affiliated hospitals reported to Statistics Canada that they were actively facilitating the transfer of technology and were collectively investing more than \$30 million in operational expenditures, research parks and business incubators. These expenditures continue to grow. Almost all of these institutions have an office of research services and some combination of an industry liaison office, a business development office or a technology transfer office. These facilities are crucial to ensure universities' commercialization success. The technology transfer staff actively manage the development, protection, promotion and commercialization of their institutions' intellectual property.

Universities' approaches to the creation and financing of their technology transfer offices are as diverse as the universities themselves. Some institutions, such as Simon Fraser University, manage their IP internally through technology transfer offices reporting to the university's vice-president, research. Others have chosen to manage their intellectual property through separate non-profit entities. Queen's University, for example, established PARTEQ Research and Development Innovations in 1987 as an independent corporation controlled by a board of directors drawn from both the university and industry. A third approach is used by those such as the University of Victoria, which manage their commercialization activities through for-profit corporations with independent boards of directors and shareholders.



Some universities which lack the critical mass required to establish their own facilities find it beneficial to partner with other institutions in the use of technology transfer facilities to minimize the cost and maximize the returns on investment. These collaborative efforts usually take place among affiliated institutions or between smaller and larger institutions located within the same region. In some cases, universities join a larger consortium as a transitional strategy prior to establishing their own technology transfer offices. In most instances, however, collaboration proves to be an effective and practical long-term solution for offering commercialization services to a smaller pool of researchers. Atlantech Network, a dedicated network of technology commercialization officers from 11 universities in the Atlantic region, is one example of a joint effort to assemble a critical mass of expertise in technology transfer. A second example, Univalor, provides commercialization services to Université de Montréal and its affiliates, including HEC Montréal, École Polytechnique de Montréal, and Hôpital Sainte-Justine.

Some provincial governments are working cooperatively with universities to chart a provincial strategy for managing university-based technology transfer. For example, the 18 universities in Quebec are pooling their technology transfer resources into four commercialization corporations operating under the umbrella of the province's Valorisation Recherche Québec. A non-profit organization created by the provincial government, VRQ provides financial support to university research in Quebec. The government initially funded VRQ with \$100 million for the period 1999 to 2006. Additional funding of \$120 million was later provided for the period 2000 to 2004.

In addition to investing in technology transfer offices and personnel, Canadian universities are also important partners in the development of industrial parks, where companies using new technologies developed at universities might be situated, and incubators, which are facilities where new start-up firms can develop. In 2001, Canadian universities and university-affiliated hospitals invested more than \$1.9 million to develop and manage 17 incubators and industrial parks, in addition to significant in-kind investments such as donations of land or long-term leases, faculty and staff time, and other contributions.

University-affiliated research parks are encouraging collaboration between the university research community and local entrepreneurs through physical proximity and joint services. University incubators, for their part, are assisting entrepreneurs in the formative years of new ventures and



providing them with access to the research facilities and expertise of universities. To ensure that these research parks and incubators are successful, universities are working collaboratively with public and private sector partners to leverage development funds, build networks and maximize return on investment.

At Innovation Place, one of the oldest university-based research parks in Canada, the University of Saskatchewan has been facilitating private sector, university and public sector partnerships for 25 years. Building on local industrial and university-based strengths in agriculture, information technologies, resources and the life sciences, the research park continues to grow strongly and to make important contributions to the local and regional economy. There are now 116 organizations employing 2,000 individuals located in the 18 buildings of the facility. Together, these organizations contribute more than \$248 million to the local economy every year.

Recognizing the value of joint initiatives, many universities are in the process of seeking partners to develop ventures or expand existing facilities.

For example, McMaster University has initiated a major study in partnership with the city of Hamilton to develop a Regional Bio-Sciences Cluster Strategy. This strategy

includes research and development facilities, an incubator, and a private sector anchor tenant. For its part, Memorial University has created a Campus Incubation Consortium that will support entrepreneurship in the local research community. Some of the members of the Consortium include the NRC-Institute for Marine Dynamics (or IMD), the Enterprise Gateway (a support centre for students interested in developing an entrepreneurial venture) and the new INCO Innovation Centre.

In Toronto, the Medical and Related Sciences Centre will be a convergence facility for life science, information technology and other related disciplines. The MaRS Centre is an initiative of the MaRS Discovery District, a not-for-profit corporation that brings together Canada's academic, scientific and business communities to facilitate the commercialization of research. It will provide a suite of programs and services to assist start-up companies through the stages of commercialization.

Also under way is a new Accelerator Centre to be located within the University of Waterloo's Research and Technology Park. The park is expected to employ as many as 6,000 people and have a regional economic impact of \$5 to \$10 billion. Phase 1 of construction of the Research and Technology Park began in June 2002 with occupancy planned for early 2004. The 2,000 sq. m. Accelerator Centre will provide a home for small start-ups, nurturing these embryonic companies through their first years of growth. The start-up businesses will benefit from a shared office concept and services, flexible leases, and access to mentors, as well as below-market rental rates. In addition, they will have access to resources for help with business

plans, marketing, accounting, legal matters and financing.

Whether through incubators, research parks or technology transfer offices, universities are continuing to make the investments in infrastructure that are necessary to provide quality commercialization services to their researchers; leverage partnerships with public and private sector funders and developers; and

achieve their overall commercialization targets. These investments are most significant, not for their dollar figures, but for their emphasis on generating an environment that is

Universities provide leadership by catalyzing the commercialization process through incubators, research parks or technology offices.

conducive to innovation, to knowledge exchange and to fostering a learning environment across disciplines. In this way, universities provide leadership by catalyzing the commercialization process.

Developing expertise and communicating the benefits of commercialization

Universities recognize that they must match their investments in the physical infrastructure for commercialization with a strong commitment to developing the expertise of their technology transfer specialists and to communicating the benefits of the commercialization of university research to university researchers and external partners. In contributing to the education and training of technology transfer experts, universities ensure that these specialists are better able to work with university researchers to exploit more innovations with commercial potential. These specialists, given their appreciation of both university and business cultures, play important roles in facilitating interaction among government, business and university partners.

There is a need for more technology transfer experts and for greater investment in the upgrading of their knowledge and skills as universities continue to enhance their commercialization activities. The number of technology transfer employees on campuses currently varies from as few as one or two full-time equivalent employees to as many as 30; on some campuses there are none. The national average in 2001 was 3.8 FTEs, a number which is growing rapidly as more and more universities make additional investments in the human capital required to manage universities' intellectual property. While the number of FTEs dedicated solely to commercialization activities is relatively small, universities also draw on a wider pool of expertise, both from faculty and administrative staff within the university as well as from outside experts in industry and government.

Increased investment in the number of staff dedicated to technology transfer on campuses will improve the ability

of Canadian universities to capitalize on university research activities with commercial potential across the country. More staff in and of itself is insufficient, however; universities must confront an on-going challenge to attract, educate, train and retain staff for what has become a new profession. Technology transfer officers require a wide variety of skills including a deep appreciation of the research field; proven business development and management experience; fluency in financial investment strategies; in-depth understanding of the legal aspects of intellectual property management; and exceptional interpersonal and communication skills. Given the great demand for employees with such specialized and diversified skills, there is growing pressure for universities to offer competitive salaries and a stimulating and well-resourced work environment to compete successfully for their services.

In light of the rapid expansion in technology transfer offices over the last decade and the growth anticipated over the next 10 years, universities are relying on a wide array of strategies to strengthen their commercialization roster.

As one part of their strategy to bolster technology transfer

expertise on university campuses, many universities are taking advantage of the National Research Council's Industrial Research Assistance Program. This program provides innovation assistance for small and medium-sized Canadian enterprises (SMEs) and links these SMEs with researchers in universities and the NRC. IRAP's Industrial Technology Advisors work closely with university

industry liaison officers. For example, at the University of Western Ontario, IRAP Industrial Technology Advisors bolster the technology transfer capacity by 25 percent.

Universities in western Canada are partnering through a consortium called WestLink to build technology transfer skills and awareness. The consortium offers seminars and workshops on commercialization for researchers, technology transfer staff, industry and the general public. WestLink has also developed an innovative Technology Commercialization Internship Program. Interns gain direct exposure to and experience with three types of employers over the course of two years: a university technology transfer or commercialization office; a venture capital firm; and a spin-off

Provision of knowledge transfer services may well become another competitive edge for universities competing for world-class researchers.

company or business. A successful pilot program was launched in 2001 and a second round of funding for the program began in April 2003. In another example of partnering, universities in Quebec and Université de Moncton in New Brunswick have worked together to establish a French-language technology transfer pilot project to provide training for an initial cadre of 20 commercialization specialists.

These investments in developing technology transfer expertise take on new importance in light of the unprecedented faculty renewal and growth in graduate student enrolment now under way across the country. As more and more researchers and graduate students planning to engage in research arrive on Canadian campuses, universities must be equipped to provide the full range of research support services including expertise in the protection, promotion and commercialization of intellectual property. The availability of these services and the expertise of the professionals who provide them will increasingly influence faculty and students' evaluation of the quality of the Canadian university research environment. As competition for innovators escalates, the ability to provide knowledge transfer services may well become another competitive edge for universities seeking to attract and retain world-class talent.

Promoting the disclosure and protection of intellectual property

Canadian universities create a significant amount of intellectual property and need to be well positioned to capitalize on their relationships with industry to commercialize that IP when the opportunity presents itself. Intellectual property represents the "raw materials" of the technology transfer process. Identifying the most promising opportunities for commercialization through the disclosure process is a critical first step in a technology transfer process that also includes the following elements:

- protecting IP with patents;
- promoting IP through market studies, business plans, feasibility studies;
- scale-up plans, demonstrations and prototype development; and
- transferring IP successfully to the market by licensing it to an existing company or to a spin-off company especially created for that purpose.

Identifying IP through disclosure is essential because universities can only protect, promote and commercialize



IP developed on their campuses if they are aware of its existence. Investment in technology transfer personnel is therefore critical not only to increase the likelihood that innovation will be commercialized but also to ensure that it is identified in the first place. Promoting disclosure requires technology transfer staff to develop relationships with promising researchers and gain a thorough understanding of their work while increasing the awareness of the research community as a whole about the benefits of commercialization. By doing so, technology transfer staff encourage researchers to disclose any innovation offering a real market potential. At the same time, they educate researchers to ensure that disclosures are manageable and are limited to those most likely to offer commercialization potential. Finally, disclosure also allows universities to manage the potential conflict of interest between publicly funded research support and commercialization activities aimed at private gain for researchers.

In 2001, researchers in Canadian universities and their affiliated hospitals reported more than 1,100 inventions, an increase of 24 percent from the previous survey in 1999. Of these, 682 were protected through patents and other means, a 24 percent increase over 1999. Moreover, many sources indicate that the number of disclosures in Canadian universities is still growing. For instance, over the fiscal year 2000-01, the University of Calgary reported a record number of technology disclosures, for a third consecutive year.

As the number of disclosures per year increases, so do the number of patents filed by Canadian universities and university-affiliated hospitals. In 2001, universities filed

932 patent applications, a 42 percent increase over 1999; from these applications, more than 381 patents were issued. Canadian universities hold well in excess of 2,100 patents that they have acquired over the years.

Some universities in Canada have already developed research niches in terms of disclosures and patenting. For example, universities in British Columbia are leading centres of life sciences and biotechnology, working closely with partners at the local, provincial and federal levels to facilitate the commercialization of research. Together, the University of British Columbia, Simon Fraser University and the University of Victoria have spun off more than 60 biotechnology firms. A 2002 study conducted by the Vancouver Economic Development Commission found that biotechnology firms contributed to a significant cluster of high technology in the Vancouver area.



Technology transfer offices at universities have also gained a much improved understanding of the legal aspects of the commercialization process, either by developing in-house expertise or through the use of outside counsel. These offices now provide expert legal assistance in the patenting process, often with in-house registered patent agents, and offer advice on how best to protect researchers' intellectual property. As an example of how these offices operate, the University of Manitoba has partnered with a local patent agent to provide in-depth training regarding the patent process to office staff. The university has hired additional intellectual property analysts to enhance its outreach capacity to researchers. The additional staff will focus on providing newsletters, training workshops and seminars on the subjects of protecting intellectual property and undertaking technology commercialization.

Researchers benefit from the expertise that these offices provide. For example, a cell biologist at McGill University credits the institution's Office of Technology Transfer with helping him commercialize his research into new cancer therapies. The office provided support in the patenting process as well as assistance in creating a spin-off company, Adherex.

Bringing intellectual property to market

As demonstrated in previous sections, Canadian universities are making considerable efforts to create an environment that is ripe for the commercialization of university research. The goal is for universities to contribute to the social and economic development of their communities and to help Canada become a more innovative society. In terms of commercializing research, this means bringing as much of the intellectual property as universities can to the market.

Before a patented innovation can be effectively brought to market, Canadian universities must invest financial and human resources to develop the value of their intellectual property portfolios. Adding value to an innovation before it is sold or licensed is a key element in the management of intellectual property, given the extra benefits often secured. For example, in 1989, UBC created the Prototype Development Program, now considered a hallmark of the university's technology transfer activities. The program heightens the market value of university technologies by undertaking proof-of-concept projects, developing prototypes, examining questions of scale-up and manufacturability, studying market potential and preparing business plans. Once these initial market assessments are completed, the process of bringing the technology to market proceeds to the next step. The Canadian Institutes of Health Research and the Natural Sciences and Engineering Research Council of Canada are augmenting this part of the technology transfer process in universities through new, competitive programs that provide funding for proof of principles and early technology development.

Licence agreements with existing companies are the preferred means of bringing IP to market for many universities. In negotiating licence agreements, the technology transfer office or its equivalent and the faculty members involved in the research seek to identify an existing company with the appropriate skills, knowledge of the market and expertise to transform the intellectual property into a successful product or service. When no such company can be found, the technology transfer office will often collaborate with

university faculty and venture capitalists in establishing a new spin-off company and negotiating an equity stake for the university, in exchange for a licence on its IP.

In 2001, Canadian universities and university-affiliated hospitals awarded 354 new licences, an increase of 53 percent from 1999. The total number of active licences in 2001 was 1,424, an increase of 22 percent. Royalties from licences to universities amounted to \$47.6 million in 2001, an increase of more than 126 percent. One such licence, from McMaster University, is for the use of optical laser technology to help engineers in detecting structural problems in bridges, gas and oil pipelines, buildings and dams. Bacterial research at the University of Toronto has yielded technology that has been licensed to treat various types of cancer. Software developed by researchers at the University of New Brunswick is used to help create a high-resolution colour image from satellites sensors. This software preserves the original colour fidelity and allows for better visualisation and interpretation of satellite images. The University of Saskatchewan has licensed technology with potential to help treat spinal cord and brain injuries by preventing paraplegia and associated long-term damage by limiting secondary damage from inflammation that follows such injuries.

To address, in part, the limited receptor capacity of domestic industry, Canadian universities and university-affiliated hospitals have also become very adept at creating spin-off companies. As of 2001, universities and their affiliated hospitals have created a total of 680 companies – an increase of 44 percent in two years. In 2002, these spin-off companies are estimated to have total revenues of \$2.58 billion and to employ almost 19,000 people. Of these 680 spin-off companies, only 11 are known to be controlled outside Canada.

Canadian universities' success with spin-offs is not limited to establishing the companies or licensing the innovation, but also extends to facilitating the long-term growth of the firms. For example, the University of Alberta provides on-campus incubation and laboratory space and access to business services to new spin-off companies. Its investments in spin-offs have paid off with the creation of eight new start-up companies last year alone. This brings the university's total to 76 spin-off companies



created since 1963. Collectively, these spin-offs are generating revenues of more than \$43 million per year and employing more than 900 highly qualified personnel. The university's eight largest spin-off companies have a market capitalization in excess of \$1 billion.

Universities' spin-offs include such companies as QLT PhotoTherapeutics Inc., a UBC spin-off biotechnology company developing therapies to treat cancer and eye diseases. In 2002, QLT posted revenues of \$110 million US.

Other spin-offs include Sipro Lab Telecom, with a focus on voice compression technologies for the telecommunications industry, spun off from Université de Sherbrooke; ImmunoVaccine Technologies, which markets vaccines to control domestic animal and wildlife populations, spun off from Dalhousie University, and Biosyntech which specialises in the discovery, development

and manufacturing of injectable biomaterials for tissue repair and therapeutic delivery, spun off from École Polytechnique de Montréal.

In most instances, the university's portion of revenues is largely reinvested in technology transfer services. Consequently, while licences do result in some net revenues for the universities, the main benefit is the social and economic returns

University spin-off
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to Canadians of the commercialized research. For example, the University of Western Ontario licences software on a non-exclusive basis to manufacturers of hearing aids. The software is used to fine tune the hearing aids to meet users' needs and is particularly useful for young children who cannot provide the same feedback as adults. Although the income from this technology is limited, the societal benefits are significant.

Communicating results and assessing progress

Canadian universities are committed to assessing their progress and comparing their achievements with those of key competitor countries. To facilitate these comparisons, they participate in a domestic survey of commercialization results conducted every two years by Statistics Canada. Many universities are also active members of the Association of University Technology Managers, based in the U.S. As part of their membership in the association, Canadian universities participate in the annual AUTM survey, which provides a further basis of comparison on an international level.

In addition, many universities use their communications offices to promote their achievements through news releases, publications, Web sites or other media. These initiatives illustrate the efforts universities are taking to communicate the results of their work and to assess their progress in meeting the goals that have been set with respect to the commercialization of university research. In particular, using 1999 as a base year, Canadian universities are tracking their commercialization



activities with an eye towards meeting their collective goal of tripling their commercialization performance. The most recent results of Statistics Canada's survey on intellectual property, the only national source of data on the commercialization of university research in this country, provide an encouraging summary of the advances in commercialization seen on Canadian university campuses in recent years. For example, disclosures increased 24 percent; new patent applications are up 42 percent and licence revenues have increased by 126 percent.

Activity	1999	2001	% Change
Universities and affiliated hospitals managing IP	63	77	22%
Inventions disclosed	893	1,105	24%
Inventions protected	549	682	24%
Patents held	1,915	2,133	11%
Patents issued	349	381	9%
New patent applications	656	932	42%
Active licences	1,165	1,424	22%
New licences	232	354	53%
Licence royalty revenue (\$ thousand)	\$21,100	\$47,584	126%
Dividends & equity (\$ thousand)	\$54,560	\$45,120	-17%
Number of spin-offs	471	680	44%
Spin-off revenues (\$ millions)	n/a	\$2,580	n/a
Employment in spin-offs	n/a	19,243	n/a

A comparison of Canadian and American commercialization results provides a further indication of the relative success of Canadian universities in commercializing their research results. The AUTM survey, which includes Canadian and U.S. universities, provides a convenient means of making the comparison. The most recent survey included 22 Canadian universities. Its findings suggest that the universities participating in the survey have considerably improved their collective performance over the last decade. Moreover, in recent years these institutions have produced results that compare well in a number of areas with those of the U.S.

A study for the Canada Foundation for Innovation, meanwhile, also found that the commercialization results achieved by 15 of the largest research institutions in Canada and the U.S. are similar, notably in terms of invention disclosures and licences executed. In 2000, the Canadian universities disclosed as many inventions and executed as many licences

or options on their intellectual property as their American counterparts. Where the two groups of institutions differed significantly was in the number of spin-off companies they created and in the revenues generated by the licensing of their intellectual property.

Canadian institutions included in the analysis created 2.5 times more spin-off companies than their American counterparts, but received significantly less income per licence. While it is difficult to determine the exact cause of these differences, the relatively limited revenues generated by these Canadian universities' licensing activities and their relatively greater investment in spin-off companies are likely inter-related. Both appear to result, at least in part, from the limited receptor capacity of industry in Canada.

This limited receptor capacity, particularly among smaller and medium-sized enterprises, has significant financial consequences for universities. The financial risks to the university in creating spin-off companies are often higher, because spin-offs are frequently confronted with managerial and cash-flow challenges that can jeopardize the successful exploitation of their intellectual property. Moreover, according to AUTM, "up to 10 times more effort is required to participate in the formation, licensing, and ongoing relationship with a start-up as with an existing company", which adds to both the financial risks and the investments required for success.

In contrast, the licensing route often poses fewer risks to the university as most of the investments and risks are assumed by the private-sector partners. At the same time, licences can generate revenues immediately and for a longer period of time, whereas spin-off companies will generate profits only when their shares are sold in part or in their entirety at some often distant point in time.

The licensing revenues obtained by universities may also reflect the stage of development of their technology transfer offices. AUTM has noted that a "10-year barrier" appears to exist, in which no Canadian technology transfer program in existence for fewer than 10 years had licence income greater than \$1 million US. This 10-year barrier appears to exist both for Canadian and American institutions, as 92 percent of American universities with a technology transfer program of less than 11 years of age also have incomes of less than \$5 million US.

It is likely that this 10-year barrier affects relatively more Canadian than American institutions given the recent

development of the technology transfer network in this country. Almost half of Canadian universities responding to the latest AUTM survey had technology transfer programs less than 11 years old. Conversely, only two percent of Canadian universities have technology transfer programs that have been operational for more than 20 years.

As additional expertise is acquired, more resources are attracted and the challenge of industry's receptor capacity is addressed, universities will be better positioned to achieve their target of tripling their commercialization performance. This being said, universities are already achieving significant gains in commercialization and will continue to network strategically to organize for success and to learn from each other's experiences. This networking is fostering the sharing of best practices among universities and across sectors and is producing new ways of working together. Most importantly, the collective actions taken by universities are enabling them to develop commercialization portfolios that demonstrate more depth and diversity, ultimately leading to even greater social and economic returns for Canadians.

Conclusion

Canadian universities have shown remarkable progress in recent years in the commercialization of university research. In the past, attempts to identify promising technologies and work with researchers to bring products to market were generally ad hoc. With the creation of technology transfer offices at many institutions, a more rigorous approach to commercialization has emerged which already demonstrates significant promise.

Working together with the public and private sectors, Canadian universities can point to growth in patents, spin-offs and licensing revenue. In addition, researchers and their partners have begun to think increasingly about the knowledge transfer and commercialization opportunities that their work has to offer. With their collective commitment to triple their commercialization performance, Canadian university presidents show their confidence in the capacity of their institutions to build on their achievements to date and to reap greater benefits for Canadians.

Resources

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Additional descriptions provided by universities with regard to their commercialization efforts can be found in, *Commercialization Vignettes*, available from the Association of Universities and Colleges of Canada.