

Université de Sherbrooke

Summary of the Strategic Plan for Canada Research Chairs (CRC) and CFI

2016

Strategic vision and objectives

Université de Sherbrooke's Strategic Plan, *Réussir 2010-2015* (revised and extended to 2017 since), identifies five research priorities: To open and expand our borders through internationalization and decompartmentalization of traditional approaches and disciplines; To renew our distinctive approach in teaching, research and creation (student co-op program, partnerships); To rally the university community behind student achievement; To contribute to the social, economic and cultural development of Québec (partnerships and entrepreneurship); To build a quality living environment.

Réussir 2010-2017 has a fundamental objective regarding research development: to position the University favorably in the new context created by the emergence of open innovation and governmental innovation strategies. The synergy between basic and applied research and the will to pursue strategic partnership opportunities with private or public partners are key elements of our approach. Thus, the Université intends to increase its research collaborations (1) to reach the critical mass needed to develop major projects, (2) to play a major role in the national system of innovation at the regional, national and international levels by ensuring an efficient flow of knowledge transfer from the laboratory to the user that provides a maximum of opportunities, and (3) to improve the training and the work-force readiness of our highly qualified and innovative students.

Selection of Key Themes

The selection of strategic research priorities or « key themes » by the faculties and the Université is crucial if we want to increase the scientific and socio-economic impact of our research. To be strategic, we must take into account the following factors: socio-economic relevance, multidisciplinary, a just equilibrium between basic and applied research, and alignment with governmental objectives. These themes must be aligned with the priorities of both Québec's Strategy for Research and Innovation and Canada's Science and Technology Strategy. We therefore need to make choices that will position the Université favorably on the chessboard of national and international research without neglecting those areas of excellence that have made our reputation. A list of these key themes is given in Table 1.

Table 1 – KEY RESEARCH THEMES	
Faculty of Medicine and Health Sciences	<ul style="list-style-type: none"> ➤ Cancer biology, prognosis and diagnosis ➤ Inflammation and pain ➤ Diabetes, obesity and cardiovascular complications ➤ Aging ➤ Health - populations, organisation of health services, best practices ➤ Mother- child (emerging theme)
Faculty of Sciences	<ul style="list-style-type: none"> ➤ Functional materials for the future ➤ Quantum information ➤ Pharmaceutical and medicinal chemistry ➤ Environment and ecology ➤ Molecular biology and genetics ➤ Intelligent habitats for the well-being of the society of the future
Faculty of Engineering	<ul style="list-style-type: none"> ➤ Materials ➤ Energy ➤ Health (new technologies) ➤ Transportation ➤ Sustainable development ➤ Security
Faculty of Physical Activity Sciences	<ul style="list-style-type: none"> ➤ Neuromechanics and ergonomics ➤ Educational interventions in physical activity and health ➤ Kinesiology, health and aging
Faculty of Arts, Humanities and Social Sciences	<ul style="list-style-type: none"> ➤ Dynamics of communities and social networks ➤ Culture, language and intercultural relations ➤ Governance, ethics and power ➤ Observation and modeling of the environment ➤ Aging
School of Management	<ul style="list-style-type: none"> ➤ International development, public economy and taxation ➤ Entrepreneurship and innovation ➤ Brand name management and responsible consumption ➤ Responsible financial management and sustainable development ➤ Competitive and business intelligence ➤ Work organisation, occupational health and safety
Faculty of Education	<ul style="list-style-type: none"> ➤ Educational and socio-educational intervention ➤ Pedagogy of higher education ➤ Management of school organisations ➤ Behavioral difficulties and social adaptation in children and adolescents ➤ Lifelong transitions and learning ➤ Teaching of science, technology and mathematics ➤ Continuity in acquiring reading and writing skills ➤ Career paths and teaching practices in vocational training
Faculty of Law	<ul style="list-style-type: none"> ➤ Vulnerability and protection of vulnerable persons ➤ Governance ➤ Democracy, justice and social life ➤ Environment et sustainable development

Canada Research Chairs (CRC) distribution

The vast majority of the Université’s CRC are linked to the key research themes or emerging priorities (see Table 2). The selection of CRC candidates follows an open and transparent process that promotes the recruitment of chairholders of the highest quality.

Table 2 – Distribution of Canada Research Chairs		
Research Themes	Number of CRC*	
	Tier 1	Tier 2
Science and Engineering		
Materials	2	2
Quantum information	2	
Transportation	1	
Health (new technologies)	2	
Environment and ecology	1	3
Energy		2
Molecular biology and genetics		1
Low dimensional topology		1
Sub-total	8	9
Medicine and Health Sciences		
Health - populations, organisation of health services, best practices		1
Cancer biology, prognosis and diagnosis	4	2
Aging	1	1
Inflammation and pain	1	
Diabetes, obesity and cardiovascular complications		1
Mother- child	3	
Sub-total	9	5
Humanities and Social Sciences		
Aging		1
Culture, language and intercultural relations		1
Governance, ethics and power		1
Behavioral difficulties and social adaptation in children and adolescents	1	1
Sub-total	1	4
TOTAL	18	18

* As of September 1, 2016, taking into account plans for renewals and an allocation of 38 CRC (2 CRC in science and engineering are currently being advertised).

All chairs must be advertised externally and all candidates must be approved by the Université's Executive Committee. Half of the new chairs must be offered to external candidates. The Université expects that the applications meet the equal employment opportunity requirements for women. Considering the limited resources of the CFI's John R. Evans Leaders Fund, the Université recommends that only new CRC holders apply to this program, with the priority given to the candidates for whom the acquisition of major equipment is essential to their recruitment.

Research Development

Several areas of research excellence at Université de Sherbrooke will soon require upgraded equipment and more research space, notably in quantum information science and in materials characterization. New infrastructure is also required to allow our researchers in medical imaging, environmental science and personalized medicine to innovate and remain competitive.

Réussir 2010-2017 emphasizes the importance for the Université to play a major role in the social, economic and cultural development of Quebec. Partnerships with the private sectors are essential to this objective. Examples include the creation of (1) the Advanced Technology Centre BRP - Université de Sherbrooke and (2) the Interdisciplinary Institute for Technological Innovation (3IT) in the Parc Innovation de Sherbrooke. The 3IT aims to increase university-industry synergy by offering world-class research facilities to public and private organizations interested in achieving technological developments, particularly in the areas of health, information and communication, transportation, and energy. Finally, the Université is working on the creation of an Energy and Renewable Resources Research Centre in the Parc Innovation.

Since its creation in 2011 to encourage student entrepreneurship, Université de Sherbrooke's Accelerator for the creation of technological enterprises (ACET) has been devoted to selecting, training and supporting start-up technology-based companies, creating high quality jobs and transforming projects into businesses which will support a knowledge-based economy. In 2016, more than 50 companies have been started, with a value estimated at \$62M, and nearly 170 jobs have been created in the region. ACET will continue to facilitate the commercialisation of Université de Sherbrooke's research discoveries towards health care, industry or directly to consumers.

Innovation, Partnerships, Entrepreneurship

Université de Sherbrooke understands that playing a leadership role in bringing innovation to the private and public sectors, through entrepreneurship and partnership, requires a highly integrated interdisciplinary research activity and that we need to bring together students and professors from various backgrounds to develop successful ventures. To succeed, Université de Sherbrooke has deployed a global Innovation, Partnership and Entrepreneurship (IPE) Strategy with three clear goals over a 10 year period: (1) to triple the amount of research funding from the private sector; (2) to double the number of inventions that reach a commercialisation phase; and (3) to double the number of start-up companies launched each year. To achieve these three goals, our IPE strategy is structured around several key elements:

- focusing our efforts on target areas of excellence (Quantum technologies, Medical Technologies, Information Technologies, Transportation, and Renewable Energies) and increasing our international networking;

- integrating seasoned veterans from industry into our faculties and broadening access to programs that connect researchers with entrepreneurs and industry leaders;
- providing small grants to support proof-of-concept demonstration and prototype fabrication to accelerate the commercialisation phase of innovative technologies;
- supporting entrepreneurship and partnerships through our cooperative teaching model;
- building a Creation Studio for engineering students' projects and making our laboratories and research and fabrication infrastructure more accessible to industry;
- stimulating and supporting entrepreneurial projects, including interdisciplinary initiatives such as connecting medical students with engineering students to develop innovative medical technologies aimed at real health-care issues;
- strengthening our partnerships with economic development organisations;
- participating actively in regional initiatives that promote innovation and creativity;
- training the next generation of entrepreneurs through new programs that cross disciplinary and department boundaries and supporting environments that stimulate creativity and innovation;
- working upstream with students from high school and elementary school to motivate and support them for careers in STEM fields and as entrepreneurs.

Université de Sherbrooke revealed its colours as soon as 2014 when it created the first Vice-President – Research, Innovation and Entrepreneurship position in the country to better disclose its unique partnership-based ecosystem, which encompasses both fundamental and applied research, technology transfer and social innovation, and the entrepreneurial spirit that characterises her.