

2015-2020 Research Development plan

Summary for Canada Research Chair Program

The 2015–2020 Research Development Plan (the “Plan”) is the product of an environment that reinforces the need for new approaches based on collaboration, public-private ventures, and an international outlook. The ability to quickly and effectively capitalize on opportunities to strengthen areas with strong potential and to develop new areas and partnerships by making full use of institutional resources is becoming a major priority.

The 2015–2020 Plan builds upon major infrastructure, including facilities developed within the past five years, such as the *Laboratoire de physiologie intégrative en sciences animales*, *Laboratoire de développement durable des infrastructures publiques*, *Plateforme de génomique intégrative humaine et microbienne*, and *Laboratoire audio-numérique de recherche et de création*.

The Plan continues the high visibility achievements of late, including *Alliance Santé Québec* and *Institut nordique du Québec*. And like its predecessor, it leverages Université Laval’s position as a leader in the francophone world and in sustainable development. The university’s location in a vibrant, outward-looking city further adds to its appeal.

The 2015–2020 Plan ties in closely with Université Laval’s *Horizon 2017* action plan, in terms of research and innovation. These plans, developed following extensive consultation with its community, are based on main provincial and federal funding agencies such as Tri-agency Institutional Programs Secretariat (TIPS) and the Canada Foundation for Innovation (CFI).

Our vision

In order to fully play its role within Québec and Canadian society and the international scientific community, Université Laval will work to consolidate and enhance its stature as a major research and innovation institution that embraces the future and is open to the world. Université Laval will continue to serve as a cornerstone of its community, both through its humanist approach and its ability to educate tomorrow’s leaders, and undertakes to expand the frontiers of knowledge by ensuring its transfer and creating innovative, sustainable solutions.

Strategy

To make this vision a reality, Université Laval has adopted a strategy based on the belief that tomorrow’s solutions to the complex questions of today will emerge from a solid research and innovation base and the interplay between key disciplines :

- 1) Mobilize the Université Laval scientific community around seven major scientific and societal challenges that transcend institutional structures and correspond to our current research strengths and paths to future development ;
- 2) Support research capacity building and dissemination.

Priority 1 : Mobilize around societal challenges

Université Laval wants to play a role in solving societal issues by building on its research and innovation strengths in each of its disciplines, developing high-potential emerging fields, adapting to rapid changes in research, encouraging cross-disciplinary collaboration among its professors, and supporting membership in these communities of interest.

Université Laval is building its research focus areas around seven major societal challenges, and has identified strategic priorities within each focus area that reflect our strengths.

1.1. Create a society where health and well-being are sustainable

Only a comprehensive approach can achieve sustainable health. Such an approach not only requires contributions from every field of health research, but also from virtually every other field of research, including the human and social sciences, arts and literature, the natural sciences, and engineering.

Strategic goals

- Understand the connections between environment and human health;
- Make decisive progress in the treatment of physical and mental disease;
- Leverage the positive impact of nutrition research and improve food security;
- Contribute to the smooth and efficient functioning of the healthcare system;
- Develop innovative strategies for disease prevention and health promotion;
- Harness the power of science and technology to improve health at every phase of life;
- Develop healthcare approaches centered on individuals and their well-being

1.2. Explain how humans develop in their environment

How humans develop in their environment is a particularly complex research area, one where a multidisciplinary perspective is required to develop a more accurate and nuanced understanding.

Strategic goals

- Better understand the individual and support eco-friendly human development;
- Shed light on the multiple individual, social, and occupational facets of human life paths;
- Comprehend the economic dimension of human development;
- Meet the challenge of community-building in a context of demographic and climate change;
- Optimize educational approaches to create the schools of tomorrow.

1.3. Understand societies, their cultures and their arts

Since it was founded in 1852, Université Laval, the oldest French-language university in north America, has earned a reputation for excellence through its contribution to culture and the arts and the innovative research produced by its professors, both individually and collectively, at leading research institutes and centers. As language is central to culture, and Québec is the only French-speaking society in north America, Université Laval has a responsibility to focus on the study of both the facts

and symbolic productions of the language that has helped shape and define Québec's identity and way of being.

Strategic goals

- Develop research at the interface of culture and digital technology;
- Analyze the facts and symbolic productions of language;
- Expand the study of Québec and other francophone cultures, in historical and contemporary contexts;
- Stimulate creative endeavours in the university setting and continue to develop research-creation;
- Study the various dimensions of history and heritage from new methodological perspectives;
- Consolidate the integration of artistic disciplines within knowledge ecosystems;
- Continue to develop new forms of socially relevant expression.

1.4. Model intelligent communities, invent their technologies and their logistics

The society of the future poses a major challenge that inspires professors from every field to join forces and share their visions and discoveries. Intelligent communities demand multidimensional approaches to research and innovation projects that address multiple issues in technology, art, architecture, education, governance, citizens' rights, safety for seniors, food production, transport of people and goods, logistics, societal organization, and communications.

Strategic goals

- Explore social, cultural, economic, and digital challenges;
- Understand social issues in communication;
- Produce a new generation of innovative materials;
- Accelerate the technological revolution, notably in the field of intelligent systems;
- Make significant breakthroughs in data processing, management, and analysis;
- Make major advances in modeling and simulation;
- Develop the intelligent machines and systems of tomorrow.

1.5. Manage and develop natural resources in a responsible manner

The Industrial revolution sparked massive economic growth, but also put tremendous pressure on the earth's natural resources, many of which are non-renewable. To counter this trend, more research-based approaches are needed to inform sustainable natural resource use and management.

Strategic goals

- Enhance our understanding of the living world and the changes that affect it;
- Develop sustainable natural resource management approaches;
- Develop environmentally responsible processes, products, and methods to better produce and consume energy;
- Reduce natural and human-made hazards and enhance ecosystem conservation and rehabilitation;
- Propose sustainable resource development strategies.

1.6. Consolidate and develop northern sustainability

The complex challenges of northern sustainability can only be tackled when professors from wide-ranging disciplines work together with community partners. These challenges encompass everything from remote sensing, autonomous marine monitoring, and the development of materials and technologies adapted for northern infrastructure to questions of public policy, culture, health, and indigenous rights, all of which are informed by the central issue of climate change and its impact on the northern economy, community life, and flora and fauna. Institut nordique de Québec (InQ) is an outstanding example of the university's vision and strategy at work to promote sustainable northern development.

Strategic goals

- Affiner notre connaissance des écosystèmes et de la géographie humaine nordiques;
- Élaborer des stratégies gagnantes d'adaptation aux changements climatiques et de diminution des risques environnementaux;
- Maîtriser les différentes composantes technologiques et économiques du développement en milieu nordique;
- Déchiffrer les enjeux humains et sociaux liés au développement nordique;
- Favoriser l'accessibilité au territoire nordique.
- Refine our understanding of northern ecosystems and human geography;
- Develop effective strategies for adapting to climate change and reducing environmental risks;
- Comprehend the technological and economic aspects of northern development;
- Clarify the human and social challenges related to northern development;
- Facilitate access to the north.

1.7 Engage actively in ethics, sound governance, and social organization

Sustainable health, sustainable northern development, intelligent communities, sustainable resource management, culture and creation, development of humans in their environment: in each of these spheres, UL professors are leveraging their expertise in the name of social progress and working to achieve greater collective wellbeing. And each of these areas of endeavour shares the need for good governance, which is inseparable from ethics, and for forms of social organization respectful of both individuals and communities. One of the great challenges facing us, both today and in the future, is how to live together in societies shaped by immigration where the plurality of values challenges social cohesion.

Ethics, a normative branch of philosophy that addresses real-world problems, is in a period of flux. Université Laval professors are doing valuable ethics research to elucidate contemporary ethical issues in areas ranging from political philosophy and economics to agrifood, and health.

Strategic goals

- Elucidate contemporary ethical issues;
- Analyze in greater depth the foundations of governance, including risk management and entrepreneurship;
- Promote citizen participation in democratic life;
- Envision ways of living together harmoniously in societies shaped by immigration;
- Integrate an international dimension into the study of social organization.

Priority 2 : Build research capacity and support the dissemination

Université Laval has chosen four focus areas:

- 2.1 Support and promote excellence in research and innovation;
- 2.2 Stimulate and promote regional, national, and international partnerships and collaborations;
- 2.3 Encourage research through and for training, and promote the achievements of students and post-doctoral fellows;
- 2.4 Encourage and promote innovation.

Université Laval has chosen four focus areas based on institutional excellence, productive partnerships, top-notch programs, and leading-edge innovation. A range of communication tools is used to share the success stories, achievements, and exceptional commitment of UL professors, professionals, and students, acknowledging the quality of UL research, knowledge transfer, and partnerships, and raising the university's profile at home and around the world.

Planning and approval process

The 2015–2020 Plan is a key instrument to guide University's decisions towards major strategic research programs such as the Canada Excellence Research Chairs (CERC), the Canada Research Chairs (CRC) and grants from the CFI. The Plan aims to increase University leadership in research and teaching, to recruit and retain the most talented minds and to benefit from partnerships for the profit of Québec City, Québec Province, and Canada.

In addition to ensuring compliance with the Institution and funding agencies rules, the Office of the Vice-President, Research and Innovation manages and selects all CERC and CRC attributions and CFI grants in collaboration with partnering faculty, department, and affiliated research center. Furthermore, the Office of the Vice-President takes into account the fit with strategic and priority areas as indicated in the 2015-2020 Plan and also considers diversity and gender issues as mentioned in the institutional recruitment policies.