

Fonds de recherche du Québec

Nature et Technologies Santé Société et Culture

THE FONDS AN OVERVIEW



Québec 

THE CHIEF SCIENTIST OF QUÉBEC



Rémi Quirion is the Chief Scientist of Québec. His position at the interface of the three Fonds de recherche enables him to build connections and implement changes that will boost knowledge production and innovation within Québec's research system and, ultimately, extend its influence on national and international levels.

The mandate of the Chief Scientist of Québec is as follows:

- To advise the ministre de l'Économie et de l'Innovation on matters pertaining to the development of research and science in Québec;
- To foster the excellence, position and influence of Québec research in Canada and internationally, especially through partnership development;
- To chair the boards of directors of each of the three Fonds de recherche du Québec, and coordinate issues of common concern and the development of cross-sectoral research;
- To administer the human, material, financial and information resources of the three Fonds;
- To promote careers in research and scientific culture.

THE SCIENTIFIC DIRECTORS



Janice Bailey
Fonds de recherche du Québec -
Nature et technologies



Carole Jabet
Fonds de recherche du Québec -
Santé



Louise Poissant
Fonds de recherche du Québec -
Société et culture



THE THREE FONDS AND A SHARED MISSION

The restructuring of Québec's three research funding agencies in 2011 was aimed primarily at ensuring strong management regarding the support and promotion of Québec research, thus improving Québec's position on the world map of science; fostering and increasing synergies and partnerships between the various research sectors; and increasing the local and international visibility of Québec's public research under a common banner. Together the three Fonds are contributing to the creation of a real knowledge society, renowned for the excellence of its researchers and the quality of its research achievements.

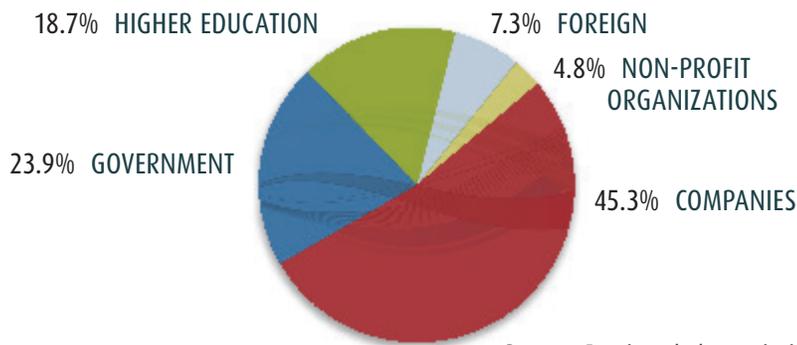
In their respective fields, the Fonds de recherche du Québec – Nature et technologies, the Fonds de recherche du Québec – Santé, and the Fonds de recherche du Québec – Société et culture have the following mandate:

- To ensure the strategic and coherent development of research in Québec;
- To provide financial support for research and for the training of researchers;
- To create any partnerships necessary for fulfilling their mission;
- To promote and provide financial support for knowledge mobilization.

BACKGROUND INFORMATION

In 2018, Québec spent 9.6 billion dollars on intramural research and development (GERD), representing 2.17% of Québec's GDP, compared with 1.68% across Canada as a whole. The chart below illustrates the distribution of GERD expenditure by funding sector in Québec.

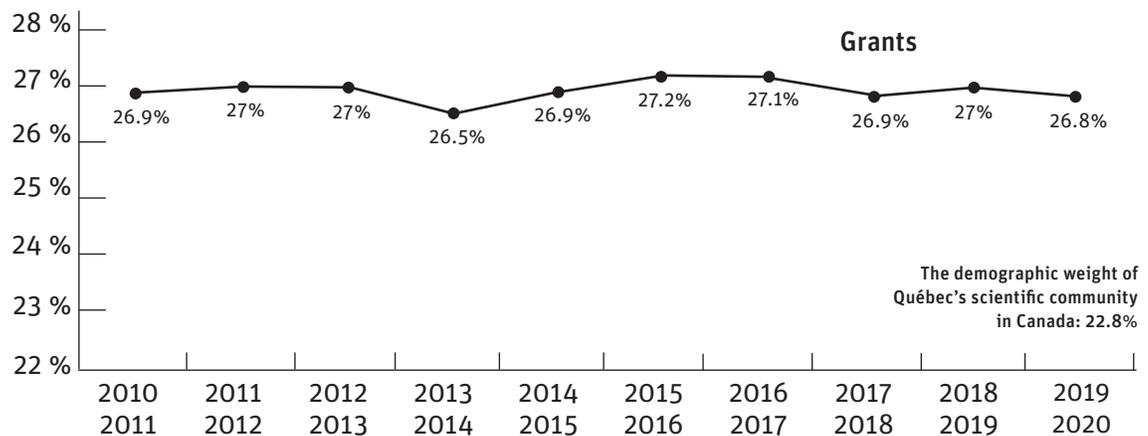
GERD FUNDING, 2018



Source: Institut de la statistique du Québec, April 2021

Québec's share of total funding from federal research funding agencies (SSHRC, NSERC, CIHR) has remained stable for the past 10 years at around 27%. This share exceeds Québec's demographic weight in Canada's scientific community (22.8%).

QUÉBEC SHARE OF FUNDING FROM THE THREE FEDERAL RESEARCH FUNDING AGENCIES (SSHRC/NSERC/CIHR) FROM 2010-2011 TO 2019-2020



Sources: SSHRC- Awards Search Engine, 2020
NSERC- Awards Search Engine, 2020
CIHR- Awards List, 2020



THE PRIORITIES

The Chief Scientist and the Fonds de recherche du Québec share a set of priorities.

Support research training

One of the mandates of the Fonds is to provide training support for future generations of researchers. Tomorrow's researchers are a highly qualified work force, both for the research field and for all sectors of Québec's economy, and will be called on to play a leading role in a knowledge society that is increasingly becoming part of a globalized economy.

Support independent and basic research

Independent and basic research, source of great innovation as a bona fide pipeline of applied research, accounts for most of the funding granted by the Fonds. The other part is allocated to research in partnership with public and private sectors, directed at the needs of society. The Fonds also support a number of research groups that represent all the catalyst areas of leading edge research in Québec.

Address three major societal challenges

By working together in interdisciplinary teams from all sectors, researchers with complementary expertise can better address the major challenges facing our society: sustainable development and climate change, aging and demographic change, and entrepreneurship and creativity. The Fonds develop intersectoral networking and initiatives to address these challenges.

Develop international partnerships

The Chief Scientist and the Fonds are developing international partnerships to increase research capacity (sharing of costs and expertise), drive discovery and innovation on common issues and concerns, position Québec's scientific community, and contribute to scientific and economic diplomacy.



THE PRIORITIES (continued)

Advance research practices

The Fonds intend to pursue their initiatives in collaboration with the scientific community, whether in terms of ethics, scientific integrity or responsible conduct of research, access to administrative databases for research, promotion of principles of equity, diversity and inclusion, citizen science and commitment from the scientific community toward areas where research is used and in the public sphere.

Advise governments

The Chief Scientist and the Fonds are developing initiatives to encourage members of the scientific community to get involved in parliamentary and government machinery. For instance, the Chief Scientist is organizing science breakfasts with members of the National Assembly of Québec to give them the opportunity to discuss current issues with experts.

The Fonds are partners of the Canadian Science Policy Centre, whose goal is to bring together Francophone and Anglophone communities on emerging science policy issues.

Finally, the Chief Scientist is one of the founding members of the International Network for Government Science Advice (INGSA), whose goal is to promote political discussion, capacity building and research on science advice internationally. The initiatives he supports include setting up an INGSA chapter in Africa and holding training workshops.

Raise awareness about research

In the age of fake news and increasing digital sources of information, it seems crucial to raise greater awareness of research among the general public. Through various communication tools and several partnerships with broadcasting organizations, including Agence Science-Press and the *Détecteur de rumeurs* [Rumor Detector], the Fonds and the Chief Scientist contribute to creating dialogue on scientific issues in the public sphere and fostering critical thinking.

GRANTS AND SCHOLARSHIPS

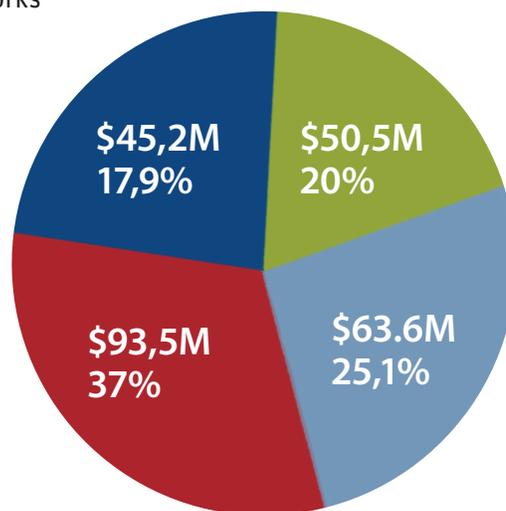
In 2020-2021, the Fonds de recherche du Québec spent 252.7 million dollars on academic research. As shown in the chart below, 25% of the budget provides direct funding for the new generation (master's students, PhD and postdoctoral fellows). Furthermore, as part of their strategy to complement the federal granting agencies, the Fonds allocated 37% of their global budget to research centres, networks, clusters, institutes and teams, making it possible for the researchers within these groups to apply for research funding on the federal level. Year in year out, Québec researchers obtain 27% of federal research funding, while they represent 22.8% of Canada's scientific community.

RESEARCH PROJECTS

- Partnership projects
- Innovation networks
- Team projects
- Research chairs
- Promotion, dissemination and recognition

RESEARCH CAREERS

- Research scholars
- New researcher-professors
- College researchers



THE NEW GENERATION

- Scholarships and fellowships (Master's, PhD and postdoctoral)

RESEARCH CLUSTERS

- Research centres, networks, groups, institutes and teams

BUDGET: \$252.8M

Note: the graph does not include **\$10.4M** in indirect research costs allocated to universities.

Source: Fonds de recherche du Québec
Annual reports, 2020-2021

MAJOR SOCIETAL CHALLENGES AND THE DEVELOPMENT OF RESEARCH INITIATIVES IN ALL SECTORS

As part of the 2017–2022 Québec Research and Innovation Strategy (SQRI), the Fonds de recherche du Québec will roll out a strategic program of intersectoral research to address three major challenges facing our society. The initiatives supported include:

Sustainable development and climate change

- Future Earth: international consortium for research on sustainable development and climate change
- Québec Maritime Network and France-Québec Institute for Scientific Cooperation to Support the Maritime Sector
- KHEOPS: consortium for multisectoral research on the governance of large infrastructure projects
- Research network on flood-related risk management
- International observatory on the societal impacts of artificial intelligence and digital technologies
- Canada First project – Data Serving Canadians: Deep Learning and Optimization for the Knowledge Revolution
- Canada First project – From Quantum Science to Quantum Technologies
- CITÉ-ID LivingLab – Urban Resilience Governance

Entrepreneurship and creativity

- OSEntreprendre: Québec pan-regional contest to support the next generation of entrepreneurs – prizes for student founders of a business
- Adopt Inc.: sponsorship and mentoring initiative matching successful entrepreneurs with young business creators
- Research programs in cutting-edge fields from the Canadian Institute for Advanced Research
- Audace program: High Risk/High Reward research projects
- ENAP program in public administration with a research focus

Aging and demographic change

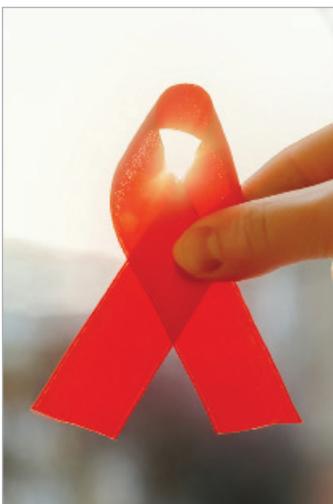
- Inclusive society and rehabilitation: adaptation/rehabilitation projects and those that support the social integration of people with disabilities
- Canada First project – Healthy Brains for Healthy Lives
- Canada First project – TransMedTech Institute: An open-innovation ecosystem for the development of next-generation medical technologies
- Collaborative agreement on artificial intelligence between the FRQ and the World Anti-Doping Agency

IMPACTS ON SOCIETY

Natural sciences, engineering, health, social sciences, humanities, arts and literature research provides a better understanding of the world in which we live, clarifies decision-making and public policy, improves practices and interventions; in short, it fosters innovation for the common good. Here is a look at some of the impacts of Québec research.



Beaches, sources of CO₂: Some beaches may contribute to ocean acidification and the emission of CO₂ into the atmosphere. Gwénaëlle Chaillou, professor at Université du Québec à Rimouski and researcher at Institut des sciences de la mer de Rimouski, is one of the few researchers who study beaches as underground estuaries: areas where groundwater runs into an ocean's salty waters. This is the case in Îles-de-la-Madeleine. Indeed, when she set her towel out on one of the islands' sandy beaches, Professor Chaillou realized that it was dampened by freshwater from the ground—not salt water from the gulf. She then inferred that the beach could serve as a medium of exchange between the coastal and marine environments: the subterranean freshwater percolates through the sand and carries the carbon generated by the leaching of ancient soils to the sea. To understand the extent of these exchanges of natural carbon, as well as of contaminants from sources such as agriculture, she worked with hydrogeologists and oceanographers to quantify the groundwater discharge. She hopes her findings will enhance carbon cycle models by accounting for the carbon carried by groundwater.



A new lead to bring an end to AIDS?: Could a cancer treatment knock out HIV for good? While the treatment regimen is 99.9% successful, Nicolas Chomont, researcher at the Centre de recherche du Centre hospitalier de l'Université de Montréal, aims to bump the figure up to 100%. HIV is sneaky: it takes cover in certain immune cells and lymphocytes in particular. These hiding places, which are known as reservoirs, help the virus escape the medicines and reactivate the infection when the regimen is interrupted. Nicolas Chomont and his team were able to demonstrate that the immunotherapy used to treat cancer draws the HIV from its hideouts. How? By targeting the surface proteins of the HIV reservoirs. Still, because of the side effects of immunotherapy, the experts remain cautious. It is also important to track down the HIV reservoirs. In collaboration with colleagues, Nicolas Chomont has developed a method to analyze tens of millions of cells from a blood sample to determine whether reservoirs are present. The next step is to test the protocol on different patient cohorts.



Extracurricular activities that pay off: Sport, music, arts, leisure clubs... Under what conditions do extracurricular activities contribute positively to adolescent development? Heather Lawford, a psychology researcher at Bishop's University, conducted a longitudinal study of 50 youth between the ages of 17 and 20. Each year, participants were asked to complete an online questionnaire that focused on extracurricular activities, community engagement, identity, autonomy and well-being. The research findings highlight the importance of mentoring and show that listening, counselling and encouragement improve young people's perception of themselves. The study also indicates that generativity is already present in these adolescents, whereas it is generally seen as a trait in people over 35. In addition, the study shows a correlation between activity engagement and more harmonious psychosocial development. This translates into closer relationships with others and greater self-esteem.

The Fonds de recherche du Québec

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Update: JANUARY 2022