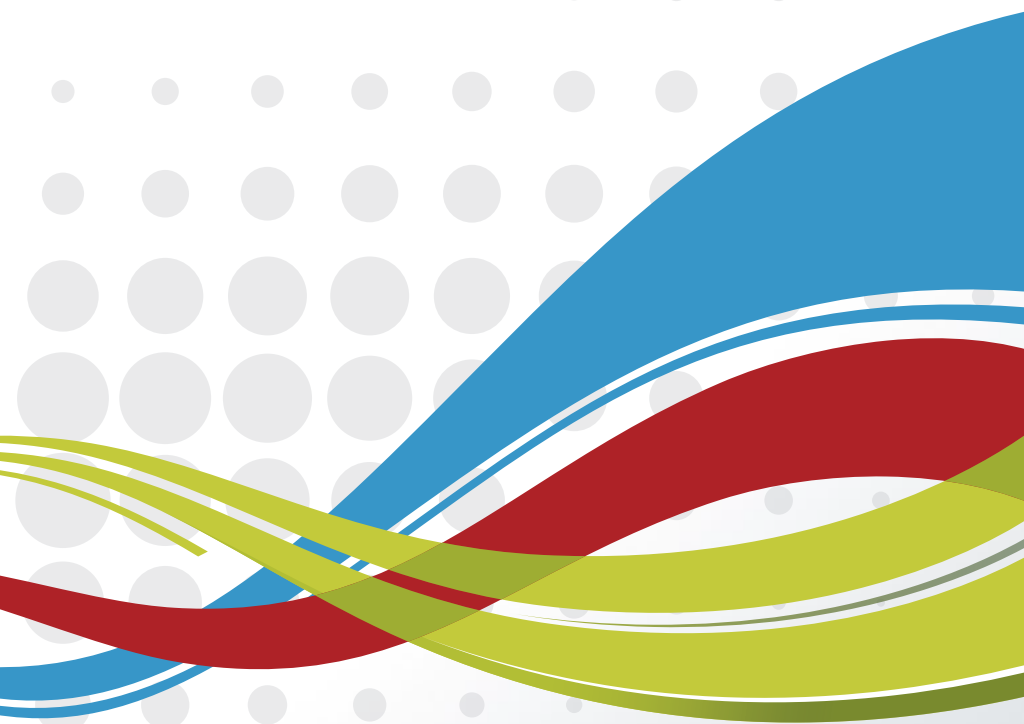


Fonds de recherche du Québec

Société et culture
Santé
Nature et technologies





SCIENCE, DRIVER OF THE POST-PANDEMIC ECONOMIC RECOVERY

The year 2020-2021 took place entirely in the context of the COVID-19 pandemic and all its attendant disruptions. After more than 18 months of health crisis, the virus responsible for the disease and its variants continue to circulate. The past year has brought many challenges, but these have also led to the development of projects that promise improvements for the future. The rapid development of effective vaccines against COVID-19 in 2020, the result of concerted efforts of researchers from several nations, led to large-scale vaccination campaigns around the world. The Québec population answered the call, allowing a gradual return to a more normal life. After long months of lockdown and uncertainty, the time has come for economic recovery, for which research will play a major role in the near future and in the years to come.

Science has never been more present in our lives than during this pandemic. It is mentioned daily, either during government press briefings or in the media. Many researchers are very active in the public sphere, providing insights into the various facets of the pandemic from their own fields of research. Their contributions, combined with those of science journalists, serve to counteract the current of disinformation and conspiracy theories that the health crisis continues to exacerbate. However, there are still many aspects to be explored in order to better understand these phenomena, whose effects can be extremely harmful. Research could help us find answers.

Scientific expertise has also been in high demand by government ministries and agencies since spring 2020. Science advice to governments has been widely deployed around the globe over the past year. As Québec's Chief Scientist, my advisory role to the Minister of the Economy and Innovation on all matters relating to research and innovation also extends to other offices, including those of the Premier and the Minister of Health and Social Services. Recognizing the importance of research, the government has granted \$50 M of additional funding to the Fonds de recherche du Québec. This funding was provided as part of the Minister of Finance's November 2020 economic update to support the post-pandemic economic recovery. While research helps us to better understand and innovate, and to better prepare us to face adversity, it is also a tool for sustainable, green, equitable economic development. Support for research will be one of the challenges of the coming years, as will the promotion and dissemination of scientific publications in French resulting from the work and expertise of our scientific community.

Despite the arrival of a fourth wave that we hope will be short and will not cause too much damage, science and basic research allow us to look to the future with hope. The mobilization of the scientific community and international open science collaborations have led, in recent months, to great social, technological and medical advances. This mobilization will need to target other major challenges, such as climate change, the aging population, human migration, social inequalities, global health (other than the coronavirus), biodiversity and the environment. With these solid achievements, government support, and the confidence of the population, science will be able to propel the post-pandemic economic recovery in Québec and around the world.



Rémi Quirion, OC, CQ, PhD, FRSC
Chief Scientist of Québec

Chief Scientist of Québec's Report 2020-2021

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❖ Actions related
to the pandemic

❖ Scientific missions
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❖ Promoting research

Québec 

BACKGROUND

The COVID-19 pandemic has largely coloured the fifth year of my second mandate. The activities of my office and those of the Fonds de recherche du Québec (FRQ) were again disrupted this year. In particular, I was not able to carry out any scientific missions abroad, and the International Conference on Science Advice to Governments (INGSA), originally scheduled for September 2020, had to be postponed until 2021. My international involvement has therefore been in virtual mode.

Despite the continuing inconveniences caused by the pandemic, the FRQ have once again managed to carry out their activities successfully. Funding announcements took place as usual in April, as did the launch of the new programs in July. The FRQ teams, well versed in teleworking by now, showed agility and resilience in carrying out their duties, including supporting the research community in the face of pandemic-related constraints. Further mitigation measures have been put in place for the research community since September 2020.

I have maintained regular communication with several government bodies on a number of important initiatives, including the report on the Québec university of the future, commissioned by the then Minister of Education and Higher Education; the environment committee; the agriculture plan; and the additional funding obtained in November 2020 from the Minister of Finance to stimulate scientific research and collaboration in Québec.

As head of the FRQ, I initiated a series of activities that will lead to the development of their 2022-2025 strategic plans, including a day dedicated to sustainable development goals. Reflections on the future Québec Research and Innovation Strategy (SQRI) and Québec Life Sciences Strategy (SQSV) and all the work related to the government's innovation zones project also took up a great deal of my time. These projects also involve the participation of the new Innovation Council set up by the Québec government, on which I sit as a member.

In terms of open science, I would like to highlight the FRQ's membership in the cOAlition S consortium, a group of funding agencies around the world that are working to accelerate the transition towards open access to scientific publications. Also noteworthy is the launch of the FRQ's strategy for equity, diversity and inclusion (EDI) in research. These orientations will contribute to the quality, relevance and impact of the work produced with FRQ support.

Continuing on a note that transcends our borders, it is an honour for me to be appointed as President of the International Network for Government Science Advice (INGSA). My appointment was officially announced at the 4th INGSA Conference, held from August 30 to September 2, 2021. In addition, on the last day of the conference, which was dedicated to science advice within the Francophonie, I announced the launch of a francophone network on science advice that will serve to encourage francophone science advisors of all kinds and backgrounds to share their practices and to develop science advice capacity within their communities.

In short, the last 18 months have unsettled us, but we have grown from the experience. Despite the prolongation of the health crisis due to the onset of a fourth wave driven by the Delta variant, I intend to undertake my third mandate as Chief Scientist of Québec with the objective of promoting science and its role in post-pandemic recovery.

KEY ACHIEVEMENTS

Actions related to the pandemic

SUPPORT MEASURES FOR THE SCIENTIFIC AND STUDENT COMMUNITY

The year 2020-2021 has brought its share of challenges for the scientific and student community supported by the Fonds de recherche du Québec (FRQ). As in the early months of the pandemic, decisions have been made since September 2020 to help researchers and students better cope with the challenges posed by the situation. The deadlines for the submission of scientific and administrative reports have been made more flexible. The FRQ are aware that in many cases the effects of the pandemic will be felt, not over months, but over years. This will be taken into account when assessing competition applications.

Media presence

Rémi Quirion conducted several general public interviews over the course of the year. A range of media, including RDI Économie, Salut Bonjour, CTV News, Radio-Canada, TVA, *Le Soleil*, *Le Journal de Montréal*, 98.5 Montréal and *Le Devoir*, gave him the opportunity to express himself on different aspects of the COVID-19 pandemic, specifically open access to scientific data, public confidence in science, and the management of the health crisis. He also wrote or co-wrote several opinion pieces published by major media outlets.



POST-PANDEMIC ECONOMIC RECOVERY INITIATIVES

The development of arguments for post-pandemic economic recovery has paid off. Thanks to the joint work of the three Boards of Directors, FRQ management, and the Ministry of the Economy and Innovation, science and research have been recognized as key elements of economic recovery. An additional \$50 M was allocated to the FRQ in the Minister of Finance's November 2020 economic update. \$10 M of this will be provided in 2020-2021, and \$40 M in 2021-2022. This funding allows for the creation of research initiatives in key sectors: education, agri-food, clean energy, aging and mental health, the circular economy, cybersecurity, and more. The *Impulsion* call for projects, the launch of the *Public-Private Partnership Research Chairs* program and the announcement of the establishment of the *Québec Circular Economy Research Network* in the first half of 2021 stem directly from this reinvestment.

YOUTH IN THE FIGHT AGAINST COVID-19

This new competition, launched in December 2020, aimed to encourage students to carry out scientific communication projects using digital tools (videos, podcasts, blogs, etc.), with the goal of raising awareness and mobilizing young people around the fight against COVID-19 by addressing their concerns: their difficulties with the health crisis, the challenges related to the COVID-19 pandemic, disinformation, public health guidelines, the importance of vaccination, etc. Of the 40 or so application received, eleven teams stood out and each one received a grant of \$10,000 to carry out their project. Some teams recruited influencers who are well known among 18–30-year-olds, thus gaining good visibility on social media. Initiatives such as “Vérité ou pandémie?” were reported in the media.



Several projects of great notoriety within the framework of the Youth in the fight against COVID-19 competition.

Scientific missions and agreements

Due to the pandemic, the Chief Scientist was unable to carry out scientific missions abroad in 2020-2021. Nevertheless, several international activities took place in virtual mode, including participation in UNESCO consultations. Topics covered included open science; issues related to equity, diversity and inclusion; and artificial and digital intelligence.

FRANCOPHONIE

In January 2021, at the initiative of Rémi Quirion, several ambassadors and consuls representing the Francophonie in Québec and Canada got together, as a first step towards the creation of a francophone network on science advice. The winter of 2021 was also punctuated by meetings with the Organisation internationale de la Francophonie (OIF). Discussions focused on the future strategic plan of this institution, which celebrated its fiftieth anniversary in 2020, as well as on the economy and education. The Chief Scientist also worked with the Rwandan authorities to explore possible partnerships with INGSA, which has a regional office in Kigali, and with Québec, regarding doctoral students specializing in artificial intelligence and quantum physics.

UNITED KINGDOM-CANADA INUIT NUNANGAT AND ARCTIC REGION RESEARCH PROGRAM

On May 7, 2021, Inuit Tapiriit Kanatami (ITK), United Kingdom Research and Innovation, Polar Knowledge Canada, the National Research Council of Canada (NRC), Parks Canada and the FRQ signed a new memorandum of understanding in support of the

United Kingdom-Canada Inuit Nunangat and Arctic Region Research Program. This program aligns with the objectives and actions of the National Inuit Strategy on Research. Its themes are connected to climate-driven changes to the terrestrial, coastal and near-shore marine environments in Inuit Nunangat, as well as their impacts on Inuit and community health and well-being. Research funded under this program will also explore innovative mitigation and adaptation mechanisms and technologies to improve resilience to climate change.

APPOINTMENT TO HEAD THE INGSA INTERNATIONAL NETWORK

Québec's Chief Scientist was appointed President of the International Network for Government Science Advice (INGSA), becoming the first francophone to head the organization, which brings together more than 5,000 members from some 110 countries. His appointment was officially announced during the 4th International Conference on Science Advice to Governments, INGSA2021, which took place in Montréal from August 30 to September 2, 2021, under his leadership. During his two-year term as president, Rémi Quirion will



Rémi Quirion, Chief Scientist of Quebec, appointed President of INGSA.

pursue the mandate established when he co-founded INGSA, namely to facilitate and promote government science advice at the international level: an important function of science diplomacy. Quirion attaches great importance to French-language research and its dissemination and intends to continue his efforts for its promotion, particularly in French-speaking European countries and francophone Africa.

Conferences and public affairs

INGSA "GLOBAL WEEK OF DIALOGUE" ROUNDTABLES

From September 14 to 18, 2020, INGSA held a series of round tables to better understand how science advice to governments was implemented in different regions of the world during the COVID-19 pandemic. Rémi Quirion spoke with the World Health Organization's Chief Scientist, Dr. Soumya Swaminathan. Mona Nemer, Canada's Chief Scientific Officer, was part of the Americas roundtable, broadcast on September 17, 2020.

INTERVIEW AT THE ANNUAL CSPC CONFERENCE

The annual Canadian Science Policy Conference (CSPC) took place in virtual mode from November 16 to 20, 2020. Rémi Quirion was interviewed by CSPC President and CEO Mehrdad Hariiri about open science and open access to research results, disinformation and the importance of explaining the scientific method to the general public, and science advice to governments. As Chief Scientist, he took part in several of the conference's panel sessions.

Rémi Quirion on an interview with Mehrdad Hariiri, President and CEO of CSPC.



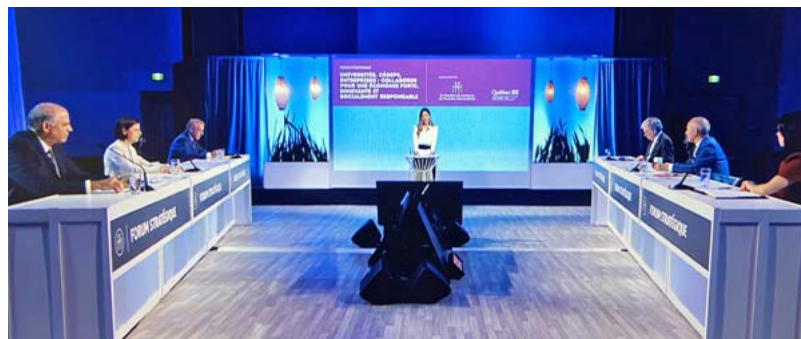
ACFAS ACTIVITIES

On January 28, 2021, Rémi Quirion addressed the issue of open science at an Acfas workshop organized in collaboration with the Canadian Commission for UNESCO and the Québec Ministry of International Relations and the Francophonie. A few weeks later, from May 3 to 7, 2021, he was a speaker at the 88th Acfas Congress, covering topics including the university of the future, the engagement of Quebecers in science, and the importance of science and research in decision-making.

EVENTS AT THE CHAMBER OF COMMERCE OF METROPOLITAN MONTREAL

On September 4, 2020, at the invitation of the Chamber of Commerce of Metropolitan Montreal, the Chief Scientist met with the Minister of the Economy and Innovation, Pierre Fitzgibbon. The virtual discussion allowed participants to learn more about the issues and opportunities raised by the COVID-19 crisis in the basic and applied research community. It also showed how Québec's economic recovery is in many ways defined by the scientific community's capacity for innovation, mobilization and resilience.

On May 31, 2021, Rémi Quirion participated in the strategic forum entitled "Universities, CEGEPs, businesses: Working together for a strong, innovative and socially responsible economy", organized by the Chamber of Commerce of Metropolitan Montreal in partnership with the FRQ. The event brought together various actors from higher education, business, NPOs and politics. The Chief Scientist had the opportunity to speak with Luc Sirois, Québec's Chief Innovator, about the Québec Innovation Council created in December 2020.



One of the discussion panels of the strategic forum «Universities, CEGEPs, businesses: Working together for a strong, innovative and socially responsible economy» which notably brought together ministers, Rémi Quirion and the mayoress of Montreal.

INGSA2021 CONFERENCE: A GREAT SUCCESS

More than 2,000 participants from around the world responded to the invitation of Québec's Chief Scientist, Rémi Quirion, and Canada's Chief Science Advisor, Mona Nemer, to attend the 4th International Conference on Science Advice to Governments. The event, presented in a hybrid format at the Palais des congrès de Montréal, took place from August 30 to September 2, 2021 under the theme "Reinventing the dialogue between science, politics and the public". Structured across four days and four themes, the INGSA2021 conference provided an opportunity to reflect on the lessons to be learned from the pandemic and the strategies to be adopted in the face of the major challenges facing the world. Science advice in a pandemic context, sustainable development goals, and disinformation were among the topics discussed. September 2nd was dedicated to the Francophonie, with the announcement of the creation of a new francophone network on science advice. The event received excellent media coverage.

INGSA 2021



The INGSA Conference took place from August 30 to September 2, 2021.

ACTION PLAN FOR ENVIRONMENTAL RESPONSIBILITY IN RESEARCH

At the initiative of Québec's Chief Scientist, on January 26, 2021, the FRQ launched their Action Plan for Environmental Responsibility in Research, which aims to raise awareness of the environmental impacts of research

and invite the scientific community to take measures to minimize them. Contributing to environmental protection is a responsibility that transcends all sectors of society, including the scientific research community. This is the first step in supporting the scientific community in protecting the environment.



❖ Intersectoral project development

CREATION OF THE QUÉBEC INNOVATION COUNCIL

With a view to stimulating innovation within Québec businesses and society, the Minister of the Economy and Innovation announced in December 2020 the creation of an innovation Council and the position of Chief Innovator to lead it. Rémi Quirion, who has been appointed to this new Council, is working closely with the Chief Innovator, Luc Sirois, to better align research and innovation. Much of this collaboration is focused on the future Québec Research and Innovation Strategy. 2021 has seen several consultations on this subject.

ADVISORY COMMITTEE ON CLIMATE CHANGE

Created under the *Act mainly to ensure effective governance of the fight against climate change and to promote electrification*, the Advisory Committee on Climate Change has 13 members, most of whom are from the scientific community. Its mission is to advise the Minister of the Environment and the Fight Against Climate Change on policy directions, programs,

policies and strategies. It will also provide advice on the revision of greenhouse gas (GHG) reduction targets or the adoption of new targets¹. The Chief Scientist was given the mandate of creating this interdisciplinary committee. Environment Minister Benoit Charette announced the committee's composition on April 9, 2021.

AUDACE CALL FOR PROPOSALS

Under the leadership of the Chief Scientist of Québec, the FRQ launched a new call for bilateral "Québec-Luxembourg" projects under the AUDACE international program in July 2021. This initiative was made possible by the agreement signed in May 2020 between the FRQ and the Luxembourg National Research Fund (NRF). With the continuation of this joint program, the partners intend to stimulate risk-taking and offer favourable conditions for researchers from Québec and Luxembourg to initiate projects with high transformative potential, considerable spin-offs, and an intersectoral approach. The 2022-2023 competition is the second of three. It should also be noted that a fifth competition of the AU-

DACE intersectoral program was launched at the same time. This program seeks to give Québec a prominent place in the international movement of high risk/high return research funding.

INTERSECTORAL RESEARCH FOR "SUCCESSFUL AGING"

A second competition of the platform on aging was launched in November 2020. This competition includes a "Call for solutions for successful aging" component consisting of grants for projects focusing on finding solutions that could have quick, concrete benefits for user communities. This second competition offered by the FRQ and supported by the Health and Social Services Ministry's Secrétariat aux aînés is seeking to encourage intersectoral and collaborative research initiatives with a view to generating not only new knowledge, but also innovative and even transformative solutions to address the major challenge of population aging.

1. Source: [Gouvernement du Québec, Comité consultatif sur les changements climatiques](https://www.quebec.ca/gouv/ministere/environnement/organismes-lies/comite-consultatif-changements-climatiques) (Page visited August 24, 2021). <https://www.quebec.ca/gouv/ministere/environnement/organismes-lies/comite-consultatif-changements-climatiques>

❖ Promoting research

UNVEILING OF PUBLIC ARTWORKS INSPIRED BY SCIENCE

Seven of the nine public art installations inspired by scientific knowledge about COVID-19 were unveiled in the fall of 2020, across Québec. At the initiative of the Chief Scientist, artists, municipalities and scientists came together to create works of art that will leave a lasting mark on the urban landscape for several years, reflecting this historic period for Québec society. These artworks, which take form of murals, window displays, giant books, pavement art and sculptures, were funded by the FRQ under the call for proposals for the creation

of urban art installations for the #covidart movement. Local teams shared the progress of their work on social media with the hashtag #COVIDArtQc, and some held activities as part of the Journées de la culture 2020.

SCIENCE BREAKFAST AT THE QUÉBEC NATIONAL ASSEMBLY

The pandemic has put a halt to series of meetings at the Québec National Assembly (ANQ) organized by the Chief Scientist of Québec for MNAs, chiefs of staff and deputy ministers, which consist of presenting and discussing subjects of interest based on scientific expertise. However, a virtual

activity was held on November 4, 2020. Eminent researcher Gary Kobinger, a professor in the Department of Microbiology and Immunology at Université Laval, spoke alongside Rémi Quirion on the topic of vaccines against COVID-19.

LAUNCH OF THE NEW PRIX PUBLICATION EN FRANÇAIS

Chief Scientist of Québec launched the new Prix Publication en français award on March 17, 2021. This award, presented monthly to three researchers, aims to promote and showcase French-language research publications in Québec and the Francophonie, encourage open access to research publications in French, and recognize the social relevance and impacts of Québec research. In the wake of the launch of this award, the Chief Scientist published an op-ed in the daily newspaper *Le Devoir* on May 5, 2021.

WORKSHOPS FOR MUNICIPAL AND PROVINCIAL ELECTED OFFICIALS

Municipalities are showing increasing interest in science advice, an approach that Rémi Quirion is promoting at different levels of government. A first workshop was held on March 17, 2021 with the Union des municipalités du Québec (UMQ) on the general theme of adaptation to climate change and stormwater management. A new scientific workshop was also held with elected officials of the City of Montréal on April 23, 2021 on the topic of waste management for an ecological transition. Also in Montréal, a model was presented to the City's teams with the aim of establishing a science council at their discretion.

At the provincial level, nearly 600 government officials participated in a webinar on the quality of scientific information. Rémi Quirion was accompanied by Yves Gingras, a professor and scientific director of UQAM's Science and Technology Observatory. The two speakers presented some reflexes that can be developed to help in evaluating the soundness of scientific information and the credibility of its sources, in order to reduce the risks of misinformation within the public service. In addition, they discussed how best to communicate scientific information to senior officials who are required to make decisions. Participants were also provided with a checklist to facilitate the integration of

the lessons learned from the webinar into their work habits. The activity took place on April 22, 2021.

"DISINFORMATION: WHAT ARE THE SOLUTIONS?" PANEL

Organized by the Chief Scientist's office, this webinar on disinformation brought together a panel of representatives from research, major media and social media on March 30, 2021. The phenomenon of disinformation and its effects; ways to counteract it; and short, medium and long-term solutions were discussed. As the subject is sensitive and remains highly relevant, Rémi Quirion intends to continue his work in this area with the FRQ in the coming years and to contribute to the fight against disinformation, which is an obstacle to the development of a knowledge-based society and economy.

PROPULSIONS ENSEMBLE LA RECHERCHE PROMOTIONAL CAMPAIGN

On May 3, 2021, the FRQ launched a digital campaign entitled *Propulsions ensemble la recherche*. The campaign ran until May 28, 2021 and aimed to encourage the 7,000 FRQ scholarship and grant recipients to showcase their success and pride at being members of the FRQ community, using a promotional kit they could download and use in their communications. Videos were produced and posted on FRQ and Chief Scientist social media, as well as visuals of some of the campaign ambassadors. The initiative greatly contributed to the growth of the communities, particularly on the FRQ LinkedIn platform, which saw the largest increases.



NEW FRQ WEBSITE

Officially launched on May 19, 2021, the main objective of the new [FRQ website](https://frq.gouv.qc.ca) is to present the agencies' program offering to the research community, in addition to promoting initiatives common to the three Fonds, such as intersectoral activities. In an effort to harmonize services, everything can now be found at the same address, with a renewed design, intuitive navigation, and dedicated sections for content specific to each Fonds. »frq.gouv.qc.ca



LAUNCH OF THE SECOND EDITION OF THE ENGAGE PROGRAM

The Chief Scientist of Québec launched the second edition of the FRQ Engage program on May 26, 2021. The new version of this program is designed as a science culture initiative to enable Quebecers to better understand the scientific method and thus become more familiar with research. The program is divided into two phases: the Startup phase, lasting one year, during which citizens and researchers get to know each other and develop a participatory science process to explore a question submitted by the citizen, and the Action phase, also lasting one year, during which the duos carry out their project.

scientifique-en-chef.gouv.qc.ca/en/



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