GenomeQuébec

Annual Report

2020-2021

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DID YOU KNOW?

WHAT IS GENOMICS?

Genomics refers to the study of the complete set of genetic information of all living beings, encoded in their DNA and other similar molecules, such as RNA and proteins. Our current technological capacity to read this "code" of life is unprecedented and continues to develop at a rapid pace. The knowledge gained through genomics holds the key to innovative solutions in a wide range of sectors and offers tremendous opportunities for economic growth and better quality of life for people the world over.

GÉNOME QUÉBEC

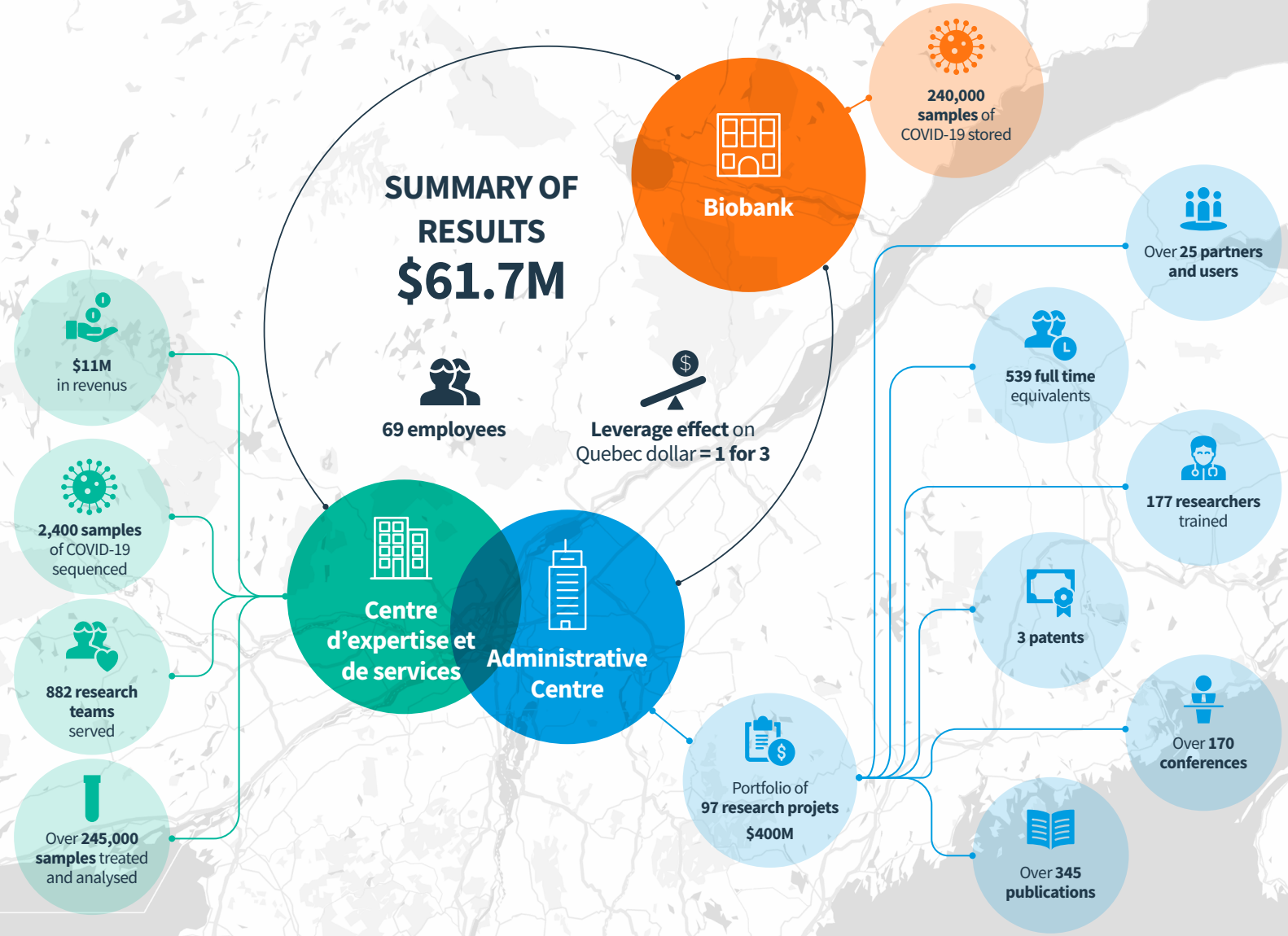
Since its inception in 2000, Génome Québec has helped Québec make great strides in genomics research. Over the years, many areas of activities have benefited from research funded by Génome Québec and its Centre d'expertise et de services (CES) located at CHU Sainte-Justine. Genomics is now seen as a promising technology for the economy, more specifically in health, agrifood, forestry and the environment.

Génome Québec plays a leading role in genomics research by funding the most relevant research and guiding researchers to achieve world-class expertise.

Québec has every reason to be proud of the success of our genomics researchers, who are recognized internationally for the quality of their work and for the major discoveries made right here at home.

Over the past 20 years, more than $1 billion has been invested in genomics through Génome Québec. This includes investments from the provincial and federal governments, as well as other partners.

SUMMARY OF RESULTS



OUR MISSION

Génome Québec's mission is to catalyze the development and excellence of genomics research and promote its integration and democratization. It is a pillar of the Québec bioeconomy and contributes to Québec's influence and its social and sustainable development.

OUR VISION

Genomics-driven innovations improve health care service delivery, support agrifood, environmental and forest management practices and enhance public policies.

OUR VALUES

Excellence

—

Openness

—

Creativity

—

Integrity

—

Ethics

MESSAGE FROM THE CHAIR OF THE BOARD

ANIE PERRAULT

"I applaud Québec's expertise, which was rapidly leveraged for public health to address this major health crisis."

GENOMICS EXPERTISE: AN UNDERESTIMATED INVESTMENT MAGNET

What a year! It was a critical milestone for genomics and Génome Québec. If SARS-CoV-2 taught us anything, it is that science, especially as a collaborative venture, is paramount in addressing a challenge such as a global pandemic. I certainly do not mean to be pessimistic, but if we listen to the experts we know that this virus is not the last one we will face. There will be many other challenges in the coming years, from antibiotic resistance to climate change and food crises. In each case, genomics will be a powerful, indisputable part of the solution to our problems.

In just a brief period of time, the scientific community has progressed at lightyear speed and made outstanding advances that will forever mark history. And at the centre of it all, there was genomics, a transformational technology that made a substantive difference in our fight against the virus. The speed at which the COVID-19 genome was sequenced meant that we were able to rapidly go about the business of developing vaccines. This just goes to show that the tools and technologies available today, along with the ensuing data and analyses – the result of extensive collaboration among researchers worldwide, are truly revolutionary.

I applaud Québec's expertise, which was rapidly leveraged for public health to address this major health crisis. I am proud of the leadership of Génome Québec and the many achievements that have resulted from it. But above all, I commend Québec's foresight when it decided, 20 years ago, to invest in the development of genomics. Thanks to the forward-looking vision of our governments, we can now draw upon a critical mass of expertise and infrastructure for the economic and social future of Québec.

One of the key messages of the Québec government regarding research and innovation is the need to put in place strategies that will attract foreign private investment, and thus make Québec a key and recognized destination in this respect. The ecosystem is now actively engaging in strategic thinking on ways to nourish this vision. In this regard, I would like to point out, once again, just how valuable our expertise in genomics truly is and how, too often, its role is not properly given its due to the work of several stakeholders. What seems so clear to me does not seem obvious to some.

Yet many international models have taken this road and capitalized on the knowledge and quality research stemming from genomics as their main investment magnet. Thanks to Génome Québec, the province now has international-level expertise. So the question is, "why are we not doing more to promote it?"

The best of the best have always wanted to work with the cream of the crop, so by cultivating great talent we will be able to maintain our competitive edge, fully leverage our critical mass, convince experts to come to Québec, persuade private companies and economic development partners to invest here and, last but not least, build an economy based on globally recognized knowledge and innovation, capable of responding to the major challenges before us. Talent attracts money, so let's invest in promoting Québec expertise to ensure that Québec is known and recognized the world over for its exceptional talent in genomics.

I would like to conclude by congratulating the staff of Génome Québec, led by Daniel Coderre and a highly competent management team, for their commitment to and enthusiasm for genomics and their dedication to bettering the lives of Quebecers.

I would also like to thank the members of the Board of Directors for their devotion to the cause, their sound advice and the trust they have placed in me.

Let's build on genomics; it's a sure bet for the coming decades!

MESSAGE FROM THE PRESIDENT AND CEO

DANIEL CODERRE

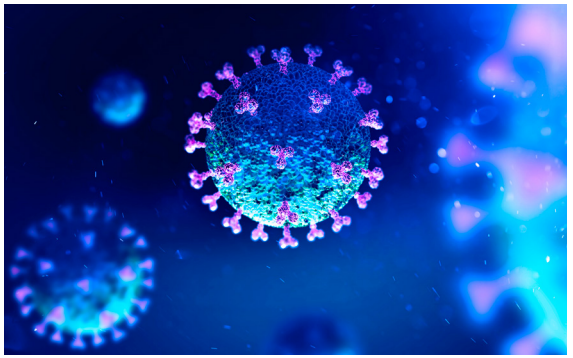
"Génome Québec has emerged from this experience with a rich portfolio of major achievements that have highlighted for all to see, the critical role of genomics."

COVID-19 AND BEYOND

For many organizations and businesses, 2020-2021 may well mark a crucial turning point in history. A time when resilience and cooperation took centre stage. I would like to commend the staff at Génome Québec, who swiftly adjusted to the new reality, be it working from home or facing more restrictive conditions at work, and remained engaged and productive throughout the year. Through our collective efforts and the high quality of the work accomplished, Génome Québec has emerged from this experience with a rich portfolio of major achievements that have highlighted for all to see, the critical role of genomics.

As a team, we not only reached our goals, but in some areas, exceeded them. The fight against COVID-19 was the focus of our activities this year, but we nevertheless stayed on course with regard to our other priorities. We were proactive as we offered to leverage our 20 years of expertise in support of public health. The move paid off since Génome Québec almost instantly became a major partner for public health authorities in terms of screening the virus, funding research geared specifically to the COVID-19 challenge, biobanking all viral samples and sequencing a portion of them. Moreover, in partnership with the Fonds de recherche du Québec – Santé and the Public Health Agency of Canada, we created the Biobanque québécoise de la COVID-19. Other contributions where we were able to make a real difference included a close partnership with the Laboratoire de santé publique du Québec and the implementation of a variant surveillance plan for Québec.

Beyond the fight against COVID-19, I am proud of our many other achievements. We made great strides, for instance, in supporting research, capitalizing on our service platforms, promoting education and social acceptance, optimizing our management and mobilizing our staff.



In addition, we made numerous strategic presentations and submitted two briefs, one to the Ministère de l'Économie et de l'Innovation and the other to the Ministère des Finances du Québec. It was a period marked by collaboration and a landmark year for both genomics and Génome Québec.

Now that genomics has attained a demonstrated level of maturity, Génome Québec intends to build on this recognition to provide Québec with its own genomics strategy. The time has come to follow in the footsteps of great pioneers and, most importantly, to prepare Québec for the Canadian genomics strategy which the federal government plans on developing. We hope to work together with the Québec government and key stakeholders to establish a vision for the development of genomics for the next decade, across all sectors, and above all to make this transformational science one of the pillars of Québec's economic recovery and competitiveness.

Lastly, I would like to thank the members of the Board of Directors for their support and confidence over the past year, as well as all the members of the Génome Québec team, without whom it would be impossible to maintain our organization's paramount position in Québec.

HIGHLIGHTS

HUMAN RESOURCES

- Staff of the Administrative Centre working from home since March 2020
- Staff of technology centres working on site, with sanitary measures, since May 2020

FIGHT AGAINST COVID-19

- COVID-19 screening initiative in conjunction with the Ministère de la Santé et des Services sociaux and CHU Sainte-Justine
- Creation of the Biobanque québécoise de la COVID-19, in partnership with the Fonds de recherche du Québec – Santé and the Public Health Agency of Canada
- Participation in the launch of the Canadian COVID-19 Genomics Network, a Genome Canada initiative
- Renewal of the partnership with the CIUSSS du Saguenay-Lac-Saint-Jean for the Biobank
- Cooperation with the Institut national de santé publique du Québec and the Fonds de recherche du Québec on the implementation of a Québec surveillance strategy of the SARS-CoV-2 variants – funding of $11.1 M

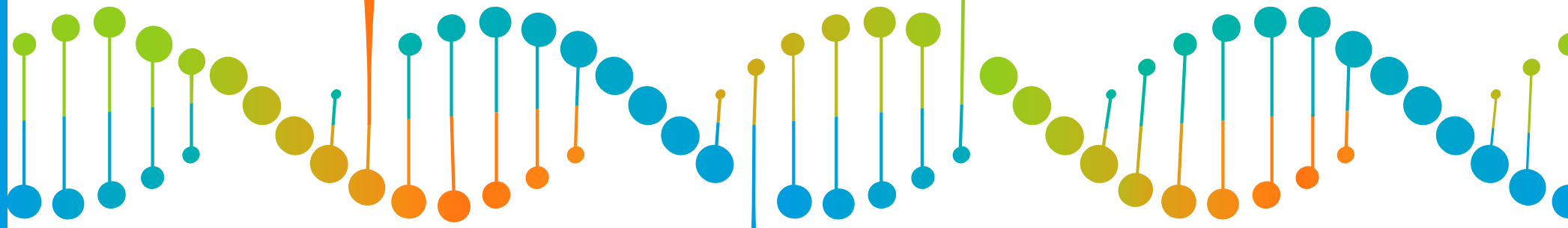
SCIENTIFIC AFFAIRS

- Oversight of a portfolio of 97 projects, 17 of which began this year
- Strategic investment of $480,000 in precision medicine
- New innovative partnership on the integration of genomics and artificial intelligence
- Launch of the Genomics Integration Program – Human Health

BUDGET

- Investments of $61.7M
- Balanced budget
- General and administrative costs of 4.1%

HIGHLIGHTS



EDUCATION AND SOCIAL ACCEPTANCE

- Second edition of *Mission ADN-eau* a success: 136% increase in the participation rate of Québec schools
- Submission of a report on Successfull secondary education initiatives

TECHNOLOGY CENTRES

- Balanced budget despite service interruption due to the COVID-19 pandemic
- 882 research teams served
- 10 new positions created
- Revenues of $12 M

PUBLIC AFFAIRS

- Launch of the Concertation Table on Precision Medicine
- Two briefs submitted:
  - 2017-2027 Québec Life Sciences Strategy
  - Pre-budget Consultations

SCIENTIFIC OUTREACH

STÉPHANIE LORD-FONTAINE
Vice President, Scientific Affairs

“In the coming years, genomics will definitely be at the forefront, facilitating solutions to more and more societal challenges.”

THE SCIENTIFIC AFFAIRS TEAM AND QUÉBEC RESEARCHERS AN INDISPENSABLE ALLY IN THE FIGHT AGAINST COVID-19

The year 2020-2021 has been a busy one on all fronts for the Scientific Affairs team. To start, when the pandemic erupted in March 2020, we wasted no time in adjusting our priorities and programs to the challenges of COVID-19. We then focused on developing and launching several related initiatives, while working remotely. This called for resilience, cooperation and communication. At the same time, we continued to monitor the Génome Québec portfolio of 97 projects, 17 of which began during this period. Other competitions, projects and partnerships also materialized during this highly unusual year.

GENOMICS, A KEY PLAYER IN THE FIGHT AGAINST COVID-19

Early on in the pandemic, the sequenced genome of the SARS-CoV-2 virus, produced by Chinese scientists, was rapidly made available to the international scientific community. By sharing the complete genetic sequence of the virus, researchers were able to make rapid advances in the development of diagnostic tests, now used worldwide to monitor the evolution of the pandemic and the emergence of variants. Thanks to this information, in less than a year and at a pace unprecedented in medicine, the first vaccines were brought to market.

LAUNCH OF THE CANADIAN COVID-19 GENOMICS NETWORK

When COVID-19 emerged, Génome Québec responded swiftly by launching a series of large-scale projects. As a way of fostering strategic partnerships among industry, users, researchers, research institutes and funding agencies, we contributed to the creation of the Canadian COVID-19 Genomics Network (CanCOGeN), a Genome Canada initiative launched in April 2020. As part of this effort, Génome Québec, in partnership with the Laboratoire de santé publique du Québec, helped collect and analyze virus sequence data from patients who had tested positive for COVID-19. The data gathered in Québec were pooled with those of other provinces to monitor the spread of the virus and provide real-time information to public health authorities to assist with their decision making.

Furthermore, to facilitate the sharing of the data generated by virus sequencing, Professor Yann Joly and his team are working on a national strategy that will meet existing international legislative and ethical standards on data sharing. Another team, spearheaded by Professor Guillaume Bourque, was selected by Genome Canada to develop a new Canadian VirusSeq Data Portal. Tasked with accelerating research, the innovative portal will provide the IT infrastructure required to harness data sharing among all public health laboratories and members of the scientific community.

On the treatment front, Génome Québec, in cooperation with Genome Canada, has invested $1 million in a project to accelerate the discovery of antiviral COVID-19 medications using an innovative approach based on artificial intelligence. Led by Professors Michael Tyers, Yoshua Bengio and Anne Marinier, the project was launched in fast-track mode on June 1, 2020.

BIOBANQUE QUÉBÉCOISE DE LA COVID-19

Recent studies have shown that genetic factors are associated with the risk of developing a more severe form of SARS-CoV-2. Moreover, genomic data from patients may lead to the discovery of treatments and a better understanding

of the immune response to the virus. This is why Génome Québec has partnered with the Fonds de recherche du Québec – Santé and the Public Health Agency of Canada to create the Biobanque québécoise de la COVID-19 (BQC19). BQC19 is a collection of samples from patients with COVID-19 from 11 hospitals in Québec and its mission is to make sure that scientists have access to the biological materials and data they need to nurture their research efforts. Our ability to respond effectively to public health challenges resulting from the pandemic requires solid scientific data generated within an appropriate ethical and legal framework. Implemented at the start of the pandemic, this $10 million project has already recruited over 2,600 patients.

There is no doubt that the engagement of all players in the ecosystem in this considerable research effort has showcased the excellence of Québec and Canadian research and strengthened our ability to deal with future pandemics.

PROMISING PARTNERSHIPS IN PRECISION MEDICINE

In addition to the research effort on the COVID-19 pandemic, Génome Québec has pursued its strategic investments in precision medicine. Among them, an investment of $480,000 in a new partnership with the Cancer Research Society has led funding for four promising projects in oncology and genomics.

Génome Québec also created, alongside Oncopole and IVADO, an innovative partnership that brings together artificial intelligence and genomics in the fight against cancer. Five research projects, representing a total of $1.5 million, were funded under this initiative. The projects will use the tools and methods of digital intelligence to explore genomic datasets in order to accelerate cancer research. Also worthy of note is the funding of a project led by a young up-and-coming researcher in artificial intelligence, Amin Emad, co-led with Morag Park, a renowned researcher in oncology. Their goal is to develop a tool that will assist in the selection of the best treatment and suggest new drug combinations to address cases of therapy-resistant breast cancer.

Lastly, in order to better understand the genetic traits of Quebecers, a sum of $3 million was granted to Geno-Ref-Q, a project led by researchers Guillaume Lettre and Simon Gravel to establish a reference genome representative of the population of Québec. The project will make use of several Québec infrastructures, such as the CARTaGENE population-based cohort, the BALSAC population database, the Centre d'expertise et de services Génome Québec and the Quebec Genomic Data Center (CQDG). Using genome sequencing, Geno-Ref-Q will develop a catalogue of genetic variants found in the Québec population and ultimately provide clinicians with a powerful tool to compare and interpret genetic test results and pinpoint the cause of various genetic diseases. The data will be stored at CQDG and made available to the scientific community to accelerate the integration of genomics into clinical practice.

A NEW PROGRAM IN HEALTH CAPITALIZING ON QUÉBEC'S STRENGTH AND PRIORITIES

The Genomics Integration Program – Human Health was launched in early 2021. The measure will serve as a springboard to build new bridges among researchers and public and private users. It is also meant to bolster the competitiveness of Québec SMEs and attract new investments to the province, in addition to accelerating the integration of genomics into the health system.

Although a large segment of research efforts was focused on health this year, new projects were also launched in other sectors. Again this year, the environment and agrifood sectors have proved to be particularly promising with the initiation of five projects.

Genomics has also paved the way to the development of mRNA[1] vaccines by pharmaceutical companies such as Pfizer-BioNTech and Moderna. Immediately after the virus was sequenced, the corresponding viral RNA messenger was produced without the need to manipulate the virus itself. This saved significant time and now scientists are able to adapt the vaccine to emerging variants.

[1]mRNA vaccines contain part of the genetic code of the virus in the form of RNA. It instructs the cells of the body to make one or more viral proteins that resemble those of a virus in order to trigger an immune response. It's a set of instructions on developing antibodies to fight certain targeted proteins.

THE ESSENTIAL ROLE OF GENOMICS

This year's global fight against the COVID-19 pandemic demonstrated the critical role played by genomics. Remarkable strides were made, science advanced by leaps and bounds and the groundwork has been laid for future discoveries that will have an impact in many economic sectors. In the coming years, genomics will definitely be at the forefront, facilitating solutions to more and more societal challenges and providing technologies to address climate change and support our shift to a greener, more resilient economy.

But none of this would be possible without the commitment and ongoing work of the Scientific Affairs team, in collaboration with the research community, who are working tirelessly and constantly adapting to these ongoing changes. In closing, I would like to thank them for their efforts, their immense contribution and their dedication to science.

Jennifer Sunday, Assistant Professor, McGill University

TAKING STOCK OF CANADA'S MARINE BIODIVERSITY USING GENOMICS

Génome Québec is proud to promote the next generation of female scientists through Genome Canada's Genomic Applications Partnership Program (GAPP).

GAPP is designed to foster partnerships between university researchers and users. It is a major financial lever to ensure the integration of genomic innovations into society. For Jennifer Sunday, Assistant Professor, McGill University, it is also an opportunity to make the most of the economic and social potential of such innovations. This year, Jennifer Sunday was awarded $758,000 in funding for her project in marine biodiversity.

Though she is only at the beginning of her promising career in research, the recent McGill recruit, is a rising star in environmental genomics. Ms. Sunday has already won several prestigious awards and is on the world's list of most cited researchers.

Her project, conducted in collaboration with Fisheries and Oceans Canada, aims to develop a new genomic method to establish an inventory of biodiversity in Canada's protected marine areas, which cover 800,000 km^2 in three oceans. The environmental DNA approach allows all species present in a given location, fish, mammals, invertebrates and molluscs, to be identified by analyzing a one-litre sample of water. Genomic tools will help the Canadian government achieve its conservation mission of ensuring sustainable fisheries and ecosystem resilience to climate change. With the size of protected areas increasing from 14% of territorial waters in 2020 to 30% in 2030, there is an immediate need for better, less expensive tools.

TECHNOLOGICAL OUTREACH

DANIEL TESSIER
Vice President, Technology Centres

“Génome Québec’s technology centres have been in the heat of the battle since the start of the pandemic, providing them with a great opportunity to once again assert their strong position within the Québec research ecosystem.”

A YEAR MARKED BY COOPERATION IN THE NAME OF SCIENCE

The year 2020 transformed the world as we knew it, right before our eyes. Faced with an invisible, previously unknown threat, everyone’s gaze turned to science for answers, hope and possible solutions. The COVID-19 pandemic also had a considerable impact on our habits, our ways of doing things and our priorities in the workplace. The Génome Québec technology centres, which include the Centre d’expertise et de services (CES) and the Génome Québec and CIUSSS du Saguenay-Lac-Saint-Jean Biobank, were not spared from these changes, but judging by the results of 2020-2021, we can confidently say that they rapidly came to grips with our new reality.

With teleworking becoming the norm for a large number of workers early on in the pandemic, most of the CES staff located at CHU Sainte-Justine returned to their labs in May, after the temporary shutdown of the facility during the first wave. The team then had the chance to leverage its expertise in support of Québec and Canadian COVID-19 initiatives.

As we navigated the ups and downs of this unchartered territory, science, particularly genomics, gained greater visibility among government authorities and the general public. Recognized for its advanced expertise and the high quality standards of its technological services, Génome Québec reached out to the public health authorities to offer the help of its teams. The response from stakeholders was positive and our involvement paved the way to a new collaboration that will continue in the long term. Génome Québec’s technology centres have been in the heat of the battle since the start of the pandemic, providing them with a great opportunity to once again assert their strong position within the Québec research ecosystem.

SURVEILLANCE PROGRAM OF SARS-COV-2 VARIANTS

This collaboration with public health authorities took several forms. In the early months of the pandemic, CES staff volunteered to help with the COVID-19 screening initiative, in conjunction with the Ministère de la Santé et des Services sociaux and CHU Sainte-Justine. In early 2021, the team also contributed to the launch of a Québec-wide variant surveillance strategy to identify, trace and understand new emerging variants of COVID-19. For this initiative, Génome Québec partnered with the Institut national de santé publique du Québec and the Fonds de recherche du Québec to initiate a program meant to improve the surveillance of COVID-19 variants through comprehensive monitoring of SARS-CoV-2. Funded at $11.1 million, the program focuses on the early detection of genetic mutations in the virus and on the identification of variants, along with their impact on transmission, disease severity and vaccine response. Developed to assist the Québec government in managing the pandemic, the variant surveillance program aims to sequence 65,000 SARS-CoV-2 positive samples by the end of 2021. This will strengthen our ability to monitor the pandemic, more specifically the emergence and epidemiology of the British, South African, Brazilian and Indian variants of the virus.

GÉNOME QUÉBEC AND THE CIUSSS DU SAGUENAY-LAC-SAINT-JEAN BIOBANK

As part of Génome Québec’s contribution to the fight against COVID-19, another noteworthy achievement is the closest relationship that has developed between the CES and the Génome Québec and CIUSSS du Saguenay-Lac-Saint-Jean Biobank, a world class, state-of-the-art facility dedicated to managing biological and non-biological samples with the potential to influence or interact with human health. The Biobank supports large-scale projects, such as CARTaGENE

and Genizon, as well as initiatives on biodiversity. Since July 2020, it has stored almost all (240,000) of the samples positive for COVID-19 collected in Québec's 80 screening centres.

In addition, several projects involving the CES and the Biobank, including the genotyping of 18,000 CARTaGENE samples, the sequencing of a reference genome representative of the Québec population from the CARTaGENE cohort and the complex logistics surrounding the reception, aliquoting, inactivation, RNA extraction and sequencing of thousands of positive COVID-19 viral samples, will allow for even closer ties with the health ecosystem.

Québec can count on the CES to produce valuable genomic data, ensure scientific and economic competitiveness, create wealth, save lives and aspire to improve the well-being of the population as a whole. The CES has carved out an enviable place for itself in Québec and Canada, and it now has everything it needs to take its success to the next level.

BALANCED BUDGET

In 2020-2021, the CES served 882 research teams, including 37 private companies, generating total revenues of $11 million. Quite the feat since the CES was closed for part of the first quarter due to the pandemic. We can thank our motivated staff for these results. They successfully adapted to the new, restrictive methods, whether working from home or on site, and coped with many health measures that added extra steps to their tasks, all the while keeping the technology centres running smoothly, efficiently and on budget. Through it all, our staff dedicated themselves to the greater good by assisting the research community and public health authorities and contributing to the advancement of science.

In addition to the concerted effort to combat COVID-19, we had to maintain our focus on our regular activities such as finding new clients and supporting the major research projects of Génome Québec and Genome Canada. We have continued construction work on our permanent facilities at CHU Sainte-Justine, which is scheduled for an opening in the spring of 2022. We also created 10 new positions to meet our many commitments.

ACCREDITATION PROCESS UNDERWAY

Lastly, we have been hard at work on our accreditation to ISO 15189, an international standard for quality and competence requirements for medical laboratories. This certification, which we hope to obtain within the next year, will help maintain and build our reputation for excellence around the world and, in turn, ensure the future of our technology centres.

Lastly, I would like to thank our entire staff for their resilience, commitment and unwavering professionalism.

PUBLIC OUTREACH AND EDUCATION

MARIE-KYM BRISSON
Vice President, Strategic Development and Public Affairs

"Science and genomics, in particular, are essential pillars of our modern societies."

GENOMICS, IN THE PUBLIC EYE, NOW MORE THAN EVER!

Over the past year, the COVID-19 pandemic has shown us, among other things, that science and genomics, in particular, are essential pillars of our modern societies. The topic is on everyone's lips and has become the focus of discussions and public debates, leaving no one unaffected. Scientists are now the talk of the town whether it is in traditional and social media or at government press conferences. With interest in science at its peak, Génome Québec took advantage of this wave of sympathy to bolster its visibility. The timing was perfect to capitalize on one of the most important aspects of our mission: education and social acceptance.

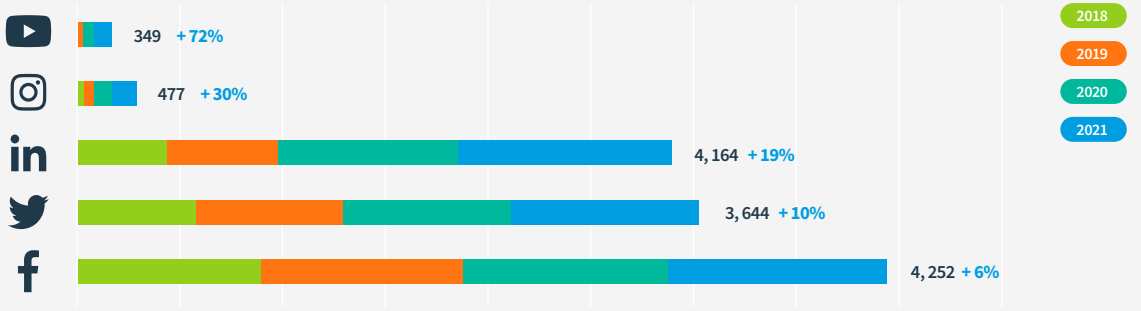
A REORGANIZED TEAM READY TO FACE MANY CHALLENGES AHEAD

But first, the Strategic Development and Public Affairs team had to address a major challenge at the very start of its fiscal year: it had to find replacements for 50 percent of its staff. Even in normal times, such a task would have been difficult, but with our team working remotely, it was extremely demanding. The entire process, from interviews to on-boarding and training new hires, had to be conducted in virtual mode, while keeping up with our usual deliverables. We're pleased to report that by January 2021, we had a full new team in place, ready to meet the many challenges of ensuring the democratization and influence of genomics, as well as its integration into Québec's social and economic development.

NUMEROUS OPPORTUNITIES FOR VISIBILITY

The pandemic has provided many opportunities for Génome Québec and genomics to gain exposure. On the scientific front, many doors have opened for us, allowing Génome Québec to actively participate in the fight against COVID-19. This has had a positive impact on our reputation. The media called on our experts in order to better understand processes such as sequencing and biobanking. These terms, once unknown to the general public, have now become part of everyday discourse. Moreover, we have opened the doors of our labs to journalists, given interviews, participated in print media profiles, issued press releases and even created a COVID-19 section on our website. We have also been very active on social media as the following graph shows:

SOCIAL MEDIA - EVOLUTION OF THE NUMBER OF MEMBERS



PUBLIC OUTREACH AND EDUCATION

AN INTEGRATED, ADAPTED COMMUNICATION PLAN

As per our 2020-2021 corporate objectives, a new integrated communication and education plan was submitted to the Board of Directors in March 2021. This two-year plan sets out the communication and education activities relating to our strategic and cross-cutting issues, in a context of employee mobilization and ongoing delivery of services. It also focuses on internal communication, a key factor in relation to teleworking, and one in which we have already invested time and energy, for instance by regularly publishing messages from our President and CEO.

EDUCATION MISSION

Our education initiatives gained considerable momentum and credibility with our partners this year. Although schools grappled with many issues related to the pandemic, with teachers having to adapt their subject matter and content to changing health guidelines and various waves of the virus, our *Flight450 Minilab* and *Mission ADN-Eau* projects have generated a great deal of interest among teachers and students. Even under these challenging circumstances, we can proudly say «mission accomplished" on the education front.

MISSION ADN-EAU, CITIZEN SCIENCE AT ITS BEST

The *Mission ADN-eau* citizen science project, in its second edition this year, was a resounding success. A total of 26 schools and over 1,100 students participated in the initiative that brought together teens, adults and scientists to conduct research aiming to gain a better understanding of Québec streams. Developed in cooperation with the Ministère des Forêts, de la Faune et des Parcs, the Ministère de l'Environnement et de la Lutte contre les changements climatiques, and with financial support from Hydro-Québec and the Ministère de l'Économie et de l'Innovation, this year's experiments took place in the regions of the Capitale-Nationale, Chaudière-Appalaches, Bas-Saint-Laurent and Saguenay-Lac-Saint-Jean. Representatives from the two ministries involved reiterated the value and relevance of the results obtained for their respective research projects, contributing to sound decision making on the health of streams in Québec.

BRIEF ON GENETIC EDUCATION IN HIGH SCHOOL

Génome Québec commissioned a study on the impact of education initiatives in biology at the secondary school level. The task was assigned to a research team on science and technology education from Université du Québec à Montréal, led by Pierre Chastenay. The purpose of the study was to understand what the research data on science education from the last 10 years can tell us about the impact of teaching genetics concepts in high school. Several interesting findings emerged from the study and we will be integrating these recommendations when we develop our future education projects. More specifically, the report confirmed that the current approach used by Génome Québec aligns perfectly with the success factors listed, i.e., the «hands-on» models and real-world experiments such as those featured in the *Flight450 Minilab* and *Mission ADN-eau*.

SOCIAL ACCEPTANCE

As part of our social acceptance mission, we continue to produce material that presents our positions and informs our various audiences on complex issues that have the potential to generate debate and controversy. True to form again this year, we published two new policy briefs: Genomics Tools for a Better Use of Pesticides in Agriculture and Using Genomics Tools to Address Traceability Challenges in Agriculture and Agrifood.

The results of *Mission ADN-eau* were unveiled during a video conference on April 30, 2021. Tiny living microorganisms, invisible to the naked eye, were discovered in the water, along with many benthic macro invertebrates or benthos. Benthos are organisms without a backbone, such as insects, molluscs, crustaceans and worms, which inhabit the bottom of rivers and lakes and can be seen without a microscope.

The amateur student scientists were also surprised to find one of the world's hardiest creatures: the tardigrade. Also called "water bears," tardigrades are capable of surviving extreme situations, even in the vacuum of space. They are rarely detected by government scientists in traditional sampling, confirming the value of this citizen project.

Our budding scientists also discovered 20 different species of fish with names as poetic as brook trout, fathead minnows and five-spined sticklebacks. Environmental DNA allows the detection of rare species that are more difficult to capture with traditional sampling methods, such as nets.

The in-class *Flight 450 Minilab* gives students the opportunity to use the scientific method and handle real DNA.

The scientific investigation included in this minilab is an extremely rewarding experience as students oversees a polymerase chain reaction (PCR) to replicate real human DNA fragments and then analyze the PCR results by making the DNA migrate in agarose gel electrophoresis.

PUBLIC POLICIES

As is the case year after year, we took part in the public policy conversation by submitting two briefs, the first to the Ministère de l'Économie et de l'Innovation, as part of the consultations on the 2017-2027 Québec Life Sciences Strategy, and the second to the Ministère des Finances during the pre-budget consultations. Our contribution reflected our vision of creating economic value and efficiency and enhancing our national and international influence.

CONCERTATION TABLE ON PRECISION MEDICINE

In 2020, the Génome Québec Concertation Table on Precision Medicine was created following a decision by the Board of the Quebec Network for Personalized Health Care (QNPHC) to dissolve the non-profit organization and transform it into a roundtable.

It was unanimously decided to have Génome Québec lead the new roundtable, whose purpose is to capitalize on Québec's strengths in precision medicine and consolidate existing expertise in this area. This decision was made to ensure the roundtable's successful launch, solid organizational structure and networking capacity, all factors that have earned Génome Québec a reputation for excellence in scientific and economic development. The roundtable is independent in its positions and actions. I would like to thank the Strategic Development and Public Affairs team, which has shown tremendous flexibility and creativity in finding solutions during this challenging year. I also acknowledge their remarkable adaptability and dedication to science.

GÉNOME QUÉBEC: AN INTEGRAL PART OF THE SOLUTION

- Hosting of a webinar on mRNA vaccines in collaboration with the Association des communicateurs scientifiques
- Participation in a panel discussion: Cellular Therapy: How to make Québec a leader, as part of EFFERVESCENCE 2021
- Participation in a Let's Talk Science symposium
- Participation in the Université de Montréal job fair
- Partnership agreement with Hydro-Québec for *Mission ADN-eau*

GenomeQuébec XXIe

Due to the pandemic, we needed to rethink our outreach strategy on our 20th anniversary. Which is exactly what we did by transforming it into events highlighting our 21st year! Throughout the year, Génome Québec will be celebrating its anniversary with internal and external activities referencing the number 21. We've adapted our logo in continuity with the previous one.

The logo was developed by taking the double helix, which is used to depict Génome Québec, and splitting it in two to form the number "20" in Roman numerals. The number 1 was then added to reference the year. It also features the four colours of our areas of activity (health, agrifood, forestry and the environment). Each colour gradually blends into the next to illustrate how knowledge is shared from one sector to the next. The Roman numerals call to mind the Latin roots of our province and emphasize that we produce knowledge in French.

This logo spark curiosity, raises questions and stimulates the thirst for knowledge that is so essential to science. It points to what we want in the future: to shed more and more light on the, as yet, unexplored areas of genomics.

FINANCIAL ACTIVITY REPORT

MARC BERGERON
Vice President, Finance and Administration

"During the 2020-2021 fiscal year, Génome Québec invested a total of $61.7 million."

A YEAR OF FISCAL BALANCE

Génome Québec receives most of its financial support from the Québec government and Genome Canada for the funding of research projects and the operation of its technology centres.

As of March 31, 2021, our portfolio included 97 research projects, and two technology centres in operation. During the 2020-2021 fiscal year, Genome Québec invested $40.2 million in its activities. This amount, combined with the $21.5 million invested by our partners, brings our overall injection of funds to $61.7 million.

The COVID-19 pandemic, which took hold in March 2020, has had a relatively large impact on Génome Québec's activities and on the results for the fiscal year ending March 31, 2021. Delays in research projects and the shutdown of the operations of the technology centres for the first two months of the pandemic led to a significant drop in the volume of activities, both in terms of research projects and revenues generated by the technology centres. However, the vigorous recovery observed since the third quarter has allowed Génome Québec to emerge relatively unscathed and achieve fiscal balance despite this unusual year.

During the fiscal year, research projects represented a business volume of $41.3 million compared to $43.3 million for the previous year. The most significant activity resulted from the following three competitions: Genomics and Precision Health, Genomic Solutions for Natural Resources and the Environment, and Genomic Solutions for Agriculture, Agri-Food, Fisheries and Aquaculture. During the year, the development of CARTaGENE was also completed. Moreover, Génome Québec made a significant contribution to the fight against COVID-19 through the following initiatives: the Canadian COVID-19 Genomics Network, the COVID-19 Regional Genomics Initiative, Biobanque québécoise de la COVID-19, and the variant surveillance program. The budget for projects underway totalled $218.7 million, $89.5 million of which are still to be completed.

For the year ending March 31, 2021, sales from the technology centres totalled $12 million, down 19% from the previous year. The centres posted an excess of revenues over expenses of $1,068,672 compared to $98,079 in the previous year.

Expenses for strategic development were $470,695 compared to $616,945 last year.

General and administrative expenses amounted to $2,527,590, a decrease of $372,783 compared to the previous year. After certain adjustments, these expenses represented 4.1% of the year's overall investment. Investment and intellectual property income reached $1,077,470, for a return of 1.39%.

The excess of revenues over expenses totalling $1,289,587 is derived from the technology centre surplus of $1,068,672, plus investment and intellectual property income of $1,077,470, minus activities carried out without government funding, that is strategic development, Administrative Centre operating costs, and researcher support, for a total of $856,555. Unrestricted net assets increased by $479,397 to $2,500,905 as of 31 March 2021. Net assets restricted for research and infrastructure projects totalled $897,120. Net assets allocated to the contingency and technology investment fund totalled $2,279,303.

Génome Québec has respected the terms and conditions in compliance with the contractual agreements it has signed with its main financial partners.

Daniel Coderre
President and CEO
Génome Québec

Marc Bergeron
Vice President, Finance and Administration
Génome Québec

STATEMENT OF FINANCIAL POSITION MARCH 31, 2021, WITH COMPARATIVE INFORMATION FOR 2020

The following Statement of Financial Position as at March 31, 2021 and 2020, and the Statement of Operations for the years ending March 31, 2021 and 2020 are provided as illustrative summaries only and are not intended to replace the full audited financial statements of Génome Québec.

The full financial statements of Génome Québec were audited by KPMG LLP, Chartered Professional Accountants, and reported on June 17, 2021.

ASSETS

	2021	2020
Current Assets		
Cash and cash equivalents	$2,999,022	$48,150,538
Short-term investments	$56,318,768	$27,317,910
Accounts receivable and work in progress	$3,309,686	$3,936,519
Advances to genomics research projects	$5,140,645	$693,777
Stocks	$2,019,358	$2,167,207
Prepaid expenses	$508,798	$242,403
	$70,296,277	**$82,508,354**
Long-term investments	$17,927,362	$8,860,235
Capital assets	$4,890,690	$5,183,856
	$93,114,329	**$96,552,445**

LIABILITIES AND NET ASSETS

	2021	2020
Current liabilities		
Accounts payable and accrued liabilities	$3,810,633	$2,683,801
Obligations from an agreement	—	$206,517
Deferred revenues	$705,285	$527,172
	$4,515,918	$3,417,490
Deferred contributions		
Future expenses	$77,783,040	$83,576,600
Capital assets	$3,474,752	$3,548,481
Deferred lease inducements – leasehold improvements	$388,475	$434,179
Deferred lease inducements – other	$247,353	$160,491
	$86,409,538	**$91,137,241**
Net assets		
Unrestricted	$2,500,905	$2,021,508
Restricted – Invested in capital assets	$1,027,463	$1,201,196
Restricted – Technology investment and contingency funds	$2,279,303	$1,337,092
Restricted – Research projects	$897,120	$855,408
	$6,704,791	**$5,415,204**
	$93,114,329	**$96,552,445**

INCOME STATEMENT

	2021	2020
Revenues		
Amortization of deferred contributions related to future expenses	$26,800,789	$31,388,483
Amortization of deferred contributions related to capital assets	$1,132,900	$573,791
Investment and intellectual property revenues	$1,077,470	$1,119,081
Revenues from technology centres	$12,022,834	$14,807,261
Other revenues	$51,952	$246,519
	$41,085,945	**$48,135,135**
Expenses		
Genomics research projects	$19,734,258	$20,007,128
Research projects, *Fonds de partenariat pour un Québec innovant et en santé*	—	$2,268,334
Technology centres operational costs	$15,591,064	$21,060,519
General and administrative expenses	$2,527,590	$2,900,373
Strategic development	$470,695	$616,945
Depreciation of capital assets	$1,132,900	$573,791
Depreciation of restricted capital assets	$339,851	$176,819
	$39,796,358	**$47,603,909**
EXCESS OF REVENUES OVER EXPENSES	**$1,289,587**	**$531,226**

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Suzanne Vinet

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CEA/Centre national de recherche en génomique humaine, France

Tim McAllister, PhD
Agriculture and Agri-Food Canada

Owen White, PhD
Microbiomic Expert, University of Maryland, United States

OUR TEAM

EMPLOYEES

Marc Bergeron
Valérie Bergeron
Diane Bouchard
Marie-Kym Brisson
Marie-Paule Choquette
Cristina Ciurli
Daniel Coderre
Hélène Fournier
Nathaly Hébert
Diana Iglesias
Charlotte Josepovic
Mélissa Khadra
Dominika Kozubska
Renée Larouche
Fabienne Lefebvre
France Lescarbeau
Darie Lessard
Stéphanie Lord-Fontaine
Noémie Poirier Stewart
Laetitia Sabatier
Michaël Sabeh
Nidia Salazar
Annina Spilker
Caroline Telekawa
Vincent Trudel
Tu Linh Van

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François-Marie Bacot
Jacques Boisvert
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Sébastien Brunet
Valérie Catudal
Philippe Daoust
Geneviève DonPierre
Nathalie Émond
David Faucher
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Martine Lavoie
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Sonia Saghi
Maria-Laura Suarez
Alexandra Tanguay
Daniel Tessier
Berchnaude Vernet
Annie Verville
Daniel Vincent
Hoai-Thu Vo
Hao Fan Yam
Corine Zotti

BIOBANK

Steve Arsenault

CORPORATE INFORMATION

For more information, please contact:

France Lescarbeau
Coordinator, Marketing and Communication
T 514 398-0668, ext. 232
flescarbeau@genomequebec.com

THANKS TO OUR PARTNERS

Québec

GenomeCanada

HEAD OFFICE

630, boul. René-Lévesque Ouest, bureau 2660
Montréal (Québec) H3B 1S6
T 514 398-0668
gqinfo@genomequebec.com
genomequebec.com

AUDITORS KPMG LLP

600, boul. de Maisonneuve Ouest, bureau 1500
Montréal (Québec) H3A 0A3
kpmg.ca

LEGAL ADVISER

Me Jean Brunet
Stein Monast, S.E.N.C.R.L.
70, rue Dalhousie, bureau 300
Québec (Québec) G1K 4B2
steinmonast.ca

GENOME CANADA

150, rue Metcalfe, bureau 2100
Ottawa (Ontario) K2P 1P1
genomecanada.ca

MINISTÈRE DE L'ÉCONOMIE ET DE L'INNOVATION

710, place D'Youville, 3e étage
Québec (Québec) G1R 4Y4
economie.gouv.qc.ca

CENTRE D'EXPERTISE ET DE SERVICES GÉNOME QUÉBEC

3175, chemin de la Côte-Sainte-Catherine
Montréal (Québec) H3T 1C5
T 514 398-7211
infoservices@genomequebec.com
cesgq.com

BIOBANQUE GÉNOME QUÉBEC ET CIUSSS DU SAGUENAY-LAC-SAINT-JEAN

305, rue Saint-Vallier
Chicoutimi (Québec) G7H 5H6
T 514 398-7211
infoservices@genomequebec.com

GenomeQuébec

genomequebec.com