



GenomeCanada  
**20 YEARS**

**COLLABORATING**  
ON THE FUTURE

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ANNUAL REPORT 2019-20





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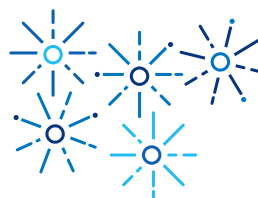


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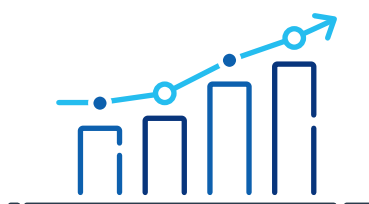
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## MESSAGE FROM THE CHAIR



“Genome Canada’s rich 20-year legacy has readied us to play an integral role in the post-COVID economic recovery period. We have a clear vision, strong leadership, a dynamic pan-Canadian network and a proven track record of leveraging our federated model to collaborate on global challenges for the benefit of Canadians.”

– Elizabeth Douville, Chair

When I became Chair of the Board of Genome Canada a year ago, I was tremendously excited about the transformative power of genomics — from the treatment of rare diseases to helping address the challenge of producing enough food to feed the world’s growing population in the face of climate change. And, looking at the rapid developments in gene editing, synthetic biology, big data and artificial intelligence, I was well aware that Canada had yet to realize the full potential of this evolving science.

In the last few months, as Canada and the world have courageously battled COVID-19, the promise of genomics has become even more apparent. Canada’s breadth and depth of genomics research, technologies and data have proven to be among the strongest tools for short-term viral containment and long-term health-care response and management. Front-line workers in health care, public health authorities, government policymakers and researchers working on testing, drug treatments, vaccines and immunity initiatives are all leaning on robust scientific knowledge to make the most informed choices for Canadians. Genomics continues to contribute immensely.

This past year we bid farewell to Marc LePage, who served as President and CEO of Genome Canada and prior to that of G enome Qu ebec, and welcomed [Rob Annan as President and CEO alongside several talented new members to our senior team](#). Looking ahead, it is amply clear that Genome Canada’s rich 20-year legacy has readied us to play an integral role in the post-COVID economic recovery period. We have a clear vision, strong leadership, a dynamic pan-Canadian network and a proven track record of leveraging our federated model to collaborate on global challenges for the benefit of Canadians.

As Canada charts its recovery course, and perhaps faces a second wave of the novel coronavirus, the work we do at the intersection of genomics and society will become increasingly important. We will certainly take stock of the scientific advances. At the same time, however, we must continue to examine the ethical, environmental, economic, legal and social impacts they present and how these figure into Canada’s leadership role in the global bioeconomy.

The year ahead will hold many challenges for Canadians. Genome Canada will continue to provide national leadership and drive positive, made-in-Canada impact on society and the economy by advancing genomics research and innovation to improve health, agribusiness, the environment and natural resources.

A handwritten signature in black ink, appearing to read 'Elizabeth Douville', with a long horizontal line extending to the right.

**DR. ELIZABETH DOUVILLE**  
**CHAIR, BOARD OF DIRECTORS**

## MESSAGE FROM THE PRESIDENT AND CEO



**“Taking the helm of this organization in January 2020 has been a great privilege... To say that I am inspired by the energy, resilience and commitment I see around me is an understatement.”**

*– Rob Annan, President and CEO*

Interconnectedness is a key characteristic of the modern world. As the novel coronavirus forged a devastating path around the world in early 2020, the scope of our connections was made obvious. For 20 years Genome Canada has been advancing Canada’s leadership in the application of genomics-based biosciences for human health, the environment and across key economic sectors — and we were ready. Two decades of investment in research allowed us to deploy and respond quickly to the global challenge posed by COVID-19.

Early on, Genome Canada got involved in Canada’s COVID-19 response as part of a coordinated effort with other funding organizations including the Canadian Institutes of Health Research (CIHR), the Natural Sciences and Engineering Research Council (NSERC), the Social Sciences and Humanities Research Council (SSHRC) and the International Development Research

Centre (IDRC). Together, we leveraged \$54.2 million in funding to support 99 research projects looking at medical, social and policy countermeasures to help stem the spread of the virus.

Genome Canada also launched a regional genomics initiative to catalyze rapid response solutions to COVID-19 across the country through the six Genome Centres. Similarly, our colleagues at Genome British Columbia and Génome Québec hit the ground running with their provincial governments, issuing strategic calls to their genomics communities. An additional \$38.4 million in funding was announced for Genome Canada to launch the Canadian COVID Genomics Network (CanCOGeN), a partnership that will provide crucial science in this pandemic.

This response from the Canadian genomics community is a testament to the Government of Canada’s two-decade investment in the Canadian Genomics Enterprise. In 2000, the Government boldly envisioned a path for Canada to become a world leader in what has proved to be a truly transformative field of discovery. The creation of Genome Canada represented a milestone public investment in science, rooted in a willingness to imagine possible, more prosperous, futures where advances in science and technology benefit everyone.

This promise of science is the very core of what drives Genome Canada and the returns of this investment are everywhere. Canada is an innovator in the application of genomics in precision health, modern agriculture, cleantech and environmental remediation. Make no mistake: we are in the midst of a biosciences revolution that is fundamentally transforming our world.

To say that I am inspired by the energy, resilience and commitment I see around me is an understatement. To our staff who remain dedicated in the face of immense change; to our colleagues at the Genome Centres who provide inspired leadership that keeps our enterprise a truly national endeavour; and to our Board of Directors who have demonstrated great vision to ensure we harness the full force of our network – thank you. And, to the innumerable researchers who push the limits of knowledge and application every day, we commit to continue supporting your vision and working with you to bring those ideas to life.

And thanks to all of you who have contributed so much to the first 20 years of Genome Canada. There is much to be proud of. And there remains much to be done.

A handwritten signature in black ink, appearing to read 'Rob Annan', written in a cursive style.

**DR. ROB ANNAN  
PRESIDENT AND CEO**

# 20 YEARS OF COLLABORATING ON THE FUTURE

## 20 YEARS GenomeCanada COLLABORATING ON THE FUTURE

In 2019-20, Genome Canada prepared for a milestone year. We began taking stock of our accomplishments over two decades of foundational work, planning ways to mark the occasion and mapping out the road ahead. It is with this 20<sup>th</sup> anniversary lens that we framed this year's annual report.

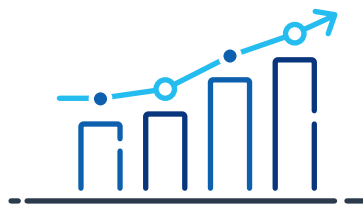
### EARLY DAYS...

Genome Canada was created amid the excitement of the Human Genome Project. Convinced that Canada needed a dedicated organization to provide both funding and leadership in this space, a group of Canadian science leaders called upon the government to get more involved in genomics. Genome Canada was born.

While the early years focused on capacity building, it was clear from day one that Canada's approach would be multi-sectoral and interdisciplinary. This approach has distinguished Genome Canada among national genomics initiatives, with technologies and infrastructure developed in a human health context also used to sequence salmon, spruce or wheat. Twenty years on, Canada is a world leader in the application of genomics across diverse sectors, particularly in forestry, fisheries, agriculture and mining.

As we reflect on this rich history, what is also clear is that thoughtful, long-term investment in research serves us well. In times of crisis, science leads.

### GENOME CANADA HAS CARVED OUT IMPORTANT AREAS OF LEADERSHIP IN GENOMICS:



## \$3.9 BILLION

Supported \$3.9 billion in total investment including \$1.6 billion federal dollars and \$2.3 billion in co-funding through 6 regional Centres



## 455 PROJECTS

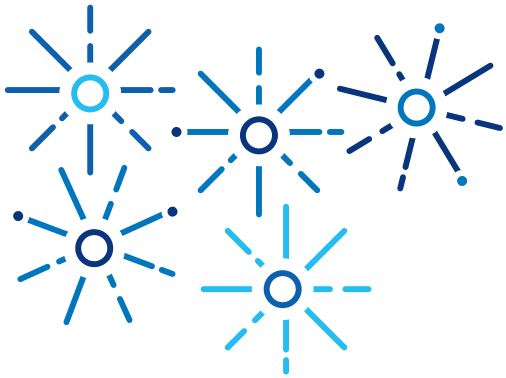
Funded 455 projects in 7 sectors (health, agriculture and agri-food, forestry, fisheries and aquaculture, environment, energy and mining)



## 2<sup>ND</sup> WORLDWIDE IN PATENTS

Helped make Canada 2<sup>nd</sup> only to the U.S. in genomics patents

# #GC20IN2020



## 20 YEARS

20 years and counting



## 82 START-UP COMPANIES

Contributed to the launch of 82 start-up companies

“Biosciences will revolutionize the 21<sup>st</sup> century as digital technologies revolutionized the 20<sup>th</sup> century... If you think the past two decades have been exciting for biosciences research, just wait to see what the next 20 years has in store.”

– Rob Annan, President and CEO

### 20 YEARS IN THE MAKING...

This is an exhilarating time for genomics and an exciting new era for Genome Canada. As the science explodes in multiple directions, we are building on our strong foundation of achievements to meet new challenges and capitalize on new opportunities. As Canada’s only national organization focused exclusively on harnessing the power and potential of genomics, we are committed to mobilizing the capacity of this relatively young science to improve the lives of Canadians.

- Through the implementation of precision health, better diagnostics and new therapies, genomics **will help make Canadians healthier** and increase the efficiency of the health-care system.
- By driving innovation in the bioeconomy, genomics will improve productivity and support new products, making **Canadians more prosperous**.
- And, through adaptation to and mitigation of climate change, improved techniques for managing pollution, and better management of natural systems, genomics will help **create a cleaner, more sustainable environment**.

Always looking ahead, Genome Canada will be shifting a greater portion of our efforts to supporting strategic, mission-driven research — with line-of-sight to application and the potential to help solve societal challenges of both national and global importance. The very makeup of our world is changing; McKinsey Global Institute recently estimated that as much as [60% of the physical inputs to the global economy could be produced biologically](#).

Our 2020-21 corporate goals build on recent successes and learning. We will continue to drive high-impact research, deliver effective programs that support our mission, and promote the responsible application of genomics in Canada. We are retaining and growing the talent necessary to deliver on these goals. For more information about our corporate goals for the coming year, see our [2020-21 Corporate Plan](#).

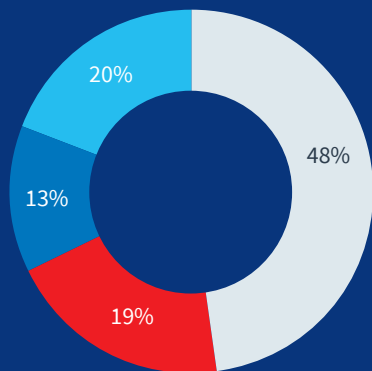
## WE ARE READY: WE ARE 20 YEARS IN THE MAKING, AND EXCITING TIMES LIE AHEAD.

# THE YEAR IN REVIEW

This was a memorable year for Genome Canada. We achieved significant results, launched exciting new projects, renewed our leadership team and made considerable progress towards our objectives. The year culminated in our national leadership role in mounting the Canadian COVID Genomics Network (CanCOGeN) as part of the Team Canada science and public health response to the COVID-19 pandemic.

Operating in partnership with six independent Genome Centres – Genome Atlantic, G enome Qu ebec, Ontario Genomics, Genome Prairie, Genome Alberta and Genome British Columbia – we supported research projects totalling \$183.4 million, including support from federal, provincial, industrial and other sources. Together, Genome Canada and the Centres constitute the Canadian Genomics Enterprise, working together to align federal and provincial strategy and funding, and to build exceptional interdisciplinary teams focused on putting genomics into the hands of those who will use it.

## 2019-20 RESEARCH FUNDING SUPPORTED BY THE CANADIAN GENOMICS ENTERPRISE



## 2019-20 BY THE NUMBERS

32

new projects, representing \$161.7 million in total funding, \$56.2 million flowing through Genome Canada and \$105.5 million through other partners

19

projects in the Genomic Applications Partnership Program (GAPP)

3

projects in the Genomics in Society Program

8

projects in the Large-Scale Applied Research Project (LSARP) Competition

10

Genomics Technology Platforms successful in interim review and received additional \$21.3 million in funding

\$25M

call for applications for an LSARP Competition in natural resources and the environment

“We are harnessing the full power of Genome Canada’s national network of researchers. We are taking cues from our governments, who are making swift investments in a diverse mix of research solutions to COVID-19. This variety of research approaches is what will move us to containment in the short term and to sustainable management in the long term.”

- Dr. Rob Annan, President and CEO



## SUCCESS STORIES



### Improving diagnoses for rare genetic diseases

Collectively, mutations in just one of a patient's many genes can cause more than 7,000 different rare diseases. Although these diseases are affecting at least 500,000 Canadian children, the most advanced genetic tests are able to diagnose fewer than half of these children. Drs James Dowling and Michael Brudno of The Hospital for Sick Children are [investigating the potential of RNA sequencing](#) as a new clinical diagnostic tool to identify genetic mutations responsible for undiagnosed diseases and to uncover new causes of genetic disease. *(In partnership with Ontario Genomics)*

### A rare disease pilot program for critically ill newborns

Rare genetic disorders and congenital malformations affect 1-2% of live births in Canada and are the leading cause of hospitalization and death of infants. It is extremely difficult to diagnose many of these rare conditions as infants' symptoms often differ from those observed in older patients. Dr. Jacques Michaud of CHU Sainte-Justine Research Centre and Denis Ouellet of Ministère de la Santé et des Services sociaux are [spearheading a rapid clinical genome-wide sequencing program](#) for critically ill newborns and infants in Quebec. A genetic diagnosis in the first few months of life can have crucial implications for the clinical management of newborns and infants, as well as on a child's health for their entire life. *(In partnership with Génome Québec)*





## Breeding better oysters

The oyster industry in Canada is expanding rapidly, with revenues of nearly \$31 million in 2017, a 25% increase from 2016. This growth, however, cannot be sustained by relying solely on wild-caught oyster spat. Genomic tools, such as high-density SNP chips, are required to create a rigorous breeding program that selects for traits such as improved growth, better flesh quality and resistance to disease. Dr. Louis Bernatchez of Université Laval is partnering with Shippigan, New Brunswick-based L'Étang Ruisseau Bar Ltée (ERB), Eastern Canada's largest oyster hatchery seed supplier, to [produce the first production-ready strain of selectively bred Eastern oyster](#). This new strain could grow up to 20% faster and have more disease resistance — while maintaining the outstanding taste. Genomics could increase ERB's production by 60%. *(In partnership with Genome Atlantic and Génome Québec)*

## Translating “omics” for competitive dairy products

The projected increase in global demand for quality aged cheddar requires a corresponding increase in Canada's manufacturing capacity and efficiency. Dr. Gisele LaPointe of the University of Guelph is working with Lactalis Canada (formerly Parmalat Canada), the top producer of aged cheddar in Canada, to [validate and implement metagenomic, metaproteomic and metabolomics tools](#) modified to meet the technical requirements of cheese production. The project will improve manufacturing processes and controls to overcome current bottlenecks and significantly increase the company's production capacity. *(In partnership with Ontario Genomics)*





## More productive and resilient spruce forests

Spruce trees, which produce high-quality wood and fibre, make up a large share of forestry's \$19.8 billion contribution to Canada's GDP. Despite well-established spruce breeding programs in British Columbia and Quebec, climate change and related epidemics of insects and droughts are reducing productivity. The Spruce-Up project, led by Dr. Joerg Bohlmann of the University of British Columbia and Dr. Jean Bousquet of Université Laval, will [accelerate the development and use of genomics-improved spruce stock](#) that is more resistant to insects and drought, uses nutrients efficiently, and results in improved wood quality and productivity. Spruce-Up is estimated to more than double the net economic output value of spruce forests relative to conventional breeding. *(In partnership with Genome British Columbia and Génome Québec)*



## Harnessing wetlands to clean up oil spills

The environmental impacts of oil spills are a major public concern and impede social license for the development of the petroleum sector in Canada. In particular, there is uncertainty around the best methods for cleaning oil spills in sensitive freshwater ecosystems. Vince Palace of the International Institute for Sustainable Development-Experimental Lakes Area, the world's freshwater laboratory, is partnering with the Canadian Association of Petroleum Producers and the Canadian Energy Pipeline Association to [investigate the effectiveness of engineered floating wetlands \(EFWs\) in cleaning up oil spills in freshwater lakes](#). EFWs are a proven method for nutrient and contaminant treatment in many scenarios, but their ability to remediate oil and hydrocarbons from water is a growing area of research. *(In partnership with Genome Prairie and Génome Québec)*

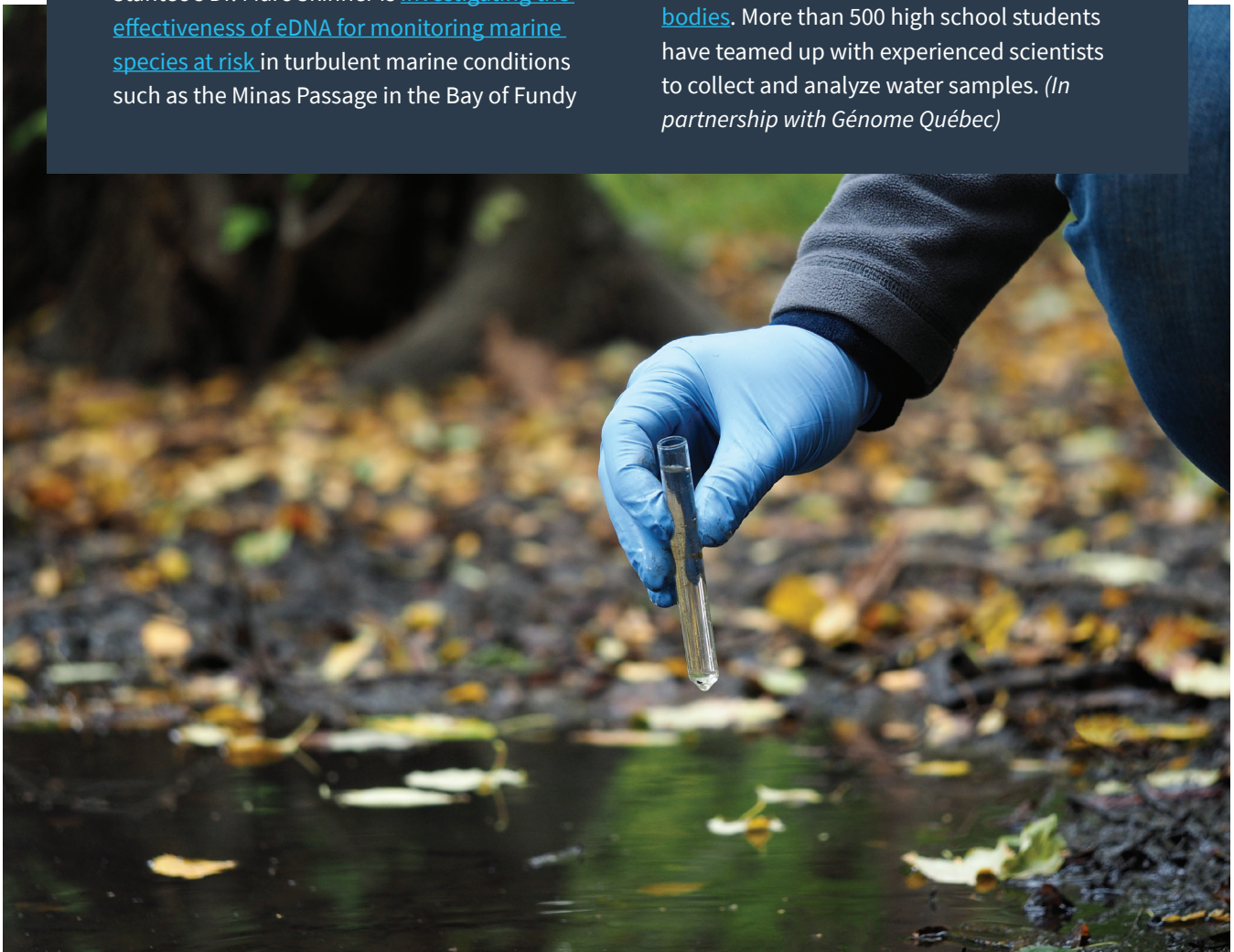
## Using eDNA to protect vulnerable ecosystems

Environmental DNA (eDNA) is a promising new tool for environmentally monitoring living organisms in water and on land. It works by analyzing DNA found in tissue and waste samples collected from environmental samples of seawater, soil and even air to determine what species are present. Several projects in Canada are assessing the potential of eDNA to support rapid and effective protection of vulnerable ecosystems:

- Stantec's Dr. Marc Skinner is [investigating the effectiveness of eDNA for monitoring marine species at risk](#) in turbulent marine conditions such as the Minas Passage in the Bay of Fundy

where more than 160 billion tons of seawater flow through twice a day driven by the world's highest tides. *(Supported by Genome Atlantic)*

- Dr. Mehrdad Hajibabaei of the University of Guelph and the World Wildlife Fund-Canada are [using eDNA barcoding to generate biodiversity data for freshwater benthic macroinvertebrates](#), the small animals that live at the bottom of streams and rivers. They will analyze bulk samples collected by community-based monitoring efforts across a wide range of Canadian watersheds. *(In partnership with Ontario Genomics)*
- In Quebec, Mission ADN-eau (Mission eDNA), a citizen-based science project, is [using eDNA to explore the biodiversity of the province's water bodies](#). More than 500 high school students have teamed up with experienced scientists to collect and analyze water samples. *(In partnership with Génome Québec)*





## Saving farmed Atlantic salmon from climate change

Warming sea temperatures in the North Atlantic, which are already causing disease in salmon, are expected to rise by 2-4 degrees Celsius in the next two to three decades. This is a big concern for the sustainability of Atlantic Canada's \$2.4 billion aquaculture industry. Dr. Kurt Gamperl of Memorial University is using genomics and genetic sequencing to [help the industry adapt its production to rising temperatures](#) and to select more disease-resistant broodstock. This research will provide information on the environmental conditions where the fish grow best, what fish to breed for such conditions, and where to site sea-cages so that the fish are not exposed to unfavourable environmental conditions. *(In partnership with Genome Atlantic)*

## Sustainable cancer care

Cancer is a collection of related genetic diseases caused by DNA mutations that change how cells grow and develop. Recent innovations allow us to sequence the complete set of DNA and RNA in a patient's cancer. However, Canadians have limited access to precision oncology, an approach that develops treatments that target cancer cells based on specific cancer-causing mutations, due to a lack of data about its clinical- and cost-effectiveness. Drs Dean A. Regier (BC Cancer), Tania Bubela (Simon Fraser University) and Timothy Hanna (Queen's University) are partnering with Canadian learning health-care system initiatives for precision oncology to inform the [design of a system that turns genomic knowledge into sustainable cancer care](#). *(In partnership with Genome British Columbia and Ontario Genomics)*





## Transforming how infectious disease data are shared and analyzed

The One Health approach recognizes that the close intertwining of the health of humans, animals and the environment requires a collective approach to effectively detect, respond to and prevent infectious disease outbreaks. Genomics has transformed the detection and characterization of pathogens, expediting the development of diagnostic tests and vaccines. Dr. William Hsiao of the University of British Columbia and BC Centre for Disease Control Public Health Laboratory and Dr. Gary Van Domselaar of the Public Health Agency of Canada are creating [new platforms and tools to enable more secure real-time, multijurisdictional genomics data sharing and analysis](#). Better monitoring of the emergence and spread of pathogens in wildlife, food and food animals, and the environment will reduce disease burden, prevent agri-food trade embargoes and minimize costly food product recalls. *(In partnership with Genome British Columbia and Genome Prairie)*

## SELECTED ACCOMPLISHMENTS

### MAY 9, 2019

The Honourable Kirsty Duncan, then Minister of Science and Sport, launched [Dimensions: Equity, Diversity and Inclusion Canada](#), inspired by the UK's [Athena SWAN](#) program, and unveiled the Dimensions Charter. As a signatory of the Charter, Genome Canada made a [public commitment to embed equity, diversity and inclusion](#) (EDI) principles into our policies, practices, action plans and culture.

As such, we now have a high-level EDI Committee to drive forward a corporate plan to move the needle related to organizational operations, staffing, governance, programs, policy and public affairs.



Left to right: Then Genome Canada President Marc Lepage, then Minister of Science Kirsty Duncan and University of Saskatchewan President Peter Stoicheff, at Dimensions Charter signing.

### JULY 23, 2019

At the International Wheat Congress in Saskatoon, the Honourable Kirsty Duncan announced [\\$117 million in total funding for 19 research projects](#), including \$41.2 million in federal funding and an additional \$75.8 million invested by provincial governments, business and research partners. This included two projects in natural resources, six in the health



The Honourable Kirsty Duncan announces \$117 million in genomics funding at the International Wheat Congress in Saskatoon.

sector, and 10 in the agriculture/aquaculture sector, including a collaboration between researchers at the University of Saskatchewan and Agriculture and Agri-Food Canada to use [genomics to improve the breeding and production of wheat](#), a vital crop in global food security.

### OCTOBER 16 – 17, 2019

Coinciding with the one-year anniversary of the *Cannabis Act*, we convened stakeholders from academia, health care and industry at *Canadian Grown: The 2020 Cannabis Public Policy Conference*. We hosted four panel discussions related to human health and crop production, as well as a strategic session to identify and discuss genomics research priorities.



### NOVEMBER 13, 2019

We became a signatory to the [San Francisco Declaration on Research Assessment \(DORA\)](#) at the Canadian Science Policy Conference alongside four national funding partners: the Canada Foundation for Innovation, CIHR, NSERC and SSHRC. As a signatory, we reaffirmed our commitment to meaningful assessment of excellence in research funding.

### JANUARY 30, 2020

Genome Canada and Natural Resources Canada (NRCan) launched a Request for Applications for the [2020 Large-Scale Applied Research Project Competition: Genomics Solutions for Natural Resources and the Environment](#). Our investment of \$25 million, in addition to \$1.5 million from NRCan, will support projects related to energy, mining, forestry, water stewardship, healthy oceans, wildlife management/conservation and bioproducts that help conserve natural resources, protect the environment and support sustainable resource management. Due to pandemic-related matters, we have extended deadlines for the competition.

### FEBRUARY 4, 2020

Genome Canada and CIHR announced a [consultation to seek input from stakeholders on the cohort landscape in Canada](#). The goal is to advance collective thinking on opportunities to optimize collection and analysis of social, economic, environmental, health-care, lifestyle and human biological data in a manner that reflects Canada's unique population, including Indigenous populations and founder populations. Due to pandemic-related delays, the working group will resume its work in fall 2020 and a workshop with key stakeholders will take place in spring 2021.

## MARCH 2, 2020

On behalf of The Honourable Navdeep Bains, the Minister of Innovation, Science and Industry, Parliamentary Secretary William Amos [announced \\$44.4 million to support 11 genomics research projects](#) awarded through Genome Canada, including \$14.7 million in federal funding and \$29.7 million from provincial governments, businesses and research partners. This included one project in the agricultural sector, two in environmental remediation and eight in health care.



Parliamentary Secretary William Amos announces \$44 million in genomics funding at the McGill University Health Centre in Montreal.

### COMMITMENT TO RENEWAL

As a talent-driven and mission-oriented leader in Canada's research and innovation ecosystem, we invested heavily this year in our people. We successfully recruited new members for our governance and leadership team:

- Dr. Elizabeth Douville as our [new Chair of the Board of Directors](#) (June 2019);
- Dr. Rob Annan as the [next President and CEO](#) (January 2020);
- Scott Davies, CPA, CA as [Vice-President, Corporate Services and Chief Financial Officer \(January 2020\)](#); and
- Pari Johnston as [Vice-President, Policy and Public Affairs](#) (March 2020).

## MULTIMEDIA HIGHLIGHTS, 2019-20

195K+

website pageviews by 54K visitors

17.7K

total social followers, up by 26% from last year (Twitter, LinkedIn, Facebook, YouTube)

9,504

Twitter followers and 1.3 million impressions

3,829

LinkedIn followers, up by 106% from last year

24.7K

YouTube video views

35K+

views of 5 genomics videos in the [COVID-19 Rebound series](#) with *The Future Economy*

514

media stories mentioned Genome Canada

12 [press releases issued](#)

6 new [blog posts](#), including a 4-part series on GE3LS

7 new staff roles promoted and filled

[#GC20in2020](#)  
[#CanCOGeN](#)  
hashtags launched

“Dr. Annan’s leadership comes at an important time in the evolution of advanced biosciences. The pace of change is so astonishing – in gene editing, synthetic biology, big data and artificial intelligence – that as an organization, we really have a responsibility to evolve.”

- Dr. Elizabeth Douville, Board Chair



## COVID-19 RESPONSE

In spring 2020 and subsequent to fiscal year-end, Genome Canada led a national genomics response to the COVID-19 pandemic. This section gives a brief snapshot of this effort.

### MARCH 6, 2020

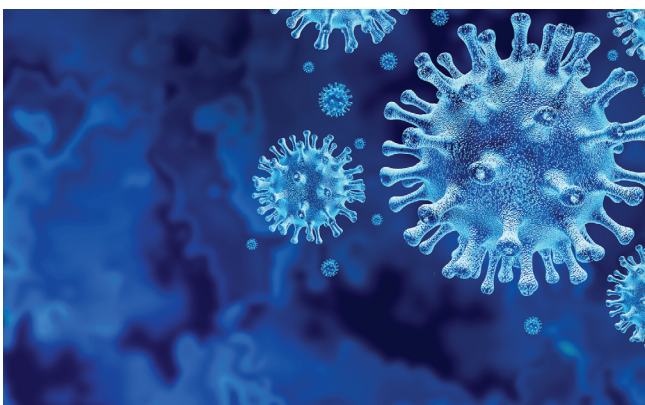
The Honourable Navdeep Bains, Minister of Innovation, Science and Industry, and the Honourable Patty Hajdu, Minister of Health, [announced \\$26.8 million to support 47 projects](#) (later [increased to \\$54.2 million and 99 projects](#)) in medical, social and policy countermeasures research to combat COVID-19. Genome Canada invested \$250,000 in funding from our own reserves to support a genomics-based project selected through a newly created [COVID-19 Regional Genomics Initiative](#): University of Calgary researcher [Dr. Dylan Pillai's medical countermeasures project in diagnostics](#). Within two months, Dr. Pillai's team proved that the new testing chemistry worked, announcing that the lab intended to refine the prototype over the next six months to make it a hand-held, point of care tool to detect viruses outside of hospital or lab settings.



Left to right: The Honourable Ministers Jean-Yves Ducloux, Mélanie Joly, Navdeep Bains and Patty Hajdu at a COVID-19 funding announcement at McGill University on March 6, 2020.

### MARCH 20, 2020

We issued a [statement on the measures taken to support our research teams](#) in light of COVID-19. For active projects, we took into account the need for some extensions/flexibility on various project deliverables, covering costs for cancellations and delays. We also continued payment to researchers re-deployed to the COVID-19 front lines and to those unable to continue their work on Genome Canada-funded projects due to circumstances beyond their control and who are not being reimbursed by other sources. We also adjusted competitions in progress to ensure fairness and equity.



### APRIL 2, 2020

Again drawing on our strategic reserve, and in partnership with the six regional Genome Centres, we launched [\\$1.5 million in rapid response funding](#) for research across the country with real potential to address near-term challenges related to COVID-19. The initiative used a fast-tracked review process for evaluating applications, enabling researchers to initiate projects quickly and deliver rapid solutions to the most pressing challenges and to address the immediate needs of the public health emergency.

### APRIL 23, 2020

We launched the [Canadian COVID Genomics Network \(CanCOGeN\)](#), backed by \$38.4 million in federal funding. The network is led by Genome Canada, in partnership with the six regional Genome Centres, the National Microbiology Laboratory and provincial public health labs, genome sequencing centres through CGEn, hospitals, universities and the private sector. CanCOGeN will coordinate and scale up existing genomics-based COVID-19 research in Canada and internationally to inform decision-making by public health authorities and support the development of therapies and vaccines. It will also oversee the sequencing of up to 10,000 patient and up to 150,000 viral samples, while building in-house capacity in public health laboratories across the country and supporting a coordinated approach to data analysis and sharing within Canada and internationally.

### MAY 4, 2020

CanCOGeN entered a [new partnership with the COVID-19 Genomics UK consortium](#). In sharing knowledge, lessons learned and protocols, the initiatives will support national efforts to coordinate the work of health-care, public, private and academic organizations to sequence and analyze the spread and evolution of the SARS-CoV-2 virus and how it affects patients.

## CanCOGeN

### MAY 12, 2020

As part of our commitment to strategic partnerships, we announced jointly with CIFAR [14 AI and COVID-19 Catalyst Grants](#). The grants are part of a program funded by the Government of Ontario, Microsoft Research, NSERC, Genome Canada, the Max Bell Foundation and others to support innovative, high-risk, high-reward ideas and projects that address the current pandemic. Two of the projects are specifically focused on genomics and artificial intelligence to address COVID-19, with Genome Canada funding a transmission modelling project.

## ACHIEVING OUR OBJECTIVES

We envision Canada as a world leader in the application of genomics-based biosciences for human health, agriculture, the environment and across the bioeconomy. To achieve this vision, we are committed to putting genomics into the hands of those who will use it to create benefits for all Canadians. This section outlines the three main objectives that guide our actions to make this vision a reality, and how we met these objectives over the last year:

- 1 DRIVE HIGH-IMPACT RESEARCH TO BENEFIT CANADA**
- 2 DELIVER EFFECTIVE, PURPOSE-FIT PROGRAMS THAT SUPPORT OUR MISSION**
- 3 PROMOTE THE RESPONSIBLE APPLICATION OF GENOMICS IN CANADA**

We believe that genomics, responsibly applied, can change the world for the better.

### DRIVING HIGH-IMPACT RESEARCH TO BENEFIT CANADA

**We continued to support large-scale, interdisciplinary research with line-of-sight to application. We funded strategic mission-driven research addressing social challenges, while providing access to leading-edge technologies and supporting research on genomics in society.**

Genome Canada research projects are selected via world-class, international peer review. Reviewers are chosen for their recognized expertise in the science, technology and/or translation arena, and management of large-scale genomics projects. Drawing reviewers primarily from the international scientific community ensures that the research we fund is of the highest international standards and avoids conflict of interest. Over the past year, Genome Canada recruited 157 reviewers from 18 countries. Our Board of Directors makes the final decision on which applications to fund, based on recommendations from the international panel of reviewers.

### GENOMICS AT WORK

## A comprehensive toolkit for characterization of bacterial genomes

Genome sequencing instruments have advanced to the point that sequencing an organism's genome is relatively easy. However, it does not come out all in one piece. Instead, computers are needed to connect short sequenced pieces and determine the meaningful instructions that they contain. A team led by Dr. Paul Stothard of the University of Alberta and Dr. Gary van Domselaar of the Public Health Agency of Canada is developing novel bioinformatics tools to stitch together the jumbled collection of sequence fragments and illustrate them in useful ways to [convey important genetic information that provides insights and aids discoveries that benefit the Canadian bioeconomy](#). *(In partnership with Genome Alberta)*

### CONTINUED INVESTMENT IN GENOMICS TECHNOLOGY PLATFORMS.

We support [10 technology platforms](#) with a total of approximately \$133 million, including co-funding, over five years (2017-22). The platforms provide the research community with access to leading-edge 'omics technologies including fee-for-service DNA sequencing, proteomics and metabolomics, phenomics and bioinformatics. They foster environments of excellence in technology development, training, experimental design, methods development and analytics. The interim review in 2019 by an international panel of experts highlighted dramatic advances in technologies including those for studying single cells that have the resolution to spatially interrogate single molecules within cells and over time. To understand how best to support technology platforms after 2022, we formed an international working group and held a workshop in Vancouver in February 2020. The working group has expertise over a broad range of genomics including areas of emerging technologies and is advising us on how we could deliver them through the platforms most effectively taking into consideration international models.

#### **FURTHER ADVANCEMENT OF PRECISION HEALTH IN CANADA.**

We are making headway with an initiative to advance [precision health for Canadians](#) through the implementation of clinical genomics. Branded *All For One*, the initiative is guided by a publicly announced [Mission Statement](#). Working groups continued to advance specific components of the initiative over the year. In summer 2019 a forum was created to bring together the clinical implementation research teams to work collectively. We are now advancing the key priorities identified in a March 2020 in-person meeting. These include establishing national quality assurance frameworks, better understanding clinical utility and cost-effectiveness to facilitate the adoption of genome-wide sequencing, and developing a pan-Canadian data ecosystem to enable the exchange of patient data to support genomic-based diagnosis.

#### **CONTINUED INVESTMENT IN THE 2015 BIOINFORMATICS AND COMPUTATIONAL BIOLOGY COMPETITION.**

Projects in this competition, held in partnership with CIHR, support the development of next-generation tools and methodologies, and facilitate broad and timely access to the research community. The 16 projects, of which 5 are completed and 11 are continuing, were funded for two-year terms for a total of \$4.1 million. Some projects bolster federal action on antimicrobial resistance through stronger surveillance, stewardship and innovation; others enhance diagnosis and treatment for patients, improve crops of importance to Canada and strengthen environmental monitoring.

#### **CONTINUED INVESTMENT IN THE 2017 BIOINFORMATICS AND COMPUTATIONAL BIOLOGY COMPETITIONS.**

This \$23.8 million investment supports 25 projects, all underway, in the three domains that we fund: health, food/agriculture and natural resources/environment. Examples of projects include using machine learning to predict drug resistance in pathogenic bacteria, developing toolkits for rapid characterization of bacterial genomes, and tackling the environmental and agri-food context of antimicrobial resistance.

#### **FUNDING ADDITIONAL PROJECTS THROUGH THE GENOMIC APPLICATIONS PARTNERSHIP PROGRAM (GAPP).**

In 2019-20, we announced funding for 19 new GAPP projects. A total of approximately \$300 million, including co-funding, has been invested in 76 receptor-led projects to date (28 completed and 48 underway). The program connects academic researchers with receptors in industry and the public sector, and aims to stimulate investment from private and public partners in Canadian genomics technologies. Examples of projects range from developing diagnostic tests for pediatric cancers to building tools to detect and identify surface microbial contamination.

#### **SUPPORTING NEXT-GENERATION RESEARCHERS.**

We partner with Mitacs to provide placements and funding for graduate students and post-doctoral fellows to work on GAPP projects within industry partners' operations. In 2019-20, this partnership supported 11 Mitacs Accelerate interns. It prepares Canada's next generation of innovators to advance genomics by allowing candidates to apply their knowledge and skills in a real-world industry setting. Companies, meanwhile, benefit from the high-quality research expertise.

#### **GENOMICS AT WORK**

### **Detecting ovarian and endometrial cancer early on**

Ovarian and endometrial cancers are among the top four causes of cancer deaths in women in North America. The lack of symptoms in the early stages means that the cancers are usually not diagnosed until later stages when they have metastasized to other organs. Dr. Lucy Gilbert of McGill University and Dr. Guy Rouleau of the McGill University Health Centre are [developing DOvEEgene](#), a genomic uterine pap test that aims to screen and detect these cancers while they remain confined to the gynecologic organs — and potentially are still curable. *(In partnership with Génome Québec)*



Dr. Lucy Gilbert (right) shows Parliamentary Secretary William Amos the DOvEEgene genomic pap test.

**CONTINUED FUNDING OF FIVE SEPARATE LARGE-SCALE APPLIED RESEARCH PROJECT (LSARP) COMPETITIONS, EACH WITH A SPECIFIC SECTOR FOCUS:**

- [2018 LSARP Competition in Genomic Solutions for Agriculture, Agri-food, Fisheries and Aquaculture](#). We launched this \$78.4 million competition, including co-funding, in partnership with Agriculture and Agri-food Canada. With funding until 2023-24, the eight projects will translate genomics research into solutions advancing the sustainability, productive capacity and competitive position of the Canadian agriculture/agri-food and fisheries/aquaculture sectors.
- [2017 LSARP Competition in Genomics and Precision Health](#). We launched this \$163.9 million competition, including co-funding, in partnership with CIHR. With funding until 2021-22, 15 projects will demonstrate how genomics-based research can contribute to a more evidence-based approach to health. These projects aim to improve health outcomes and/or enhance the cost-effectiveness of the health-care system, including diagnosing and treating cancers, reducing health-care disparities and improving diagnostic success for children with genetic diseases from Indigenous populations, and diagnosing rare diseases and several chronic illnesses, such as cystic fibrosis, inflammatory bowel disease and childhood arthritis.
- [2015 LSARP Competition in Natural Resources and the Environment](#). Genome Canada and co-funding partners are investing a total of \$112.8 million in 13 projects slated to run until 2020-21. The scope of the competition includes genomics research in energy, mining, forestry, water stewardship, wildlife management and conservation. It also includes genomics research in bioproducts that will provide tools to help conserve natural resources and protect the environment. Outcomes have the potential to contribute to the Canadian bioeconomy and well-being of Canadians.
- [2014 LSARP Competition in Genomics and Feeding the Future](#). We continued to fund 11 projects approved in 2015 via a \$94.4 million investment, including co-funding, to run until 2019-20. The projects use genomics approaches within the agriculture/agri-food and fisheries/aquaculture sectors to address challenges and opportunities related to global food safety, security and sustainable production. Funding flowed to projects focused on the application of genomics in multiple areas, including sustainable fisheries and honeybees; stress and disease resistance of crops and livestock; and, in partnership with the Western Grains Research Foundation, using genomics to expedite breeding for desirable traits in wheat, lentils and soybeans.

**GENOMICS AT WORK**

## Increasing lentil productivity and quality

As the largest lentil producer and exporter in the world, Canada generated \$2.5 billion in export revenue from lentils in 2015. Entering the high-value food and ingredients sector requires improved productivity and further development of lentil varieties. A University of Saskatchewan project, led by Drs Kirstin Bett and Albert Vandenberg, seeks to [accelerate the deployment of specific quality traits](#) through strategic use of genetic variability, and improve the capability and agility of the breeding program so Canada can rapidly capture emerging market opportunities. *(In partnership with Genome Prairie)*



## DELIVERING EFFECTIVE, PURPOSE-FIT PROGRAMS THAT SUPPORT OUR MISSION

We continued our support for an equitable, diverse and inclusive research program focused on excellence and impact. We also further strengthened the impact of research and innovation through collaboration and coordination within academia and industry, both nationally and internationally.

### CONTINUED INVESTMENT IN THE REGIONAL PRIORITIES PARTNERSHIP PROGRAM.

This \$20.4 million initiative, including co-funding, supports the Genome Centres in developing initiatives that advance genomics research and translation capacity in areas of strategic priority to their regions. Between 2018 and 2020, 11 initiatives were approved, supporting 25 projects on research such as:

- implementing a sustainable mussel breeding program;
- improving cannabis productivity and strain identification;
- developing a process for identifying fertile and resilient dairy cows; and
- accelerating the development of high-yield soybean cultivars.

### CONTINUED INVESTMENT IN EMERGING OPPORTUNITIES.

Since 2000, we have invested \$7.5 million, including co-funding, in Emerging Opportunities projects that address important, time-sensitive challenges. In 2019-20 we continued to fund a project on [harnessing genomics to accelerate crop improvement](#), through DivSeek, to create a readily expandable database for Canadian crop information. In April 2019, we approved a project to examine Lyme disease in Nova Scotia.

### ONGOING FUNDING OF TWO DISRUPTIVE INNOVATION IN GENOMICS COMPETITIONS.

These competitions fund projects that develop leading-edge genomics technologies with the potential to displace existing technologies, disrupt an existing market or create a new market. Projects are structured such that Phase 1 proves the feasibility of an “idea” while Phase 2 builds a prototype (e.g., process, product and/or method) to advance the “idea.”

- [2017 Disruptive Innovation in Genomics Competition](#). Genome Canada and co-funding partners have invested a total of \$19.2 million in seven Phase 1 projects to advance to Phase 2.
- [2015 Disruptive Innovation in Genomics Competition](#). We selected 20 projects for funding in the first round of Phase 1, and 5 in the first round of Phase 2 (4 of which were ongoing in 2019-20), for a total investment of \$18.5 million by Genome Canada and co-funders.

## GENOMICS AT WORK

### Making widespread prenatal diagnostic testing safe

Amniocentesis is typically only carried out on pregnant women after a prenatal screening test or fetal ultrasound shows an increased risk for chromosomal abnormality. Tests carry a risk of miscarriage, and results are often not known until 17 weeks' gestation. Canadian researchers are developing a safe, non-invasive test that can be performed by a variety of health-care professionals on all pregnant women as early as six weeks. Drs David Chitayat and Elena Kolomietz from Mount Sinai Hospital are working with Dr. Aaron Wheeler from the University of Toronto to [isolate and analyze fetal cells using microfluidics and genomic analysis](#). The team is refining and validating the platform for use in a 550-patient clinical trial, and ultimately for commercialization. *(In partnership with Ontario Genomics)*



### ENHANCING OF INTERNATIONAL LEADERSHIP.

We collaborate in international efforts to tackle global challenges with genomic solutions and maintain close relations with our counterparts around the world to share ideas and identify avenues for partnership. In 2019-20, we supported a number of international initiatives including the following:

- [The Structural Genomics Consortium](#), established in 2004, is a not-for-profit public-private partnership that supports the discovery of new medicines through open access research. Since inception, it has produced 2,244 structures of human proteins for use in drug discovery and is the world's largest maker of chemical probes used to validate novel strategies for new medicines.
- [The International Rare Disease Research Consortium \(IRDiRC\)](#) unites national and international governmental, non-profit, for-profit, patient advocacy and scientific research organizations to promote international collaboration and advancement of rare diseases research. Our involvement supports IRDiRC's vision to enable all people living with a rare disease to receive an accurate diagnosis, care, and available therapy within one year of coming to medical attention.
- [The Global Alliance for Genomics and Health](#) represents 500+ member organizations from 71 countries focused on improving human health through global genomics and clinical data sharing.
- [DivSeek](#) enables researchers and breeders to mobilize the genetic variation from the world's gene banks for crop breeding. This international collaboration aims to enhance the productivity, sustainability and resilience of crop varieties to challenges such as climate change.

### ONGOING COMMITMENT TO EQUITY.

We remain committed to our equity, diversity and inclusion (EDI) policy and framework:

- We are actively implementing EDI principles throughout calls for applications and funding guidelines.
- We are committed to proactively building internal capacity and developing deeper expertise in anti-racism and EDI in all aspects of our organization and work.
- We signed [Canada's Dimensions Charter](#) and the [Declaration on Research Assessment \(DORA\)](#) in 2019-20.
- We have established a high-level EDI Committee to drive forward a corporate plan to move the needle related to organizational operations, staffing, governance, programs, policy and public affairs.

## GENOMICS AT WORK

### Accelerating crop improvement

Growing populations, a changing climate and increasing constraints on land, water and fertilizer together translate into increased risks to global food security and pressure to dramatically expand agricultural productivity in Canada.

Accelerated plant breeding programs are needed to develop high-yielding, climate-friendly and "earth-friendly" plant varieties. DivSeek Canada, led by Dr. Loren H. Rieseberg of the University of British Columbia, will accelerate plant breeding by [leveraging the genetic diversity in the world's live collections and seed banks](#) to create a unified, coordinated and cohesive information management platform. The focus will be on three Canadian crops: lentils, flax and sunflower. (*In partnership with Genome Prairie and Genome British Columbia*)



## PROMOTING THE RESPONSIBLE APPLICATION OF GENOMICS IN CANADA

We demonstrated thought-leadership through a genomics lens by our ongoing participation in the national dialogue on genomics and policy. We worked collaboratively with stakeholders to share information and develop our strategy.

### CONTINUED OUTREACH.

We engaged in a broad range of outreach activities in 2019-20. For example:

- We developed media content in partnership with other national and global initiatives, such as Genomics England, to increase patient and broader community engagement.
- We organized a panel at the Canadian College of Medical Geneticists (CCMG) annual conference in June 2019. Based on the panel's success, we have been invited for a second time to participate in CCMG webinar series "The Leading Strand."
- We spoke about [All For One precision health](#) at the Genomic Medicine in Action Symposium in Stockholm, Sweden in May 2019.
- We attended numerous smaller-scale outreach events, hosting booths at conferences, delivering keynote addresses and sponsoring scientific cafes.
- We applied event sponsorship funds towards student travel awards and lab tours. Specifically, we supported travel for three students to the Canadian National Proteomics Network conference in Quebec City in May 2019, and for two students from developing countries to the 8<sup>th</sup> International Barcode of Life meeting in Norway in June 2019.

### CONTINUED INVESTMENT IN THE JOINT INITIATIVE WITH SSHRC ON THE SOCIETAL IMPLICATIONS OF GENOMICS.

This \$1.3 million initiative supports social sciences and humanities research and related activities that enrich the understanding of [the societal implications of genomic research](#). By reaching a community of social sciences and humanities scholars who may still be unfamiliar with our programs, the initiative is helping to build a cadre of scholars interested in pursuing genomics-related research collaborations and facilitate their involvement in multidisciplinary teams applying to Genome Canada applied research competitions. With applications coming through and peer reviewed by SSHRC, a total of 10 projects have now been approved for funding.

### LAUNCH OF THE GENOMICS IN SOCIETY INTERDISCIPLINARY RESEARCH TEAMS PROGRAM.

This program, launched in February 2019, [brings researchers from different disciplines together](#) to investigate factors affecting the advancement, adoption, evaluation and governance of genomics research; and to address issues at the intersection of genomics and society that will ultimately contribute to Canada's leadership and social and/or economic benefits in various sectors. The program supports and enhances GE3LS research that addresses important and overarching challenges affecting the adoption and uptake of the outcomes from genomics research and/or accelerating the synthesis and dissemination of research pertinent to users, including policymakers, within a sector.

## OPERATING CHALLENGE

### THE CHALLENGE OF LONG-TERM FUNDING

Our principal operating challenge in 2019-20 was co-funding. The current model of short-term funding agreements with the Government of Canada presents some issues with strategic investment planning and additional challenges in the ability of Genome Canada and the six Centres to secure co-funding through medium- to long-term partnerships. We are motivated to secure longer-term federal funding that would position Genome Canada as a more stable and credible partner with industry and the provinces and territories. Many essential co-funding partners require a multi-year planning horizon for the kind of large-scale and long-term investments that genomics research and innovation entail. Eased requirements for co-funding would positively affect equitable access to Genome Canada funding, as the current model can favour more experienced researchers with larger networks and those with a long track record of funding to attract co-funding partners.

### SUPPORT FOR THE SUMMER INTERNSHIP FOR INDIGENOUS PEOPLES IN GENOMICS CANADA (SING CANADA).

Genome Canada and the six Centres supported the [2019 SING Canada program](#) held at the University of Alberta. The program provided genomics training to 14 Indigenous students by examining chronic wasting disease, which currently affects many wildlife species in the Canadian prairies. This interdisciplinary initiative aims to incorporate genomic science, epidemiology, wildlife management and Indigenous Knowledge.

# OPERATIONS & MANAGEMENT

## THE CANADIAN GENOMICS ENTERPRISE

Genome Canada operates within a unique and highly collaborative pan-Canadian model:

- We work in partnership with six regional Genome Centres to drive strategic policy conversations about the transformative role of genomics knowledge, tools and technologies in building a stronger Canada now and in the future.
- We leverage national breadth and regional depth of genomics expertise to competitively invest in and deliver impactful programs across the country.
- We project a unified voice and purpose for Canada's genomics community in delivering results that have real, positive impacts on the health and well-being of Canadians.

The Genome Centres help shape our work by:

- informing and advising on national strategy;
- leading on regional policy and stakeholder relationships;
- fostering and funding regional expertise in genomics research and applications;
- nurturing partnerships to strengthen regional leadership and competitiveness;
- facilitating researcher access to Genome Canada-funded technology platforms;
- devising innovative regionally led, nationally relevant public outreach initiatives; and
- securing co-funding for projects from domestic and international investors.

The Centres, each of which is independently incorporated, pursue their own strategic objectives informed by regional strengths and priorities. We work across the Centres to integrate these regional strengths and priorities into a national approach that aligns with the objectives of the federal government.

We support the Centres through project-based funding. Each Centre also secures funds from other sources, such as provincial governments, the public sector, not-for-profit organizations and private industry.





# GOVERNANCE

Genome Canada is governed by a Board of Directors comprising up to 16 people drawn from the academic, private and public sectors. Directors bring unique skills and experiences, as well as strong interests and insights, to successfully fulfil our strategic plan. New directors are appointed for two-year terms renewable up to a maximum of six years.

The Board of Directors has overall responsibility for the stewardship of our business and affairs. To help with the discharge of these duties, the Board has five standing committees: Executive Committee; Audit and Investment Committee; Programs Committee; Governance, Election and Compensation Committee; and Communications and Outreach Committee. As well, a Science and Industry Advisory Committee provides strategic advice to the Board on emerging issues to help the corporation achieve our objectives.

## NUMBER OF MEETINGS HELD BY THE BOARD AND ITS COMMITTEES IN 2019-20

Board of Directors	5
Executive Committee	0
Audit and Investment Committee	4
Programs Committee	4
Governance, Election and Compensation Committee	4
Communications and Outreach Committee	4
Science and Industry Advisory Committee	4

## BOARD OF DIRECTORS, EX OFFICIO ADVISORS, AND SCIENCE AND INDUSTRY ADVISORY COMMITTEE MEMBERS IN 2019-20

### BOARD OF DIRECTORS

#### Elizabeth Douville (Chair)

Founder and Managing Partner  
AmorChem Venture Fund  
Montreal, Quebec

#### Jim Farrell (Vice-Chair)

Forest Sector Consultant  
Ottawa, Ontario

#### Rob Annan

President and CEO  
Genome Canada  
Ottawa, Ontario  
(as of January 1, 2020, formerly Vice-President,  
Public Affairs and Communications)

#### Eric Cook

Executive Director and Chief Executive  
Officer  
Research and Productivity Council  
Fredericton, New Brunswick

#### Jennifer Gardy

Deputy Director, Surveillance,  
Data & Epidemiology  
Bill & Melinda Gates Foundation  
Seattle, Washington, U.S.

#### Marc LePage

President and CEO  
Genome Canada  
Ottawa, Ontario  
(until December 31, 2019)

#### Kathryn Phillips

Professor of Health Services Research  
and Health Economics  
University of California  
San Francisco, California, U.S.  
(until March 2020)

#### Ian Rae

Founder and CEO  
CloudOps  
Montreal, Quebec

#### Eddy Rubin

Chief Science Officer  
Metabiota  
San Francisco, California, U.S.

#### Jacques Simoneau

Corporate Director  
Fer 3 Capital Inc.  
Montreal, Quebec

#### Janet Wightman

Managing Director  
Kincannon & Reed  
Regina, Saskatchewan

## **EX OFFICIO ADVISORS**

### **Ted Hewitt**

President  
Social Sciences and Humanities Research  
Council of Canada Ottawa, Ontario

### **Michael J. Strong**

President  
Canadian Institutes of Health Research  
Ottawa, Ontario

### **Roseann O'Reilly Runte**

President and CEO  
Canada Foundation for Innovation  
Ottawa, Ontario

### **Alejandro Adem**

President  
Natural Sciences and Engineering  
Research Council of Canada  
Ottawa, Ontario

### **Iain Stewart**

President  
National Research Council of Canada  
Ottawa, Ontario

## **SCIENCE AND INDUSTRY ADVISORY COMMITTEE**

### **Doane Chilcoat (Chair)**

Director, Applied Technology Systems  
DuPont Pioneer  
Johnston, Iowa, U.S.

### **Anne-Christine Bonfils**

Research Program Manager, Vice-  
President's Office –  
Life Sciences  
National Research Council of Canada  
Ottawa, Ontario

### **Iain Gillespie**

Pro-Vice-Chancellor, Research and  
Enterprise  
University of Leicester  
Leicester, U.K.

### **Tina Hambuch**

Medical Director, Pediatric Genetics  
Invitae  
San Diego, California, U.S.

### **Joan Lunney**

Supervisory Research Scientist  
Beltsville Agricultural Research Center  
Beltsville, Maryland, U.S.

### **John MacKay**

Wood Professor of Forest Science,  
Department of Plant Sciences  
University of Oxford  
Oxford, U.K.

### **Elaine R. Mardis**

Professor of Pediatrics, Ohio State  
University College of Medicine  
Co-Director, Institute for Genomic  
Medicine at the Research Institute,  
Nationwide Children's Hospital  
Columbus, Ohio, U.S.

### **Dan Roden**

Principal Investigator, National Institutes  
of Health (NIH), Pharmacogenomics  
Research Network  
NIH, National Human Genome  
Research Institute, Electronic Medical  
Records and Genomics  
Vanderbilt University  
Nashville, Tennessee, U.S.

### **Cami Ryan**

Social Sciences Lead  
Bayer Crop Science  
St. Louis, Missouri, U.S.

### **Julie Segre**

Senior Investigator, NIH,  
National Human Genome  
Research Institute  
Chief, Translational and Functional  
Genomics Branch  
Head, Microbial Genomics Section  
Bethesda, Maryland, U.S.

### **Wyeth Wasserman**

Executive Director, BC Children's  
Hospital Research Institute  
Associate Dean, Research,  
Faculty of Medicine  
Senior Scientist, Centre for Molecular  
Medicine and Therapeutics  
Professor, Department of  
Medical Genetics  
University of British Columbia  
Vancouver, British Columbia

### **Susan Wood-Bohm**

President and CEO, Wood-Bohm and  
Associates  
Douro-Dummer, Ontario

## **MANAGEMENT TEAM**

### **Rob Annan**

President and CEO  
(as of January 1, 2020, formerly Vice-President,  
Public Affairs and Communication)

### **Marc LePage**

President and CEO  
(until December 31, 2019)

### **Cindy Bell**

Executive Vice-President, Corporate  
Development

### **Scott Davies**

Vice-President, Corporate Services  
and CFO  
(as of January 1, 2020, formerly  
Director, Finance)

### **Paul St George**

Vice-President, Corporate Services  
and CFO  
(until June 2019)

### **Karl Tibelius**

Vice-President, Genomics Programs

### **Pari Johnston**

Vice-President, Policy and Public Affairs  
(as of March 20, 2020)

# FINANCIAL MANAGEMENT

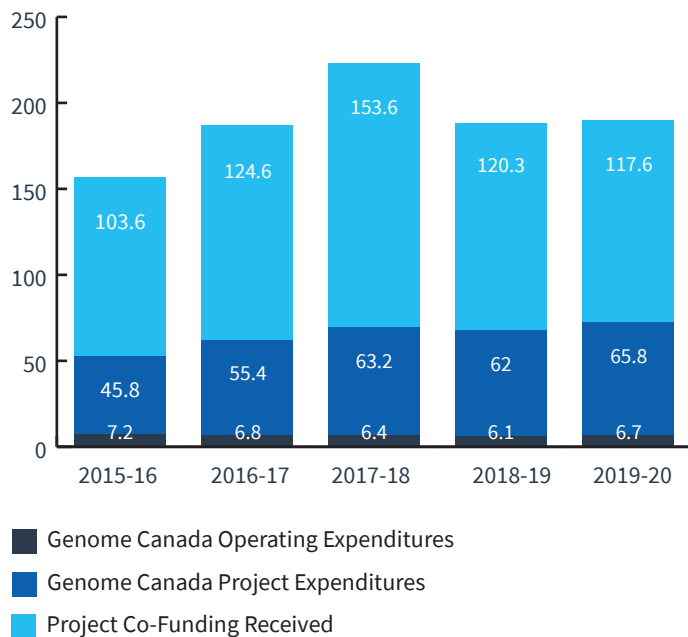
Genome Canada has invested \$3.9 billion in genomics research and applications since our creation in 2000. The federal government has provided \$1.6 billion, including investment income from this funding. The remaining \$2.3 billion has come from national and international partners, including provincial governments, and private- and public-sector partners. Genome Canada's investments support large-scale science, access to leading-edge technology, translation, and the operations of Genome Canada and the six regional Genome Centres.

All research projects, with few exceptions, require co-funding from other parties, including provincial governments, universities, the private sector, and other national and international organizations. Genome Canada's required funding ratio for co-funding was 1:1 prior to 2012. However, it has since increased to approximately 1:1.6.

We receive funding each year from the federal government based on the annual requirements of research projects. This funding goes to the six Genome Centres, which direct the funds to the individual projects located in their regions. In addition, the projects, administered at institutions, receive funding directly from the required co-funders. The Centres and project leaders must report co-funding quarterly to Genome Canada.

The total annual financial investment in projects is shown in the graph below. Genome Canada and the Centres monitor total project investment. Genome Canada project leaders managed \$183.4 million in funding in 2019-20, with \$65.8 million from Genome Canada and \$117.6 million from co-funding.

## ANNUAL ACTIVITY (IN MILLIONS OF DOLLARS)



Genome Canada's operating costs were \$6.7 million in 2019-20. Operations include activities relating to genomics programs, strategy, fundraising, communications, governance, performance and evaluation, genomics in society and administration.

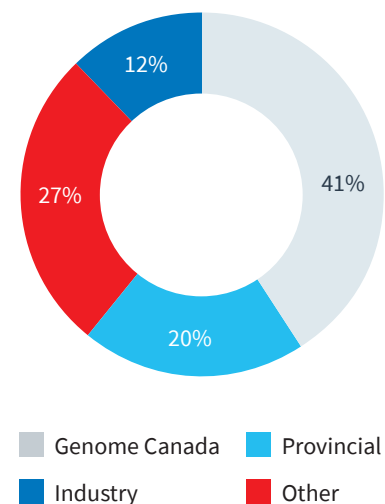
Our operating costs include the following remuneration. The Board Chair, Board members and Science and Industry Advisory Committee members receive remuneration from Genome Canada. Genome Canada pays the expenses incurred by directors in the performance of their duties. The compensation policy for our staff includes job classifications and related salary ranges. Our employees are eligible for performance awards ranging from 10% to 25%.

For positions that exceeded \$100,000 in the year ended March 31, 2020, the following are the annual salary ranges:

- President and CEO \$275,000 to \$340,000
- Vice-Presidents \$141,965 to \$212,947
- Directors (Band 4) \$110,320 to \$165,480
- Directors (Band 3) \$85,729 to \$128,592

As of March 31, 2020, Genome Canada has \$34.3 million in investments, at market value. These investments are administered in accordance with the Board's approved investment policy and the terms and conditions of the contribution agreement with the federal government. The investment policy remained unchanged this past fiscal year.

## INVESTMENT BY GENOME CANADA AND PARTNERS SINCE 2000



**Total Genome Canada Funding \$1.6 B**  
**Total Co-Funding \$2.3 B**  
**Total Investment \$3.9 B**

## ACKNOWLEDGEMENTS

Genome Canada gratefully acknowledges the support of the Government of Canada, whose funding supports our mission and is the lead investment in all our research projects. The funding renewal of \$100.5 million in Budget 2019 continues to support excellence in Canadian research, application and translation.

With funding from

Canada 

We collaborate with stakeholders across the ecosystem in program delivery and policy dialogue, and wish to acknowledge the following organizations for their partnership this year:

- Agriculture and Agri-food Canada
- Canadian Cancer Research Alliance
- Canada Foundation for Innovation
- Canadian Institutes of Health Research
- Canadian Public Health Laboratory Network
- Canadian Science Policy Centre
- CanCOVID Forum
- CGEn
- CIFAR
- Council of Canadian Academies
- Mitacs
- Natural Resources Canada
- National Microbiology Laboratory
- Natural Sciences and Engineering Research Council
- Office of the Chief Science Advisor
- Office of The Governor General of Canada
- Public Policy Forum
- Social Sciences and Humanities Research Council

# APPENDICES



# ACTIVE PROJECTS FUNDED 2019-20

## LARGE-SCALE SCIENCE

CENTRE(S)	SECTOR	LEADER(S)	ORGANIZATION	TITLE	TOTAL FUNDING	GENOME CANADA CONTRIBUTION
<b>LARGE-SCALE APPLIED RESEARCH PROJECTS</b>						
Genome Alberta Genome Prairie	Agriculture	Dyck, Michael Harding, John Kemp, Bob	University of Alberta University of Saskatchewan PigGen Canada Inc.	Application of Genomics to Improve Disease Resilience and Sustainability in Pork Production	\$9,801,714	\$3,799,998
Genome Alberta Ontario Genomics	Agriculture	Schenkel, Flavio Stothard, Paul	University of Guelph University of Alberta	Increasing Feed Efficiency and Reducing Methane Emissions through Genomics: A new Promising Goal for the Canadian Dairy Industry	\$10,306,910	\$3,798,134
Genome Alberta Ontario Genomics Genome British Columbia Genome Québec	Agriculture	Baes, Christine Stothard, Paul Cerri, Ronaldo Sirard, Marc-André	University of Guelph University of Alberta University of British Columbia Université Laval	Integrating genomic approaches to improve dairy cattle resilience: A comprehensive goal to enhance Canadian dairy industry sustainability	\$12,541,132	\$3,997,769
Genome British Columbia	Agriculture	Rieseberg, Loren H. Burke, John M.	University of British Columbia	Genomics of Abiotic Stress Resistance in Wild and Cultivated Sunflowers	\$7,879,009	\$3,054,485
Genome British Columbia Ontario Genomics	Agriculture	Foster, Leonard Zayed, Amro	University of British Columbia York University	Sustaining and Securing Canada's Honey Bees using 'Omic Tools	\$7,263,568	\$2,786,531
Genome Prairie	Agriculture	Bett, Kirstin Vandenberg, Albert	University of Saskatchewan	Application of Genomics to Innovation in the Lentil Economy (AGILE)	\$7,892,793	\$1,463,833
Genome Prairie	Agriculture	Bett, Kirstin Vandenberg, Albert	University of Saskatchewan	Enhancing the Value of Lentil Variation for Ecosystem Survival (EVOLVES)	\$7,432,398	\$3,519,023
Genome Prairie	Agriculture	Pozniak, Curtis Sharpe, Andrew	University of Saskatchewan National Research Council of Canada	Canadian Triticum Applied Genomics (CTAG2)	\$8,809,640	\$1,707,991
Genome Prairie Genome Alberta	Agriculture	Waldner, Cheryl Otto, Simon	University of Saskatchewan University of Alberta	Genomic ASSETS (Antimicrobial Stewardship Systems from Evidence-based Treatment Strategies) for Livestock	\$5,678,154	\$2,540,323
Genome Prairie Genome British Columbia	Agriculture	Potter, Andrew Hancock, Robert	VIDO-Intervac University of Saskatchewan	Reverse vaccinology approach for the prevention of mycobacterial disease in cattle	\$7,358,606	\$2,872,310
Genome Prairie Ontario Genomics	Agriculture	Pozniak, Curtis Cloutier, Sylvie	University of Saskatchewan Agriculture and Agri-Food Canada	4DWheat: Diversity, Discovery, Design and Delivery	\$11,166,747	\$3,999,856
Genome Québec	Agriculture	Belzile, François Bélangier, Richard	Université Laval	SoyaGen: Improving Yield and Disease Resistance in Short-Season Soybean	\$8,235,673	\$1,602,591
Genome Québec	Agriculture	Goodridge, Lawrence Levesque, Roger C.	McGill University Université Laval	A SystOMICS approach to ensuring food safety and reducing the economic burden of salmonellosis	\$9,708,401	\$3,817,861

CENTRE(S)	SECTOR	LEADER(S)	ORGANIZATION	TITLE	TOTAL FUNDING	GENOME CANADA CONTRIBUTION
Ontario Genomics Genome British Columbia	Agriculture	Zayed, Amro Foster, Leonard	York University University of British Columbia	BeeCSI: 'omic tools for assessing bee health	\$9,922,053	\$3,831,866
Genome Alberta Genome Atlantic	Energy	Gieg, Lisa Wolodko, John Khan, Faisal	University of Calgary University of Alberta Memorial University	Managing Microbial Corrosion in Canadian Offshore and Onshore Oil Production	\$7,850,739	\$2,307,750
Genome Alberta	Environment	McKenzie, Debbie Wishart, David	University of Alberta	Systems Biology and Molecular Ecology of Chronic Wasting Disease	\$11,500,523	\$3,092,335
Genome Alberta Genome Prairie	Environment	Hubert, Casey Stern, Gary	University of Calgary University of Manitoba	GENICE: Microbial Genomics for Oil Spill Preparedness in Canada's Arctic Marine Environment	\$10,612,988	\$2,999,422
Genome British Columbia	Environment	Schulte, Patricia M. Koop, Ben Farrell, Anthony	University of British Columbia University of Victoria	Sustaining Freshwater Recreational Fisheries in a Changing Environment	\$4,386,173	\$1,460,163
Genome Québec	Environment	Sauvé, Sébastien Shapiro, Jesse Dorner, Sarah	Université de Montréal Polytechnique Montréal	ATRAPP – Algal Blooms, Treatment, Risk Assessment, Prediction and Prevention Through Genomics	\$12,304,536	\$3,166,666
Genome Québec Genome Prairie	Environment	Basu, Niladri Hecker, Markus Crump, Doug	McGill University University of Saskatchewan Environment and Climate Change Canada	EcoToxChip: A toxicogenomics tool for chemical prioritization and environmental management	\$9,786,922	\$3,104,002
Ontario Genomics	Environment	Lougheed, Stephen C. van Coeverden de Groot, Peter Whitelaw, Graham Dyck, Markus	Queen's University Government of Nunavut	BEARWATCH: Monitoring Impacts of Arctic Climate Change using Polar Bears, Genomics and Traditional Ecological Knowledge	\$9,219,247	\$2,708,282
Genome British Columbia Genome Québec	Fisheries	Koop, Ben Bernatchez, Louis	University of Victoria Université Laval	Enhancing Production in Coho: Culture, Community, Catch (EPIC4)	\$9,709,592	\$3,796,910
Genome Québec Ontario Genomics	Fisheries	Bernatchez, Louis Moore, Jean-Sebastian Fraser, Dylan J. Schott, Stephan	Université Laval Concordia University Carleton University	FISHES: Fostering Indigenous Small-scale fisheries for Health, Economy, and food Security	\$14,404,554	\$4,000,000
Ontario Genomics	Fisheries	Walker, Virginia K. Lougheed, Stephen C. Schott, Stephan van Coeverden de Groot, Peter	Queen's University Carleton University	Towards a Sustainable Fishery for Nunavummiut	\$5,652,792	\$2,124,674
Ontario Genomics Genome Prairie	Fisheries	Health, Daniel Docker, Margaret Cooke, Steven J.	University of Windsor University of Manitoba Carleton University	GEN-FISH: Genomic Network for Fish Identification, Stress and Health	\$9,072,963	\$3,999,815
Genome Alberta Genome British Columbia	Forestry	Thomas, Barb Erbilgin, Nadir El-Kassaby, Yousry	University of Alberta University of British Columbia	Resilient Forests (RES-FOR): Climate Pests & Policy – Genomic Applications	\$5,678,657	\$1,762,342

CENTRE(S)	SECTOR	LEADER(S)	ORGANIZATION	TITLE	TOTAL FUNDING	GENOME CANADA CONTRIBUTION
Genome British Columbia Genome Alberta Genome Québec	Forestry	Aitken, Sally Yeaman, Samuel Hamelin, Richard	University of British Columbia University of Calgary Université Laval	CoAdapTree: Healthy trees for future climates	\$5,800,000	\$1,881,454
Genome British Columbia Genome Québec	Forestry	Bohlmann, Joerg Bousquet, Jean	University of British Columbia Université Laval	Spruce-Up: Advanced spruce genomics for productive and resilient forests	\$10,417,352	\$3,000,000
Genome British Columbia Genome Québec	Forestry	Hamelin, Richard Duff, Cameron Porth, Ilga	University of British Columbia Canadian Food Inspection Agency Université Laval	BioSurveillance of Alien Forest Enemies (BioSAFE)	\$8,730,760	\$2,763,989
Ontario Genomics Genome British Columbia	Forestry	Master, Emma Brumer, Harry	University of Toronto University of British Columbia	SYNBIOMICS: Functional genomics and techno-economic models for advanced biopolymer synthesis	\$10,725,222	\$2,830,771
Genome Alberta	Health	Lewis, Ian Church, Deirdre	University of Calgary Calgary Laboratory Services	Reducing the global burden of infectious diseases through precision population health	\$11,030,405	\$2,103,371
Genome British Columbia	Health	Arbour, Laura Caron, Nadine Wasserman, Wyeth W.	University of British Columbia BC Children's Hospital Research Institute	Silent Genomes: Reducing health-care disparities and improving diagnostic success for Indigenous children with genetic disease	\$10,399,812	\$2,200,000
Genome British Columbia	Health	Carleton, Bruce C. Ross, Colin J.	University of British Columbia	Genomic and outcomes database for pharmacogenomics and implementation studies (Go-PGx)	\$10,517,507	\$1,899,963
Genome British Columbia	Health	Penn, Andrew Borchers, Christoph Coutts, Shelagh	Vancouver Island Health Authority University of Victoria University of Calgary	Reducing Stroke Burden with Hospital-Ready Biomarker Test for Rapid TIA Triage	\$9,634,996	\$4,755,969
Genome British Columbia	Health	Steidl, Christian Marra, Marco Scott, David	BC Cancer Research Centre University of British Columbia	Deciphering the genome biology of relapsed lymphoid cancers to improve patient management	\$11,926,360	\$2,100,000
Genome British Columbia Genome Québec	Health	Elliott, Alison M. Knoppers, Bartha Lynd, Larry Austin, Jehannine	BC Provincial Health Services Authority McGill University University of British Columbia	GenCOUNSEL: Optimization of Genetic Counselling for Clinical Implementation of Genome-wide Sequencing	\$4,237,284	\$1,004,017
Genome British Columbia Genome Québec Genome Alberta	Health	Keown, Paul Sapir-Pichhadze, Ruth Caulfield, Timothy Bryan, Stirling	University of British Columbia McGill University University of Alberta	Precision Medicine CanPREVENT AMR: Applying precision medicine technologies in Canada to prevent antibody-mediated rejection and premature kidney transplant loss	\$10,834,538	\$2,036,000
Genome British Columbia Ontario Genomics	Health	Turvey, Stuart Kobor, Michael Finlay, Brett Subbarao, Padmaja	University of British Columbia The Hospital for Sick Children	Childhood Asthma and the Microbiome - Precision Health for Life: The Canadian Healthy Infant Longitudinal Development (CHILD) Study	\$9,142,486	\$4,569,644
Genome Québec	Health	Perreault, Claude Roy, Denis-Claude	Hôpital Maisonneuve-Rosemont	Personalized Cancer Immunotherapy	\$13,486,784	\$2,409,386



CENTRE(S)	SECTOR	LEADER(S)	ORGANIZATION	TITLE	TOTAL FUNDING	GENOME CANADA CONTRIBUTION
Genome Québec	Health	Sauvageau, Guy Hébert, Josée	Institute for Research in Immunology and Cancer Hôpital Maisonneuve-Rosemont	Interrogating and implementing Omics for precision medicine in acute myeloid leukemia	\$12,785,000	\$5,000,000
Genome Québec Genome British Columbia	Health	Rousseau, François Langlois, Sylvie	Université Laval University of British Columbia	PEGASUS-2 - Personalized Genomics for prenatal Abnormalities Screening Using maternal blood: Towards First Tier Screening and Beyond	\$12,241,625	\$2,198,882
Genome Québec Ontario Genomics	Health	Jabado, Nada Taylor, Michael Majewski, Jacek	Research Institute of the McGill University Health Centre The Hospital for Sick Children	Tackling Childhood Brain Cancer at the root to improve survival and quality of life	\$12,997,397	\$2,349,822
Genome Québec Ontario Genomics	Health	Simard, Jacques Chiarelli, Anna Maria	Université Laval Cancer Care Ontario	Personalized Risk Assessment for Prevention and Early Detection of Breast Cancer: Integration and Implementation	\$15,217,975	\$100,000
Ontario Genomics	Health	Ratjen, Felix	The Hospital for Sick Children	Personalized Therapy for Individuals with Cystic Fibrosis	\$10,073,758	\$4,999,907
Ontario Genomics	Health	Stein, Lincoln Godfrey, Tony	Ontario Institute for Cancer Research	Early Detection of Patients at High Risk of Esophageal Adenocarcinoma	\$3,240,865	\$795,272
Ontario Genomics	Health	Stintzi, Alain Mack, David	University of Ottawa Children's Hospital of Eastern Ontario	Microbiome-Based Precision Medicine in Inflammatory Bowel Disease	\$9,111,566	\$4,555,624
Ontario Genomics Genome Alberta	Health	Yeung, Rae S.M. Benseler, Susanne M.	The Hospital for Sick Children University of Calgary	UCAN CURE: Precision Decisions for Childhood Arthritis	\$10,000,000	\$5,000,000
Ontario Genomics Genome Alberta Genome British Columbia	Health	Boycott, Kym Brudno, Michael Bernier, Francois van Karnebeek, Clara	Children's Hospital of Eastern Ontario Research Institute The Hospital for Sick Children University of Calgary University of British Columbia	Care4Rare Canada: Harnessing multi-omics to deliver innovative diagnostic care for rare genetic diseases in Canada (C4R-SOLVE)	\$10,866,640	\$2,198,898
Ontario Genomics	Mining	Warren, Lesley A. Banfield, Jillian	University of Toronto	Mine Wastewater Solutions: Next Generation Biological Treatment through Functional Genomics	\$3,682,691	\$1,181,739

## EMERGING ISSUES

Genome British Columbia	Agriculture	Rieseberg, Lorne	University of British Columbia	DivSEEK Canada: Harnessing Genomics to Accelerate Crop Improvement in Canada	\$751,552	\$242,800
Genome Prairie	Agriculture	Murphy, Lee Anne Navabi, Katayoon	University of Manitoba	DivSEEK International Network	\$742,073	\$242,073
Genome Atlantic	Health	Hatchette, Todd Ogden, Nicholas Lindsay, Robbin	Dalhousie University Public Health Agency of Canada	Lyme Disease in NS: The influence of strain variation on clinical disease	\$780,801	\$242,800
Genome British Columbia	Health	Hieter, Philip	University of British Columbia	Research Network: Expanding Collaboration between Basic and Clinician Scientists in Functional Studies of Novel Rare Diseases	\$1,679,500	\$560,000
Genome Prairie	Health	Karniychuk, Uladzimir	University of Saskatchewan	In vivo and Ex vivo models for Zika virus infection	\$713,062	\$237,436

CENTRE(S)	SECTOR	LEADER(S)	ORGANIZATION	TITLE	TOTAL FUNDING	GENOME CANADA CONTRIBUTION
<b>NATIONAL AND INTERNATIONAL INITIATIVES</b>						
Genome British Columbia	Agriculture	Lu, Xiaonan Hsiao, William	University of British Columbia BC Centre for Disease Control	“One Health” Syst-Omics approach to reduce <i>Campylobacter</i> in agri-food chain	\$500,000	\$166,667
Genome Prairie	Agriculture	Pozniak, Curtis	University of Saskatchewan	An integrated approach for enhancing <i>Fusarium</i> head blight resistance in durum	\$1,475,000	\$475,000
Ontario Genomics	Agriculture	Baes, Christine Lohuis, Michael	University of Guelph Semex Alliance	Precision fertility and resiliency phenotyping in dairy cattle	\$499,899	\$166,633
Ontario Genomics	Agriculture	Barta, John Brisbin, Jennifer	University of Guelph Ceva Animal Health Inc.	A genomics-derived assay for rapid determination of <i>Eimeria</i> spp. Oocyst viability: Improving coccidiosis management in the poultry industry	\$366,628	\$122,210
Ontario Genomics	Agriculture	Emery, Neil Tanaka, Kelly	Trent University NutriAg Ltd.	Metabolomic-based strain selection of microbial bioinoculants which alleviate impacts of drought stress in crop production	\$358,250	\$119,417
Ontario Genomics	Agriculture	Eskandari, Milad Reid, Jeff	University of Guelph SeCan	Using New Emerging Genomic Tools to Improve Soybean Yield and Seed Compositions in Ontario	\$180,000	\$60,000
Ontario Genomics	Agriculture	Lee, Elizabeth Cowan, Josh	University of Guelph Grain Farmers of Ontario	Application of genomic-based technologies to improve the rate of genetic gain in Ontario winter wheat breeding	\$400,000	\$133,333
Ontario Genomics	Agriculture	Lu, Ray Vanderbroek, Dave	University of Guelph Alliance Genetics Canada	Genomics tools to reduce sow stress and improve piglet survival and overall performance	\$480,000	\$160,000
Ontario Genomics	Agriculture	Saxena, Praveen Yates, Barbara	University of Guelph Ferrero Canada	Introducing cold tolerance in hazelnut	\$274,058	\$91,352
Ontario Genomics	Agriculture	van der Merwe, George Preiss, Richard	University of Guelph Escarpment Laboratories	Development of an omics-driven beer yeast performance database to support the Ontario craft brewing industry	\$366,165	\$122,055
Genome Atlantic	Environment	Finn, Dave Cote, David Hajibabaei, Mehrdad	Petroleum Research, Newfoundland and Labrador Fisheries and Oceans Canada University of Guelph	Advancing Environmental Genomics in the Marine Environment	\$1,304,000	\$200,000
Genome British Columbia	Environment	Prystajecky, Natalie Levett, Paul	University of British Columbia BC Centre for Disease Control	UPCOAST-N	\$499,990	\$166,663
Genome Atlantic	Fisheries	Hori, Tiago	Memorial University	Breeding Better Blue Mussels ( <i>Mytilus edulis</i> ): Developing genomic tools for the implementation of a modern and sustainable mussel breeding program	\$779,339	\$200,000
Genome Atlantic	Fisheries	Santander, Javier	Memorial University	Whole Genome Sequencing and Transcriptome Profiling in Response to Vaccination of Cleaner Fish <i>Cyclopterus lumpus</i> and <i>Tautoglabrus adspersus</i>	\$840,000	\$200,000
Genome Alberta	Health	Zovoilis, Athanasios	University of Lethbridge	BioNet Alberta	\$2,950,000	\$950,000
Genome Alberta Genome Québec	Health	McCabe, Christopher Rousseau, François	University of Alberta	Genomics and Personalized Health GE3LS Network program	\$1,996,945	\$998,473

CENTRE(S)	SECTOR	LEADER(S)	ORGANIZATION	TITLE	TOTAL FUNDING	GENOME CANADA CONTRIBUTION
Genome Atlantic	Health	Alda, Martin Uher, Rudolf	Nova Scotia Health Authority Dalhousie University	Early detection of bipolar disorder and optimized selection of long term treatment	\$974,996	\$199,996
Genome Atlantic	Health	Joly, David Filion, Martin	Université de Moncton	TRICHUM: Translating Research into Innovation for Cannabis Health at Université de Moncton	\$1,227,800	\$200,000
Genome British Columbia	Health	Finlay, Brett Rossant, Janet	University of British Columbia	Canadian Humans and the Microbiome Program	\$5,775,000	\$1,000,000
Genome British Columbia	Health	Hoang, Linda Eloranta, Katie	University of British Columbia BC Centre for Disease Control Canadian Food Inspection Agency	Unified Pathogen Control Onehealth Approach Specifically Targeting Vibrio (UPCOAST-V)	\$498,010	\$166,003
Genome British Columbia	Health	Sanatani, Shubhayan	BC Children's Hospital	Improving Diagnosis and Treatment of Catecholaminergic Polymorphic Ventricular Tachycardia	\$4,640,290	\$333,000
Genome Prairie	Health	Slater, Jim Banerji, Shantanu	University of Manitoba Provincial Health Services Authority	Genome360 Phase II: Manitoba's Provincial Applied Genomics Enterprise Platform	\$2,027,496	\$475,000
Genome Québec	Health	Knoppers, Bartha Maria	McGill University	Can-SHARE Connect (2019-2020): Supporting the Regulatory and Ethics Work Stream	\$500,000	\$166,667
Genome Québec	Health	Knoppers, Bartha Maria	McGill University	Canadian Genomics Partnership for Rare Disease- The Regulatory and Ethics Toolbox	\$329,715	\$244,715
Genome Québec Ontario Genomics Genome British Columbia	Health	Knoppers, Bartha Maria Brudno, Michael Friedman, Jan	McGill University	Canadian International Data Sharing Initiative (CanSHARE)	\$3,287,331	\$1,000,000
Ontario Genomics	Health	Brudno, Michael	The Hospital for Sick Children	Harmonising Phenomics Information for a Better Interoperability in the RD Field	\$4,429,833	\$333,000
Ontario Genomics	Health	Diamandis, Eleftherios	University of Toronto	Netherton Syndrome: From Mechanisms to Therapies	\$4,358,669	\$333,000
Ontario Genomics	Health	Duggan, Ana	McMaster University	Jenner's Legacy: uncovering the origins and dissemination of smallpox vaccines in the 19th-20th centuries	\$48,030	\$24,015
Ontario Genomics	Health	Edwards, Aled Arrowsmith, Cheryl	University of Toronto	The Structural Genomics Consortium IV	\$51,182,671	\$12,499,998
Ontario Genomics	Health	Gattinger, Monica	University of Ottawa	@Risk: Strengthening Canada's Ability to Manage Risk	\$195,166	\$97,583
Ontario Genomics	Health	Goodhand, Peter	Ontario Institute for Cancer Research	Canadian Genomics Partnership for Rare Disease	\$488,000	\$244,000
Ontario Genomics	Health	Sargent, Ted	University of Toronto	Bio-inspired Solar Energy Network	\$500,000	\$250,000
Ontario Genomics	Health	Stein, Lincoln	University of Toronto	Advancing Big Data Science in Genomics Research Project - The Cancer Genome Collaboratory	\$5,999,860	\$2,000,000
Ontario Genomics Genome Alberta	Health	Dirks, Peter Weiss, Samuel	The Hospital for Sick Children University of Calgary	Brain Cancer Stem Cell Dream Team	\$10,577,948	\$8,500,000

## LEADING-EDGE TECHNOLOGY

CENTRE(S)	SECTOR	LEADER(S)	ORGANIZATION	TITLE	TOTAL FUNDING	GENOME CANADA CONTRIBUTION
<b>CORE OPERATIONS SUPPORT FOR TECHNOLOGY PLATFORMS</b>						
Genome Alberta Genome British Columbia	All	Wishart, David Borchers, Christoph	University of Alberta University of Victoria	The Metabolomics Innovation Centre	\$5,427,207	\$5,427,207
Genome British Columbia	All	Borchers, Christoph Foster, Leonard	University of Victoria University of British Columbia	The Pan-Canadian Proteomics Centre	\$5,518,555	\$5,518,555
Genome British Columbia	All	Marra, Marco Jones, Steven Nislow, Corey Hirst, Martin	BC Cancer Agency University of British Columbia	BC Cancer Agency Genome Sciences Centre Genomics Technology Platform	\$5,472,887	\$5,472,887
Genome Québec	All	Lathrop, Mark Pastinen, Tomi Ragoussis, Ioannis Bourque, Guillaume	McGill University	McGill University and Génome Québec Innovation Centre	\$5,505,600	\$5,505,600
Genome Québec	All	Thibault, Pierre Tyers, Michael	Université de Montréal	Centre for Advanced Proteomic and Chemogenomic Analyses	\$2,052,208	\$2,052,208
Genome Québec Ontario Genomics	All	Bourque, Guillaume Brudno, Michael	McGill University The Hospital for Sick Children	Canadian Centre for Computational Genomics	\$4,133,680	\$4,133,680
Ontario Genomics	All	Awadalla, Philip Stein, Lincoln Ferretti, Vincent Simpson, Jared Bartlett, John	Ontario Institute for Cancer Research	Canadian Data Integration Centre	\$3,807,658	\$3,807,658
Ontario Genomics	All	Scherer, Stephen Strug, Lisa	The Hospital for Sick Children	The Centre for Applied Genomics	\$5,505,002	\$5,505,002
Ontario Genomics	All	Wrana, Jeff Gingras, Anne-Claude	Lunenfeld-Tanenbaum Research Institute Sinai Health System	Network Biology Collaborative Centre	\$3,016,310	\$3,016,310
Ontario Genomics Genome Québec	All	McKerlie, Colin Vidal, Sylvia	The Hospital for Sick Children McGill University	The Centre for Phenogenomics	\$3,780,893	\$3,780,893
<b>BIOINFORMATICS AND COMPUTATIONAL BIOLOGY</b>						
Genome Alberta	Agriculture	Stothard, Paul Van Domselaar, Gary	University of Alberta Public Health Agency of Canada	A comprehensive analytical toolkit and high-performance genome browser for rapid, reliable and in-depth characterization of bacterial genomes	\$940,977	\$458,368
Genome Atlantic Ontario Genomics	Agriculture	Beiko, Rob McArthur, Andrew	Dalhousie University	Rapid prediction of antimicrobial resistance from metagenomics samples: data, models, and methods	\$1,398,943	\$499,051

CENTRE(S)	SECTOR	LEADER(S)	ORGANIZATION	TITLE	TOTAL FUNDING	GENOME CANADA CONTRIBUTION
Genome British Columbia	Agriculture	Hsiao, William Van Domselaar, Gary	University of British Columbia Public Health Agency of Canada	Bioinformatics Tools to Enable Federated, Real Time Genomic Epidemiology Data Sharing and Analysis in a One Health Framework	\$1,164,488	\$500,000
Genome Québec	Agriculture	Butler, Gregory	Concordia University	TooT Suite: Predication and classification of membrane transport proteins	\$600,000	\$300,000
Genome Québec	Agriculture	Diallo, Abdoulaye Baniré Sirard, Marc-André	Université du Québec à Montréal Université Laval	Bioinformatics and Artificial Intelligence to leverage predictive models of dairy production	\$1,004,258	\$499,070
Ontario Genomics	Agriculture	Provart, Nicholas	University of Toronto	ePlants Pipeline and Navigator for Accessing and Integrating Multi-Level 'Omics Data for 15 Agronomically-Important Species for Hypothesis Generation	\$250,000	\$250,000
Genome British Columbia	Environment	Biol, Inanc	BC Cancer Agency	AnnoVis: Annotation and visualization of de novo genome and transcriptome assemblies	\$1,000,000	\$500,000
Genome British Columbia	Environment	Hallam, Steven	University of British Columbia	Global scale metabolic pathway reconstruction from environmental genomes	\$1,028,699	\$499,962
Genome Québec	Environment	Xia, Jianguo Basu, Niladri	McGill University	Development and Validation of a Web-Based Platform for Environmental Omics and Toxicology	\$1,047,507	\$500,000
Ontario Genomics	Environment	Adamowicz, Sarah Hebert, Paul	University of Guelph	Extracting Signal from Noise: Big Biodiversity Analysis from High-Throughput Sequence Data	\$507,231	\$250,000
Ontario Genomics	Forestry	Provart, Nicholas Bohmann, Joerg	University of Toronto University of British Columbia	From ePlants to eEcosystems: New Frameworks and Tools for Sharing, Accessing, Exploring and Integrating 'Omic Data from Plants	\$1,000,000	\$499,999
Genome British Columbia	Health	Biol, Inanc	BC Cancer Agency	New Bioinformatics for New Sequencing Technologies: Genome Characterization and Variation Detection using Long Reads	\$250,000	\$116,668
Genome British Columbia	Health	Borchers, Christoph Mohammed, Yassene	University of Victoria	Proteogenomics-Improved and -Guided Quantification Pipeline (PIGQpipe): Targeted Proteomics with Internal Proteogeno-typic Peptide Standards to Quantify Variants Identified by Proteogenomic Experiments	\$556,472	\$273,860
Genome British Columbia	Health	Brinkman, Ryan Chauve, Cedric Mostafavi, Sara	BC Cancer Agency	Automated Analysis of Big Flow Cytometry Data	\$249,994	\$118,762
Genome British Columbia	Health	Chindelevitch, Leonid Hsiao, William Chauve, Cedric	Simon Fraser University	PathOGIST: Calibrated Multi-Criterion Genomic Analysis for Public Health Microbiology	\$250,000	\$116,668
Genome British Columbia	Health	Chindelevitch, Leonid Libbrecht, Maxwell Shapiro, Jesse	Simon Fraser University Université de Montréal	Machine learning methods to predict drug resistance in pathogenic bacteria	\$1,000,000	\$499,886
Genome British Columbia	Health	Foster, Leonard Wishart, David	University of British Columbia University of Alberta	Illuminating the dark matter of the metabolome with convolutional neural networks	\$500,000	\$250,000
Genome British Columbia	Health	Joy, Jeffrey B. Montaner, Julio S.G.	University of British Columbia	Development and implementation of bioinformatics tools for HIV and HCV phylogenetic monitoring platforms	\$1,249,397	\$499,992
Genome British Columbia	Health	Wasserman, Wyeth	University of British Columbia	OnTarget: Big Data Informed Software for the Design of cis-Regulatory Regions Controlling Human Gene Expression	\$250,000	\$116,709

CENTRE(S)	SECTOR	LEADER(S)	ORGANIZATION	TITLE	TOTAL FUNDING	GENOME CANADA CONTRIBUTION
Genome British Columbia Ontario Genomics	Health	Hsiao, William McArthur, Andrew Brinkman, Fiona	University of British Columbia	Genomic Epidemiology Application Ontology (GenEpiO)	\$250,000	\$116,668
Genome Québec	Health	Blanchette, Mathieu Majewski, Jacek Waldispühl, Jérôme	McGill University	Bioinformatics tools for integrative 3D epigenomics	\$1,122,405	\$500,000
Genome Québec	Health	Bourque, Guillaume Joly, Yann	McGill University	Epigenomics Secure Data Sharing Platform for Integrative Analyses (EpiShare)	\$1,000,000	\$500,000
Genome Québec	Health	Greenwood, Celia Oualkacha, Karim	Lady Davis Institute for Medical Research Université du Québec à Montréal	Precision Medicine in Cellular Epigenomics	\$660,512	\$317,220
Genome Québec	Health	Najmanovich, Rafael	Université de Montréal	Next-generation molecular docking leveraging artificial intelligence techniques to understand large-scale ligand binding data sets	\$500,000	\$250,000
Genome Québec	Health	Shapiro, Jesse Barreiro, Luis	Université de Montréal	A Toolkit for Genome-Wide Association Studies in Bacteria	\$250,000	\$116,668
Genome Québec	Health	Waldispühl, Jérôme Moitessier, Nicolas	McGill University	Computational Methods and Databases to Identify Small RNA-binding Molecules Regulating Gene Expression	\$249,999	\$116,868
Genome Québec	Health	Xia, Jianguo Bourque, Guillaume Jacques, Pierre-Etienne	McGill University Université de Sherbrooke	An integrative platform for metabolomics and systems biology	\$1,094,607	\$500,000
Ontario Genomics	Health	Boone, Charles Myers, Chad L.	University of Toronto University of Minnesota	BridGE-SGA: A novel computational platform to discover genetic interactions underlying human disease	\$990,910	\$494,552
Ontario Genomics	Health	Boutros, Paul	Ontario Institute for Cancer Research	Enhanced and Automated Visualization of Complex Data	\$250,000	\$116,668
Ontario Genomics	Health	Brudno, Michael Weksberg, Rebecca	The Hospital for Sick Children	EpigenCentral: Consolidated epigenetic landscape for congenital, developmental and childhood disorders	\$249,900	\$117,577
Ontario Genomics	Health	Ferretti, Vincent Stein, Lincoln	Ontario Institute for Cancer Research	Dockstore: A Platform for Sharing Cloud-Agnostic Tools with the Research Community	\$250,000	\$116,668
Ontario Genomics	Health	Gingras, Anne-Claude Rost, Hannes	Lunenfeld-Tanenbaum Research Institute University of Toronto	Computational tools for Data-Independent Acquisition (DIA) for quantitative proteomics and metabolomics	\$1,000,000	\$500,000
Ontario Genomics	Health	Haibe-Kains, Benjamin	University Health Network	SYNERGx: A computational framework for drug combination synergy prediction	\$972,700	\$486,336
Ontario Genomics	Health	Ma, Bin Moran, Michael	University of Waterloo Hospital for Sick Children	Software for Peptide Identification and Quantification from Large Mass Spectrometry Data using Data Independent Acquisition	\$925,987	\$462,998
Ontario Genomics	Health	Poon, Art	Western University	Kamphir: A Versatile Framework to Fit Models to Phylogenetic Tree Shapes	\$205,365	\$91,033
Ontario Genomics	Health	Pugh, Trevor Brudno, Michael	Princess Margaret Cancer Centre Hospital for Sick Children	CReSCENT: CanceR Single Cell ExpressioN Toolkit	\$1,000,000	\$499,900

CENTRE(S)	SECTOR	LEADER(S)	ORGANIZATION	TITLE	TOTAL FUNDING	GENOME CANADA CONTRIBUTION
Ontario Genomics	Health	Simpson, Jared	Ontario Institute for Cancer Research	Rapid, Accessible Genome Assembly Using Long Read Sequencing	\$250,000	\$116,668
Ontario Genomics	Health	Stein, Lincoln Fiume, Mark	Ontario Institute for Cancer Research DNAstack	Dockstore 2.0: Enhancing a community platform for sharing cloud-agnostic research tools	\$875,269	\$437,610

## DISRUPTIVE INNOVATION IN GENOMICS

Ontario Genomics	Agriculture	Krell, Peter Doucet, Daniel	University of Guelph	Cell Biosensors for Rapid Screening of Insect Attractants	\$233,901	\$233,901
Genome British Columbia	Health	Borchers, Christoph Sickmann, Albert	University of Victoria	Replacing Immunoassays with MS-based Technology: Quantitative Proteomics Kits Enabling Deep Molecular Phenotyping of the Mouse	\$3,865,231	\$999,695
Genome British Columbia	Health	Hansen, Carl	University of British Columbia	Next Generation Immune Profiling Technology based on Microfluidic Single Cell Analysis	\$2,993,509	\$991,185
Genome Québec	Health	Costantino, Santiago Kleinman, Claudia	McGill University	Laser Assisted Single-Cell Genomics	\$250,000	\$250,000
Genome Québec	Health	Juncker, David	McGill University	Digital Omics of Single Exosomes	\$2,001,438	\$667,157
Genome Québec	Health	Lécuyer, Eric Blanchette, Mathieu Waldispühl, Jérôme	Institut de recherche clinique de Montréal McGill University	The RNA Zipcode Discovery Pipeline: Emerging tools for therapeutic targeting at subcellular resolution	\$3,164,100	\$999,997
Ontario Genomics	Health	Boone, Charles Moffat, Jason	University of Toronto	AbSyn Technology for Identification of Synergistic Cancer Therapeutics	\$249,389	\$249,389
Ontario Genomics	Health	Boone, Charles Moffat, Jason	University of Toronto	AbSyn Technology for Identification of Synergistic Cancer Therapeutics	\$2,719,453	\$896,331
Ontario Genomics	Health	Dowling, James Brudno, Michael	The Hospital for Sick Children	RNA-seq in Patient-Derived ex-vivo Models: Genetic Diagnostics beyond Whole Exomes	\$250,000	\$250,000
Ontario Genomics	Health	Emili, Andrew	University of Toronto	Massively Parallel Single Molecule Protein Sequencing in Situ	\$250,000	\$250,000
Ontario Genomics	Health	Figeys, Daniel Stinzi, Alain	University of Ottawa	RapidAIM: a High-Throughput Assay of Individual Microbiome	\$250,000	\$250,000
Ontario Genomics	Health	Figeys, Daniel Stinzi, Alain	University of Ottawa	RapidAIM: A technology to rapidly assess the effects of compounds on individual microbiomes	\$2,888,563	\$757,358
Ontario Genomics	Health	Finan, Turlough	McMaster University	Development of Advanced Genetic Toolbox for <i>Sinorhizobium Meliloti</i> to Enable Genome Scale Engineering	\$250,000	\$250,000
Ontario Genomics	Health	Scherer, Stephen Lok, Si	The Hospital for Sick Children	Economical High Throughput de novo Whole Genome Assembly	\$241,467	\$241,467
Ontario Genomics	Health	Shlien, Adam Dowling, James	Hospital for Sick Children	Beyond the Genome: Transcriptome Based Diagnostics for Rare Diseases and Cancer	\$2,999,944	\$999,419
Ontario Genomics	Health	Sidhu, Sachdev	University of Toronto	Synthetic Inhibitors of Ubiquitin-Binding Cancer Targets	\$3,009,018	\$1,000,000
Ontario Genomics	Health	Stagljar, Igor	University of Toronto	Development of SIMPL, a Novel Protein-Protein Interaction Assay based on Split Intein for Biomedical Research	\$250,000	\$250,000

CENTRE(S)	SECTOR	LEADER(S)	ORGANIZATION	TITLE	TOTAL FUNDING	GENOME CANADA CONTRIBUTION
Ontario Genomics	Health	Stagljar, Igor	University of Toronto	The Mammalian Membrane Two-Hybrid (MaMTH) Assay - an Advanced Proteomics Technology for Biomedical Research	\$3,034,211	\$1,000,000
Ontario Genomics	Health	Stagljar, Igor	University of Toronto	Interactome mapping of disease-related proteins using split intein-mediated protein ligation (SIMPL)	\$2,223,117	\$741,039
Ontario Genomics	Health	Tabard-Cossa, Vincent	University of Ottawa	Solid-State Nanopore-based Quantification of Low-Abundance Biomarkers	\$250,000	\$250,000
Ontario Genomics	Health	Taylor, Michael Khokha, Rama	The Hospital for Sick Children	Functional Genomics in Human Cells for Drivers of Lethal Metastatic Human Cancers	\$250,000	\$250,000
Ontario Genomics	Health	Wheeler, Aaron Kolomietz, Elena	University of Toronto	Development of a Digital Microfluidic Platform to Identify and Target Single Cells from a Heterogeneous Cell Population for Lyses in an Ultra-Low Volume	\$250,000	\$250,000
Ontario Genomics	Health	Wheeler, Aaron Kolomietz, Elena Chitayat, David	University of Toronto Sinai Health Systems	Development of a digital microfluidic platform to identify and target single cells from a heterogeneous cell population for lysis in an ultra-low volume for non-invasive prenatal diagnosis	\$3,002,971	\$1,000,000
Ontario Genomics	Health	Wilson, Michael Shlien, Adam	University of Toronto	SANGRE (Systematic Analysis of Blood Gene Regulation by Sequencing) – Bringing RNA-seq to Clinical Diagnostics	\$249,934	\$249,934



## TRANSLATION

CENTRE(S)	SECTOR	LEADER(S)	ORGANIZATION	TITLE	TOTAL FUNDING	GENOME CANADA CONTRIBUTION
<b>GENOMIC APPLICATIONS PARTNERSHIP PROGRAM</b>						
Genome Alberta	Agriculture	Plastow, Graham Kemp, Robert	University of Alberta Genesis Inc.	Development of Genomic Crossbred Estimate Breeding Values (GCEBV) to maximize profitability for Canadian pork producers	\$3,389,222	\$1,129,647
Genome Prairie	Agriculture	Yost, Christopher Whiting, Mike	University of Regina Lallemand Plant Care	Improving on-seed survival and performance of legume inoculants using genome shuffling	\$427,491	\$142,491
Genome Québec	Agriculture	Labrie, Steve Fraud, Sebastian	Université Laval General Mills	Genomic-based approach to optimize the development of texturizing bacterial strains in yogurt	\$1,170,675	\$390,225
Genome Québec	Agriculture	Robert, Claude Sullivan, Brian	Université Laval Canadian Centre for Swine Improvement	Chips for Better Chops: Commercial Application of Genomics for Accelerated Swine Genetic Improvement	\$6,550,103	\$1,996,186
Genome Québec	Agriculture	Tsang, Adrian Escobar, Jeffery	Concordia University Elanco Animal Health Eli Lilly and Company	Lysozyme feed additives to improve gut health and productivity of food animals for Swine and Poultry	\$6,000,000	\$2,000,000
Ontario Genomics	Agriculture	Baes, Christine Wood, Ben	University of Guelph Hybrid Turkeys	Application of Genomic Selection in Turkeys for Health, Welfare, Efficiency and Production Traits	\$6,039,988	\$1,999,422
Ontario Genomics	Agriculture	Guttman, David Paulter, Michael	University of Toronto Vineland Research and Innovation Centre	Broad-Range Disease Resistance in Greenhouse Vegetables	\$2,008,200	\$668,291
Ontario Genomics	Agriculture	LaPointe, Gisele Pepe, Maria	University of Guelph Parmalat Canada	Translating OMICS for competitive dairy products	\$1,339,129	\$446,077
Ontario Genomics	Agriculture	Mallard, Bonnie Lohuis, Michael	University of Guelph The Semex Alliance	Translating High Immune Response (HIRTM) Genomics to Improve Beef Cattle Health and Welfare	\$1,617,164	\$538,601
Ontario Genomics	Agriculture	Mubareka, Samira Qadir, Mohammed	University of Toronto Fusion Genomics	Pre-emergence surveillance for reportable influenza viruses at the human-animal interface	\$790,753	\$250,000
Ontario Genomics	Agriculture	Pauls, Peter Oufattole, Mohammed	University of Guelph Benson Hill Biosystems	Increasing yield in Canola Using Genomic Solutions	\$3,682,897	\$1,147,374
Genome Atlantic Genome Alberta	Energy	Hubert, Casey MacDonald, Adam	University of Calgary Nova Scotia Department of Energy	Microbial Genomics for De-Risking Offshore Oil and Gas Exploration in Nova Scotia	\$4,886,764	\$1,597,843
Genome Atlantic Genome Alberta	Energy	Hubert, Casey Ventura, Todd MacDonald, Adam	University of Calgary Saint Mary's University Nova Scotia Department of Energy	Validation and Integration of Genomics Solutions for Offshore Oil Exploration in Nova Scotia and Beyond	\$6,479,444	\$1,999,864
Genome Prairie Genome Québec	Environment	Palace, Vince Smyth, Patrick	IISD - Experimental Lakes Area Canadian Association of Petroleum Producers	Floating Wetland Treatments to Enhance Remediation (FLOWTER)	\$3,905,267	\$1,119,560

CENTRE(S)	SECTOR	LEADER(S)	ORGANIZATION	TITLE	TOTAL FUNDING	GENOME CANADA CONTRIBUTION
Genome Québec	Environment	Robert, Claude Côté, Steeve Rioux, Réjean	Université Laval Protection de la faune du Québec	Use of genomics to manage and protect caribou populations	\$3,043,190	\$1,011,323
Ontario Genomics	Environment	Edwards, Elizabeth A. Dworatzek, Sandra	University of Toronto SiREM	Scale-up of Bioaugmentation Cultures and Development of Delivery Strategies and Monitoring Tools for Anaerobic Benzene and Alkylbenzene Bioremediation	\$952,497	\$317,422
Ontario Genomics	Environment	Edwards, Elizabeth A. Dworatzek, Sandra	University of Toronto SiREM	Field Validation of Technologies for Anaerobic Benzene and Alkylbenzene Bioremediation	\$2,980,980	\$926,160
Ontario Genomics	Environment	Hajibabaei, Mehrdad Hendriks, Elizabeth	University of Guelph World Wildlife Fund Canada	Assessing Freshwater Health Through Community Based Environmental DNA Metabarcoding	\$2,608,784	\$866,852
Ontario Genomics	Environment	Mahadevan, Radhakrishnan Lee, Brian	University of Toronto Visolis Inc.	Genomics Driven Engineering of Hosts for Bio-Nylon	\$5,700,000	\$1,900,000
Genome Atlantic	Fisheries	Rise, Matthew Taylor, Richard	Memorial University EWOS Innovation	Integrated Pathogen Management of Co-Infection in Atlantic Salmon	\$4,533,102	\$1,509,113
Genome Atlantic Genome Québec	Fisheries	Bernatchez, Louis Mallet, André	Université Laval L'Étang Ruisseau Bar Ltée	Genomics for Developing the first Canadian production ready strain of selectively bred Eastern Oyster	\$3,806,291	\$1,249,924
Genome British Columbia	Forestry	Bohlmann, Joerg Russell, John H.	University of British Columbia British Columbia Ministry of Forests, Lands and Natural Resource Operations	Cedar Enhanced Durability and Resistance (CEDaR): Sustainability of Canada's Western Redcedar Forestry Sector	\$2,150,779	\$716,811
Genome Alberta	Health	Lewis, Ian Church, Deirdre	University of Calgary Calgary Lab Services	Device for the rapid detection of seven common bloodstream infections and assessment of antibiotic susceptibility	\$6,024,695	\$1,999,812
Genome British Columbia	Health	Carleton, Bruce Coté, Yvan	University of British Columbia Dynacare	Integrating Pediatric Pharmacogenomic Testing into the Canadian Health Care System	\$2,809,934	\$936,512
Genome British Columbia	Health	Lehman, Anna Ramsay, Pam	University of British Columbia Provincial Health Services Authority	Implementation of Diagnostic Whole Genome Sequencing for Rare Diseases in British Columbia	\$8,124,794	\$1,999,086
Genome British Columbia	Health	Rossi, Fabio Heyries, Kevin	University of British Columbia AbCellera Biologics	Antibody Therapeutics for Duchenne Muscular Dystrophy	\$6,506,824	\$1,998,726
Genome Québec	Health	Borchers, Christoph Spatz, Alan Leduc, Claude	Lady Davis Institute Jewish General Hospital MRM Proteomics Inc.	Developing the Next Generation PD-L1 Assays Using Precision Mass Spectrometry	\$1,449,026	\$478,138
Genome Québec	Health	Goodyer, Paul Huertas, Pedro	McGill University Health Centre Eloxx Pharmaceuticals	Novel Aminoglycoside Readthrough Reaction for Nonsense Mutations	\$2,051,396	\$671,720
Genome Québec	Health	Michaud, Jacques Ouellet, Denis	CHU Ste-Justine Research Centre Ministère de la santé et des services sociaux	Rapid Whole-Genome Sequencing in Acute Care Neonates and Infants	\$6,165,460	\$2,000,000

CENTRE(S)	SECTOR	LEADER(S)	ORGANIZATION	TITLE	TOTAL FUNDING	GENOME CANADA CONTRIBUTION
Genome Québec	Health	Thibault, Pierre Dunyach, Jean-Jacques	Université de Montréal Thermo Fisher Scientific	Bridging the ProteoGenomics Gap for Personalized Medicine Using Transformative Mass Spectrometry Technologies	\$1,737,722	\$522,730
Genome Québec	Health	Waldispühl, Jérôme Szantner, Attila	McGill University Massively Multiplayer Online Science	Crowdsourcing sequence alignments in a AAA game for Microbiome research	\$2,953,319	\$803,250
Ontario Genomics	Health	Bartlett, John Sadis, Seth	Ontario Institute for Cancer Research Thermo Fisher Scientific	Targeted Next Generation Sequencing Panels for Clinical Disease Management	\$6,000,000	\$2,000,000
Ontario Genomics	Health	Bramson, Jonathan Helsen, Christopher	McMaster University Triumvira Immunologics Inc.	Validation of TAC receptors for use against liquid and solid tumors	\$2,256,179	\$723,883
Ontario Genomics	Health	Cowen, Leah Jaikaran, Dominic	University of Toronto Bright Angel Therapeutics	Targeting fungal stress responses to provide first-in-class treatment for drug resistant fungal pathogens	\$5,994,687	\$1,986,029
Ontario Genomics	Health	Hawkins, Cynthia Brown, Chad	The Hospital for Sick Children Nanostring Technologies	Clinical Development and Translation of Genomics-Driven Pediatric Cancer Diagnostics using NanoString Technology	\$1,865,739	\$600,000
Ontario Genomics	Health	Hawkins, Cynthia Ferree, Sean	The Hospital for Sick Children Nanostring Technologies	NanoString nCounter Vantage 3D platform-based complementary diagnostic tests for precision medicine in pediatric cancers	\$4,045,291	\$1,300,000
Ontario Genomics	Health	Kelley, Shana McInnes, Mark	University of Toronto Charlotte Products Ltd.	Devices for Detection and Identification of Surface Microbial Contamination in High-Risk Facilities	\$4,469,365	\$1,485,636
Ontario Genomics	Health	Moffat, Jason Singh, Sheila	University of Toronto Empirica Therapeutics	Systematic evaluation and optimization of immune-targeting modalities for GBM and brain metastases	\$4,581,669	\$1,375,100
Ontario Genomics	Health	Sadikovic, Bekim Kadour, Mike	Lawson Health Research Institute/ Western University London Health Sciences Centre	Beyond Genomics: Assessing the Improvement in Diagnosis of Rare Diseases using Clinical Epigenomics in Canada (EpiSign-CAN)	\$4,787,447	\$1,588,260
Ontario Genomics	Health	Stewart, David Sekhon, Harmon	Ottawa Hospital University of Ottawa Eastern Ontario Regional Laboratory Association	Standardization of Molecular Diagnostic Testing for Non-small Lung Cancer	\$2,054,798	\$595,197
Ontario Genomics	Health	Surette, Michael Magarvey, Nathan Haigh, Andrew	McMaster University Adapsyn Bioscience Inc.	Applying the Adapsyn Genomics Platform to the Identification, Isolation, and Characterization of Immune Modulators from the Human Microbiome	\$6,034,102	\$1,990,459

# FINANCIAL REPORTS

## GENOME CANADA

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Year ended March 31, 2020

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KPMG LLP  
150 Elgin Street, Suite 1800  
Ottawa ON K2P 2P8  
Canada  
Telephone 613-212-5764  
Fax 613-212-2896

## INDEPENDENT AUDITORS' REPORT

To the Directors of Genome Canada

### **Opinion**

We have audited the financial statements of Genome Canada (the "Entity"), which comprise:

- the statements of financial position as at March 31, 2020
- the statements of operations and changes in net assets for the year then ended
- the statements of cash flows for the year then ended
- and notes to the financial statements, including a summary of significant accounting policies

(Hereinafter referred to as the "financial statements").

In our opinion, the accompanying financial statements present fairly, in all material respects, the financial position of the Entity as at March 31, 2020, and its results of operations and its cash flows for the year then ended in accordance with Canadian accounting standards for not-for-profit organizations.

### **Basis for Opinion**

We conducted our audit in accordance with Canadian generally accepted auditing standards. Our responsibilities under those standards are further described in the "**Auditors' Responsibilities for the Audit of the Financial Statements**" section of our auditors' report.

We are independent of the Entity in accordance with the ethical requirements that are relevant to our audit of the financial statements in Canada and we have fulfilled our other ethical responsibilities in accordance with these requirements.

We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our opinion.

### **Other Information**

Management is responsible for the other information. Other information comprises:

- the information, other than the financial statements and the auditors' report thereon, included in the Annual Report document.

Our opinion on the financial statements does not cover the other information and we do not and will not express any form of assurance conclusion thereon.

In connection with our audit of the financial statements, our responsibility is to read the other information identified above and, in doing so, consider whether the other information is materially inconsistent with the financial statements or our knowledge obtained in the audit and remain alert for indications that the other information appears to be materially misstated.

We obtained the information, other than the financial statements and the auditors' report thereon, included in the Annual Report document as at the date of this auditors' report. If, based on the work we have performed on this other information, we conclude that there is a material misstatement of this other information, we are required to report that fact in the auditors' report.

We have nothing to report in this regard.

### ***Responsibilities of Management and Those Charged with Governance for the Financial Statements***

Management is responsible for the preparation and fair presentation of the financial statements in accordance with Canadian accounting standards for not-for-profit organizations, and for such internal control as management determines is necessary to enable the preparation of financial statements that are free from material misstatement, whether due to fraud or error.

In preparing the financial statements, management is responsible for assessing the Entity's ability to continue as a going concern, disclosing as applicable, matters related to going concern and using the going concern basis of accounting unless management either intends to liquidate the Entity or to cease operations, or has no realistic alternative but to do so.

Those charged with governance are responsible for overseeing the Entity's financial reporting process.

### ***Auditors' Responsibilities for the Audit of the Financial Statements***

Our objectives are to obtain reasonable assurance about whether the financial statements as a whole are free from material misstatement, whether due to fraud or error, and to issue an auditors' report that includes our opinion.

Reasonable assurance is a high level of assurance, but is not a guarantee that an audit conducted in accordance with Canadian generally accepted auditing standards will always detect a material misstatement when it exists.

Misstatements can arise from fraud or error and are considered material if, individually or in the aggregate, they could reasonably be expected to influence the economic decisions of users taken on the basis of the financial statements.

As part of an audit in accordance with Canadian generally accepted auditing standards, we exercise professional judgment and maintain professional skepticism throughout the audit.

We also:

- Identify and assess the risks of material misstatement of the financial statements, whether due to fraud or error, design and perform audit procedures responsive to those risks, and obtain audit evidence that is sufficient and appropriate to provide a basis for our opinion.

The risk of not detecting a material misstatement resulting from fraud is higher than for one resulting from error, as fraud may involve collusion, forgery, intentional omissions, misrepresentations, or the override of internal control.

- Obtain an understanding of internal control relevant to the audit in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the Entity's internal control.
- Evaluate the appropriateness of accounting policies used and the reasonableness of accounting estimates and related disclosures made by management.
- Conclude on the appropriateness of management's use of the going concern basis of accounting and, based on the audit evidence obtained, whether a material uncertainty exists related to events or conditions that may cast significant doubt on the Entity's ability to continue as a going concern. If we conclude that a material uncertainty exists, we are required to draw attention in our auditors' report to the related disclosures in the financial statements or, if such disclosures are inadequate, to modify our opinion. Our conclusions are based on the audit evidence obtained up to the date of our auditors' report. However, future events or conditions may cause the Entity to cease to continue as a going concern.
- Evaluate the overall presentation, structure and content of the financial statements, including the disclosures, and whether the financial statements represent the underlying transactions and events in a manner that achieves fair presentation.
- Communicate with those charged with governance regarding, among other matters, the planned scope and timing of the audit and significant audit findings, including any significant deficiencies in internal control that we identify during our audit.



Chartered Professional Accountants, Licensed Public Accountants

Ottawa, Canada

June 18, 2020

# GENOME CANADA

## Statement of Financial Position

March 31, 2020, with comparative information for 2019  
(in thousands of dollars)

	2020	2019
<b>Assets</b>		
Current assets:		
Cash	\$ 7,515	\$ 10,672
Short-term investments (note 3)	34,280	30,996
Interest receivable	75	12
Other receivables	90	76
Prepaid expenses	243	244
	<u>42,203</u>	<u>42,000</u>
Capital assets (note 4)	31	39
	<u>\$ 42,234</u>	<u>\$ 42,039</u>
<b>Liabilities and Net Assets</b>		
Current liabilities:		
Accounts payable and accrued liabilities (note 5)	\$ 831	\$ 782
Deferred contributions - research projects (note 6(a))	40,249	40,091
	<u>41,080</u>	<u>40,873</u>
Deferred lease inducements (note 7)	173	177
Deferred contributions (note 6)		
Deferred contributions - internally restricted	950	950
Deferred contributions related to capital assets	31	39
	<u>981</u>	<u>989</u>
Commitments (note 10)		
	<u>\$ 42,234</u>	<u>\$ 42,039</u>

See accompanying notes to financial statements.

On behalf of the Board:



Director



Director



# GENOME CANADA

## Statement of Operations and Changes in Net Assets

Year ended March 31, 2020, with comparative information for 2019  
(in thousands of dollars)

	2020	2019
Revenue:		
Research projects	\$ 72,524	\$ 68,054
Amortization of deferred contributions related to capital assets (note 6)	8	16
	<u>72,532</u>	<u>68,070</u>
Expenses:		
Projects and Genome Centres	65,810	61,977
Corporate services	2,453	2,417
Program management	2,164	1,732
Strategy, development and external relations	2,097	1,928
Amortization of capital assets	8	16
	<u>72,532</u>	<u>68,070</u>
Excess of revenue over expenses, being net assets, end of year	\$ —	\$ —

See accompanying notes to financial statements.

# GENOME CANADA

## Statement of Cash Flows

Year ended March 31, 2020, with comparative information for 2019  
(in thousands of dollars)

	2020	2019
Cash provided by (used in):		
Operating activities:		
Excess of revenue over expenses	\$ —	\$ —
Items not affecting cash:		
Amortization of capital assets	8	16
Amortization of deferred lease inducement	(4)	(2)
Deferred contributions – research projects	(72,524)	(68,054)
Amortization of deferred contributions related to capital assets	(8)	(16)
Excluded from the increase in deferred contributions (note 9)	72	86
	(72,456)	(67,970)
Grants received from Government of Canada (note 6)	71,800	68,700
Reimbursement of disbursements to approved projects	—	491
Deferred lease inducement	—	179
Deferred contributions related to capital assets	—	9
Changes in non-cash operating working capital items:		
Decrease (increase) in other receivables	(15)	142
Increase in prepaid expenses	1	(74)
Increase (decrease) in accounts payable and accrued liabilities	50	(42)
		1,435
Investing activities:		
Decrease (increase) in short-term investments	(3,284)	7,279
Interest received on investments	791	781
Portfolio investment management	(44)	(48)
Purchase of capital assets	—	(9)
	(2,537)	8,003
Net change in cash	(3,157)	9,438
Cash, beginning of year	10,672	1,234
Cash, end of year	\$ 7,515	\$ 10,672

See accompanying notes to financial statements.

# GENOME CANADA

## Notes to Financial Statements

Year ended March 31, 2020  
(in thousands of dollars)

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### 1. Description of the organization:

Genome Canada (the "Corporation") was incorporated on February 8, 2000, under the Canada Corporations Act and continued on December 11, 2012. The Corporation is a not-for-profit organization and has the following objectives:

- (a) The development and establishment of a co-ordinated strategy for genomics research to enable Canada to become a world leader in areas such as health, agriculture, environment, forestry, fisheries, mining and energy;
- (b) The provision of leading-edge technology to researchers in all genomics-related fields through regional Genome Centres across Canada, of which there are currently six, one each in British Columbia, Alberta, the Prairies, Ontario, Quebec and the Atlantic;
- (c) The support of large-scale projects of strategic importance to Canada by bringing together industry, government, universities, research hospitals and the public;
- (d) The assumption of leadership in the area of ethical, environmental, economic, legal, social and other issues related to genomics research, and the communication of the relative risks, rewards and successes of genomics to the Canadian public; and
- (e) The encouragement of investment by others in the field of genomics research.

### 2. Significant accounting policies:

The financial statements have been prepared by management in accordance with Canadian accounting standards for not-for-profit organizations and include the following significant accounting policies:

#### (a) Revenue recognition:

The Corporation follows the deferral method of accounting for contribution for not-for-profit organizations received from the Government of Canada.

Externally restricted contributions and related investment income are recognized as revenue in the year in which the underlying expenses are incurred. A receivable is recognized if the amount to be received can be reasonably estimated and collection is reasonably assured.

Externally restricted contributions for the purchase of capital assets are deferred and amortized to revenue on a declining balance basis at a rate corresponding to the amortization rate for the related capital assets.

#### (b) Investments:

Investments are recorded at fair value. Fair value is determined at quoted market prices. Sales and purchases of investments are recorded at the settlement date. Short-term investments can be easily converted to cash during the period. Transaction costs related to the acquisition of investments are expensed.

# GENOME CANADA

Notes to Financial Statements (continued)

Year ended March 31, 2020  
(in thousands of dollars)

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## 2. Significant accounting policies (continued):

(c) Capital assets:

Capital assets are stated at their net book value. Amortization is provided for using the declining balance method at the following annual rates or term:

Asset	Rate
Furniture, fixtures and office equipment	20%

(d) Financial instruments:

The Corporation records interest receivable, other receivables and accounts payable and accrued liabilities at amortized cost using the effective interest method of amortization.

(e) Use of estimates:

The preparation of financial statements in conformity with Canadian accounting standards for not-for-profit organizations requires the use of estimates and assumptions that affect the reported amounts of assets and liabilities, disclosures of contingent assets and liabilities at the date of the financial statements and the reported amounts of revenues and expenses during the reporting periods. Accordingly, actual results could differ from these estimates. The most significant estimates used in the preparation of the financial statements include the fair value of investments, the amount of certain accrued liabilities and the estimated useful lives of capital assets. These estimates are reviewed annually and as adjustments become necessary, they are recorded in the financial statements in the year in which they become known.

(f) Lease inducements

Lease inducements, consisting of free rent and improvement allowances granted to the Corporation for the leased offices, are amortized on a straight-line basis over the term of the lease or over the useful life of the purchased asset.

# GENOME CANADA

Notes to Financial Statements (continued)

Year ended March 31, 2020  
(in thousands of dollars)

### 3. Short-term investments:

	2020		2019	
	Cost	Fair market value	Cost	Fair market value
Government of Canada				
Treasury bills	\$ 4,474	\$ 4,475	\$ 1,655	\$ 1,656
Bank deposits/Bankers' Acceptance	4,083	4,099	6,730	6,736
Commercial paper	279	280	5,809	5,824
Provincial/Municipal Short-term bills and notes	11,628	11,670	6,654	6,673
Federal government bonds	3,796	3,796	800	800
Provincial government bonds	4,839	4,906	6,547	6,548
Corporate bonds	5,098	5,054	2,760	2,759
	\$ 34,197	\$ 34,280	\$ 30,955	\$ 30,996

The interest rates at the end of the year range from 0.000% to 5.187% (2019 - 0.000% to 6.800%) and mature at varying dates in 2021 (2019 - varying dates in 2020).

### 4. Capital assets:

	2020		2019	
	Cost	Accumulated amortization	Net book value	Net book value
Furniture, fixtures and office equipment	\$ 442	\$ 411	\$ 31	\$ 39

Cost and accumulated amortization at March 31, 2019, amounted to \$442 and \$403, respectively.

### 5. Accounts payable and accrued liabilities:

Included in accounts payable and accrued liabilities are \$Nil (2019 - \$2) for goods and services tax/harmonized sales tax and payroll-relates taxes due to government entities.

# GENOME CANADA

Notes to Financial Statements (continued)

Year ended March 31, 2020  
(in thousands of dollars)

## 6. Deferred contributions:

The Corporation receives contributions from the Government of Canada to be held, invested, administered and disbursed in accordance with the related funding agreement between the Corporation and the Government of Canada.

### (a) Deferred contributions - research projects:

The Corporation operates under two active Funding Agreements with the Government of Canada. As at March 31, 2019, Innovation, Science and Economic Development Canada had committed \$402,200 in grants to the Corporation under these agreements, of which \$309,200 has been received as at March 31, 2020. The terms and conditions of these agreements call for remaining grants to be paid to the Corporation annually, subject to the appropriation by the Parliament, based on the estimated cash requirements for the year. During the year ended March 31, 2020, the Corporation received \$11,400 under the agreement dated March 10, 2014, and \$60,400 under the agreement dated May 19, 2017.

The changes in the deferred contributions balance for the year are as follows:

	2020	2019
Balance, beginning of year	\$ 40,091	\$ 39,155
Add: grants received	71,800	68,700
Add: reimbursement of disbursements to approved projects	–	491
Add: investment income	882	758
Less: amounts reflected in revenue	(72,524)	(68,054)
Less: amounts invested in capital assets	–	(9)
Less: amounts internally allocated to wind-down costs	–	(950)
<b>Balance, end of year</b>	<b>\$ 40,249</b>	<b>\$ 40,091</b>

### Expenses of future years:

Deferred contributions related to expenses of future years represent unspent externally restricted funding received to date, together with investment revenue earned, for the purpose of providing funds to eligible recipients and paying for operating and capital expenditures in future years.

# GENOME CANADA

Notes to Financial Statements (continued)

Year ended March 31, 2020  
(in thousands of dollars)

## 6. Deferred contributions (continued):

### (b) Deferred contributions related to capital assets:

Deferred contributions related to capital assets represent restricted contributions with which capital assets were originally purchased.

The changes in the deferred contributions balance for the year are as follows:

	2020	2019
Balance, beginning of year	\$ 39	\$ 46
Add: acquisition of capital assets	–	9
Less: amounts amortized to revenue	(8)	(16)
Balance, end of year	\$ 31	\$ 39

### (c) Deferred contributions - internally restricted:

On March 21, 2019, the Board of Directors approved an internal restricted reserve from previously received deferred contributions of \$950. The amount will be held to cover costs of a potential wind-down of the organization. Interest and investment income earned from these restricted amounts is recognized as income during the year it is earned and redistributed to the deferred contributions for future research project distribution.

## 7. Lease inducements:

The lease inducements include the following amounts:

	2020	2019
Leasehold improvement allowances	\$ 136	\$ 136
Free rent	37	41
Total lease inducements	\$ 173	\$ 177

During the year, leasehold improvement allowances and free rent of \$Nil (2019 - \$179) were provided. The Leasehold improvement allowance remained unspent during the 2020 period and was therefore not amortized. The amortization of leasehold improvement allowances and free rent are \$Nil and \$4, respectively (2019 - \$Nil and \$2, respectively).

# GENOME CANADA

Notes to Financial Statements (continued)

Year ended March 31, 2020  
(in thousands of dollars)

## 8. Employee pension plan:

The Corporation maintains, for the benefit of almost all of its employees, a defined contribution pension plan. The cost of the plan is recorded in the statement of operations and changes in net assets as it is incurred. The charge for the year totals \$189 (2019 - \$201).

## 9. Supplemental cash flow information:

	2020	2019
Gain on disposal of investments	\$ 30	\$ 17
Amount transferred to capital assets	—	(9)
Fair value adjustment	42	78
	\$ 72	\$ 86

## 10. Commitments:

Committed funding:

The Corporation is committed to finance approved research projects, science and technology platforms and Genome Centre operations in accordance with established agreements. As at March 31, 2020, the payments committed are approximately \$54,581 in 2020 and \$52,148 for other future years.

Operating leases:

The Corporation leases its premises and equipment under long-term operating leases, which expire at various dates between 2021 and 2028. The minimum aggregate lease payments are approximately as follows:

2021	\$	100
2022		98
2023		101
2024		102
2025		107
Thereafter		351
	\$	859



# GENOME CANADA

Notes to Financial Statements (continued)

Year ended March 31, 2020  
(in thousands of dollars)

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## 11. Financial risk management:

The Corporation is subject to the following risks due to its financial instruments:

(a) Foreign currency risk:

Foreign currency risk is the risk that the fair value or future cash flows of a financial instrument will fluctuate because of changes in foreign exchange rates. The Corporation holds \$7 (2019 - \$13) in foreign currency.

(b) Liquidity risk:

Liquidity risk is the risk that the Corporation will be unable to fulfill its obligations associated with financial liabilities or to meet cash requirements on a timely basis or a reasonable cost. The Corporation manages its liquidity risk by monitoring its operating requirements. The Corporation prepares budgets and cash forecasts to ensure it has sufficient funds to fulfill its obligations.

(c) Credit risk:

Credit risk refers to the risk that a counterparty may default on its contractual obligations resulting in a financial loss. The Corporation is exposed to credit risks with respect to its interest-bearing investments. The Corporation invests in government bonds to reduce the credit risk to an acceptable level.

(d) Interest rate risk:

Interest rate risk is the risk that the fair value or future cash flows of a financial instrument will fluctuate because of changes in interest rates. The Corporation is exposed to interest rate risk with respect to its interest-bearing investments as disclosed in note 3 to the financial statements.

(e) Other price risk:

Other price risk is the risk that the fair value or future cash flows of a financial instrument will fluctuate because of changes in market prices. The fair value of investments is disclosed in note 3 to the financial statements.

The Corporation is not subject to significant risks from its financial instruments. There has been no significant change in the risk exposures of the Corporation compared to the fiscal year 2019.

# GENOME CANADA

Notes to Financial Statements (continued)

Year ended March 31, 2020  
(in thousands of dollars)

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## 12. Effects of COVID-19:

On March 11, 2020, the COVID-19 outbreak was declared a pandemic by the World Health Organization. This has resulted in governments worldwide, including the Canadian federal and provincial governments, enacting emergency measures to combat the spread of the virus. The situation is dynamic and the ultimate duration and magnitude of the impact on the economy and the financial effect on our business is not known at this time. These impacts could include impairment of our investments, future declines in revenue, and the use of accumulated internally restricted deferred contributions to sustain operations.

## 13. Adoption of new accounting standards:

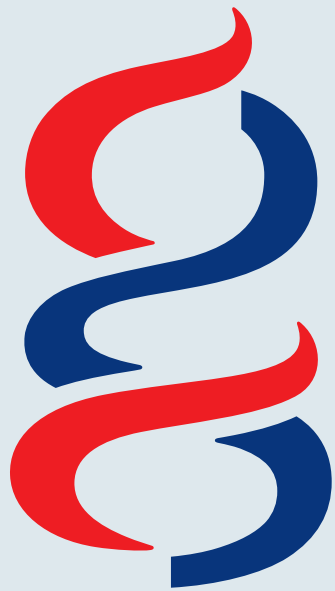
Genome Canada has adopted the following Canadian Not-for-Profit Accounting Standards effective on April 1, 2019:

- Section 4433, to replace Section 4431, Tangible Capital Assets Held by Not-for-Profit Organizations
- Section 4434, to replace Section 4432, Intangible Assets Held by Not-for-Profit Organizations
- Section 4441, to replace Section 4440, Collections Held by Not-for-Profit Organizations

Genome Canada has adopted these standards on a prospective basis and will apply the componentization approach of significant tangible capital assets (and related amortization) acquired in future years.

Genome Canada does not have assets that meet the intangible asset or collections definition set out by the revised standards and as such there is no impact to the prior period or current period financial statements.

The adoption of these standard did not result in any adjustments to the financial statements as at April 1, 2019.





**Genome**Canada  
**20YEARS**  
COLLABORATING ON THE FUTURE

150 METCALFE STREET, SUITE 2100  
OTTAWA, ON K2P 1P1

[WWW.GENOMECANADA.CA](http://WWW.GENOMECANADA.CA)  
[#GC20IN2020](https://twitter.com/GC20IN2020)