



GenomeCanada



2021

2022

Genome Canada Corporate Plan 2021-22

GLOBAL CHALLENGES ♦ GENOMIC SOLUTIONS

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1.0 About Genome Canada

Organizational context

Genome Canada was created in 2000 to coordinate applied genomics¹ research across Canada and make the country a world leader in strategically important sectors. A unique model, based on a federation of five (now six) independent regional Genome Centres, we deliver public-private research and innovation partnerships via a cross-sectoral platform. This model aligns regional strengths with national priorities, and leverages investments by federal and provincial governments, and partners in industry, universities and the non-profit sector.

Over time, as the community has matured and the science and its applications have advanced exponentially, Genome Canada has evolved its model—from ecosystem building to its current role as a catalyst for translating research to impact. Genome Canada serves as ‘connective tissue’ between federally funded research and the commercial or social impacts delivered by industry and other users. The regional Genome Centres, funded primarily by provincial governments, are proactively engaged with researchers and industry and other users, and provide in-depth regional knowledge and project management to national initiatives.

Value-add elements of our unique model include:

- **Proactive business development** and ongoing project management involving boots-on-the-ground networks.
- **Collaborative applied research projects with interdisciplinary, multi-sector teams** of researchers who combine genomics research, technology development and research on its ethical, environmental, economic, legal and social implications.
- **Robust international connections** that ensure Canadian researchers and firms benefit from and contribute to global perspectives, research results, and partnered initiatives.
- **Strong partnerships with Canada’s research ecosystem**, including the Tri-Councils, Canada Foundation for Innovation (CFI) and Mitacs to cooperate and coordinate for maximum impact.
- **Cooperation and coordination with science-based federal departments and agencies** on research priorities and projects.



¹ Genome Canada uses a broad definition of genomics - the comprehensive study, using high throughput technologies, of the genetic information of a cell or organism and its functions - which includes related disciplines such as epigenomics, metabolomics, metagenomics, proteomics, transcriptomics, bioinformatics and synthetic biology.

- **Engagement with policy and regulatory bodies**, and facilitation of dialogue between leading researchers and policymakers.
- **Knowledge mobilization** through engagement with key stakeholders and the public.
- **Convening of diverse stakeholder groups** to develop and implement bioscience research and innovation strategies in key economic sectors.
- **Demonstrated success at accelerating the growth of existing companies and spinning out companies** from research projects (more than 80 to date) and skills development for trainees (2/3 of project partners hire trainees).
- **Highly leveraged funding** with each federal matched dollar matched by 1.4 additional dollars from provinces, industry and other sources.

Drawing on 20 years of experience engaging at the regional, national and international levels, and 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 cutting-edge science to improve the lives of Canadians. 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 national and global importance. The very makeup of our world is changing; McKinsey Global Institute estimates that as much as 60% of the physical inputs to the global economy could be produced biologically. As Canada charts a course for resilient post-pandemic recovery and eventual growth, harnessing the game-changing potential of genomics research and innovation—key drivers of the bioeconomy—can deliver homegrown solutions, position Canada for global market leadership and, most fundamentally, protect and improve Canadians’ lives. Genome Canada is on a mission to play a national leadership role.

Since our inception in 2000, Genome Canada has operated within a unique and highly collaborative pan-Canadian model in partnership with six regional Genome Centres to drive business development, cross-sectoral public-private partnerships and strategic policy conversations about the transformative role of genomics knowledge, tools and technologies. As the Canadian Genomics Enterprise, we leverage national breadth and regional depth of genomics expertise to competitively invest in and deliver impactful programs across the country and to project a unified voice and purpose for Canada’s genomics community.



Building on the success and experience of our large-scale research projects, applied partnership projects, Technology Platforms and other programs, we are orienting the organization around a mission-driven framework, identifying and focusing on missions where genomics will contribute to tangible, impactful outcomes. These missions will translate the ideas and technologies generated through research and innovation into impact. They will improve innovation-based productivity, boost Canadians' health, ensure a secure and sustainable food supply, and address challenges with climate, natural resources and the environment.

Securing co-funding through partnerships is central to our business model. Bringing together diverse partners to co-invest in Canadian genomics research aligns efforts and benefits society. In collaboration with the Genome Centres, Genome Canada has leveraged \$1.6 billion in federal funding since 2000 for a total investment of \$3.9 billion for genomics research in Canada. This includes funds announced in Budget 2019, as well as \$38.4 million announced in April 2020 to fund the Canadian COVID Genomics Network (CanCOGeN) as part of federal countermeasures to address COVID-19.



\$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

This is an exhilarating time for genomics as its enormous potential is being realized. Thanks to sustained federal funding over the last two decades and the achievements of researchers and innovators supported by Genome Canada, the regional Genome Centres and other partners, Canada is now a powerhouse in genomics. Genome Canada is poised to build on this success and strategically marshal and mobilize our country's genomics research, innovation, data and talent assets to generate solutions to the big challenges facing Canadians.

Our range of programs

Genome Canada supports the advancement of genomics in Canada. The knowledge generated through our funding programs strengthens Canada's bioeconomy, supports evidence-based policymaking, and improves the health and quality of life of Canadians.

Mission-Driven Initiatives are envisioned as the evolution of our programming approach. These Initiatives will address big cross-cutting challenges where genomics will have a transformational impact. Missions will be goal oriented with targeted social and/or economic benefits; we would design, develop and lead them in partnership with the Centres and key partners. Multisectoral programming will be delivered through a combination of open competitions and directed funding opportunities, supported by four pillars of activity: research, innovation, data and talent. A great example of our mission-driven approach is the Canadian COVID Genomics Network (CanCOGeN) launched in April 2020.

Large-Scale Applied Research Project (LSARP) competitions fuel the innovation pipeline. Through the LSARP program, Genome Canada supports interdisciplinary research teams using a variety of research strategies and methodologies, contributing to a broader understanding of specific research

problems. LSARP competitions encourage investigators to explore the potential uses of their discoveries by engaging with those who can help translate the research into applications that benefit Canadian society and the bioeconomy.

The **Genomic Applications Partnership Program (GAPP)** is an academic-receptor partnered program that funds downstream research and development, and addresses opportunities and challenges identified by receptors from the private, public and non-profit sectors. The goal of GAPP is to increase and accelerate positive social and economic impacts of Canada's genomics R&D capacity.

The **Emerging Issues/Opportunities** and **Regional Priorities Partnership Programs** are two additional initiatives that respond to regional and national strategically identified needs. Both programs allow for rapid, flexible responses.

Our research funding programs are underpinned by our **Technology Programs**, including **Bioinformatics/Computational Biology, Disruptive Innovation in Genomics**, and **Genomics Technology Platforms**. Currently, there are ten platforms supported across Canada that provide researchers access to high-throughput genomic technologies such as DNA sequencing, RNA expression, protein identification and quantitation, and metabolomics, as well as new method and protocol development, data analysis and bioinformatics. They also help researchers develop research proposals by providing advice on appropriate technologies, study design, data analysis and bioinformatics that enables and improves research quality. The platforms develop new and improved genomic technologies, ensuring that the services they provide can support cutting-edge genomics research, such as that required for COVID-19.

Genome Canada also supports projects that address the application and implications of genomics in society (GE³LS research), either as an integrated component of other programs (such as through LSARP) or as stand-alone projects such as the **Genome Canada and Social Sciences and Humanities Research Council (SSHRC) Joint Initiative on Societal Implications of Genomics Research** and our **Genomics in Society Interdisciplinary Research Teams** initiatives.

Our commitment to accountability

In delivering our mandate, Genome Canada is committed to applying the highest standards of accountability and transparency to our operations. We provide a high level of assurance through mechanisms and instruments such as:

- corporate plans and annual reports;
- independent performance audit, compliance audit and evaluation studies;
- peer review and research oversight Committee processes;
- annual attest audits;
- continuous risk management assessment; and
- effective oversight by the Board of Directors.

We rigorously monitor our expenditures to manage operations in a fiscally prudent manner.

2.0 Results 2020-21

2020-21 was a year unlike any other. To accommodate changes necessary to respond to the pandemic, Genome Canada developed strategies to address both ongoing and future project work during a pandemic. We released a [statement outlining measures](#) to support the funded research teams, reassuring researchers that delays were anticipated and recognizing that flexibility would be the primary principle as everyone dealt with the limitations imposed by the pandemic. We continue to monitor the ongoing impacts on research teams and the larger research ecosystem.

Short- and medium-term outputs and outcomes from 2020-21

In 2020-21, Genome Canada achieved a broad and substantial range of short- and medium-term outputs and outcomes. We also launched the first example of our mission driven approach with the Canadian COVID Genomics Network.

- **Launch of the Canadian COVID Genomics Network (CanCOGeN).** When the pandemic hit in early 2020, Genome Canada activated our community immediately, with rapid time to impact. We launched the Canadian COVID Genomics Network (CanCOGeN) in April 2020, building on 20 years of investment in genomics in Canada, ongoing collaborations and existing infrastructure. CanCOGeN leverages a \$38.4 million investment of new money from Innovation, Science and Economic Development Canada (ISED) to generate accessible and usable genomics data to inform public health and policy decisions, as well as to guide treatment and vaccine development in Canada. As of February 19, 2021, 15,271 viral genomes have been uploaded into GISAID. This makes up 2.8% of the world total within GISAID (with Canada having contributed 0.8% of world total). CanCOGeN has been responsible for building capacity in provincial labs throughout the country. Our funding has directly contributed towards increased sequencing and most labs are sequencing between 5% and 10% of all positive COVID-19 cases. Conversations with our regional partners (provincial public health) has revealed that CanCOGeN infrastructure has been helpful for other disease monitoring.
- **COVID-19 Regional Genomics Initiative (CRGI)** Beyond CanCOGeN, Genome Canada launched the COVID-19 Regional Genomics Initiative, which has funded eight projects so far, for an anticipated investment of \$4.1 million, as well as establishing partnerships with the Canadian Institutes of Health Research (CIHR) and CIFAR to fund three additional COVID-19 related projects.
- **Launch of the 2020 LSARP Competition – Genomic Solutions for Natural Resources and the Environment.** This new competition, in partnership with Natural Resources Canada (NRCan), supports applied research projects that use genomic approaches to address challenges and opportunities in Canada’s natural resources and environmental sectors. These projects contribute to the Canadian bioeconomy, a healthy environment and the well-being of Canadians. The partnership builds on the complementary mandates of Genome Canada and

NRCan and provides an opportunity to bring together and maximize the effectiveness of the research communities, infrastructure and resources supported by both organizations. The scope of this funding opportunity includes areas such as genomics research 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. It also includes the use of genomics to understand the adaptive genetic potential of species, populations and ecosystems to climate and other environmental changes and stressors, and to identify those key elements that impact ecosystem structure, function and diversity. Approximately \$25 million is available from Genome Canada and another \$1.5 million from NRCan. Deadlines for the applications were pushed back by three months to accommodate disruptions caused by COVID-19.

- **Continued investment in the 2018 LSARP Competition – Genomic Solutions for Agriculture, Agri-food, Fisheries and Aquaculture.** This \$78.4 million competition, including co-funding, was launched in January 2018 in partnership with Agriculture and Agri-food Canada (AAFC). It supports eight projects that demonstrate how genomics research can be translated into solutions advancing the sustainability, productive capacity and competitive position of the Canadian agriculture/agri-food and fisheries/aquaculture sectors. We invested \$6.6 million in 2020-21.
- **Continued investment in the 2017 LSARP Competition – Genomics and Precision Health.** This \$163.9 million competition, including co-funding, was launched in January 2017 in partnership with CIHR. It supports 15 projects that demonstrate how genomics-based research can contribute to a more evidence-based approach to health. These projects are expected to improve health outcomes and/or enhance the cost-effectiveness of the health-care system. A broad range of projects were funded, including several focused on diagnosis and treatment for cancers, reducing health-care disparities and improving diagnostic success for children with genetic diseases from Indigenous populations, diagnosis of rare diseases, and several chronic illnesses, including cystic fibrosis, inflammatory bowel disease, and childhood arthritis. We invested \$10.5 million in 2020-21.
- **Continued investment in the 2015 LSARP Competition – Natural Resources and the Environment.** Genome Canada and co-funding partners are investing a total of \$112.8 million in 13 projects. The scope of this 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. We invested \$5.0 million in 2020-21.

- **Continued investment in the 2014 LSARP Competition – Genomics and Feeding the Future.** Genome Canada has continued to fund the 11 projects announced in 2015 via a \$94.4 million investment, which includes co-funding. 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. We invested \$2.4 million in 2020-21.
- **Continued investment in the 2012 LSARP Competition – Genomics and Personalized Health.** A total of \$150.0 million, including co-funding, was committed over the full term of these projects. The projects are completed and in the process of submitting final reports. The projects demonstrate how genomics can contribute to a more evidence-based approach to health, improve the cost-effectiveness of the health-care system, and ensure discoveries are translated into patient and population benefits. Areas of focus include tailoring patient treatments and therapies through the application of genomics. The outcomes have applications in fields as diverse as epilepsy, autism, HIV/AIDS, cancer, cardiovascular disease, rare neurological diseases and stroke, among others. We invested approximately \$0.2 million in 2020-21.
- **Funding of more projects through GAPP.** Throughout 2020-21, Genome Canada continued to invest in GAPP, disbursing approximately \$12.4 million during the fiscal year. Through Round 19, we have funded 86 receptor-led projects to date through our approximately \$347.5 million rolling-intake competition. GAPP is designed to increase collaboration between genomics scientists and users of genomics research to advance projects that address real-world challenges and opportunities. GAPP is also intended to stimulate investment from private and public partners in Canadian genomics technologies.
- **Continued partnership with Mitacs through GAPP to provide training opportunities in the private sector.** This partnership uses Mitacs programs to provide placements and funding for graduate students and post-doctoral fellows to work on GAPP projects within industry partners' operations. It prepares Canada's next generation of innovators to advance the field of genomics by allowing candidates to apply their knowledge and skills in a real-world setting. Companies, meanwhile, benefit from the high-quality research expertise. During 2020-21, this partnership supported 11 Mitacs Accelerate internships in GAPP projects.
- **Continued investment in the Joint Initiative with SSHRC on Societal Implications of Genomics.** This \$1.3 million initiative jointly supports social sciences and humanities research

and related activities that will enrich the understanding of the societal implications of genomic research. SSHRC has the lead on the peer review as applicants apply through SSHRC's regular programs. A total of 10 projects have now been approved for funding.

- **Continued funding of the Genomics in Society Interdisciplinary Research Teams program.** This \$5.8 million program, launched in February 2019, is part of our translational suite of programs. The Interdisciplinary Research Teams program brings researchers from different disciplines together to investigate factors affecting the advancement, adoption, evaluation and governance of genomics research and 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. This program is designed to support and enhance GE³LS research that addresses important and overarching challenges that affect the adoption and uptake of the outcomes from genomics research and/or accelerate the synthesis and dissemination of research pertinent to users, including policymakers, within a sector. We invested \$0.5 million in 2020-21.
- **Continued investment in Emerging Issues.** Genome Canada is currently funding Emerging Issues projects that address important and timely needs. Since 2000, we have invested approximately \$7.8 million (including co-funding) in these projects. In 2020-21, we added a COVID-19-related project in partnership with CIHR. University of Calgary researcher Dr. Dylan Pillai will focus this key research on creating tools to rapidly identify and test for the COVID-19 virus. The test his team is developing will be bedside portable to patients who are under quarantine, helping ensure that infected individuals cannot further transmit the virus in hospitals and public places.
- **Continued investment in the 2015 E-Rare-3 Joint Transnational Call – Translational Research Projects on Rare Diseases, Structural Genomics Consortium.** The total investment from all partners for the nine projects is \$13.4 million over three years. Genome Canada directly funded three of the projects, with two of these now completed. \$111,000 was invested in the final project in 2020-21. These projects focused on topics such as harmonizing phenomics information and improving the diagnosis and treatment of a cardiac arrhythmia syndrome as well as studying a life-threatening autosomal skin disease to understand its pathophysiology, facilitating the development of targeted therapies. E-Rare-3 is enabling scientists in different countries to build effective collaboration around a common interdisciplinary research project based on the sharing of expertise.
- **Continued support for the Structural Genomics Consortium (SGC).** Established in 2004, the SGC is a not-for-profit public-private partnership that supports the discovery of new medicines through open access research. We reconfirmed our investment in the SGC in March 2020, approving funding for Phase V with a total project budget of \$23.5 million and a

maximum of \$5 million from Genome Canada over two years. We invested \$2.7 million in SGC in 2020-21.

- **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. 21 projects have been approved thus far across key sectors. Genome Canada invested \$1.7 million in the RP3 program in 2020-21.
- **Continued investment in the 2017 Bioinformatics and Computational Biology Competitions.** This \$24 million competition launched in December 2017. It supports the development of next-generation tools and methodologies under two streams: those mainly impacting the human health sector, and those mainly impacting one or more of the other sectors that we focus on. The 25 projects funded received a \$4.1 million investment in 2020-21.
- **Continued investment in the Genomics Technology Platforms.** Ten Technology Platforms are being supported with a total of approximately \$133 million, including co-funding, over five years (2017-22). The platforms provide researchers access to the latest high-throughput 'omics technologies in areas such as DNA sequencing, proteomics and metabolomics. The platforms also provide researchers with advice on new method and protocol development, data analysis and bioinformatics. They received \$11.1 million in 2020-21.
- **Continued Investment in Disruptive Innovation in Genomics.** Genome Canada and co-funding partners have invested \$37.6 million in Disruptive Innovation projects since the program was launched in 2015. With the competition of initial-round projects, we invested \$2.1 million in second-round projects in 2020-21.
- **Continued outreach.** We engaged in a range of outreach activities in fiscal year 2020-21, listed here in several categories and ordered from most to least recent:

OUTREACH ON THE HILL

- **Standing Committee on Health (HESA) Appearance.** Following the CanCOGeN announcement, outreach was immediately put in motion to target key Ministers, MPs and Parliamentary Secretaries, as well as Parliamentary Committees (HESA, INDU, FINA). As a result, Drs. Rob Annan and Cindy Bell were invited to present at HESA on April 30, 2020 to help MPs understand the scientific response to COVID-19. The presentation focused on a lay overview of genomics and its potential to contribute key solutions to the public health crisis and economic recovery. The Committee was attended by 14 MPs, including two non-members, representing all parties and most regions.

STRATEGIC PARTNERSHIPS

- **Gairdner Foundation:** Genome Canada sponsored a well-attended high-profile event in December 2020 with Dr. Annan moderating the closing panel on the future of gene therapies and gene editing.
- **Synbio 2020:** Pari Johnston was a panel member on an Ontario Genomics event in November 2020 with Policy Horizons Canada as part of Canada Synbio 2020 Canada's Bio-Revolution Webinar Series. The panel examined engineering biology-driven manufacturing opportunities and specific initiatives and strategies in the USA, UK, and Canada.
- **BHER Canada Comeback Challenge:** Genome Canada is providing executive and staff participation to support this national competition that connects students and employers in the context of Canada's COVID-19 recovery, from fall 2020 through to spring 2021. Dr. Rob Annan will have an evaluation role as a judge of student pitches, and a potential internship is being considered for Spring/Summer 2021.
- **Governor General Innovation Awards:** Genome Canada nominated three researchers for the 2020 Governor General Innovation Awards. Award winners were announced in fall 2020.
- **BIONATION 2020:** Genome Canada was a key sponsor of the BIONATION event, organized by BIOTECCanada, showcasing cutting-edge life science and biotech. This March 31-April 1, 2020 event was postponed due to the pandemic and pivoted to become a fall 2020 webinar series, of which Dr. Annan chaired one on October 26 on the biotechnology ecosystem in Canada.
- **Canadian Science Policy Centre Partnership (CSPC):** Dr. Annan authored an editorial through CSPC's online COVID-19 platform. He then participated in a live interview on May 20 with CEO Mehrdad Hairiri. The discussion highlighted the importance of long-term investments in science and how this has produced a research community able to mobilize quickly on COVID-19. Genome Canada was also part of a panel event, "Lifting the Curtain", with five CanCOGeN members on July 21. The panel provided an update on the results of the initiative to date and defined the main elements of the network and its 24-month mandate. Dr. Annan also participated in an interview to mark Genome Canada's 20th anniversary, highlighting our 20-year legacy and laying out our forward-looking vision, linking it to the economic recovery.
- **CSPC 2020 Conference:** Pari Johnston hosted a pre-conference session in November, *Meat and Potatoes: Genomics and Agriculture in Canada's Economic Recovery*, with a panel of Canadian innovators, researchers and government policymakers on how to seize Canada's genomics opportunity in smart and sustainable agriculture. Enterprise involvement included "A Canadian Engineering Biology Roadmap: Building our Biomanufacturing Future" organized by Ontario Genomics; "Responding together in real time: collaboration and coordination in the face of public health emergencies" organized by Genome BC; and "Genome Canada: 20 years of collaboration on the future", an interview with Dr. Annan on August 21.

- **One-Health Workshop:** A series of seven virtual workshops began on September 30. A full Summit will be held in 2021 involving researchers and federal and provincial policymakers in health, agriculture and the environment. Dr. Catalina Lopez-Correa gave the keynote presentation at a related One-Health seminar on October 14 coordinated by Genome Alberta and University of Calgary.
- **RBC Disruptors Series:** This thought-leadership series pivoted to the COVID-19 response and recovery. Genome Canada’s Dr. Rob Annan and Ontario Genomics’ Dr. Bettina Hamelin were interviewed by RBC’s John Stackhouse for a Sep. 8 podcast on genomics and Canada’s economic recovery, “Catalyzing Canada’s Bioeconomy.”
- **SING Canada 2020:** Genome Canada supported a video and two online courses on Indigenous Peoples and Technoscience at the University of Alberta in fall 2020. Planned support of the 2020 Summer Internship for Indigenous peoples in Genomics (SING Canada) focused on *Helicobacter pylori* in Canada’s North (bacteria that infects the stomach lining and can lead to other serious health issues) was postponed to summer 2021 because of the pandemic. This followed on last year’s Enterprise-wide contribution of \$35,000 toward direct program support, covering travel and administrative costs for the program and its participants.
- **Public Policy Forum (PPF):** PPF is conducting a podcast series focused on the diverse policy implications of COVID-19 for Canada. Drs. Annan and Bettina Hamelin (CEO, Ontario Genomics) were interviewed by PPF CEO Ed Greenspon in June about how genomics research can inform policy action in the crisis and provide innovative solutions to economic recovery.

COVID STORYTELLING

- **Bacon and Eggheads with Research Partnership Group for Science and Engineering (PAGSE):** Sponsorship of Dr. Volker Gerdts, Director and CEO of VIDO-Intervac, a leader in global COVID-19 vaccine development as a February 2021 speaker in this series.
- **CanCOGeN HostSeq and CGEn:** Drs. Catalina Lopez-Correa, Naveed Aziz and Stuart Turvey ran a HostSeq webinar series in coordination with the Centres in October/November. The objective was to boost interest and participation in the HostSeq project.
- **Re\$earch Money Conference:** Drs. Rob Annan and Catalina Lopez-Correa participated in an October webinar about proving COVID-19’s secrets with CanCOGeN.
- **Health Summit 2020:** Dr. Catalina Lopez-Correa gave the keynote about genomics, personalized medicine and COVID-19 on October 27, and participated in the closing panel discussion on challenges around data sharing the next day.
- **Pharmaceutical Sciences World Congress 2020:** Dr. Catalina Lopez-Correa participated on a panel about genomics, personalized medicine and COVID-19 on October 4.
- **“The Future Economy” (TFE):** Genome Canada and the Centres collaborated on a COVID-19 six-part TFE interview series, beginning with Dr. Rob Annan and expanding to

- five genomics- oriented researchers who are making diverse contributions to responding to the pandemic in Canada. A 12-part interview series is being planned for early 2021.
- **Public information videos:** In June, Genome Atlantic created two information videos about COVID-19: *On the trail of COVID-19* and *The race for a vaccine*. Génome Québec had both videos translated for a French audience, and all Centres promoted them.
 - **Research Canada:** CanCOGeN member Dr. Terrance Snutch participated in a Research Canada event on COVID Vaccine and Treatment R&D in Canada on May 21.
 - **CanCOVID Forum:** Led by the Office of the Chief Science Advisor, this network brings together Canada's research expertise on COVID-19 from across the country to improve communication between the scientific, health-care and policy communities. Genome Canada co-hosted a session on May 19 with Dr. Fiona Brinkman of Simon Fraser University, a lead researcher on the VirusSeq project under CanCOGeN.
 - **Life Sciences Ontario:** Dr. Catalina Lopez-Correa spoke at a Life Sciences Ontario event on August 13 on CanCOGeN and the theme of genomics, precision health and COVID-19.
 - **COVID-19 Resources Canada:** In spring 2020 Genome Canada became a sponsor of this resource portal for researchers and clinicians responding to the COVID-19 epidemic in Canada.

Remaining challenges from 2020-21

Our principal operating challenge in 2020-21 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. In addition, 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.

Mission-related challenges for CanCOGeN revolve around data sharing. With the current model, completed sequencing in Canada is uploaded to NML, then to GISAID. However, because of restrictions within GISAID, not all Canadian researchers have been able to access these data. To overcome this challenge, CanCOGeN launched a rapid request for proposals in February 2021 to create a national data portal to serve as a repository for Canadian SARS-CoV-2 data which will ensure Canadian researchers have the access they need.

The COVID-19 pandemic has presented unique challenges for the research sector. With the closing of academic institutions around the country, there have been delays in research projects with research labs closed, childcare centres shuttering their doors and researchers no longer able to be in close

physical proximity to their teams. Economic effects have heightened the risk that co-funding will be difficult to obtain, as businesses and governments will have to adjust their budgets to account for reduced revenues.

3.0 Moving forward into 2021-22

Genome Canada Strategic Vision

| | | |
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| OUR VISION Canada is a world-leader in the application of genomics-based biosciences for human health, the environment, and across the bioeconomy. | OUR MISSION Genome Canada commits to put genomics in the hands of those who will use it to create health, environmental, and economic benefits for Canadians. | OUR OBJECTIVES <ol style="list-style-type: none">1 Drive high-impact research to benefit Canada2 Deliver effective, purpose-fit programs that support our mission3 Promote the responsible application of genomics in Canada |
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To support our vision and enact our mission, Genome Canada is continuing to evolve our approach and programs. Beginning with the need to respond to the COVID-19 pandemic and to plot a path to economic recovery, we are moving towards a mission framework underpinned by the pillars of research, innovation, data and talent to mobilize genomics to ensure future pandemic readiness, climate action and drive Canada’s recovery across sectors.

Our bioinformatics and disruptive technologies funding will continue supporting researchers who seek to push the limits of their methodologies and tools and who want to disrupt current ways of thinking and doing. We will build on our funding of data-driven and bioinformatics projects as well as Technology Platforms and work with the Centres and other partners like the National Digital Research Infrastructure Organization to create and implement a national genomics data strategy to drive data generation, analysis, standards, tools, access and usage to derive maximum valued and impact from Canada’s genomic data assets.

As the leading voice for Canadian genomics researchers, we will continue to support the genomics research ecosystem through provision of large-scale funding for big genomics research projects while also enabling timely responses to social needs through rapid-response funding for emerging and strategic issues. These large-scale funding opportunities will provide opportunities for Canadian ‘omics researchers of all levels of experience, from senior researchers to undergraduate co-op students, to engage in exciting research opportunities that facilitate skills building, jump-start careers and keep genomic talent in Canada.

For the 2021-22 fiscal year, Genome Canada will continue to manage ongoing programs and initiatives funded by the various agreements noted in Table 1 at the end of this report. Additionally, we will continue to monitor the COVID-19 pandemic and its effects on funded researcher teams. Table 2 (at the end of this report) includes a list of our funded programs that will be active in 2021-22.

1. Drive high-impact research to benefit Canada

Genome Canada will continue to support large-scale, interdisciplinary research with line-of-sight to application. We will fund strategic mission-driven research addressing grand challenges, while developing and providing access to leading-edge technologies and supporting research on genomics in society.

To support this objective, we will:

- Maintain our commitment to large-scale, interdisciplinary research through inclusion of GE³LS in the LSARP programs.
- Continue funding our Genomics in Society Interdisciplinary Research Teams and ongoing partnership with SSHRC to build capacity in research on genomics in society by investing \$1.1 million in 2021-22.
- Invest approximately \$24.2 million (excluding co-funding) in 2021-22 in ongoing LSARP projects on natural resources and the environment, precision health, and agriculture and aquaculture/fisheries.
- Invest approximately \$15.0 million in ongoing and new GAPP projects in 2021-22.
- Invest \$9.9 million in our 10 ongoing Technology Platforms in 2021-22.
- Continue to invest \$3.3 million in our big data program, Bioinformatics and Computational Biology (B/CB), in 2021-22 to ensure scientists have the tools needed to interpret, manage, govern, store and share genomics data in a secure and equitable manner.
- The Canadian COVID Genomics Network (CanCOGeN) will see an investment of \$25.3 million to continue national work on COVID-19 research. CanCOGeN will continue to provide national coordination for Canada's ongoing COVID-19 pandemic. One of the larger anticipated outcomes for CanCOGeN in 2021-22 will be greater coordination between Host and Viral sequencing to facilitate decision-making on a population-wide scale. Ongoing work to sequence up to 150,000 SARS-CoV-2 samples and up to 10,000 related Canadian human host samples will continue and it is anticipated that the national data portal, a repository for Canadian SARS-CoV-2 data, will be designed and implemented. There will also be the launch of an International Speaker Series to engage with scientists around the world who are involved in COVID-19 genomics. Ongoing reporting will also continue to be provided through the CanCOGeN newsletter, which is available at the end of each month.
- The COVID-19 Regional Genomics Initiative is earmarked for an investment of \$0.4 million in 2021-22.
- Furthermore, through a new \$53 million Government of Canada Variants of Concern Strategy, CanCOGeN is working with the Public Health Agency of Canada's National Microbiology Laboratory, Health Canada, Canadian Institutes of Health Research, and other provincial and territorial partners to quickly scale up genomic sequencing and research efforts to detect new variants, increase real-time data sharing capacity, and inform appropriate public health responses. CanCOGeN's Executive Director, Dr. Catalina Lopez-Correa will sit on the Leadership Group and Genome Canada will provide secretarial support to this group.

2. Deliver effective, purpose-fit programs that support our mission

Genome Canada is committed to supporting an equitable, diverse and inclusive research program focused on excellence and impact. We will continue to strengthen the impact of research and innovation through collaboration and coordination within academia and industry, nationally and internationally.

- We have implemented an Equity, Diversity, Inclusion and Accessibility (IDEA) Committee to work with and advise management on a strategic plan to move the organization forward and embed IDEA policies and practices across our operations, programs and governance structures. Based on the input provided by four IDEA subcommittees (Data Collection and Management, Education and Training, Enterprise and Stakeholder Engagement, and Human Resources and Governance), an IDEA Framework is being presented to the Board of Directors for approval at a Board of Directors meeting in March of 2021. The key foci of the IDEA Framework include creating a diverse and inclusive workforce, creating a diverse and inclusive governance structure, gathering data and understand who we are as an organization, and embedding IDEA values into all of our programs, policies and procedures. The organization will be hiring a consultant to help develop and implement an IDEA strategy based on the Framework developed by the staff-led Committee.
- We also launched an EDI working group across the genomics enterprise chaired by Genome Canada and involving senior staff from all six Genome Centres which has hosted external EDI experts and focused on aligned activities for 2021 including data collection, sharing tools and resources and progress towards the 50/30 goals that all but one in the Genomics Enterprise have signed on to.
- Genome Canada is also initiating the needs assessment exercise with the support of an Indigenous led consulting firm to inform the development of a stand-alone Indigenous engagement and partnership strategy as Genome Canada is committed to playing its part to advance the vital Canadian process of Indigenous reconciliation.
- That Genome Canada's Board of Directors unanimously signed on to the 50/30 challenge in late 2020 to help lead and accelerate organizational diversity actions to improve equity.
- We engage with stakeholders in the research ecosystem and industry to ensure our programs are informed by the research community, stakeholders, relevant industry and the Genome Centres.
- We regularly work with the six Genome Centres, who have regional expertise and capabilities, to ensure that all programs remain relevant and responsive.
- The Regional Priorities Partnership Program focuses on supporting the Genome Centres in developing initiatives that advance genomics research and translation capacity in areas of strategic priority to their region. In 2021-22, we plan to invest approximately \$2.2 million in this program.
- We believe that challenging the norm is part of what we must do to generate innovation. The Disruptive Innovation in Genomics competition supports the development of new genomics-

based technology (or the application of existing technology from another field applied to genomics) that is transformative and has the potential to displace an existing technology, disrupt an existing market or create a new one. In 2021-22, we will continue investing in existing disruptive innovation projects with \$1.7 million.

- We have been a member and supporter of the Global Alliance for Genomics and Health (GA4GH) since 2014. We plan to provide approximately \$0.2 million in 2021-22 to support convening activities to advance the research efforts of the alliance and to support the secretariat staying in Canada.
- The Structural Genomics Consortium (SGC) is a unique Canadian-led public-private partnership established in 2004 to support the discovery of new medicines through open science research. Genome Canada's funding has allowed the SGC to remain in Canada and facilitated its open access programming through new partnerships. We will invest \$2.5 million in 2021-22.
- In 2018, Genome Canada launched *All for One*, a pan-Canadian precision health initiative with the goal of improving the health and wellness of Canadians with serious genetic conditions by enabling access to a timely and accurate genomic-based diagnosis. It lays a foundation for precision health in Canada. Over the past year, work has focused on three components: clinical implementation projects, a data governance framework and a health data ecosystem.
 - As of December 2020, five clinical implementation projects have been approved for funding through the GAPP, and at least one more is anticipated in 2021. These projects are working to demonstrate the clinical utility and cost-effectiveness of genome-wide sequencing as a standard-of-care for people suspected of having a serious genetic condition. Each project is driven by the needs of the healthcare system and is carried out in partnership with clinicians, diagnostic labs, and the provincial ministry or regional authority.
 - The *All for One* GAPP Rare Disease Forum brings together clinical, lab, and ministry representatives from the clinical implementation projects, as well as regional Genome Centre representatives, to facilitate the discussion of project strategies, identify challenges, share best practices and policies, and inform the development of a Health Data Ecosystem.
 - The Policy Toolkit will be used to develop a data governance framework for clinical consent and genomic data sharing. The framework will support connecting projects and institutions within the *All for One* initiative and enable partnerships with other national health data initiatives in Canada and abroad.
 - Genome Canada will invest in the development of a pan-Canadian Health Data Ecosystem to enable teams to harmonize the capture, standardization and sharing of genomic and clinical datasets across the *All for One* clinical implementation sites. The Health Data Ecosystem will serve as a model for health data sharing in Canada.

3. Promote the responsible application of genomics in Canada

Genome Canada will demonstrate thought leadership through a genomics lens by continuing to participate in national and local dialogues on genomics and policy. We will work collaboratively with stakeholders – and build new diverse relationships - to share information and develop our strategy.

- We will continue to support and encourage outreach and engagement in the community of Genome Canada-funded researchers. They open their labs to tours by school students of all levels every year and take on co-op and summer students to generate capacity and interest in science. They support the interest of undergraduate, masters and PhD students, and post-doctoral fellows, by finding places for them on their research projects. They speak at local schools and universities and institutions outside of Canada, visit professors in other departments, and hold public workshops to share their knowledge.
- We will continue to sponsor and directly participate in outreach events, both nationally and internationally. We represent Canadian genomics at national and international conferences and meetings and engage with broad sets of stakeholders through Genome Centre programs such as GeneSkool and through partnerships supporting initiatives such as the Summer Internship for Indigenous Peoples in Genomics.
- We will continue to demonstrate policy and thought leadership through strategic partnerships with organizations such as the Public Policy Forum, the Business Higher Education Roundtable, the Parliamentary Internship Program and the Canadian Science Policy Centre.
- We will continue to support and recognize our researchers through initiatives such as nominating them for awards such as the Governor General Innovation Awards and suggesting them as speakers for panels or speaker series, such as “The Future Economy” interview series.
- Genome Canada is a world leader in genomics and its ethical, environmental, economic, legal, and social aspects (GE³LS). To maintain our leadership, we are implementing recommendations from the Integrated GE³LS Program Review. We are also developing a plan for GE³LS research integration into our mission framework and a strengthened Genomics in Society mandate, with a greater emphasis on bridging the research-policy nexus.
- We will tap into the excellence of Genome Canada-funded researchers and help them share their knowledge with our stakeholders. Many researchers have spoken before Parliamentary committees, been admitted to the Royal Society of Canada, and received prestigious awards such as the Kyoto Prize, Heineken Prize, Gairdner Award and the Killam Prize, among others.
- We will continue to maintain and develop national and international partnerships in areas of pressing importance to Canadians. We will reach out to all types of industries and potential users to inform them of the many applications of genomics research and tools for their sector.

4.0 Financial management

The federal government, through Innovation, Science and Economic Development Canada (ISED), has committed \$1.6 billion in funding to Genome Canada since 2000-01. This includes the most recent support of \$100.5 million in Budget 2019 as well as \$38.4 million for the Canadian COVID Genomics Network (CanCOGeN) initiative to quickly mobilize genomics researchers in support of large-scale COVID-19 research. All funding is provided through funding agreements between Genome Canada and ISED. Genome Canada and the Genome Centres raise co-funding from others, including the public, not-for-profit and private sectors.

Investment and management of funds

The Audit and Investment Committee supports Genome Canada's Board of Directors in fulfilling its fiduciary responsibilities with respect to the management of funds. The Committee meets quarterly and reports to the Board on the outcome of its deliberations.

The Committee is responsible for:

- overseeing the investment and management of funds received from the Government of Canada as per a Board-approved investment policy that outlines guidelines, standards and procedures for the prudent investment and management of funds; and
- overseeing Genome Canada's policies, processes and activities in the areas of accounting and internal controls, risk management, auditing and financial reporting.

The Board's Programs Committee brings further oversight to the management of funds by ensuring research funding and activities are aligned with Genome Canada's strategic priorities. The Committee provides advice to the Board of Directors on research programs and projects, research partnerships and collaborations, competitions and program evaluation.

Source and use of funds

Genome Canada currently manages funds arising from the following Contribution Agreements.

TABLE 1: GENOME CANADA FUNDING AGREEMENTS WITH INNOVATION, SCIENCE AND ECONOMIC DEVELOPMENT CANADA

| Federal budget | Competitions and projects funded |
|---|--|
| Budget 2008 (\$140 million) | Competition in applied genomics research in bioproducts and crops Two research projects through the Cancer Stem Cell Consortium and the International Barcode of Life project Support for the Science and Technology Innovation Centres The operations of six regional Genome Centres and Genome Canada through to 2012-13 |
| Budget 2010 (\$75 million) | Competition in forestry and the environment Multi-sector competition Competition for operations support for the Genomics Innovation Network |
| Budget 2011 (\$65 million) | Competition in applied genomics research in personalized health Funding of Phase III of the Structural Genomics Consortium (SGC) and continued funding for the International Barcode of Life project Funding for the Public Population Project in Genomics Competition in bioinformatics and computational biology Contribution to the operations of six regional Genome Centres and Genome Canada for 2013-14 |
| Budget 2012 (\$60 million) | Funding for the Genomic Applications Partnership Program Funding for renewal of the Genomics Innovation Network for two years Funding of the SGC and the International Barcode of Life project |
| Budget 2013 (\$165 million) | Two competitions in large-scale applied genomics research Funding for Genomics Innovation Network operations in 2015-16 and 2016-17, as well as related technology development Funding for disruptive innovation in genomics and in bioinformatics and computational biology Funding for national and international partnerships, including the SGC and the International Barcode of Life project Contribution to the operations of six regional Genome Centres and Genome Canada through to 2016-17 |
| Budget 2016 (\$237 million) | Two competitions in large-scale applied genomics research Support for genomics Technology Platforms and for bioinformatics and computational biology competitions Funding for the Genomic Applications Partnership Program Funding for national and international partnerships and strategic initiatives Contribution to the operations of six regional Genome Centres and Genome Canada through to 2019-20 |
| Budget 2019 (\$100 million) | One competition in large-scale applied genomics research Funding for Technology Platforms and research projects in bioinformatics and computational biology, technology development and disruptive technology Support for translational research Operating costs of Genome Canada and contribution to the operations of six regional Genome Centres through 2021-22 |
| Canadian COVID Genomics Network (CanCOGeN) (\$38.4 million) | The CanCOGeN initiative to coordinate and fund national genome sequencing efforts and share the resultant data, nationally and internationally, in support of large-scale research to combat COVID-19 Creation of a coordinated national genomics-related network to build capacity to address future pandemic outbreaks |

Cash management

Genome Canada disburses funds on a quarterly basis through the six regional Genome Centres (for approved research projects) and the Technology Platforms. On a quarterly basis, each Genome Centre is required to review the expenditures to date. Each Centre is also required to estimate cash requirements for Centre operations and for each project and Technology Platform that it manages. It then submits a “draw request” to Genome Canada, indicating the cash needs for the subsequent quarter.

The Genome Centres assess the project/Technology Platform needs against the approved budget, actual expenditures, scientific progress to date and co-funding received from other sources. Genome Canada then conducts a thorough review of the draw request submission before releasing funds.

Receipts and disbursements

Table 2 provides an estimate of the receipts and disbursements for the funding agreements.

TABLE 2: SUMMARY OF RECEIPTS AND DISBURSEMENTS

| Details (in millions of dollars) | Actual 2000-20 | Forecast 2020-21 | Forecast 2021-22 | Forecast Other | Total | Estimated co- funding | Genome Canada and co- funding | % |
|---|-------------------|---------------------|---------------------|-------------------|----------------|-----------------------------|--|---------------|
| RECEIPTS | | | | | | | | |
| Government of Canada | | | | | | | | |
| Previous budgets | 1,205.0 | | | | 1,205.0 | | 1,205.0 | 30.4% |
| Budget 2016 | 144.2 | 38.0 | 30.0 | 25.0 | 237.2 | | 237.2 | 6.0% |
| Budget 2019 | | 31.5 | 18.0 | 51.0 | 100.5 | | 100.5 | 2.5% |
| Canadian COVID Genomics Network (CanCOGeN) | | 25.9 | 12.5 | | 38.4 | | 38.4 | 1.0% |
| Investment income | 92.5 | 0.2 | | | 92.7 | | 92.7 | 2.3% |
| Co-funding | | | | | | 2,285.1 | 2,285.1 | 57.7% |
| | 1,441.7 | 95.6 | 60.5 | 76.0 | 1,673.8 | 2,285.1 | 3,958.9 | 100.0% |
| DISBURSEMENTS | | | | | | | | |
| Research projects and Genome Centres funding | | | | | | | | |
| Projects and programs completed in previous years | 868.7 | | | | 868.7 | 1,091.1 | 1,959.8 | 49.6% |
| 2012 LSARP*: Genomics and Personalized Health | 46.2 | 0.2 | 0.4 | | 46.8 | 103.2 | 150.0 | 3.8% |
| 2014 LSARP*: Genomics and Feeding the Future | 29.6 | 2.4 | 0.6 | | 32.6 | 61.8 | 94.4 | 2.4% |
| 2015 LSARP*: Natural Resources and the Environment | 25.3 | 5.0 | 3.0 | 1.1 | 34.4 | 78.4 | 112.8 | 2.9% |
| 2017 LSARP*: Genomics and Precision Health | 14.1 | 10.5 | 10.1 | 10.1 | 44.8 | 119.1 | 163.9 | 4.1% |
| 2018 LSARP*: Genomics and Agriculture, Agri-Food, Fisheries and Aquaculture | 2.8 | 6.6 | 7.0 | 14.3 | 30.7 | 47.8 | 78.5 | 2.0% |
| 2020 LSARP*: Natural Resources and the Environment | | | 3.1 | 21.9 | 25.0 | 25.0 | 50.0 | 1.3% |
| Genomics Technology Platforms | 65.9 | 11.1 | 9.9 | 4.2 | 91.1 | 103.3 | 194.4 | 4.9% |
| Genomic Applications Partnership Program | 55.1 | 12.4 | 15.0 | 25.8 | 108.3 | 239.2 | 347.5 | 8.8% |
| Cancer Stem Cells Consortium | 22.6 | 0.1 | | | 22.7 | 34.8 | 57.5 | 1.5% |
| Disruptive Innovation in Genomics | 11.7 | 2.1 | 1.7 | | 15.5 | 22.1 | 37.6 | 1.0% |
| Bioinformatics and Computational Biology | 11.1 | 4.1 | 3.3 | 0.3 | 18.8 | 20.5 | 39.3 | 1.0% |
| Structural Genomics Consortium | 9.4 | 2.7 | 2.5 | 0.6 | 15.2 | 115.7 | 130.9 | 3.3% |
| Strategic Initiatives | 4.1 | 0.6 | 1.3 | | 6.0 | 25.9 | 31.9 | 0.8% |
| Advancing Big Data Science | 1.9 | 0.1 | | | 2.0 | 4.0 | 6.0 | 0.2% |
| GE ³ LS Third Modality | 0.9 | 0.1 | | | 1.0 | 1.0 | 2.0 | 0.1% |
| Regional Priorities | 2.1 | 1.7 | 2.2 | | 6.0 | 14.4 | 20.4 | 0.5% |
| Genomics in Society Interdisciplinary Research Teams | | 0.5 | 1.1 | 1.1 | 2.7 | 3.1 | 5.8 | 0.1% |
| All For One Health Data Ecosystem | | | | 4.3 | 4.3 | 4.3 | 8.6 | 0.2% |
| COVID Regional Genomics Initiative | | 1.1 | 0.4 | | 1.5 | 2.6 | 4.1 | 0.1% |
| Canadian COVID Genomics Network (CanCOGeN) | | 13.1 | 25.3 | | 38.4 | | 38.4 | 1.0% |
| Genome Centres' operations | 101.9 | 5.0 | 5.3 | | 112.2 | 163.5 | 275.7 | 7.0% |
| | 1,273.4 | 79.4 | 92.2 | 83.7 | 1,528.7 | 2,280.8 | 3,809.5 | 96.5% |
| Genome Canada operations | 126.9 | 6.1 | 7.1 | | 140.1 | 0.0 | 140.1 | 3.5% |
| Total disbursements | 1,400.3 | 85.5 | 99.3 | 83.7 | 1,668.8 | 2,280.8 | 3,949.6 | 100.0% |
| Excess receipts over disbursements | 41.4 | 10.1 | -38.8 | -7.7 | 5.0 | | | |
| Opening cash balance | 0.0 | 41.4 | 51.5 | 12.7 | | | | |
| Closing cash balance | 41.4 | 51.5 | 12.7 | 5.0 | 5.0 | | | |

5.0 Risk assessment, mitigation measures and performance monitoring

Genome Canada has a wide array of policies, systems and processes that have been developed over time to address issues of risk assessment and mitigation strategies. They also address ongoing performance and evaluation monitoring. An updated *Performance, Evaluation, Risk, and Audit Framework* was approved by the Board of Directors in December 2019.

Risk management

Risk management is integrated into all our operational, managerial and governance activities. A formal risk management framework is in place and is annually updated and approved by the Board of Directors. Strategic risks arising from the external operating environment, as well as the internal operating environment, are assessed on an ongoing basis.

- At the project selection level, risk is managed and mitigated through a process that restricts funding to certain projects. Namely, these are projects judged to have the greatest probability of success from both a scientific and managerial point of view. The viability of each project's success is further mitigated through ongoing monitoring and reviews.
- At the operational level, officers of Genome Canada identify risks and propose strategies for mitigating and reporting. Examples include due diligence routines for reviews of draw requests and for reviews of funded projects.
- At the managerial level, policies, systems, processes and procedures (administrative, financial, human resource management) are developed, implemented and monitored.
- At the governance level, the Board of Directors and its Committees are aware of their risk management responsibilities. They exercise modern governance practices with respect to policy approval and oversight.
- The Audit and Investment Committee is responsible for the monitoring of risk and mitigation strategies and regularly reviews the organization's corporate risk profile.
- The Genome Canada internal working environment culture is one that values honesty, integrity and ethical conduct.

Annual audit

The annual audit of Genome Canada's financial statements is conducted in accordance with generally accepted Canadian auditing standards. The statements are filed with Innovation, Science and Economic Development Canada (ISED) by July 31 of each fiscal year. The objective is to express an opinion on whether Genome Canada's financial statements present fairly—in all material respects—the financial position, results of operations and cash flow of the corporation.

Upon completion of the audit, the financial statements and a summary of audit findings are presented to the Audit and Investment Committee. They are then presented to the Board of Directors for approval. The financial statements can be found on our website: www.genomecanada.ca.

Recipient audit

Genome Canada has developed and implemented a recipient audit framework in consultation with the Genome Centres. As part of this exercise, a risk assessment tool was developed to enable the Genome Centres to identify projects that would undergo a detailed compliance audit. This includes the Technology Platforms. This framework was introduced to bring a common approach to recipient audits across Canada and to improve the management control framework within which genomics research is administered.

Compliance audit

In fiscal year 2018-19, ISED, as a routine practice, initiated a compliance audit of Genome Canada. It was conducted by an independent accounting firm. The stated objective of the audit was to assess Genome Canada's compliance with the requirements of the Contribution Agreement that was in effect in fiscal year 2017-18.

Performance measurement and evaluation

Genome Canada's funding agreement with ISED specifies that Genome Canada will provide reporting on data collected in the past fiscal year. This is described in the *Performance Information Strategy*.

Performance monitoring

Genome Canada has adopted a corporate scorecard to monitor the organization's performance. This scorecard monitors performance in five key areas: delivering high-impact research that benefits Canada; delivering effective, purpose-fit programs that support the mission; promoting responsible application of genomics; demonstrating financial success; and indicators related to our COVID-19 initiatives. The scorecard is reviewed by the Board every quarter.

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