



GenomeCanada

Request for Applications

2018 Large-Scale Applied Research Project Competition:

Genomics Solutions for Agriculture, Agri-food, Fisheries and Aquaculture

1. Overview

The agriculture/agri-food and fisheries/aquaculture sectors are currently facing many challenges. The effects of climate change, such as severe weather extremes, shifting habitats, and pest and disease outbreaks are threatening agricultural production and quality. Consumer demand for products from non-conventional agricultural systems is increasing costs and lowering production volume, and regulatory challenges and uncertainties are hindering innovation and the adoption of new technologies. Capture fisheries are subject to drastic changes in availability, while aquaculture is the fastest growing food production sector in the world. Consequently, these sectors must find strategies to increase production efficiency, quality, and sustainability, while maintaining healthy ecosystems and providing safe products. In addition, societal acceptance of genomics-based technologies is a major challenge faced by these sectors.

Canada is uniquely positioned to address many of these challenges. The agriculture/agri-food sector is considered to be one of the foundations of Canada's economy, accounting for \$111.9 billion of gross domestic product (GDP), about 8%, and employing 2.3 million people in 2016¹. Canada is also a major exporter of key foodstuffs needed for global food security, producing 2% of the world's cereals, and 3.4% of global oilseeds and pulses. The fisheries and aquaculture sector contributes \$14.7 billion to the Canadian economy each year, and supports 130,000 jobs.² On a global scale, Canada is the steward of 25% of the world's coastline and contributes 1% of the world's fisheries production. Between 2011 and 2021, global fish consumption is projected to increase by 16%, with aquaculture expected to address the bulk of this increase. Finding sustainable solutions to these challenges will drive growth, productivity, commercialization and global competitiveness, offering significant benefit to Canada and the Canadian economy.

The agriculture/agri-food and fisheries/aquaculture sectors have a history of using research to assess challenges and develop solutions. In the genomics era, emerging knowledge and innovation have the potential to provide new approaches that can improve disease and pest resistance in our crops, livestock, and fish, increase our understanding of soil and aquatic microbiomes, improve early disease detection in livestock, and improve our ability to track, monitor and assess wild fish populations. Genomics-based approaches also have the potential to predict and mitigate the effects of climate change, such as understanding the response of fisheries to climate fluctuations, identifying crops and

¹ <http://www.agr.gc.ca/eng/about-us/publications/economic-publications/an-overview-of-the-canadian-agriculture-and-agri-food-system-2017/?id=1510326669269>

² Genomics for Fisheries and Aquaculture Factsheet
https://www.genomecanada.ca/sites/default/files/fisheries_and_aquaculture_factsheet_en.pdf

livestock that are more resilient to temperature extremes, and by reducing methane emissions related to livestock production systems.

Building upon regional stakeholder consultations across Canada and the resulting agriculture/agri-food and fisheries/aquaculture sector strategies, Genome Canada, together with Agriculture and Agri-Food Canada (AAFC), is seeking proposals for large-scale research projects which focus on the application of genomics³ in the agriculture/agri-food and fisheries/aquaculture sectors to address challenges and opportunities of importance to Canada^{4,5,6}. The role of the agriculture and agri-food sector,⁵ as well as the fisheries and aquaculture sector,⁶ is well recognized for Canada's economic growth and culture. Genomics will continue to be essential for the success of these sectors, contributing to Canada's growing bioeconomy and the well-being of Canadians.

This funding opportunity builds on the complementary mandates of Genome Canada and AAFC and provides an opportunity to bring together and maximize the effectiveness of the research communities, infrastructure, and resources supported by both organizations. This funding opportunity makes it possible to collaboratively carry out joint projects with AAFC researchers, where Genome Canada funds will support the Genome Canada eligible researchers and AAFC funds will support the AAFC researchers.

2. Objective

The 2018 Large-Scale Applied Research Project Competition aims to support projects that will demonstrate how genomics research can be translated into solutions that advance the sustainability, productive capacity and the resulting competitive position of the Canadian agriculture/agri-food and fisheries/aquaculture sectors, and thereby contribute to the Canadian bioeconomy and the well-being of Canadians.

Applicants must demonstrate how their proposal will produce concrete deliverables by the end of the funding period that have the potential to be subsequently translated into significant social and/or economic benefits within as short a time-frame as possible after the end of the project.

To ensure that the objectives of the Request for Applications (RFA) are met, all applications will be evaluated according to the criteria established for the competition: 1) quality of the research proposal; 2) benefits for Canada; and, 3) management and financial aspects (see Appendix 1).

3. Funding Available and Term

- There is approximately \$30 million available for this competition from Genome Canada and up to \$16 million from AAFC.

³ The term genomics is defined here as the comprehensive study, using high throughput technologies, of the genetic information of a cell or organism and its functions. The definition also includes related disciplines such as epigenomics, metabolomics, metagenomics, proteomics, transcriptomics, bioinformatics and synthetic biology as long as the link to genetic information is clear.

⁴ The Opportunity for Agri-Food Genomics in Canada: Ours for the making. May 2013
https://www.genomecanada.ca/sites/default/files/agri_food_en.pdf

⁵ Genomics for Agriculture and Agri-Food: Canada's strategic opportunity. Summary of the regional consultations, June-September 2017

⁶ Canadian Fisheries and Aquaculture: How genomics can address sector challenges. August 2013
https://www.genomecanada.ca/sites/default/files/fisheries_and_aquaculture_en.pdf

- The maximum contribution to an approved project will be \$3 million from AAFC and \$4 million from Genome Canada with the amount from each organization determined by the research being proposed, i.e., Genome Canada funds will support the Genome Canada eligible researchers, and AAFC funds will support the AAFC researchers.
- There must be a minimum contribution of \$1 million from Genome Canada in each approved project.
- For approved projects jointly supported by AAFC and Genome Canada (hereinafter referred to as “Collaborative Projects”), there must be a minimum contribution of \$0.5 million from AAFC.
- AAFC will only invest in projects it determines to be relevant (see Appendix 2)
- Although collaborations with AAFC researchers are encouraged, projects are not required to include a component that would be funded by AAFC.
- The amount of co-funding for a project must be at least equal to the Genome Canada contribution. The co-funding must be from eligible sources other than the AAFC funds designated as part of the funding opportunity. It is the responsibility of the lead Genome Centre(s), working with the applicants, to obtain the necessary co-funding.
- Successful projects will be awarded funding for a term of up to four years.

4. Research into the implications of genomics in society (GE³LS research⁷)

While genomics and its applications have the potential to have significant social and economic impact in the agriculture/agri-food and fisheries/aquaculture sectors, there remain potential barriers to the acceptance and uptake of the outcomes from this research. To help promote the use of genomic-based research and innovation, this competition supports research into the implications of genomics in society (GE³LS research). Specifically, such research is intended to investigate key factors that may facilitate or hinder the effective translation of research, and the uptake of genomic-based applications. GE³LS research may be conducted by researchers from universities, government, industry, not-for-profit or other organizations, who generally are trained in disciplines other than the life sciences, including social or behavioural scientists or humanities scholars. Such GE³LS research may be conducted in two forms:

- **Large-scale GE³LS research projects:** These projects investigate in a comprehensive and innovative manner factors affecting the acceptance and translation of genomics. Project outputs should be of a scope and depth to make a significant contribution to the uptake of genomic applications, while also making significant contributions to the understanding of the implications of genomics in society more broadly. Large-scale GE³LS research projects should bring together different disciplinary expertise and use a variety of research strategies and methodologies. These projects are expected to demonstrate active collaboration with the genomics scientific community and user communities in the development of the research as well as its conduct. Project findings should have the potential to enhance uptake of genomic-

⁷ The acronym GE³LS stands for “Genomics and its Ethical, Environmental, Economic, Legal and Social aspects”. However, it should be understood broadly as research into the implications of genomics in society from the perspective of the social sciences and humanities. Therefore, it is not strictly limited to disciplines that make-up the acronym but rather encompasses all those that rely on quantitative and qualitative methodologies to investigate the implications of genomics in society, and inform applications, practices and policies. In the context of this RFA, it can also include approaches from a wide range of disciplines including but not limited to: development studies, environmental sciences, food studies, geography, innovation studies, political sciences and population studies.

based applications and affect changes in practices or policies related to genomics research and innovation. This may entail sustained interactions with other large-scale projects and/or their integrated GE³LS research components funded through this competition.

- **Integrated GE³LS research:** *All other projects must include an integrated GE³LS research component.* LSARP projects as a whole entail a team-based approach that is collaborative, integrative and applied, such that researchers with different disciplinary expertise, using a variety of research strategies and methodologies, contribute to a broader understanding of the scientific problem and potential genomic-based solution(s). The integrated GE³LS research component should be shaped by, and help shape, the overall project by ***investigating key factors that may facilitate or hinder the uptake of the genomic-based application(s) being developed by the project.*** It should also help provide evidence that can inform changes in policy or practice in the sectors relevant to this competition. Research questions should be informed by intended users who can help identify barriers and define knowledge gaps that need to be addressed.

Following the funding decisions on this competition, Genome Canada will determine if additional mechanisms are required to maximize the GE³LS research and the overall social and/or economic benefits that can be realized through this competition. For example, to the extent that integrated GE³LS research across different projects and/or stand-alone GE³LS research projects are addressing the same research area, are focused on the same overarching objectives, or are using similar research approaches, additional support may become available to achieve greater impact through the coordination and strengthening of collaborations between researchers, users and other stakeholders, thereby accelerating the translation of research and the responsible uptake of genomic-based applications in the sectors relevant to this competition.

5. Eligibility of Proposals

To be eligible for this competition, proposals must:

- respond to the objectives of the competition;
- include genomics approaches as essential components in terms of importance to the overall outcomes of the project; and,
- be of a scale and scope such that they are able to address challenges requiring a genomics approach, be internationally competitive and have the potential for major impact.

To be eligible for AAFC funding, applicants must satisfy the requirements for the competition as outlined above as well as any additional requirements put forth by AAFC as described in Appendix 2.

This RFA provides an opportunity for research teams to propose large-scale projects that would be part of even larger national and international research initiatives, as long as the eligibility criteria are met.

Projects funded through this competition must focus on using genomic approaches to address challenges and opportunities of importance to Canada's agriculture/agri-food and/or fisheries/aquaculture sectors. Topics of applied research that could be addressed include, but are not limited to, the following:

- increasing production efficiency, yield, and agronomic performance;

- genomics based approaches that reduce and/or mitigate abiotic and biotic stress in plants and animals;
- more effective production of bioproducts (e.g., biochemicals, biofuels) from agriculturally-sourced feedstock through the modification and selection of crops and microorganisms with enhanced attributes;
- improving the health of crops, livestock, and fish through increased resilience to disease, pests and invasive species, along with more accurate diagnostic tests;
- product and food safety, e.g., developing improved genomic tools to detect pathogens, toxins and undesirable metabolites, or to prevent food fraud;
- adapting production to accelerated climate change, such as genomics-assisted crop breeding to identify agronomic traits which can make crops more resilient to drought, flooding, and temperature extremes;
- reducing the environmental footprint of crop, livestock and aquaculture production systems through decreased water, fertilizer and pesticide use, reduced GHG emissions, and improved fish feed, resulting in improved sustainability;
- advancing genomics research on microbial communities and ecosystems related to agricultural and aquaculture production systems (e.g. soil, plant-microbe, rumen, monogastric gut, fermented foods, aquatic primary production);
- improving the environmental sustainability of farmed fish species, ensuring wild species conservation and protection of ecosystem biodiversity;
- preserving biodiversity in crops and livestock, including the genetic resources for agriculture and agri-food, as well as the components of biodiversity that support agroecosystems;
- managing and reducing antimicrobial resistance in livestock and aquaculture - proposals are encouraged to include a one-health perspective (i.e., the collaborative efforts of multiple disciplines working locally, nationally and globally to achieve the best health for people, animals and our environment) but the main focus should be on livestock or aquaculture;
- development of genomics tools and resources needed to accelerate breeding and further the development of the emerging Cannabis industry;
- growth and sustainability of pollinators (e.g. bees), especially where adversely affected by climate change, habitat loss, disease, pests and insecticides; or,
- food supply chains that are more efficient and less susceptible to spoilage and waste (e.g., breeding for specific traits that improve resistance of crops to damage during harvesting, handling and storage).

NOTE: Studies focussing on genomics related to companion animals are not eligible for support in this competition. Eligible animal species for study must be part of agriculture or aquaculture food production systems or the wild commercial fishery. Studies focussed on companion animals may, however, be able to obtain support from other Genome Canada programs such as the Genomic Applications Partnership Program depending on the details of the proposal and whether it meets the eligibility criteria of these other programs.

Integrated GE³LS research topics that could be addressed in this competition include, but are not limited to, the following:

- supporting regulatory research to improve the precision and robustness of testing, decision-making, and regulatory approaches, to be in line with international standards;

- gaining social legitimacy, credibility and trust by aligning technological advances with societal goals; or,
- exploring translational pathways including social, political, regulatory, policy or economic factors that would accelerate the responsible uptake of genomics-based applications in the agriculture/agri-food or the fisheries/aquaculture sectors, and investigating strategies that can foster receptivity.

In order to maximize the effectiveness of this RFA in advancing genomics research and its application in Canada, rapid sharing of the outputs of the research (e.g., publications, data and resources) is required (see [Genome Canada's Data Release and Sharing Policies](#)).

6. User Engagement

All projects must clearly demonstrate engagement with users in the development and execution of the research plan in order to help ensure receptor uptake and practical applicability of the research. For the purpose of large-scale genomics projects with integrated GE³LS research, this engagement should inform the genomics research, the GE³LS research, and to the extent possible, its integration into the overall project.

“Users” in the context of this RFA can be defined as those who are able to use the information generated through research to make informed decisions on relevant issues, policies, programs and product development. Examples of user organizations could include industry and industry associations, producer organizations, government departments and regulatory agencies. Individuals from these types of organizations should be included on the project team.

Users must be clearly integrated into the project team in the form of a project team member, collaborator and/or member of the management team. Users are encouraged to actively collaborate in the priority setting and conduct of research as well as in summarizing, distributing, sharing, and applying its resulting knowledge. Co-funding would clearly demonstrate user interest in the project's potential deliverables, although it is not a requirement for a user organization to contribute to the co-funding required.

7. Benefits for Canada

All applications must describe, with supporting evidence, the concrete **deliverable(s) that will be realized by the end of the project** that have the potential for subsequent translation into significant social and/or economic benefits for Canada.

Proposals that make a strong case that the project deliverables can and will be translated into significant social and/or economic benefits within as short a time-frame as possible after the end of the project are particularly encouraged, taking into consideration what is reasonable for the proposed deliverables.

Applications must include a plan which explains the next steps of how the deliverables from the research will be transferred, disseminated, used, and/or applied to realize the social and/or economic benefits. Once funded, the project teams will be required to further elaborate on the path forward to

ensure that the proposed deliverables are realized in the stated timeframe and within the approved budget. The project's Research Oversight Committee (see 10.2) will assess the plan on an on-going basis.

8. Competition Timeline

Applications must be submitted to Genome Canada through a Genome Centre. The competition timeline outlined below only includes Genome Canada's deadlines. Please contact your Genome Centre for further information on their process and internal deadline dates, as these could be a month or more earlier than the Genome Canada deadline for certain steps of the competition.

June 2018	Launch of competition
August 16, 2018	Deadline for submitting registrations to Genome Canada
November 15, 2018	Deadline for submitting pre-applications to Genome Canada
Late January 2019	Applicants notified of results of pre-application
April 11, 2019	Deadline for full applications to Genome Canada
Late May, 2019	Review committee meets (including meetings with applicants)
Late June 2019	Decisions by Genome Canada and AAFC
Late June 2019	Notification of Decision

9. Application Process

Applicants are required to apply for funding through their regional Genome Centre. The application process is comprised of three steps: Registration, Pre-Application and Full Application.

9.1. Registration

A brief Registration form will be used to provide early guidance on elements such as who is applying, what they are planning to do, research areas including integrated GE³LS, expected deliverables, approximate budgets and suggested reviewers. This allows for screening of eligibility by the Genome Centres and facilitates the early selection of reviewers for the peer review process. Information from eligible registrations (i.e., name of project leader(s), lead institution, title of project, research areas and keywords) will be posted on the Genome Canada website to facilitate the identification of areas of

potential synergy between applications across the country, so that applicants can consider engaging with other researchers on a common project. This will also make possible the exchange of required information between project teams and genomics technology service providers, such as Genome Canada supported Genomics Technology Platforms.

9.2. Pre-Application

For the **Pre-Application**, applicants will be asked to submit a short description of the following:

- The proposed genomics research, GE³LS research, and an integration plan;
- How the team will engage users in the project;
- Expected deliverables of the research; and,
- The potential socio-economic benefits of the research

Also, please see Appendix 2 for additional requirements at the Pre-Application stage for applications requesting AAFC funding.

Pre-Applications will be reviewed in a two-stage process. The first stage involves an initial review that will be done “at-home” by a College of Reviewers who will evaluate the Pre-Applications, focusing on the quality of the research plan and the potential for benefits for Canada. College reviews will provide a rating for the quality of the research proposal and potential for benefits, and the mean score for each of these categories will be calculated separately. A ranking list of the Pre-Applications, based upon the mean of the scores for both criteria (quality of the research proposal and benefits) will be prepared. The Pre-Applications with the lowest scores will not be considered further.

The second stage will involve review by a Pre-Application Review Committee (PARC) with broad expertise in research including GE³LS, technology development, research management and the translation of research results in areas relevant to the competition. This committee will consider the College reviews and make a final recommendation to Genome Canada on which Pre-Applications should be invited to submit a Full Application.

The proposals will again be checked for eligibility to the program. Only the most competitive Pre-Applications will be invited to submit full applications. Information from approved Pre-Applications (i.e., name of project leader(s), lead institution, title of project, research areas and keywords) will be posted on the Genome Canada website to further facilitate the exchange of information between project teams and genomics technology service providers such as the Genome Canada supported Genomics Technology Platforms.

9.3. Full Application

Those applicants successful at the Pre-Application stage will be asked to submit a full application. Full applications must address the evaluation criteria established for the competition, i.e., 1) quality of the research project; 2) benefits for Canada; and, 3) management and financial aspects. A final check for eligibility will be carried out. A multidisciplinary committee of experts, with expertise in assessing all of the review criteria, will be established to review applications. The review committee will meet with and interview representatives from each project through a face-to-face meeting. After the review committee completes its deliberations and

develops an overall ranking list, it will provide its recommendations to Genome Canada and AAFC, who have the final authority for funding decisions.

The evaluation processes may be adjusted where warranted by the complexity of proposals received or other relevant factors. Any changes will be communicated through Genome Canada's website and through the Genome Centres.

See Appendix 2 for additional requirements at the full application stage for applications requesting AAFC funding.

10. Project Management and Oversight

10.1. Project Managers

All approved projects must have a dedicated project manager. Project managers coordinate administrative and reporting requirements and support the project's research enterprise.

10.2. Research Oversight Committees

All Genome Canada funded projects will have a Research Oversight Committee (ROC) constituted by, and reporting to, the Genome Centre(s). The ROC reports to the Genome Centre on the progress being made by the project and makes recommendations to the funders regarding continued funding, as well as providing advice and guidance to the research team to help ensure that the project achieves its stated objectives and milestones. The membership of the ROC must be completely independent from the project, with no real or perceived conflicts of interest and should be composed of experts who will work with the Genome Centre and the funders to maximize the successful outcomes of the project. A portion of the funds awarded to each project will be designated to cover costs associated with the project's ROC.

11. Co-Funding

A project's eligible costs must be co-funded from eligible sources (other than the AAFC funds designated as part of the collaboration) such that the co-funding is at least equal to the Genome Canada contribution. The Genome Centres, working with the applicants, are responsible for securing co-funding. Co-funding for this competition must be for research activities that are an integral part of the Genome Canada approved project and must be for eligible costs specifically requested in the Genome Canada budget form. See the [Guidelines for Funding](#) for more details.

12. Communication and Outreach

Public communication and outreach are important activities to help advance scientific knowledge and understanding. Public understanding of science benefits both the public and scientific communities as well as helping influence governmental decision making with regard to regulation, science policy and funding. Project teams are encouraged to work with their stakeholders, Genome Centres and other groups to communicate the outputs of their research to a broad community.

13. Contacts

Andy Stone	Genome Atlantic	astone@genomeatlantic.ca	902-421-5645
B.F. Francis Ouellette	Genome Québec	LSARP2018@genomequebec.com	514 398-0668 x 203
Caitlin Taylor	Ontario Genomics	ctaylor@ontariogenomics.ca	416-673-6512
Simon Potter	Genome Prairie	spotter@genomeprairie.ca	204-230-7974
Niall Kerrigan	Genome Alberta	nkerrigan@genomealberta.ca	403-210-5252
Lisey Mascarenhas	Genome British Columbia	lmascarenhas@genomebc.ca	604- 637-3087

Appendix 1. Evaluation Criteria

Proposals submitted to Genome Canada are evaluated via a rigorous independent peer review process to assess their research merit and potential for social and/or economic benefits for Canada, as well as to ensure that sound management and financial practices are implemented.

Eligibility Criteria

Each proposal will be reviewed for eligibility at each stage of the application process. The following criteria will be used:

- Does the proposal respond to the objectives of the competition?
- Does the proposal include genomics approaches as essential components in terms of importance to the overall outcomes of the project?
- Is the proposal of a scale and scope such that it is able to address challenges requiring a genomics approach, be internationally competitive and have the potential to have major impact?

If considered eligible, the proposal will be reviewed using the criteria described below:

The review criteria fall into three categories:

- 1) Research Proposal;
- 2) Benefits for Canada; and,
- 3) Management and Finance

Note that the descriptive phrases which follow the criteria below are not all-inclusive.

1. Research Proposal

Including research into the implications of genomics in society (GE³LS research)

- Research Context and Originality
 - To what extent does the proposed research lead, extend and/or complement national and international work in the area?
 - To what extent does the proposed research reflect creative, original thinking?
 - To what extent is the research relevant to the users identified?
- Research Plans
 - How appropriate are the methods and approaches in terms of the research objectives?
 - How feasible is the research given the projected resources and time-lines?
 - How appropriate is the plan for handling and sharing of data and resources within the project and with the wider community? Does the plan comply with Genome Canada's policies on data release and resource sharing?
- Research Expertise

- How appropriate is the expertise of the research team in terms of realizing the research goals?
- How well will different types of expertise be integrated?
- Research Support
 - How suitable are the available facilities, equipment and services (including services to be provided by Genome Canada supported Genomics Technology Platforms and/or other technology service providers)?
- Specific criteria for the **integration** of GE³LS Research into the overall proposal
 - Does the GE³LS investigation address salient factors that will impact the advancement and application of the genomics research and are the GE³LS research questions supportive of the objectives and expected outcomes?
 - Is the integrated GE³LS research plan aligned with, and complementary to, the overall project milestones?
 - How well will the different disciplinary expertise, research strategies and methodologies taken together contribute to a broader understanding of the research question and potential genomic-based solution(s)?

2. Benefits for Canada

- Deliverables
 - To what extent have the applicants identified appropriate deliverables in terms of their potential to have impact on the sectors relevant to the competition?
 - What is the probability that the deliverables will be achieved by the end of the funding period?
- Expected Social and/or Economic Benefits
 - How significant are the anticipated benefits described in the proposal in terms of their potential of contributing to the sectors relevant to this competition?
 - How convincing is the assessment of the value of the benefits (including economic aspects, where applicable)?
 - Will the benefits be realized within a short time-frame after the end of the project, taking into consideration what is reasonable for the proposed deliverables?
 - Are the benefits realistic and achievable within the timeframe proposed?
- Strategy for Realizing Benefits
 - How strong is the plan for knowledge translation and development of benefits, i.e., how well does the plan explain the next steps of how the deliverables from the research will be transferred, disseminated, used, and/or applied to realize the social and/or economic benefits?
 - How closely aligned is the plan for knowledge translation with the GE³LS research and the overall deliverables and outcomes of the project?
- Expertise for Realizing Benefits

- How appropriate is the expertise of the team that will further develop and implement the strategy for realizing benefits?
- To what extent are likely users involved in the project and the strategy to realize benefits?
- If the strategy includes commercialization, to what extent has appropriate technology transfer expertise been included?

3. Management and Finance

- Management Plans and Expertise
 - How well does the management plan cover project governance, accountabilities of personnel, and processes for decision-making on research direction and strategy for realizing benefits?
 - How realistic is the project schedule given the likely need to “ramp-up” activities at the front end?
 - How credible is the management plan in terms of coordination of current and future partnerships?
 - Are the proposed arrangements with Genome Canada supported Genomics Technology Platforms and/or other technology service providers sufficiently articulated to ensure that the provider is able to complete the requested service(s) in the timeframe required by the applicant?
 - To what extent do the project leaders have experience in managing large-scale projects involving research and the application of results?
 - How appropriate are the plans to ensure that an adequate number of highly qualified personnel (HQP), both support personnel such as technicians and trainees such as post-doctoral fellows, are available to meet the needs of the proposed research through recruitment and/or training?
 - What is the likely effectiveness of the proposed plans for communicating within the project, with the Genome Centre, with collaborators and partners, and with the scientific community?
- Budget and Expenditure Controls
 - How reasonable is the proposed budget in terms of the anticipated level of effort and deliverables?
 - To what extent are the budget and proposed expenditures well-documented and eligible per the guidelines?
 - To what extent does the proposal provide assurance that expenditures from a funded project would be closely and critically monitored?
- Financing from Co-Funders
 - To what extent is the proposed co-funding plan well-documented, eligible and feasible?
 - Does the proposed co-funding directly support the objectives of the project?
 - How likely is it that the project will be able to secure at least 75% of the co-funding for eligible costs at the time of release of funds?



Appendix 2. Strategic Collaboration with Agriculture and Agri-Food Canada (AAFC)

Description

Genome Canada and AAFC will jointly support research projects developing genomic solutions for challenges and opportunities in the agriculture and agri-food sector through Genome Canada’s 2018 Large-Scale Applied Research Project Competition. This funding opportunity builds on the complementary mandates of Genome Canada and AAFC and provides an opportunity to bring together and maximize the effectiveness of the research communities, infrastructure and resources supported by both organizations. This funding opportunity makes it possible to collaboratively carry out joint projects with AAFC researchers, where Genome Canada funds will support the Genome Canada eligible researchers and AAFC funds will support the AAFC researchers.

Background

Agriculture and Agri-Food Canada provides research, development and technology transfer (RDT) capacity to serve producers, processors, industry and Canadians by approaching all of their challenges and opportunities (agronomic, economic and environmental) in the same integrated way they do when they run their businesses.

AAFC RDT capacity is located in 20 research and development centres and in sub-stations throughout Canada. AAFC scientists, technicians and staff work to create better opportunities for farmers and all Canadians through agricultural research and innovation.

AAFC has been at the forefront of agricultural genomics-based innovation in Canada. This leadership was enabled by a number of federal investments, such as the Genomics Research and Development Initiative (GRDI), the series of Agriculture Policy Frameworks (currently entitled Canadian Agricultural Partnership), and from Budget 2016 (to support genomics, digitization and data mobilization of AAFC’s biological collections). Key strategic areas of investment included cereals, oilseeds, pulses, as well as foundational activities towards national biodiversity collections and bioinformatics.

Funds Available

- AAFC has agreed to provide up to \$16 million to AAFC scientists for approved “relevant” Collaborative Projects over a four year period from 2019 to 2023.
- The maximum contribution to an approved Collaborative Project will be \$3 million from AAFC.
- The minimum contribution to an approved “relevant” Collaborative Project will be \$0.5 million from AAFC.
- The AAFC contribution to a Collaborative Project will not have to be co-funded by other eligible sources, though AAFC scientists are encouraged to find co-funding that can be directly linked to the AAFC component and these projects will be rated more favourably in the AAFC relevance review.

- AAFC funding, and any co-funding coming to AAFC scientists, will follow the applicable federal government and AAFC guidelines. In the event where such funding would be used to cover costs not considered eligible under Genome Canada's [Guidelines for Funding](#), the total amount of such costs will not be accounted as part of the collaborative project's budget.
- As per the Financial Administration Act, a mechanism will be put in place to ensure that no Genome Canada funds flow to AAFC.

Eligible Research Areas for AAFC Funding

Based on internal consultations (2016, 2018) and the results from the transformative workshops, AAFC investments in Collaborative Projects will focus in the following areas:

- Crop functional genomics (with a focus on productivity and attributes)
 - Scope: Cereals, oilseeds, pulses and horticulture
- Crop pests and diseases (with a focus on threats)
 - Includes, but is not limited to, pathogenomics
- Microbiome (with a focus on productivity, threats (e.g., to animal health) and environment)
 - Scope: soil/plant; respiratory and digestive tracts

Process (for AAFC portion of Collaborative Projects only)

- A director-level committee will conduct a coarse analysis for alignment at the registration phase, and an assessment for relevancy and approval at the pre-application phase.
- AAFC applicants should obtain a letter of support from their Director, Research Development and Technology Transfer in advance of applying at each stage, to be included with their application. They will also be required to enter their project in the Science Management Solution at Stage 3 prior to AAFC funds being released.
- While the AAFC contribution to a Collaborative Project does not have to be co-funded by other eligible sources, the availability of such co-funding will be taken into consideration as part of the internal assessment.
- AAFC funds and funds received by AAFC will be subject to the 10% Science Service Charge. Note that this charge will be administered outside of the project budget and should not be included in the application's budget form.
- All projects involving AAFC researchers and collaborators will require a Collaborative Research and Development Agreement outlining, amongst other issues, IP arising from the collaboration.