

## Request for Applications Genomics in Society Interdisciplinary Research Teams

### 1. Overview

The uptake of genomic-based innovations can be affected by various social, economic and environmental factors, including legal and regulatory requirements, especially when they represent significant changes to current practices. Already, research into the implications of genomics in society (GE<sup>3</sup>LS research<sup>1</sup>) conducted through Large-Scale Applied Research Projects (LSARPs) helps better understand these factors primarily in the context of individual projects, but also in relation to sectors. However, to ensure the effective and responsible translation of innovative genomic<sup>2</sup> applications, Genome Canada has developed a *Genomics in Society Interdisciplinary Research Teams Program* to facilitate collaborations and dialogue between researchers and other key stakeholders whose sectors stand to be transformed by genomics advances.

Specifically, this program aims to strengthen the connections between researchers, users and other stakeholders on issues that could impact the uptake and application of genomic technologies, including commercialization. The goal of the team program is to support and enhance GE<sup>3</sup>LS 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 policy-makers within a sector.

This Request for Applications (RFA) supports proposals under the following three streams with the goal of funding at least one team in each stream:

- Stream 1: proposals mainly impacting the human health sector
- Stream 2: proposals mainly impacting the agriculture/agri-food and/or aquaculture/fisheries sectors
- Stream 3: proposals mainly impacting the natural resource (forestry, energy, mining) and/or environment sectors

Cross-sectorial proposals that address multiple sectors across two or three streams are also eligible to apply.

### 2. Objectives

The *Genomics in Society Interdisciplinary Research Teams* program aims to bring 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.

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<sup>1</sup> The acronym GE<sup>3</sup>LS 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.

<sup>2</sup> 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.

To achieve this objective, team activities could include, but are not limited to, the following:

- undertaking collaborative, interdisciplinary, applied research efforts to address key challenges and opportunities in one or more sectors
- identifying and addressing pressing knowledge gaps in one or more sectors
- promoting existing tools, developing common methodology, applying standardized approaches and/or establishing best practices, where appropriate
- attaining cross-cutting insights and engagement with stakeholders that facilitate the implementation of innovations
- pooling or sharing resources that can be of value to funded projects, or other ongoing genomic-based research
- provide training and skill development including cross-disciplinary learning and understanding, for future generation of GE<sup>3</sup>LS researchers

The team would be expected to demonstrate active collaboration with the relevant genomics scientific and user communities in the planning of the research as well as its conduct, and project findings are expected to have the potential to enhance practices or policies within these communities. This may also entail interaction with integrated GE<sup>3</sup>LS projects funded through Genome Canada's LSARP competitions

### **3. Funding Available and Term**

- There is approximately \$3 million available from Genome Canada.
- Approximately one-third of the available Genome Canada funding will be invested in each of the three streams as defined above with the goal of funding at least one team in each of the three streams.
- At least 50% of the requested funds for eligible costs for each team must be obtained through co-funding. At least 50% of the co-funding needs to be secured at the time of the release of funds and a feasible plan needs to be submitted describing how the remaining co-funding will be obtained over the term of the team.
- The maximum contribution from Genome Canada to an approved team will be \$1 million. There is no limit on the amount of co-funding and therefore no maximum team size.
- Teams requiring less than a total of \$500,000 from Genome Canada will not be considered.
- Successful teams will be awarded funding for a term of up to four years.

### **4. Eligibility**

**To be eligible for this competition proposals must address the following:**

- Respond to the objectives of the competition
- The main focus of the team must be to take an interdisciplinary approach to address topics related to the implications of genomics in society (GE<sup>3</sup>LS research) that will have an impact nationally
- Teams must include at least three researchers from different disciplines at the Leader or Co-Investigator level

- Teams must demonstrate engagement and integration of appropriate genomic scientists and users. Teams that bring together researchers and users from different regions of the country could have a bigger impact nationally; while this approach is encouraged it is not a requirement.
- Incorporation of new researchers into the team is encouraged. New researchers include those that are new to genomics and society as well as early stage investigators (defined as being within five years of their first appointment allowing them to be an eligible individual as per Genome Canada Guidelines).

**Eligible research areas include, but are not limited to, topics such as:**

- exploration of the societal implications of novel technologies such as CRISPR/Gene-editing and Synthetic Biology (e.g., public perception and understanding, public trust, regulatory guidelines, policies and government oversight of these technologies)
- uptake of genomics technologies for mitigation of, and adaptation to, climate change (e.g., risk/benefit analysis of effects of climate change; identification of management strategies for wildlife conservation; development of management frameworks that address related safety, environmental, and regulatory issues)
- incorporation of traditional knowledge with local Indigenous stakeholders to gain social license for research activities; implementation of research in a way that recognizes rights, respect, cooperation, and partnership with local Indigenous communities
- challenges and opportunities facing the application of 'omics technologies to help ensure food security, food safety and sustainable production practices as the world's population grows (e.g., community well-being, resource management, sustainable development, climate change adaptation; understanding effects of regulation on new breeding techniques; access and benefit sharing, crop yield models, international treaty frameworks)
- Examining the barriers and opportunities related to translation of genomics into the clinic (e.g., understanding the health economic evidence for clinical implementation of whole-exome sequencing (WES) and whole-genome sequencing (WGS) for cancers and rare diseases).

## **5. 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.

“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 team.

Users must be clearly integrated into the team in the form of a 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 team's potential deliverables, although it is not a requirement for a user organization to contribute to the co-funding required.

## 6. Benefits for Canada

All applications must describe, with supporting evidence, the concrete **deliverable(s) that will be realized by the end of the funding term** that have the potential for subsequent translation into significant social and/or economic benefits for Canada. Deliverables should have practical applicability in as short a time as possible after the end of the funding period and lead to benefits for Canada, taking into consideration what is reasonable for the proposed deliverables

Applications must include a strong plan for knowledge translation and development of benefits (i.e., how the deliverables from the research will be transferred, disseminated, used, and/or applied to realize the social and/or economic benefits).

## 7. Guidelines for Funding

Genome Canada's [Guidelines for Funding](#) must be adhered to throughout the competition and post-award management processes.

### 7.1. Additional Guidelines

Additional Guidelines specific to this RFA include:

#### Ineligible costs:

Note that while genomic scientist(s) must be included as part of the team, salaries, benefits and associated costs for the performance of wet lab work (defined as activities such as DNA sequencing or protein analysis that generate 'omics data) are not eligible.

#### Reporting:

Genome Canada, through the Administrative Genome Centre, will require a report on progress at least annually.

## 8. Application and Review Process

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

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 and expected deliverables, approximate budgets and suggested reviewers. This will allow for screening for eligibility by the Genome Centres and Genome Canada and facilitate 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 from across the country so that applicants can consider engaging with other researchers on a common project.

The Full Application will be reviewed for eligibility and overall fit to the program using the evaluation criteria as outlined in Appendix 1.

## 9. Timeline

**The request for support must be submitted to Genome Canada through a Genome Centre. Please contact your regional Genome Centre for further information on their process and deadline dates.**

Date	Activity
May 30, 2019	Deadline for Registrations
September 11, 2019	Deadline for Full Applications
Mid-November 2019	Review Committee Meets
December 2019	Funding Decisions and Notification

## 10. Contacts

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## **Appendix 1 – Evaluation of Applications**

### **1. Review Criteria**

The review criteria fall into three categories:

- 1) Research Proposal
- 2) Social and/or Economic Benefits for Canada
- 3) Management and Finance

#### **1. Research Proposal**

- **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 team in terms of realizing the research goals?
- How well will different types of expertise be integrated, including that of genomic scientists and users?
- To what extent does the proposal include plans for the inclusion of new researchers, including those that are new to the area of genomics and society as well as early stage investigators (defined as being within five years of their first appointment allowing them to be an eligible individual as per Genome Canada Guidelines)?

- **Team Approach**

- How feasible and appropriate are the plans to allow for pooling or sharing resources that can be of value to other members of the team?
- To what extent will the team facilitate meaningful collaborative efforts across disciplines to generate robust results to the research questions?

#### **2. Benefits for Canada**

- **Deliverables**

- To what extent have the applicants identified appropriate deliverables in terms of their potential to have impact on the relevant sectors?

- 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 relevant sectors?
  - 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?
- **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?

### **3. Management and Finance**

- To what extent do the Team Leader(s) have the leadership capabilities, experience, research expertise, administrative expertise, and time commitment to lead the team?
- How appropriate is the management plan (i.e., governance, accountabilities, and processes for decision-making)?
- How appropriate are the plans to ensure that an adequate number of highly qualified personnel (HQP), including research trainees such as students and 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 team, with the Genome Centre, with collaborators and partners, and with the research community?
- How reasonable is the proposed budget in terms of the anticipated level of effort and deliverables?
- How feasible is the co-funding plan?