GenomeCanada

Request for Applications

2015 Disruptive Innovation in Genomics Competition

June 11, 2015

1. Overview

The development of new disruptive technologies is fundamental to Genome Canada's ability to deliver on the goals set out in its Strategic Plan and is tightly coupled to the provision of access to leading-edge technologies as it relates to genomics[1]. Genome Canada believes that this can be achieved by supporting innovation from conception of an idea leading to transfer of knowledge and technologies from academia to users in ways that will maximize the impact of this initial investment and lead to economic and social benefits for Canada. The Disruptive Innovation in Genomics (DIG) initiative will ensure that true disruptive innovation is captured and transferred to those who have the ability to translate and use it. It is expected that this initiative will attract those who embrace strongly the notion of convergence of technologies from divergent fields.

2. Objective

The major objective of this RFA is to support the development of **disruptive innovation** in the field of genomics, which for the purpose of this RFA is defined as *a new genomics-based technology or the application of an existing technology from another field, applied to the field of genomics, that is truly transformative in that it has the potential to either displace an existing technology, disrupt an existing market or create a new market. A disruptive innovation offers the capability to do things not previously possible and is not an incremental improvement of an existing technology.*

To ensure that the objective of the RFA is met, all applications must address the evaluation criteria established for the competition. Only those proposals demonstrating the highest degree of overall fit with the criteria will be funded.

3. Program Model

To maximize the benefits for the genomics community, the DIG program will be delivered in **two** phases:

Phase 1 will support activities to prove the feasibility of an "idea" – does this technology work and what can it do? This phase is intended to attract *ideas* for potential disruptive innovations from either individuals with a need (i.e., users), technology developers or others with great ideas.

Phase 2 will support the development of a prototype (process, product and/or method) advancing the "idea".

[1] The term genomics is defined here as the comprehensive study, using high throughput technologies, of the genetic information of a cell or organism, including the function of specific genes, their interactions with each other and the activation and suppression of genes. For purposes of describing Genome Canada's mandate it also includes related disciplines such as bioinformatics, epigenomics, metabolomics, metagenomics, nutrigenomics, pharmacogenomics, proteomics and transcriptomics.

4. Deliverables and Benefits

All applications must describe, with supporting evidence, the potential for the innovation to be disruptive, have impact within the technology space, and eventually social and/or economic benefits for Canada.

For phase 2 there must be clear deliverables that will be realized by the end of the project and 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 benefits. Proposals that make a strong case that those deliverables will/can be subsequently translated into significant 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 different types of innovations. It is expected that the deliverables realized at the end of the project will in time lead to technologies that result in benefits such as, but not limited to, facilitation of scientific research, improved diagnostics, environmental monitoring, enhanced food production or food safety, sustainable energy production, etc. The intention is that true disruptive innovation is captured and transferred to those who have the ability to translate and use it, resulting in social and/or economic benefits for Canada.

5. Funds Available, Term and Co-Funding

There is $15 million available from Genome Canada for Phases 1 and 2. The availability of funds, co-funding requirement and terms for Phases 1 and 2 will be as follows:

5.1. Phase 1 – *Feasibility*

- Approximately $5 million will be available to support Phase 1 projects from Genome Canada.
- Co-funding is NOT required for *Feasibility* projects.
- There will be a maximum investment of $250,000 in an individual project by Genome Canada.
- Projects requiring less than $50,000 will not be considered unless well justified.
- Successful individual projects will be awarded funding for a term of up to two years.

5.2. Phase 2 – *Development of Prototype*

- Approximately $10 million will be available to support Phase 2 projects from Genome Canada. Funds for this phase will be available over two rounds (see Competition Design section below).
- At least two-thirds of the requested funding for eligible costs for each project must be obtained through co-funding from other sources.
- Genome Canada will provide support for projects ranging in total size from $300,000 to $3 million. The Genome Canada investment in an individual project cannot exceed more than 1/3 of the total investment in the project by all parties; the remaining 2/3 must be secured through co-funding. (Note that projects with a total size that exceeds $3 million will be considered as long as the Genome Canada contribution does not exceed $1 million).
- Successful individual projects will be awarded funding for a term of up to three years.

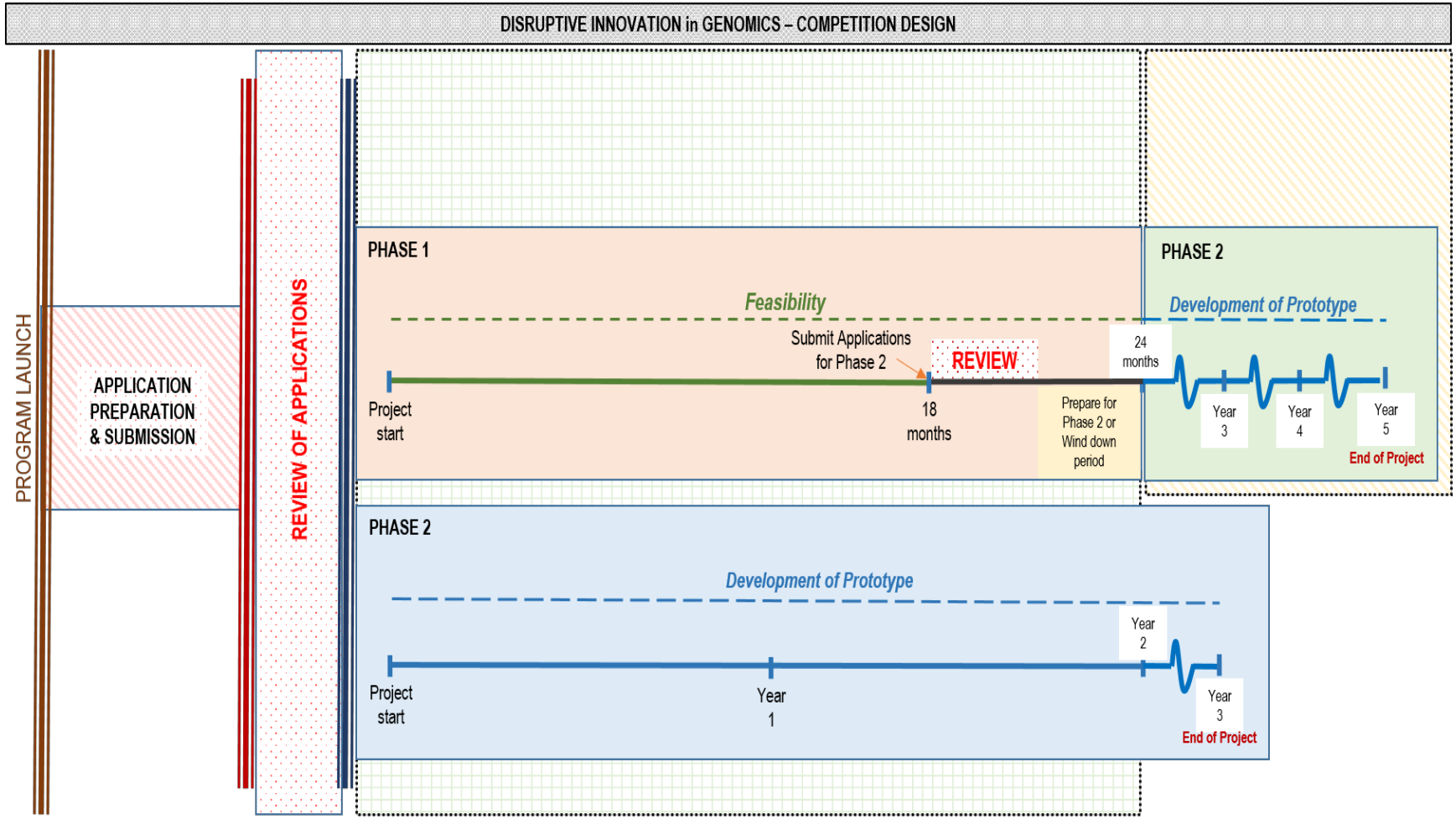
The Genome Centres, working with the applicants, are responsible for securing co-funding. Co-funding for this competition must be for research activities that are an integral part of the Genome Canada approved project and must be for eligible costs specifically requested in the Genome Canada budget form in order to be considered as an eligible co-funding source. See the **Guidelines for Funding Research Projects** for more details.

6. Competition Design

Genome Canada acknowledges that some potentially disruptive innovations may already have passed the feasibility stage (Phase 1) but require support to develop a prototype to prepare for translation to users (Phase 2). Phase 1 and Phase 2 will, therefore, be run in parallel to support potential disruptive innovations both at the feasibility and development of prototype stages.

A second round of Phase 2 funding, open only to eligible Phase 1 projects, will be held 18 months after successful Phase 1 projects are launched. This will allow Phase 1 projects approved for Phase 2 funding to continue to Phase 2 without a gap in funding and for projects not approved for Phase 2 funding to wind down.

*Please see illustration on next page


DISRUPTIVE INNOVATION in GENOMICS – COMPETITION DESIGN
PROGRAM LAUNCH
APPLICATION PREPARATION & SUBMISSION
REVIEW OF APPLICATIONS
PHASE 1
Feasibility
Submit Applications for Phase 2
REVIEW
24 months
Project start
18 months
Prepare for Phase 2 or Wind down period
PHASE 2
Development of Prototype
Year 3
Year 4
Year 5
End of Project
PHASE 2
Development of Prototype
Year 2
Project start
Year 1
Year 3
End of Project

7. Guidelines for Funding

Genome Canada's *Guidelines for Funding Research Projects* must be adhered to throughout the competition and post-award management processes.

7.1. Exceptions to the Guidelines

Exceptions to the Guidelines specific to this RFA include:

- **Integrated GE^{3}LS:** An integrated GE^{3}LS (Genomics and its Ethical, Environmental, Economic, Legal and Social aspects) component is not required.
- **Project Managers:** A dedicated Project Manager is not required but the engagement of an individual performing this role even part-time could be considered for Phase 2 projects and is an eligible expense.
- **Research Oversight Committees:** Will not be set up for these projects.

8. Societal Implications of Disruptive Innovation

It is widely acknowledged that so-called "disruptive" technologies or innovation can entail complex economic and social changes, and therefore represent a potentially rich topic for social scientists and humanities scholars. Rather than requiring applicants to include a GE^{3}LS research component in their projects, it is expected that a more diverse exploration of the societal implications of genomic applications characterized as "disruptive" could be carried out through a parallel program directly targeted at social sciences and humanities researchers. In this regard, Genome Canada and the Social Sciences and Humanities Research Council (SSHRC) have signed a joint initiative agreement to jointly support social sciences and humanities research and related activities pertaining to genomics, with one of the first initiatives focusing on societal implications of disruptive innovation in genomics. This initiative, led by SSHRC, will be available during a period concurrent to the Disruptive Innovation in Genomics program.

9. Application and Review Process

Applicants are required to apply for funding through a regional Genome Centre.

9.1. Phase 1 - *Feasibility*

9.1.1. 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, expected deliverables, approximate budgets and appropriate reviewers. This will allow for screening for eligibility by the Genome Centres and facilitate the early selection of reviewers for the review process.

9.1.2. Full Application

Applicants submit a brief document (including a high level budget), which will present their idea, describe how they will demonstrate its feasibility and justify its potential to be disruptive. A final check for eligibility will be carried out.

9.1.3. Review Process

An international panel of experts from a wide range of relevant backgrounds who are known for their ability to innovate and/or have experience with high-risk high-reward ventures will review the applications based on the evaluation criteria in Appendix 1. Only those proposals demonstrating the highest degree of overall fit with the review criteria will be funded.

Please note, if the application pressure is high, a streamlining process may be used to assist in reducing the number of applications to those deemed to be of the highest merit.

9.2. Phase 2 - *Development of Prototype*

9.2.1. 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, expected deliverables, approximate budgets and appropriate reviewers. This will allow for screening for eligibility by the Genome Centres and facilitate the early selection of reviewers for the review process.

9.2.2. Full Application

Applicants submit a document describing the plans for development of the product, the potential for disruption and eventual plans for uptake by users.

9.2.3. Review Process

An international panel of experts from a wide range of relevant backgrounds (for example, subject matter experts, venture capitalists, industry business development experts, etc.) will review the applications based on the evaluation criteria in Appendix 1.

Applicants may be invited for an interview, via videoconference, with the Review Committee. Only those proposals demonstrating the highest degree of overall fit with the review criteria will be funded.

Please note, if the application pressure is high, a streamlining process may be used to assist in reducing the number of applications to those deemed to be of the highest merit before proceeding to the Review Committee meeting.

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

10. Competition Timeline

Requests for support of projects must be submitted to Genome Canada through a Genome Centre. The competition timeline outlined below includes both Genome Canada and Genome Centre deadlines. Please contact your regional Genome Centre for further information on their process and internal deadline dates.

Date	**Activity**
June 11, 2015	Launch of Request for Applications (RFA)
Sep 1, 2015	Registrations due to Genome Centres for Phase 1 (Feasibility) and Phase 2 (Development of Prototype)
Sep 4, 2015	Eligible registrations due to Genome Canada for Phase 1 (Feasibility) and Phase 2 (Development of Prototype)
Oct 8, 2015	Full Applications due to Genome Centres for Phase 1 (Feasibility) and Phase 2 (Development of Prototype)
Oct 29, 2015	Full Applications due at Genome Canada for Phase 1 (Feasibility) and Phase 2 (Development of Prototype)
Jan 15, 2016	Phase 2 applicants notified regarding interviews with reviewers.
Mid-Feb, 2016	Review committee meetings, including interviews with Phase 2 applicants
Mid-March, 2016	Decisions by Genome Canada
Late March, 2016	Notification of Decision

11. Contacts

Lorna Jackson	Genome Canada	(613) 751-4460 ext 226	ljackson@genomecanada.ca
Andy Stone	Genome Atlantic	(902) 421-5646	astone@genomeatlantic.ca
Catalina Lopez -Correa	Genome Québec	(514) 398-0668	clopez@genomequebec.com
Meredith McLaren	Ontario Genomics Institute	(416) 673-6562	mmclaren@ontariogenomics.ca
Chris Barker	Genome Prairie	(306) 668-3587	cbarker@genomeprairie.ca
Gijs van Rooijen	Genome Alberta	(403) 210-5253	vanrooijen@genomealberta.ca
Gabe Kalmar	Genome British Columbia	(604) 637-4374	gkalmar@genomebc.ca

Appendix 1 – Evaluation of Applications

Proposals submitted to Genome Canada are evaluated via a rigorous 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. Excellence and innovation at the very highest of international standards must be demonstrated for funding to be awarded.

1. Eligibility of the Proposal

To be eligible for this competition, a proposal must:

- respond to the objective of the competition, i.e., to support the development of disruptive innovation in the field of genomics;
- fit the parameters of the program model;
- be internationally competitive; and,
- for Phase 2 (Development of Prototype) proposals, provide evidence of secured co-funding (no less than two-thirds of total project costs from eligible co-funders), which includes a third party interested in investing in the development to the next stage (e.g., the investigator's own company, spin-offs, incubators, etc.).

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

2. Review Criteria

2.1. Phase 1 - Feasibility

- To what extent will the proposal support the development of transformative ideas with the potential for disruptive innovation?
- What is the likelihood the idea will be ready for Phase 2 (Development of Prototype) at the end of the funding period?
- How realistic is the project plan?
- How realistic is the budget requested?

2.2. Phase 2 - Development of Prototype

The review criteria fall into three categories:

1) Research Proposal
2) Benefits
3) Management and Finance

2.2.1. Research Proposal

2.3.1.1. Research Context

- To what extent will the proposal support the development of transformative ideas with the potential for disruptive innovation?
- To what extent is the research relevant to the end users identified?

2.2.1.2. 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?

2.2.1.3. Research Expertise

- How appropriate is the expertise of the research team in terms of realizing the research goals?

2.2.1.4. Research Environment

- How suitable are the available facilities and equipment?

2.2.2. Social and/or Economic Benefits

2.2.2.1. Deliverables

- To what extent have the applicants identified appropriate deliverables in terms of the potential for disruptive innovation?
- What is the probability that the deliverables will be realized by the end of the funding period?

2.2.2.2. Expected Benefits

- How significant are the anticipated benefits and how soon are they anticipated to be achieved after the end of the project?
- How high is the potential to either displace an existing technology, disrupt an existing market or create a new market or offer the capability to do things not previously possible?

2.2.2.3. Strategy for Realizing Benefits

- How persuasive is the strategy for realizing benefits from the research?
- 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 benefits?
- How appropriate is the plan for access to, and dissemination of, the tools and methodologies developed?

- How appropriate are the plans for IP?

2.2.2.4. Expertise for Realizing Benefits

- To what extent are likely end-users involved in the project and the strategy to realize benefits?
- If the strategy includes commercialization, to what extent does the team have access to the appropriate technology transfer expertise?

2.2.3. Management and Finance

2.2.3.1. 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 convincing is the management plan in terms of coordination of current and future partnerships?
- How realistic is the project plan?
- To what extent do the project leaders have experience in managing projects involving research and the application of results?
- How good are the plans to ensure that an adequate number of highly qualified personnel (HQP), both support personnel such as technicians and trainees (e.g., post-doctoral fellows), are available to meet the needs of the proposed research through recruitment and/or training?

2.2.3.2. 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?

2.2.3.3. 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 strong is the likelihood 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?