



## Integrated GE<sup>3</sup>LS Research Review Implementation Plan

### Recommendation 1: Affirm the Value and Vision of Integrated GE<sup>3</sup>LS Research

Element of the Expert Panel Recommendation	Proposed Action
<p><i>Genome Canada should reaffirm its commitment to the value of research into the implications of genomics in society by strengthening its support for the integration of GE<sup>3</sup>LS research in large-scale projects to foster the responsible and effective development and uptake of genomic-based applications.</i></p>	<ol style="list-style-type: none"><li>1. Genome Canada will develop a communication strategy to:<ul style="list-style-type: none"><li>• Assert its commitment to GE<sup>3</sup>LS research, including integrated GE<sup>3</sup>LS research;</li><li>• Confirm retention of the GE<sup>3</sup>LS acronym; and</li><li>• Promote a broader interpretation of GE<sup>3</sup>LS research as “research into the implications of genomics in society.”</li></ul></li></ol>
<p><i>Recognizing that the GE<sup>3</sup>LS acronym has historic and ongoing relevance, the Expert Panel recommends that it be retained. Nevertheless, Genome Canada should promote a broader interpretation of GE<sup>3</sup>LS as “research into the implications of genomics in society” that extends beyond the narrow focus on topics and/or disciplines that make-up the acronym and should encourage innovation in GE<sup>3</sup>LS research strategies and methods to help accelerate the translation of genomics solutions into benefits to society.</i></p> <p><i>To ensure that the broader interpretation of integrated GE<sup>3</sup>LS research is better understood, Genome Canada should adopt a definitional framework that emphasizes the following elements:</i></p>	<ol style="list-style-type: none"><li>2. Genome Canada will adopt and promote a definitional framework that encourages inquiries into the full range of factors that can affect the current and future development of genomic-based applications, to help ensure their responsible implementation.</li><li>3. Genome Canada will develop and showcase exemplars of successful integrated GE<sup>3</sup>LS research to provide greater clarity on the role of integrated GE<sup>3</sup>LS research and enhance its visibility.</li></ol>



- *Adopting a team-based approach where researchers with diverse expertise, using a variety of research strategies and methodologies, collectively contribute to a broader understanding of the scientific problem;*
- *An investigation of factors that may facilitate or hinder the acceptance and uptake of the genomic-based application(s); and*
- *Provision of evidence that may be useful to inform and help implement changes in policy or practice related to its use.*

**Key Feedback**

Overall, there is strong support for the first recommendation. However, a segment of the GE<sup>3</sup>LS research community expressed concerns that the integrated model, as described by the definitional framework, is too restrictive. Particularly, the term “uptake” may be problematic, as GE<sup>3</sup>LS researchers not only ask *how* to enhance implementation, but also *whether* to implement, how to *responsibly* implement, etc. GE<sup>3</sup>LS researchers emphasized that GE<sup>3</sup>LS research should not be viewed as the provision of services, but as independent research.

For these reasons, it is recommended that the definitional framework be supportive of a broad spectrum of questions, including those that may result in a more critical stance vis-à-vis certain technologies or applications. The definitional framework could be modified to ensure that GE<sup>3</sup>LS research is pertinent to the project at hand, but also that there is an opportunity for forwarding-looking considerations and other original contributions.

Finally, a robust communications strategy regarding the definitional framework will be required to ensure it is clearly articulated to the genomics and GE<sup>3</sup>LS research communities, the staff who support LSARPs and help teams prepare their applications, reviewers, members of the Research Oversight Committees, and others. Overall, great efforts should be taken to promote a shared understanding of the appropriate scope of integrated GE<sup>3</sup>LS research to avoid inconsistent or contradictory interpretations.



## Recommendation 2: Enhance Implementation of the Integrated GE<sup>3</sup>LS Research Vision in Large-Scale Projects

*Genome Canada should review its competition processes used to support funding of large-scale projects to address perceived or identified barriers to selecting strong integrated GE<sup>3</sup>LS research.*

*Program requirements, activities to assist team formation and research development, review criteria and processes, the selection of peer reviewers and members of Research Oversight Committees are amongst the key elements that must be aligned with the definitional framework suggested in Recommendation 1, particularly to reflect the diversity of research expertise involved in projects, and to account for the complexity of translating (genomics and GE<sup>3</sup>LS) research results into tangible benefits.*

4. Genome Canada, in partnership with the regional Genome Centres and as part of its regular review of its competition processes, will undertake a review of the entire competition process used to support funding of large-scale projects to address perceived or identified barriers to selecting strong integrated GE<sup>3</sup>LS research.

- The assessment of the peer review process will focus on issues identified by the Expert Panel and the consultations, such as: the selection of peer reviewers with the appropriate GE<sup>3</sup>LS expertise; the guidance provided to peer reviewers; the level of feedback provided to applicants; the quality of the assessment of integrated GE<sup>3</sup>LS research at early stages of the review process; whether integrated GE<sup>3</sup>LS research should be scored separately; and whether there should be a minimum rating required for the GE<sup>3</sup>LS research component in order to approve funding for a project.
- To help enhance team formation and project development Genome Canada will work with the regional Genome Centres to create opportunities to bring together the genomics and GE<sup>3</sup>LS research communities, such as:
  - National events, held on a regular basis and featuring a wide range of genomics and GE<sup>3</sup>LS research to provide a better understanding of the full scope of the research each community conducts; and



- Regional events, held well in advance of the launch of competitions to provide the necessary lead time to co-develop research plans.

**Key Feedback**

While feedback emphasized that Genome Canada has a high-quality peer review process, participants believed there are instances when GE<sup>3</sup>LS reviewers on peer review panels do not have the appropriate expertise; therefore, it is important to identify reviewers with a broad understanding of social sciences and humanities. Furthermore, reviewers should have a clear understanding of Canadian-specific perspectives (e.g. regarding the Canadian healthcare system). Overall, respondents considered the selection and orientation of reviewers to be an important component of the review process.

A number of concerns identified in the Report were also raised through the consultation, including a desire for more feedback from peer reviewers, as well as more clarity on the relative strengths and weaknesses of the applications and, ultimately, the funding decisions. During the online discussions, GE<sup>3</sup>LS researchers described instances where there was insufficient feedback to understand why certain projects received funding and others did not. Although responses were mixed regarding whether integrated GE<sup>3</sup>LS research should receive a separate rating or continue to be rated as part of the overall research rating, a separate score could be a potential solution.

It was noted in the consultations that the first-time creation of a team would benefit from more gradual development, as LSARPs are viewed as high-risk collaborations. Some of the suggestions that were repeated by several respondents to address team formation (as well as the development of GE<sup>3</sup>LS research capacity) included events or workshops between genomic and GE<sup>3</sup>LS researchers before competitions are launched.

The uneven support provided by the regional Genome Centres regarding GE<sup>3</sup>LS research was also mentioned. Participants noted that if events to facilitate interactions between genomics and GE<sup>3</sup>LS researchers are only held regionally, based on Centre capacity, there is a risk that uneven support for GE<sup>3</sup>LS will be perpetuated. Therefore, activities at a national level to “level the playing field” are important.



### Recommendation 3: Enhance Capacity to Conduct and Support Integrated GE<sup>3</sup>LS Research

*To strengthen integrated GE<sup>3</sup>LS research, Genome Canada should undertake the following actions to increase capacity:*

1. *Build capacity to conduct GE<sup>3</sup>LS research as part of large-scale projects:*

*Genome Canada should commit to increasing the breadth of researchers pursuing GE<sup>3</sup>LS research as part of large-scale projects, including early career researchers, including through the development of training opportunities.*

*Genome Canada should seek ways to enhance the collaborations with partners that support social sciences and humanities research and other interdisciplinary research, including universities, federal granting councils and other national or international stakeholders.*

2. *Build capacity to support GE<sup>3</sup>LS research leadership to enhance integration in large-scale projects:*

*Genome Canada should reinstate a national senior position whose role would include long-term visioning and oversight of the GE<sup>3</sup>LS research program and, in the short term, supporting the timely execution of the recommendations set out in this Report.*

5. Genome Canada will endeavour to support GE<sup>3</sup>LS research through several funding mechanisms in addition to integrated GE<sup>3</sup>LS research to help build research capacity. Examples include:

- Standalone GE<sup>3</sup>LS research projects;
- Collaborative teams or networks for GE<sup>3</sup>LS research; and
- Smaller-scale research projects.

6. Genome Canada will facilitate capacity-building by considering actions such as:

- Encouraging the inclusion of early-career GE<sup>3</sup>LS researchers and GE<sup>3</sup>LS research trainees as part of LSARP teams; and
- Ensuring maximum benefits from partnerships, such as the joint initiative with SSHRC.

7. Genome Canada will recruit an individual in a senior position to oversee the Genomics in Society program, as per the Expert Panel's recommendation.

8. Genome Canada will work with the Centres to determine which resources are required to support their efforts to enhance GE<sup>3</sup>LS research and its integration in LSARPs.



*Genome Canada should provide targeted resources to support the Genome Centres' efforts to enhance integrated GE<sup>3</sup>LS research as part of large-scale projects. Where appropriate, Genome Canada should assist in the coordination of such work, or in the development of tools or other material that facilitates it.*

**Key Feedback**

Survey and webinar participants felt strongly that there should be smaller and/or alternative funding opportunities for GE<sup>3</sup>LS research to help develop capacity, as early-career researchers are less likely than established researchers to receive funding as part of the LSARP competitions. In particular, it was suggested that smaller grants would help develop collaborative relationships, a common language and trust between the members of these interdisciplinary teams. Participants also thought Genome Canada strongly encourage the inclusion of early-career researchers or trainees on LSARP research teams, without imposing strict requirements.

Additionally, it was suggested that the Genomics Enterprise host regional or national meetings and invite more established GE<sup>3</sup>LS research to present their work. These meetings should be open to everyone, so graduate students, trainees, early-career researchers, and others can learn about Genome Canada. Furthermore, there was some disagreement that there is a lack of capacity, as there are many researchers who could be brought into the LSARPs; rather, the community *as it is currently perceived* is small and overstretched. It was noted that it is a matter of trying to make potential GE<sup>3</sup>LS researchers understand they have a place in this space, reaching out to social scientists and humanists to give them an overview of the research the Genomics Enterprise funds so they understand how they can contribute.

There were suggestions made regarding greater visibility of GE<sup>3</sup>LS research and resources to identify GE<sup>3</sup>LS researchers. Genome Canada was encouraged to ensure more benefits of its partnerships, particularly its joint initiative with SSHRC, which was not felt to be utilized effectively, as well as to partner with other funding agencies and universities to help create visibility for Genome Canada and help bring students or researchers from various social science and humanities disciplines into the GE<sup>3</sup>LS research community. Moreover, it was suggested that the Genomics Enterprise develop a database listing GE<sup>3</sup>LS researchers and their contact info, along with their interests and competencies.



## Recommendation 4: Accountability for the Implementation of the Recommendations

*Implementation and evaluation go hand in hand. The following actions are called for:*

*Recognizing the interest in this Review, the Expert Panel encourages Genome Canada to undertake a comprehensive consultation with the research community, Genome Centres and other stakeholders on the findings and recommendations of the Expert Panel. Following the consultation, the results should be shared with the Genome Canada Board through SIAC to help inform decision-making. In this way, Genome Canada would follow an accountability pathway for the implementation of this Expert Panel’s recommendations.*

9. In fulfilling the recommendation to consult with the research community, Genome Canada has conducted:

- A survey to validate each key finding of the Review and element of the recommendations of the Expert Panel; and
- Four webinar consultations to seek stakeholders’ opinions on key issues and priorities brought up in the Review.

Results are being shared as recommended to inform decisions.

*Genome Canada should strive to assess the overall value of integrated GE<sup>3</sup>LS research, its outcomes and its impact within Canada through the development and application of key performance indicators that capture the diversity of this research and its translational pathways. This should be part of an overall strategy for longitudinal performance evaluation.*

10. Genome Canada will undertake a review of its evaluation strategy to ensure it sufficiently measures the outputs, outcomes and overall success of GE<sup>3</sup>LS research, and may refine or develop new key performance indicators (KPIs) to do so.

### Key Feedback

During the consultations, participants noted that there should be robust assessments of research outcomes, yet there will be challenges because they are diverse and may not occur until several years beyond the completion of a project. It was suggested that Genome Canada consult the GE<sup>3</sup>LS research community regarding outcome assessment; moreover, such evaluation should be a joint effort of regional Genome Centres and Genome Canada.

Participants noted it is important to distinguish evaluating the “integration” of GE<sup>3</sup>LS research within projects from the impact of GE<sup>3</sup>LS research beyond the projects. Moreover, the evaluation of GE<sup>3</sup>LS research should help provide more visibility, by showcasing “success” (see Recommendation 1 and Management Response).



**Genome**Canada