Some examples of eligible research areas include, but are not limited to, using genomics-based approaches to:

- Increase the production efficiencies of existing food systems of value to Canada while reducing their environmental footprints.
- Develop scalable applications using microbial communities to help build carbon-neutral agriculture and aquaculture production systems, such as soil, plant-microbe synergies, rumen or monogastric gut microbiome engineering, fermented foods and sustainable products.
- Characterize and develop cultivars and soil microbial communities that improve terrestrial carbon sequestration.
- Reduce the environmental footprints of crop, livestock and aquaculture production systems by decreasing the use of water, fertilizers and pesticides, reducing greenhouse gas emissions, and improving fish feed, resulting in improved sustainability.
- Create food products in new and sustainable ways, such as through the use of cell cultures, tissue engineering or precision fermentation-based techniques.
- Develop commercially viable production systems for emerging climate-smart options like seaweed, controlled-environment agriculture or alternative and plant-based proteins.
- Enhance food production in local communities (such as urban communities or remote or underserved areas) to limit transportation emissions.
- Develop food supply chains that are more efficient and less susceptible to spoilage and waste, for example by breeding for specific traits that improve crops’ resistance to damage during harvesting, handling and storage.
- Develop more sustainable production systems for established input types, such as fertilizers or protectants.
- Develop novel production inputs that maintain or improve productivity while providing sustainability benefits, such as biostimulants, protectants (including RNA-based solutions), pre- and pro-biotics, and feed additives.
Some potential integrated GE³LS topics include, but are not limited to:

- Exploring translational pathways, including social, political, regulatory, policy or economic factors that would accelerate the responsible uptake of genomics-based tools and technologies to reduce the carbon footprint of food production and investigating strategies that can foster receptivity.
- Exploring the effects of national policies and/or regulations on sector competitiveness and productivity.
- Investigating the influence of consumers' values and beliefs on the likely success of novel foods developed using nature-based solutions and processes (for example, consumer acceptance of foods developed through cell cultures, tissue engineering or precision fermentation-based techniques).
- Improving the effectiveness of regional, national and/or international sustainable production practices on food safety, security and sustainability.
- Developing models to encourage users (such as farmers) to adopt genomics tools for sequestering carbon in agricultural soils as a climate change mitigation strategy.

Non-eligible research areas

- While projects focused on forest production systems cultivated for non-food products are not eligible, tree horticulture systems used for food production remain eligible.
- Projects primarily focused on the human health benefits of functional foods are not eligible.