

## SECTOR INNOVATION PROGRAM

### Intake 8 Information Sheet

### Health in a Changing Climate: A Genomic Response

This document outlines details for the eighth intake of the Sector Innovation Program (SIP8): the research focus, intake-specific parameters eligibility criteria, and the competition timelines. Note that this document is a supplement to the Sector Innovation Program - Program Guidelines. Unless specified otherwise, the program parameters, eligibility and evaluation criteria indicated in the Program Guidelines apply.

#### I. INTAKE FOCUS

The focus of SIP8 is to support genomics<sup>1</sup> research related to the impacts of climate change on human health. Climate change is already negatively impacting human health in many ways, and health risks are predicted to increase as global warming continues<sup>23</sup>. Higher temperatures, shifts in precipitation patterns, more frequent and intense heat waves, and weather events deprive people of clean air, fresh water, a safe food supply, and can influence the prevalence and distribution of infectious diseases. Genomics can be a useful approach to explore and understand the current and projected impacts of climate change on human health, and ultimately inform our response to a changing climate.

Through this competition, Genome BC aims to support research projects related to the following key research areas:

- **Infectious diseases:** the impact of changing climate patterns on the distribution and evolution of infectious agents. Includes human infectious diseases (e.g. Lyme disease, West Nile Virus) and diseases that could impact the food supply (e.g. plant, seafood or livestock diseases).
- **Nutrition and food security:** the impacts of climate change on the nutritional value of food crops and forage on which humans and livestock depend, and the sustainable management of wild plants and wildlife used for food and medicine.
- **Allergies and respiratory health:** the genomic basis of respiratory health (e.g. allergies, asthma, and COPD) in response to increased allergens and environmental contaminants from climate events (e.g. wildfires).
- **Adaptation and evolution:** genetic adaptation of human populations, microbes and viruses in response to environmental changes, and the genomic basis of climate change impacts on chronic conditions (e.g. diabetes, renal disease, neurological disease, heart and lung disease).
- **Digital solutions of climate change and health:** research that collects, measures, organizes, and analyses diverse Big Data streams to improve the quality and harmonization of data on climate change and human health.

The following research areas are not eligible for funding through this competition: the mental health impacts of climate change, antimicrobial resistance, wildlife conservation, forestry

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<sup>1</sup> Genomics is the comprehensive study, using high-throughput, cutting-edge technologies, of the genetic information of a cell or an organism. For this funding call, Genome BC includes the function of specific genes, gene clusters, their interactions with each other or the surrounding environment as well as regulation. Related disciplines, such as epigenomics, metabolomics, proteomics, transcriptomics, lipidomics, metagenomics, and bioinformatics, as they relate to the functional and structural analysis of genomes, gene regulation, and the interaction of genetic factors with environmental elements are eligible.

<sup>2</sup> [doi:10.1017/9781009325844.009](https://doi.org/10.1017/9781009325844.009)

<sup>3</sup> <https://ostrnrcan-dostrncan.canada.ca/entities/publication/d27927d6-bf0d-43f2-b262-cba6b0d69806>

(including urban forests), agriculture projects not directly related to impacts on human health (e.g. crop yields, distribution, adaptation, selective breeding for resistance to climate change impacts (drought, pests, heat, etc.), ocean and freshwater acidification and nutrient runoff, and mining and energy sector projects.

Some examples of eligible research can be found in **Appendix I** at the end of this document.

## II. INTAKE-SPECIFIC PARAMETERS AND CRITERIA

The funding envelope for this intake is \$2M. The intake-specific parameters and criteria are indicated below. Note that the eligibility and evaluation criteria outlined in the Sector Innovation Program - Program Guidelines apply.

- 1) Project budgets must be in the range of \$250K to \$500K.
- 2) Project terms must be in the range of 24 to 36 months.
- 3) Genome BC aims to encourage research that employs interdisciplinary approaches. To that end, projects that bring together climate scientists, geneticists, public health experts, community members, rightsholders and other relevant specialists are encouraged. This is not an eligibility criterion but will be considered a strength during the review of applications.

## III. INTAKE TIMELINE

Date	Activity
June 2024	Launch of SIP-Intake 8
September 25, 2024	Application Submission Deadline
December 9, 2024	Notification of Results
April 1, 2025	Anticipated Project Start Date

Please contact [sip@genomebc.ca](mailto:sip@genomebc.ca) with any questions.

## APPENDIX I. EXAMPLES OF ELIGIBLE RESEARCH

Below are some examples of eligible research to demonstrate the breadth of this intake.

- Study the impact of climate change on the nutritional value of food, and ways to mitigate impacts.
- Study the epigenetics and environmental attributes of human health conditions exacerbated by climate events and air pollution.
- Develop diagnostic methods for emerging diseases related to climate change.
- Explore how seafood safety can be affected by warmer temperatures leading to increased risk of exposure to marine pathogens and toxins.
- Investigate the evolutionary mechanisms that may allow humans to adapt to new environmental stressors, such as altered temperatures, varying levels of UV radiation, and changes in air and water quality.
- Develop and apply novel artificial intelligence approaches to tackle the challenges of climate change modeling.
- Develop novel bioinformatics pipeline for the integration and harmonization of climate change data.