# SECTOR INNOVATION PROGRAM
# Info Sheet – Intake 7

This document outlines details for the seventh intake of the Sector Innovation Program (SIP7): the research focus, intake-specific parameters and 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 SIP7 is Single-Cell Omics, which includes single-cell genomics, epigenomics, transcriptomics, proteomics, proteogenomics, metabolomics, lipidomics, immunogenomics and bioinformatics, as well as the technologies enabling these single-cell omics approaches.

The ultimate characterization of individual cells at the molecular level, including how they communicate and respond to each other and their native environment, holds the key to the fundamental understanding of an organism and to solving many challenges that bulk analysis of different cells is incapable of revealing. Realizing the potential of single-cell omics, public, private, and non-profit organizations have made significant investment into this field over the past 10 years. Cutting edge technologies have rapidly evolved from their beginnings in cancer research and are continuing to revolutionize our understanding of many complex biological systems. These technologies also have enormous potential to lead to applications such as prenatal-genetic testing, drug screening, cell-transplantation therapy and 3D printing. In this growing field, new opportunities and challenges open the doors for novel inventions and approaches such as accelerating data analysis with machine learning approaches.

Genome BC hopes to fund novel, innovative projects from a variety of sectors that will truly advance the field. The development and application of single-cell omics in animals, plants and beyond are at a much earlier stage than in human health. Given the potential for new advances, researchers working in these emerging areas are strongly encouraged to apply. SIP7 is open to proposals focused on any of the sectors supported by Genome BC: human health, forestry, fisheries and aquaculture, agriculture and agri-foods, mining, energy and environment. This intake is limited to studies of multi-cellular organisms, and thus applications focusing on unicellular organisms alone are not eligible.

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

British Columbia has demonstrated excellence in both technology development and the application of single-cell omics. Through this intake, Genome BC would like to leverage this knowledge and expertise to: (1) promote BC researchers' international leadership in this field, (2) support single-cell omics research with the potential to yield benefits to BC, (3) prepare BC researchers for success in large-scale Canadian and international research initiatives, and (4) facilitate and encourage interdisciplinary collaborations among biologists, bioinformaticians, computer scientists, and engineers to tackle the most challenging problems in this field.

To facilitate data sharing and the use of data towards meaningful applications, the funded project teams will be required to work with Genome BC on co-designing a Genome BC funded data platform, and potentially use that platform to share data generated through this intake.

## II. INTAKE-SPECIFIC PARAMETERS AND ELIGIBILITY

The funding envelope for this intake is $1M. The intake-specific parameters and eligibility criteria are indicated below, in addition to the eligibility requirements outlined in the Sector Innovation Program – Program Guidelines.

1) The Project Leader for this intake cannot have served as the Project Leader on a funded Genome BC or Genome Canada project; this criterion does not apply to the Co-Project Leader(s) for this intake. Co-Project Leaders and Co-applicants from funded Genome BC or Genome Canada projects are welcome to apply as a Project Leader in this intake;
2) Project budget must be in the range of $75K to $250K; and
3) Project term must be in the range of 12 to 24 months.

## III. INTAKE TIMELINE

| Date | Activity |
|---|---|
| **January 2020** | Launch of SIP-Intake 7 info sheet |
| **February 11, 2020** | Deadline for submitting Statements of Interest (SOI) |
| **February 26, 2020** | Applicants notified if their SOI is eligible for this intake |
| **March 26, 2020** | Deadline for submitting Applications |
| **June 12, 2020** | Recommendations presented to Genome BC's Board of Directors |
| **June 30, 2020** | Applicants notified of results of their application |
| **October 1, 2020** | Anticipated start date for successful projects |

Please contact 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. Please note this list does not indicate that particular areas of research are of higher priority to Genome BC.

- Use single-cell analysis to understand plant stress regulation and adaptation, developmental plasticity, model gene regulatory networks, regeneration, etc.;
- Study plant system biology at the single cell level to investigate heterogeneity, conservation of the "housekeeping" elements, or environmental responsiveness in plant cells of the same type;
- Develop novel methodology for efficient and economical isolation of single cells from plants without losing spatial information;
- Perform single-cell analysis of neural stem cell heterogeneity and plasticity in zebrafish brain to reveal how zebrafish combat Alzheimer's disease;
- Apply single-cell omics approaches to identify biomarkers in autoimmune diseases;
- Use single-cell analysis to identify new markers to distinguish immune cell populations in lower vertebrates;
- Integrate single-cell analysis with immune phenotyping and clonal analysis to study changes in expression of key functional genes in virus-specific T cells post organ transplantation;
- Develop and apply novel artificial intelligence approaches to tackle the challenges of single-cell analysis such as in cancer genomics;
- Develop novel bioinformatics pipeline for the integration and harmonization of single-cell data.