

# Genome BC

## Data Access, Integration and Analysis (DAIA) Program Guidelines

### 1. Introduction and Background

Since its inception in 2000, Genome British Columbia (Genome BC) has invested over \$1B in genomics<sup>1</sup> research and built a globally significant genomics research cluster in British Columbia.

The volume of genomic data continues to rise at an ever-increasing rate, much faster than it can be organized, analyzed, interpreted or implemented. Genomic data ownership, privacy, security and reliability (including data quality and [data findability, accessibility interoperability and reusability - FAIR](#)) are rising concerns, as is the cost of commercial data storage. Genome BC strategically promotes data collection, management, storage, analysis and integration as they are essential for genomic research and innovation.

To help enable the advancement of medical research and patient care, Genome BC has partnered with Providence Health Care Ventures (Ventures) to provide access to their [Integrated Health Informatics Datalab](#) (IHID; formerly known as the Health Data Lab), a cloud-based bioinformatics system integrated within BC's Provincial Health Services Authority (PHSA). The IHID provides a secure platform that integrates patient data in the healthcare system with genomics and imaging data to enable the discovery of new insights to improve the health and well-being of Canadians. Privacy and data governance are built-in to ensure close alignment with the [Five Safes framework](#) for data access and governance. The layers of security, privacy and governance enable analysts to work with data without breaching privacy guidelines and creates dataset-specific or system-wide pseudonyms enabling linking and sharing of data without risking data leakage.

### 2. Program Objective

The goal of the Data Access, Integration, and Analysis (DAIA) program is to support researchers' access to the IHID. Through this partnership, Genome BC aims to provide researchers with the opportunity to analyze existing genomic data integrated with PHC healthcare clinical and imaging data to enable new insights that can address a clinical need and provide benefits to the BC healthcare system. Genome BC will cover the IHID costs to facilitate use of the platform and training opportunity.

For ease of reference, the term "genomics" is used throughout this document to encompass related disciplines, including but not limited to, epigenomics, metabolomics, metagenomics, proteomics, and transcriptomics.

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<sup>1</sup> The term genomics is specifically defined here as the comprehensive study, using high throughput cutting edge technologies, of the genetic information of a cell or an organism. This includes the function of specific genes, gene clusters, their interactions with each other or the surrounding environment as well as regulation.

The IHID can provide the following de-identified clinical and imaging data drawn from care activities at St. Paul's Hospital and Mount St. Joseph's Hospital in Greater Vancouver from 2017 to the present:

- 200,000+ distinct individuals' electronic medical record (EMR) information
- 2,500,000+ radiology medical imaging exams
- Includes data from BC-wide specialty programs (cochlear implants, cystic fibrosis, etc.)

After receiving appropriate patient consent and ethics approval, the data above would be matched and linked with researcher-supplied genomic data for research projects in a manner that preserves patient anonymity for individual researchers.

The IHID allows the extraction and linking of the following data types or results:

- Discrete electronic medical record (EMR) fields, including
  - ICD10 disease classification codes
  - Surgical interventions
  - Cancer stage at time of encounter
  - Laboratory specimen results
- Radiology medical imaging exams, including:
  - 374,000+ projection x-ray exams
  - 475,000+ Computed Tomography (CT) exams
  - 110,000+ Mammography exams
  - 290,000+ Magnetic Resonance (MR) exams
  - 398,000+ Ultrasound exams
  - Detailed radiology reports for the above

### 3. Program Parameters

Genome BC has committed an investment of up to \$1M to the DAIA competition. Ventures will provide access to the data and the IHID analytic environment through reduced service fees specific to this program.

The program parameters are as follows:

- Co-funding (matching funds) is not required;
- The allowable project budget is up to \$250,000 of which between \$75,000 and \$150,000 needs to be allocated towards the use of the IHID. Please contact [DAIA@genomebc.ca](mailto:DAIA@genomebc.ca) to obtain the budget template for estimating the IHID cost;
- The allowable project term is up to 12 months.

### 4. Eligibility

To be eligible for the program, applicants must demonstrate all of the following:

- The project has a cohort of patients who were enrolled at St. Paul's Hospital and/or Mount Saint Joseph's Hospital within the last 5 years;
- The project will have genomics data available for these patients by the project start date, or the ability to develop genomics data within the first three (3) months of the project from already-collected samples;
- The project responds to the objective of this program, namely it can clearly indicate the benefits of using the IHID in order to achieve its goals;

- The project will upload its genomics data into the IHID for integration with the patients' clinical data and imaging (request of imaging data is optional but clinical data use is required); and
- The Project Leader is an academic researcher based at one of the following types of BC institutions: (1) post-secondary institutions or their affiliated hospitals or research institutes; or (2) laboratories of federal government departments or agencies<sup>2</sup>, including regional health authorities. Industry partnership is welcome.

## 5. Application Process

There is a two-stage application process for this program:

1. Statement of Interest (SOI) outlining the scope of the proposed project to assess its eligibility and help identify reviewers; and
2. Application providing full details of the research plan with an accompanying budget.

Statements of Interest and applications must be submitted directly to Genome BC through the following email address: [DAIA@genomebc.ca](mailto:DAIA@genomebc.ca).

### Statement of Interest

The Statement of Interest (SOI) must provide a brief outline of the proposed project which addresses the eligibility criteria for the DAIA program. A SOI template is available on the Genome BC website (<https://www.genomebc.ca/funding-opportunity/daia>) or by contacting Genome BC at [DAIA@genomebc.ca](mailto:DAIA@genomebc.ca). SOIs must be submitted to Genome BC by the deadline posted by Genome BC to be considered.

Statements of Interest will be reviewed by Genome BC to determine their eligibility to the program.

### Application

Instructions for submitting applications are available in the *Data Access, Integration and Analysis program - Application Form*, which will be available on the Genome BC website and must be used. Detailed explanations of each application section are included with the form. Applications must address the evaluation criteria described in Appendix 1 of these Program Guidelines.

Key information to include in the application:

1. Clinical data requested:
  - a. Number of patients
  - b. Expected average # imaging exams per patient
  - c. Imaging modalities of interest (CT, X-Ray, ultrasound, etc.)
  - d. Imaging procedures types of interest (head, lung, etc.)
2. In addition to the loading of researcher provided data and linking to EMR/imaging data, other services may be requested from IHID:
  - a. Consulting (Data Governance, Data Anonymization)
  - b. Data Services
    - Semantic Data Mapping (e.g. OMAP-CDM),
    - Data Analytics (custom data analysis workflows)
  - c. AI/Model Building

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<sup>2</sup> Researchers at BC Provincial government labs are not eligible for this program since Genome BC funds cannot flow to BC Provincial government organizations.

- DataFrame Development
  - AI/Model Definition and Refinement
  - d. Other Services (Cluster Tuning and Optimization, etc.)
3. Data provided:
    - a. The type of genomics data that will be provided by the project team,
    - b. Format it will be provided in, and
    - c. Clinical or any other related patient data collected by investigator.
  4. Appraisal of IHID:
 

Description of how applicants will measure success of their collaboration with the IHID, i.e. what worked well and what did not in the platform, how was the onboarding process, was there all clinical data available that was needed for project, etc.
  5. A companion Excel budget must be provided for the project using the provided template. Financial Guidelines are described in Appendix 2 of these Program Guidelines.

### **Review Process and Outcomes**

Applications will be assessed against the evaluation criteria described in Appendix 1 of these Program Guidelines. Each application will be sent for external written review by reviewers with expertise relevant to the application. Financial due diligence reviews will be conducted by Genome BC. The final ranking will be made by a Review Panel composed of members with a relevant breadth of expertise for the program. Final funding decisions will be approved by Genome BC's Board of Directors. Genome BC reserves the right to modify the review process to accommodate the number of applications and ensure that the evaluation criteria are followed, and program objectives are met. Following the full decision process, all applicants, whether recommended for funding or not, will be provided with the external written reviews of their application.

Successful applicants will receive a Notice of Results with conditions that must be met prior to project launch. Project-specific conditions may include changes to budget, research plan or Gantt chart. For example, certain activities or items may need to be removed if the costs are deemed ineligible or the activity is not well-aligned to the project objectives.

The decision of Genome BC regarding any project is final and appeals will not be considered.

### **Evaluation Criteria**

To ensure that the objectives of the DAIA program are met, applications will be evaluated on each of the following major criteria, which are regarded as equally important:

- A. Strategic importance to the health sector:
  - Demonstrated need for the outcomes of this research
  - Potential for use of the outcomes by users and impact on the healthcare system
- B. Research, management and financial feasibility

A description of each criterion can be found in Appendix 1 of this document. Financial Guidelines are described in Appendix 2.

### **Timelines**

Key dates are listed below. Unless communicated otherwise by Genome BC, submissions must be received by Genome BC by 5pm Pacific Time on the day of the deadline.

Date	Activity
1 June 2022	Launch of the competition
6 July 2022	Deadline for submitting Statements of Interest (SOI)
14 July 2022	Applicants notified of results of their SOI; eligible SOIs invited to submit an application
25 August 2022	Deadline for submitting applications
Late September 2022	Review Panel meets
2 December 2022	Recommendations presented to Genome BC's Board for approval
5 December 2022	Applicants notified of results of their application
December 2022 - February 2023	PHC-Ventures and Genome BC work with approved teams to refine the project budgets to reflect accurate IHID costs for the work
1 April 2023	Anticipated start date for successful projects

## 6. Administration Following Notice of Results

For approved projects, Ventures and Genome BC will meet with the project leads to ensure IHID costs have been accurately estimated.

The plan for disbursement of approved funds will be determined based on the specific needs of the project. The first disbursement of funds will flow to projects once all conditions for the release of funds have been met as detailed in the Notice of Results.

Funded projects will be required to provide Genome BC with a financial report and research report at the end of the project. *Genome BC reserves the right to hold back a portion of funding until receipt and approval of the final report.*

## 7. Genome British Columbia Contact

Interested researchers are encouraged to contact Genome BC at [DAIA@genomebc.ca](mailto:DAIA@genomebc.ca) at their earliest opportunity with any questions or for clarification of any aspects of these program guidelines. Further information is available on the Genome BC website (<https://www.genomebc.ca/funding-opportunity/daia>).

## Appendix 1. Evaluation Criteria and Guidelines

See the application form for a description of the required contents for each section. Reviewers will be asked to interpret the evaluation criteria at a level appropriate to the scale and type of project proposed.

To ensure that the objectives of the DAIA program are met, applications will be evaluated on each of the following major criteria, which are regarded as equally important:

- A. Strategic importance to the health sector:
  - Demonstrated need for the outcomes of this research
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### A. Strategic importance to the health sector

1. How convincing is the argument that the project deliverables are of strategic importance to the sector?
2. Are the deliverables realistic and achievable?
3. Are the potential economic, social and/or environmental benefits of this research well-described and reasonable?
4. How significant are the potential benefits of this research in terms of impact on the sector?

### B. Research, Management and Financial Feasibility

#### Research

1. How will genomics be used to realize the proposed objectives?
2. Are the major activities consistent between the research plan, budget, and Gantt chart?
3. Are the proposed objectives, goals, milestones, and critical path feasible? Milestones must be constructed to provide objective, quantifiable measures of success and should be realistically attainable during the proposed timeframe.
4. Are the design, methods and analysis adequately developed, well integrated, and appropriate to the aims of the project?
5. How appropriate are the plans for using the Integrated Health Informatics Datalab?
6. Is genomics data available at project start for the patient cohort enrolled within St. Paul's hospital and/or Mount Saint Joseph's Hospital, or can be generated from already-collected samples within the first 3 months of project start?
7. Has a plan been developed for how feedback will be provided regarding ease of use of, and value provided by Integrated Health Informatics Datalab?

## Management

8. How appropriate is the expertise and time commitment of the research team in terms of realizing the research goals?
9. Has the team clearly demonstrated how they will make the research results accessible to the research community, when intellectual property protection is not a concern? For example, has the team defined data repositories to share data produced within the project?

## Financial

13. Do the budgeted costs comply with the eligible costs outlined in the Financial Guidelines (Appendix 2)?
14. Are the budgeted costs aligned with the proposed research plan and activities?
15. How effective are the financial and budgetary control processes?
16. Do the documentation and principal financial assumptions support the proposed budget?
17. Are all the costs incurred and paid for in the Province of BC? Costs incurred in BC utilizing fee-for-service providers located outside of the Province are eligible, but quotes and justification must be provided.

## Appendix 2. Financial Guidelines

Eligible costs are defined as reasonable and new costs for items that directly support the objectives of the Genome BC approved project. Genome BC funds cannot be used to cover overhead costs.

Note that Genome BC funds cannot flow to a company or to a BC Provincial government laboratory unless they are providing the work on a Fee-for-Service basis (see Services from Others).

The main categories of eligible costs are 1) Salaries and benefits, 2) Consumables, 3) Services from Others and 4) General and Administrative costs.

### Eligible costs may include the following:

1. Salaries and benefits:
  - a. Salaries for team members, apart from Project Leader or Co-leaders, who do not hold existing, ongoing or permanent salaried positions through their institution. Salaries must represent at least 0.15 FTE per year.
  - b. Benefit rate as charged by the host institution, not to exceed 20% of the employee's salary per year.
  - c. Salaries to support administration and co-ordination of the project, such as a Project Manager. These costs cannot exceed more than 5% of the total budget.
2. Consumables:
  - a. Materials and supplies consumed as part of the research, such as laboratory reagents and supplies (e.g. microtitre plates, pipette tips, kits, reagents). For consumables utilized in most laboratories, a general rate per Full Time Equivalent (FTE) may be accepted, provided that the rate is appropriately justified in the supporting documentation.
  - b. Items that meet at least one of the following: 1) expendable tangible property, 2) useful life of 1 year or less, or 3) a cost of less than \$2000. For example, a \$2000 laptop would be considered a consumable cost.
  - c. Equipment service contracts, provided that the need for the use of the equipment is justified.
3. Services from Others:
  - a. External costs that are incurred based on a reasonable fee-for-service arrangement or contract.
  - b. A copy of a quote or Statement of Work (SOW) must be provided to support any individual cost that exceeds \$15,000.
  - c. Genome BC strongly recommends the use of service providers based in BC. The use of out-of-province or out-of-country service providers must be justified in the appropriate section of the application.
4. General and Administrative (G&A):
  - a. Reasonable and low general and administrative (G&A) costs directly linked to the project. For example, costs for the project's communications and public outreach activities, and costs associated with scholarly publications, including fees to provide open access to the findings (e.g. costs of publishing in an open access journal or making a journal article open access).
  - b. G&A costs must not exceed five percent (5%) of the non-administrative costs of the project budget (calculated as total budget less administrative costs).

### Ineligible costs include, but may not be limited to:

- Cost related to the purchase of equipment

- Indirect costs to the project, such as institutional overhead costs applied to funds from partners.
- The opportunity cost of using existing infrastructure.
- Project Leader or Project Co-Leader salaries.

Genome BC will conduct a financial due diligence review as part of the review process to assess if project costs are eligible and well-justified. For approved projects, Ventures and Genome BC will meet with the project leads to ensure Integrated Health Informatics Datalab costs have been accurately estimated.