

Position description

Position title:	Domain Bioinformatician (Research Officer)
Employer:	Baker Heart and Diabetes Institute
Laboratory:	Systems Genomics
Supervisor/Manager:	Dr Fumihiko Takeuchi
Date:	June 2024

Background

The Baker Heart and Diabetes Institute is an independent, internationally renowned medical research facility focused on cardiovascular disease (including stroke and hypertension), diabetes and their complications, such as kidney disease. We have a long and distinguished history, spanning more than 97 years with our work critical to today's healthcare challenges.

The Baker Institute is well positioned to address these challenges, with multidisciplinary teams comprising medical specialists, scientists and public health experts all focused on translating laboratory findings into new approaches to prevention, treatment and care.

Headquartered in Melbourne, with research teams based in Alice Springs, we are a key player in research, translation, education, advocacy and health promotion with a staff of more than 450 (including scientists, clinicians and students). Our senior staff represent us on a broad range of government advisory boards, from health and wellbeing to science and innovation. We also collaborate with leading international research groups as part of our commitment to assisting vulnerable communities around the world.

The Baker Institute is funded through a diverse range of sources including competitive grants, Federal and State Governments, service and clinical income and philanthropic support.

The opportunity

The Research Officer is a bioinformatician who will be based at the Baker Institute in the Systems Genomics lab and supervised by Dr Takeuchi.

The lab collaborates widely within the Baker Institute and the RO is expected to be one of the focal points for these collaborations. The projects are diverse and are likely to include analysis of multi-omic data (genomic, transcriptomic, metabolomic, proteomic) from both bulk and single-cell samples, as well as biobank cohort data. Thus, the position would best fit someone with wide research interests and the ability to multi-task. There may be opportunities to develop new statistical methods and software to meet research challenges.

The RO will have extensive experience in programming languages common to the genomics field (e.g. R and python) as well as software tools, such as plink, snptest, edgeR and Seurat. They will also be expected to have a strong background in advanced statistical methods (e.g. generalised linear mixed models, multiple imputations, empirical Bayes) commonly used with omics data. Since many collaborations involve biobank data analysis, a basic understanding of epidemiology is desirable.

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Laboratory

The Systems Genomics lab is dynamic and international, with nodes at the Baker Institute and the University of Cambridge. The lab is led by Prof Michael Inouye and is home to the Cambridge Baker Systems Genomics Initiative, a partnership which brings together data science expertise and massive multi-omics datasets. Dr Fumihiko Takeuchi, the position's supervisor, is the Baker Institute's Head of Bioinformatics which is administratively based in the Systems Genomics lab.

Our aim is to alleviate the burden of disease using our interdisciplinary strengths in statistics, computation and bioscience to leverage the latest genomic/biomolecular technologies. We straddle basic and translational research of cardiometabolic diseases. By leveraging the immense opportunities of large datasets, the lab focuses on:

1. Building genomic risk scores for multi-factorial (complex) diseases and then applying them to medicine and public health.
2. Understanding the systems-level basis for disease through integrative network analysis of genes, metabolites, microbiota and health records.
3. Developing novel statistical methods for modern omics data.

Within the lab, the bioinformatics program has a dual mission:

1. Providing bioinformatics services and fostering collaborations with other labs in the Baker Institute, and
2. Conducting independent research in bioinformatics.

Members of the section allocate their efforts equally between these two missions. Currently, the program consists of a head and three postdoctoral bioinformaticians.

Nature of environment

The Baker Institute has a project-oriented environment, encompassing a local and multi-site (including interstate) organisational structure. The staff comprise mainly research, scientific and specialist clinical personnel engaged in the capacity of permanent, grant specific and casual employment. The atmosphere is collegial, usually relaxed and informal though busy and often dynamic with frequent deadlines that must be met. The environment is often demanding and challenging with a strong team orientation but also provides the opportunity to work independently and show initiative. The nature of the work also requires a focus on accuracy and detail.

Travel requirements

None.

Key job requirements, responsibilities and duties

- Collaborating with Baker Institute laboratories and supporting them with advice/expertise on experimental design, data processing, analysis, visualisation and interpretation.
- Performing high-quality research in genomics, bioinformatics or computational biology.
- Developing or modifying new analytical methodologies that would allow researchers to use cutting-edge tools for their research.

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- Contributing to preparing manuscripts for publication, technical reports and other research-related documents.
- Participating in the planning and development of general goals for the research project.
- Organising data for supporting new funding applications.
- Performing critical literature reviews.
- Proactive attendance at team meetings and all relevant seminars and staff meetings.

This role may require other duties to be performed, as directed by the manager/supervisor from time to time, and it is a condition of employment that the successful candidate complies with any such reasonable requirement.

Meet statutory requirements of the company

Maintain up-to-date and accurate knowledge in:

- OHS legislation.
- EEO legislation.
- Privacy legislation.
- Confidential Information Policy.
- Baker Heart and Diabetes Institute Code of Conduct.
- Australian Code for the Responsible Conduct of Research.
- Baker Heart and Diabetes Institute Intellectual Property Agreement.

Requirements of the position holder

Key selection criteria

- A master's or PhD in a computing-related discipline (such as bioinformatics, computational biology, computer science, or statistics).

Experience and field of research

- Research experience in at least one of the following areas: statistical genomics, computational biology or bioinformatics, with high competency in the statistical or computational analysis of large datasets.

Communication/interpersonal skills

- A high level of interpersonal skills, which enable the appointee to liaise effectively with a wide range of people at a variety of levels internal and external to the Institute.
- Demonstrated ability to produce high-quality results and to meet deadlines without compromising close attention to detail and accuracy.
- Excellent oral and written communication skills.
- Well-developed time management skills, including the ability to negotiate priorities and manage conflicting demands for resources.
- Excellent planning and organisational skills, including the ability to manage a range of tasks with conflicting priorities.

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- A high level of independence and initiative, and demonstrated ability to consistently produce high-quality results.
- Demonstrated ability to maintain confidentiality and comply with privacy requirements.

Knowledge

- Demonstrated ability to use Unix-based systems, computing clusters and modern scripting/programming languages, including R.
- Design and analysis of studies involving RNA sequencing, metabolomics, and/or proteomics.
- Application or development of machine learning or deep learning methods to genomic data.

Abilities

- Proven capacity to work as a member of a team as well as autonomously without close supervision.
- Demonstrated ability to lead and contribute to high-impact research publications.
- Demonstrated ability to develop user-friendly software packages and/or new algorithms.
- Experience with analysis of data from emerging technologies such as single-cell RNA sequencing.

Summary of position

As the Baker Institute evolves to meet its changing strategic and operational needs and objectives, so will the roles required of its staff members. As such, staff should be aware that this document is not intended to represent the position that the occupant will perform in perpetuity.

This position description is intended to provide an overall view of the incumbent's role as of the date of this statement. In addition to this document, the specifics of the incumbent's role will be described in Key Performance Indicators (KPIs) developed by the incumbent and relevant supervisor as part of the Baker Institute's performance appraisal and development process.

The Baker Institute is an Equal Opportunity Employer and we encourage interest from Aboriginal and Torres Strait Islanders and members of the LGBTIQ+ community for roles within the Institute. We value diversity, inclusivity, gender equity and we promote family-friendly practices. We are a proud recipient of an inaugural Athena SWAN Bronze Award from Science in Australia Gender Equity (SAGE).