

## Position description

<b>Position title:</b>	Postdoctoral Researcher
<b>Employer:</b>	Baker Heart and Diabetes Institute
<b>Laboratory:</b>	Computational Biology and Clinical Informatics
<b>Supervisor/Manager:</b>	A/Prof David Ascher
<b>Date:</b>	May 2021

### 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 90 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 both Melbourne and 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.

### Laboratory

The Computational Biology and Clinical Informatics lab led by Prof Ascher and based at the University of Queensland is home to the Biosignatures Platform, a resource of >70 widely used programs developed by the group. Our aim is to alleviate the burden of disease using our interdisciplinary strengths in artificial intelligence, statistics, and bioscience to leverage the latest genomic/biomolecular/structural/clinical technologies. The group has access to multiple dedicated HPC and GPU clusters to drive this work.

We focus on the development of new bioinformatics tools to improve human health and guide drug development. We straddle basic and translational research in a wide variety of diseases, including cardiovascular, genetic diseases, cancer and antimicrobial resistance. By leveraging the immense opportunities of large datasets, the group focuses on:

1. Building new bioinformatics tools to leverage large biological data and then applying them to medicine and public health.
2. Developing novel statistical methods for analysing health and modern omics data.
3. Understanding the molecular consequences of genomic variants on protein folding, stability, dynamics and interactions, and understanding how these changes lead to disease states.

## Position description

### 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

- National and international travel to attend conferences and for visits to collaborators.

### 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.
- 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.
- Supervision of research students.
- Proactive attendance at team meetings and all relevant seminars and staff meetings.

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

### Meet statutory requirements of the Institute

Employees of the Baker Institute must comply with and 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
- Baker Heart and Diabetes Institute Values
- Australian Code for the Responsible Conduct of Research
- Baker Heart and Diabetes Institute Intellectual Property Agreement.

## Position description

### Requirements of position holder

#### Essential

- Research or industry experience in at least one of the following areas: data science, software development, machine learning, deep learning, computational biology, bioinformatics or biostatistics, with high competency in the statistical and computational analysis of large datasets.
- 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.
- Application or development of machine learning and/or deep learning methods to biological and medical data.
- Experience in application development for the web, both front-end and back-end and relational database development and management.
- Demonstrated ability to use Unix-based systems, HPC clusters, modern scripting/programming languages including Python and R.
- Demonstrated ability to produce high quality results and to meet deadlines without compromising close attention to detail and accuracy.
- 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.

#### Desirable

- A PhD in a quantitative discipline (such as computer science, computational biology, bioinformatics or statistics) and/or science discipline (such as biochemistry, molecular biology or genetics/genomics) with substantial computational component.
- Excellent oral and written communication skills.
- Demonstrated ability to guide and mentor research students.
- 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.
- 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.

### Summary of position

This is an exciting opportunity for **up to two Postdoctoral Researchers**.

The Researchers will be computational biologists/computer scientists who will be based at the Baker Institute in the Computational Biology and Clinical Informatics lab and supervised by Prof Ascher. These appointments will be for up to 1 year initially, with the potential to extend subject to performance and funding. Both full-time and part-time opportunities are possible.

## Position description

The lab collaborates widely within the Baker Institute and the researchers are expected to be one of the focal points for these collaborations. The projects are diverse and are likely to include analysis of medical (from patient information to medical image data) or multi-omic data (genomic, transcriptomic, metabolomic, proteomic) from both bulk or single-cell samples, thus the position would best fit someone with wide research interests and the ability to multi-task. There will be opportunities to develop new statistical and analytical methods and software to meet clinical and research challenges.

The researchers will have a strong computational background, including extensive experience with programming languages for data science and large-scale analysis (e.g. C/C++, Python and R), familiarity with High Performance Computing (HPC) environments (e.g. well-established job queueing systems and data parallelism) as well as strong background in machine learning, deep learning and data visualisation. They will also be expected to have experience in advanced statistical methods (e.g. generalised linear mixed models, multiple imputations, empirical Bayes) commonly used with omics data.

Ideally the researchers will have extensive experience in application development, including front-end (e.g. well-established frameworks such as Materialise and Bootstrap) and back-end development (e.g. including Python Flask, Javascript, RQworkers and Apache web server deployment and management) for web-based and mobile applications, relational database development and management (PostgreSQL, MariaDB and SQLite). In addition, the researchers will actively participate and drive the development of new machine learning-based methods using well established frameworks (e.g. SciKit-Learn, TensorFlow, Keras) and data visualisation approaches.

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 which the occupant will perform in perpetuity.

This position description is intended to provide an overall view of the incumbent's role as at 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).