POSITION DESCRIPTION

Position Title: Postdoctoral Research Fellow in Statistical Genomics
Organisation Unit: Institute for Molecular Bioscience
Position Number: 3036168
Type of Employment: Full time, fixed term 6 months
Classification: Academic Research Level A

THE UNIVERSITY OF QUEENSLAND

The University of Queensland (UQ) contributes positively to society by engaging in the creation, preservation, transfer and application of knowledge. UQ helps shape the future by bringing together and developing leaders in their fields to inspire the next generation and to advance ideas that benefit the world. UQ strives for the personal and professional success of its students, staff and alumni. For more than a century, we have educated and worked with outstanding people to deliver knowledge leadership for a better world.

UQ ranks in the world’s top universities, as measured by several key independent ranking, including the Performance Ranking of Scientific Papers for World Universities (43), the US News Best Global Universities Rankings (52), QS World University Rankings (47), Academic Ranking of World Universities (55), and the Times Higher Education World University Rankings (65). UQ again topped the nation in the prestigious Nature Index and our Life Sciences subject field ranking in the Academic Ranking of World Universities was the highest in Australia at 20.

UQ has an outstanding reputation for the quality of its teachers, its educational programs and employment outcomes for its students. Our students remain at the heart of what we do. The UQ experience – the UQ Advantage – is distinguished by a research enriched curriculum, international collaborations, industry engagement and opportunities that nurture and develop future leaders. UQ has a strong focus on teaching excellence, winning more national teaching excellence awards than any other in the country and attracting the majority of Queensland's highest academic achievers, as well as top interstate and overseas students.

UQ is one of Australia’s Group of Eight, a charter member of edX and a founding member of Universitas 21, an international consortium of leading research-intensive universities.

Our 50,000-plus strong student community includes more than 13,000 postgraduate scholars and more than 12,000 international students from 144 countries, adding to its proud 240,000-plus alumni. The University has about 7,000 academic and professional staff and a $1.8 billion annual operating budget. Its major campuses are at St Lucia, Gatton and Herston, in addition to teaching and research sites around Queensland and Brisbane city. The University has six Faculties and four University-level Institutes. The Institutes, funded by government and industry grants, philanthropy and commercialisation activities, have built scale and focus in research areas in neuroscience, biomolecular and biomedical sciences, sustainable minerals, bioengineering and nanotechnology, as well as social science research.
UQ has an outstanding track-record in commercialisation of our innovation with major technologies employed across the globe and integral to gross product sales of $11billion+ (see http://uniquest.com.au/our-track-record).

UQ has a rapidly growing record of attracting philanthropic support for its activities and this will be a strategic focus going forward.

Organisational Environment

The University of Queensland’s Institute for Molecular Bioscience (IMB) is a leading global life sciences research institute committed to improving quality of life through research. IMB was established in 2000 as UQ’s first research institute and is the cornerstone of one of the largest bioscience research precincts in Australia.

The Institute is home to more than 450 researchers, postgraduate students and support staff from more than 40 countries who work in partnership with their academic, industry and clinical colleagues around the world to advance knowledge in areas including pain, rare diseases, inflammation, superbug infection, cardiovascular disease, environmental research, drug discovery and development, cancer, diabetes and obesity, and reproductive health. Our mission is to drive the bioeconomy and create better health; our vision is to be a life sciences institute with global impact.

By investigating how we grow and develop at the genetic, molecular, cellular and organ levels, IMB researchers can better understand the development processes and pathways involved in human and animal health and disease. The institute also has the technical capacity to translate its new knowledge into drugs, diagnostics and technologies to more effectively prevent, detect and treat disease; and pursue opportunities in a range of biotechnology applications for health, industry and the environment.

IMB’s research outcomes are protected and commercialised by UQ-owned technology transfer group UniQuest.

Details of the research interests of the Institute may be accessed on the Institute’s website at: https://imb.uq.edu.au/

Program in Complex Trait Genomics

The Program in Complex Trait Genomics (website: cnsgenomics.com) is a joint initiative between the Institute for Molecular Biosciences (IMB) and the Queensland Brain Institute (QBI). Physically located in IMB, the broad research focus is towards a better understanding of complex traits and disorders, including psychiatric and neurological disorders. A key research strength is the development of underpinning computational and statistical analysis methods. The Program is led by an Executive comprising Prof Peter Visscher, Prof Naomi Wray and Prof Jian Yang, who were awarded a Program Grant by the Australian National Health and Medical Research Council, commencing in 2017.

Visscher, Wray and Yang and their colleagues are internationally recognised for pioneering the use of multi-marker statistical methods in human genetics and for innovative methods in the analysis of genetic and genomic data of complex traits. Their research is regularly published in top journals such as Nature, Science, Nature Genetics, Genome Research, American Journal of Human Genetics, PLoS Genetics and Molecular Psychiatry.

Research in the Program covers four major themes: Statistical Genomics, Systems Genomics, Psychiatric Genomics and Motor Neuron Disease Genomics. The Program consists of over 20 postdoctoral research staff as well as PhD students, research assistants
and visiting academics. Current research involves; the development of novel statistical genetics methodology and software; analysis of genotype, expression and methylation array data alongside DNA and RNA sequencing data; application of statistical genetic methods to infer the genetic control of diseases.

**Information for Prospective Staff**

The Institute recognises and values equity and diversity, and encourages applications from any individual who meets the requirements of this position irrespective of gender, sexuality, race, ethnicity, religion, disability, age or other protected attributes.

IMB strives to provide an inclusive working environment, and along with the University is committed to supporting staff with family and caring responsibilities by providing policies, programs and initiatives to help balance work and family responsibilities.

Specific initiatives at IMB can be found at [https://imb.uq.edu.au/about/equity-and-diversity-imb](https://imb.uq.edu.au/about/equity-and-diversity-imb)

Information about life at UQ including staff benefits, relocation and UQ campuses is available at - [http://www.uq.edu.au/current-staff/working-at-uq](http://www.uq.edu.au/current-staff/working-at-uq)

The University of Queensland [Enterprise Agreement](https://www.uq.edu.au/enterprise-agreement) outlines the position classification standards for Levels A to E.

**DUTY STATEMENT**

**Primary Purpose of Position**

The person appointed to the role will be required to work with lead researchers on the projects listed below.

1. Develop methodology to estimate genetic parameters in quantitative and disease traits from whole-genome sequence data. This project will build on recent cutting-edge research performed by PCTG for accurate estimation of genetic variance from large-scale samples. One major focus of this initiative is the development of efficient and user-friendly software, which is to be made publically available. The successful candidate will have a strong background in genetics and statistics and a proven ability to code efficiently in low-level languages.

2. Develop methods for the analyses of ‘omics data. The project will build on the large amount of ‘omics data collected by PCTG and collaborators, including genome-wide SNPs, whole-genome sequence, genome-wide gene expression, and genome-wide DNA methylation in large samples. The aim of this project is to use the integrated information from ‘omics data to identify genes responsible for the genetic etiology of complex diseases and to achieve a higher accuracy of disease risk prediction.

**Duties**

Duties and responsibilities include, but are not limited to:

**Research**

- Research in the broad field of statistical genomics, including analysis of data generated by the Program, by collaborators or in the public domain, method development and testing and writing computer code data analysis
- Dissemination of knowledge via multiple training strategies of undergraduate and postgraduate student training
- Co-supervision of undergraduate and postgraduate student projects
- Preparation of high-quality manuscripts for publication
- Record-keeping
- Collaboration with other group members, and as part of national and international consortia
- Any other duties as reasonably directed by your supervisor

Other

Ensure you are aware of and comply with legislation and University policy relevant to the duties undertaken, including but not exclusive to:

- the University’s Code of Conduct
- requirements of the Queensland occupational health and safety (OH&S) legislation and related OH&S responsibilities and procedures developed by the University or Institute/School
- the adoption of sustainable practices in all work activities and compliance with associated legislation and related University sustainability responsibilities and procedures
- requirements of the Education Services for Overseas Students Act 2000, the National Code 2007 and associated legislation, and related responsibilities and procedures developed by the University

Organisational Relationships

The position reports to Professor Jian Yang.
SELECTION CRITERIA

Essential

- PhD in statistical genetics, quantitative genetics, or other relevant areas
- Evidence of research productivity, including high-profile publications, conference presentations and external grant applications
- Knowledge or Expertise in:
  - the principles of genetics and genomics
  - the statistical programming language C/C++
  - linear model methodology
- Computing skills, including in scripting language and programming
- Ability to work collaboratively with colleagues
- Excellent attention to detail and record-keeping skills and an ability to work relatively independently with excellent organisational skills that allow for meeting deadlines.
- Self-reliance and motivation
- A high level of written, oral and interpersonal communication skills

Desirable

- Knowledge or Expertise in one or more of the following:
  - quantitative genetics models and theories
  - the development and application of multi-marker methods
  - the analysis of large-scale SNP array and whole genome sequencing data
- Past track record in genetics related research demonstrating ability to both work within teams and independently to successfully complete research projects
- Experience in supervising or co-supervising PhD students
- Experience in dissemination of knowledge in complex trait genetics to undergraduate and postgraduate students

Qualification Verification

An appointment to this position is subject to the verification of the highest academic qualification from the conferring institution.

The University of Queensland values diversity and inclusion and actively encourages applications from those who bring diversity to the University. Please refer to the University’s Diversity and Inclusion webpage (http://www.uq.edu.au/equity) for further information and points of contact if you require additional support.

This role is a full-time position; however flexible working arrangements may be negotiated.

Accessibility requirements and/or adjustments can be directed to the contact person listed in the job advertisement.