Computational Sciences Initiative Research Fellow - Bioinformatics

POSITION DESCRIPTION

Department of Microbiology and Immunology
School of Biomedical Sciences
Faculty of Medicine, Dentistry and Health Sciences

POSITION NO 0055073

CLASSIFICATION Research Officer Grade 1

SALARY $75,289 - $102,163 p.a. (Level A)

SUPERANNUATION Employer contribution of 17%

WORKING HOURS Full-time (1.0 FTE)

BASIS OF EMPLOYMENT Fixed term for 1 year

Fixed term contract type: Externally funded contract employment

OTHER BENEFITS http://about.unimelb.edu.au/careers/working/benefits

HOW TO APPLY Online applications are preferred. Go to http://about.unimelb.edu.au/careers, under ‘Job Search and Job Alerts’, select the relevant option (‘Current Staff’ or ‘Prospective Staff’), then find the position by title or number.

CONTACT FOR ENQUIRIES ONLY Dr Jan Schroeder

Email jan.schroeder@unimelb.edu.au

Please do not send your application to this contact

For information about working for the University of Melbourne, visit our website: about.unimelb.edu.au/careers
Position Summary

The Peter Doherty Institute for Infection and Immunity (the Doherty Institute) is seeking to appoint a highly motivated Research Fellow to deliver projects supervised by Dr Jan Schroeder within the Institute's Computational Sciences Initiative.

The Doherty Institute is internationally renowned for its cutting-edge studies of infectious diseases and immunity, as highlighted during the COVID-19 pandemic. To support ongoing and new research activities at the Doherty Institute, new resources are required for computational and data sciences, incorporating bioinformatics, biostatistics, infectious disease modelling and artificial intelligence. The Doherty Computational Sciences Initiative has been established to maximise the use of computational and data sciences across the Institute.

The successful candidate will be appointed within this initiative to develop bioinformatics projects to support ongoing and new research. The Research Fellow will drive computational and statistical analysis of multi-omics datasets, with a focus on single-cell RNA sequencing, applied to the areas of infectious diseases and immunology. This includes the integration of various high-dimensional data sets for analyses.

The candidate will be self-motivated and develop a strong program of collaborative projects with other researchers in the Doherty Institute. This is anticipated to generate substantial new scientific discovery in areas spanning Immunology and Microbiology pursued in the institute. It will also facilitate the development of novel approaches in bioinformatics, particularly in the application of mathematical and computational techniques to the analysis of data from new and emerging ‘omic’ technologies, including genomics, epigenomic, transcriptomics, proteomics and metabolomics. The incumbent will also develop a strong publication record, including co-authorship on primary papers in leading specialist journals, and will have opportunity to initiate novel approaches in bioinformatics.

The applicant should have a PhD in computer science, bioinformatics or another relevant discipline. Previous experience in genetics, genomics, computational biology, or bioinformatics is essential and strong programming skills are required.

The School of Biomedical Sciences and its Departments foster a values-based culture of innovation and creativity to enhance the research performance of the University and to achieve excellence in teaching and research outcomes.

We invest in developing the careers and wellbeing of our students and staff and expect all to live by our Faculty Values of:

- Collaboration
- Compassion
- Respect
- Integrity
- Accountability

1. Key Responsibilities

1.1 RESEARCH AND RESEARCH TRAINING

- Assist the development of a strong program of collaborative research with other groups in the Doherty Institute in bioinformatics
• Develop new methods and software packages for analysis of genomic, transcriptomic, proteomic, metabolomic or epigenomic sequence data where appropriate
• Use best-practice pipelines for analysis of genomic, transcriptomic, proteomic, metabolomic and epigenomics data generated by collaborators. This includes: integration of high-dimensional data sets, best-practice programming practices, establishment of code-review activities, and appropriate version control
• Be responsible for qualitative and statistical analysis of research data and to communicate this information to collaborators
• Maintain accurate and detailed records of computational analysis carried out
• Deliver analyses in accordance with timelines and milestones based on goals of the research program
• Oversee training of staff and students in research methods as required
• Contribute to development of competitive grant applications by collaborating research groups
• Perform other duties as requested by the appointee's immediate supervisor

1.2 ENGAGEMENT
• Contribute to authorship in peer-reviewed journal publications by providing intellectual input, writing experimental results, and assisting with data presentation and access
• Communicate results to collaborating groups
• Assist collaborators with experimental design where appropriate, particularly in relation to adequate experimental design to enable downstream bioinformatics analyses
• Attend and contribute to lab meetings of collaborators
• Set appropriate expectations with collaborating research groups
• Present experimental results at local, national and international forums
• Attend and actively participate in departmental seminars, meetings and/or committee memberships

1.3 TEACHING AND LEARNING
• Contribute to training, scientific mentoring and supervision of students where appropriate
• Contribute to relevant journal clubs

1.4 SERVICE AND LEADERSHIP
• Undertake other duties as requested by the supervisor and the Head of the Department
• Occupational Health and Safety (OH&S) and Environmental Health and Safety (EH&S) responsibilities as outlined in section 5.

2. Selection Criteria

2.1 ESSENTIAL
• Completion of a PhD in bioinformatics, statistics, computer science or a related field
• Demonstrated ability to communicate across teams and disciplines (biology and computer science), work as a member of a research team, and interact in a courteous, collaborative and effective manner with academic, administrative and support staff

• Experience in running bioinformatics workflows on high-performance computing clusters

• Experience in analysis of high-dimensional datasets, ideally those arising from high-throughput molecular assays

• Strong organisation skills and accurate recording and analysis of data generated from research undertaken

• Excellent verbal and written communication skills, demonstrated by presentation of research results at internal forums, conferences, and through manuscript submissions, inclusive of manuscripts posted to preprint servers

• Demonstrated experience in using initiative, working with minimal supervision and ability to prioritise tasks to achieve project objectives within timelines

2.2 DESIRABLE

• Post-doctoral research experience in bioinformatics

• Experience in analysing single cell RNAseq datasets

• Experience in integrating different high-dimensional datasets and multi-omics analyses

• Experience in developing bioinformatics pipelines and/or software packages

• Experience in cloud computing

• Experience in machine learning or statistics

• Fundamental level of understanding and prior exposure to concepts in immunology and/or microbiology

• Demonstrated experience in supervising students or research staff

2.3 SPECIAL REQUIREMENTS

• N/A

3. Equal Opportunity, Diversity and Inclusion

The University is an equal opportunity employer and is committed to providing a workplace free from all forms of unlawful discrimination, harassment, bullying, vilification and victimisation. The University makes decisions on employment, promotion and reward on the basis of merit.

The University is committed to all aspects of equal opportunity, diversity and inclusion in the workplace and to providing all staff, students, contractors, honorary appointees, volunteers and visitors with a safe, respectful and rewarding environment free from all forms of unlawful discrimination, harassment, vilification and victimisation. This commitment is set out in the University’s People Strategy 2015-2020 and policies that address diversity and inclusion, equal employment opportunity, discrimination, sexual harassment, bullying and appropriate workplace behaviour. All staff are required to comply with all University policies.

The University values diversity because we recognise that the differences in our people’s age, race, ethnicity, culture, gender, nationality, sexual orientation, physical ability and
background bring richness to our work environment. Consequently, the People Strategy sets out the strategic aim to drive diversity and inclusion across the University to create an environment where the compounding benefits of a diverse workforce are recognised as vital in our continuous desire to service for excellence and reach the targets of Growing Esteem.

4. Occupational Health and Safety (OHS)

All staff are required to take reasonable care for their own health and safety and that of other personnel who may be affected by their conduct.

OHS responsibilities applicable to positions are published at:
http://safety.unimelb.edu.au/topics/responsibilities/

These include general staff responsibilities and those additional responsibilities that apply for Managers and Supervisors and other Personnel.

5. Other Information

5.1 DEPARTMENT OF MICROBIOLOGY & IMMUNOLOGY

The Department of Microbiology & Immunology is one of the departments within the School of Biomedical Sciences in the Faculty of Medicine, Dentistry and Health Sciences. Further information is available at http://www.microbiol.unimelb.edu.au/ and http://bsac.unimelb.edu.au/.

5.2 THE PETER DOHERTY INSTITUTE FOR INFECTION AND IMMUNITY

The Doherty Institute is a world-class institute combining research in infectious disease and immunity with teaching excellence, reference laboratory diagnostic services, epidemiology and clinical services. It is a joint venture between the University of Melbourne and Melbourne Health.

A new, purpose-built building for the Doherty Institute was completed in early 2014. The members of the Doherty include the Department of Microbiology and Immunology and the Microbiological Diagnostic Unit Public Health Laboratory of the University of Melbourne, the Victorian Nosocomial Infection Surveillance System, The Victorian Infectious Diseases Reference Laboratory, The Victorian Infectious Diseases Service, and The World Health Organisation Collaborating Centre for Reference and Research on Influenza.

Further information about the Doherty Institute is available at:
http://www.doherty.unimelb.edu.au

5.3 SCHOOL OF BIOMEDICAL SCIENCES

https://biomedicalsciences.unimelb.edu.au/

The School of Biomedical Sciences is one of the most prominent and diverse Schools in the Faculty of Medicine, Dentistry & Health Sciences and is comprised of three
Departments - Anatomy and Physiology, Biochemistry and Pharmacology, and Microbiology and Immunology.

The School is situated on the University’s Parkville Campus and is part of the largest biomedical precinct in the southern hemisphere, providing access to world class research facilities for staff and students.

The School fosters a values-based culture of innovation and creativity to achieve research and teaching excellence.

5.4 FACULTY OF MEDICINE, DENTISTRY AND HEALTH SCIENCES
www.mdhs.unimelb.edu.au

The Faculty of Medicine, Dentistry & Health Sciences has an enviable research record and is the University of Melbourne’s largest faculty in terms of management of financial resources, employment of academic and professional staff, teaching of undergraduate and postgraduate (including research higher degree) students and the conduct of basic and applied research. The Faculty’s annual revenue is $628m with approximately 55% of this income related to research activities.

The Faculty has a student teaching load in excess of 8,500 equivalent full-time students including more than 1,300 research higher degree students. The Faculty has approximately 2,195 staff comprising 642 professional staff and 1,553 research and teaching staff.

The Faculty has appointed Australia’s first Associate Dean (Indigenous Development) to lead the development and implementation of the Faculty’s Reconciliation Action Plan (RAP), which will be aligned with the broader University – wide plan. To enable the Faculty to improve its Indigenous expertise knowledge base, the Faculty’s RAP will address Indigenous employment, Indigenous student recruitment and retention, Indigenous cultural recognition and building partnerships with the Indigenous community as key areas of development.

5.5 THE UNIVERSITY OF MELBOURNE

Established in 1853, the University of Melbourne is a leading international university with a tradition of excellence in teaching and research. The main campus in Parkville is recognised as the hub of Australia’s premier knowledge precinct comprising eight hospitals, many leading research institutes and a wide-range of knowledge-based industries. With outstanding performance in international rankings, the University is at the forefront of higher education in the Asia-Pacific region and the world.

The University employs people of outstanding calibre and offers a unique environment where staff are valued and rewarded.

Further information about working at The University of Melbourne is available at http://about.unimelb.edu.au/careers.

5.6 GROWING ESTEEM, THE MELBOURNE CURRICULUM AND RESEARCH AT MELBOURNE: ENSURING EXCELLENCE AND IMPACT TO 2025

Growing Esteem describes Melbourne’s strategy to achieve its aspiration to be a public-spirited and internationally-engaged institution, highly regarded for making distinctive
contributions to society in research and research training, learning and teaching, and engagement. http://about.unimelb.edu.au/strategy-and-leadership

The University is at the forefront of Australia’s changing higher education system and offers a distinctive model of education known collectively as the Melbourne Curriculum. The new educational model, designed for an outstanding experience for all students, is based on six broad undergraduate programs followed by a graduate professional degree, research higher degree or entry directly into employment. The emphasis on academic breadth as well as disciplinary depth in the new degrees ensures that graduates will have the capacity to succeed in a world where knowledge boundaries are shifting and reforming to create new frontiers and challenges. In moving to the new model, the University is also aligning itself with the best of emerging European and Asian practice and well-established North American traditions.

The University’s global aspirations seek to make significant contributions to major social, economic and environmental challenges. Accordingly, the University’s research strategy Research at Melbourne: Ensuring Excellence and Impact to 2025 aspires to a significant advancement in the excellence and impact of its research outputs.

http://research.unimelb.edu.au/our-research/research-at-melbourne

The strategy recognises that as a public-spirited, research-intensive institution of the future, the University must strive to make a tangible impact in Australia and the world, working across disciplinary and sectoral boundaries and building deeper and more substantive engagement with industry, collaborators and partners. While cultivating the fundamental enabling disciplines through investigator-driven research, the University has adopted three grand challenges aspiring to solve some of the most difficult problems facing our world in the next century. These Grand Challenges include:

- Understanding our place and purpose – The place and purpose grand challenge centres on understanding all aspects of our national identity, with a focus on Australia’s ‘place’ in the Asia-Pacific region and the world, and on our ‘purpose’ or mission to improve all dimensions of the human condition through our research.

- Fostering health and wellbeing – The health and wellbeing grand challenge focuses on building the scale and breadth of our capabilities in population and global health; on harnessing our contribution to the ‘convergence revolution’ of biomedical and health research, bringing together the life sciences, engineering and the physical sciences; and on addressing the physical, mental and social aspects of wellbeing by looking beyond the traditional boundaries of biomedicine.

- Supporting sustainability and resilience – The sustainability and resilience grand challenge addresses the critical issues of climate change, water and food security, sustainable energy and designing resilient cities and regions. In addition to the technical aspects, this grand challenge considers the physical and social functioning of cities, connecting physical phenomena with lessons from our past, and the implications of the technical solutions for economies, living patterns and behaviours.

Essential to tackling these challenges, an outstanding faculty, high performing students, wide collaboration including internationally and deep partnerships with external parties form central components of Research at Melbourne: Ensuring Excellence and Impact to 2025.

5.7 GOVERNANCE

The Vice Chancellor is the Chief Executive Officer of the University and responsible to Council for the good management of the University.
Comprehensive information about the University of Melbourne and its governance structure is available at http://www.unimelb.edu.au/governance