THE UNIVERSITY OF MELBOURNE

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

Bioinformatician / Software Engineer

POSITION NO	0056958
CLASSIFICATION	Level A
SALARY	$97,558 - $104,717 p.a.
SUPERANNUATION	Employer contribution of 17%
WORKING HOURS	Full-time
BASIS OF EMPLOYMENT	Fixed term for 24 months
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, select the relevant option ('Current Staff' or 'Prospective Staff'), then find the position by title or number.
CONTACT FOR ENQUIRIES ONLY	Professor Lachlan Coin Tel: +61 3 8344 3831 Email: lachlan.coin@unimelb.edu.au *Please do not send your application to this contact*

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about.unimelb.edu.au/careers

Position Summary

The position is supported by an MRFF Pathogen Genomics Grant: *H2Seq: Viral genomics for public health interventions in HIV and HCV* which aims to use of molecular epidemiology to inform public health interventions to control HIV and HCV transmissions. This collaborative effort includes researchers, clinicians, policy makers, and community stakeholders from across the country. This position will be working in collaboration with researchers from the Microbiological Diagnostic Unit Public Health Laboratory at the Doherty Institute and the Kirby Institute, UNSW.

The Microbiological Diagnostic Unit Public Health Laboratory (MDU PHL) provides reference laboratory services for the state, national and regional public health community. Working closely with public health authorities and diagnostic laboratories MDU PHL conducts and advises on the detection and characterisation of bacterial, viral and fungal pathogens for the identification, surveillance and control of infectious diseases, and is a leader in the implementation of public health genomics globally. MDU PHL is committed to remaining on the forefront of public health and microbiological practice, leading and participating in translational research activities, national and international collaborations and training programs.

The Kirby Institute is a leading global research institute dedicated to the prevention and treatment of infectious diseases. Established in 1986 in response to the then emerging HIV epidemic, the Kirby Institute now contributes to knowledge on a broad range of diseases, including viral hepatitis and sexually transmissible infections. Focussing on the coordination of national surveillance programs, population health and epidemiological research, clinical and behavioural research and clinical trials, the Kirby Institute's research projects are conducted in partnership with communities most affected by epidemics.

The selected candidate will primarily be responsible for implementing a secure cloud-based system for upload, management and analysis of Hepatitis C (HCV) and HIV molecular data and selected sample meta-data obtained from public health laboratories (PHLs) in Australia to enable a rapid public health response. In addition, the candidate will be responsible for developing approaches to integrate with traditional epidemological data. The candidate may also contribute to implementation of visualisation tools on this platform. One possible solution will be based on adaption of the AusTrakka system which has been utilised extensively for SARS-Cov-2 data across jurisdictions in close to real-time.

1. *Key Responsibilities*

- Engage and consult with users including bioinformaticians, genomics epidemiologists and government across jurisdictions to develop the molecular epidemiological data platform for HIV and HCV in the H2Seq project

- Investigate suitability of existing pathogen molecular epidemiological platforms, such as AusTrakka, for adaption to fulfill H2Seq program requirements.

- Engage with bioinformaticians and genomic epidemiologists to develop and implement processes for managing HIV and HCV genomics data on this platform

- Interface with members of the AusTrakka development team to implement best-practice in development of a cloud-based data management platform and associated web-based visualisation tools.

- Interface with other bioinformatics and phylogenetics researchers working on H2Seq project, and assist these researchers in implementing phylogenetic workflows for analysis of molecular data on H2Seq platform.

- Develop and maintain genomics visualisation solutions for HIV and HCV on the H2Seq molecular epidemiology platform

- Develop user and developer documentation for the H2seq platform

- Conduct training and develop training tools to assist and build capacity in using the H2Seq platform

- Ensure we meet our security requirements

- Maintain and uphold security, and privacy and confidentiality standards

- 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

- A Bachelor or Postgraduate Degree in Bioinformatics, Computer Science, or Software Engineering, (or equivalent)

- Experience in working with genomics and/or clinical data

- Experience in managing bioinformatics workflows using pipeline frameworks, particularly NextFlow

- Demonstrable understanding of database concepts

- Demonstrable working knowledge of the Unix/linux environment

- Demonstrable working knowledge of Git and GitHub

- Strong communication skills and the ability to communicate effectively with a variety of stakeholders

- A strong team player who likes to listen, help others and collaborate with team members

- Be able to sign a non-disclosure agreement, and pass security checks

2.2 DESIRABLE

- Familiarity with Azure or other commercial computing clouds

- Familiarity with Docker and/or Singluarity

- Experience in developing front-end applications in Javascript/Typescript

- Experience in working with .NET, particularly application development in .NET core

- Experience working in C#

- Experience in Python

- Knowledge of SQL

- Experience in developing data visualisation approaches, particularly in genomics

- Familiarity with pathogen genomics

2.3   SPECIAL REQUIREMENTS

- Sign and abide by confidentiality and information use agreement
- Flexibility in work patterns in the face of pressing needs and requirement to perform out of hours work when the need arises.
- Short-term interstate or international travel may be required
- Undergo police and security checks as a condition of employment with the University of Melbourne
- Vaccination against relevant infectious diseases is recommended and provided.

3. Job Complexity, Skills, Knowledge

3.1   LEVEL OF SUPERVISION / INDEPENDENCE

The incumbent will work collaboratively with other bioinformaticians and staff from other sections. They will have responsibility for developing and maintaining CI/CD pipelines in Azure Pipelines for deployment of Bioinformatics tools and web apps in relation to the H2Seq project. Within existing protocols and guidelines, the incumbent will have general independence in the application of best practices in deploying, testing, monitoring, and maintaining, all elements of the platform on the Azure cloud.

3.2   PROBLEM SOLVING AND JUDGEMENT

The position will be required to exercise judgement in assisting the development and maintenance of the platform and to test and trouble shoot in the event of programming failure or unexpected result. This position is expected to keep abreast of new pipeline development methods and may be expected to develop and implement new protocols. The incumbent will be required to take corrective action, where possible, in the event of development issues and conduct systems recovery where needed.

3.3   PROFESSIONAL AND ORGANISATIONAL KNOWLEDGE

The position requires a Bachelors Degree in Computer Science, Software Engineering, IT (or equivalent). Central to this knowledge acquisition will be a parallel understanding of good systems practice, linking theoretical knowledge with practical capability. The incumbent is expected to understand and adhere to MDU PHL Standard Operating Procedures and other relevant protocols, and perform in a professional environment that is subject to independent audit practices. Active membership in relevant professional organisations is desirable.

3.4   RESOURCE MANAGEMENT

The position will provide status reports on the progress of activities to the Lead Developer and others, as directed.

3.5   BREADTH OF THE POSITION

The position covers the Bioinformatics Section and any other bioinformatics activities performed at MDU PHL. The position will also require participation in evaluations, acquisition

of competence in new procedures and maintaining quality systems and documentation that will meet third party audit requirements.

4. 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 Advancing Melbourne strategy 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 strive for excellence and reach the targets of Growing Esteem.

5. 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/people/community/responsibilities-of-personnel

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

6. Other Information

6.1   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/.

6.2   THE MICROBIOLOGICAL DIAGNOSTIC UNIT PUBLIC HEALTH LABORATORY

The Microbiological Diagnostic Unit (MDU PHL) is a public health laboratory for the Department of Health, Victoria situated within the Department of Microbiology and Immunology at the University of Melbourne. The MDU has been established for over 100 years on External State Government funding.

The MDU PHL is concerned with provision of services for the laboratory diagnosis of diseases of public health importance, the application of typing methods, the use of computer-based data collection systems for epidemiological purposes, and provision of expert opinion. In addition, the Unit undertakes the microbiological examination of foods and water for compliance with regulatory and voluntary codes and standards. MDU PHL is NATA accredited for Biological testing, including Forensic Operations, NATA/RCPA accredited for Medical testing and performs selected veterinary testing.

6.3   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 Nososcomial 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

6.4   FACULTY OF MEDICINE, DENTISTRY AND HEALTH SCIENCES

The Faculty of Medicine, Dentistry and Health Sciences (MDHS) plays a vital role in the delivery of the University of Melbourne's Strategic Plan 2015-2020: Growing Esteem by providing current and future generations with education and research equal to the best in the world. It is Australia's largest and leading biomedical research faculty. It employs more than 1,700 members of staff, has more than 8,000 students, and total revenue of $607 million for 2015. Reflecting the complexity of today's global health landscape, the Faculty is made up of six different Schools and four Strategic Research Initiatives, and draws together all areas of human health, ranging from the most basic to the most applied areas of research. The Faculty contributes close to 50 per cent of research conducted at the University.

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.

Further information about the Faculty is available at:

 http://www.mdhs.unimelb.edu.au

6.5   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.

6.6   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.

6.7 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