

POSITION DESCRIPTION

Department of Microbiology and Immunology
School of Biomedical Sciences

Faculty of Medicine, Dentistry and Health Sciences

Bioinformatician (COVID-19) – MDU PHL

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| Position No | 0055725 |
| Classification | Academic Specialist Level A  |
| Salary | $75,289 - $102,163 |
| Superannuation | Employer contribution of 17% |
| WORKING HOURS | Full-time  |
| BASIS OF EMPLOYMENT | Fixed term for 2 yearsFixed 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](http://hr.unimelb.edu.au/careers), select the relevant option (‘Current Staff’ or ‘Prospective Staff’), then find the position by title or number. |
| contactFor enquiries only | A/Prof Torsten SeemannEmail tseemann@unimelb.edu.auPlease 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 Microbiological Diagnostic Unit Public Health Laboratory (MDU PHL) provides a comprehensive microbiological investigation and advisory service for the public health community. This is supported by strong molecular biology, a substantial bacterial culture collection, and, expertise in infectious disease epidemiology and infection control. One of the major focuses of MDU PHL is transitioning existing technologies onto genomic platforms. We are committed to providing an efficient, effective, legally robust and timely public health laboratory service in the biological, medical and veterinary fields, including forensic operations. These activities incorporate the principles of ISO/IEC 17025, ISO 15189, and ISO 14001 in a Quarantine Approved Premises fulfilling the requirements of The National Health Security Act.

This Bioinformatics position sits within the MDU Bioinformatics team and provides support to the section leader in the analysis of sequence data across multiple disciplines at the MDU PHL. The appointee will have the opportunity to join a productive Bioinformatics team in a supportive and exciting work environment focused on MDU PHLs COVID-19 public health pathogen genomics activities.

The position of Bioinformatician (COVID-19) will focus on the bioinformatic analysis of pathogen genomics data for MDU PHL, leading and supporting COVID-19 translational research activities and maintenance or modification of existing pipelines, for public health service delivery and research outputs. This position involves working closely with bioinformaticians, phylodynamic modellers and researchers across the Doherty Institute, and laboratory scientists and epidemiologists at MDU PHL.

In addition to service provision, there will be opportunity for involvement in research activities, such as contributing or leading peer-reviewed articles and conference presentations. A desire to learn and implement new techniques is essential. The position, together with senior bioinformaticians, has the added duties of providing support to the Section Leader and deputising in their absence. The individual will be skilled in Python and/or R and be comfortable in the organization and analysis of genome sequence data in a Unix software environment. The individual should have strong troubleshooting skills, have an interest in microbial genomics and public health, be a team player, and be prepared to work in across research and implementation.

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

# Key Responsibilities

* Contribute to MDU PHLs COVID-19 bioinformatics capacity and support to translational research programs such as the Victorian Department of Health Innovative Testing Program.
* Work collaboratively with research, public health and clinical partners to design research projects to better understand the prevalence, transmission and public health and clinical impact of COVID-19.
* Work collaboratively with public health laboratory staff to ensure research outcomes inform enhanced public health laboratory activities
* Prepare written and oral reports for reporting to public health, clinical and regional partners, and for peer-reviewed research publications.
* Perform in-depth bioinformatics analysis in collaboration with other sections of MDU PHL and broadly across the Peter Doherty Institute, and contribute to the development and implementation of COVID-19 research programs.
* Independently plan and carry out routine and *ad hoc* data analyses required for the fulfilment of MDU PHL’s obligations to the Department of Health and Human Services of Victoria, and other external clients
* Under the supervision of the Section Leader and Director, engage, collaborate and consult with other sections of MDU PHL and groups within the Peter Doherty Institute and externally including government, institutional and industry partners where appropriate.
* Develop and maintain a continued understanding in the fields of pathogen genomics and bioinformatics, including phylogenetic analysis
* Independently apply theoretical principles and techniques to solve problems in consultation with the Section Leader, other senior staff and provide possible solutions and remedies for test failures
* Ensure all work is completed in a timely manner and meets required turnaround times
* Perform other duties as requested by the appointee’s immediate supervisors
* Actively participate in the Quality system utilised at MDU PHL including preparation of new SOPs and ensuring current practices are reflective of SOPs.
* Observe confidentiality and safety precautions and procedures.
* Undertake responsibility for select MDU PHL-wide activities or other tasks as required by the Principal Scientist, Section Leader, and/or the Director/Deputy Director.
* Meet and maintain Occupational Health and Safety (OH&S) and Environmental Health and Safety (EH&S) responsibilities as outlined in section 5 below

# Selection Criteria

## Essential

* A postgraduate qualification in Bioinformatics, Computational Biology or a related field (either MSc or PhD)
* Demonstrable working knowledge of Python and/or R
* Demonstrable experience working in a UNIX environment
* Good knowledge of microbiology and/or pathogen genomics
* Excellent troubleshooting skills
* Demonstrable understanding and experience working with standard bioinformatics tools such as samtools, bwa, bedtools, blast, clustalo and EMBOSS, using large genome datasets including capacity to manage and troubleshoot on multiple platforms
* Demonstrated leadership and teamwork skills and ability to manage workgroups or projects
* Strong interpersonal and written and oral communication skills and demonstrated ability to interact with and work effectively as part of a team. Ability to engage with government, industry or other professional colleagues.
* Superior time management, analytical and organisational skills allowing prioritisation, problem solving and timely, accurate completion of tasks
* Capability to record scientific data and results of analyses electronic forms
* Ability to adapt to periodic pressures of the workplace, where large numbers of analyses need to be performed rapidly with a high degree of analytical precision
* An understanding of the need to commit to a workplace culture that is cognisant of the on-going requirements of third-party audits. Commitment to observe MDU PHL’s: confidentiality, safety and security requirements, procedures, and ethos
* Demonstrate a flexible attitude to work, as tasks vary

## Desirable

* Track record contributing to peer-reviewed publications and oral presentations.
* Experience working with Next Generation Sequencing data and phylogenomics, preferably in a public health setting
* Experience working with Nanopore data
* Experience with workflow engines, in particular, Snakemake or Nextflow
* Experience with container technologies, in particular, Singularity
* Strong analytical and statistical skills
* A strong interest in microbial genomics as applied to public health
* Relevant knowledge of microbiological standards including NATA, DA (Quarantine Accredited Premises), DoH
* Ability to design and validate bioinformatics pipelines, demonstrating initiative and the ability to work in a self-directed manner

## Special Requirements

* Sign and abide by a confidentiality 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 a police and security check as part of the condition of employment with the University of Melbourne
* Vaccination against relevant infectious diseases is recommended and provided

# 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 deserve to service for excellence and reach the targets of Growing Esteem.

# 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.

# Other Information

## 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/>.

## 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, 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.

## 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](http://www.doherty.unimelb.edu.au/)

## School of biomedical sciences

[www.biomedicalsciences.unimelb.edu.au](http://www.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.

## Faculty of Medicine, Dentistry and Health Sciences

[www.mdhs.unimelb.edu.au](http://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.

## 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>.

## 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.

## 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>