Bioinformatician – MDU PHL

POSITION DESCRIPTION

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

Bioinformatician – MDU PHL

POSITION NO 0043906
CLASSIFICATION UOM 7
SALARY $102,338 – $110,780 p.a.
SUPERANNUATION Employer contribution of 17%
WORKING HOURS Full-time
BASIS OF EMPLOYMENT Fixed term position for 2 years
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 Kristy Horan
Email kristy.horan@unimelb.edu.au
Please do not send your application to this contact

For information about working for the University of Melbourne, visit our websites:
about.unimelb.edu.au/careers
Acknowledgement of Country

The University of Melbourne acknowledges the Traditional Owners of the unceded land on which we work, learn and live: the Wurundjeri Woi Wurrung and Bunurong peoples (Burnley, Fishermans Bend, Parkville, Southbank and Werribee campuses), the Yorta Yorta Nation (Dookie and Shepparton campuses), and the Dja Dja Wurrung people (Creswick campus).

The University also acknowledges and is grateful to the Traditional Owners, Elders and Knowledge Holders of all Indigenous nations and clans who have been instrumental in our reconciliation journey.

We recognise the unique place held by Aboriginal and Torres Strait Islander peoples as the original owners and custodians of the lands and waterways across the Australian continent, with histories of continuous connection dating back more than 60,000 years. We also acknowledge their enduring cultural practices of caring for Country.

We pay respect to Elders past, present and future, and acknowledge the importance of Indigenous knowledge in the Academy. As a community of researchers, teachers, professional staff and students we are privileged to work and learn every day with Indigenous colleagues and partners.

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 to work to develop and implement bioinformatics tools for use in an accredited public health laboratory and analyse sequence data across multiple disciplines. The appointee will have the opportunity to join a productive Bioinformatics team in a supportive and exciting work environment helping MDU PHL implement its transition to a genomics workflow. The appointee will help MDU PHL have a positive impact in reducing the time it takes to detect microbial pathogen outbreaks, thus reducing the disease burden in society. In addition, the successful applicant will contribute towards the Australian Pathogen Genomics (AusPathoGen) Program, a large scale integrated public health pathogen genomics research program seeking to demonstrate utility, cost-effectiveness, and capacity for translation of genomics into public health nationally.

The position of Bioinformatician will focus on the development, evaluation and/or implementation of new bioinformatics pipelines, and maintenance or modification of existing pipelines, for public health service delivery. This position involves working closely with laboratory scientists and epidemiologists at MDU PHL, and public health teams. The individual will be skilled in Python and be comfortable in the organisation and analysis of genome sequence data in a Unix OS 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 a service delivery environment. In addition to service provision, there will be opportunity for professional development and involvement in research activities.
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**

- Develop, evaluate and implement new bioinformatics pipelines for routine genomics based public health service delivery, including validation and documentation of novel pipelines for NATA accreditation. 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.

- Participate in research and development of processes as part of associated research programs, including the AusPathogen Genomics program.

- 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 Bioinformatics Section Leader, other senior staff and provide possible solutions and remedies for test failures.

- 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 of Victoria, and other external clients.

- 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.
2. Selection Criteria

2.1 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.
- Ability to design and validate bioinformatics pipelines, demonstrating initiative and the ability to work in a self-directed manner.
- 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, 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.

2.2 DESIRABLE

- Experience working with Next Generation Sequencing data and phylogenomics, preferably in a public health setting.
- Experience working with Nanopore data.
- Experience with cg/wgMLST.
- Experience with workflow engines, in particular, 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.
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.
- This position requires the incumbent to hold a current and valid Working with Children Check.

3. **Job Complexity, Skills, Knowledge**

3.1 **LEVEL OF SUPERVISION / INDEPENDENCE**

The Bioinformatician will report to the Section Leader (Bioinformatics) and work collaboratively with other bioinformaticians and staff from other sections. The bioinformatician will also be required to design, develop and validate new pipelines under broad direction by the Section Head or Lead Bioinformatician.

They will have responsibility for maintaining appropriate standards of analysis, data management and reporting in a hands-on-role. Within existing protocols and guidelines, the incumbent will have general independence in the application of best practices in data analysis and in day-to-day decision making.

The position will report to the Section Leader with oversight by the Director and Deputy Director. The incumbent is responsible for the effective execution of data analysis and the accurate recording of results and control data that provide documentary evidence of the completion of a valid result. Within required guidelines, the incumbent will have independence in the judicious application of best practices of analysis of data in day to day decision making.

3.2 **PROBLEM SOLVING AND JUDGEMENT**

The position will be required to apply the correct standard operating procedure (SOP) to the data and will be expected to refer to relevant SOP’s or databases to determine guiding principles, as required, to resolve any uncertainty that circumstances may present. In the event that existing SOP’s do not provide sufficient guidance to the circumstance in question the incumbent will seek further professional guidance from supervising staff. In these circumstances, problems relating to test integrity and safety matters should be discussed immediately with the Section Head. The incumbent will be required to take corrective action, where possible, in the event of malfunction and advise senior staff accordingly.

3.3 **PROFESSIONAL AND ORGANISATIONAL KNOWLEDGE**

The position requires a postgraduate qualification in Bioinformatics, Computational Biology or other relevant field. Additional knowledge acquisition from both specific workplace training and practical experience in Bioinformatics is essential. Central to this
knowledge acquisition should be a parallel understanding of good practice, linking theoretical knowledge with practical capability. The incumbent is expected to understand and adhere to MDU Standard Operating Procedures and perform in a professional environment that is subject to independent audit practices.

3.4 RESOURCE MANAGEMENT

The incumbent will manage the daily processing of submitted data and associated documentation and provide status reports on the progress of analyses to the Section Leader.

3.5 BREADTH OF THE POSITION

The position covers the laboratory wide activities of the MDU. More specifically this involves the performance of data analysis, participation in evaluations of new procedures and maintaining quality systems and documentation that will meet third party audit requirements of various regulatory authorities as required.

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 addresses 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 Advancing Melbourne.

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:

https://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, 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
doherty.edu.au

The Doherty Institute is a world-class institute combining research, teaching, public health and reference laboratory services, diagnostic services and clinical care into infectious diseases and immunity. It was officially opened in September 2014 and is a joint venture between the University of Melbourne and Melbourne Health. The Doherty Institute has a major focus on diseases that pose serious public and global health threats such as influenza, tuberculosis, HIV, viral hepatitis, Ebola and drug resistant bacteria. The Doherty’s activities are multi-disciplinary and cross-sectoral, placing great emphasis on translational research and improving clinical outcomes. Teams of scientists, clinicians and epidemiologists collaborate on a wide spectrum of activities - from basic immunology and discovery research, to the development of new vaccines and new preventative and treatment methods, to surveillance and investigation of disease outbreaks.

6.4 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.

6.5 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.

6.6 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.

6.7 ADVANCING MELBOURNE

The University’s strategic direction is grounded in its purpose. While its expression may change, our purpose is enduring: to benefit society through the transformative impact of education and research. Together, the vision and purpose inform the focus and scale of our aspirations for the coming decade.
Advancing Melbourne reflects the University’s commitment to its people, its place, and its partners. Our aspiration for 2030 is to be known as a world-leading and globally connected Australian university, with our students at the heart of everything we do.

We will offer students a distinctive and outstanding education and experience, preparing them for success as leaders, change agents and global citizens.

We will be recognised locally and globally for our leadership on matters of national and global importance, through outstanding research and scholarship and a commitment to collaboration.

We will be empowered by our sense of place and connections with communities. We will take opportunities to advance both the University and the City of Melbourne in close collaboration and synergy.

We will deliver this through building a brilliant, diverse and vibrant University community, with strong connections to those we serve.

The means for achieving these goals include the development of the University of Melbourne’s academic and professional staff and the capabilities needed to support a modern, world-class university. Those means require a commitment to ongoing financial sustainability and an ambitious infrastructure program which will reshape the campus and our contribution to the communities we engage with. This strategy, and the priorities proposed, is centred around five intersecting themes: place, community, education, discovery and global.

6.8 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