



POSITION DESCRIPTION

Department of Microbiology and Immunology
Microbiological Diagnostic Unit (Public Health Laboratory)
Faculty of Medicine, Dentistry and Health Sciences

Software (Python) Developer–MDU(PHL)

POSITION NO	0044581
CLASSIFICATION	PSC 7
SALARY	\$88,171 - \$95,444 p.a.
SUPERANNUATION	Employer contribution of 9.5%
WORKING HOURS	Full-time
BASIS OF EMPLOYMENT	Fixed-term for 12 months 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 , select the relevant option (‘Current Staff’ or ‘Prospective Staff’), then find the position by title or number.
CONTACT FOR ENQUIRIES ONLY	Anders Goncalves Da Silva Tel +61 3 8344 5701 Email anders.goncalvez@unimelb.edu.au <i>Please do not send your application to this contact</i>

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 microbiological investigation, detection, enumeration, reference characterisation, challenge testing and advisory service for the public health community. This is supported by strong molecular biology, a substantial culture collection, and, expertise in infectious disease epidemiology and infection control. 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.

The MDU's Bioinformatics Team is composed of a group of people from various backgrounds (biology, computer science, medical doctors) with an interest in clinical microbiology, and computational biology. Our role is to support MDUs transition to a genomics data workflow through development of software tools and pipelines that are long-term maintainable, scalable, testable, and verifiable for accreditation purposes. The tools will form the basis of MDUs rapid respond to public health through analysis of genomic data programme. As part of our responsibilities, we administer a small Linux cluster for all our internal analyses. This section also provides support to MDU in archiving, processing, and quality controlling all DNA sequence data produced by MDU.

The Software Developer, reporting directly to the MDU Director, will assist in developing maintainable, and scalable, tools for quality control and analysis of genomic data for public health microbiology. Code will be primarily written in Python3 following PEP8 guidelines, using Git and TravisCI for code version control and continuous integration. Tools will be written in a test-driven development (TDD) environment, with tool validation for NATA accreditation, reporting, and traceability, build in. Where convenient and suitable, code will be refactored based on code developed by others in order to meet quality, style, and NATA requirements. Tools will be modules in a larger platform for delivering actionable information to public health officials. Data quality and data security are paramount. This position will also assist with network and server administration tasks.

1. Key Responsibilities

- ▶ Develop maintainable and scalable Python code for production environment
- ▶ Refactor code to meet production and regulatory NATA requirements
- ▶ Automate and document workflows, and tool validation process for NATA accreditation
- ▶ Assist the MDU Bioinformatics Team to implement development/production environments for our Bioinformatic tools
- ▶ Assist the MDU Bioinformatics Team with the identification and development of information system needs for MDU genomics pipeline and ensuring that training and development needs are identified and supported.
- ▶ Effectively communicate to the MDU Director potential problems in the workplace, that will directly or indirectly impact adversely on service delivery and the scientific reputation of MDU.
- ▶ Assist the MDU Bioinformatics Team in developing a positive, customer focused, laboratory support focused culture which staff feel supported to utilise and further develop their skills and expertise.

- ▶ Maintain existing MDU database systems including prevention of data corruption and loss, pursuing maximum data quality, data archive and storage, troubleshooting and user support.
- ▶ Maintain, and install, software on the MDU Linux server
- ▶ Contribute to the development of MDU Bioinformatics policies and procedures, including Bioinformatics technology reviews.
- ▶ Maintain familiarity with and ensure appropriate management of MDU DNA data collections held in various forms. Contribute to the streamlining of these collections and potential integration into the LIMs.
- ▶ Assist with maintaining secure and reliable Bioinformatics infrastructure to ensure integrity of diagnostic and patient data along with research and administrative data.
- ▶ Keep Python environment up to date, and version controlled.
- ▶ Assist in the administration of the MDU Linux Server.
- ▶ 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 tertiary qualification or equivalent experience in Software Engineering, Information Systems, Information Technology, Computer Science, Bioinformatics, or related discipline
- ▶ Demonstrable experience developing software in Python environment following PEP8 guidelines
- ▶ Demonstrable experience in packaging and deploying Python code using pip, PyPI, and virtual environments
- ▶ Demonstrable ability to work with experts to understand tool requirements
- ▶ Demonstrable experience with unix/linux, preferably RHEL
- ▶ Strong coding management skills (Jenkins, Git, TravisCI)
- ▶ A high level of initiative, including the ability to develop and implement new database ideas and ability to effectively contribute to Bioinformatics data management planning.
- ▶ Proven skills in report writing and presentations and a demonstrated ability to communicate with staff from all backgrounds and levels within and external to MDU
- ▶ Ability to extensively interact and work collaboratively with all sections within MDU and use highly developed analytical and problem-solving skills to achieve optimal delivery of support
- ▶ Superior time management, analytical and organisational skills allowing prioritisation, problem solving and timely, accurate completion of tasks
- ▶ 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's: confidentiality, safety and security requirements, procedures, and; ethos

2.2 DESIRABLE

- ▶ An interest in public health

- ▶ Experience working with biological data
- ▶ Experience with BioPython, Pandas, Numpy/SciPy libraries
- ▶ Experience with PostgreSQL and/or rethinkDB
- ▶ Experience with JavaScript, and JS web frameworks (e.g., AngularJS, VueJS), or other JS web libraries (e.g., ReactJS)
- ▶ Experience with deploying in container (e.g., Docker, rkt)
- ▶ Interest/experience in developing REST APIs and Webservices
- ▶ Interest/experience in API design, development and architecture
- ▶ Experience automating workflows
- ▶ Familiarity/experience with a job queues, message queues system like Python Celery
- ▶ Familiarity with Brew, Conda, Anaconda package management systems
- ▶ Familiarity with Galaxy Genome Analysis platform (<https://galaxyproject.org/>)
- ▶ Familiarity with Nectar Cloud Computing (<https://nectar.org.au/>) and RDSI (<https://www.rds.edu.au/>) Commonwealth initiatives
- ▶ Experience with NATA accreditation procedures and documentation
- ▶ Experience with a wide variety of database technology and database programming and scripting languages.
- ▶ High level understanding of the University's computing environment, IT policies and procedures.

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 works work when the need arises
- ▶ 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 Software Developer will report to the MDU Director. The position under broad direction will be responsible for obtaining requirements from experts in the field and developing tools to facilitate data analysis, implement task automation within MDU, and ensure MDU meets NATA regulatory requirements. This position is responsible for implementing decisions made by senior staff and initiative and sound judgement are essential attributes. The position is responsible for all major maintenance and project tasks requiring management of DNA sequence data and reports any major issues to the MDU Director. They will have independence in the judicious application for maintaining appropriate IT standards throughout the MDU.

3.2 PROBLEM SOLVING AND JUDGEMENT

The Software Developer will be required to exercise sound and independent judgement about operational matters specific to the core functions and responsibilities of the position. The position will be required to perform a range of tasks varying in complexity and will perform problem solving and decision making at a day-to-day and longer term strategic level. The position is expected to analyse a broad range of technical issues and recommend and implement solutions including the requirement to anticipate problems and undertake preventative measures to minimise risk to the MDU. Problems relating to IT/network security, equipment malfunction and safety matters should be discussed immediately with the MDU Director and effective corrective action taken, where possible.

3.3 PROFESSIONAL AND ORGANISATIONAL KNOWLEDGE

This position is expected to keep abreast of all relevant regulations, standards and codes of practice applicable within the MDU and the University. The position is expected to implement, understand and adhere to MDU Standard Operating Procedures and perform in a professional environment that is subject to independent audit practices. The position is required to develop and maintain excellent working relationships with senior staff in MDU, across the Doherty Institute and the University.

3.4 RESOURCE MANAGEMENT

This position will manage the daily operation of the DNA data management and all associated documentation and provide status reports to the MDU Director. The position will liaise with other professional and technical staff on the acquisition of IT hardware and software.

3.5 BREADTH OF THE POSITION

The position covers the MDU Bioinformatics Team activities on behalf of the MDU. The Software Developer will be included in decision making and expected to initiate discussions for areas for improvement.

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 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.

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/topics/responsibilities/>

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

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>

6.4 SCHOOL OF BIOMEDICAL SCIENCES

www.biomedicalsciences.unimelb.edu.au

The School of Biomedical Sciences is part of the Faculty of Medicine Dentistry and Health Sciences. It was established on 1 January 2015 and comprises the Departments of Anatomy and Neuroscience, Biochemistry and Molecular Biology, Microbiology and Immunology, Pathology, Pharmacology and Therapeutics, and Physiology.

Situated on the University's Parkville Campus in a rich medical practice and research precinct the School has much to offer research and teaching staff alike.

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 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.

6.8 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>