POSITION DESCRIPTION

Department of Clinical Pathology
Faculty of Medicine, Dentistry and Health Sciences

Bioinformatics Software Engineer

POSITION NO	0064054
CLASSIFICATION	Academic Level A
SALARY	$83,468 - $113,262
SUPERANNUATION	Employer contribution of 17%
WORKING HOURS	Full time
BASIS OF EMPLOYMENT	Fixed term for 1 year
OTHER BENEFITS	https://about.unimelb.edu.au/careers/staff-benefits
HOW TO APPLY	Online applications are preferred. Go to http://about.unimelb.edu.au/careers, select the relevant option ('Current Opportunities' or 'Jobs available to current staff'), then find the position by title or number.
CONTACT FOR ENQUIRIES ONLY	A/Prof Richard Tothill Email rtothill@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

Date Created: 07/10/2024

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

We are seeking a highly motivated and technically proficient bioinformatics software engineer to be part of a translational research project involving the development of an innovative diagnostic method for the analysis of cell-free DNA in the blood of cancer patients.

The Rare Disease Oncogenomics (RADIO) Laboratory within the Department of Clinical Pathology and University of Melbourne Centre for Cancer Research (UMCCR) is dedicated to translational research of rare cancers of unmet clinical need. The laboratory specialises in the field of cancer genomics and development of genomic methods that can help improve and speed up a cancer diagnosis as well as identify better treatment options.

The bioinformatics software engineer will provide research support data analysis and data management within the RADIO lab and will work closely with collaborators at the Peter MacCallum Cancer Centre. The role will principally involve application of innovative new next-generation sequencing methods towards the goal of developing a liquid biopsy diagnostic test for patients with cancer of unknown primary.

The role will also contribute to the University of Melbourne's partnership with international genomics company Illumina. The University has entered a long-term strategic partnership with Illumina, a global leader in genomics technology, to jointly foster the development of world-leading genomics research and innovation activities and to accelerate the translation of these innovations through to adoption in the healthcare system. Together, Illumina and the University have established The Advanced Genomics Collaboration (TAGC), a Victorian Government funded initiative which aims to support a pipeline of commercially focused genomics innovation projects to deliver a cluster of new high growth, high-tech start-ups within the Melbourne Biomedical Precinct.

The bioinformatics software engineer will be required to keep accurate records of all their work and to present this work to the laboratory head at regular meetings. Formal and informal presentation of this work, as well as participation in team/group discussions/presentations, is essential.

1. Key Responsibilities

- Contribute to collection and analysis of genomics data derived from next generation sequencing technologies.
- Design, implement, and manage databases to store and retrieve complex biological datasets.
- Create and maintain a web-based portal for the lab to facilitate data visualization and analysis.
- Integrate new algorithms and software into the existing infrastructure to improve data analysis workflows.
- Ensure code quality, version control, and documentation for reproducibility and long-term maintenance.
- Participate in internal or external training sessions and conferences as required.
- Undertake research under supervision with the collation of research results for presentation and publication.

2. Selection Criteria

2.1 ESSENTIAL

- Bachelor of Science or Engineering, Computer Science, or a related field.
- Demonstrated experience in software development, with proficiency in programming languages such as Python and R.
- Good understanding of database management (e.g., SQL, NoSQL) and the ability to design and manage databases for biological data.
- Proven ability to develop, maintain, and optimize bioinformatics pipelines for high-throughput sequencing and other biological datasets.
- Experience in developing web-based tools or applications for data analysis and visualisation (e.g., Shiny, Django, Flask).
- Attention to detail with the demonstrated ability to consistently produce high-quality code and meet established targets and deadlines.
- Demonstrated ability to collect and manage biological data accurately and reliably.
- Excellent interpersonal and communication skills, with the ability to collaborate effectively with senior researchers and interdisciplinary teams.
- Well-developed organisational and written/oral communication skills.
- Ability to work independently as part of a small team with some autonomy, while following project directions.
- Demonstrated willingness and ability to learn new bioinformatics techniques, technologies, and follow established best practices.

2.2 DESIRABLE

- Masters or PhD in appropriate computer science or biology field.
- Experience with next-generation sequencing platforms, including the ability to design, maintain, and optimize pipelines for data analysis and interpretation.

- Familiarity with cloud computing environments (e.g., AWS, Google Cloud) for managing large-scale biological datasets.
- Prior experience in collaborating with external research institutes, laboratories, and clinicians.

2.3 SPECIAL REQUIREMENTS

- Unrestricted right to live and work in Australia.

2.4 OTHER JOB-RELATED INFORMATION

- This position requires the incumbent hold a current and valid Working with Children Check. The University of Melbourne is dedicated to safeguarding the welfare of all community members, especially those most vulnerable. As part of our commitment to child safety and in line with the Victorian Child Safe Standards, this position will be required to hold a valid Employee WWCC, regardless of where in the University an employee may work or what work they do.
- This position may require the incumbent to work flexible hours when necessary, including after hours and weekend work. Work hours may be flexible provided the needs of the projects are met.

3. Job complexity, Skills, Knowledge

3.1 LEVEL OF SUPERVISIONS / INDEPENDENCE

The incumbent shall operate under direct supervision and general direction of the Rare Disease Oncogenomics (RADIO) Laboratory Head.

This position will contribute to the running of a laboratory and to ensuring that assays performed in this laboratory are performed according to Good Laboratory Practice. To this effect the incumbent is expected to contribute to the daily technical supervision of students and staff working in this laboratory and will provide regular technical and operational reports to the Laboratory Head, Associate Professor Richard Tothill.

3.2 PROBLEM SOLVING AND JUDGEMENT

The incumbent will be required to apply the correct standard operating procedures (SOP) for all performed assays and will be expected to refer to relevant SOPs to determine guiding principles when required to resolve any uncertainty arising during their experimental work. If 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 Laboratory Head. The incumbent will be required to take corrective action, where possible, in the event of equipment malfunction and advise senior staff accordingly. The incumbent will be responsible for individual time management on a day-to-day basis, and for using initiative in prioritising work and balancing a range of tasks. Judgement will be needed to ensure matters are escalated when necessary.

3.3 PROFESSIONAL AND ORGANISATIONAL KNOWLEDGE

The incumbent is expected to have the training and skill at undergraduate degree level to undertake a range of routine molecular and cell biology tests and assist with more complex tests.

The incumbent must be familiar with general laboratory procedures and comply with relevant Faculty and University policy and procedures as well as procedures pertaining to the Victorian Comprehensive Cancer Centre (VCCC) building.

3.4 RESOURCE MANAGEMENT

The incumbent contributes to the effective running of the laboratory, including information flow, compute resources and management of documentation and records.

3.5 BREADTH OF THE POSITION

The position will work within the Rare Disease Oncogenomics Laboratory in the University of Melbourne Department of Clinical Pathology, located within the Victorian Comprehensive Cancer Centre building. The role will liaise with a range of staff at a variety of levels across the University and with stakeholders such as partner hospitals and institutes, located locally and nationally, including Peter MacCallum Cancer Centre.

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 CLINICAL PATHOLOGY

http://medicine.unimelb.edu.au/school-structure/clinical-pathology

The Department of Clinical Pathology focuses on graduate learning and teaching, research and engagement in the clinical discipline of pathology. The Department is located at the Parkville campus with offices in the state of the art Victorian Comprehensive Cancer Centre (VCCC) building.

The Department of Clinical Pathology collaborates broadly with other Departments, Centres, Schools and Faculties of the University of Melbourne, health services and medical research institutes to generate new knowledge in cancer research to improve the outcomes of patients. Initial programs of research will specifically focus on the molecular defects of tumours and the utility of applying the knowledge of these defects to prognostication and treatment of patients with cancer. The Department of Clinical Pathology also provides specialist laboratories for cancer cell biology, DNA bio-banking, rapid large scale, next generation sequencing and organoid generation and testing.

Whilst the initial research focus of the MMS Department of Clinical Pathology is cancer research it also has a more generalist remit for graduate learning and teaching and engagement across the broader areas of clinical pathology. The Department of Clinical Pathology teaches into the Melbourne Medical School's flagship course, the Doctor of Medicine and has thriving Honours, Masters and PhD student cohorts.

6.2 THE UNIVERSITY OF MELBOURNE CENTRE FOR CANCER RESEARCH

www.mdhs.unimelb.edu.au/umccr

The University of Melbourne Centre for Cancer Research is located within the Victorian Comprehensive Cancer Research Centre and is focused on improving cancer outcomes through genome-directed medicine and discovery. The UMCCR has strong involvement with Melbourne teaching hospitals, research institutes and VCCC alliance partners. The Centre is also actively engaged in several large international consortia.

6.3 MELBOURNE MEDICAL SCHOOL

www.medicine.unimelb.edu.au

Established in 1862, Melbourne Medical School (MMS) in the Faculty of Medicine, Dentistry and Health Sciences at The University of Melbourne is the oldest medical school in Australia. It is internationally renowned for global leadership in teaching and training, health research, policy and practice. MMS is ranked 14th in the world (Times Higher Education World University Rankings 2022 for clinical, pre-clinical and health), has strong academic partnerships and ground-breaking collaborative research programs with leading

public and private hospitals, as well as leading medical research institutes and centres in Australia and internationally.

Under the leadership of Professor Sarath Ranganathan, MMS spans all major fields of medicine and is comprised of thirteen clinical departments:

Baker Department of Cardiometabolic Health;

Clinical Pathology;

Critical Care;

General Practice and Primary Care;

Medical Education;

Infectious Diseases;

Medicine;

Obstetrics, Gynaecology and Newborn Health;

Paediatrics;

Psychiatry;

Radiology;

Rural Health; and

Surgery

MMS has more than 1,200 academic and professional staff members located at the Parkville campus or embedded within health services throughout metropolitan Melbourne and rural Victoria. Staff are privileged to work alongside more than 2,296 honorary appointees from the health sector who generously contribute their time, knowledge, research and clinical expertise.

MMS is committed to improving community wellbeing through the discovery and application of new knowledge. With annual research income of $165 million, the School's research effort is highly collaborative, spanning research programs from basic to translational. The School has research collaborations across the 47 partner organisations in the vibrant Melbourne Biomedical Precinct, as well as nationally and internationally. These partnerships enable medical advances to impact healthcare delivery as rapidly and seamlessly as possible.

The School's flagship Doctor of Medicine (MD) degree was the first Masters level entry-to-practice qualification of its kind developed in Australia, setting a new benchmark in medical education. Now, the new curriculum launched in 2022 has created more responsive, modular, technology-enhanced learning for state-of-the-art curriculum delivery. Continuous research and discovery options, and an ability to tailor the degree, allows each student to gain deeper experience in areas of greatest interest. The MD Rural Pathway offers students the opportunity to undertake their entire program in rural Victoria, with a $6.5 million expansion of facilities in Shepparton to accommodate this. There is also an expanded range of joint degree pathways on offer. The School utilises the Department of General Practice and Primary Care's continually expanding network of general practitioners and primary healthcare providers in the community to ensure that MD students are also provided with quality community-based medical education.

In addition to the MD, MMS has an ever-expanding portfolio of other vocationally oriented programs. These teach research skills, leadership and continuing professional development in specific disciplines. An emphasis on the clinician-scientist career

trajectory – with training, support and ongoing career pathways at graduate and postgraduate levels – is central to the School's development of future leaders in all aspects of healthcare, education, research and policy. MMS has over 600 higher degree by research candidates located both within Departments and across its network of partners.

School staff and honorary appointees lead and participate in public debate and advocacy around key health issues and policy based on the MMS values of commitment, integrity, compassion, respect and service. The School also offers a range of initiatives and programs in support of its diverse and inclusive culture: https://medicine.unimelb.edu.au/about/diversity-and-inclusion MMS is always looking to recruit talented individuals across a wide range of medical disciplines which include leadership roles. This presents a wonderful opportunity for appointees to help drive the strategy, growth and continued excellence of Australia's leading medical school.

6.4 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.

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 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, place, and 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, 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 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 that will reshape the campus and our contribution to the communities we engage with. This strategy and the priorities proposed are centred around five intersecting themes: place, community, education, discovery and global.

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 https://about.unimelb.edu.au/strategy/governance