



## POSITION DESCRIPTION

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

# Post-Doctoral Bioinformatics Research Scientist

<b>POSITION NO</b>	0056046
<b>CLASSIFICATION</b>	Level A
<b>SALARY</b>	\$75,289 - \$102,163 p.a.
<b>SUPERANNUATION</b>	Employer contribution of 17%
<b>WORKING HOURS</b>	Full time
<b>BASIS OF EMPLOYMENT</b>	Fixed Term Contract for 2 years
<b>OTHER BENEFITS</b>	<a href="https://about.unimelb.edu.au/careers/staff-benefits">https://about.unimelb.edu.au/careers/staff-benefits</a>
<b>HOW TO APPLY</b>	Online applications are preferred. Go to <a href="http://about.unimelb.edu.au/careers">http://about.unimelb.edu.au/careers</a> , select the relevant option ('Current Opportunities' or 'Jobs available to current staff'), then find the position by title or number.
<b>CONTACT FOR ENQUIRIES ONLY</b>	A/ Prof Richard Tothill Tel: +61 425 783 946 Email: <a href="mailto:rtohill@unimelb.edu.au">rtohill@unimelb.edu.au</a>  <i>Please do not send your application to this contact</i>

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[about.unimelb.edu.au/careers](http://about.unimelb.edu.au/careers)

## ***Position Summary***

A post-doctoral bioinformatics scientist is required for the SUPER-NEXT study involving development of a novel diagnostic method involving whole-genome analysis of cancers of unknown primary.

SUPER-NEXT aims to evaluate complete genome sequencing and the use of liquid biopsies in a group of diagnostically challenging cancers, collectively known as cancers of unknown primary (CUP). SUPER-NEXT is recruiting CUP patients from more than 12 sites around Australia for centralised biobanking and genomic testing at the University of Melbourne Centre for Cancer Research (UMCCR) and the Peter MacCallum Cancer Centre, both located at the Victorian Comprehensive Cancer Centre. The SUPER-NEXT study is funded as part of the Medical Research Future Fund Genomics Health Future Mission.

The incumbent will undertake a project leveraging the resources of the SUPER-NEXT study that is focussed on developing a diagnostic method from cell free DNA in patient blood samples. The method will use whole genome sequencing for mutation signature detection and ctDNA fragment analysis. The project will be highly translational with the goal to develop a diagnostic tool ready for deployment in CUP in the short to medium term. The candidate will require prior experience with Linux-based high-performance computing environments, as well as experience with scripting languages such as R, Python, and Shell-script. A strong background in mathematics or statistics is also highly desirable.

This role will contribute to the University of Melbourne's partnership with international genomics company Illumina by collaborating with The Advanced Genomics Collaboration and utilising its clinical genomics and bioinformatics platforms.

The role will be based within the Rare Disease Genomics (RADIO) Laboratory at UMCCR.

We 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.

## ***1. Key Responsibilities***

### **1.1 RESEARCH AND RESEARCH TRAINING**

- ▶ Contribute to collection, analysis and interpretation of genomics data derived from next generation sequencing technologies
- ▶ Assist with data management and compute resources in the RADIO lab
- ▶ Use demonstrated scientific creativity, collaboration with others, and independent thought to expand technical capabilities and identify new research opportunities.
- ▶ Lead and contribute to publications arising from scholarship and research, such as publication of books and in peer reviewed journals.
- ▶ Prepare research proposals and progress reports for submission to external funding bodies
- ▶ Participate in research independently and as a member of research teams both within the UMCCR and external collaborators
- ▶ Provide effective supervision of major honours or postgraduate research projects and supervise or co-supervise Research Higher Degree and Honours students
- ▶ Steady development of an academic research profile in Cancer genomics and Computational Biology.

## 1.2 LEADERSHIP AND SERVICE

- ▶ Actively participate at School and/or Faculty meetings and play a major role in planning or committee work
- ▶ Actively participate in key aspects of engagement within and beyond the University e.g., School's outreach, first year orientation, academic advising and other external bodies
- ▶ Participate in community and professional activities related to the relevant disciplinary area including attendance and presentations at conferences and seminars
- ▶ Positive engagement in learning and career development of self and others
- ▶ Effective demonstration and promotion of University values including diversity and inclusion and high standards of ethics and integrity

## 1.3 RESPONSIBILITY AND COMPLIANCE

- ▶ Maintain a sound knowledge of current University Policy and Procedures, and reliably follow these or provide compliant advice to others.
- ▶ Reliably follow communications protocols and/or policies as appropriate.
- ▶ Occupational Health and Safety (OH&S) and Environmental Health and Safety (EH&S) responsibilities as outlined in Section 5.
- ▶ Behavioural Expectations - All staff are expected to maintain the following behaviours:
  - ▶ Treat everyone equitably; act fairly with staff and demonstrate respect for diversity
  - ▶ Be an effective team player who is cooperative and gains the trust and support of staff, peers and clients through collaboration.
  - ▶ Create ethics applications and report to the ethics committees

## 2. Selection Criteria

### 2.1 ESSENTIAL

- ▶ PhD or equivalent professional qualification in bioinformatics, genome sciences computational biology, or related area, or equivalent experience
- ▶ Proficient understanding of DNA and RNA biology
- ▶ Experience working with data derived from next generation sequencing technologies, particularly whole genome sequencing
- ▶ Experience in R and basic knowledge in one or more scripting languages such as Perl, Python, etc.
- ▶ Experience working with high performance computing and/or cloud computing infrastructure in Linux based computing environments.
- ▶ Demonstrated ability to contribute to independent and team-based research in Cancer Genomics (or related areas)
- ▶ Demonstrated excellent verbal and written communication skills for effective research collaboration and engagement and at public presentations
- ▶ Strong evidence of ability and desire to build an academic career trajectory.
- ▶ Strong publication record in high-impact peer-reviewed journals

- ▶ Strong interpersonal and communication skills, with an ability to build and maintain relationships with key stakeholders (internal and external) and work collaboratively
- ▶ Ethical scholar who values diversity and works effectively with individual differences

## 2.2 DESIRABLE

- ▶ Experience in manipulating and analysing complex and high-dimensional data from varying sources.
- ▶ Experience in management of large data sets in Unix/Linux environment.
- ▶ Experience developing analysis pipelines using workflow management tools (Snakemake, Nextflow, etc)
- ▶ Experience with version control and code collaboration tools (Git, etc)
- ▶ Ability to meet deadlines and efficiently multitask.

## 2.3 SPECIAL REQUIREMENTS OF THE ROLE

The incumbent may be required to contribute to Centre activities out-of-hours.

### ***3. 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.

### ***4. 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.

## 5. Other Information

### 5.1 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 is in a period of expansion and currently has approximately 40 research staff and an annual operating budget of \$2 million.

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 led by the world-renowned cancer researcher, Professor Sean Grimmond. 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.

### 5.2 MELBOURNE MEDICAL SCHOOL

<http://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 John Prins, 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;
- Medical Education;
- Infectious Diseases;
- Medicine;

- Obstetrics and Gynaecology;
- Paediatrics;
- Psychiatry;
- Radiology;
- Rural Health; and
- Surgery.

MMS has more than 1,000 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 2,725 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'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.

### 5.3 THE UNIVERSITY OF MELBOURNE CENTRE FOR CANCER RESEARCH

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

The University of Melbourne Centre for Cancer Research (UMCCR) is driving discovery, innovation and implementation for clinical impact in cancer care. It is located within the Victorian Comprehensive Cancer Research Centre. The UMCCR has a focus on genome-directed medicine and discovery and is highly engaged with the University's partnership with Illumina, a global industry leader in genomics. 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.

### 5.4 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>

### 5.5 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.

## 5.6 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>