POSITION DESCRIPTION



Department of Infectious Diseases
Melbourne Medical School

Faculty of Medicine, Dentistry and Health Sciences

Research Fellow Virology

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| Position No | 0063694 |
| Classification | Research Fellow Grade 1, Level A |
| Salary | $101,460 - $108,905 p.a. |
| Superannuation | Employer contribution of 17% |
| working hours | Full time (1.0 FTE)  |
| basis of Employment  | Fixed Term contract available for 24 months  |
| Other Benefits | <http://about.unimelb.edu.au/careers/working/benefits> |
| How to Apply | Online applications are preferred. Go to [www.jobs.unimelb.edu.au](http://www.jobs.unimelb.edu.au/) and use the Job Search screen to find the position by title or number. |
| contactFor enquiries only | Doctor Wei ZhaoEmail: wei.zhao1@unimelb.edu.auPlease do not send your application to this contact |

For information about working for the University of Melbourne, visit our websites:

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

Position Summary

The Department of Infectious Diseases based at the Peter Doherty Institute for Infection and Immunity (the Doherty Institute) is seeking to appoint a Research Fellow to conduct laboratory research under the supervision of Dr Wei Zhao within the Lewin Laboratory. The fellow will be co-supervised by Senior Research Fellows Dr Rob de Rose from the Department of Chemical Engineering and Dr Danielle Anderson from the department of Microbiology and Immunology. The collaborating supervisory team focuses on the development of new and innovative antiviral therapeutics for respiratory pathogens of pandemic potential using gene editing tools and lipid nanoparticles (LNPs). The project is funded by the newly established Cumming Global Centre for Pandemic Therapeutics, based at the Doherty Institute.

The appointee will be a member of an established and highly productive team developing new and innovative therapeutics for RNA respiratory viruses using CRISPR-Cas13. The main goal of the fellow’s work will be to deliver mRNA-LNPs in vitro, and in vivo to the upper and lower airways of mice to prevent and treat viral infections. Additionally, we aim to further optimise intranasal and intravenous delivery strategies of CRISPR-Cas13 by LNPs, and evaluate the biodistribution, dosing, and antiviral efficacy of the formulation in mice models.

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.

We invest in developing the careers and wellbeing of our students and staff and expect all our leaders to live our values of:

• Collaboration and teamwork

• Compassion

• Respect

• Integrity

• Accountability

# Key Responsibilities

## RESEARCH and research training

* Under limited supervision, undertake competitive research in the appointee's area of expertise, either independently or in collaboration with the broader research team.
* Contribute to the development of the laboratory’s research program aimed at treating RNA viruses with CRISPR-Cas13 and other related gene editing tools
* Assess mRNA expression in vitro (cell lines and primary tissue cultures)
* Deliver and examine mRNA uptake in vivo, following intranasal and intravenous administration.
* Deliver CRISPR-Cas13 mRNA to in vitro infection models and mice infected with respiratory pathogens, including SARS-CoV-2 and MERS-CoV, and assess the efficacy.
* Troubleshoot challenges, optimise and develop protocols associated with in vivo mRNA-LNP delivery.
* Techniques will include but are not limited to in vivo delivery of mRNA-LNP, IVIS, organ harvest, histology, microscopy, flow cytometry, in vitro assays in molecular biology and RNA biology, cell culture, quantitative PCR based assays, mouse virus infection of mice and viral titration in the PC3 laboratory,
* Independently plan and carry out experiments focused on completion of research project aims to meet agreed timelines and milestones
* Build an independent research project and apply for grant funding for that project
* Collaborate with other researchers in carrying out experiments in order to work as a team and further the Department’s research output, including supervision of PhD and Honours students
* Prepare manuscripts in a timely manner for publication in peer-reviewed journals
* Ability to perform experimental techniques accurately and reproducibly
* Maintain accurate and detailed records of all experiments conducted according to the laboratory guidelines and use of Lab Archives
* Be responsible for qualitative and statistical analysis of research data
* Maintain outstanding relationships with internal and external collaborators including prompt response to any project related correspondence
* Perform other duties as requested by the appointee’s immediate supervisors consistent with responsibilities of a junior post-doc.

## service and leadership

Effective contribution to the quality and impact of research teams, projects and publications

* Present experimental results at local, national and international conferences when opportunities arise
* Attend and actively participate in departmental and institute seminars, meetings and/or committees
* Attend and provide regular updates at team/lab meetings and other relevant meetings with collaborators.
* Assist general laboratory duties including maintenance of the laboratory and equipment and ordering of supplies.
* Effective training of research support staff where required
* Participate in relevant community and professional activities within the Cumming Global Centre for Pandemic Therapeutics, the Department of Infectious Diseases, the Doherty Institute.
* Effectively demonstrate and promote of University values including diversity and inclusion and high standards of ethics and integrity
* Adhere to Occupational Health and Safety (OH&S) and Environmental Health and Safety (EH&S) responsibilities as outlined in section 4.
* Undertake other duties as requested by the supervisor

# Selection Criteria

## Essential

* A PhD in virology, immunology, microbiology, molecular biochemistry, pharmaceutical sciences, CRISPR, or related fields.
* Demonstrated experience with in vivo mouse work including administration of substances and organ harvest.
* Proficiency in basic virology or molecular biology techniques, including cloning, PCR, RT-qPCR.
* Demonstrated experience in cell culture and passage of multiple mammalian cell lines together with cell transfection and validation by multiple methods.
* Strong evidence of emerging academic standing through research contributions, and possessing the ability and desire to build an academic career trajectory as demonstrated by prior awards, scholarships and/or involvement in research activities.
* Demonstrated experience designing and performing experiments effectively, achieving project objectives within timelines and initiative in problem solving.
* Demonstrated ability to work with limited supervision in a self-directed manner and as a member of a research team, and to interact in a courteous and effective manner with academic, administrative and support staff.
* Demonstrated ability to keep detailed accurate records of work done and to analyse and interpret the data obtained.
* Excellent written and verbal communication skills, demonstrated by presentation of research results at conferences, internal forums and through manuscript submissions.
* Ability to adhere to the principles of good laboratory practices.
* Experience with Microsoft Word, Excel, PowerPoint, simple statistical software

## Desirable

* Experience with infectious work in high-containment laboratories, primary cell culture, air-liquid interphase (ALI) culture, stem-cell derived cell culture.
* Administration of substances to mice by the intranasal and intravenous routes and evaluation of drug delivery by in vivo imaging system and histology.
* Demonstrated ability to develop new experimental protocols and experience in trouble shooting laboratory protocols and reagents

# 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

## ORGANISATION UNIT

## Department of Infectious Diseases

<https://medicine.unimelb.edu.au/school-structure/infectious-diseases>

The Department of Infectious Diseases is a recently established department of the Melbourne Medical School, Faculty of Medicine, Dentistry and Health Sciences that is based at The Peter Doherty Institute for Infection and Immunity (Doherty Institute). Research within the department encompasses infectious diseases including antimicrobial resistance and healthcare associated infections, malaria, HIV, tuberculosis, influenza, viral hepatitis, sexually-transmitted infections, skin pathogens and emerging infectious diseases such as COVID-19. Our researchers come from diverse backgrounds, including discovery research and basic scientists, clinician researchers, epidemiologists, public health physicians and microbiologists

## MELBOURNE MEDICAL SCHOOL

https://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. The School is ranked 14th in the world (Times Higher Education World University Rankings 2020 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.

MMS is committed to working with the communities we serve to improve health and advance health care. We will do this through our teaching, learning, research, clinical care and advocacy.

With 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) the MMS has more than 900 academic and professional staff members at our Parkville campus or embedded within health services throughout metropolitan Melbourne and rural Victoria. MMS staff are privileged to work alongside more than 2400 honorary appointees from the health sector who tirelessly contribute their time, knowledge and clinical expertise to the education of our students. The School has partnerships and research collaborations across the 30 partner organisations in the vibrant Melbourne Biomedical Precinct, as well as national and international partnerships.

MMS delivers a suite of health-related graduate programs including the Doctor of Medicine (MD), the School’s flagship program. It was the first Masters level entry-to-practice medicine qualification developed in Australia, setting a new benchmark in medical education.

MMS is committed to improving community wellbeing through the discovery and application of new knowledge. With annual research income of $95 million, the School’s research effort is highly collaborative, spanning basic and translational research. MMS has over 500 higher degree by research candidates.

School staff members also 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.

Under the leadership of Professor John Prins, MMS is undertaking exciting new developments, including a major review of the MD curriculum, an emphasis on the clinician-scientist career trajectory (in partnership with affiliated hospitals, medical research institutes and foundations), and a reinvigorated focus on clinically relevant research.

Commencing in 2022, the MD redesign will allow students to build their own unique medical degree. Practical time in clinics and research options will start in the first year. The core units will be available online, allowing flexibility. And discovery subjects will offer a chance to explore a wide range of topics or deep dive into a future specialty including the choice to learn extra skills and even take part in a joint degree.

These initiatives are being enhanced by a number of recruitment opportunities (through retirements, resignations and recent funding acquisitions) for a range of leadership positions across the School. These positions present a wonderful opportunity for appointees to help drive the strategy, growth and continued excellence of Australia’s leading medical school.

## 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 $630m 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 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.

The Cumming Global Centre for Pandemic Therapeutics was established through the generous gift to the Doherty Institute of $250 million over 20 years from Canadian philanthropist Geoff Cumming. The overall mission of the Centre is to develop novel platform technologies that will deliver therapeutics at speed for a pathogen of pandemic potential, with a significant focus on antiviral therapies.

## The University of Melbourne

The University of Melbourne is a leading international university with a tradition of excel­lence in teaching and research. With outstanding performance in international rankings, Melbourne is at the forefront of higher education in the Asia-Pacific region and the world. The University of Melbourne is consistently ranked among the world’s top universities. Further information about our reputation and global ranking is available at <http://futurestudents.unimelb.edu.au/explore/why-choose-melbourne/reputation-rankings>.

Established in 1853, shortly after the founding of Melbourne, the University is located just a few minutes from the centre of this global city. The main Parkville campus 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.

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*.

## Equity and Diversity

Another key priority for the University is access and equity. The University of Melbourne is strongly committed to an admissions policy that takes the best students, regardless of financial and other disadvantage. An Access, Equity and Diversity Policy Statement, included in the University Plan, reflects this priority.

The University is committed to equal opportunity in education, employment and welfare for staff and students. Students are selected on merit and staff are selected and promoted on merit.

## 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/unisec/governance.htm