RESEARCH FELLOW

DEPARTMENT/UNIT  
Monash Ramaciotti Centre for Cryo-Electron Microscopy

FACULTY/DIVISION  
Medicine, Nursing and health Sciences

CLASSIFICATION  
Level B

DESIGNATED CAMPUS OR LOCATION  
Clayton campus

ORGANISATIONAL CONTEXT

Everyone needs a platform to launch a satisfying career. At Monash, we give you the space and support to take your career in all kinds of exciting new directions. You’ll have access to quality research, infrastructure and learning facilities, opportunities to collaborate internationally, as well as the grants you’ll need to publish your work. We’re a university full of energetic and enthusiastic minds, driven to challenge what’s expected, expand what we know, and learn from other inspiring, empowering thinkers. Discover more at www.monash.edu

The Faculty of Medicine, Nursing and Health Sciences, is the largest faculty at Monash University, and offers the most comprehensive suite of professional health training in Victoria. We consistently rank in the top 40 universities worldwide for clinical, pre-clinical and health sciences.

We want to improve the human condition. That is our vision - it has no expiration date. Through academic health centres, other translational models and by educating the healthcare workforce of the future, our staff, students and alumni directly improve quality of life.

Setting the global health care agenda, the Faculty aspires to lead in all areas of research activity and influence local, national and international policy to improve health and social outcomes and health inequalities. We’ve made a major impact in the world of medical research and become globally recognised for our quality education of over 41,000 doctors, nurses, and allied health professionals.

We are ambitious and aim to maintain our position as a leading international medical research university. We’re recognised for the breadth and depth of our research, for our commitment to translational research, for the quality and scale of our research capability, and as a thriving biotechnology hub.

To learn more about the Faculty, please visit www.monash.edu/medicine.

The Monash Biomedicine Discovery Institute (BDI) is one of the largest and most dynamic biomedical research and teaching environments in Australia. The Institute and its cognate Departments of Anatomy and Developmental Biology, Biochemistry and Molecular Biology, Microbiology, Pharmacology and Physiology comprise over 120 research groups and deliver discipline-focused teaching into our flagship Bachelor of Biomedical Science Degree, the Bachelor of Science Degree, as well as the Medical School and various Health-
related Degree Programs. We pride ourselves on an excellent and evolving teaching curriculum and provide world-class teaching and learning space for Biomedical Sciences.

The BDI comprises six inter-disciplinary health-focused research Programs, each led by a renowned leader in the field. The BDI programs include Infection and Immunity, Cancer, Cardiovascular Disease, Development and Stem Cells, Metabolism, Diabetes and Obesity and Neuroscience. The BDI works closely with clinical and drug development precincts at Monash and has a number of major industry partnerships to facilitate the translation of our research.

For more information about the BDI please visit our website at www.monash.edu/discovery-institute.

The Ramaciotti Centre for Cryo-Electron Microscopy is a university research platform and is part of the national grid of Microscopy Australia facilities. Its mission is to enable and advance research excellence at Monash University and beyond through the provision of a world-class research capability in electron microscopy for the biomedical sciences.

The Monash Ramaciotti Centre supports research projects in life sciences electron microscopy of researchers from Monash University, national and international research institutes and universities, as well as industry projects. The Centre is home to Australia’s first high-end Titan Krios cryo-TEM and has acquired seed funding for a second high-end cryo-TEM through its partnership with Microscopy Australia. It also houses Australia’s first cryo-FIBSEM, a Helios G4 UX with a Leica VCT500 cryo-stage. In addition, the Centre has a Talos Arctica, as well as two 120keV TEMs and a FESEM. A suite of advanced sample preparation and other equipment is available, including a Zeiss LSM900 Airyscan with Linkam cryo-stage, a Wohlwend high pressure freezer, Leica AFS2 and FC7 cryo-ultramicroscopes. The facility’s expert team supports and collaborates on a large number of life sciences EM techniques ranging from standard SEM and TEM to immuno EM, correlative light and electron microscopy, cryo tomography and single particle analysis. More information can be found on www.monash.edu/researchinfrastructure/cryo-em.

The Ramaciotti Centre collaborates with and provides complementary facilities to the adjacent Monash Centre for Electron Microscopy (MCEM), the Australian Synchrotron and the Melbourne Centre for Nanofabrication (MCN), which are within walking distance.

Microscopy Australia (formerly known as the Australian Microscopy and Microanalysis Research Facility) is a national grid of university-based microscopy and microanalysis laboratories which provide open access to world-class instrumentation and expertise in nanostructural characterisation capability to all Australian researchers.

Funded by the Commonwealth government under the National Collaborative Research Infrastructure Strategy (NCRIS), relevant state governments and with co-investment by the institutional partners, Microscopy Australia’s mission is to enable world-class outcomes from Australian research by providing essential infrastructure for the characterisation of materials at the micro, nano and atomic scales.

Comprising nine core institutions with linkages to another five laboratories, Microscopy Australia is a large collaborative research infrastructure facility governed as an unincorporated joint venture that develops and implements a business plan annually in accordance with the overall Microscopy Australia project plan.

POSITION PURPOSE

A Level B research-only academic is expected to carry out independent and team research within the field of Cryo-Electron Microscopy

The role is funded by Microscopy Australia to provide expertise, training and conduct research in advanced cryo-electron microscopy. A focus of the position will be extension of the cryo-tomography capabilities within the Moash Ramaciotti Centre for Cryo-EM. The research fellow will play a critical role in running the to be acquired second 300keV cryo-TEM in the centre and the associated cryo-tomography capability. The Research Fellow will be an expert in the operation of dedicated high-end cryo-electron microscopes and cryo-EM data analysis.

Reporting Line: The position reports to the Head, Monash Ramaciotti Centre for Cryo-Electron Microscopy

Supervisory Responsibilities: Not applicable
Financial Delegation: Not applicable
Budgetary Responsibilities: Not applicable

KEY RESPONSIBILITIES

Specific duties required of a Level B research-only academic may include:

1. The conduct of research either as a member of a team or independently and the production of conference and seminar papers and publications from that research. Research and develop cryo-EM methods for both single particle cryo-EM and cryo-electron tomography to optimise and enhance the research capability of the Ramaciotti Centre

2. Supervision of research-support staff involved in the staff member’s research. Provide training and supervision of Ramaciotti Centre users in the safe and effective operation of high end cryo-TEM instruments. Produce technical and teaching documentation to support the training and operation of Ramaciotti Centre instrumentation

3. Guidance in the research effort of junior members of research-only Academic staff in their research area. Provide high level expertise, advice and assistance to Ramaciotti Centre users to undertake structural cryo-EM research

4. Contribution to the preparation or, where appropriate, individual preparation of research proposal submissions to external funding bodies

5. Involvement in professional activities including, subject to availability of funds, attendance at conferences and seminars in the field of expertise. Contribute to occasional lectures and/or lecture courses and/or workshops on specialist topics

6. Administrative functions primarily connected with their area of research

7. Occasional contributions to the teaching program within the field of the staff member's research

8. Co-supervision or, where appropriate, supervision of major honours or postgraduate research projects within the field of the staff member's area of research

9. Attendance at meetings associated with research or the work of the organisational unit to which the research is connected and/or at departmental, school and/or faculty meetings and/or membership of a limited number of committees

10. Other duties as directed from time to time

KEY SELECTION CRITERIA

Education/Qualifications

1. The appointee will have:

   ● a doctoral qualification in structural biology, biochemistry, cell biology or equivalent qualifications or research experience

Knowledge and Skills

2. Demonstrated statistical analysis and manuscript and research proposal preparation skills; including a solid track record of refereed research publications in cryo-electron microscopy

3. Advanced expertise in at least three of the following areas:

   ● Cryo-electron tomography
   ● Structural analysis by sub tomogram averaging
   ● Single particle cryo-electron microscopy
   ● High-resolution structure determination and model building
● Cryo-FIBSEM and cryo-lamella preparation
● Cryo-optical microscopy and correlative light and electron microscopy
● Optimisation of cryo-electron microscopy sample preparation
● Development of hardware or software for cryo-electron microscopy

4. Advanced expertise in transmission electron microscope instrumentation, its operation, maintenance and optimisation.
5. Experience in successfully supervising, mentoring and coaching to support the development of research staff and/or a demonstrated trajectory of leadership capability.
6. Experience in supervising and working with major honours or postgraduate students within the discipline.
7. The ability to work both independently in a research environment and as part of an inter-disciplinary research team.
8. High level organisational skills, with demonstrated capacity to establish and achieve goals.
9. Excellent written and oral communication skills.
10. A demonstrated capacity to work in a collegiate manner with other staff in the workplace.
11. Advanced computer skills with experience using Microsoft Word, Excel and PowerPoint; specific experience in working with a range of analytical software for cryo-tomography, sub tomogram averaging, and/or single particle analysis.

OTHER JOB-RELATED INFORMATION

● Travel to other campuses of the University may be required.
● There may be a requirement to work additional hours from time to time.
● There may be peak periods of work during which taking of leave may be restricted.

GOVERNANCE

Monash University expects staff to appropriately balance risk and reward in a manner that is sustainable to its long-term future, contribute to a culture of honesty and integrity, and provide an environment that is safe, secure and inclusive. Ensure you are aware of and adhere to University policies relevant to the duties undertaken and the values of the University. This is a standard which the University sees as the benchmark for all of its activities in Australia and internationally.