POSITION DESCRIPTION

Position Title: Cryo TEM Flagship Scientist (NCRIS)
Organisation Unit: Centre for Microscopy and Microanalysis
Position Number:
Type of Employment: Full time, fixed term (three years)
Classification: Academic A/B (depending on expertise and experience of the successful candidate)

THE UNIVERSITY OF QUEENSLAND

The University of Queensland (UQ) contributes positively to society by engaging in the creation, preservation, transfer and application of knowledge. UQ helps shape the future by bringing together and developing leaders in their fields to inspire the next generation and to advance ideas that benefit the world. UQ strives for the personal and professional success of its students, staff and alumni. For more than a century, we have educated and worked with outstanding people to deliver knowledge leadership for a better world.

UQ ranks in the world’s top universities, as measured by several key independent ranking, including the CWTS Leiden Ranking (32), the Performance Ranking of Scientific Papers for World Universities (40), the US News Best Global Universities Rankings (42), QS World University Rankings (47), Academic Ranking of World Universities (54), and the Times Higher Education World University Rankings (66). Excluding the award component, UQ is now ranked 45th in the world in the ARWU, and is one of the only two Australian universities to be included in the global top 50.

UQ has an outstanding reputation for the quality of its teachers, its educational programs and employment outcomes for its students. Our students remain at the heart of what we do. The UQ experience – the UQ Advantage – is distinguished by a research enriched curriculum, international collaborations, industry engagement and opportunities that nurture and develop future leaders. UQ has a strong focus on teaching excellence, winning more national teaching excellence awards than any other in the country and attracting the majority of Queensland’s highest academic achievers, as well as top interstate and overseas students.

UQ is one of Australia’s Group of Eight, a charter member of edX and a founding member of Universitas 21, an international consortium of leading research-intensive universities.

Our 53,000-plus strong student community includes more than 16,400 postgraduate scholars and more than 17,000 international students from 135 countries, adding to its proud 260,000-plus alumni. The University has more than 6,600 academic and professional staff (full-time equivalent) and a $2.15 billion annual operating budget. Its major campuses are at St Lucia, Gatton and Herston, in addition to teaching and research sites around Queensland and Brisbane city. The University has six Faculties and four University-level Institutes. The Institutes, funded by government and industry grants, philanthropy and commercialisation
activities, have built scale and focus in research areas in neuroscience, biomolecular and biomedical sciences, sustainable minerals, bioengineering and nanotechnology, as well as social science research.

UQ has an outstanding track-record in commercialisation of our innovation with major technologies employed across the globe and integral to gross product sales of $11billion+.

UQ has a rapidly growing record of attracting philanthropic support for its activities and this will be a strategic focus going forward.

Organisational Environment

The Centre for Microscopy and Microanalysis (CMM) has a world standard laboratory equipped with state-of-the-art instrumentations and techniques in electron and X-ray microscopy and analysis. The Centre has a wide range of cutting edge instruments and techniques including, conventional and cryo electron microscopes, cs corrected S/TEM, X-ray analysis instrumentation, electron based nano-fabrication tools as well sample preparation facilities for material and life science and data processing workflows. The centre provides leading edge capability in microstructural analysis to the staff and students across a broad range of disciplines at the University of Queensland.

The Centre’s strengths lie in training clients in relevant techniques and in solving characterisation problems relevant to a wide range of industrial, environmental and biological processes.

Information about the Centre for Microscopy and Microanalysis may be accessed on the Centre’s web site at https://cmm.centre.uq.edu.au/home

Information for Prospective Staff

Information about life at UQ including staff benefits, relocation and UQ campuses is available online.

The University of Queensland Enterprise Agreement outlines the position classification standards for Levels A to E.

DUTY STATEMENT

Primary Purpose of Position

This role is to manage, maintain and operate the cryo transmission electron microscopes which are located in the Centre for Microscopy and Microanalysis (CMM). The role involves a number of aspects including the training of new users in the proper and effective usage of the instrumentation, in the preparation of sample specimens for cryo-electron microscopy; the production of high-quality images and the development of new workflows for single-particle reconstruction and cryo-electron tomography. In addition, aiding clients in experimental design and in the interpretation of high-quality data will be a highly significant aspect this management position.
Duties

Duties and responsibilities include, but are not limited to:

Training and Assisting Clients (40%)
- Sample preparation (Negative Stain, Plunge Freezing with Vitrobot MK-4 and Leica EM-GP2)
- Sample preparation cryo-tomography TEM (cryo-sectioning, cryo-FIB/SEM)
- Grid preparation (grid coating, glow discharge, carbon coating)
- Operation of JEOL CryoARM 200 & 300KV, JEOL 1011, Tecnai F30 electron microscopes
- Introducing clients into the use of the CMM IT-infrastructure around single-particle processing.
- Trouble shooting with clients e.g. stain artefacts, cryo grid preparation, dataset collection and processing for high resolution single particle reconstruction.

Completing Work for Clients (40%)
- Transmission electron microscopy
- Negative stain
- Sample preparation for single particle and cryo-tomography CryoEM
- Single particle or tomographic 3D reconstruction

Laboratory Upkeep (15%)
- Assisting in the operation and maintenance of the facilities' Cryo-electron microscope.
- Maintaining and keeping up to date software tools for single-particle reconstruction.
- In collaboration with CMM’s Data-Informatics-Managers, developing workflows for single particle reconstruction.

Administration (5%)
- Ensuring clients complete relevant building and laboratory inductions
- Undertaking appropriate training courses.
- Maintaining up-to-date client and instrument risk assessments.
- Complying with the University’s Code of Conduct, OH&S responsibilities
- Adopting sustainable practices.
- Documentation and reporting of work done for clients (Work for Fee) and
- Assisting clients with publications
- Assisting with grant applications as deemed appropriate by the Director

Other
Ensure you are aware of and comply with legislation and University policy relevant to the duties undertaken, including but not exclusive to:
- the University’s Code of Conduct
- requirements of the Queensland occupational health and safety (OH&S) legislation and related OH&S responsibilities and procedures developed by the University or Institute/School
- the adoption of sustainable practices in all work activities and compliance with associated legislation and related University sustainability responsibilities and procedures
- requirements of the Education Services for Overseas Students Act 2000, the National Code 2007 and associated legislation, and related responsibilities and procedures developed by the University
Organisational Relationships

The position reports to the Director of the Centre for Microscopy and Microanalysis

SELECTION CRITERIA

• PhD in structural biology, biochemistry, bioengineering or related fields plus 2 years of cryo-EM experience.
• Demonstrated expertise in handling samples, using microscopes and evaluating data.
• Solid understanding of the principles of transmission electron microscopy and cryo-vacuum technology.
• General understanding of single-particle cryo-EM workflow; experience in cryo-electron tomography.
• Solid experience with recent software used in the CryoEM workflows for single-particle reconstruction and cryo-electron tomography.
• Experience in the operation of a Cryo FIB/SEM.
• Experience applying scientific and engineering principles and practices to perform technical services and support.
• Extensive experience in sample preparation for cryo-EM i.e. plunge freezing and high pressure freezing.
• Operation and maintenance of cryoEM-related ancillary equipment such as plunge freezers, carbon coaters, plasma cleaner, etc.
• Experience in bash or shell scripting and the use of high-performance computer clusters (eg. software are C++, python or Fortran.
• Demonstrated training and teaching skills at undergraduate and postgraduate levels.
• Excellent communication and interpersonal skills and the ability to work collaboratively with colleagues.
• Experience in liaising and collaborating with external agencies to develop co-operative research initiatives.
• Evidence of a contribution to research, including successful external grant applications.

Seminar

Applicants invited for interview may be expected to present a seminar in conjunction with the selection interview process.

Qualification Verification

An appointment to this position is subject to the verification of the highest academic qualification from the conferring institution.

Vaccinations and Immunisation

It is a condition of employment for this role that if you are required now or in the future, to work or interact in Queensland Health clinical facility; or in an equivalent clinical health facility; or health care role; or will be required to perform work tasks that put you at risk of exposure to vaccine-preventable disease you are required to be immunised against, and remain immunised against, certain vaccine preventable diseases (VPDs) in accordance with the University’s Vaccinations and Immunisation Guidelines (PPL 2.60.08). The employee is required to provide evidence of immunisation against VPDs.
The University of Queensland values diversity and inclusion and actively encourages applications from those who bring diversity to the University. Please refer to the University’s Diversity and Inclusion webpage for further information and points of contact if you require additional support.

This role is a full-time position; however flexible working arrangements may be negotiated.

Accessibility requirements and/or adjustments can be directed to recruitment@uq.edu.au.