POSITION SUMMARY

This key position is available for a PhD qualified scientist with extensive experience in live cell imaging, light sheet, confocal and multiphoton microscopies applied to biomedical / life sciences. The successful applicant will be involved in collaborative research projects studying dynamic processes of mammalian cells, in particular the regulation of the cytoskeleton in neuronal cells. It is expected that the candidate will provide specialist fluorescence imaging support and collaboration on projects with internal and external research groups. In addition, the candidate is expected to contribute to the development of advanced imaging expertise within the BMIF.

ORGANISATIONAL ENVIRONMENT

Overview of the Faculty/School/Divisional Work Unit

The Biomedical Imaging Facility (BMIF) is a multi-user facility within the Mark Wainwright Analytical Centre (MWAC) in the Division of Research at UNSW. The facility is a platform for researchers to gain access to a comprehensive suite of advanced light and optical instrumentation and associated expertise. The facility supports and collaborates with a variety of research groups in the Faculties of Science, Medicine and Engineering at UNSW, as well as groups at other universities and research institutes in Australia and overseas.

Dr Thomas Fath is Head of the Neurodegeneration and Repair Unit in the School of Medical Sciences. His research uses genetic manipulation of the actin cytoskeleton to define its role in neuronal morphogenesis and injury of the central nervous system. The actin cytoskeleton is a key structure in regulating neuronal polarization and neurite outgrowth and plays an important role in pathomechanisms of neurodegeneration. Live cell recordings of the dynamic processes of neuronal morphogenesis and the breakdown of neuronal compartments during disease is critical for our understanding of the healthy development and maintenance of structure and function of the nervous system.
Statistics

Number of staff within the BMIF including this position: 9
Number of registered users within the facility: > 350
Number of high end instruments within the BMIF: 22
Number of staff within the Analytical Centre: ~60

Reporting Relationships

Supervisor’s title: Head, BMIF
Other positions reporting to the supervisor: 8

And

Supervisor’s title: Head, Neurodegeneration and Repair Unit
Positions reporting to this position: none

KEY DUTIES & RESPONSIBILITIES

- Manage and conceptually develop live imaging applications for original research, as a member of interdisciplinary collaborations under the direction of the Head of the Neurodegeneration and Repair Unit (School of Medical Sciences) and the Head of the BMIF.

- As part of the BMIF team, provide high level support and advice to researchers in the area of live cell imaging, multiphoton and light sheet microscopy including experiment design, acquisition, data processing and interpretation.

- Contribute to the maintenance and troubleshooting of BMIF instruments, in conjunction with instrument suppliers and BMIF staff.

- Develop and optimize the culture of neuronal cells and tissue slice preparations for live cell imaging.

- Develop and optimize technologies for the visualization of neuronal cells in tissue preparations combined with morphometric analysis tools.

- Develop familiarity with other microscopy instrumentation relevant to the research projects being undertaken.

- Train and supervise staff and research students undertaking live imaging experiments.

- Participate and contribute to the delivery of short courses or other training activities delivered by the BMIF.

- Disseminate research findings to scientific and industry audiences through seminars and conferences and scholarly publications.

- Contribute actively to research funding applications and preparation of reports.

- Contribute to other biomedical research, facility and centre activities as required.
Cooperate with all health and safety policies and procedures of the university and take all reasonable care to ensure that your actions or omissions do not impact on the health and safety of yourself or others

PRINCIPAL ACCOUNTABILITIES

(a) Research

1. Develop live cell imaging techniques and techniques for the visualization and morphometric analysis of neuronal tissue for biomedical research applications

2. Undertake individual and collaborative research in the area of the biomechanical properties of the actin cytoskeleton in cells of the nervous system and other cell types.

3. Effective training of other researchers in live cell imaging techniques

4. Submission of research proposals to support projects as co-investigator, associate investigator or having assisted the preparation of the proposal by providing preliminary data or information pertaining to the application

5. Effective support of researchers using live cell imaging

6. Timely completion of projects

7. Collaboratively publish findings in scholarly journals or prepare reports for Unit clients

8. Conceive and undertake research and/or development projects to expand the applications of live cell imaging as part of a suite of advanced microscopy research capabilities in the BMIF

9. Independent publication of findings from projects in scholarly journals and at scientific conferences as appropriate

(b) Management and Training

1. Ensure accurate and prompt completion of administrative records for project management and use of infrastructure as required by grant agencies, the BMIF and the Analytical Centre

2. Contribute to effective management of the live cell imaging instruments including strategic monitoring of use; undertaking and/or delegating maintenance tasks; training scientific staff in maintenance; creating and updating of appropriate workplace safety documentation such as risk assessments and safe work procedures

3. Design and delivery of training for specialised courses or workshops in live cell imaging for biomedical research and related topics as delivered by the BMIF and the Analytical Centre
SELECTION CRITERIA

- PhD and/or postdoctoral experience in a discipline involving extensive use of live cell imaging and its research applications in medical or life sciences
- Experience in development and implementation of tissue processing techniques for optimized analysis of morphological features in larger specimen preparations
- Skills in sample preparation of human, rat and mouse brain tissue for microscopy
- Experience in clearing techniques including; Clarity, cubic and scaleview.
- Experience in design, implementation and associated processing of live cell imaging on epifluorescence, and confocal microscopes.
- Detailed knowledge of the operation of live cell imaging instrumentation and the interpretation of research results
- Experience in light sheet, multiphoton, confocal and superresolution imaging.
- Skills in imaging and analysis of Brainbow/Confetii animals, tissue and primary cells.
- Ability to use specialist image processing software including but not limited to ImageJ and Imaris
- Demonstrated capacity to work with, train and support others in live cell imaging, confocal and multiphoton within a multidisciplinary research environment and working with booking systems.
- Excellent oral and written communication skills
- Demonstrate experience in publishing and presenting scholarly work in journals and at conferences
- Ability to work cooperatively within a team environment
- Understanding of equity and diversity principles
- Knowledge of health and safety responsibilities and commitment to attending relevant health and safety training

PRE EMPLOYMENT CHECKS REQUIRED FOR THIS POSITION

Referee checks
Independent verification of qualifications