

POSITION DESCRIPTION

POSITION TITLE:	Research Officer
CLASSIFICATION:	QR2
RESPONSIBLE TO:	Dr Luca Cocchi
LOCATION:	Herston

POSITION OBJECTIVES

The postdoctoral position in neuroimaging is a unique opportunity to be part of a dynamic collaboration between industry (ANT Neuro, Resonait medical), clinics (Queensland Neurostimulation Centre), and academia (QIMR Berghofer Medical Research Institute). This collaboration aims to identify neural markers for brain stimulation therapy, particularly for major depression. The successful candidate will work alongside researchers, clinicians, and engineers from academia and industry, contributing to the development of next-gen personalised therapies.

ORGANISATIONAL CONTEXT

QIMR Berghofer is a statutory body under the *Queensland Institute of Medical Research Act (1945)*. QIMR Berghofer Medical Research Institute proudly serves the people of Queensland with better health and wellbeing through impactful medical research. Our collaborative research programs address the foremost health challenges of our time. Our research responds to health challenges arising from social and environmental factors and aims to advance Aboriginal and Torres Strait Islander health equity.

QIMR Berghofer has a vision to lead the way to significant innovation in health outcomes, nationally and globally. We are committed to supporting ground-breaking research discoveries, achieving sustainability and conducting impactful research.

The Institute focuses its research within four key Programs:

- Cancer Research
- Infection & Inflammation
- Brain and Mental Health
- Population Health

Our Brain and Mental Health research program makes a meaningful difference to millions. The research is critical, with about half of all people experiencing mental ill-health at some stage in their lives. It focuses on a range of mental health areas including anxiety, depression, ADHD, Autistic Spectrum Disorder, bipolar disorder, eating disorders, and schizophrenia.

Our neuroscientists, geneticists, epidemiologists, and clinical researchers are devoted to developing treatments, finding the causes, and working out how to prevent these conditions. This includes investigations into innovative neuro-stimulation and psychopharmacological interventions for people with serious mental disorders. Our understanding in the areas of psychiatric genetics, neuroimaging and neuroscience will inform novel strategies for prevention, early intervention, and the treatment of complex syndromes.

Neurological conditions such as Parkinson's disease, multiple sclerosis (MS), motor neuron disease, epilepsy, and dementia are a growing health issue worldwide, often with limited treatment options. Our researchers provide broad interdisciplinary expertise in advancing understanding of this area from infancy to the elderly.

QIMR Berghofer promotes a *Working Better Together* operating model, recognising that whilst the purpose of the Institute is medical research, and the contribution of researchers is key, it cannot be done without the work of our highly-skilled professional staff. It recognises that we are all here to facilitate the same mission – *Better health through impactful medical research*. *Working Better Together* is underpinned by the shared understanding and application of our values:

- Excellence
- Integrity
- Respect
- Collaboration
- Accountability

REPORTING AND RELATIONSHIPS

The position reports to Associate Professor Luca Cocchi and is a member of the Clinical Brain Networks Group.

PRIMARY RESPONSIBILITIES

- Ensure that both academic and industry objectives are met.
- Oversee the ongoing collection of high-quality clinical EEG data.
- Develop a robust and repeatable EEG data analysis pipeline, implementing steps that may include preprocessing, source reconstruction and feature extraction.
- Collaborate with industrial partners to integrate this pipeline with commercial machine-learning tools.
- Plan and undertake research analyzing differences in neurophysiological states expressed by these tools across clinical populations.
- Interpret analysis results and contextualise them against the background of existing literature for communication and dissemination.
- In consultation with industry partners, research how this information could best be incorporated into novel digital therapeutics, such as clinical decision support tools and neurofeedback interventions.
- Support the planning, study design and implementation of a clinical feasibility study analysing a home-use neurofeedback system for depression therapy.
- Supervision of Honours and PhD students.
- Model and promote excellence and integrity, adhering to the highest quality and ethical standards.
- Ensure work practices comply with the Work Health and Safety Act requirements, related legislative requirements and the Institute's Work Health & Safety (WH&S) policies and procedures.

KEY SELECTION CRITERIA

Essential

- PhD in neuroimaging, engineering, physiology, psychology, or related fields.
- Demonstrated record of the following:
 - Design of experiments probing context-specific patterns of brain activity.

- Electroencephalography (EEG; iEEG is a plus) data processing and analyses.
- Statistical modelling of behavioural and/or physiological data.
- Development of software (in MATLAB and Python) for EEG data analysis.
- Publication of research findings in recognised peer-reviewed journals.
- Working on collaborative projects with multiple stakeholders.

Desirable

- Experience in designing neurofeedback experiments.
 - Experience in the analysis of intracranial-EEG data.
 - Experience in the analysis of fMRI data.
 - Experience in machine learning/AI.
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QIMR Berghofer also offers:

- Salary Packaging
- State-of-the-art facilities
- Stimulating work setting focussed on cutting-edge medical research
- Supportive/collaborative team environment
- Parental leave provisions