Researcher Job Description

Newcastle University

Research Assistant/Associate in Imaging Neuroscience
Translational and Clinical Research Institute
Faculty of Medical Sciences

The role

....

We are looking to recruit a motivated researcher interested in an exciting multi-disciplinary translational neuroscience project funded by the Motor Neuron Disease Scotland charity with the aim of developing a rapid, sensitive and entirely non-invasive diagnostic test for this disease. You will join a multi-disciplinary team of neuroscientists, MR physicists, neuroradiologists and computer scientists and will be primarily responsible for developing magnetic resonance imaging protocols to image skeletal motor unit activity first in healthy controls, and then in patients with motor neuron disease (MND).

Motor neurone disease (MND) – also known as Amyotrophic Lateral Sclerosis (ALS) - is a rapidly disabling and fatal neurodegenerative disease affecting 1 in 10,000. The disease affects people at all ages, but more commonly affects individuals in their 50s and 60s. It is characterised by progressive, painless muscle wasting and weakness, which ultimately leads to immobility, respiratory failure and death. Underlying this devastating condition is the progressive loss of skeletal motor units (a single motor axon and all of the muscle fibres that this innervates). Current diagnostic tests are invasive, relatively insensitive, and available only in larger centres, meaning that patients still typically wait up to 12 months to get a diagnosis. This matters because it delays access to life-prolonging treatments and prevents early recruitment of patients to clinical trials of new therapies.

Our group has recently patented a novel method of imaging human motor units using a variation of diffusion-weighted MRI. We call this motor unit MRI or MUMRI, and are the only group in the world currently developing this technology. We have used MUMRI to study the earliest signs of motor unit dysfunction in MND patients and have already translated this to our local NHS hospital's scanners. The aim of this project is to build on this work to develop and test methods of detecting both early and late disease stages in the same scan session, thereby creating a rapid, sensitive and entirely non-invasive diagnostic test for MND.

You will obtain the necessary regulatory approvals for these studies, arrange for both healthy volunteers and patients to attend scanning sessions, perform the experiments and analyse the imaging data. Data analysis will require the writing of custom analysis scripts, usually in the MATLAB environment. Finally, you will be responsible for producing publication-quality figures illustrating our findings, and for writing the first draft of manuscripts reporting the results.

This post is fixed term for a period until 30/11/2026 in the first instance.
For informal enquiries contact: Professor Roger Whittaker r.whittaker@ncl.ac.uk

Researcher Job Description

Find out more about the Faculty of Medical Sciences here:
https://www.ncl.ac.uk/medical-sciences/

Find out more about our Research Institutes here:
https://www.ncl.ac.uk/medical-sciences/research/institutes/

As part of our commitment to career development for research colleagues, the University has developed 3 levels of research role profiles. These profiles set out firstly the generic competences and responsibilities expected of role holders at each level and secondly the general qualifications and experiences needed for entry at a particular level.

Key Accountabilities
....

- Developing an MRI scan protocol to time lock diffusion-weighted image acquisition to electrical and auditory stimulation in healthy volunteers.
- Obtaining regulatory approvals for studies in healthy volunteers and patients with motor neuron disease.
- Organising healthy volunteer and patient visits to the Centre for In Vivo Imaging.
- Analysis of neurophysiological and imaging data using MATLAB environment.
- Preparation and collation of scanner protocols, data and regulatory documentation.
- Although working under the general guidance of an academic or Principal Investigator, the postholder will contribute ideas, including enhancements to the technical or methodological aspects of their studies, thus providing substantial 'added value'
- Develop and carry out the specified project using appropriate techniques and equipment as outlined in the personal requirements
- Determine appropriate methodologies for research, with advice and support where required
- Contribute to grant applications submitted by others and in time develop own research objectives and proposals for funding
- Begin to write, with appropriate support, proposals for individual research funding or, where funders do not permit this, contribute to the writing of collective bids
- Assess research findings for the need/scope for further investigations
- Contribute to the writing up of their research for publication and dissemination, either through seminar and conference presentations or through publications
- Present research findings, either at conferences or through publications in reputable outlets appropriate to the discipline
- May be involved in the supervision, with guidance, of final year undergraduate research projects and in providing support to postgraduate research students or Research Assistants

Researcher Job Description

- Will need to work with the support staff and, on occasions, with undergraduate and postgraduate students, and interact intellectually with other academic members of the Institute.
- May contribute to events celebrating the public engagement of science/social sciences/humanities
- Develop an awareness of University structures, policies and procedures and relevant issues in the higher education, research, social and political environment

The Person (Essential)

Knowledge, Skills and Experience

Essential
- Ability to work well as part of a team and rapidly acquire new skills
- Detailed subject knowledge in the area of MND research
- Likelihood of advanced skills directly related to the research projects
- High level of analytical and problem-solving capability
- Ability to communicate complex information with clarity and to encourage the commitment of others
- Experience of research with clear transferable skills and some experience or awareness of the research environment
- Presentations at conferences and/or high-quality publications
- Experience of experiments involving humans subjects

Desirable
- Good knowledge of the scientific literature on Motor Neuron Disease
- Experience of obtaining regulatory approvals for experiments in human subjects
- Experience of the MATLAB platform, and writing scripts to analyse neurophysiological and imaging data

Attributes and Behaviour

Essential
- Ability to work within a varied team to deliver requirements of project

Qualifications

- A PhD in relevant area for Research Associate
- Close to submission/completion of PhD for Research Assistant
- Honors degree in relevant subject (desirable).