Research Associate/Research Fellow in Microstructural Brain MRI
5883BR

The Cardiff University Brain Research Imaging Centre seeks a creative and experienced microstructural MRI research scientist to join their team, working on a Wellcome Trust Strategic Award entitled ‘Multi-scale and Multi-Modal Assessment of Coupling in the Healthy and Diseased Brain’ (see: http://sites.cardiff.ac.uk/cubric/our-funders/wellcome-trust-funding)

This is a rare and exciting career opportunity to join a successful neuroimaging centre in a phase of strong growth. The successful candidate will benefit from access to a suite of Siemens MRI systems, including a Connectom system (3T with 300mT/m gradients), 7T Magnetom system and two 3T Prisma systems. These systems are well-supported by an on-site Siemens scientist, a comprehensive master research agreement with Siemens, and a talented team of physicists, engineers, radiographers and scientific support officers. The Connectom forms part of the National Microstructural Imaging Facility supported by the EPSRC (see: http://sites.cardiff.ac.uk/cubric/our-funders/epsrc-funding). The Experimental MRI Centre (http://goo.gl/9ASl6A) in the School of Biosciences houses a 9.4T Horizontal Bore Bruker Biospin system allowing additional microstructural experiments to be made in non-human samples, and validation of measurements on clinical systems.

We are seeking an excellent candidate, with a relevant PhD, to take forward CUBRIC’s ambitious neuroimaging research strategy, particularly in the field of microstructural neuroimaging. You should have an emerging or established international profile, with an excellent publication record.

Cardiff University is recognized as one of the UK’s leading research-intensive universities. We are ranked in the top 5 in the UK’s Research Excellence Framework based on the quality of our research. CUBRIC offers excellent scientific connections underpinned by funded national networks for microstructural imaging and UHF MRI. In CUBRIC’s research field, Psychology, Psychiatry and Neuroscience, Cardiff University is ranked 2nd in the UK on research quality. CUBRIC offers a new, positive and vibrant research environment in which to work and is situated in the lively and well-connected capital of Wales.

CUBRIC moved to new purpose-built premises with a combination of neuroimaging equipment that is currently unique in Europe. CUBRIC’s significant expansion has been brought about by funding from Cardiff University, UK Medical Research Council, Wellcome Trust, UK Engineering and Physical Sciences Research Council, The Wolfson Foundation, Welsh Government and Welsh European Funding Office. The new CUBRIC houses up to 200 researchers, 4 Siemens human MRI systems (1 x Connectom with 300mT/m gradients, 1 x 7T and 2 x Prisma systems), MEG, EEG, TMS, tDCS and a clinical research unit. You can learn more about CUBRIC at: http://sites.cardiff.ac.uk/cubric

The post is full time and fixed term. A term of 3 to 5 years would be offered.
Appointment will be made at either Research Associate (Grade 6), or Research Fellow (Grade 7), according to the level of expertise and experience.

**Salary:**
£32,004 - £38,183 per annum (Grade 6).
£40,523 - £46,924 per annum (Grade 7).
Appointment at Grade 7 is not expected to be above starting salary grade 7.38 (£40,523).

Closing date: 12 May 2017
Shortlisting will be performed throughout.
Interviews will take place week beginning 22 May 2017.

**Applying:**
In advance of submitting a full application, applicants are strongly encouraged to engage in informal discussions with CUBRIC’s Head of MRI (Prof Richard Wise, wiserg@cardiff.ac.uk or cubricjobs@cardiff.ac.uk) and Director (Prof Derek K Jones, jonesd27@cardiff.ac.uk).

Applications can only be made through Cardiff University jobs website: [http://www.cardiff.ac.uk/jobs/](http://www.cardiff.ac.uk/jobs/). Full details of the required criteria for the position can be found in the job pack online. Please submit with your full CV, together with a summary of research interests and career goals, and a clear statement of how you meet each of the essential criteria (and any of the desirable criteria) for the role.

For other job opportunities at CUBRIC and the School of Psychology, please see [http://psych.cf.ac.uk/aboutus/jobs.html](http://psych.cf.ac.uk/aboutus/jobs.html).

Please be aware that Cardiff University reserves the right to close this vacancy early should sufficient applications be received.

Cardiff University is committed to supporting and promoting equality and diversity. Our Inclusive environment welcomes applications from talented people from diverse backgrounds.
Job Description

Main function
To conduct methodological research into advanced characterization of tissue microstructure in the human brain using non-invasive MRI methods, as part of a larger collaborative team working to understand how signals measured in neuroimaging in one domain (e.g. electrical, structural, chemical, vascular) couple to differences in signals measured in another, and how the brain responds to perturbation. To pursue excellence in research, publishing work in high-quality journals [Grade 7: contribute to internationally recognised research performance including winning research funding]

Research
• To work with a large team of researchers in CUBRIC to deliver the strategic aims of the Wellcome Trust Strategic Award entitled 'Multi-Scale and Multi-Modal Assessment of Coupling in the Healthy and Diseased Brain'
• To develop and apply novel quantitative microstructural imaging approaches, with a focus on advanced models of diffusion that exploit the high gradient performance of the National Microstructural Imaging Facility (http://goo.gl/KQRGm0). A key focus will be on the diffusion time-dependence of the diffusion-encoded signal, and separation of uninteresting sources of variance from interesting (biological) sources of variance.
• To explore synergistic benefits of information from other imaging approaches used at CUBRIC, including quantitative relaxometry, quantitative magnetization transfer imaging and quantitative susceptibility mapping.
• To contribute to the overall research performance of CUBRIC, the School and University by the production of measurable outputs including bidding for funding, publishing in international academic journals and conferences, and the recruitment and supervision/co-supervision of postgraduate students.
• To work collaboratively with other CUBRIC researchers, members of the National Microstructural Imaging Facility steering committee, and related colleagues, working on microstructural imaging methods, providing advice and support where needed.
• To develop research objectives and proposals for own or joint research including research funding proposals [Grade 7: independently develop research objectives, acting as PI as required]
• To undertake administrative tasks associated with the research project, including the planning and organisation of the project and the implementation of procedures required to ensure accurate and timely reporting
• To review and synthesise existing research literature within the field
• To participate in CUBRIC/School research activities (seminars, workshops, training etc.).
• To build and create networks both internally and externally to the university, to influence decisions, explore future research requirements, and share research ideas for the benefit of research projects [Grade 7: develop networks through national/international conference/seminar presentations]
• To prepare research ethics and research governance applications as appropriate

Other
• To engage effectively with industrial, commercial and public sector organisations, professional institutions, other academic institutions etc., regionally and nationally to raise CUBRIC’s profile, to cultivate strategically valuable alliances, and to pursue opportunities for collaboration across a range of activities.
• To undergo personal and professional development that is appropriate and which will enhance performance.

• To participate in administration and activities to promote CUBRIC and its work to the wider University and the outside world

• Any other duties not included above, but consistent with the role.
Person Specification

Essential Criteria

Qualifications and Education

1. Postgraduate degree at PhD level in a relevant subject area, for example, MR Physics / Engineering.

Knowledge, Skills and Experience

2. An established expertise and proven portfolio of research (i.e., with proven ability to publish papers that include the development of microstructural models in international journals) and experience within microstructural imaging, including:
   a. Specification of signal sampling protocols for microstructural imaging; b. Model fitting / optimisation; c. Monte Carlo simulation of diffusion-weighted signals; d. Artefact identification and amelioration; e. Interpretation of microstructural imaging data.
   [Grade 7: Growing national reputation within the field]

3. Detailed knowledge of the current status of research in diffusion MRI, including opportunities and challenges of working at high field and / or with ultra-strong gradients, and state-of-the-art modelling approaches.

4. Good working knowledge of other quantitative white matter imaging techniques, including multi-component relaxometry, magnetisation transfer imaging and susceptibility mapping.

5. Strong computing skills, including shell-scripting, coding (e.g. MATLAB), image-registration packages, the Linux environment, and use of statistical packages (e.g., R, SPSS).

6. Proven ability to be successful in contributing to competitive research funding [Grade 7: strong contribution to research grant applications]

Communication and Team Working

7. Proven ability in effective and persuasive communication, and to have excellent presentation skills

8. Proven ability to establish effective collaborations both inside and outside one’s primary institution, assuming an ambassadorial role both for the project and the host institution.

Other

9. Proven ability to demonstrate creativity, innovation and team-working and to work without close supervision

10. Proven ability to translate research findings into high quality published papers in a timely and efficient manner.

Desirable Criteria

11. A clear vision of how to grow and fund your research in the future

12. A willingness to take responsibility for academically-related administration.
13. Ability to supervise the work of others to focus team efforts and motivate individuals

14. Experience of effective working/collaboration with a range of disciplines (including clinical and non-clinical academic colleagues)

15. Willingness to provide training on neuroimaging analysis methods to colleagues at all levels from postgraduate to senior academic

16. Experience of MR sequence development/optimisation including pulse programming (e.g. Siemens IDEA, ICE).

17. Experience of working with preclinical/non-human high field systems

Additional Information

Evidencing Criteria - It is School of Psychology’s policy to use the person specification as a key tool for shortlisting. Candidates should evidence that they meet ALL of the essential criteria as well as, where relevant, the desirable. As part of the application process you will be asked to provide this evidence via a supporting statement. Please ensure when submitting this document/attaching it to your application profile you name it with the vacancy reference number.

If candidates do not provide written evidence of meeting all the essential criteria then their application will not be progressed.

Cardiff School of Psychology

We are recognised internationally for sustained excellence in research, impact and research-led teaching. We are a large School with over 50 academic staff, over 600 undergraduates and 150 postgraduate students. In the last assessment the School attained the highest rating of ‘excellent’ for its teaching from the HEFCW Teaching Quality Assessment Panel.

Many individuals in the School are leading figures in their research areas. In the last Research Excellence Framework we entered as a unit of over 80 staff with our colleagues in Psychological medicine. We were placed 2nd in our topic area across the UK. We have state of the art laboratories and experimental expertise across the range of psychology, and are currently building one of the largest and best equipped imaging centres in Europe (see: sites.cubric.cardiff.ac.uk).

Our collective aim is to understand the psychological and biological foundations of behaviour at both individual and group levels. The research undertaken in the School ranges from ‘synapse to society’, and includes normal behaviour in development and adulthood, the breakdown of cognition after stress, trauma and in neurological and/or genetic conditions, as well as key psychological issues of broad importance to society, such as prejudice, reproductive health and understanding risk. The School also contributes to cross-disciplinary University Research Institutes in Neuroscience and Mental Health, Sustainable Places, and Energy Systems Research.