Research Associate/Research Fellow in Microstructural Brain MRI

OVERVIEW

The Cardiff University Brain Research Imaging Centre (CUBRIC) seeks a creative and experienced microstructural MRI research scientist to join their team, in the final phase of a Wellcome Trust Strategic Award entitled 'Multi-scale and Multi-Modal Assessment of Coupling in the Healthy and Diseased Brain' (see: https://bit.ly/CUBRIC-MultiScale).

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.

This is a rare and exciting career opportunity to join a successful neuroimaging centre. 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: https://bit.ly/CUBRIC-NMIF).

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’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. The MRI labs also have a Skope field camera and TractInnovations optical tracking system. You can learn more about CUBRIC at: http://sites.cardiff.ac.uk/cubric
**APPOINTMENT DETAILS**

**Level:** Appointment will be made at either Research Associate (Grade 6), or Research Fellow (Grade 7), according to the level of expertise and experience.

**Salary:** £34,304 - £40,927 per annum (Grade 6); or £43,434 - £50,296 per annum (Grade 7). Appointment at Grade 7 is not expected to be appointed above starting salary grade 7.38 (£43,434 per annum).

**Duration:** The post is full time and fixed term. The post is available to start immediately, and will end before 11/06/23 (the end of the grant)

**Closing Date for Applications:** Monday 1st November 2021.

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 and to creating an inclusive working environment. We believe this can be achieved through attracting, developing, and retaining a diverse range of staff from many different backgrounds. We therefore welcome applicants from all sections of the community regardless of sex, ethnicity, disability, sexual orientation, trans identity, relationship status, religion or belief, caring responsibilities, or age. In supporting our employees to achieve a balance between their work and their personal lives, we will also consider proposals for flexible working or job share arrangements.

**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 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. If candidates do not provide written evidence of meeting all the essential criteria then their application will not be progressed. Please ensure when submitting this document/attaching it to your application profile you name it with the vacancy reference number (12381BR).

**PLEASE READ:**
(a) You are strongly advised to copy-and-paste each of the Essential Criteria (and any Desirable Criteria that you meet) into a separate document – and to provide written evidence, under each criterion, how you meet that criterion.
(b) Applicants are encouraged to have an informal conversation with Prof Derek Jones (CUBRIC Director and PI of the Wellcome Strategic Award) before submitting their application (jonesd27@cf.ac.uk).
(c) Applications can only be received through the official Cardiff University vacancies website.  
https://krb-sjobs.brassring.com/TGnewUI/Search/Home/HomeWithPreLoad?partnerid=30011&siteid=5460&PageType=searchResults&SearchType=linkquery&LinkID=6#jobDetails=1855679_5460
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 neuroimaging signals measured 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 develop and apply novel quantitative microstructural imaging approaches, with a focus on advanced tissue models that exploit the high gradient performance of the Connectom scanner.
- To explore synergistic benefits of information from other microstructural imaging approaches used at CUBRIC, including quantitative relaxometry, quantitative magnetization transfer imaging and quantitative susceptibility mapping.
- 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' (https://bit.ly/CUBRIC-MultiScale) including the integration of microstructural data into multimodal assessment of connectivity (e.g. using TMS, EEG, MEG, fMRI).
- To assist with data acquisition and analysis for the Welsh Advanced Neuroimaging Database ('WAND') study (https://bit.ly/CUBRIC-WAND). This includes the collection of neuroimaging and cognitive data.
- 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 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 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 methods in international journals) and experience within microstructural imaging, including:
   a. Specification of signal sampling protocols for microstructural imaging;
   b. Pre-processing pipelines, including artefact identification and amelioration;
   c. Model fitting / analysis of microstructural imaging data;
   d. Tract-specific / connectomic analyses;
   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 complimentary 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
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 hands-on data collection of MRI data
17. Experience of MR sequence development/optimisation including pulse programming (e.g. Siemens IDEA, ICE).
18. A clear vision of how to grow and fund your research in the future
19. A willingness to take responsibility for academically-related administration.