



UNIVERSITY OF LIVERPOOL



POSTDOCTORAL RESEARCH FELLOW (NEUROIMAGING)

Job Ref: 010761



Faculty: Health & Life Sciences, Institute of Translation Medicine, Department of Molecular & Clinical Pharmacology

Location: University Campus & Aintree University Hospital

Grade: 7

Salary: Depending on qualifications and experience

Range: £34,188 - £39,640 pa

Tenure: Fixed Term, 3 years

Hours of work: Full-Time

Informal enquiries to Dr Simon Keller, e-mail simon.keller@liverpool.ac.uk

Shortlisting and interview arrangements are the responsibility of the recruiting Department. Please contact Hayley Sheppard on 0151 795 7421, e-mail hshep@liverpool.ac.uk for enquiries after the closing date.



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The Post

OVERVIEW

We are seeking a postdoctoral research fellow with a track record of neuroimaging research for a Medical Research Council funded project to study people with newly diagnosed epilepsy. The principle roles of the post will be to:

- Optimise the set-up of the project (e.g. MRI protocol)
- Co-ordinate the recruitment of patients and healthy controls into the study
- Liaise with collaborators throughout the duration of the position
- Perform sophisticated MRI and EEG analysis studies, principally using network- and connectivity-based techniques
- Draft papers for publication

This research will be administered in the research group of Dr. Simon Keller located at the Walton Centre NHS Foundation Trust for Neurology and Neurosurgery and the Liverpool Magnetic Resonance Imaging Centre (LiMRIC) on the main university campus. Work will be performed in collaboration with clinicians at the Walton Centre, and collaborators at University of Manchester, King's College London and Medical University South Carolina.

THE LIVERPOOL EPILEPSY RESEARCH GROUP

The Liverpool epilepsy research group (ERG) has a longstanding international reputation for assessing outcomes in epilepsy. The ERG has led some of the largest randomised controlled trials in epilepsy to date, which includes two MRC funded trials (MRC antiepileptic withdrawal study, and the MESS study) and the NIHR HTA funded SANAD and SANAD II trials. The ERG also leads the Cochrane Epilepsy Group and epilepsy is a major theme within the MRC North West Hub for Trials Methodology Research. An overriding common theme to the broad research portfolio within the ERG is to assess prognostic markers of treatment outcome in epilepsy. The principle research objectives of the neuroimaging arm of the ERG include the use of MRI to assess biomarkers of treatment outcome in people with newly diagnosed and chronic epilepsy. Neuroimaging research in Liverpool is supported by a recently installed and research-dedicated 3 T Siemens Prisma MRI system at LiMRIC and four MRI scanners at the Walton Centre.

THE PROJECT

Epilepsy is one of the most common serious neurological disorders. However, the vast majority of research studies are performed in patients with chronic epilepsy. There are very few sophisticated imaging studies in the early stages of human epilepsy despite that this is a key time point to understand the underlying biology of the disorder and the best time to identify prognostic markers of treatment outcome. Furthermore, many patients with a new diagnosis of epilepsy experience cognitive problems; again, the mechanisms underlying these issues have not been investigated with sophisticated imaging techniques. The first line of treatment for people with epilepsy is antiepileptic drugs (AEDs). 60% of patients with epilepsy experience seizure freedom after AED treatment. The reasons for persistent seizures in the remaining patients are unknown. Conventional imaging and clinical investigations have not established reliable prognostic markers of treatment outcome. The analysis of structural and functional brain networks is providing increasing insights into neurological and neuropsychiatric disorders. In this project, network- and connectivity-based analyses of brain structure and function will be applied to MRI and EEG data prospectively collected in people with a new diagnosis of focal epilepsy. The primary goals of the project will be to:

- Characterise brain network alterations in people with a new diagnosis of epilepsy
- Determine whether alterations in brain networks and connectivity relate to neuropsychological impairments in the same cohort
- In context of a longitudinal design, identify imaging prognostic markers of AED treatment outcome



ROLE

You will take responsibility for:

- recruitment of participants into the study
- the acquisition of MRI and EEG data
- analysis of the neuroimaging data
- preparing manuscripts for publication

You will coordinate and liaise with colleagues and collaborators under the supervision of Dr. Simon Keller. You will have experience of working in a multi-disciplinary team. You will work with other members of the neuroimaging team within the ERG to develop and apply network- and connectivity-based methods to MRI and EEG data. Experience with network-based imaging (e.g. connectome analyses) would be an advantage. Training in specific network-based analysis approaches can also be provided. Specific aspects of the role include:

- Analysis of diffusion and functional MRI data using a variety of network-based methods
- Resting-state connectivity analysis of clinically-acquired EEG data
- Management of neuroimaging and demographic data relevant to this project
- Work closely with a Psychologist Research Assistant who will be acquiring neuropsychological data in the same cohort
- To review the literature on network analysis and novel biomarkers in epilepsy
- To lead the write-up and dissemination of study findings in reports for the funder, academic journals, conferences and other relevant audiences
- To mentor PhD students in the epilepsy neuroimaging group who perform network- and connectivity-based analysis of brain MRI
- Other duties within the scope and purpose of the role as requested by the lead

You will have a PhD in a relevant field (e.g. neuroimaging, computer science, engineering, medicine, cognitive neuroscience etc.) and experience of network- and connectivity-based neuroimaging to study the human brain. Knowledge and experience of Matlab and quantitative image analysis software packages is essential. You will be able to work independently towards agreed goals with a high degree of professional integrity and trustworthiness and be able to confidently communicate research findings to collaborators and members of the wider research community. A demonstrated experience of patient recruitment into research studies would be an advantage.

You will be based at two sites, the Walton Centre and LiMRIC, which are 5-6 miles apart. Both are easily accessible by public transport and have car parking facilities.

The post offers the opportunity to join a strong inter-disciplinary team with an excellent international reputation for epilepsy and neuroimaging research. You will be fully supported to develop your skills and your future career plans.

The post is fixed-term for three years in the first instance, anticipated start date of 1st April 2019.



Person Specification

ESSENTIAL CRITERIA

DESIRABLE CRITERIA

(Identified from – Application form, CV, Supporting Statement, Interview, References)

EXPERIENCE

1.	Knowledge and experience of quantitative MRI methods applied to study the human brain	Experience of neuroimaging in clinical (neurological, neurodegenerative, psychiatric) contexts
2.	Knowledge and experience of MRI-based connectivity analysis (e.g. connectome analysis, graph theory) using DTI and resting-state fMRI	Experience of working in a multidisciplinary team including neuroimaging and computer scientists, clinicians, statisticians etc
3.	Experience of participant (preferably patient) recruitment into research studies	
4.	A track record commensurate with experience of collaborative research leading to publication in internationally recognised journal	

EDUCATION, QUALIFICATIONS AND TRAINING

1.	PhD in area relevant to this post (e.g. neuroimaging, computer science, engineering, medicine, cognitive neuroscience etc)	
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SKILLS, GENERAL AND SPECIAL KNOWLEDGE

1.	Proficiency with Matlab and other software for brain network/connectivity analysis	
2.	Excellent IT skills	
3.	Excellent practical and problem-solving skills	

PERSONAL ATTRIBUTES AND CIRCUMSTANCES

1.	Able to work independently towards agreed goals with a high degree of professional integrity and trustworthiness	Motivation to develop career as an independent researcher in neuroimaging
2.	Able to confidently communicate research findings to collaborators and members of the wider research community	
3.	Initiative, flexibility and ability to work under pressure and to deadlines	



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A World Class University



The University of Liverpool is one of the UK's leading research institutions with an annual turnover of £480 million, including £102 million for research. Ranked in the top 1% of higher education institutions worldwide, Liverpool is a member of the prestigious Russell Group of the UK's leading research universities. The University has 33,000 students, 7,500 of whom travel from all over the world to study here, and 211,000 alumni in 171 countries. Its global focus has led the institution to establish a university in Suzhou near Shanghai, in partnership with Xi'an Jiaotong University, as well as a campus in London. The University is the largest provider of 100% online postgraduate degree courses in Europe with over 10,000 students studying for Liverpool degrees around the world.

As one of the top 25 UK universities targeted by global graduate employers, and 18th in the top universities in the UK for graduate employability our students enjoy high employability rates, with 88% of all of the University's graduates in employment or further study six months after graduation. For undergraduate leavers this rises to 90% and to 95% for UK-based undergraduate leavers. The University is committed to continually improving the quality of its student experience, and, supported by a £600 million phased investment in our campus our approach has had a significant impact on the University's student recruitment position in recent years.

Liverpool graduates have become pioneers in every field, with Nobel prize winners including: Sir Ronald Ross (1902; discovery of mode of spread of malaria), Professor Charles Glover Barkla (1917; discovery of the electromagnetic properties of x-rays), Professor Sir Charles Sherrington (1932; functional analysis of motor unit in a muscle), Professor Sir James Chadwick (1936; discovery of the neutron), Professor Sir Robert Robinson (1947; investigation into alkaloids and other plant products), Professor Har Gobind Khorana (1968; genetic code of protein synthesis), Professor Rodney Robert Porter (1972; structure of antibodies); Professor Sir Joseph Rotblat (1995; work to diminish the role of nuclear arms in international politics) and Ronald H. Coase – awarded the Nobel Prize in Economics 1991 for his research into the significance of transaction costs and property rights for the institutional structure and functioning of the economy.

Over 6,000 talented staff help create the inspiring learning environment our students thrive in, it's no wonder given over 81% of our research is seen as 'world leading' and 'internationally excellent'. What's more, we provide a supportive and high-quality environment for our people across the University and a range of initiatives ensure that there are equal opportunities for all, including our partnership with Athena SWAN which celebrates good employment practice for women working in science, technology, engineering and medicine.

Life Changing, World Shaping



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The City of Liverpool



As the seventh largest city in the UK, Liverpool is diverse, energetic and exciting. Built on an illustrious heritage that stretches back 800 years, Liverpool has a global reputation for sport, music, architecture and culture.

Today the city is enjoying a resurgence, driven by its designation as European Capital of Culture in 2008. Record levels of inward investment have transformed the city.

The regeneration of Liverpool City Centre has been spearheaded by the £1 billion Liverpool One project - one of Europe's biggest shopping/mixed-use schemes, which has positioned the city as one of the UK's top five retail destinations.

The successful European Capital of Culture experience in 2008 has been followed by the designation of Liverpool's stunning waterfront as a UNESCO World Heritage Site and massive investment in new cultural and leisure attractions, including Albert Dock. Liverpool is a major cultural hub in the UK. In fact, there are more museums, theatres, and galleries in Merseyside than in any other region outside London.

Liverpool Philharmonic Hall, home to the Royal Liverpool Philharmonic Orchestra, one of Europe's leading orchestras, is the classical counterpoint to the city's many contemporary music venues and the visually stunning Echo Arena.

Home to two of Europe's most famous football teams – Liverpool FC and Everton FC– the city's achievements in sport are internationally recognised. Aintree Racecourse, home of the Grand National, and two internationally acclaimed golf courses at Royal Birkdale & Royal Liverpool in Hoylake are on the doorstep.

Compared to many other UK cities Liverpool has less congestion, is closer to countryside, has more parks, has more cultural and recreational opportunities, better schools and more accessible transport. Liverpool is uniquely situated 1 hour from Manchester, 3 hours from London by train and the city's Liverpool John Lennon Airport (one of the Europe's fastest growing airports) connects to more than 650 world wide destinations.

For more information on the city of Liverpool, visit: www.itsliverpool.com



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General Information

Asylum & Immigration

The University will comply with the Immigration, Asylum and Nationality Act 2006, which requires all employees to provide documentary evidence of their legal right to work in this country prior to commencing employment. Please be aware that you will be required to bring your passport (and visa if applicable) to interview so that it can be copied and verified by a member of the Selection Panel. For posts requiring a recognised degree level or equivalent qualification, and where there is no suitable UK or European Economic Area candidate, the University will take the necessary steps to secure UK Border Agency permission for a foreign national to take up employment.

Should a candidate require a Certificate of Sponsorship in order to take up a post they will need to meet the UK Border Agency Tier 2 Points Based Criteria. A self assessment tool can be found on the UK Border Agency website at: www.ukba.homeoffice.gov.uk/pointscalculator

A candidate may also be required to undertake an English Language test prior to commencing work at the University. Details of Home Office approved tests can be found at: <https://www.gov.uk/government/publications/guidance-on-applying-for-uk-visa-approved-english-language-tests>

Further information on the eligibility criteria for Certificates of Sponsorship can be found at: www.ukba.homeoffice.gov.uk/employers/points

National Insurance Number

All employed individuals must possess a UK National Insurance Number. Further information and how to apply for a unique National Insurance Number can be found at: <https://www.gov.uk/apply-national-insurance-number>

Diversity and Equality

The University of Liverpool is committed to diversity and equality of opportunity. All employees and applicants for jobs will be considered on their abilities and will not be discriminated against on the grounds of age, caring responsibilities, colour, disability, employment status, gender, gender identity, marital status, nationality, race or ethnic origin, religion or belief, sexual orientation, socio-economic status or any other irrelevant distinction. Training is available to support career progression within the University.

Two Ticks Disability: Guaranteed Interview Scheme (GIS)

The University of Liverpool is committed to the employment of disabled people, and as part of our commitment, we guarantee to interview all disabled applicants who meet the essential criteria for a post and consider them on their abilities. If your disability prevents you completing the application form by the specified closing date, or when the vacancy closes early, due to a high volume of applications, please call the Recruitment Team to discuss alternative arrangements. <http://www.liv.ac.uk/working/jobvacancies/guaranteedinterviewscheme/>

Micah Liverpool Programme

The University of Liverpool supports the Liverpool Anglican Cathedral Micah Liverpool Programme. Applicants who have successfully completed the programme and meet the essential criteria for the post will be offered a guaranteed interview. Please note that individuals will be confirmed through the Micah Liverpool Programme directly. <http://www.liverpoolcathedral.org.uk/home/micah-liverpool.aspx>

GiveGetGo Volunteer Programme

Applicants who have successfully completed the GiveGetGo Volunteer Programme at the University in Partnership with the Transform Lives Company who meet the essential criteria for the post will be offered a guaranteed interview. Please note that individuals will be confirmed through the GiveGetGo Volunteer Programme directly. <https://www.liverpool.ac.uk/working/jobvacancies/givegetgo/>

Accessibility

If you require copies of documentation in alternative formats, for example, large print or Braille, please contact jobs@liverpool.ac.uk or telephone 0151 794 6771.

If you have any other requirements which will help you access the application or interview process or employment opportunities at the University of Liverpool, please let us know by contacting jobs@liverpool.ac.uk or telephone 0151 794 6771.

Pension

The Occupational Pension Scheme associated with this appointment is the Universities Superannuation Scheme (USS). You are encouraged to familiarise yourself with the full particulars of the scheme which can be found [here](#)

Outcome of applications

Vacancies at the University often attract a large number of candidates and it is not always possible to respond individually to every application. If you have not heard from the recruiting department within 6 weeks after the closing date please take it that your application has not been successful.



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