



NUFFIELD DEPARTMENT OF  
CLINICAL NEUROSCIENCES

West Wing, Level 6, John Radcliffe Hospital, Oxford, OX3 9DU

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UNIVERSITY OF  
OXFORD

<b>Job title</b>	<b>Postdoctoral Researcher in Diffusion MRI Methods</b>
<b>Division</b>	Medical Sciences Division
<b>Department</b>	Nuffield Department of Clinical Neurosciences (NDCN)
<b>Location</b>	WIN@FMRIB, John Radcliffe Hospital, Oxford, OX3 9DU
<b>Grade and salary</b>	Grade 8: £48,235 – £57,255 per annum
<b>Hours</b>	Full time
<b>Contract type</b>	Fixed-term (12 months)
<b>Reporting to</b>	Prof. Karla Miller, Deputy Director for WIN
<b>Vacancy reference</b>	176575

<b>Research topic</b>	Diffusion MRI acquisition and reconstruction methods development
<b>Principal Investigator / supervisor</b>	Prof. Karla Miller, Deputy Director for WIN
<b>Project team</b>	WIN Physics Group
<b>Project web site</b>	<a href="http://www.ox.ac.uk/">www.ox.ac.uk/</a> <a href="https://www.win.ox.ac.uk/research/physics-research">https://www.win.ox.ac.uk/research/physics-research</a>
<b>Funding partner</b>	The funds supporting this research project are provided by the Wellcome Trust
<b>Recent publications</b>	<p>Li Z, Miller KL, Zhu S, Wu W. Submillimeter diffusion MRI using an in-plane segmented 3D multi-slab acquisition and denoiser-regularized reconstruction. 2024; bioRxiv</p> <p>Li Z, Miller KL, Chen X, Chiew M, Wu W. Self-navigated 3D diffusion MRI using an optimized CAIPI sampling and structured low-rank reconstruction estimated navigator. IEEE Transactions on Medical Imaging, 2024.</p> <p>Li Z, Miller KL, Andersson JLR, Zhang J, Liu S, Guo H, Wu W. Sampling strategies and integrated reconstruction for reducing</p>



Athena  
Swan  
Silver Award



Race  
Equality  
Charter  
Bronze Award



	distortion and boundary slice aliasing in high-resolution 3D diffusion MRI. Magnetic Resonance in Medicine, 2023; 90(4), 1484-1501.
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## The role

The post will be based within the Oxford Centre for Functional MRI of the Brain (FMRIB), reporting to Professor Karla Miller. Our group develops, validates and applies novel MRI techniques for basic and clinical neuroscience.

This project involves development and integration of advanced acquisition and reconstruction techniques for diffusion MRI. We will develop novel acquisition and reconstruction methods, design cutting-edge imaging protocols, and conduct experiments to demonstrate these techniques. Specifically, we aim to develop sub-millimeter diffusion MRI methods that are suitable for imaging the laminar structure of brain gray matter. We aim for these techniques to be deployable using vendor agnostic sequence platforms at both 3- and 7-tesla.

The post holder will be expected to take an independent and proactive role in managing the research process, maintaining and setting up collaborations, and generating new research and grant opportunities.

## Responsibilities

- Develop research programme and conduct individual research into novel acquisition and reconstruction techniques for high-resolution diffusion MRI.
- Develop, implement, and disseminate platforms for diffusion MRI, including implementation of vendor-agnostic acquisition and reconstruction.
- Disseminate research findings. Regularly write research articles for international peer-reviewed journals. Present papers at international conferences and lead seminars.
- Agree clear task objectives, organise, and delegate work to other members of the team, including co-supervision of post-graduate research students.
- Raise research funds through grant applications and manage own area of a larger research budget
- Share responsibility for shaping the research group's plans and the writing of group-funding applications for new research projects
- Represent the research group at external meetings/seminars and carry out collaborative projects with colleagues in partner institutions
- Undertake other duties in the department from time to time as determined commensurate with the grade and responsibilities of this post, and any other reasonable request

## Selection criteria

### Essential selection criteria

- Doctoral degree (PhD or DPhil) in physics, engineering or other relevant discipline
- Strong publication record and familiarity with research in diffusion MRI methods.



- Expertise in diffusion MRI acquisition techniques, ideally including 3D acquisition methods (e.g., multi-slab corrections and CAIPI sampling) at 7T
- Expertise in reconstruction of diffusion MRI data, ideally including navigator reconstruction, denoising, and constrained/regularised optimisation
- Experience with deep learning for MRI acquisition and/or analysis
- Track record in experimental design and analysis of diffusion MRI data of the brain, ideally using 3D acquisition techniques
- Ability to manage own academic research, research projects, and associated activities
- Excellent communication skills

### Desirable selection criteria

- Experience in sequence development on Siemens platforms, ideally both 3T and 7T
- Experience with vendor-agnostic sequence development platforms, ideally PulSeq
- Experience with analysis methods in neuroimaging, ideally using FSL for post-processing and tractography
- Demonstrated collaborative abilities and desire to work in a team environment

## Pre-employment screening

### Standard checks

If you are offered the post, the offer will be subject to standard pre-employment checks. You will be asked to provide: proof of your right-to-work in the UK; proof of your identity; and (if we haven't done so already) we will contact the referees you have nominated. If you have previously worked for the University we will also verify key information such as your dates of employment and reason for leaving your previous role with the department/unit where you worked. You will also be asked to complete a health declaration so that you can tell us about any health conditions or disabilities for which you may need us to make appropriate adjustments.

Please read the candidate notes on the University's pre-employment screening procedures at: <https://www.jobs.ox.ac.uk/pre-employment-checks>

## About the University of Oxford

Welcome to the University of Oxford. We aim to lead the world in research and education for the benefit of society both in the UK and globally. Oxford's researchers engage with academic, commercial and cultural partners across the world to stimulate high-quality research and enable innovation through a broad range of social, policy and economic impacts.

We believe our strengths lie both in empowering individuals and teams to address fundamental questions of global significance, while providing all our staff with a welcoming and inclusive workplace that enables everyone to develop and do their best work. Recognising that diversity is our strength, vital for innovation and creativity, we aspire to build a truly diverse community which values and respects every individual's unique contribution.

While we have long traditions of scholarship, we are also forward-looking, creative and cutting-edge. Oxford is one of Europe's most entrepreneurial universities and we rank first in the UK for university spin-outs, and in recent years we have spun out 15-20 new companies every year. We are also recognised as leaders in support for social enterprise.



Join us and you will find a unique, democratic and international community, a great range of staff benefits and access to a vibrant array of cultural activities in the beautiful city of Oxford.

For more information, please visit [www.ox.ac.uk/about/organisation](http://www.ox.ac.uk/about/organisation).

## Medical Sciences Division

The Medical Sciences Division is an internationally recognized centre of excellence for biomedical and clinical research and teaching, and the largest academic division in the University of Oxford. World-leading programmes, housed in state-of-the-art facilities, cover the full range of scientific endeavour from the molecule to the population. With our NHS partners we also foster the highest possible standards in patient care.

For more information visit: [www.medsci.ox.ac.uk](http://www.medsci.ox.ac.uk)

## The Nuffield Department of Clinical Neurosciences

The Nuffield Department of Clinical Neurosciences (NDCN), led by Prof Kevin Talbot, has over 400 staff and 150 postgraduate students. NDCN has an established research and teaching portfolio with a national and international reputation for excellence.

NDCN is based in high quality research and clinical facilities in the West Wing of the John Radcliffe Hospital, alongside the Department's world-class Wellcome Centre for Integrative Neuroimaging (WIN) and the Weatherall Institute of Molecular Medicine (which houses 3 of our research groups), and provides the ideal facilities to translate research from bench to bedside. In keeping with the award of NIHR Comprehensive Biomedical Research Centre status, to a partnership between Oxford University and the Oxford Radcliffe Hospitals NHS Trust, we have developed a highly integrated and interdisciplinary environment in which research, teaching, clinical training and clinical care interact. This enables us to establish new approaches to the understanding, diagnosis and treatment of brain diseases. To this end the Department fosters collaborations worldwide and warmly welcomes visiting scientists, clinical fellows and students.

For more information visit: [www.ndcn.ox.ac.uk](http://www.ndcn.ox.ac.uk)

The Department comprises six sections:

### Medical Research Council Brain Network Dynamics Unit

The MRC BNDU is directed by Professor Peter Magill and is exceptionally multidisciplinary, integrating research programmes that span clinical, experimental and computational neuroscience. The Unit's collective goal is to understand and exploit the moment-to-moment interactions between nerve cells that are critical for brain functions, with a special focus on the brain circuits underlying movement and memory.

For more information visit: [www.mrcbndu.ox.ac.uk](http://www.mrcbndu.ox.ac.uk)

### Nuffield Division of Anaesthesia

NDA is led by Associate Professor Andrew Farmery. The NDA is committed to the development and maintenance of internationally competitive research programmes in pain and consciousness; respiration and hypoxia; adult and neuro-intensive care; simulation and human factors training.

For more information visit [www.nda.ox.ac.uk](http://www.nda.ox.ac.uk)

### Division of Clinical Neurology

DCN is led by Professor David Bennett. DCN is committed to the development of research programs that improve understanding of the nervous system in health and disease.

For more information visit [www.dcn.ox.ac.uk](http://www.dcn.ox.ac.uk)

### The Wellcome Centre for Integrative Neuroimaging (WIN)

WIN is a multi-disciplinary neuroimaging research facility led by Heidi Johansen-Berg. WIN aims to bridge the gap between laboratory neuroscience and human health, by performing multi-scale



studies spanning from animal models through to human populations. It focuses on the use of Magnetic Resonance Imaging (MRI) for neuroscience research, along with related technologies such as Transcranial Magnetic Stimulation, transcranial Direct Current Stimulation, MEG and EEG. WIN has core locations at the John Radcliffe Hospital (FMRIB), Warneford Hospital (OHBA) and University Science area (BSB).

For more information visit [www.win.ox.ac.uk](http://www.win.ox.ac.uk)

### **Nuffield Laboratory of Ophthalmology**

NLO is led by Professor Russell Foster, who leads the Sleep & Circadian Neuroscience Institute. NLO pursues scientific and clinical research into a range of areas related to vision, the eye and circadian neuroscience.

For more information visit [www.nlo.ox.ac.uk](http://www.nlo.ox.ac.uk)

### **Centre for the Prevention of Stroke & Dementia**

CPSD is led by Professor Peter Rothwell. The centre carries out research that increases understanding of the causes of cerebrovascular disease. Its aims are to improve prevention of stroke and dementia by earlier diagnosis, more reliable prognostication, and more effective use of existing preventive treatments in routine clinical practice.

For more information visit [www.cpsd.ox.ac.uk](http://www.cpsd.ox.ac.uk)

### **Working at NDCN**

NDCN actively promotes a healthy work life balance amongst employees through a number of family friendly policies. See <https://hr.admin.ox.ac.uk/staff-benefits> for further information.

The University of Oxford is a member of the [Athena SWAN Charter](#) and holds an institutional Bronze Athena SWAN award. The Department of Clinical Neurosciences holds a departmental Silver Athena award in recognition of its efforts to introduce organisational and cultural practices that promote advancement of gender equality: representation, progression and success for all.





## How to apply

Applications are made through our online recruitment portal. Information about how to apply is available on our Jobs website <https://www.jobs.ox.ac.uk/how-to-apply>.

Your application will be judged solely on the basis of how you demonstrate that you meet the selection criteria stated in the job description.

As part of your application you will be asked to provide details of two referees and indicate whether we can contact them now.

You will be asked to upload a CV and a supporting statement. The supporting statement must explain how you meet each of the selection criteria for the post using examples of your skills and experience. This may include experience gained in employment, education, or during career breaks (such as time out to care for dependants)

Please upload all documents **as PDF files** with your name and the document type in the filename.

All applications must be received by **midday** UK time on the closing date stated in the online advertisement.

If you currently work for the University please note that:

- as part of the referencing process, we will contact your current department to confirm basic employment details including reason for leaving
- although employees may hold multiple part-time posts, they may not hold more than the equivalent of a full time post. If you are offered this post, and accepting it would take you over the equivalent of full-time hours, you will be expected to resign from, or reduce hours in, your other posts(s) before starting work in the new post.

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## Information for priority candidates

A priority candidate is a University employee who is seeking redeployment because they have been advised that they are at risk of redundancy, or on grounds of ill-health/disability. Priority candidates are issued with a redeployment letter by their employing department(s).

If you are a priority candidate, please ensure that you attach your redeployment letter to your application (or email it to the contact address on the advert if the application form used for the vacancy does not allow attachments).

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## If you need help

Application FAQs, including technical troubleshooting advice is available at:

<https://staff.web.ox.ac.uk/recruitment-support-faqs>.

Non-technical questions about this job should be addressed to the recruiting department directly: [recruitment@ndcn.ox.ac.uk](mailto:recruitment@ndcn.ox.ac.uk).

To return to the online application at any stage, please go to: [www.recruit.ox.ac.uk](http://www.recruit.ox.ac.uk).

Please note that you will receive an automated email from our online recruitment portal to confirm receipt of your application. **Please check your spam/junk mail** if you do not receive this email.



## Important information for candidates

### Data Privacy

Please note that any personal data submitted to the University as part of the job application process will be processed in accordance with the GDPR and related UK data protection legislation. For further information, please see the University's Privacy Notice for Job Applicants at: <https://compliance.admin.ox.ac.uk/job-applicant-privacy-policy>. The University's Policy on Data Protection is available at: <https://compliance.admin.ox.ac.uk/data-protection-policy>.

### The University's policy on retirement

The University operates an Employer Justified Retirement Age (EJRA) for very senior research posts at **grade RSIV/D35 and clinical equivalents E62 and E82** of 30 September before the 70<sup>th</sup> birthday. The justification for this is explained at: <https://hr.admin.ox.ac.uk/the-ejra>.

For **existing** employees on these grades, any employment beyond the retirement age is subject to approval through the procedures: <https://hr.admin.ox.ac.uk/the-ejra>.

There is no normal or fixed age at which staff in posts at other grades have to retire. Staff at these grades may elect to retire in accordance with the rules of the applicable pension scheme, as may be amended from time to time.

### Equality of opportunity

Entry into employment with the University and progression within employment will be determined only by personal merit and the application of criteria which are related to the duties of each particular post and the relevant salary structure. In all cases, ability to perform the job will be the primary consideration. No applicant or member of staff shall be discriminated against because of age, disability, gender reassignment, marriage or civil partnership, pregnancy or maternity, race, religion or belief, sex, or sexual orientation.



# Benefits of working at the University

## Employee benefits

University employees enjoy 38 days' paid holiday, generous pension schemes, flexible working options, travel discounts including salary sacrifice schemes for bicycles and electric cars and other discounts. Staff can access a huge range of personal and professional development opportunities. See

<https://hr.admin.ox.ac.uk/staff-benefits>

## Employee Assistance Programme

As part of our wellbeing offering staff get free access to Health Assured, a confidential employee assistance programme, available 24/7 for 365 days a year. Find out more at

<https://staff.admin.ox.ac.uk/health-assured-eap>

## University Club and sports facilities

Membership of the University Club is free for University staff. It offers social, sporting, and hospitality facilities. Staff can also use the University Sports Centre on Iffley Road at discounted rates, including a fitness centre, powerlifting room, and swimming pool. See [www.club.ox.ac.uk](http://www.club.ox.ac.uk) and

<https://www.sport.ox.ac.uk/>.

## Information for staff new to Oxford

If you are relocating to Oxfordshire from overseas or elsewhere in the UK, the University's Welcome Service includes practical information about settling in the area, including advice on relocation, accommodation, and local schools. See <https://welcome.ox.ac.uk/>

There is also a visa loan scheme to cover the costs of UK visa applications for staff and their dependants. See <https://staffimmigration.admin.ox.ac.uk/visa-loan-scheme>

## Family-friendly benefits

We are a family-friendly employer with one of the most generous family leave schemes in the Higher Education sector (see <https://hr.web.ox.ac.uk/family-leave>). Our Childcare Services team provides guidance and support on childcare provision, and offers a range of high-quality childcare options at affordable prices for staff. In addition to 5 University nurseries, we partner with a number of local providers to offer in excess of 450 full time nursery places to our staff. Eligible parents are able to pay for childcare through salary sacrifice, further reducing costs. See <https://childcare.admin.ox.ac.uk/>.

## Supporting disability and health-related issues (inc menopause)

We are committed to supporting members of staff with disabilities or long-term health conditions, including those experiencing negative effects of menopause. Information about the University's Staff Disability Advisor, is at <https://edu.admin.ox.ac.uk/disability-support>. For information about how we support those going through menopause see <https://hr.admin.ox.ac.uk/menopause-guidance>

## Staff networks

The University has a number of staff networks including for research staff, BME staff, LGBT+ staff, disabled staff network and those going through menopause. Find out more at <https://edu.admin.ox.ac.uk/networks>

## The University of Oxford Newcomers' Club

The University of Oxford Newcomers' Club is run by volunteers that aims to assist the partners of new staff settle into Oxford, and provides them with an opportunity to meet people and make connections in the local area. See [www.newcomers.ox.ac.uk](http://www.newcomers.ox.ac.uk).

## Research staff

The Researcher Hub supports all researchers on fixed-term contracts. They aim to help you settle in comfortably, make connections, grow as a person, extend your research expertise and approach your next career step with confidence. Find out more at <https://www.ox.ac.uk/research/support-researchers/researcher-hub>

Oxford's Research Staff Society is a collective voice for our researchers. They also organise social and professional networking activities for researchers. Find out more at <https://www.ox.ac.uk/research/support-researchers/connecting-other-researchers/oxford-research-staff-society>

