<table>
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<tr>
<th><strong>Job title</strong></th>
<th>Postdoctoral Research Scientist in MRI Methods</th>
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<td><strong>Division</strong></td>
<td>Medical Sciences Division</td>
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<tr>
<td><strong>Department</strong></td>
<td>Nuffield Department of Clinical Neurosciences (NDCN)</td>
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<tr>
<td><strong>Location</strong></td>
<td>WIN@FMRIB, John Radcliffe Hospital, Oxford, OX3 9DU</td>
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**Grade and salary**

- **Grade 8**: £45,585 – £54,395 per annum
- *A less experienced candidate may be appointed at Grade 7 (£36,024 – £44,263 per annum), with a commensurate adjustment in either the essential criteria, responsibilities or duties.*

**Hours**

- Full time (37.5 hours)
- *Part time hours will be considered*

**Contract type**

- Fixed term until 31 August 2026

**Reporting to**

- Prof. Karla Miller

**Vacancy reference**

- 167106

**Additional information**

- *This vacancy is for two posts*

**Research topic**

- Biophysical modelling and simulation for MRI data harmonisation

**Principal Investigator / supervisor**

- Prof. Karla Miller

**Project team**

- WIN Physics Group

**Project web site**

- [https://www.win.ox.ac.uk/research/physics-research](https://www.win.ox.ac.uk/research/physics-research)

**Funding partner**

- The funds supporting this research project are provided by the Wellcome Trust

**Recent publications**

- Wang et al, *Nat Neurosci*. 2022. doi: [10.1038/s41593-022-01074-w](https://doi.org/10.1038/s41593-022-01074-w)
- Douaud et al, *Nature*. 2022. doi: [10.1038/s41586-022-04569-5](https://doi.org/10.1038/s41586-022-04569-5)
- Miller et al, *Nat Neurosci*. 2016. doi: [10.1038/nn.4393](https://doi.org/10.1038/nn.4393)
The project

The past decade has seen the emergence of population-level brain imaging. For the first time, imaging can provide a rich, multi-faceted description of how an individual’s brain deviates from population norms, potentially informing about early pathology or susceptibility to disease. However, the imaging in these new population-health resources reflects specific imaging protocols that may not match acquisitions in novel settings, such as hospital scanners.

We aim to enable clinical imaging to take advantage of population-level health data resources by addressing the deep challenges of information translation. We will achieve this by linking the relevant biology to the physics of the imaging measurement in order to predict unseen imaging phenotypes. This requires new research across multiple domains, including biophysical modelling, physics-based simulation, development of imaging protocols, quantitative measurement, and non-linear modelling/optimisation.

This research is funded by the Wellcome Trust and is based at the Wellcome Centre for Integrative Neuroimaging (WIN) in Oxford, UK. The project is directed by Professor Karla Miller, in collaboration with other members of the WIN physics team and partner institutions. Professor Miller’s research portfolio includes co-leading brain imaging in the UK Biobank, the world’s largest population imaging study, and the translation of MRI markers from microscopy to rodents to humans.

Our lab values diversity and equity. We are committed to creating a working environment where everyone belongs and can thrive. You can read about our lab ethos, culture, and commitment to each other in our Lab Handbook: https://www.win.ox.ac.uk/files/training/lab-handbook-abridged.pdf

The role

We are looking to hire two postdocs with a background in MRI physics/engineering, between whom we will gain experience in:

- Biophysical modelling
- Bloch-based physics simulation
- Multi-modal quantitative MRI
- MRI experiment and analysis

The postholders will work closely together and with other members of the WIN physics group to create an MR physics-based framework for predicting imaging phenotypes from quantitative imaging data. They will be expected to take an independent and proactive role in managing their own research; establishing and maintaining international collaborations; representing the group and communicating our research; and generating new research and grant opportunities.
Responsibilities

- Develop novel biophysical modelling techniques and MRI signal prediction frameworks
- Develop novel quantitative MRI methods, including acquisition, reconstruction, and estimation
- Develop and deploy image analysis pipelines for extraction of quantitative phenotypes
- Propose and conduct experimental investigations using a broad range of quantitative and non-quantitative MRI methods
- Agree clear task objectives, organise, propose strategies, and delegate work to other members of the team as appropriate to the wider research program
- Collaborate with a global network of research partners
- Co-supervise DPhil students and/or early-career research assistants
- Share responsibility for shaping the research group’s plans by proposing new research directions and contributing to grant applications
- Regularly author journal articles and present the work at national and international scientific conferences
- 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 another relevant discipline
- Expertise in MRI physics/engineering
- Experience in scientific programming, e.g. Matlab, python, C/C++ or similar
- Ability to manage own academic research and associated activities
- Strong communication skills, including a track record in academic publication
- Experience independently managing a research project
- Collaborative abilities and desire to work in a team environment
Desirable selection criteria

- Experience in MRI protocol optimisation and experimental design
- Experience in biophysical modelling of MRI, Bloch simulation, and/or sequence development
- Track record in software architecture, including implementation of novel algorithms
- Experience with quantitative imaging, including DTI, QSM and relaxometry
- Knowledge of MR image reconstruction and/or optimisation techniques

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. 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.
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

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 Oxford Centre for Functional MRI of the Brain (FMRIB), 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. The Department comprises six sections:

For more information visit: www.ndcn.ox.ac.uk

Medical Research Council Brain Network Dynamics Unit
The MRC BNDU is directed by Professor Peter Brown 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

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

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
Centre for Functional Magnetic Resonance Imaging of the Brain
FMRIB is led by Professor Heidi Johansen-Berg. FMRIB is an internally recognised human neuroimaging centre housing both 3T and 7T scanners. The Centre has strong programmes of research in MR physics, image analysis and the applications of neuroscience in health and disease.

For more information visit [www.fmrib.ox.ac.uk](http://www.fmrib.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](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 e-recruitment system and you will find all the information you need about how to apply 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.

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).

If you need help

Help and support is available from: https://hrs systems.admin.ox.ac.uk/recruitment-support
If you require any further assistance please email recruitment.support@admin.ox.ac.uk.
To return to the online application at any stage, please go to: www.recruit.ox.ac.uk.
Please note that you will receive an automated email from our e-recruitment system 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 all academic posts and some academic-related posts. The University has adopted an EJRA of 30 September before the 69th birthday for all academic and academic-related staff in posts at grade 8 and above. The justification for this is explained at: https://hr.admin.ox.ac.uk/the-ejra

For existing employees, 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 grades 1–7 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, travel discounts, and a variety of professional development opportunities. Our range of other employee benefits and discounts also includes free entry to the Botanic Gardens and University colleges, and discounts at University museums. See https://hr.admin.ox.ac.uk/staff-benefits

University Club and sports facilities

Membership of the University Club is free for all University staff. The University Club 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 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 website 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 dependents. See https://staffimmigration.admin.ox.ac.uk/visa-loan-scheme.

Family-friendly benefits

With one of the most generous family leave schemes in the Higher Education sector, and a range of flexible working options, Oxford aims to be a family-friendly employer. We also subscribe to My Family Care, a service that provides practical advice and support for employees who have caring responsibilities. The service offers a free telephone advice line, and the ability to book emergency back-up care for children, adult dependents and elderly relatives. See https://hr.admin.ox.ac.uk/my-family-care
The University has excellent childcare services, including five University nurseries as well as University-supported places at many other private nurseries. For full details, including how to apply and the costs, see https://childcare.admin.ox.ac.uk/.

Disabled staff

We are committed to supporting members of staff with disabilities or long-term health conditions. For further details, including information about how to make contact, in confidence, with the University’s Staff Disability Advisor, see https://edu.admin.ox.ac.uk/disability-support

Staff networks

The University has a number of staff networks including the Oxford Research Staff Society, BME staff network, LGBT+ staff network and a disabled staff network. You can find more information at https://edu.admin.ox.ac.uk/networks

The University of Oxford Newcomers’ Club

The University of Oxford Newcomers’ Club is an organisation 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.