NUFFIELD DEPARTMENT OF
CLINICAL NEUROSCIENCES
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UNIVERSITY OF OXFORD

Job title	**Postdoctoral Research Associate in Cross-Species Neuro-AI**
Division	Medical Sciences Division
Department	Nuffield Department of Clinical Neurosciences (NDCN)
Location	Trinity College Institute of Neuroscience (TCIN), Trinity College Dublin, Ireland *The postholder will be employed by the University of Oxford and appointed within NDCN, but will be physically based at Trinity College Dublin as a visiting researcher. Regular engagement with Oxford (in person and remote) will be expected.* *Hybrid working is supported where compatible with research activities; regular on-site presence is expected for collaboration and training.*
Grade and salary	Research Grade 7: £39,424 – £47,779 per annum A less experienced candidate may be appointed at Research Grade 6 (£35,681 - £41,636 per annum), with a commensurate adjustment in either the essential criteria, responsibilities or duties.
Hours	Full time *Working times are flexible, provided they allow for sufficient in-person interactions for collaboration and training.* *Applications for a part time position at a minimum 0.8 FTE will be considered.*
Contract type	Fixed-term until 31st March 2029 in the first instance
Reporting to	Dr Sean Froudist-Walsh, UKRI Future Leaders Fellow
Vacancy reference	184889

Research topic	Cross-species simulation of brain-wide networks during cognition
Principal Investigator / supervisor	Dr Sean Froudist-Walsh

Project team	Cognition, Anatomy & Neural Networks (CANN) group
Project web site	www.ox.ac.uk/
Funding partner	The funds supporting this research project are provided by the UKRI via a Future Leaders Fellowship.
Recent publications	Froudist-Walsh, Sean, Daniel P. Bliss, Xingyu Ding, Lucija Rapan, Meiqi Niu, Kenneth Knoblauch, Karl Zilles, Henry Kennedy, Nicola Palomero-Gallagher, and Xiao-Jing Wang. "A dopamine gradient controls access to distributed working memory in the large-scale monkey cortex." Neuron 109, no. 21 (2021): 3500-3520. Ding*, Xingyu, Sean Froudist-Walsh*, Jorge Jaramillo*, Junjie Jiang, and Xiao-Jing Wang. "Cell type-specific connectome predicts distributed working memory activity in the mouse brain." elife 13 (2024): e85442. Sevenster, E., Thrivikraman, A., Davies, G., Klatzmann, U., Pedamonti, D. and Froudist-Walsh, S., Cortically-Embedded RNNs for integration of cortex-wide neuroscience data into recurrent neural network models. Cognitive Computational Neuroscience Conference, 2025. https://2025.ccneuro.org/abstract_pdf/Sevenster_2025_Cortically-Embedded_RNNs_integration_cortex-wide_neuroscience_data.pdf

The role

This postdoctoral position contributes to a UKRI-funded programme developing **anatomy-driven artificial intelligence for translational neuroscience**, with a focus on understanding how cognitive computations emerge from cortex-wide neural dynamics across species.

The PDRA will contribute primarily to developing and analysing **Cortically-Embedded Recurrent Neural Networks (CERNNs)** that simulate large-scale neural dynamics during cognitive tasks. These models integrate species-specific neuroanatomical constraints to enable principled comparisons between human, macaque, marmoset, and rodent cognition.

The postholder will be physically based at **Trinity College Dublin**, embedded in the School of Computer Science and Statistics, Artificial Intelligence Discipline, and the Trinity College Institute of Neuroscience (TCIN), where they will interact closely with experimental and computational neuroscience groups. They will hold visiting researcher status at Trinity while being employed and line-managed by the University of Oxford.

This role is well suited to a postdoctoral researcher seeking advanced training at the interface of **computational neuroscience, neuroanatomy, and AI**, with opportunities to build expertise towards future fellowships or faculty positions.

Flexible working

The role is primarily based on-site at Trinity College Dublin to facilitate close interaction with the Principal Investigator, CANN group collaborators and the local research environment. Some remote working is possible for computational tasks. Travel to Oxford and international collaborator sites will be supported where required for project meetings, training, and dissemination.

Responsibilities

- Develop and analyse neural network models of cognition, integrating species-specific anatomy
- Train models to perform cognitive tasks relevant to working memory, attention, and decision-making
- Compare model behaviour and neural dynamics across species
- Compare model outputs with empirical behavioural and neuroimaging or electrophysiological datasets from open sources and international collaborators
- Lead and contribute to the preparation of manuscripts for peer-reviewed journals
- Present research findings at seminars, conferences, and collaborative meetings
- Contribute to shared codebases, documentation, and open-science resources
- Assist with mentoring junior researchers
- 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

- Hold, or be close to completion of, a PhD/DPhil in neuroscience, computer science, physics, engineering, mathematics, or a closely related discipline
- Experience in computational modelling of neural systems, cognition, or dynamical systems
- Strong programming skills (e.g. Python; experience with neural network frameworks desirable)
- Experience analysing complex simulation or experimental datasets
- Ability to work independently and contribute effectively within an interdisciplinary research team
- Good written and verbal communication skills, with evidence of research dissemination

Desirable selection criteria

- Experience with recurrent neural networks or large-scale neural simulations
- Familiarity with neuroimaging or neurophysiological data (e.g. fMRI, MEG, electrophysiology)
- Interest in cross-species or translational neuroscience

- Experience in contributing to a positive scientific culture

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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.

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 Integrative Neuroimaging (OxCIN) 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

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

Nuffield Division of Anaesthesia
NDA is led by the Nuffield Professor of Anaesthetic Science, Bruce Biccard. The NDA is committed to the development and maintenance of internationally competitive research programmes in global anaesthesia and surgery; 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

The Oxford Centre for Integrative Neuroimaging (OxCIN)
OxCIN is a multi-disciplinary neuroimaging research facility led by Professor Karla Miller. OxCIN 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. OxCIN has core locations at the John Radcliffe Hospital (FMRIB), Warneford Hospital (OHBA) and University Science area (BSB).

For more information visit https://www.oxcin.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

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

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.

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

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.

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 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 70th 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

The University of Oxford is committed to equal opportunity, and to being a place where everyone belongs and is supported to succeed. We recognise how the diversity of our community enriches our ability to deliver on our academic mission.

We welcome applications from individuals from all backgrounds, including those under represented within higher education. No applicant or members of staff shall be unlawfully discriminated against on the basis of age, disability, gender reassignment, marriage or civil partnership, pregnancy or maternity, race, religion or belief, sex, or sexual orientation.

Employment with the University and progression within employment will be determined according to personal merit and the application of criteria related to the duties and conditions of the post. In all cases, the primary consideration will be the ability to perform the job.

As stated in the University's Equality Policy and Equality, Diversity and Inclusion Strategic Plan, our commitment to equality and diversity goes hand in hand with our commitment to academic freedom and free speech.

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 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.

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