NUFFIELD DEPARTMENT OF
CLINICAL NEUROSCIENCES
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UNIVERSITY OF OXFORD

Job title	**Senior Postdoctoral Researcher in Parkinson's Disease Biomarkers and α-Synuclein Seeding**
Division	Medical Sciences Division
Department	Nuffield Department of Clinical Neurosciences (NDCN)
Location	John Radcliffe Hospital, Headington, Oxford, OX3 9DU
Grade and salary	Research Grade 8: £50,067 - £59,396 per annum
Hours	Full time
Contract type	Fixed-term until 31st of March 2029
Reporting to	Professor Laura Parkkinen
Vacancy reference	189559
Additional information	This post is funded by Aligning Science Across Parkinson's (ASAP). The post holder will be expected to work in line with ASAP's open science policy, including the timely sharing of protocols, data and code.

Research topic	Development and application of α-synuclein seed amplification assays (SAA) to detect, quantify and characterise α-synuclein seeding activity in Parkinson's disease biofluids and brain tissue
Principal Investigator / supervisor	Professor Laura Parkkinen
Project team	Translational Neuropathology Group
Project web site	https://www.ndcn.ox.ac.uk/research/parkinsons-neuropathology-group
Funding partner	Aligning Science Across Parkinson's (ASAP)

Athena Swan Silver Award · Gender Charter · Race Equality Charter Bronze Award · ECU Race Charter · Stonewall Silver Employer 2022 · Environmental Sustainability at Oxford · Oxford Living Wage · We are a Living Wage Employer

Recent publications	1. Fairfoul G et al. Alpha-synuclein RT-QuIC in the CSF of patients with alpha-synucleinopathies. Ann Clin Transl Neurol. 2016;3(10):812-818. 2. Poggiolini I, et al. Diagnostic value of cerebrospinal fluid alpha-synuclein seed quantification in synucleinopathies. Brain. 2022;145(2):584–595. 3. Lee SS, Civitelli L, Parkkinen L. Brain-derived and in vitro-seeded alpha-synuclein fibrils exhibit distinct biophysical profiles. eLife. 2024;13:RP92775. 4. Bernhardt AM et al. A quantitative Lewy-fold-specific alpha-synuclein seed amplification assay as a progression marker for Parkinson's disease. Acta Neuropathol. 2025;149(1):20. 5. Bräuer S, Schniewind I, Dinter E, Falkenburger BH. Recursive seed amplification detects distinct α-synuclein strains in cerebrospinal fluid of patients with Parkinson's disease. Acta Neuropathol Commun. 2025;13(1):13. 6. Otero-Jimenez M et al. Novel in situ seeding immunodetection assay uncovers neuronal-driven alpha-synuclein seeding in Parkinson's disease. NPJ Parkinsons Dis. 2025;11(1):259.

The role

We are seeking an experienced Senior Postdoctoral Researcher to lead a defined laboratory-based workstream within the Translational Neuropathology Group (TNG) led by Professor Laura Parkkinen, in the Nuffield Department of Clinical Neurosciences (NDCN), University of Oxford. The role contributes to “Deciphering the Aggregatome: Unravelling Alpha-Synuclein Seeding Drivers in Parkinson’s Disease”, an international research programme supported by Aligning Science Across Parkinson’s (ASAP). The project brings together Oxford, the Max Planck Institute of Biochemistry and LMU Munich.

Misfolded α-synuclein aggregates are a defining pathological feature of Parkinson’s disease and related synucleinopathies. Seed amplification assays (SAAs), including RT-QuIC, can detect disease-associated α-synuclein seeding activity in human samples. The TNG group in Oxford has contributed to the development and application of these approaches in cerebrospinal fluid [1, 2] and to the biochemical characterisation of human brain-derived α-synuclein aggregates [3]. However, it remains unclear which molecular features explain differences in seeding activity and clinical progression.

The collaborative project will investigate the “aggregatome”, the molecular environment associated with α-synuclein aggregates, including interacting proteins, post-translational modifications, lipids and glycosaminoglycans. Complementary SAAs will be combined with biochemical and structural analyses, spatially resolved measurements and multi-omics data across brain tissue, cerebrospinal fluid, blood and skin. By comparing matched and longitudinal samples, the consortium aims to distinguish factors associated with seeding from those that functionally modify it, and to identify potential biomarkers and therapeutic targets.

Reporting to Professor Laura Parkkinen, the postholder will lead the Oxford research workstream focused on the measurement, mechanistic investigation and interpretation of α-synuclein seeding activity across human brain tissue and biofluids. They will independently develop research questions and experimental strategies within the agreed programme, supervise junior

researchers, coordinate specialist laboratory activities and manage resources allocated to their workstream.

The postholder will establish and critically evaluate quantitative, recursive and in situ seed amplification assays [4-6]; integrate kinetic results with biochemical, structural, spatial and multi-omics findings; and lead high-quality scientific outputs. They will collaborate closely with the ASAP network, contribute to grant development and project reporting, and ensure rigorous research governance, reproducibility and timely open-science sharing, subject to consent and data-access requirements.

Flexible working

We are happy to discuss flexible working arrangements, subject to the needs of the project. As this is a laboratory-based role, the majority of duties will need to be carried out on site.

Responsibilities

Core responsibilities

- Develop research questions within a defined scientific area; conduct original research and critically analyse complex quantitative and qualitative data from multiple sources.
- Design, establish, validate and pursue advanced experimental and analytical methods, resolving complex technical problems and generating original scientific insights.
- Lead the preparation of peer-reviewed research articles, reviews and scientific presentations; disseminate findings at national and international meetings and seminars.
- Set objectives, organise and delegate work, provide day-to-day supervision to research assistants and coach colleagues in specialist methods.
- Contribute to competitive grant applications and manage the budget and resources allocated to the research workstream.
- Contribute to the research group's scientific strategy, project planning, milestones and applications for future funding.
- Liaise with funders and project stakeholders as appropriate and represent the group at scientific and collaborative meetings.
- Lead collaborative research activities with partner institutions, coordinating experimental standards, data interpretation and delivery.
- Contribute to departmental scientific and management activities or committees where appropriate.
- 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

Role-specific responsibilities

- Lead the design, validation and comparative application of α-synuclein seed amplification assays (including quantitative, recursive and in situ SAA/RT-QuIC) in brain tissue and relevant biofluids, with robust controls, reproducibility criteria and quality assurance.

- Develop experimental strategies to distinguish differences in seed abundance from intrinsic seeding competency, and critically interpret kinetic and endpoint-dilution measurements.
- Oversee sample selection, processing, traceability and experimental use of human biospecimens in accordance with applicable consent, Human Tissue Act, institutional governance and laboratory safety requirements.
- Lead biochemical and biophysical characterisation of native and amplified α-synuclein species using appropriate methods such as fractionation, immunoassays, western blotting and microscopy, working with specialist collaborators for advanced structural studies.
- Integrate assay results with neuropathological, spatial and molecular measurements, including proteomics, lipidomics and glycan-related data generated across the consortium; develop robust statistical and reproducible computational analyses.
- Plan and coordinate experiments and deliverables across the Oxford team; supervise and train junior researchers, review data quality, maintain documentation and manage workstream consumables and equipment needs.
- Lead manuscripts, conference presentations, protocols and project reports; contribute to grant proposals and scientific discussions with Oxford and international ASAP collaborators.
- Ensure timely, responsible sharing of methods, code and research outputs in accordance with ASAP open-science policy and relevant ethical, legal and data governance restrictions.
- Participate in and support public engagement and widening access activities of the Department and University.
- Undertake mandatory University, Division and Department training as required.

Selection criteria

Essential selection criteria

- A relevant PhD/DPhil in neuroscience, molecular biology, biochemistry, biomedical science or a related discipline, with substantial post-qualification research experience.
- Demonstrated expertise in protein seed amplification assays, including assay development, optimisation, validation and quantitative analysis
- Advanced expertise in protein biochemistry, including protein extraction, isolation, characterisation and quantification, with experience in biochemical, immunoassay-based and/or spatial protein profiling techniques (e.g. Western blotting, ELISA, NULISA, Akoya/CODEX or comparable technologies).
- Strong research background in translational neuropathology and neurodegenerative diseases, with expertise in investigating molecular mechanisms of protein aggregation and their relationship to human disease.
- Experience in the analysis of human brain tissue and/or biofluids, including the application of molecular and biochemical approaches to investigate disease-associated protein pathology
- A strong record of peer-reviewed publications and detailed knowledge of the relevant literature in protein aggregation, neurodegeneration or related molecular research.

- Advanced specialist knowledge and scientific independence, with the ability to develop original research questions, design and implement experimental strategies, and lead a defined research workstream within a larger collaborative programme
- Demonstrated ability to independently plan, manage and deliver complex laboratory research projects, including effective management of priorities, resources and allocated research budgets.
- Strong analytical and problem-solving skills, including the ability to critically interpret complex experimental data, apply appropriate statistical approaches and ensure reproducibility and scientific rigour.
- Excellent written and oral communication skills, with experience leading scientific publications, presenting research findings and collaborating effectively with multidisciplinary and international research teams.
- Demonstrated ability to develop competitive research funding proposals or make substantial intellectual contributions to grant applications.
- Ability to supervise, mentor and train junior researchers, while maintaining high standards of research integrity, laboratory safety and regulatory compliance.

Desirable selection criteria

- Experience with advanced α-synuclein seed amplification methodologies, including quantitative endpoint dilution, recursive or in situ SAA approaches.
- Experience in the biochemical and biophysical characterisation of protein aggregates, including techniques such as ultracentrifugation, electron microscopy or other structural analysis methods.
- Extensive experience in human neuropathology, including neuropathological assessment, immunohistochemistry, multiplex immunofluorescence and spatial analysis of Parkinson's-associated protein pathology.
- Experience integrating molecular, biochemical and neuropathological findings with clinical data from well-characterised human cohorts, including computational analysis of complex datasets using R, Python or equivalent analytical tools.

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

Hazard-specific / Safety-critical duties

This job includes hazards or safety-critical activities. If you are offered the post, you will be asked to complete a health questionnaire which will be assessed by our Occupational Health Service, and the offer of employment will be subject a successful outcome of this assessment.

The hazards or safety-critical duties involved are as follows:

- Working with blood, human products and human tissues
- Work with any substance which has any of the following pictograms on their MSDS:



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:

Brain Network Dynamics Unit

The 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.bndu.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 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.

The post-holder should consider the environmental impact of their activities where relevant (e.g. energy use, waste, travel, procurement) and take reasonable steps to minimise this impact in line with University policies and guidance.

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.

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).

You will be asked to upload a CV and a supporting statement. 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