



Job title	Postdoctoral Researcher – Protein Crystallography and Drug Discovery
Division	Medical Sciences
Department	Nuffield Department of Medicine
Location	Centre for Medicines Discovery, BioChemistry Phase II, South Parks Road, Oxford, OX1 3QU In early 2023, we will be relocating to NDM Research Building (NDMRB), Old Road Campus, Headington, Oxford, OX3 7FZ
Grade and salary	Grade 7: £34,308 - £42,155 with a discretionary range to £46,047 p.a.
Hours	Full time
Contract type	Fixed-term contact for 2 years
Reporting to	Dr Emma Murphy, Team Leader
Vacancy reference	162034
Additional information	Funding provided by the Alzheimer's Research UK

The role

The Alzheimer's Research UK Oxford Drug Discovery Institute (ARUK-ODDI) is one of three research institutes sponsored by Alzheimer's Research UK and charged with uncovering novel therapeutic approaches for dementia. The research at the ARUK-ODDI is focused on molecular mechanisms underpinning innate immunity and organelle homeostasis, which have been revealed by human genetics studies to be hot-spots that harbour many risk alleles for Alzheimer's and Parkinson's disease. Our mission is to de-risk novel therapeutic approaches so that they are fit for further discovery investment. Consequently, we work closely with pharma and biotech companies and operate industry-style project teams to deliver our target validation and translational goals.

We have an opportunity for a Postdoctoral Scientist with extensive protein crystallography experience to join the ARUK-ODDI who will be part of a larger team carrying out research into new dementia targets. You will be part of a team that is responsible for identifying and validating novel compounds for use as tools to investigate and validate neurodegenerative targets and as starting points for potential therapeutics. Reporting to the Assay Development and Screening Team Leader (Dr Emma Murphy), you will become an integral part of target-based project teams working on drug discovery projects and employ cutting-edge structural and biophysical/biochemical research to characterise new proteins and carry out mechanism of action studies. The post will be embedded in the protein crystallography group at the CMD and will work closely with the group's team leader and experts in other technical disciplines, such as neuronal cell biology, protein production or medicinal chemistry. You will be responsible for performing fragment screening experiments on targets involved in Alzheimer's disease and other neurodegenerative diseases



causing dementia and be expected to take the lead in advancing initial fragment hits to potent compounds by closely collaborating with computational and medicinal chemists and to guide the elaboration process through crystallographic and biophysical analysis.

Current projects include proteins in the TREM2 signalling pathway, inflammasome formation and complement pathway. You can expect, within a short space of time, to become proficient in several platforms and able to provide technical advice to students and colleagues within the ARUK-ODDI, or collaborating academic groups. This is an exciting opportunity for an enthusiastic scientist who wants to drive novel protein targets involved in dementia from gene to compound.

Responsibilities

You will:

- Express and purify proteins for assay development and X-ray crystallography.
- Structurally characterise new proteins, develop biochemical (enzymatic) and biophysical assays, perform fragment screens. Research the mechanism of action of novel therapeutic chemistries.
- Provide compound bound protein structures to guide structure-based drug discovery. Develop biochemical and biophysical assays to validate hit molecules from fragment screening.
- Determine the most appropriate methodologies to test compounds, and identify suitable alternatives if technical problems arise and for use as orthogonal assays.
- Execute bench level experiments with the expectation that you will be able to write protocols, contribute to the design of experimental plans and develop new scientific techniques.
- Make detailed experimental observations and communicate critical input on experimental designs and approaches.
- Manage own research on a number of dementia projects and administrative activities, such as data entry into ELN (Dotmatics).
- Carefully analyse data, report the results and suggest a plan moving forward.
- Test hypotheses and analyse scientific data from a variety of sources, reviewing and refining working hypotheses as appropriate.
- Contribute ideas for new research projects, develop ideas for generating research income, and present detailed research proposals to senior researchers.
- You will possess excellent interpersonal, oral and written communication skills. Contribute to writing of scientific reports, journal articles and the presentation of data/papers at conferences.
- Participate in and support the public engagement and widening access activities of the Department and the University. This is anticipated to be not more than 2 days per year.
- Undertake mandatory training as required by the University, Division and Department. The specific list of training courses may change from time-to-time, in response to both legal and internal University requirements.
- Carry out any other relevant duties as may reasonably be associated with the post and which may be required from time to time.

Selection criteria

Essential

- Hold a PhD (or close to completion) around protein crystallography/in biochemistry or a related subject together with relevant laboratory experience.
- Strong background in protein crystallography and biochemistry/enzymology.
- Experience in protein production using bacteria, insect cells and mammalian expression systems.
- Experience of establishing assay protocols, in particular enzyme activity assays, considering throughput, specificity and robustness.

- Ability to manage own research with an eye for detail and take responsibility for administrative activities such as management of lab reagent stock, lab book writing.
- Good team-working skills and able to collaborate effectively within a dynamic team and matrix environment.
- Excellent communication skills, including the ability to write text that can be published, present data at conferences, and represent the research group at meetings.
- Reliable, well organised, showing meticulous attention to detail.

Desirable

- Previous experience in in vitro assay development including biochemical and biophysical assays (HTRF, enzyme activity assays, BLI, SPR, mass spectrometry).
- Experience working in a high-throughput assay environment and assay automation.
- Previous experience in a drug discovery 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. 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:

- Lone Working
- Work with any substance which has any of the following pictograms on their MSDS:



- Standard manual handling

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

The Medical Sciences Division is an internationally recognized centre of excellence for biomedical and clinical research and teaching. We are 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 please visit: www.medsci.ox.ac.uk

Nuffield Department of Clinical Medicine (NDM)

The Nuffield Department of Medicine aims to improve healthcare internationally through its research and teaching. Over the last fifty years, it has pioneered the use of genetics, structural and cellular biology to understand susceptibility to human disease; at the same time, it remains a department of clinical medicine with a clinical interface at the core of its success. The NDM is the largest department in the University of Oxford and the largest department of medicine in Europe by research income.

The department is organised around a series of strong and identifiably unique institutes, centres and units; but its aim is to be as non-hierarchical and closely-knit as possible, to encourage the very best interactions and the exchange of ideas between its staff. It supports teaching to encourage the very best students to join academic research. It maintains a £800m portfolio of externally funded research from over 140 different sponsors/funders, and has an annual turnover approaching £200m. The department's activity is run directly through the University, but also through a series of subsidiary companies and other legal vehicles, tailored to the activity and the countries within which it operates. Across these vehicles and partnerships, the department has over 3,000 staff and students working solely on, or supporting, its research and teaching; and 1,000 of these staff are based in Oxford. The NDM holds collaborative grants with ~40 other departments or centres in the University of Oxford.

The NDM is recognised for its diverse impacts in the field of healthcare. These range from the discovery of the mechanism of hypoxic gene regulation (Sir Peter Ratcliffe, Nobel Prize 2019) to the worldwide introduction of artemisinin and combination therapy for malaria (Sir Nick White and others). The underlying strength of the department, and its ability to bring together disciplines, has been evident through its contributions to the pandemic response, including: ISARIC and its overseas activity, IDDO and TGHN, the work of the Africa-Asia Programmes, the Oxford-AZ vaccine, elucidating the structural biology of variants and neutralising antibodies, the Office of National Statistics study, the UK Serology

Surveillance platform, the standard testing of commercial assays for the Government, Mobile Apps, RECOVERY trial leading to the worldwide use of dexamethasone, the NHS cohort studies, the COMBAT study. This activity has certainly saved more than 2m lives during the pandemic.

The major strategic plans of the NDM are built around, (1) establishing a step-change in to clinical pathology and the study of human disease in all clinical specialities; (2) accelerating the discovery of new medicines; and (3) addressing the burden of worldwide infectious disease, including emerging threats. The GSK-Oxford Molecular and Computational Medicine Institute (MCMi) is aligned with this vision and will be primarily based in its Wellcome Centre for Human Genetics and Big Data Institute with strong links to other departments and its overseas activity.

The NDM has a strong commitment to careers and equality of opportunity and treatment. The Department holds an Athena SWAN Silver award in recognition of the commitment made to promote gender equality through our organisational and cultural practices and our efforts to improve the working environment for both men and women. For more information, please see the NDM pages of [Equality, Diversity and Inclusion](#).

For more information on NDM please visit: <https://www.ndm.ox.ac.uk>

Centre for Medicines Discovery

The Centre for Medicines Discovery is a multi-disciplinary Institute with the University of Oxford's Nuffield Department of Medicine which focuses upon drug discovery activities that catalyse the discovery and development of new medicines for patients.

We focus upon inherited and rare diseases, anti-microbial resistance, autoimmunity, inflammation, GI, respiratory, cardiometabolic & CNS diseases with a view to generating new tools, technologies and methodologies to transform drug targeting and pre-clinical development. We build upon cutting-edge technologies such as genetics & genomics, molecular, structural & single cell biology plus spatial imaging to transform drug targeting and pre-clinical development.

For more information please visit: <https://www.cmd.ox.ac.uk/>

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>.

If you would like to apply, **click on the Apply Now button** on the 'Job Details' page and follow the on-screen instructions to register as a new user or log-in if you have applied previously.

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

Please upload all documents **as PDF files** with your name and the document type in the filename. Please note using a long file name may prevent you from uploading your documents.

http://www.ox.ac.uk/about_the_university/jobs/research/

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

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@ndm.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**, which with effect from 1 October 2023 will be 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

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 the Work+Family Space, 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.