

Summary

Job title	Postdoctoral Data Scientist in Advanced Climate and Health Analytics
Division	Medical Sciences Division
Department	Nuffield Department of Orthopaedics, Rheumatology and Musculoskeletal Sciences
Location	Botnar Research Centre, Windmill Road, Oxford, OX3 7LD
Grade and salary	Grade 7: £38,674 - £45,628
Hours	Full time
Contract type	Fixed-term (2 years)
Reporting to	Associate Professor Sara Khalid
Vacancy reference	177883
Additional information	A lower grade offer may be made (Grade 6: £34,982 - £40,855 p.a.) with commensurate reduction in responsibilities (and a change in job title to Research Assistant) if a suitable candidate cannot be found to fill the Grade 7 position.

The role

The Oxford Planetary Health Informatics Lab is seeking a highly motivated postdoctoral data scientist to support new Wellcome Trust funded projects on curation and modelling of harmonised climate and health datasets and co-creating publicly available decision-support dashboards and tools to enhance mapping, monitoring, and prediction of global health challenges including mitigating climate-exacerbated global health inequities.

About the Team

Welcome to the Planetary Health Informatics Group, led by Associate Professor Sara Khalid. We combine fair and safe artificial intelligence, remote monitoring technology and clinical epidemiology to study international “real-world” health and environment/ climate data, for the prevention and treatment of human diseases and to mitigate global health inequities, leveraging common data models and federated network analytics.

We work closely with clinicians, engineers, epidemiologists, conservationists, data scientists, policy-makers, and public and patient groups in the UK and from around the world to co-create models for equitable and ethical solutions for planetary health problems in everyday (“routine”) settings. We study benefits and risks of health technologies particularly in special subgroups of the population who may have rare conditions or may otherwise be under-represented in clinical trials, those disproportionately affected by health inequities, and those most climate-vulnerable. Additionally, we are also interested in fair and safe use of AI technology e.g. large language models and foundation models for under-resourced settings around the world.

You can learn more about our research and teaching at <https://www.ndorms.ox.ac.uk/research/research-groups/planetary-health-informatics>

The clinical application domain ranges from communicable and chronic conditions through to multi-morbidity. There are ongoing studies in our current work to support each of these areas of research through local, national and international collaborations such as with Health Data Research UK, British Heart Foundation, Bill & Melinda Gates Foundation, and industry partners. These and similar studies will become part of your research portfolio.

Flexible working

This post will require a settling in period during which you will be expected to work in the office full time. After this period, a pattern of hybrid working may be possible with the agreement of your line manager with a maximum of 40% home working.

Responsibilities

1. To develop analysis plans, ethical protocols, standard operating procedures and similar as required for ongoing and future studies.
2. To undertake related literature review/s.
3. To analyse data following pre-specified analysis plan/s and/or approved protocols.
4. To curate and analyse real world climate/environment and health data assets.
5. To lead the programming of R/Python packages for the analysis.
6. To report research findings in the form of conference abstracts at national and international conferences.
7. To lead and/or support the drafting of scientific manuscripts, reports to funders and other materials for other audiences based on the results from research studies.
8. Manage own academic research and administrative activities. This involves small scale project management, to co-ordinate multiple aspects of work to meet deadlines.
9. Support administrative duties of the group. Examples include and may not be limited to arranging meetings, taking notes, report writing, maintaining project Wiki/GitHub, contributing content to Lab website and adapting existing and developing new training materials
10. Prepare working theories and analyse qualitative and/or quantitative data from a variety of sources, reviewing and refining theories as appropriate
11. Contribute ideas for new research projects and adapt existing and develop new research methodologies

12. Present papers at conferences or public meetings.
13. Act as a source of information and advice to other members of the group on methodologies or procedures, including the teaching and supervision of students.
14. Represent the research group at external meetings/seminars, either with other members of the group or alone.
15. Carry out collaborative projects with colleagues in partner institutions, and research groups.
16. Supporting research projects from inception through to reporting and dissemination/publication.
17. Curation, analysis, and interpretation of routinely collected climate and health datasets both nationally and internationally as part of ongoing and future research projects.
18. Contributing to writing research grants within the group's remit to obtain funding from both competitive and non-competitive (i.e. industry or similar) sources.

The job description is not intended to be rigid or inflexible and may include other duties and responsibilities commensurate with the grade of the post, as may be determined and directed by the line manager. You will be expected to work flexibly and respond positively to changing needs.

Selection criteria

Essential selection criteria

- Hold a PhD/DPhil (or be near completion) in applied/medical statistics, bio/medical engineering, health data sciences, health informatics, computer science, clinical artificial intelligence, environmental epidemiology, climate data sciences, earth observation, public health geography, or a similar field.
- Experience working in academia
- Demonstrable advanced skills in programming in R, Python, SQL, and/or similar languages
- Experience in version control e.g. Git; working knowledge of Docker, HuggingFace
- Demonstrable experience in data visualization and creating digital tools and dashboard using e.g. R Shiny, Power BI, Tableau and/or similar
- Advanced taught or demonstrated skills in cleaning and analysing satellite-derived data analysis products and GIS data
- Ability to work within multi-disciplinary teams with empathy, pro-actively, and independently
- Self-motivated with good organisation and time management skills; ability to prioritise workload and write reports and publications to a tight deadline
- Ability to communicate results effectively in writing and verbally with colleagues in any discipline
- Flexibility to learn new skills and programming languages easily
- Result-oriented approach and attention to detail
- Demonstrate an ability to follow departmental guidance in handling sensitive and personal information, including complying with current data protection legislation
- Track record of conference presentations, peer-reviewed publications, and ability to undertake literature reviews
- Experience in machine learning/AI for health AND/OR experience in earth observation and/or geospatial modelling

Desirable selection criteria

- Experience in the analysis/es of routinely collected (aka 'real world') health and/or climate data including and not limited to epidemiological, meteorological, environmental, earth observation data.
- Experience in medical large language models and foundation models
- Experience in common data models e.g. OMOP
- Experience in public, patient, and stakeholder engagement and interaction

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:

- 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.

Nuffield Department of Orthopaedics, Rheumatology and Musculoskeletal Sciences

The Nuffield Department of Orthopaedics, Rheumatology and Musculoskeletal Sciences (NDORMS) is part of the Medical Sciences Division and is the largest European academic department in its field, running a globally competitive programme of research and teaching.

Our mission is to discover the causes of musculoskeletal and inflammatory conditions to deliver excellent and innovative care that improves people's quality of life. Our highly skilled teams have expertise in a broad range of areas, including orthopaedic surgery, inflammation, immunology, rheumatology, medical statistics, epidemiology, and clinical trials.

We currently have 480 staff, approximately 120 post-graduate students and have a grant portfolio worth over £180 million.

The **Botnar Research Centre** enables and encourages research and education into the causes of musculoskeletal disease and their treatment.



The Centre provides world-class facilities for scientists in the field of musculoskeletal research. It takes a multidisciplinary approach, encompassing orthopaedic, rehabilitation and rheumatology clinical scientists, bone oncologists, laboratory scientists, epidemiologists, engineers and statisticians. The Botnar also hosts the Oxford Clinical Trials Research Unit (OCTRU) and the Centre of Statistics in Medicine (CSM), providing excellent statistical support to all aspects of clinical research.

The Botnar opened in 2002, with a large annex completed in 2013. The Botnar is now home to around 300 staff and postgraduate students enjoying the international and friendly atmosphere of this workplace and benefits from the vast knowledge of leading experts in the field of musculoskeletal research.

To accommodate its rapid growth, the Centre has opened another wing in early 2022. The new space provides additional 1000m² of office and 1000m² of laboratory space. The laboratory space includes a GMP clean room

facility suitable for the manufacturing of biomaterials for human implantation.

Sharing the site of the Nuffield Orthopaedic Centre, the largest specialist academic musculoskeletal hospital in the UK, puts the Botnar in a unique position to foster the collaboration between basic scientists and clinicians, which is essential to success in medical research.

The Kennedy Institute is a biomedical research centre uniquely bringing together discovery science and early-stage clinical research, to develop transformative new therapies for chronic inflammatory and musculoskeletal conditions.



Broadly focused on the thematic areas of immunity and microbiome, inflammation biology and tissue remodelling and repair, the Institute's research is relevant for a range of common diseases such as arthritis, inflammatory bowel disease, fibrosis and cancer.

The Institute has capacity for up to 260 staff and students who work collaboratively across 25 research groups. This enables a multidisciplinary approach of molecular and cellular biology, combined with analysis of disease models, patient tissue samples and longitudinal clinical data. Collectively, these studies seek to uncover the biological processes that maintain tissue health and how these pathways break down in disease.

Research at the Institute is supported by a suite of core technology platforms, as well as through strategic partnerships with other basic and clinical research centres in Oxford, across the UK and internationally. These state-of-the-art technologies include the Oxford-Zeiss Centre for Excellence and other advanced microscopy and imaging facilities, mass and flow cytometry, as well as capabilities for microbial genomics and functional microbiome studies made available through the Oxford Centre for Microbiome Studies.

Complementing a strong programme of lab-based research, the Institute has established a core of expertise and technologies in data science including single cell genomics, statistical genetics, computational biology, and research informatics. A recent extension to the Institute building with a new third floor creates additional space purposely designed for computationally intensive research.

A true trendsetter in innovative and transformational research, the Kennedy also boasts a relaxed and friendly atmosphere, revolving around its bright and airy atrium that provides a space for colleagues to meet over coffee and tea to talk about their research and beyond throughout the day.

For more information please visit: <http://www.kennedy.ox.ac.uk>

Athena Swan

The [Athena SWAN Awards](#) specifically recognise success in developing employment practices to further and support the careers of women in science, technology, engineering, maths and medicine (STEMM) departments in academia. In May 2015 the charter was expanded to recognise work undertaken in arts, humanities, social sciences, business and law (AHSSBL), and in professional and support roles. Within NDORMS, we feel that we have an established culture of equality but are using the process to spur on-going improvement that benefits everyone involved in the Department. Our on-going progress was rewarded in May 2014 with an Athena Swan Bronze Award and in October 2015 with a Silver Award.

Our development in this area has resulted in a number of commitments to our staff, central to which are:



- establishing an open, supportive and family-friendly research environment
- supporting career progression through teaching programmes, personal development reviews and mentoring
- proactive communication of support policies such as flexible working, provision of leave, promotion and career support schemes

NDORMS aims to actively promote the implementation of the University's family-friendly policies to help foster a family friendly working environment, including provision of family leave (such as policies for maternity, paternity, parental, carers and adoption leave), flexible/part-time working and scheduling inclusive meetings.

The University's childcare services support staff with a Childcare Voucher Scheme to help staff save tax and national insurance on childcare costs, offer information on nursery providers and a nursery fee Salary Sacrifice Scheme, work in partnership with playscheme providers to help support families during school holidays and signpost staff to parenting, local authority and other organisations that help support families and parents.

The Department is also committed to ensuring that staff undertaking part-time or flexible working receive the same access to benefits and entitlements as full-time staff, including the same opportunities for training and promotion, a pro-rata entitlement to leave including bank holidays and careful consideration of requests to work part-time (particularly for those by staff returning from maternity leave).

For more information please visit: <http://www.admin.ox.ac.uk/personnel/staffinfo/benefits/family/> and <http://www.admin.ox.ac.uk/personnel/during/flexible/>

We are also actively working to uphold the University's aim of providing an inclusive environment and equal career opportunities by promoting equality, valuing diversity and maintaining a working, learning and social environment in which the rights and dignity of all staff are respected. Separate University policies are also in place to ensure race, disability and gender equality. For more information, please visit: <http://www.admin.ox.ac.uk/eop/>

Centre for Statistics in Medicine

The Centre for Statistics in Medicine (CSM) (Acting Director: Professor Gary Collins) in Oxford is committed to providing collaborative statistical support for the design, analysis and reporting of clinical research, carries out a methodological research programme and runs training courses.

One of several teams within CSM, the OCTRU Statistics Team collaborates in clinical trials and other research within the University, with local and regional NHS trusts and with academic and charitable organisations throughout the UK. Our current portfolio includes 50 local, national and international trials.

The CSM also has 5 statisticians working primarily on a programme of methodological research relating to studies of prognosis; a team of Biomedical Research Centre (BRC) funded statisticians; hosts the EQUATOR initiative; and carries out a programme of work aiming at improving the reporting of health research. Members of all groups within the CSM participate in occasional training activities.

Further details of the activities of the wider CSM can be found here: <https://www.csm.ox.ac.uk/>

Medical Sciences Division

The Medical Sciences Division is an internationally recognised 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

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@ndorms.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

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

Benefits of working at the University

Employee benefits

University employees enjoy 38 days' paid holiday, generous pension schemes, flexible working options, travel discounts including salary sacrifice schemes for bicycles and electric cars and other discounts. Staff can access a huge range of personal and professional development opportunities. See <https://hr.admin.ox.ac.uk/staff-benefits>

Employee Assistance Programme

As part of our wellbeing offering staff get free access to Health Assured, a confidential employee assistance programme, available 24/7 for 365 days a year. Find out more <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 <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 <https://www.ox.ac.uk/research/support-researchers/connecting-other-researchers/oxford-research-staff-society>