

## Job description

Post	Postdoctoral Research Associate
Department	Biology
Division	Mathematical, Physical and Life Sciences Division (MPLS)
Location	Peter Medawar Building for Pathogen Research, OX1 3SY and The Life and Mind Building, Oxford, OX1 3PS
Grade and salary	Researcher Grade 7.1 – 7.8: £38,674 - £46,913 per annum
Hours	Full time
Contract type	Fixed-term (36 months)
Reporting to	Dr. Mahan Ghafari
Application deadline	Friday 30 <sup>th</sup> May at 12 noon
Vacancy reference	179640
Recruitment contacts	HR: <a href="mailto:recruitment@biology.ox.ac.uk">recruitment@biology.ox.ac.uk</a>

Research topic	Molecular evolution of emerging and high-impact pathogens affecting human, animal, or plant health
Principal Investigator / supervisor	Dr. Mahan Ghafari
Project team	The Ghafari Research Group
Project web site	<a href="https://users.ox.ac.uk/~univ4613">https://users.ox.ac.uk/~univ4613</a> ; <a href="https://wellcome.org/grant-funding/people-and-projects/grants-awarded/developing-systematic-framework-reconstructing">https://wellcome.org/grant-funding/people-and-projects/grants-awarded/developing-systematic-framework-reconstructing</a>
Funding partner	The funds supporting this research project are provided by the Wellcome Trust
Recent publications	<ul style="list-style-type: none"> <li>- Ghafari, M., Simmonds, P., Pybus, O. G., &amp; Katzourakis, A. A mechanistic evolutionary model explains the time-dependent pattern of substitution rates in viruses. <i>Current Biology</i>, 31(21), 4689-4696 (2021). <a href="#">[link]</a></li> <li>- Ghafari, M., Liu, Q., Dhillon, A., Katzourakis, A., &amp; Weissman, D. B. Investigating the evolutionary origins of the first three SARS-CoV-2 variants of concern. <i>Frontiers in Virology</i>, 2, 942555 (2022). <a href="#">[link]</a></li> </ul>

- Ghafari, M., Hall, M., Golubchik, T. et al. Prevalence of persistent SARS-CoV-2 in a large community surveillance study. *Nature* 626, 1094–1101 (2024). [\[link\]](#)
- Ghafari, M., Sömera, M., Sarmiento, C. et al. Revisiting the origins of the Sobemovirus genus: A case for ancient origins of plant viruses. *PLoS Pathogens*, 20(1), e1011911 (2024). [\[link\]](#)
- Ghafari, M., Kemp, S.A., Hall, M. et al. SARS-CoV-2 genomic diversity and within-host evolution in individuals with persistent infection in the UK: an observational, longitudinal, population-based surveillance study. Accepted for publication in *Lancet Microbe* (2025). [\[link\]](#)

## The role

Reporting to Dr. Mahan Ghafari. You will be a member of the Ghafari Research Group, with responsibility to develop a systematic framework for reconstructing evolutionary histories of pathogens, particularly viruses with pandemic potential. This involves developing new methodologies and/or integrating existing approaches from population genetics theory, phylogenetics, pathogen evolution, and AI-based protein structure predictions to create new insights for reconstructing pathogen outbreaks, tracing their origins in non-human reservoirs, and evaluating their risk to cause new outbreaks in humans and animals. You will also provide guidance to junior members of the research group including MBIol and DPhil students.

## Project team

The Ghafari Research Group is based in the Microbiology & Infectious Disease section of the Department of Biology, with ties to the Pandemic Sciences Institute. The lab is currently expanding, with several MBIol and DPhil students already part of the team.

Our group is interested in studying the mode and tempo of pathogen molecular evolution. The primary research focus is on quantifying evolutionary rates and reconstructing the evolutionary histories of pathogens, including viruses with epidemic and pandemic potential, as well as those with significant implications for plant and animal health. We integrate concepts from population genetics, phylogenetics, evolutionary theory, and structural biology to build a comprehensive understanding of how pathogens evolve. While the foundation of our work lies in evolutionary biology, data science, and bioinformatics, our research has broad applications across public and veterinary health, therapeutic development, and pandemic preparedness—informing outbreak reconstruction, risk assessment, and the development of early warning tools.

We foster a welcoming and inclusive community, where each member brings unique expertise spanning biology, mathematics, and medicine. We hold regular joint lab meetings and journal clubs, with active participation from linked research groups, including the Ecology and Evolution of Viruses Research Group led by Dr. Katrina Lythgoe, the Pathogen Dynamics Group led by Prof. Christophe Fraser, Microbiology & Infectious Disease section meetings at the Department of Biology, and the Data Analytics and Epidemiology group meetings at the Pandemic Sciences Institute.

## Responsibilities

- Manage own academic research and administrative activities. This involves small scale project management, to co-ordinate multiple aspects of work to meet deadlines.
- Adapt existing and develop new scientific techniques and research methodologies for evolutionary analyses.
- 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.
- Collaborate in the preparation of scientific reports and journal articles and occasionally present papers and posters at conferences or public meetings.
- Design, adapt, or integrate models, statistical methods, and simulations for reconstructing evolutionary histories of pathogens and estimate their evolutionary rates.
- Act as a source of information and advice to other members of the group on scientific procedures, methodologies, and latest advancements in the field.
- Develop and publish well-documented, open-source tools implementing new methods for reconstructing pathogen evolutionary histories.
- Represent the research group at external meetings/seminars, either with other members of the group or alone.
- Carry out collaborative projects with colleagues in partner institutions, and research groups.
- Teach or undertake ad-hoc teaching (this may include lecturing, demonstrating, small group teaching, tutoring of undergraduates and graduate students and supervision of projects).
- Embed the principles of mutual respect, equality, diversity, inclusivity and sustainability in all aspects of your work; undertake training as and when asked to do so.

## Selection criteria

### Essential selection criteria

- Hold, or be close to completion of, a relevant PhD/DPhil in a field such as evolutionary biology and genomics, infectious disease epidemiology, biostatistics, mathematical biology, or other quantitative fields together with relevant experience.
- Possess sufficient specialist knowledge in phylogenetics, population genetics theory, analysis of sequence data, and models for sequence evolution.
- Proficiency with at least one statistical programming language (R, Python, Mathematica, or Julia).
- Ability to manage own academic research and associated activities.
- Strong track record of contributing to publications and presentations.

- Track record of developing and sharing analytical methods for general use.
- Strong ability to contribute ideas for new research projects and research income generation.
- Excellent communication skills, including the ability to write for publication, present research proposals and results, and represent the research group at meetings.

### **Desirable selection criteria**

- Experience of independently managing a discrete area of a research project.
- Experience of actively collaborating in the development of research articles for publication.
- Experience in curating and analysing large-scale sequencing data and conducting simulation studies to infer molecular evolutionary dynamics and reconstruct population demographics, such as using Bayesian phylodynamic models.
- Experience in using high-performance computing clusters and version control (GitHub).

## **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:

- Travel outside of Europe or North America on University Business

## 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](http://www.ox.ac.uk/about/organisation).

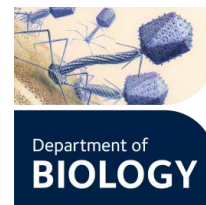
## The Department of Biology

You will be joining the Department of Biology at an exciting time. The Department established from August 2022 as a result of a merger between the Departments of Zoology and Plant Sciences, and is preparing to move into the new state-of-the-art Life and Mind Building in two to three years time.

The Department of Biology is recognised internationally for its research in a wide range of fields spanning all levels from molecules to ecosystems, and tackling global challenges through fundamental bioscience research. Over time, the research interests of the Department has been focused on five primary themes: Behaviour & Biomechanics; Ecology & Conservation; Evolutionary Biology; Microbiology & Infectious Disease; and Molecular Plant Biology. Research is conducted in all spheres from laboratory and in silico analysis to theoretical and field-based research.

At all times we seek to reinforce the connections between research and our education offering, at both graduate and undergraduate level. The Department teaches a four-year undergraduate degree MBiol course in Biology, with fourth-year students undertaking a Masters-level research project. It also supports a variety of graduate placements and hosts the University's DPhil in Biology.

External research income to the Department is derived from over 50 different funding agencies, with the principal current funders being the European Research Council, the Royal Society, the Wellcome Trust, BBSRC and NERC. The Department has a significant record in integrating broader societal impacts of its research, including the provision of policy to government at the highest level, as well as



supporting the commercialisation of research through spin-out companies and licensing arrangements that have generated hundreds of millions of pounds' worth of innovation.

The Department is located in the University's Science Area at two sites, and will move into the new £200m Life and Mind Building in 2024 that will include extensive laboratory provision with controlled environment rooms, glasshouses and an imaging suite. The Department also benefits from extensive facilities at the John Krebs Field Station at Wytham, with Wytham Woods nearby, as well as partnerships with organisations in the area such as the Oxford Botanic Gardens and Oxford Natural History Museum.

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

The Department of Biology holds a bronze Athena Swan award to recognise advancement of gender equality: representation, progression and success for all.

## **About the Mathematical, Physical, and Life Sciences (MPLS) Division**

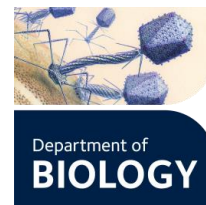
The Mathematical, Physical, and Life Sciences (MPLS) Division is one of the four academic divisions of the University, alongside the Humanities, Social Sciences and Medical Sciences Divisions. It is led by an academic Head of Division (Professor Jim Naismith) and an administrative Divisional Registrar (Dr Tracy Gale) and comprises nine of the University's academic departments – Biology, Chemistry, Computer Science, Earth Sciences, Engineering Science, Materials, the Mathematical Institute, Physics, and Statistics – as well as Begbroke Science Park, the multidisciplinary Ineos Oxford Institute for Antimicrobial Research and an interdisciplinary Doctoral Training Centre.

The disciplines within the MPLS Division regularly appear at the highest levels in rankings, including the Times Higher Education and QS world rankings. Nationally, the quality of the Division's research outputs and environment, and the resulting impact, was recognised through strong performances in the UK Research Excellence Framework in both 2014 and 2021.

MPLS is proud to be home to some of the most creative and innovative scientific thinkers and leaders in academia, whose interdisciplinary research is tackling major societal and technological challenges, from new energy solutions or improved cancer treatments to understanding climate change processes and helping to preserve biodiversity, tackling antimicrobial resistance, advancing AI and quantum technologies and space exploration, and much more. The quality and impact of our work have been recognised by successive rounds of the national Research Excellence Framework and Teaching Excellence and Student Outcomes Framework exercises, and our departments frequently top the major higher education league tables. We teach around 7,300 students (including around 3,400 graduate students) and are playing a key part in training the next generation of leading scientists.

Divisional activity is co-ordinated and represented by the MPLS Divisional Office based at 9 Parks Road, in the heart of Oxford's Science Area. The Divisional Office, which is led by the Divisional Registrar, has around 55 dedicated members of staff, as well as a number of colleagues who are embedded in divisional teams but based in central University services (e.g. in Finance, HR and Development).

To find out more, please visit: [www.mpls.ox.ac.uk](http://www.mpls.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).

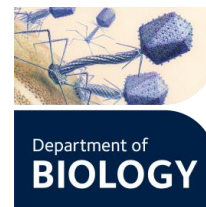
---

## 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 at [recruitment@Biology.ox.ac.uk](mailto:recruitment@Biology.ox.ac.uk)





To return to the online application at any stage, please go to: [www.recruit.ox.ac.uk](http://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 70<sup>th</sup> 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](http://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/>

Reimbursement Policy: <https://staffimmigration.admin.ox.ac.uk/reimbursement-policy>

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/>.

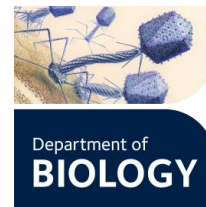
### Supporting disability and health-related issues (inc menopause)

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](http://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>