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| **Job title** | Postdoctoral Research Scientist in Infectious Disease Modelling |
| **Division** | Medical Sciences |
| **Department** | Nuffield Department of Medicine |
| **Location** | Pandemic Sciences Institute, Li Ka Shing Centre for Health and Information Discovery, Old Road Campus, Headington, Oxford, OX3 7LF |
| **Grade and salary** | Grade 7: £37,524 - £45,763 with a discretionary range to £49,850 per annum. This is inclusive of a pensionable Oxford University Weighting of £1,500 per year. |
| **Hours** | Full time |
| **Contract type** | Fixed-term contract for 2 years<br>Funding is provided by the CEPI |
| **Reporting to** | Christophe Fraser, Moh Family Foundation Professor of Infectious Disease Epidemiology |
| **Vacancy reference** | 174659 |

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| **Additional information** | This role meets the eligibility requirements for a Skilled Worker Certificate of Sponsorship under UK Visas and Immigration legislation. Therefore, the Nuffield Department of Medicine welcomes applications from international applicants who require a visa. |
| **About us** | • University of Oxford - www.ox.ac.uk/about/organisation<br>• Nuffield Department of Medicine (NDM) - https://www.ndm.ox.ac.uk<br>• Unit - www.psi.ox.ac.uk |
| **What we offer** | https://hr.admin.ox.ac.uk/staff-benefits<br>• An excellent contributory pension scheme<br>• 38 days annual leave<br>• A pensionable Oxford University Weighting allowance of £1,500 per annum (pro rata)<br>• A comprehensive range of childcare services<br>• Family leave schemes<br>• Cycle loan scheme<br>• Discounted bus travel and Season Ticket travel loans<br>• Membership to a variety of social and sports clubs<br>• A welcoming and diverse community |

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| **Research topic** | Vaccine trial modelling for pathogens with epidemic potential |
| **Project team** | Christophe Fraser, Robert Hinch, Luca Ferretti, Lucie Abeler-Dörner, Jasmina Panovska-Griffiths and James Hay |

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| **Funding partner** | The funds supporting this research project are provided by CEPI (https://cepi.net) |

# The role

This is an excellent opportunity to join the experienced multidisciplinary PRESTO team to make a difference to pandemic preparedness. The PRESTO study is funded by the Coalition for Epidemic Preparedness Innovations (CEPI) and aims to simulate outbreaks of epidemic versions of CEPI's priority pathogens in order to develop and pre-file protocols for phase III vaccine trials or real-world efficacy studies before an outbreak occurs.

In June 2021, experts from science, government and industry presented the first report on the "100-day mission" to G7 leaders. The goal of the 100-day mission is to prepare for the next pandemic as much as possible, to the extent that within 100 days of a pandemic threat being identified, accurate and approved rapid point of care diagnostic test and an initial regimen of therapeutics exist, and vaccines are ready to be produced at scale. There has been a lot of discussion of what is feasible in exactly 100 days, but the point of initiative is to prepare now what can be prepared.

In this project we will help design vaccine efficacy trials and real-world effectiveness studies which can complete quickly, thus supporting the 100-day mission. The optimal trial design will depend upon the underlying epidemiology of the pathogen e.g. mode of transmission and severity of disease. We will build a modelling framework which will simulate outbreaks for CEPI's priority pathogens and then evaluate different vaccine trial designs e.g. individual randomised control trials and ring-trials. The framework will consider ethical and logistical constraints and rank different trial designs according to several metrics, making it easier for implementing partners to choose the best design. The list of priority pathogens is updated periodically and currently comprises the following viruses: Nipah, Lassa, Ebola, Rift Valley Fever, MERS, Chikungunya and Disease X. CEPI is planning to pre-file study protocols in the appropriate countries which can be activated, and if needed modified, once an outbreak occurs, shaving time of the approval process.

You will work together with the existing team, currently Prof Christophe Fraser, Dr Robert Hinch, Dr Luca Ferretti, Dr Lucie Abeler-Dörner, Dr Jasmina Panovska-Griffiths and Dr James Hay to design and build the modelling framework, to design and build the modelling framework, integrate in-house and external epidemiological models for the various diseases and model ethical and logistical constraints.

You will be an integral member of the Pathogen Dynamics group based at Oxford, led by Christophe Fraser. Members of the group study the dynamics of several human infectious diseases using modelling and pathogen genetics. The post offers substantial opportunities for career development.

# Responsibilities

You will:

- Build a modelling framework for vaccine trial simulations, and develop and adopt simulation methods, computer code and error-checking methods for use in the project
- Perform analyses, including active management of programs on high performance cluster
- Test hypotheses and analyse data from a variety of public and confidential sources, reviewing and refining working hypotheses
- Actively manage collaboration with colleagues working on the projects, both within the Pathogen Dynamics group at Oxford and more broadly
- Collaborate in the preparation of scientific reports and journal articles, and present papers and posters at project workshops and international conferences

- Manage own academic research and administrative activities. This involves small scale project management, to co-ordinate multiple aspects of work to meet deadlines
- Contribute ideas for new projects related to PRESTO, and develop ideas for generating research income
- Act as a source of information and advice to other members of the group
- Represent the research group at external meetings, seminars and 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.

# Selection criteria

## Essential

- Hold a PhD/DPhil (or close to completion) in infectious disease modelling, applied computing, applied mathematics, statistics, epidemiology or relevant quantitative science, together with relevant experience in modelling or simulation science
- Sufficient specialist knowledge in infectious disease modelling, epidemiology or simulation science to work within established research programmes
- Ability to independently plan and manage a research project, including a research budget
- Ability to work in a collaborative project with multiple investigators
- Previous experience of contributing to scientific publications
- Excellent communication skills, including the ability to write for publication, present research proposals and results, and represent the research group at meetings
- Experience of coding in R and python
- Experience in scientific algorithm development for simulation and/or statistical inference

## Desirable

- Experience in statistical analyses
- Experience of working in a multidisciplinary team
- Willingness to travel to stakeholder meetings in Africa and Asia
- Ability to raise research funds through making grant applications

# 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:

- Travel outside of Europe or North America on University Business

# 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.