



**DEPARTMENT OF ZOOLOGY**  
TINBERGEN BUILDING  
SOUTH PARKS ROAD OXFORD OX1 3PS

Tel: 01865 271278

## Job description and selection criteria

<b>Job title</b>	Postdoctoral Research Assistant (PDRA)
<b>Division</b>	MPLS
<b>Department</b>	Zoology
<b>Location</b>	Spatial Ecology and Epidemiology Group, Tinbergen Building, Department of Zoology, University of Oxford, South Parks Road, Oxford, OX1 3PS
<b>Grade and salary</b>	Grade 7: £29,099-£35,788 per annum (£39,107 discretionary range)
<b>Hours</b>	Full time
<b>Contract type</b>	One year fixed-term commencing 01/09/2011, renewable for a further four years.
<b>Reporting to</b>	Dr Simon I Hay, Reader of Infectious Disease Epidemiology
<b>Vacancy reference</b>	ATxxxx (to be quoted in all correspondence).
<b>Additional information</b>	

## Introduction

### The University

The University of Oxford is a complex and stimulating organisation, which enjoys an international reputation as a world-class centre of excellence in research and teaching. It employs over 10,000 staff and has a student population of over 21,000.

Most staff are directly appointed and managed by one of the University's 130 departments or other units within a highly devolved operational structure - this includes 5,900 'academic-related' staff (postgraduate research, computing, senior library, and administrative staff) and 2,820 'support' staff (including clerical, library, technical, and manual staff). There are also over 1,600 academic staff (professors, readers, lecturers), whose appointments are in the main overseen by a combination of broader divisional and local faculty board/departmental structures. Academics are generally all also employed by one of the 38 constituent colleges of the University as well as by the central University itself.

Our annual income in 2009/10 was £879.8m. Oxford is one of Europe's most innovative and entrepreneurial universities: income from external research contracts exceeds £367m p.a., and more than 60 spin-off companies have been created.

For more information please visit [www.ox.ac.uk](http://www.ox.ac.uk)

### About the Mathematical, Physical, and Life Sciences Division

The Mathematical, Physical, and Life Sciences Division (MPLS) is one of the four academic divisions within the University, (that is, Humanities Division, Social Sciences Division, Mathematical, Physical, and Life Sciences Division, Medical Sciences Division). It comprises ten academic departments: Chemistry, Computing Laboratory, Earth Sciences, Engineering Sciences, Materials, the Mathematical Institute, Physics, Plant Sciences, Statistics, Zoology. The MPLS Division also encompasses the Begbroke Science Park, the Life Sciences Interface Doctoral Training Centre, and the Oxford e-Research Centre. The constituent units of the Division enjoy an international reputation for excellence in the mathematical, physical, and life sciences, as well as in interdisciplinary areas, particularly at the interface with the medical and environmental sciences.

Each division has its own academic Head of Division and a divisional secretariat, led by the Divisional Secretary. Each division is responsible for academic oversight of the teaching and research of its various departments and faculties, for strategic and operational planning, and for personnel and resource management. Much of this is undertaken by the divisional board and its principal committees.

The Head of the Mathematical, Physical, and Life Sciences Division is Professor Alex Halliday, and the Divisional Secretary is Ms Mary Ann Robertson. The Divisional Office for Mathematical, Physical, and Life Sciences is based at 9 Parks Road, in the heart of the science area.

For more information please visit [www.mpls.ox.ac.uk](http://www.mpls.ox.ac.uk)

### The Department

The Department of Zoology, within the [Mathematical, Physical and Life Sciences Division](http://www.mpls.ox.ac.uk) at the University of Oxford, has a long-standing reputation for world class research and teaching. Research in the Department is organised into several [research themes](#); these

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span a broad spectrum of biology ranging from ecology and behaviour, through to molecular evolution, development and infectious disease biology.

The Department participates in teaching a [B.A. degree in Biological Sciences](#). We were awarded full marks, 24 out of 24, in the official Subject Review (formerly known as Teaching Quality Assessment). The Department of Zoology currently has approximately 70 [academic staff](#). It also houses a very large and interactive group of post docs (~100) and graduate students (~150). Ten members of the Department are Fellows of the Royal Society including Lord May, President (2000-2005).

For more information about the department, please visit the web site <http://www.zoo.ox.ac.uk>

### **SEEG background and purpose**

The Spatial Ecology and Epidemiology Group (SEEG) has core research interests in the spatial and temporal dynamics of a range of infectious and vector-borne diseases. The group is led by Prof. David Rogers who will be succeeded by Dr Simon Hay on his retirement in 2012. The SEEG has a variety of international collaborators worldwide, with whom they aim to generate high impact science with a direct influence on policy and control. One of its major activities is the Malaria Atlas Project (MAP, <http://www.map.ox.ac.uk>).

### **The Malaria Atlas Project**

The Malaria Atlas Project was founded in 2005 to use sophisticated medical information to help policy-makers as part of a global effort to tackle infectious diseases. The MAP team has already assembled a unique spatial database of linked information related to malaria which is the largest ever data archive of its kind. These data have been assembled and analysed by a diverse group of scientists including geographers, statisticians, epidemiologists, biologists and public health specialists. We are now in the process of bringing this skill set to a broader range of key diseases, each with a unique set of characteristics requiring novel approaches built onto our existing platforms. MAP is based on four continents, including nodes in Florida, Ecuador, Kenya, Vietnam and Indonesia, as well as Oxford. The current post will be part of the UK team in Oxford, led by Simon I Hay, with close links to colleagues in Asia.

### **The IDAMS Project**

The IDAMS (International Research Consortium on Dengue Risk Assessment, Management and Surveillance) is a collaborative project of 15 participants funded by the EU for the comprehensive control of dengue fever under changing climatic conditions. It is coordinated by Dr Thomas Jaenisch, Heidelberg University Hospital. Dr Simon I Hay is lead of work package 4 of this project: Global dengue occurrence – present and future. **TJ to check**.

## Job description

<b>Research topic</b>	Global dengue occurrence – present and future
<b>Principal Investigator / supervisor</b>	Dr Simon I Hay
<b>Project team</b>	SEEG, MAP and IDAMS
<b>Project web site</b>	<a href="http://www.map.ox.ac.uk">www.map.ox.ac.uk</a>
<b>Funding partner</b>	The funds supporting this research are provided by the EU
<b>Recent publications</b>	See <a href="http://users.ox.ac.uk/~hay/SIH_references.html">http://users.ox.ac.uk/~hay/SIH_references.html</a> Patil, A.P., <i>et al.</i> (2011). Bayesian geostatistics in health cartography: the perspective of malaria. <i>Trends in Parasitology</i> , <b>27</b> (6): 246-253. Gething, P.W. <i>et al.</i> (2010). Climate change and the global malaria recession. <i>Nature</i> , <b>465</b> (7296): 342-345. Piel, F.B. <i>et al.</i> (2010). Global distribution of the sickle cell gene and geographical confirmation of the malaria hypothesis. <i>Nature Communications</i> , <b>1</b> : 104. Sinka, M.E. <i>et al.</i> (2010). The dominant <i>Anopheles</i> vectors of human malaria in the Americas: occurrence data, distribution maps and bionomic précis. <i>Parasites and Vectors</i> , <b>3</b> : 72.
<b>Technical skills</b>	Computer programming for statistical modelling

## Overview of the role

The global distribution of dengue is poorly known. This package of work defined for our participation in IDAMS has three broad aims. First, to develop a contemporary dengue occurrence map at a global scale. Second, to investigate the potential impact of environmental change on this distribution and provide occurrence maps for 2020, 2050 and 2080. Third, to extend the science of dengue risk mapping by demonstrating, in Vietnam, that it is possible to measure and thus map the endemic seroprevalence of the disease and that this can be used as a rational guide to control. Put simply this post is responsible for implementing the technical mapping development underpinning this vision.

## Responsibilities/duties

1. Maintain and augment an existing postgresQL database of dengue disease occurrence.
2. Research and advise on development to the BRT or other methodology for occurrence mapping.
3. Maintain and develop an existing set of R-scripts that implement the Boosted Trees Regression (BRT) methodology on the dengue occurrence (presence/absence) data to predict areas of potential occurrence globally.
4. Maintain and develop a standard set of surfaces on environmental data (climatologies, land use, remote sensing) to support occurrence risk mapping.

5. Document all of these developments clearly for use by the wider MAP group, IDAMS project members and the wider public health community.
6. Help develop model-based geostatistical methods to map the seroprevalence of dengue in Vietnam.
7. Manage software infrastructure as required to support appropriate computational modelling, including software library installation and updating, version control, and backup.
7. Monitor and timetable the research in this work package to meet stated IDAMS project deliverables.
8. Draft any documentation / reports required by the EU in relation to this research work for review by the principal investigator.
9. Lead in the publication of research findings from this work in open access journals.
10. Present at selected international conferences the research findings from this work.
11. Be prepared to travel to our collaborators in South east Asia, particularly Vietnam.

## **Selection criteria**

### **Essential**

- First or upper second class Bachelor degree
- Post-graduate degree (PhD or equivalent) in a quantitative science
- Demonstrable competence in computer programming for statistical modelling
- Knowledge and experience of geostatistics
- Knowledge and experience of boosted regression trees
- Very competitive publication record
- Evidence of project planning and organising skills
- Evidence of clearly communicating and relating to others (oral and written)

### **Desirable**

- Working knowledge of Spanish and French
- Knowledge and experience of generalised linear modelling
- Knowledge and experience of Bayesian statistics
- Experience writing software for others to use

## **Working at the University of Oxford**

For further information about working at Oxford, please see: [http://www.ox.ac.uk/about\\_the\\_university/jobs/research/](http://www.ox.ac.uk/about_the_university/jobs/research/)

## **How to apply**

If you consider that you meet the selection criteria, click on the **Apply Now** button on the 'Job Details' page and follow the on-screen instructions to register as a user. You will then be required to complete a number of screens with your application details, relating to your

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skills and experience. When prompted, please provide details of three referees and indicate whether we can contact them at this stage. You will also be required to upload a CV and supporting statement. (Customise this statement to confirm the document(s) you would like the applicant to attach. See “[selecting the appropriate application form](#)” in our online guide to writing effective adverts). The supporting statement should describe what you have been doing over at least the last 10 years. This may have been employment, education, or you may have taken time away from these activities in order to raise a family, care for a dependant, or travel for example. Your application will be judged solely on the basis of how you demonstrate that that you meet the selection criteria outlined above and we are happy to consider evidence of transferable skills or experience which you may have gained outside the context of paid employment or education.

Please save all uploaded documents to show your name and the document type.

All applications must be received by **midday** on the closing date stated in the online advertisement.

Should you experience any difficulties using the online application system, please email [recruitment.support@admin.ox.ac.uk](mailto:recruitment.support@admin.ox.ac.uk)

To return to the online application at any stage, please click on the following link [www.recruit.ox.ac.uk](http://www.recruit.ox.ac.uk)

Please note that you will be notified of the progress of your application by automatic e-mails from our e-recruitment system. **Please check your spam/junk mail** regularly to ensure that you receive all e-mails.