Job Description

<table>
<thead>
<tr>
<th><strong>Job title</strong></th>
<th>Postdoctoral Researcher</th>
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<tbody>
<tr>
<td><strong>Division</strong></td>
<td>Mathematical, Physical and Life Sciences (MPLS)</td>
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<tr>
<td><strong>Department</strong></td>
<td>Statistics</td>
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<tr>
<td><strong>Location</strong></td>
<td>24-29 St Giles', Oxford OX1 3LB</td>
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<tr>
<td><strong>Grade and salary</strong></td>
<td>Grade 7: £32,817 - £40,322 per annum</td>
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<tr>
<td><strong>Hours</strong></td>
<td>Full time</td>
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<tr>
<td><strong>Contract type</strong></td>
<td>Fixed-term (3 years)</td>
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<tr>
<td><strong>Reporting to</strong></td>
<td>Professor Charlotte Deane</td>
</tr>
<tr>
<td><strong>Vacancy reference</strong></td>
<td>145322</td>
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<tr>
<th><strong>Research topic</strong></th>
<th>Advancing computational methods for analysis of HDX-MS and structural data</th>
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<tr>
<td><strong>Principal Investigator / supervisor</strong></td>
<td>Professor Charlotte Deane (Department of Statistics, Oxford) and Dr Chun-wa Chung (Structural &amp; Biophysical Sciences, GSK).</td>
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<tr>
<td><strong>Project web site</strong></td>
<td><a href="http://opig.stats.ox.ac.uk/">http://opig.stats.ox.ac.uk/</a></td>
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<tr>
<td><strong>Funding partner</strong></td>
<td>The funds supporting this research project are provided by GSK</td>
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Overview of the role

The Oxford Protein Informatics group is recruiting for a postdoctoral scientist who will have responsibility for carrying out research in advancing computational methods for analysis of HDX-MS and structural data.

The post holder will join the dynamic and collaborative Department of Statistics. The Department carries out world-leading research in applied statistics fields, including statistical
and population genetics and bioinformatics, as well as core theoretical statistics, computational statistics, machine learning and probability. This is an exciting time for the Department of Statistics, having recently moved to a prominent and extensively-renovated building in the centre of Oxford. This move has further enhanced our vibrant research environment, and provides state-of-the-art facilities for our teaching and research, including a well-appointed IT teaching suite and two lecture theatres.

The successful candidate will hold a doctorate in the field of bioinformatics, statistics, structural biology or a related subject and will have the opportunity to work across the academic-industrial interface to develop innovative algorithms and methodologies to reveal new structural insights. They will work in close collaboration with GSK scientists, including regular visits to GSK’s major European R&D site in Hertfordshire, seeing their work used in a real world setting, as well as being published in leading journals. They will be an outstanding individual who has the potential to become a leader in their field.

If you would like to discuss this post and find out more about joining the academic community in Oxford, please contact Professor Charlotte Deane or Professor Garrett Morris. All enquiries will be treated in strict confidence and will not form part of the selection decision.

The Department of Statistics holds an Athena SWAN Bronze Award in recognition of its efforts to introduce organisational and cultural practices that promote gender equality in SET and create a better working environment for both men and women. Information about Athena Swan in MPLS can be found at http://www.mpls.ox.ac.uk/equality-and-diversity/athena-swan.

**Responsibilities/duties**

- 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 research methodologies and materials
- Prepare working theories and analyse qualitative and/or quantitative data from a variety of sources, reviewing and refining theories 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 research publications, and book chapters
- Present papers at conferences or public meetings
• Act as a source of information and advice to other members of the group on methodologies or procedures

• 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

The Project

HDX-MS (Hydrogen deuterium exchange mass spectrometry) is a powerful data-rich technique that has recently come of age as an experimentally automated and integrated platform informing key decisions in small molecule, antibody and vaccine R&D.

HDX-MS profiles capture peptide-level structural and dynamics data, for example, interaction sites and conformational change, which is routinely used in antibody hit/lead/candidate selection, small molecule mode of action analysis and included in antibody patents.

Unfortunately, more thorough, computational analysis of this complex data is still quite primitive, so more detailed insights are missed.

This proposal seeks to:

• Use rigorous statistical and advanced computational algorithms and approaches such as machine learning to reduce manual processing steps and remove subjective analysis in HDX-MS in binding site analysis.

• Maximise information extraction to explore scientifically important questions beyond identification of sites of interaction.

• Couple information from HDX-MS to other structural techniques such as electron microscopy, X-ray and computational methods

• Explore ways to visually or otherwise combine data from different structural methodologies.

Selection criteria

Essential
• Holds or is close to the completion of a relevant PhD/Dphil or equivalent, and publication record

• Programming experience, ideally in the area of machine learning

• Track record of applying statistical methodology to complex problems

• Experience of working with experimentalists

• Ability to manage own academic research and associated activities independently

• Previous experience of writing and delivering presentations

• 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

• High motivation with intellectual curiosity and rigour

Desirable

• Knowledge of, proteins and protein interactions.

• Interest in working across the academic-industrial interface.

• Experience of independently managing a discrete area of a research project

• Experience of actively collaborating in the development of research articles for publication

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. Income from external research contracts in 2016/17 exceeded £564m and we rank first in the UK for university spin-outs, with more than 130 companies created to date. 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.

The Department of Statistics

The Department of Statistics at Oxford carries out world-leading research in computational statistics, machine learning, statistical and population genetics, bioinformatics, core theoretical statistics, and probability. As part of the Oxford Mathematical Sciences submission, the Department was ranked first in the UK in the 2014 REF exercise; this included having the highest proportion and highest volume of research judged to be world-leading or internationally excellent.

This is an exciting time for the Department, which relocated to new premises on St Giles' in the heart of the University of Oxford in 2015. Our newly-renovated building provides state-of-the-art teaching facilities and modern space to facilitate collaboration and integration, creating a highly visible centre for Statistics in Oxford.

The Department’s research grant portfolio is currently over £8.3m. Industrial partners from Pharma, Finance and the Information sector also support research in the Department.

The Department’s research excellence has been recognised both collectively through success in REF 2014 and individually. Awards include Fellowships of the Royal Society to Professors Christl Donnelly, Peter Donnelly, Alison Etheridge, and Gilean McVean, FMedSci to Professors Christl Donnelly, Peter Donnelly, and Gilean McVean and the Weldon Memorial Prize to Professors Peter Donnelly and Gilean McVean, the Guy Medal in Bronze to Professor Chris Holmes, the Francis Crick Prize Lecture, and the Genetics Society Balfour Prize to Professor Simon Myers. Professor Gesine Reinert and Professor Christina Goldschmidt have been elected an Institute of Mathematical Statistics Fellow, and Professor Etheridge was awarded an OBE in the 2017 birthday honours for services to science, in addition to being President of the Institute of Mathematical Statistics 2017–2018. Professor Christl Donnelly was awarded a CBE in the 2018 New Year’s honours for services to epidemiology and the control of infectious diseases.

The Department recently launched Oxford University Statistical Consulting, which provides comprehensive statistical consultancy services to both internal departments and external businesses. It operates across a wide range of sectors and offers experience in all aspects of data-based research, allowing businesses and academics to access our world-leading
statistical research in computational statistics, statistical methodology, applied probability, bioinformatics and mathematical genetics.

The Department of Statistics offers an undergraduate degree (BA or MMath) in Mathematics and Statistics and an MSc in Mathematical Science (OMMS), both joint with the Mathematical Institute, and an MSc in Statistical Science, as well as a lively and stimulating environment for postgraduate researchers (DPhil or MSc by Research). The Department leads two Centres for Doctoral Training (CDTs): the EPSRC/MRC CDT in Systems Approaches to Biomedical Science and the EPSRC-MRC CDT in Next Generation Statistical Science (OxWaSP), a joint programme in Statistics with the University of Warwick, and is the partner institution for the EPSRC CDT in Modern Statistics and Statistical Machine Learning (StatML) which is led by Imperial College London. The Department is also part of the National Academy for PhD Training in Statistics, which provides graduate training in fundamental areas of Statistics and Applied Probability. Our students go on to work in a wide range of occupational sectors throughout the world, including higher education.

The Department leads and participates in many interdisciplinary research centres, including the Big Data Institute, part of the Li Ka Shing Centre for Health Information and Discovery, where Professor McVean is Director, and the Wellcome Trust Centre for Human Genetics, where Professor Myers is a Researcher. We are a founding partner in the Alan Turing Institute (ATI), the UK’s national data science centre, which brings together world-leading expertise in the emerging field of data science. Professor Holmes has recently been appointed the Health Lead at the ATI and six other members of the Department currently hold Turing Fellowships.

The Department continues to grow and is now flourishing in its new home under the leadership of Professor Alison Etheridge.

For more information please visit: www.stats.ox.ac.uk.

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

The Mathematical, Physical and Life Sciences Division

The Mathematical, Physical, and Life Sciences (MPLS) Division is one of the four academic divisions of the University. Oxford is widely recognised as one of the world's leading science universities. The disciplines within the MPLS Division regularly appear at the highest levels in world rankings and have been evaluated as conducting world-leading and internationally excellent research in UK research assessments, and Mathematical, physical and life sciences research at Oxford is the best in the country according to the 2014 Research Excellence Framework (REF) assessment exercise carried out by HEFCE.

The MPLS Division is home to the non-medical sciences at Oxford and its 10 academic departments span the full spectrum of the mathematical, computational, physical, engineering and life sciences, and undertake both fundamental research and cutting-edge applied work. Our
research tackles major societal and technological challenges – whether developing new energy solutions or improved cancer treatments, understanding climate change processes, or helping to preserve biodiversity, and is increasingly focused on key interdisciplinary issues. We collaborate closely with colleagues in Oxford across the medical sciences, social sciences and humanities, and with other universities, research organisations and industrial partners across the globe in pursuit of innovative research geared to address critical and fundamental scientific questions.

MPLS is proud to be the home of some of the most creative and innovative scientific thinkers and leaders working in academe. Our senior researchers have been awarded some of the most significant scientific honours (including Nobel prizes and prestigious titles such as FRS and FREng) and we have a strong tradition of attracting and nurturing the very best early career researchers who regularly secure prestigious fellowships. The Division is also the proud holder of ten Athena Swan Awards (3 Silver and 7 Bronze) illustrating our commitment to ensure good practice and to encourage women in science at all levels in the division.

We have around 6,000 full and part-time students (including approximately 2000 graduate students) and play a major role in training the next generation of leading scientists. Oxford’s international reputation for excellence in teaching is reflected in its position at the top of the major league tables and subject assessments. MPLS academics educate students of high academic merit and potential from all over the world. Through a mixture of lectures, practical work and the distinctive college tutorial system, students develop their ability to solve major mathematical, scientific and engineering problems.

MPLS is dedicated to bringing the wonder and potential of science to the attention of audiences far beyond the world of academia. We have a strong commitment to supporting public engagement in science through initiatives including the Oxford Sparks portal (www.oxfordsparks.net) and a large variety of outreach activities; these are crucial activities given so many societal and technological issues demand an understanding of the science that underpins them. We also endeavour to bring the potential of our scientific efforts forward for practical and beneficial application to the real world and our desire is to link our best scientific minds with industry and public policy makers.

For more information about the MPLS division, please visit: www.mpls.ox.ac.uk

How to apply

Before submitting an application, you may find it helpful to read the ‘Tips on applying for a job at the University of Oxford’ document, at www.ox.ac.uk/about/jobs/supportandtechnical/.

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.

Please provide details of at least two referees. Applicants should ask their referees to send their letters of reference directly to the Personnel Administrator by email to jobs@stats.ox.ac.uk by
the closing date quoting the vacancy reference 145322. Referees should preferably not be from the same institution, and one should normally be the applicant’s current, or most recent, supervisor.

You will also 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.

All applications must be received by midday 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 departments.

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)

Should you experience any difficulties using the online application system, please email recruitment.support@admin.ox.ac.uk. Further help and support is available from www.ox.ac.uk/about_the_university/jobs/support/. To return to the online application at any stage, please go to: www.recruit.ox.ac.uk.

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

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: www.admin.ox.ac.uk/councilsec/compliance/gdpr/privacynotices/job/. The University’s Policy
on Data Protection is available at:
www.admin.ox.ac.uk/councilsec/compliance/gdpr/universitypolicyondataprotection/.

The University's policy on retirement
The University operates an Employer Justified Retirement Age (EJRA) for all academic posts and some academic-related posts. The University has adopted an EJRA of 30 September before the 69th birthday for all academic and academic-related staff in posts at grade 8 and above. The justification for this is explained at:
www.admin.ox.ac.uk/personnel/end/retirement/acrelretire8+/

For existing employees, any employment beyond the retirement age is subject to approval through the procedures: www.admin.ox.ac.uk/personnel/end/retirement/acrelretire8+/

There is no normal or fixed age at which staff in posts at grades 1–7 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 www.admin.ox.ac.uk/personnel/staffinfo/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 www.sport.ox.ac.uk/oxford-university-sports-facilities.

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 www.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 www.admin.ox.ac.uk/personnel/permits/reimburse&loanscheme/.

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 My Family Care, 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 www.admin.ox.ac.uk/personnel/staffinfo/benefits/family/mfc/.

Childcare
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 www.admin.ox.ac.uk/childcare/.

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 www.admin.ox.ac.uk/eop/disab/staff.

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 www.admin.ox.ac.uk/eop/inpractice/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.