<table>
<thead>
<tr>
<th><strong>Job title</strong></th>
<th>Senior Postdoctoral Researcher in Biostatistics: Statistical Machine Learning and Omics Analysis</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Division</strong></td>
<td>Medical Sciences Division</td>
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<tr>
<td><strong>Department</strong></td>
<td>Nuffield Department of Medicine</td>
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<tr>
<td><strong>Location</strong></td>
<td>Big Data Institute, Li Ka Shing Centre for Health Information and Discovery, Old Road Campus, Oxford, OX3 7LF</td>
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<tr>
<td><strong>Grade and salary</strong></td>
<td>Grade 8: £41,526 - £49,553 per annum</td>
</tr>
<tr>
<td><strong>Hours</strong></td>
<td>Full time</td>
</tr>
<tr>
<td><strong>Contract type</strong></td>
<td>Fixed term for 2 years in the first instance, with possibility of extension</td>
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<tr>
<td><strong>Reporting to</strong></td>
<td>Prof Chris Holmes</td>
</tr>
<tr>
<td><strong>Vacancy reference</strong></td>
<td>145117</td>
</tr>
<tr>
<td><strong>Research topic</strong></td>
<td>Biostatistics, Statistical Machine Learning, Omics Analysis</td>
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<tr>
<td><strong>Principal Investigator / supervisor</strong></td>
<td>Prof Thomas Nichols</td>
</tr>
<tr>
<td><strong>Project team</strong></td>
<td>Oxford-Novartis Collaboration in AI Medicine</td>
</tr>
<tr>
<td><strong>Project web site</strong></td>
<td><a href="https://www.bdi.ox.ac.uk/news/bdi-novartis-partnership-is-announced">https://www.bdi.ox.ac.uk/news/bdi-novartis-partnership-is-announced</a></td>
</tr>
<tr>
<td><strong>Funding partner</strong></td>
<td>The funds supporting this research project are provided by Novartis</td>
</tr>
</tbody>
</table>

**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.

**Medical Sciences**

The Medical Sciences Division is an internationally recognized 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](http://www.medsci.ox.ac.uk)

**Nuffield Department of Clinical Medicine (NDM)** …fostering your career in science

The Nuffield Department of Clinical Medicine (NDM) is one of the largest departments of the University of Oxford and is part of the Medical Sciences Division, with responsibility for a significant part of the teaching of clinical students within the Medical School.

NDM has significant financial turnover and complexity, resulting from its diverse research portfolio, its geographical spread and its close links with NHS funding and strategic teams involved in the development and delivery of increasingly integrated clinical research platforms. For more information please visit: [http://www.ndm.ox.ac.uk/home](http://www.ndm.ox.ac.uk/home)

The Nuffield Department of Clinical Medicine has been presented with a Departmental Athena SWAN Silver award in recognition of the commitment made to promote gender equality through our organisational and cultural practices and our efforts to improve the working environment for both men and women. For more information please see our Departmental Athena SWAN pages: [https://www.ndm.ox.ac.uk/working-for-ndm/aboutndmatheneswan/](https://www.ndm.ox.ac.uk/working-for-ndm/aboutndmatheneswan/)
Oxford Big Data Institute

The Big Data Institute (BDI) is a state-of-the-art building at Oxford University's Old Road Campus which opened in April 2017. This interdisciplinary research centre focuses on the analysis of large, complex, heterogeneous data sets for research into the causes and consequences, prevention and treatment of disease. To this end, BDI researchers develop, evaluate and deploy efficient methods for acquiring and analyse information for large clinical research studies. These approaches are invaluable in identifying the associations between lifestyle exposures, genetic variants, infections and health outcomes around the globe.

Research is conducted in four general themes: genomics, population health, infectious disease surveillance, and methodology (including informatics, statistics, and engineering). Big Data methods could transform the scale (breadth, depth and duration) and efficiency (data accumulation, storage, processing and dissemination) of large-scale clinical research.

The work of the BDI requires people and projects that span traditional departmental boundaries and scientific disciplines, supported by technical resources to handle the vast quantities of data they generate.

Under the leadership of Professor Martin Landray (Acting Director), the BDI will comprise around 350 researchers (approx. 30 research groups) drawn from a wide range of departments and will form an analytical hub, deeply connected to the wider experimental and clinical community in Oxford and beyond.

For more information please visit:  http://www.bdi.ox.ac.uk/

Job Description

Overview of the role

We are looking to appoint a Senior Researcher to develop novel statistical methods for the integrated analysis of clinical, laboratory, image and omics data gathered by Novartis in the course of their clinical trials research for autoimmune diseases. You will provide biostatistical expertise to the Oxford–Novartis Collaboration for AI in Medicine, contributing to the study design and analysis of data alongside the development and application of new analytical methods independently or in collaboration with others. In addition, you will provide day-to-day supervision of junior members of the research group.

Part of the Oxford–Novartis Collaboration will involve the integrated analysis of MRI images, X-ray scans, omics and laboratory data, all linked to detailed clinical trial data. This post will be a key part of the core Oxford analysis team working in collaboration with imaging and omics specialists and other biostatistics and machine learning researchers to deliver optimal analyses for the collaboration.

Under the line management of Professor Chris Holmes and direction of Professor Thomas Nichols, this position will involve various aspects of statistics and machine learning in biostatistics to integrate the data provided by Novartis in order to provide a greater biological understanding of inflammatory and autoimmune diseases and how that underlies prediction of outcome in response to treatment.
Whilst you will be predominantly based at the Big Data Institute, you will also be expected to spend time at the Department of Statistics.

Responsibilities/duties

- To support and collaborate with scientists and clinicians as part of the Oxford–Novartis Collaboration and to help design and undertake the statistical analysis of various data modalities.
- To develop statistical solutions for integrated analysis of multidimensional omics datasets analysis linked to clinical outcomes.
- To plan and manage own research programme within the collaboration; agree clear task objectives, organise, and delegate work to other members of the team and coach other members of the group on specialist methodologies or procedures.
- Regularly write research articles at a national level for peer-reviewed journals, book chapters, and reviews. Present papers at national conferences, and lead seminars to disseminate research.
- To engage in discussions with research scientists on the analysis strategy and be responsible for development and finalization of statistical analysis plans.
- To perform the analysis in close contact with the associated clinical researchers and to take responsibility for completion of data analyses.
- To present the conclusion of the analysis to the Oxford-Novartis Collaboration Scientific Boards (both in the UK and at Novartis in Basel) and externally.
- To communicate on a regular basis with the Oxford-Novartis Collaboration lead investigators (Professor Holmes and others), the project leader and project manager, and the wider team on all issues relating to statistical data analyses (including progress and developments), ensuring that they are kept fully up to date with progress and difficulties in the research projects.
- To communicate on a regular basis with colleagues and collaborators at Novartis.
- To keep accurate and comprehensive records of statistical analyses, methods used, and work undertaken.
- To work in collaboration with Bioinformatics and Statistics groups in the University to exploit existing Bioinformatics resources, tools and methods to their full potential.
- To regularly contribute to and/or supervise the writing of papers for peer-reviewed journals and grant applications. To present findings at international conferences.
- To be responsible for assisting with the supervision of junior members of the research group.
- To perform any other comparable duties as may reasonably be required to ensure the efficient running of the Collaboration.
- To maintain confidentiality regarding research data when interacting with non-collaborating researchers.
Selection criteria

Essential

- Hold a PhD/DPhil in Statistics, Statistical Machine Learning, Biostatistics, Statistical Genetics or similar subject with post-qualification research experience.
- Strong publication record in peer-reviewed journals and conferences.
- A good understanding and potential to implement statistical techniques used in clinical studies/genomic research (e.g. logistic/linear regression, high-throughput data analysis with univariate and multivariate models taking into the account the complex correlation structure of the data, meta-analysis, survival analysis, statistical models for the analysis of longitudinal and event history data, etc.)
- Experience in high-throughput data analysis, integration and interpretation (e.g. high-throughput sequencing, proteomics, array-based technologies, etc.), preferably in human diseases.
- Working knowledge of statistical software packages such as R/Bioconductor, MATLAB and scripting skills in languages such as Python, Perl or Awk.
- An active interest in undertaking scientific research and the ability to learn new techniques and apply them to a high standard.
- Extensive research experience and an ability to develop research projects.
- Experience with model building and algorithm development, in particular using Bayesian methods.
- The ability to work closely with others, while taking personal responsibility for assigned tasks. Ability to collaborate effectively with other computational and wet-lab scientists.
- The proven ability to communicate technical advice and intellectual support, and assist others in tools relating to data processing and analysis.
- Enthusiasm for and a desire to make a career in biostatistics, statistical machine learning or statistical genetics.
- Willingness to travel abroad for meetings.
- Excellent interpersonal, communication and team working skills, along with good spoken and written English.

Desirable

- Experience of conducting complex applied statistical analyses using R packages or other software tools.
- Experience of omics or biomedical image analysis
- Knowledge of modern computational statistics and/or machine learning approaches.
- Experience in High Performance Computing environments.
- Experience in supervising students.
- Experience in managing staff.
- Experience of clinical trials data.
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 https://www.ox.ac.uk/about/jobs/research/

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 two referees and indicate whether we can contact them now.

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 receive an automated email from our e-recruitment system 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: 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.