

Nuffield Department of Medicine

Job title	Postdoctoral Scientist in Human Immunology (CD4 Tfh Optimisation)
Division	Medical Sciences
Department	Nuffield Department of Medicine
Location	NDM Research Building, Old Road Campus, Headington, Oxford, OX3 7FZ
Grade and salary	Grade 7: £32,817 - £40,322 per annum
Hours	Full time
Contract type	Fixed term for 3 years in the first instance
Reporting to	Professor Persephone Borrow
Vacancy reference	143518

Research topic	Characterisation of B cell-mediated presentation of HIV vaccine immunogens and definition of attributes of optimally-efficacious CD4 T follicular helper cell responses to inform rational development of effective prophylactic HIV vaccines
Funding partner	The funds supporting this research project are provided by the NIH – the post-holder will work as part of the international Consortium for HIV/AIDS Vaccine Development (CHAVD)
Project website	https://www.ndm.ox.ac.uk/principal-investigators/researcher/persephone-borrow
Recent publications	Bradley, T., D. Peppas, I. Pedroza-Pacheco, D. Li, D.W. Cain, R. Henao, V. Venkat, B. Hora, Y. Chen, N.A. Vandergrift, R.G. Overman, R.W. Edwards, C.W. Woods, G.D. Tomaras, G. Ferrari, G.S. Ginsburg, M. Connors, M.S. Cohen, M.A. Moody, P. Borrow* and B.F. Haynes*. RAB11FIP5 expression and altered natural killer cell function are associated with induction of HIV broadly neutralizing antibody responses. <i>Cell</i> 175:387-399, 2018 Partridge, T., A. Nicastri, A.E. Kliszczak, L.M. Yindom, B.M. Kessler, N. Ternette and P. Borrow. Discrimination between human leukocyte antigen class I-bound and co-purified HIV-derived peptides in immunopeptidomics workflows. <i>Front Immunol.</i> 9:912, 2018. Borrow, P., and M.A. Moody. Immunologic characteristics of HIV-

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	infected individuals who make broadly neutralizing antibodies. <i>Immunol. Rev.</i>, 275: 62-78, 2017. Moody, M.A., I. Pedroza-Pacheco, N. A. Vandergrift, C. Chui, A. T. Ogbe, K. E. Lloyd, R. Parks, K. A. Soderberg, A.T. Ogbe, M. S. Cohen, H.-X. Liao, F. Gao, A. J. McMichael, D. C. Montefiori, L. Verkoczy, G. Kelsoe, J. Huang, P. Shea, M. Connors, P. Borrow* and B.F. Haynes.* Immune perturbations in HIV 1-infected individuals who make broadly neutralizing antibodies. <i>Science Immunol.</i>, 1: aag0851, 2016. Wang, C., M. Hart, C. Chui, A. Ajuogu, I.J. Brian, S.C. de Cassan, P. Borrow, S.J. Draper and A.D. Douglas. Germinal center B cell and T follicular helper cell responses to viral vector and protein-in-adjuvant vaccines. <i>J. Immunol.</i>, 197:1242-51, 2016. Haynes, B.F., G. M. Shaw, B. Korber, G. Kelsoe, J. Sodrosk, B. H. Hahn, P. Borrow and A. J. McMichael. HIV-host interactions: implications for vaccine design. <i>Cell Host Microbe</i>, 19:292-303, 2016.
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Job description

Overview of the role

The research team headed by Prof Persephone Borrow and Emeritus Professor Andrew McMichael based in the NDM Research Building in the Nuffield Department of Medicine is carrying out basic immunologic research that will contribute to the development of an effective vaccine to combat infection with human immunodeficiency virus type 1 (HIV-1). The work is being conducted as part of an NIH-funded Consortium for HIV/AIDS Vaccine Development (CHAVD), and is also supported by synergistic funding from other sources, including the Gates foundation.

Optimal protection against HIV infection is likely to be conferred by vaccines that induce broadly-neutralising antibodies (bNAbs) to impair virus transmission, together with T cell, non-neutralising antibody and innate immune responses to control virus replication. The Oxford team is focusing on T cell and innate immune responses, aiming to design strategies that:

- 1) Induce CD4 follicular helper T cell (Tfh) responses that enhance the generation of HIV-1 broadly-neutralising antibodies
- 2) Elicit optimally-protective HIV-specific CD8 T cell responses (work which could also have therapeutic utility)
- 3) Enhance HIV control by innate responses (for both HIV prophylaxis and therapy)

An experienced postdoctoral researcher with a background in cellular immunology and expertise in a breadth of cellular and molecular techniques is required to play a leading role in CHAVD-funded studies focusing on CD4 Tfh cells and their interaction with B cells. Two complementary lines of work will aim:

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- i. To characterise B cell-mediated presentation of HIV vaccine immunogens and define HIV class II epitopes presented by B cells in different broadly-neutralising antibody lineages, to inform CD4 Tfh targeting to provide help to these cells
- ii. To define attributes of optimally-efficacious CD4 Tfh responses, using a combination of in vitro approaches and ex vivo analysis of samples from HIV-infected individuals and vaccine recipients who generated antibody responses differing in neutralisation breadth or other properties

This is an exciting opportunity, entailing application of basic immunological research to inform vaccine design, and we are looking for a dynamic and ambitious post-doctoral researcher to lead this component of our research.

Responsibilities/duties

- To play a leading role in research aiming to inform the design of vaccines that elicit CD4 Tfh responses optimised to drive development of HIV-1 broadly neutralising antibodies (see job description above). The post holder will be expected to plan and independently carry out cutting edge laboratory research (managing the project to meet deadlines as needed). They will develop and test hypotheses, analyse and interpret data, and develop ideas for future work.
- To employ methods already established in the group for profiling B cell mediated epitope presentation and interrogating attributes of CD4 Tfh populations, and innovate in developing new techniques for achieving these goals. Approaches used will include mass-spectrometry-based characterisation of MHC-bound peptide repertoires, multiparameter flow cytometry-based analysis of CD4 Tfh specificity, CD4 Tfh transcriptome analysis and use of in vitro co-culture systems and imaging techniques to interrogate CD4 Tfh provision of help to B cells.
- To contribute to the development of new research directions and develop ideas for generating additional research income (in liaison with the Group Head)
- To work synergistically with other members of the research team, sharing ideas, expertise and laboratory/research resources; and also interact effectively with collaborators both internally and at other institutions
- To present data and ideas at regular laboratory group meetings, other internal meetings and on conference calls with collaborators, as required; and to attend national/international conferences and present research to non-specialist audiences where appropriate.
- To draft research reports and publications necessary for the successful performance of the research.

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- To contribute to supervision of more junior lab members (including DPhil, MSc, FHS and visiting students), providing training in research techniques and assisting them with data analysis, interpretation and presentation as appropriate.
- To participate in the smooth running of the laboratory and share in management responsibilities and communal duties in the laboratory.
- To be accountable for personal professional conduct within the project, and to ensure that work in the Department is conducted safely, legally and in accord with the highest standards of data protection. Also to give due regard to the University Equal Opportunities, Data Protection and other relevant policies.
- To undertake such other duties as may be required from time to time that are commensurate with the grade and responsibilities of this post.
- To 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 1-2 days per year.

Hazard-specific / Safety-critical duties:

This job includes the following hazards or safety-critical activities which will require successful pre-employment health screening through our Occupational Health Service before the successful candidate will be allowed to start work:

- Lone working
- Working with Ionising Radiation
- Working with category 3b or 4 lasers ([laser safety class](#))
- Working with infectious pathogens (hazard group 2/3) - [Hazard Group 3 pathogens](#)
- Working with blood, human products and human tissues
- Work with any substance which has any of the following pictograms on their MSDS:



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Selection criteria

Please ensure you provide a detailed covering letter explaining why you are interested in this position, and how you meet each of the criteria below, with examples.

Essential

- Hold or be close to completion of a PhD/DPhil in immunology or a related biomedical science.
- First author research articles in high-calibre peer-reviewed journals.
- Pre- and/or postdoctoral research experience in human cellular immunology, with proven research skills in T cell immunity and/or antigen presentation.
- Expertise in cellular immunological techniques including multiparameter flow cytometry and in vitro lymphocyte (co)culture
- Experience with analysis of high-dimensional data (from flow cytometry and/or transcriptome studies).
- Evidence of scientific creativity, and an ability to contribute to determining future directions for the research project (examples are essential here).
- Ability to take initiative in developing and troubleshooting new techniques
- Good organisational skills and the ability to multitask effectively.
- Strong written and oral presentation skills, and effective communication skills
- Willingness to work with cells/pathogens at containment level 3 (although prior expertise is not essential – suitable training will be provided if needed)

Desirable

- Expertise in (or a good working knowledge of the technology underlying) mass spectrometry-based immunopeptidome profiling and/or high-resolution imaging.
- Experience with supervision of student research projects.
- Knowledge of R

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



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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

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>

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

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Departmental Athena SWAN pages: <https://www.ndm.ox.ac.uk/working-for-ndm/aboutndmatheneswan/>

The NDM Research Building and Target Discovery Institute (TDI)

Situated on the Old Road Campus this new building represents the latest phase in continued development of the Medical Research Campus. This £22M new building allows the development of the Target Discovery Institute and expansion of existing research groups of NDM with research synergies. The building is 5,300 sq m (GIA) laboratory and office space housing some 160 research and support staff.

The NDM Research Building constructed for the Nuffield Department of Medicine includes the Target Discovery Institute (TDI) with many academic partners. These include the Department of Cardiovascular Medicine and BHF Centre of Research Excellence (BHF Centre for Cardiovascular Target Discovery), Department of Radiation Oncology and Biology, Ludwig Cancer Institute, Kennedy Institute of Rheumatology, Structural Genomics Consortium and the Department of Chemistry.

The TDI consists of six research groups covering high-throughput biology (Ebner group), advanced biological mass spectrometry (Kessler group), medicinal chemistry (Brennan group), chemoproteomics (Huber group), imaging (Rittscher group) and pharmacogenomics (Nijman group). TDI research facilities include technology platform facilities for high-throughput cell-based screening, cell-based assay development programs, discovery proteomics laboratory, medicinal chemistry and chemical biology programmes. There is support space for the scientists including a 90-seat seminar room, advanced IT and AV infrastructure and additional meeting rooms and break out spaces.

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.



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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/](http://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.

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Important information for candidates

Pre-employment screening

Please note that the appointment of the successful candidate will be subject to standard pre-employment screening, as applicable to the post. This will include right-to-work, proof of identity and references. We advise all applicants to read the candidate notes on the University's pre-employment screening procedures, found at:

www.ox.ac.uk/about/jobs/preemploymentscreening/.

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.

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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/.



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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.
