### Job description and selection criteria

<table>
<thead>
<tr>
<th><strong>Job title</strong></th>
<th>Postdoctoral Research Associate - Computational Biology and Bioinformatics</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Division</strong></td>
<td>Medical Science 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>MRC Weatherall Institute of Molecular Medicine (WIMM), John Radcliffe Hospital, Headington, Oxford</td>
</tr>
<tr>
<td><strong>Grade and salary</strong></td>
<td>Grade 8: £39,992 - £47,722 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 3 years in the first instance</td>
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<tr>
<td><strong>Reporting to</strong></td>
<td>Professor Tao Dong</td>
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<tr>
<td><strong>Vacancy reference</strong></td>
<td>134261</td>
</tr>
<tr>
<td><strong>Additional information</strong></td>
<td>-Co-supervised by Dr. Hashem Koohy</td>
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<td></td>
<td>-CAMS Oxford Institute (COI)</td>
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<tr>
<td><strong>Research topic</strong></td>
<td>Anti-viral/cancer T cell</td>
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<tr>
<td><strong>Principal Investigator / supervisor</strong></td>
<td>Professor Tao Dong</td>
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<tr>
<td><strong>Project team</strong></td>
<td>Anti-viral/cancer specific T cell group</td>
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<tr>
<td><strong>Funding partner</strong></td>
<td>The funds supporting this research project are provided by NDMS</td>
</tr>
</tbody>
</table>
Introduction

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 2015/16 exceeded £537.4m 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 Medicine

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

Weatherall Institute of Molecular Medicine

The Weatherall Institute of Molecular Medicine (WIMM) was founded in 1989 by Professor Sir David Weatherall. The possibility of starting a new institute arose when the small Nuffield Research Institute, lying adjacent to the hospitals, closed its research programmes on the retirement of its director. This became a reality when the Wolfson Foundation made a grant award for the new Institute that sparked the involvement of other funders including the MRC, the Wellcome Trust, the EP Abrahams Trust and the Imperial Cancer Research Fund. These grants made it possible to add a new building to the existing institute, which was totally refurbished.

Over the past 20 years, scientists at the WIMM have been at the forefront of the research and associated training that brings together molecular biology, cell biology and clinical medicine. The WIMM is recognized as a leading international centre for basic and translational medical research. The institute won the Queens Anniversary Prize for Higher and Further Education in 1997 and was highly commended in the Cooksey review of biomedical research in 2006. The international standing of the WIMM can be measured by its success in gaining grant funding, the high output of top quality scientific papers and contributions of the research which focuses on the understanding of disease leading to better prevention and treatment. Ten current and past WIMM investigators have been elected Fellows of the Royal Society. Professors Alain Townsend and Peter Ratcliffe have won the Louis Jeantet Prize for research done in the institute and Professor Sir David Weatherall won a Lasker Award in 2010.
Human Immunology Unit

The Human Immunology Unit (HIU) is situated in the excellent research environment of the Weatherall Institute of Molecular Medicine (http://www.imm.ox.ac.uk/), which is part of the University of Oxford. By taking basic immunological discoveries and translating them into patients, the HIU has created a thriving critical mass of scientists and clinical scientists with diverse skills in diverse disease areas, such as cancer, infectious diseases, neuroscience, gastroenterology and dermatology. In addition to excellent expertise in tissue culture, protein chemistry and molecular biology the work is supported by a comprehensive infrastructure including all aspects of genomic analysis (with new generation sequencing), appropriate bioinformatics, full access to proteomics and structural biology, state of the art animal facilities, advanced FACS sorting and analysis, and imaging (including single cell technologies). The work of the HIU lies at the intersection of fundamental molecular science and clinical research and both clinical and non-clinical scientists within the HIU are engaged in translational research programmes via the associated Biomedical Research Centre (http://www.oxfordbrc.org).

For more information please visit: www.imm.ox.ac.uk/wimm-research/mrc-human-immunology-unit

Centre for Translational Immunology/CAMS Oxford Institute

The CAMS-Oxford International Centre for Translational Immunology is a joint venture between the Chinese Academy of Medical Sciences (CAMS), China Centre for Disease Control (China CDC), Beijing’s You’an Hospital (You’an), the University of Oxford’s Human Immunology Unit (HIU), and the Nuffield Department of Medicine (NDM). Founded in April 2013, three main themes will underpin our human immunology research programmes:

- Analysis of the interplay between adaptive and innate immune responses to optimize vaccination strategies;
- The role of the local micro-environment in modulating innate and adaptive immune responses;
- Understanding the mechanisms which control resolution of inflammatory processes during infectious diseases and cancer.

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

CAMS Oxford Institute (COI) was established in December 2017 funded by Chinese Academy of medical sciences with the aim to expand the collaboration between the two organisation and countries. Combining the strength of both partners—With Oxford offering a world class environment and training, and China exceptional researchers and vision-the
Nuffield Department of Medicine

institute, will deliver outstanding science and help to develop innovative medicines to tackle infectious disease and cancer.

Experimental Medicine

Experimental Medicine is part of the Nuffield Department of Clinical Medicine. We have staff based at the John Radcliffe Hospital, Churchill Hospital, Peter Medawar and Weatherall Institute of Molecular Medicine sites.

Research within Experimental Medicine spans fundamental basic science to translational and experimental medicine approaches including clinical trials. We seek to understand the pathophysiology of disease and apply this knowledge to develop enhanced diagnostics and treatments for human disease.

Experimental Medicine's thematic research includes immunology, dermatology, stroke medicine, gerontology, behavioural science, infectious diseases, gastroenterology, palliative care and respiratory medicine. The research is undertaken within different groups and research units and includes clinical trials.

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

Job description

Overview of the role

We are seeking a Postdoctoral Research Associate in Computational Biology and Bioinformatics to join Professor Tao Dong’s and Dr Hashem Koohy’s research group based at the MRC Weatherall Institute of Molecular Medicine. We are studying the Virus Associated Cancer Specific T cell's in cancer patients at a systems level, with the aim to identify key determinants for increasing anti-tumour T cell activity and controlling cancer development. Using the latest single cell approaches, and by sorting specific group of CD4 and CD8 T cell of interest based on our large clinical cohort study in China, we aim to perform detailed analysis of group of T cells isolated from patient samples with specific combination of immune checkpoint receptors expressed on tumour infiltrating T cells and paired T cell receptors usage in order to identify key factors contributed to suppressive T cell function in cancer micro-environment. We are also interested in the changes in influenza virus specific memory T cells during aging-using similar single cell analysis approach.

You will be responsible for integrative analysis of high throughput sequencing data, in particular, single cell transcriptome data using and possibly developing appropriate machine learning techniques to characterise the behaviour of antigen specific T cells in health and in Cancer patients.
The post holder will be using data generated from Dongs group to address the group’s immunological questions of the interest. You will be co-supervised by Dr. Hashem Koohy in computational immunology aspects for the project.

You will hold a PhD/D.Phil of relevance to computational genomics and/or immunology and have experience of integrative and machine learning approaches in genomics high throughput sequencing data. Knowledge in single cell technologies, in particular their applications in immune repertoire profiling will be an asset.

You will work with graduate students and post-doctoral researchers associated with Oxford Celgene funded scRNAseq projects and in collaboration with Celgene’s bioinformatics hub led by Matthew Trotter, Senior Director, Research Analytics.

This is a unique opportunity for talented postdocs and PhD students to contribute into very exciting and potentially careen changing projects in immunology as well as developing their skills in data science of computational immunology at one of the globally renowned centres for advances human immunology.

The post is full time and fixed-term for 3 years in the first instance.

The post holder will be required to add value to the ongoing programmes within the CAMS Oxford Institute and MRC Human Immunology Unit. You will be required to present your work at national and international conferences/seminars as well as publishing your work in peer reviewed journals.
Responsibilities/duties

- To perform scientific research, developing and acquiring relevant skills. Identify and plan new projects.
- Develop, establish, and pursue novel analytical protocols and techniques to support the research.
- Write and maintain software pipelines for data analysis.
- Train and supervise graduate and undergraduate students as appropriate. Advise and supervise biostatistical and laboratory staff on a day-to-day basis.
- Represent the research group and Unit at external meetings/seminars, either with other members or alone.
- Contribute to discussions planning the overall aims and objectives of the group.
- Provide bioinformatics input into outline and full grant proposals, as a co-applicant.
- Contribute to the production of scientific reports and publications for high profile journals, including taking leadership in more specialised publications on novel aspects of bioinformatics.
- Carry out collaborative projects with colleagues in partner institutions, and research groups.
- Liaise with other bioinformaticians based within the Weatherall Institute of Molecular Medicine.
- Work with graduate students and post-doctoral researchers associated with Oxford Celgene funded scRNAseq projects and in collaboration with Celgene’s bioinformatics hub led by Matthew Trotter, Senior Director, Research Analytics.
- Present work at national and international conferences/seminars as well as publishing work in peer reviewed journals.
- 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.
Nuffield Department of Medicine

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
- with Ionising Radiation
- Working with blood, human products and human tissues
- Work with allergens, Eg laboratory animals, pollen, dust, fish or insects etc.
- Work with any substance which has any of the following pictograms on their MSDS:

![Pictograms](image)

- Travel outside of Europe or North America on University Business

Selection criteria

Essential

- Hold a Ph.D/D.Phil of relevance to computational genomics and/or immunology.
- Experience of computational analysis of large high throughput (omics) datasets.
- Experience of integrative and machine learning approaches in genomics high throughput sequencing data.
- Proficiency in data since programming languages Python and/or R. Knowledge in other scripting languages such as bash and Perl. Influence in High Performance Computing facilities and linux systems.
- Knowledge of immunology and molecular biology.
- Good relevant publication record and familiarity with the existing literature and research in the field.
Nuffield Department of Medicine

- Possess sufficient specialist knowledge in the discipline to develop research projects and methodologies.
- Ability to independently plan and manage a research project and be a good team member able to work productively with other team members in collaborative projects.
- Excellent interpersonal and communication skills.

Desirable

- Cross-disciplinary collaborative experience.
- Experience with analysis of single-cell RNA seq data, CyTOF and imaging mass cytometer 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.

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

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. From 1 October 2017, 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/revisede/jra/revaim/.

For existing employees, any employment beyond the retirement age is subject to approval through the procedures: www.admin.ox.ac.uk/personnel/end/retirement/revisede/jra/revproc/
Form 1 October 2017, 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

University Club and sports facilities

The University Club provides social, sporting and hospitality facilities. It incorporates a bar, café and sporting facilities, including a gym. 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](http://www.club.ox.ac.uk) and [www.sport.ox.ac.uk/oxford-university-sports-facilities](http://www.sport.ox.ac.uk/oxford-university-sports-facilities).

Information for international staff (or those relocating from another part of the UK)

If you are relocating to Oxfordshire from overseas, or elsewhere in the UK, the University's International Staff website includes practical information related to moving to and settling in Oxford such as advice on immigration, relocation, accommodation, or registering with a doctor.
See: [www.internationalstaffwelcome.admin.ox.ac.uk/](http://www.internationalstaffwelcome.admin.ox.ac.uk/)

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 to settle into Oxford and to provide them with an opportunity to meet people in the area. See [www.newcomers.ox.ac.uk/](http://www.newcomers.ox.ac.uk/)

Childcare

The University has excellent childcare services with 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](http://www.admin.ox.ac.uk/childcare).

Family-friendly benefits

The University subscribes to My Family Care ([www.admin.ox.ac.uk/personnel/staffinfo/benefits/family/mfc/](http://www.admin.ox.ac.uk/personnel/staffinfo/benefits/family/mfc/)) and staff are eligible to register for emergency back-up childcare and adultcare services, a ‘speak to an expert’ phone line and a wide range of guides and webinars through a website called the Work + Family space.

Disabled staff

We are committed to supporting members of staff with disabilities or long-term health conditions. Please visit [www.admin.ox.ac.uk/eop/disab/staff](http://www.admin.ox.ac.uk/eop/disab/staff) for further details including information about how to make contact, in confidence, with the University’s Staff Disability Advisor.
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/

Other benefits

Staff can enjoy a range of other benefits such as free visitor access to the University’s colleges and the Botanic Gardens as well as a range of discounts. See www.admin.ox.ac.uk/personnel/staffinfo/benefits