Job description and selection criteria

Job title	Senior Bioinformatician in Immune Single Cell Genomics
Division	Medical Sciences
Department	Paediatrics
Location	Department of Paediatrics, Oxford Vaccine Group, Churchill Hospital, Oxford
Grade and salary	Grade 8: £45,585 - £54,395 per annum (with a discretionary range to £59,421 per annum)
Hours	Full time
Contract type	Fixed-term (24 months)
Reporting to	Prof Teresa Lambe, Prof Katrina Pollock in the Oxford Vaccine Group, and Dr Nicholas Provine in the Pandemic Sciences Institute
Vacancy reference	174060
Additional information	*Applications are to be made online, please see the advert for the closing date.* *This role meets the criteria for a UK Skilled Worker visa*

The role

The efficient development of vaccines effective against global and emerging pathogens relies on an improved understanding of the mechanisms and factors that govern vaccine responsiveness, including early adjuvant-dependent inflammatory events and variables such as age and environmental influences. Dissecting vaccine responsiveness is further complicated by the spectrum of immune cell types involved, but the advent of high-resolution profiling technologies along with developments for the use of human lymph nodes ex vivo and their in vivo sampling through fine needle aspiration present a tangible solution.

We have an exciting opportunity for a Senior Bioinformatician in Immune Single Cell Genomics to work on two affiliated projects examining the immune response to vaccination funded by the MRC/UKRI and the Chan Zuckerberg Initiative. These projects involve (1) profiling the intra-lymph node dynamics of vaccine response in individuals of Black and Asian ancestry and in younger and older adults through the Lymph nodE single-cell Genomics AnCestrY (LEGACY) Network and (2) the Immune Memory and Mechanisms of Protection from Vaccines (IMMPROVE) consortium headed by Prof Teresa Lambe OBE and Prof Paul Klenerman, which will include spatial transcriptomic analysis on tissues from vaccinated humans and animals. As the postholder you will join the groups of Prof Katrina Pollock and Prof Teresa Lambe at the Oxford Vaccine Group, at The Oxford Vaccine Group, and Dr Nicholas Provine at the Pandemic Sciences Institute.

You should have a background in biomedical or quantitative science, prior experience working with single-cell RNA-Seq and other relevant next generation sequencing data sets - preferably derived from human immune cells, and a strong interest in working with medical and biological researchers towards a common goal. You must have a proactive and adaptable approach to work and willingness to collaborate. You will have the opportunity to interact with other members of the LEGACY Network and IMMPROVE consortium, including Professors Sarah Teichmann, Brian Marsden, Mala Maini, Daniela Ferreira, Mark Coles and Calliope Dendrou. You should thrive on scientific challenges associated with analysing complex immunological data sets, be keen to learn, test and develop new analytical tools and methods. You must be capable of learning and working independently and be able to train junior team members. Excellent record keeping, code and data management skills and the ability to meet deadlines are essential. You will be expected to document all work thoroughly, to provide manuscript-level reporting of final analyses and results, and to substantially contribute to manuscript writing.

Responsibilities

- Develop research questions within a specific context, conduct individual research, analysing detailed and complex qualitative and/or quantitative data from a variety of sources, and generate original ideas by building on existing concepts. Keep abreast of advances in the field, disseminating these to the team and implementing them as required.
- Develop, establish, and pursue appropriate analytical protocols and techniques to support research. Conduct detailed analysis of multi-modal single-cell data and other next generation sequencing and imaging datasets generated – using the analysis to identify, define and plan new projects that contribute to the overall aims of the projects.
- Develop and use novel methodologies for interrogating and integrating datasets - creating, testing and implementing version-controlled computer code as required. Devise novel approaches for data analysis, develop informatics structures to manage large datasets, and contribute to code and data sharing and deposition via appropriate portals.
- 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 findings. Keep detailed and comprehensible records of your work, preparing accurate reports that communicate results clearly and effectively to a range of stakeholders, and ensure that project members are kept up-to-date with progress and any difficulties encountered.

- 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. Identify and troubleshoot technical or scientific problems, working collaboratively with team members including statisticians and wet-lab biologists to overcome issues.
- Raise research funds through grant applications, and manage own area of a larger research budget.
- Share responsibility for shaping the research group's plans and the writing of group-funding applications for new research projects. Contribute to the education and take responsibility for supervision and training of staff and students on a day-to-day basis as necessary and appropriate, and provide bioinformatics input into grant proposals.
- Liaise with funding bodies and provide information to project stakeholders and represent the research group at external meetings/seminars, either with other members of the team or alone
- Carry out collaborative projects with colleagues in partner institutions, and research groups
- Be accountable for personal professional conduct within the project and agree to the University Equal Opportunities and Data Protection policies.
- Participate in and support of 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.
- Undertake mandatory training as required by the University, Division and Department. The specific list of training courses may change from time-to-time, in response to both legal and internal University requirements.

Selection criteria

Essential

- Hold or near completion of a relevant Ph.D/D.Phil e.g., Bioinformatics, Statistics, Mathematics, Computer Science or related computational subject
- Experience in the analysis of single-cell RNA-seq data (e.g. generated using 10X Genomics platforms)
- Experience analysing CITE-Seq or LIBRA-Seq data and repertoire (TCR/BCR) sequencing data
- Proficiency with a high-level programming language (Python, R) and/or appropriate scripting languages
- Strong publication record and familiarity with the existing literature and research in the field. Ability to deliver high-calibre analytical outputs as evidenced typically through this strong publication record in high-quality peer-reviewed journals with clear evidence of excellent analytical and quantitative skills, ambition and self-motivation
- Possess sufficient specialist knowledge in the discipline to develop research projects and methodologies
- Ability to independently plan and manage a research project, including a research budget
- Ability to raise research funds through making grant applications

- Working knowledge of lymph node biology and the ageing process and vaccine derived immunity and experience in computational biology in an immunological context
- Knowledge of functional analysis (use of tools for GSEA, enrichment studies, networks), data management and visualisation
- Excellent interpersonal skills and capacity to work collaboratively, including the ability to communicate results clearly and effectively by oral and written means, and to discuss scientific ideas
- Evidence of ability to take a leadership role and drive project completion, working independently, and organising and prioritising work to deliver accurate results to the required standard and to an agreed schedule
- Ability to supervise and train junior team members
- Ability to evaluate and implement new developments in the field

Desirable

- Experience of supervising staff
- Experience of managing a research budget
- Experience of making grant applications
- Experience using machine learning approaches for the analysis of immunological processes
- Experience analysing spatial sequencing analysis (e.g. 10x Genomics Visium, Xenium)
- Experience analysing spatially resolved, multi-colour immunofluorescence imaging data
- Experience analysing polychromatic flow cytometry data
- Experience in systems serology

.

Pre-employment screening

Standard checks

If you are offered the post, the offer will be subject to standard pre-employment checks. You will be asked to provide: proof of your right-to-work in the UK; proof of your identity; and (if we haven't done so already) we will contact the referees you have nominated. You will also be asked to complete a health declaration so that you can tell us about any health conditions or disabilities for which you may need us to make appropriate adjustments.

Please read the candidate notes on the University's pre-employment screening procedures at: https://www.jobs.ox.ac.uk/pre-employment-checks

Additional security pre-employment checks

This job includes duties that will require additional security pre-employment checks:

- A satisfactory basic Disclosure and Barring Service check due to the nature of this position working with highly sensitive data.
- University security screening (e.g. identity checks).

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 and we rank first in the UK for university spin-outs, and in recent years we have spun out 15-20 new companies every year. We are also recognised as leaders in support for social enterprise.

The University of Oxford has recently published their New Ways of Working framework to ensure professional service staff can continue to support the University's academic mission whilst working on site or remotely. For more information, please visit https://hr.admin.ox.ac.uk/new-ways-of-working

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.

Oxford Vaccine Group

The Oxford Vaccine Group (OVG) is led by Andrew J Pollard, Professor of Paediatric Infection and Immunity. Staff are based within a purpose-built centre on the Churchill Hospital site and form part of the Centre for Clinical Vaccinology and Tropical Medicine (CCVTM). The aim of OVG is to co-ordinate expertise in the study of microbial diseases and the immune response to microbes, in order to facilitate research on the development and implementation of vaccines. This may include new, improved or combined vaccines for the adult and paediatric population. There is currently a large focus on delivering the COVID-19 vaccine trials.

Core group members include two Consultants in Vaccinology, a Director of Clinical Trials, a Senior Clinical Trials Manager, adult and paediatric clinical research fellows, adult and paediatric research nurses, project managers, QA manager, IT manager, and an administration team. The Infection and Immunity Laboratory includes post doctorate scientists, research assistants and DPhil students. Wider group members include professionals from a range of specialities including immunologists, microbiologists, statisticians, a community paediatrician, the local Health Protection team and a bioethicist.

Recent studies carried out by the group include:

- COVID vaccine trials (Phase 1, 2 and 3), Heterologous regimens and booster studies
- Vaccines against RSV
- Pneumococcal nasopharyngeal carriage epidemiology
- Meningococcal B vaccine development and evaluation
- Development of a typhoid challenge model

More information about OVG may be found at the website: http://www.ovg.ox.ac.uk

Department of Paediatrics

The Department of Paediatrics is a world leader in child health research and hosts internationally renowned research programmes in drug development, gastroenterology, haematology, HIV, immunology, neuroimaging, neuromuscular diseases and vaccinology. Our work spans from early proof-of concept fundamental science, all the way up to its application in clinical settings.

We continue to shape the landscape of medical science through positively impacting the lives of millions of children from our global research programmes, academic resources, and commitment to success. Our broad research base positions the department in a pivotal role and subsequently a world leader in child health. With research facilitates in the UK and abroad, we work on a global scale, building a paediatric network in the medical science community. We are committed to inform and inspire external audiences worldwide through our public engagement and outreach activities.

In 2021, we successfully administered a grant value of £130,895,28 obtained through 168 projects. Our strong relationship with funding bodies have also been a contributor to the successes and milestones in children's health research. With strong support from the Wellcome Trust, NIH, Cancer Research UK, UKRI, MDUK, Bill & Melinda Gates Foundation, Academy of Medical Sciences and the NIHR, we have employed 360+ staff, researchers, and students. These figures continue to grow as we expand our activities to overcome the multitude of challenges within children's research health.

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

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

Medical Sciences Division

We are an internationally recognized centre of excellence for biomedical and clinical research and teaching, and 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: http://www.medsci.ox.ac.uk/

How to apply

Applications are made through our e-recruitment system and you will find all the information you need about how to apply on our Jobs website https://www.jobs.ox.ac.uk/how-to-apply.

Your application will be judged solely on the basis of how you demonstrate that you meet the selection criteria stated in the job description.

As part of your application, you will be asked to provide details of two referees and indicate whether we can contact them now.

You will 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).

Please upload all documents **as PDF files** with your name and the document type in the filename.

All applications must be received by **midday** UK time 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 department(s).

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).

If you need help

Application FAQs, including technical troubleshooting advice is available at: https://staff.web.ox.ac.uk/recruitment-support-faqs

Non-technical questions about this job should be addressed to the recruiting department directly at recruitment@paediatrics.ox.ac.uk or using the contact details in the online advertisement.

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: https://compliance.admin.ox.ac.uk/job-applicant-privacy-policy. The University's Policy on Data Protection is available at: https://compliance.admin.ox.ac.uk/data-protection-policy.

The University's policy on retirement

The University operates an Employer Justified Retirement Age (EJRA) for very senior research posts at **grade RSIV/D35 and clinical equivalents E62 and E82**, which with effect from 1 October 2023 will be 30 September before the 70th birthday. The justification for this is explained at: https://hr.admin.ox.ac.uk/the-ejra.

For **existing** employees on these grades, any employment beyond the retirement age is subject to approval through the procedures: https://hr.admin.ox.ac.uk/the-ejra.

There is no normal or fixed age at which staff in posts at other grades 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 https://hr.admin.ox.ac.uk/staff-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 https://www.sport.ox.ac.uk/.

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 https://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 https://staffimmigration.admin.ox.ac.uk/visa-loan-scheme

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 the Work+Family Space, 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 https://hr.admin.ox.ac.uk/my-family-care 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 https://childcare.admin.ox.ac.uk/

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 https://edu.admin.ox.ac.uk/disability-support

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 https://edu.admin.ox.ac.uk/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.