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Summary

Job title	Postdoctoral Research Associate in Bioinformatics
Division	Medical Sciences Division
Department	Nuffield Department of Orthopaedics, Rheumatology and Musculoskeletal Sciences
Location	Kennedy Institute of Rheumatology, Roosevelt Drive, Headington, Oxford OX3 7FY
Grade and salary	Grade 8: £45,585 - £51,283 per annum
Hours	Full time
Contract type	Fixed-term until 31/07/2026
Reporting to	Associate Professor Stephen Sansom
Vacancy reference	172445
Additional information	A lower grade offer (Grade 7: £36,024 - £ 48,350 p.a.) may be made to a less experienced candidate (such as recent PhD/DPhil graduates) if a suitable candidate cannot be found to fill the Grade 8 position.

Research topic	Bioinformatic analysis of single-cell and spatial genomics data
Principal Investigator / supervisor	Associate Professor Stephen Sansom
Project team	Computational and Single Cell Genomics
Project web site	https://www.kennedy.ox.ac.uk/research/computational-genomics
Funding partner	The funds supporting this research project are provided by the Kennedy Trust for Rheumatology Research.
Recent publications	(1) Spatial transcriptomic characterization of COVID-19 pneumonitis identifies immune circuits related to tissue injury. Cross et al., JCI Insight **2023**.

	(2) Secondary influenza challenge triggers resident memory B cell migration and rapid relocation to boost antibody secretion at infected sites. Maclean et al. **Immunity**. 2022.
	(3) A blood atlas of COVID-19 defines hallmarks of disease severity and specificity. COMBAT Consortium. **Cell** 2022.
	(4) IL-1-driven stromal–neutrophil interactions define a subset of patients with inflammatory bowel disease that does not respond to therapies. Friedrich et al., **Nature Medicine** 2021
	(5) Distinct fibroblast subsets drive inflammation and damage in arthritis. Croft, A. et al. **Nature**. 2019.
	(6) Deconvolution of monocyte responses in inflammatory bowel disease reveals an IL-1 cytokine network that regulates IL-23 in genetic and acquired IL-10 resistance. Aschenbrenner et al., **Gut** 2020
	(7) IRF5 guides monocytes toward an inflammatory CD11c+ macrophage phenotype and promotes intestinal inflammation. Corbin et al. **Science Immunology** 2020.

The role

Research context

The Kennedy Institute of Rheumatology (KIR) is a world-class academic research centre at the University of Oxford. It has a mission to understand and develop therapies for inflammatory diseases such as atherosclerosis, arthritis, and inflammatory bowel disease.

Our researchers are using multi-modal single-cell and spatial transcriptomics approaches to study the immune system and investigate the cellular causes of immune-mediated inflammatory diseases (https://www.kennedy.ox.ac.uk/platforms-and-technologies/single-cell-and-spatial-genomics). This work includes studies of clinical cohorts, functional analysis of model organisms and participation in community projects such as the Human Cell Atlas (https://www.humancellatlas.org/) project.

The institute has a vibrant and growing data science community with established groups specialising in single cell genomics (Associate Professor Stephen Sansom), microbiome analysis (Dr Jethro Johnson), statistical method development (Dr Yang Luo) and statistical genetics (Dr Luke Jostins-Dean). It has close links with the Big Data Institute, Wellcome Centre for Human Genetics and Institute for Developmental and Regenerative Medicine which are located next-door on the Old Road Campus.

Role overview

As a post-doc in the group of Associate Professor Stephen Sansom (https://sansomlab.org) you will lead the development of bioinformatics pipelines and tools for single-cell and spatial genomics datasets (see e.g. https://cellhub.readthedocs.io) and provide bioinformatics help and training to KIR students and staff. You will also participate in collaborative research projects

with other KIR groups, contributing to publications in high impact peer-reviewed journals. This is a core-funded position.

Responsibilities

Key responsibilities

- To write and maintain open-source bioinformatic pipelines and tools for single-cell and spatial data analysis.
- To provide bioinformatics training and supervision to KIR students and staff.
- To help run the KIR Genomics Training Forum.
- To participate in collaborative projects with KIR groups.
- To help write, prepare and publish tools and analysis results in peer-reviewed national and international journals.
- To present your work in regular meetings, by poster and oral presentations at national and international scientific meetings, and via other suitable means.
- To identify training needs and to follow an agreed strategy to achieve them.
- To keep abreast of the relevant literature and methodological developments and to contribute ideas for new research projects.
- To manage your code development, training and project activities. This will involve agreeing clear task objectives, organising, and delegating work as appropriate to meet deadlines.
- To help raise research funds through grant applications, and to manage your own area of a larger research budget.
- To regularly version control and share code with the community using github, and to keep accurate, up-date and accessible records of project work.

Relationships

- The post-doctoral Research Associate will be a member of the Computational and Single Cell Genomics team led by Associate Professor Stephen Sansom (http://sansomlab.org).
- The post-hold will have the opportunity to work with other bioinformatics groups at the KIR and more widely at the University of Oxford.

Selection criteria

Essential selection criteria

- To hold a PhD/DPhil (or near completion) in a discipline of direct relevance to computational single cell and spatial genomics bioinformatics research, or equivalent experience.
- Strong and demonstrable competence with the programming languages Python and R, and with the writing of bioinformatics pipelines.

- Computational genomics code development experience that includes the documentation and version control of source code.

- Good working knowledge and understanding of single cell genomics and/or spatial transcriptomics data analysis approaches.

- Experience providing data science skills training or project supervision to fellow researchers or students.

- Hands-on experience with the computational analysis of genomic data sets evidenced by contributions to publications or submitted manuscripts in peer-reviewed journals.

- Excellent interpersonal skills, able to work independently and collaboratively with experimental and clinical colleagues.

- Highly motivated and able to use own initiative to solve problems.

- Excellent communication skills, evidenced for oral presentations, documentation of code and written contributions to scientific manuscripts.

- Demonstrate an ability to follow departmental guidance in handling sensitive and personal information, including complying with current data protection legislation.

Desirable selection criteria

- A track record of contributions to open-source community bioinformatics code projects (such as e.g. Bioconductor).

- Experience of presenting work at meetings.

- Cross-disciplinary collaborative experience.

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

Due to the nature of the research at the Kennedy Institute of Rheumatology, this job will require additional security pre-employment checks:

- A satisfactory basic Disclosure and Barring Service check

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.

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 Division

The Medical Sciences Division is an internationally recognised 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 Orthopaedics, Rheumatology and Musculoskeletal Sciences

The Nuffield Department of Orthopaedics, Rheumatology and Musculoskeletal Sciences (NDORMS) is part of the Medical Sciences Division and is the largest European academic department in its field, running a globally competitive programme of research and teaching.

Our mission is to discover the causes of musculoskeletal and inflammatory conditions to deliver excellent and innovative care that improves people's quality of life. Our highly skilled teams have expertise in a broad range of areas, including orthopaedic surgery, inflammation, immunology, rheumatology, medical statistics, epidemiology, and clinical trials.

We currently have 460 staff, 100 students and have a grants portfolio worth over £148 million, and an annual turnover in excess of £38 million.

The Kennedy Institute is a biomedical research centre uniquely bringing together discovery science and early-stage clinical research, to develop transformative new therapies for chronic inflammatory and musculoskeletal conditions.

Broadly focused on the thematic areas of immunity and microbiome, inflammation biology and tissue remodelling and repair, the Institute's research is relevant for a range of common diseases such as arthritis, inflammatory bowel disease, fibrosis and cancer.

The Institute has capacity for up to 260 staff and students who work collaboratively across 25 research groups. This enables a multidisciplinary approach of molecular and cellular biology, combined with analysis of disease models, patient tissue samples and longitudinal clinical data. Collectively, these studies seek to uncover the biological processes that maintain tissue health and how these pathways break down in disease.

Research at the Institute is supported by a suite of core technology platforms, as well as through strategic partnerships with other basic and clinical research centres in Oxford, across the UK and internationally. These state-of-the-art technologies include the Oxford-Zeiss Centre for Excellence and other advanced microscopy and imaging facilities, mass and flow cytometry, as well as capabilities for microbial genomics and functional microbiome studies made available through the Oxford Centre for Microbiome Studies.

Complementing a strong programme of lab-based research, the Institute has established a core of expertise and technologies in data science including single cell genomics, statistical genetics, computational biology, and research informatics. A recent extension to the Institute building with a new third floor creates additional space purposely designed for computationally intensive research.

A true trendsetter in innovative and transformational research, the Kennedy also boasts a relaxed and friendly atmosphere, revolving around its bright and airy atrium that provides a space for colleagues to meet over coffee and tea to talk about their research and beyond throughout the day.

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

The **Botnar Research Centre** enables and encourages research and education into the causes of musculoskeletal disease and their treatment.

The Centre provides world-class facilities for scientists in the field of musculoskeletal research. It takes a multidisciplinary approach, encompassing orthopaedic, rehabilitation and rheumatology clinical scientists, bone oncologists, laboratory scientists, epidemiologists, engineers and statisticians. The Botnar also hosts the Oxford Clinical Trials Research Unit (OCTRU) and the Centre of Statistics in Medicine (CSM), providing excellent statistical support to all aspects of clinical research.

The Botnar opened in 2002, with a large annex completed in 2013. The Botnar is now home to around 300 staff and postgraduate students enjoying the international and friendly atmosphere of this workplace and benefits from the vast knowledge of leading experts in the field of musculoskeletal research.

To accommodate its rapid growth, the Centre has opened another wing in early 2022. The new space provides additional 1000m^2 of office and 1000m^2 of laboratory space. The laboratory space includes a GMP clean room facility suitable for the manufacturing of biomaterials for human implantation.

Sharing the site of the Nuffield Orthopaedic Centre, the largest specialist academic musculoskeletal hospital in the UK, puts the Botnar in a unique position to foster the collaboration between basic scientists and clinicians, which is essential to success in medical research.
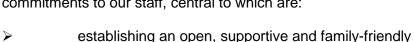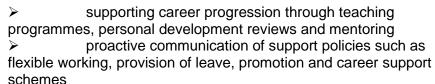
Athena Swan

The Athena SWAN Awards specifically recognise success in developing employment practices to further and support the careers of women in science, technology, engineering, maths and medicine (STEMM) departments in academia. In May 2015 the charter was expanded to recognise work undertaken in arts, humanities, social sciences, business and law (AHSSBL), and in professional and support roles.

Within NDORMS, we feel that we have an established culture of equality but are using the process to spur on-going improvement that benefits everyone involved in the Department. Our on-going progress was rewarded in May 2014 with an Athena Swan Bronze Award and in October 2015 with a Silver Award. Our development in this area has resulted in a number of commitments to our staff, central to which are:

➢   establishing an open, supportive and family-friendly research environment

➢   supporting career progression through teaching programmes, personal development reviews and mentoring

➢   proactive communication of support policies such as flexible working, provision of leave, promotion and career support schemes

NDORMS aims to actively promote the implementation of the University's family-friendly policies to help foster a family friendly working environment, including provision of family leave (such as policies for maternity, paternity, parental, carers and adoption leave), flexible/part-time working and scheduling inclusive meetings.

The University's childcare services support staff with a Childcare Voucher Scheme to help staff save tax and national insurance on childcare costs, offer information on nursery providers and a nursery fee Salary Sacrifice Scheme, work in partnership with playscheme providers to help support families during school holidays and signpost staff to parenting, local authority and other organisations that help support families and parents.

The Department is also committed to ensuring that staff undertaking part-time or flexible working receive the same access to benefits and entitlements as full-time staff, including the same opportunities for training and promotion, a pro-rata entitlement to leave including bank holidays and careful consideration of requests to work part-time (particularly for those by staff returning from maternity leave).

For more information please visit: http://www.admin.ox.ac.uk/personnel/staffinfo/benefits/family/ and http://www.admin.ox.ac.uk/personnel/during/flexible/

We are also actively working to uphold the University's aim of providing an inclusive environment and equal career opportunities by promoting equality, valuing diversity and maintaining a working, learning and social environment in which the rights and dignity of all staff are respected. Separate University policies are also in place to ensure race, disability and gender equality.

For more information, please visit: http://www.admin.ox.ac.uk/eop/

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

Help and support is available from: https://hrsystems.admin.ox.ac.uk/recruitment-support
If you require any further assistance please email recruitment.support@admin.ox.ac.uk.

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 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: https://hr.admin.ox.ac.uk/the-ejra

For **existing** employees, 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 **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 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 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 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.