Experimental Medicine Division

<table>
<thead>
<tr>
<th>Job title</th>
<th>Bioinformatician / Computational Bioscientist</th>
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<tbody>
<tr>
<td>Division</td>
<td>Medical Sciences</td>
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<tr>
<td>Department</td>
<td>Experimental Medicine, Nuffield Department of Clinical Medicine (NDM)</td>
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<tr>
<td>Location</td>
<td>John Radcliffe Hospital, Oxford</td>
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<tr>
<td>Grade and salary</td>
<td>Grade 7: £31,604 - £38,833 per annum</td>
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<tr>
<td>Hours</td>
<td>Full time - Flexible and/or part-time working arrangements could be considered</td>
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<tr>
<td>Contract type</td>
<td>Fixed-Term 2 years</td>
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<tr>
<td>Reporting to</td>
<td>Professor Sarah Walker, Professor Tim Peto</td>
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<td>Vacancy reference</td>
<td>133512</td>
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<td>Additional information</td>
<td>Candidates about to complete an MSc in a relevant scientific field are welcome to apply, but may be appointed on a Grade 6 depending on skills and experience.</td>
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### The role

This post-holder will join an established vigorous multi-disciplinary team working under the umbrella of the the Modernising Medical Microbiology (MMM) consortium which includes the NIHR Health Protection Research Unit (HPRU) in Healthcare Associated Infections and Antimicrobial Resistance (in close collaboration with Public Health England (PHE)), the NIHR Oxford Biomedical Research Centre (BRC) Modernising Microbiology and Antimicrobial Resistance Theme, the Antibiotic Review Kit in Hospitals NIHR Programme Grant for Applied Research, and other associated projects. The group comprises approximately 40 researchers situated in Oxford, predominantly at the John Radcliffe Hospital, and includes microbiologists, clinicians, medical statisticians, mathematical modellers and epidemiologists as well as molecular biologists, bioinformaticians, statistical/population geneticists and software engineers. The group is taking a lead in infectious diseases research in the UK. Key strands of work focus on:

- Investigating pathogen virulence, micro-evolution and population genetics using whole genome sequencing and other molecular approaches, and then translating findings into clinical medicine with the ultimate goal of improving patient outcomes;
• Electronic health records research, particularly across multiple different types of data/databases within secondary care; and
• Antimicrobial use and resistance.

The group maintains a large ethically approved research database of linked Oxfordshire healthcare records (IORD, The Infections in Oxfordshire Research Database, https://oxfordbrc.nihr.ac.uk/research-themes-overview/antimicrobial-resistance-and-modernising-microbiology/infections-in-oxfordshire-research-database-iord/) including patient admission data, microbiology and laboratory (haematology, biochemistry etc) data from ~3 million individuals attending or submitting samples for testing to Oxfordshire hospitals from 1997 to date, with Research Ethics Committee, Health Research Authority and Confidentiality Advisory Group approval.

The post-holder will provide computational biology and bioinformatics expertise for the MMM and HPRU programmes and the OxBRC Infection Theme. They will work in very close cooperation with the group’s other bioinformaticians, population/statistical geneticists and a team of software engineers. They will be responsible for delivery of specific tasks relating to project deliverables (see below). They will be involved in research on the genomic and clinical data generated by the group, within the broad goals of the programmes as described above. There is no teaching commitment associated with the post, however, the post-holder will be expected to provide bioinformatics advice to other group members from different disciplines (and will receive advice from other disciplines in return).

To succeed in this post, you will have strong scripting or programming skills and a background in biological sequence analysis, together with an enquiring and flexible attitude and an interest in working collaboratively with researchers from different disciplines. Your responsibilities will include

(i) Analysis of continuously generated data, predominantly from Illumina and Nanopore sequencing platforms, from “direct-from-sample” sequencing within the BRC, in order to inform optimisation of extraction methods, in collaboration with laboratory scientists.

(ii) Ensuring that existing automated and generic sequence processing pipelines for HPRU projects are functional and fit-for-purpose, particularly with regards to a study implementing near-to-real-time sequencing for Neisseria gonorrhoeae with PHE/HPRU collaborators in Leeds, but also with respect to other pathogens. This will include participating in work to ensure that currently implemented algorithms for mapping, assembling and analysing pathogen molecular variation are updated to reflect advances in this rapidly moving research field.

(iii) Analysis to address specific research questions based on the large warehouses of (predominantly Illumina-based) bacterial sequence data, including questions about overlapping reservoirs of Clostridium difficile; gene flows between humans, animals and the environment in Enterobacteriaceae; mechanisms of transmission in large outbreaks/endemic spread of carbapenemase-producing Enterobacteriaceae.

Responsibilities

• Contribute to the development and implementation of algorithms for automated quality control, mapping, assembly and analysis of whole genome sequences generated by the group from various sequencing technologies, including ensuring the outputs are accurate and quality assured.
• Contribute to the design, implementation, validation and maintenance of the informatics pipeline, including troubleshooting technical or scientific problems in collaboration with other team members.
• Identify appropriate methods to address specific scientific questions, conduct analyses accurately and efficiently, incorporate appropriate strategies to deal with unanticipated problems, and discuss and interpret results with the multi-disciplinary teams.
• Produce publications for high profile journals, and presentations at national and/or international conferences, in collaboration with the multi-disciplinary teams.
• Contribute bioinformatics expertise as necessary and appropriate for wider consortium projects.
• Continuously review developments in projects and seek to acquire new knowledge and skills.

Communication, Education and Training

• Work and communicate effectively within the multidisciplinary teams including:
  o Participating in and contributing directly to scientific discussions, within the group, within the HPRU and/or BRC, and externally as appropriate to the specific project
  o Ensuring that team members are kept up to date with progress and challenges in projects
• Ensure that team members are kept up to date with progress and difficulties in analyses.
• Maintain confidentiality regarding research data at all times.
• Continuously review developments in relevant methodology through regularly reading relevant journals, etc.

General responsibilities

• Participate and support public engagement activities on behalf of Experimental Medicine as part of a co-ordinated programme of activities undertaken within MMM
• Act at all times in the interests of the group to ensure good scientific practice.
• Be accountable for professional conduct.
• Ensure that work is conducted legally and in accord with the highest standards of data protection.
• Undertake such other duties as may be required from time to time that are commensurate with the grade and responsibilities of this post.
• Conduct yourself with due regard to the University Equal Opportunities and Data Protection policies.

Location and key working relationships

The post-holder will be based at the John Radcliffe Hospital in space dedicated to the group. The post-holder will report to Professor Sarah Walker, senior statistician and Theme co-Lead within the NIHR HPRU and Professor Tim Peto (Consultant in Infectious Diseases and Theme coLead of NIHR HPRU). The post-holder will also have close working relationships with Professor Derrick Crook (Group Lead and NIHR HPRU Director), and other members of the group.

Selection criteria

• A Masters or PhD (or equivalent) in a relevant scientific subject
• Experience in large-scale bioinformatics analyses of sequence data
• Experience with scripting and / or programming for bioinformatics (e.g. Python/Perl and / or C).
• Evidence of initiative in developing and planning new strategies and/or identifying new techniques to achieve goals
• Demonstrated ability to work independently
• Demonstrated ability to organise work time efficiently and deliver results to required standard and schedule
• Demonstrated ability to work successfully with individuals from different disciplines, with excellent communication, presentation and interpersonal skills, and a flexible and proactive attitude
• Keen interest in microbiology and/or pathogen bioinformatics

Desirable
• Background or knowledge in microbiology or bacterial/viral pathogens
• Experience in implementation of bioinformatics solutions in to a regulated production environment
• Interest and ability in writing research papers, as demonstrated by publication record

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 2014/15 exceeded £522.9m and we rank first in the UK for university spinouts, with more than 130 companies created to date. We are also recognised as leaders in support for social enterprise.

Join us and you will find a unique, democratic and international community, a great range of staff benefits and access to a vibrant array of cultural activities in the beautiful city of Oxford.

For more information please visit www.ox.ac.uk/about/organisation

Medical Sciences

The Medical Sciences Division is an internationally recognized centre of excellence for biomedical and clinical research and teaching. We are the largest academic division in the University of Oxford
World-leading programmes, housed in state-of-the-art facilities, cover the full range of scientific endeavour from the molecule to the population. With our NHS partners we also foster the highest possible standards in patient care.

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

**Nuffield Department of Clinical Medicine (NDM)**

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. The Department also has a substantial research programme which requires high quality administrative management.

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.

...fostering your career in science

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

The Nuffield Department of Medicine holds a Silver Athena SWAN award in recognition of its efforts to introduce organisational and cultural practices that promote gender equality in SET and create a better working environment for both men and women.

For more information please visit: [www.ndm.ox.ac.uk/athena-swan](http://www.ndm.ox.ac.uk/athena-swan)

**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)
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 www.ox.ac.uk/about/jobs/supportandtechnical/.

If you would like to apply, click on the Apply Now button on the ‘Job Details’ page and follow the on-screen instructions to register as a new user or log-in if you have applied previously. Please provide details of two referees and indicate whether we can contact them now.

You will also be asked to upload a CV and a supporting statement. The supporting statement must explain how you meet each of the selection criteria for the post using examples of your skills and experience. This may include experience gained in employment, education, or during career breaks (such as time out to care for dependants).

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

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

All applications must be received by midday on the closing date stated in the online advertisement.

Information for priority candidates

A priority candidate is a University employee who is seeking redeployment because they have been advised that they are at risk of redundancy, or on grounds of ill-health/disability. Priority candidates are issued with a redeployment letter by their employing departments.

If you are a priority candidate, please ensure that you attach your redeployment letter to your application (or email it to the contact address on the advert if the application form used for the vacancy does not allow attachments).

Should you experience any difficulties using the online application system, please email recruitment.support@admin.ox.ac.uk. Further help and support is available from www.ox.ac.uk/about_the_university/jobs/support/. To return to the online application at any stage, please go to: www.recruit.ox.ac.uk.

Please note that you will 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/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+.

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 and 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/

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/

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.

Family-friendly benefits

The University subscribes to My Family Care (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 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