Job description

Post	Research Assistant in Plant Biology
Department	Biology
Division	Mathematical, Physical and Life Sciences Division (MPLS)
Location	Section of Molecular Plant Biology, South Parks Road, Oxford, OX1 3RB
Grade and salary	Research Grade 6: £34,982 - £40,855 p.a.
Hours	Full time
Contract type	Fixed term - funding available from 1 January 2025 to 31 December 2027
Reporting to	Professor Paul Jarvis
Application deadline	Wednesday 4 December 2024
Vacancy reference	176543
Recruitment contacts	HR: recruitment@biology.ox.ac.uk or PI: paul.jarvis@biology.ox.ac.uk
Additional information	

Research topic	Chloroplast biology
Principal Investigator / supervisor	Professor Paul Jarvis
Project team	Jarvis Group
Project web site	https://users.ox.ac.uk/~dops0547/
Funding partner	BBSRC
Recent publications	Li, N. and Jarvis, R.P. (2024) Recruitment of Cdc48 to chloroplasts by a UBX-domain protein in chloroplast-associated protein degradation. Nat. Plants 10: 1400-1417. Sun, Y. and Jarvis, R.P. (2023) Chloroplast proteostasis: import, sorting, ubiquitination, and proteolysis. Annu. Rev. Plant Biol. 74: 259-283.

	Ling, Q., Broad, W., Trösch, R., Töpel, M., Demiral Sert, T., Lymperopoulos, P., Baldwin, A. and Jarvis, R.P. (2019) Ubiquitin-dependent chloroplast-associated protein degradation in plants. Science 363: eaav4467. Ling, Q. and Jarvis, P. (2015) Regulation of chloroplast protein import by the ubiquitin E3 ligase SP1 is important for stress tolerance in plants. Curr. Biol. 25: 2527-2534. Jarvis, P. and López-Juez, E. (2013) Biogenesis and homeostasis of chloroplasts and other plastids. Nat. Rev. Mol. Cell Biol. 14: 787-802. Ling, Q., Huang, W., Baldwin, A. and Jarvis, P. (2012) Chloroplast biogenesis is regulated by direct action of the ubiquitin-proteasome system. Science 338: 655-659.

The role

Context
Rapid human population growth (set to reach 9.8 billion by 2050) and anthropogenic climate change together place ever increasing pressure on food security and natural resources. Thus, a key challenge of our era is to deliver increased agricultural yields with resilience to stress and disease. To meet this challenge, we must develop improved crop varieties, by delivering and then exploiting advances in our understanding in key areas of plant biology.

Chloroplasts
Chloroplasts are tiny, subcellular structures ("organelles") that define plants. They contain the green pigment chlorophyll that absorbs light in photosynthesis – the process whereby sunlight energy is used to power cellular activities and plant growth. Because photosynthesis is the only significant mechanism of energy-input into the living world, chloroplasts are vitally important, not only to plants but to all life on Earth – including our staple crops. Owing to their role in photosynthesis, and in plant responses to environmental challenges (or stresses) such as drought and salinization, chloroplasts are prime targets for crop improvement strategies.

Chloroplasts are built from thousands of different proteins. Most of these proteins are encoded by genes in the cell nucleus, and so are made outside of the organelle in the cellular matrix called the cytosol. Since chloroplasts are surrounded by a double-membrane "envelope", sophisticated machinery is needed to import these proteins into the organelle. This machinery has two parts, called TOC ("Translocon at the Outer envelope membrane of Chloroplasts") and TIC. Each part is composed of several subunits that cooperate to drive protein import.

The project
Our research group has a long track-record of studying chloroplast protein import mechanisms. In recent years, we uncovered how activity of the TOC translocon is regulated by a novel mechanism called CHLORAD (chloroplast-associated protein degradation); and we showed how such regulation is vital for diverse aspects of plant growth, including resilience to adverse environments and fruit ripening. However, while the regulation of protein import is well studied, our understanding of the molecular mechanisms of the translocons is rudimentary.

As already noted, the translocons are assemblies of several protein subunits – i.e., they are multiprotein complexes. We aim to elucidate how the individual subunits are arranged within TOC machines, and how TOC assembles with TIC. Having such a detailed understanding of the translocons is extremely important, because this is the only way to finally resolve the chloroplast protein import mechanism. Particular challenges with this are that the translocons exist only in very small quantities in plants, and are rather unstable, making them difficult to study. Fortunately, we have now substantially overcome these hurdles and are in an exciting and unprecedented position to deliver a step-change in our understanding of translocon function, and of chloroplast protein import and plant biology in general. This new information on chloroplast development and functions may offer applications in the future development of crops with improved photosynthetic performance, stress resilience, and yields.

Responsibilities

- Independently manage own research and administrative activities within guidelines provided by senior colleagues, including accurate record keeping
- Contribute to wider project planning, including ideas for new research projects
- Determine the most appropriate methodologies to test hypotheses, and identify suitable alternatives if technical problems arise
- Select, follow, and adapt experimental protocols as needed for the project
- Gather, analyse, and present scientific data, from own experiments and from other sources as necessary
- Contribute to scientific reports and journal articles and the presentation of data/papers at conferences
- Share responsibility for general laboratory management and administration, including stock control of laboratory consumables
- Maintain good laboratory practice at all times
- Use and oversee specialist scientific equipment in a laboratory environment
- Represent the research group at meetings as required, potentially with other members of the group
- Contribute actively to lab meetings and other discussions, and openly share research findings with colleagues in the group
- Provide training, advice and oversight to others within the research group with their experiments, especially more junior or less experienced colleagues
- Embed the principles of mutual respect, equality, diversity, inclusivity and sustainability in all aspects of your work; undertake training as and when asked to do so.

Selection criteria

Essential selection criteria

- A bachelor's degree in a relevant discipline
- Considerable relevant research experience in molecular biology and/or protein biochemistry
- Sufficient specialist knowledge in the discipline to work independently within established research programmes
- Strong organization skills and ability to manage own research and administrative activities
- Good interpersonal skills and the ability to work well in a team
- Excellent communication skills including the ability to write text that can be published or included in grant proposals, and to present research data orally at meetings
- Experience of following and adapting protocols and selecting appropriate experimental methodologies
- Experience of using computer software, both general applications (e.g., Microsoft Office) and specialist applications relevant to molecular biology and protein research

Desirable selection criteria

- Experience of working with *Arabidopsis thaliana* or other plants
- Experience of research on chloroplasts or other organelles
- Experience of contributing to articles for publication or to grant proposal writing

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. If you have previously worked for the University we will also verify key information such as your dates of employment and reason for leaving your previous role with the department/unit where you worked. 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

Hazard-specific / Safety-critical duties

This job includes hazards or safety-critical activities. If you are offered the post, you will be asked to complete a health questionnaire which will be assessed by our Occupational Health Service, and the offer of employment will be subject a successful outcome of this assessment.

The hazards or safety-critical duties involved are as follows:

- Night working (11pm-6am)
- Lone Working
- Work in hot or cold environments
- Working with Ionising Radiation
- Working with category 3b or 4 lasers (laser safety class)
- Work with allergens, E.g., laboratory animals, pollen, dust, fish or insects etc.
- Work with any substance which has any of the following pictograms on their MSDS:

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.

The Department of Biology

You will be joining the Department of Biology at an exciting time. The Department established from August 2022 as a result of a merger between the Departments of Zoology and Plant Sciences and is preparing to move into the new state-of-the-art Life and Mind Building in two to three years' time.

The Department of Biology is recognised internationally for its research in a wide range of fields spanning all levels from molecules to ecosystems and tackling global challenges through fundamental bioscience research. Over time, the research interests of the Department has been focused on five primary themes: Behaviour & Biomechanics; Ecology & Conservation; Evolutionary Biology; Microbiology & Infectious Disease; and Molecular Plant Biology. Research is conducted in all spheres from laboratory and in silico analysis to theoretical and field-based research.

At all times we seek to reinforce the connections between research and our education offering, at both graduate and undergraduate level. The Department teaches a four-year undergraduate degree MBiol course in Biology, with fourth-year students undertaking a Masters-level research project. It also supports a variety of graduate placements and hosts the University's DPhil in Biology.

External research income to the Department is derived from over 50 different funding agencies, with the principal current funders being the European Research Council, the Royal Society, the Wellcome Trust, BBSRC and NERC. The Department has a significant record in integrating broader societal impacts of its research, including the provision of policy to government at the highest level, as well as supporting the commercialisation of research through spin-out companies and licensing arrangements that have generated hundreds of millions of pounds' worth of innovation.

The Department is located in the University's Science Area at two sites and will move into the new £200m Life and Mind Building in 2024 that will include extensive laboratory provision with controlled environment rooms, glasshouses and an imaging suite. The Department also benefits from extensive facilities at the John Krebs Field Station at Wytham, with Wytham Woods nearby, as well as partnerships with organisations in the area such as the Oxford Botanic Gardens and Oxford Natural History Museum.

For more information please visit: https://www.biology.ox.ac.uk

About the Mathematical, Physical, and Life Sciences (MPLS) Division

The Mathematical, Physical, and Life Sciences (MPLS) Division is one of the four academic divisions of the University, alongside the Humanities, Social Sciences and Medical Sciences Divisions. It is led by an academic Head of Division (Professor Sam Howison) and an administrative Divisional Registrar (Dr Tracy Gale) and comprises nine of the University's academic departments – Biology, Chemistry, Computer Science, Earth Sciences, Engineering Science, Materials, the Mathematical Institute, Physics, and Statistics – as well as Begbroke Science Park, the multidisciplinary Ineos Oxford Institute for Antimicrobial Research and an interdisciplinary Doctoral Training Centre.

MPLS is proud to be home to some of the most creative and innovative scientific thinkers and leaders in academia, whose interdisciplinary research is tackling major societal and technological challenges, from new energy solutions or improved cancer treatments to understanding climate change processes and helping to preserve biodiversity, tackling antimicrobial resistance, advancing AI and quantum technologies and space exploration, and much more. The quality and impact of our work have been recognised by successive rounds of the national Research Excellence Framework and Teaching

Excellence and Student Outcomes Framework exercises, and our departments frequently top the major higher education league tables. We teach around 7,300 students (including around 3,400 graduate students) and are playing a key part in training the next generation of leading scientists.

Divisional activity is co-ordinated and represented by the MPLS Divisional Office based at 9 Parks Road, in the heart of Oxford's Science Area. The Divisional Office, which is led by the Divisional Registrar, has around 55 dedicated members of staff, as well as a number of colleagues who are embedded in divisional teams but based in central University services (e.g., in Finance, HR and Development).

To find out more, please visit: www.mpls.ox.ac.uk.

How to apply

Applications are made through our online recruitment portal. Information about how to apply is available 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.

If you currently work for the University please note that:

- as part of the referencing process, we will contact your current department to confirm basic employment details including reason for leaving
- although employees may hold multiple part-time posts, they may not hold more than the equivalent of a full time post. If you are offered this post, and accepting it would take you over the equivalent of full-time hours, you will be expected to resign from, or reduce hours in, your other posts(s) before starting work in the new post.

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@biology.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 online recruitment portal 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** of 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 dependants. 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

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.