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Research Associate on the structural biology of bacterial secretion systems

Department/Division/Faculty:	Department of Infectious Disease/Faculty of Medicine
Campus/Location:	South Kensington
Job Family/Level:	Research Job Family, Research Associate* (Research salary scale)
Responsible to:	Prof Harry Low
Line management for:	n/a
Key working Relationships (Internal):	Prof Harry Low, other members of the group and our collaborators at Imperial including Prof David Rueda
Key Working Relationships (External):	International collaborators
Contract type:	Full time, fixed term 24 months (with the possibility to extend for a further 24 months) funded by a Wellcome Trust Discovery Award. Potential for extension subject to project direction.

Purpose of the Post

We are seeking to recruit an enthusiastic and motivated structural biologist to join the group of Prof Harry Low, Department of Infectious Disease (www.thelowlab.org). The research project focuses on determining the molecular mechanism of bacterial secretion systems including the T2SS, Tad and Type 4 pilus systems. Methodology will include cryo-electron microscopy (EM) single particle and tomography studies, and TIRF microscopy combined with single molecule FRET to determine structure and function. For more informal discussion on the project please contact Harry Low (h.low@imperial.ac.uk). Relevant publications can be found at <https://www.thelowlab.org/publications>.

The post holder will be part of the world-leading Department of Infectious Disease and Centre for Structural Biology (CSB) at Imperial College. The in-house CSB EM facility includes two Tecnai T12 screening microscopes and a Thermo Glacios microscope equipped with a sample autoloader, Falcon 4 DED and Selectris energy filter. The Low lab also has routine access to the LonCEM consortium Titan Krios fitted with K3 DED located at The Crick Institute, London. We also benefit from regular access to Titan Krios data

collection at the electron Bio-Imaging Centre (eBIC), Harwell. Computationally, the CSB is exceptionally well equipped with a state-of-the-art processing cluster comprising 26 GPU servers each equipped with 4x Nvidia A10 24GB cores. Two of these servers have Nvidia L40S 48GB cores. The lab also has three of its own GPU-enabled servers. As a shared facility with the ICR, located a ten-minute walk away, we have access to a state-of-the-art CLEM/FIB-SEM suite. This includes Leica GP2 plunge freezer, EM ICE high pressure freezer, Stellaris 5 cryo-confocal microscope, and a FIB-SEM (either Aquilos 2 or Helios to be purchased this year). The Low lab has its own ONI Nanoimager super-res microscope with STORM, PALM, epifluorescent, and TIRF capabilities suitable for smFRET studies.

Key Responsibilities

Research:

- To take responsibility for the day-to-day running of biochemical/structural biology research on bacterial secretion systems.
- To carry out the design and execution of appropriate experiments based on high-level research goals.
- To periodically manage and mentor small teams of more junior colleagues including PhD or Mres students.
- To contribute to periodic laboratory meetings and deliver presentations at internal and external seminars.
- To be proficient in new approaches and techniques, and integrate these approaches into your research projects.
- To take initiative in the planning and execution of research.
- To maintain accurate and complete records of all findings.
- To attend relevant workshops and conferences (national and international) as necessary.
- To draft publications and prepare them for submission to peer reviewed journals.
- To contribute to writing research grant bids and patent applications as required.
- To take responsibility for organising resources and effective decision making in support of research.
- To develop contacts and research collaborations within the College and the wider community as required.
- To promote the reputation of the Group, the Department, and the College.
- To comply with the College, Division, and Unit safety practices and to attend courses on safety when appropriate
- Any other duties as may be deemed reasonable by Head of group as well as Head of Division/Department/Section

Research group infrastructure:

- To help with the smooth running, organization of the laboratory and ensuring that good laboratory practice is observed in all procedures directly related to the research programme.
- To participate in all duties associated with support of the research.
- To take an active involvement in maintaining a safe working environment in accordance with Health & Safety procedures.

Techniques to be applied include:

- Single particle cryo-electron microscopy with purified sample and in-situ.
- Cryo-electron tomography.
- X-ray crystallography (possibly).

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- TIRF microscopy with single molecule FRET.
- Other light microscopy studies
- Molecular biology / PCR / cloning etc
- Protein expression and purification
- Other biophysical and biochemical techniques

Other Duties:

- To undertake any necessary training and/or development.
- To undertake appropriate administration tasks.
- To attend relevant meetings.

Person Specification

Requirements

Candidates/post holders will be expected to demonstrate the following:

**Essential (E)/
Desirable (D)**

Education

A PhD (or equivalent), preferably in cryo electron microscopy (single particle or tomography) or equivalent level of professional qualifications and experience (E)

**Candidates who have not yet been officially awarded their PhD will be appointed as Research Assistant.*

Experience & Knowledge

Strong research track record in structural biology including cryo electron microscopy, X-ray crystallography or NMR (E)

Experience in the design and execution of workflow for structure determination of proteins, from molecular biology/biochemical experiments (e.g. DNA cloning and mutagenesis, protein purification) to electron microscopy sample preparation (E)

Experience in cryo-EM single particle data collection, processing and model building work flows (E)

Experience in electron tomography data collection and data processing including tomogram reconstruction and sub-volume averaging (D)

Experience in fluorescent microscopy studies (D)

Experience in smFRET/TIRF (D)

Modern biophysical techniques for study of protein-protein or protein-ligand interactions: e.g. ITC, MST, SPR (D)

Periodic mentoring and developing junior team members including Mres students (D)

At least one first author publication in an international journal or bioRxiv (E)

Skills & Abilities

Ability to conduct a detailed review of recent literature (E)

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Ability to develop and apply new concepts	(E)
Creative approach to problem-solving	(E)
Excellent verbal communication skills and the ability to deal with a wide range of people	(E)
Excellent written communication skills and the ability to write clearly and succinctly for publication	(E)
Ability to organise own work with minimal supervision	(E)
Ability to prioritise own work in response to deadlines	(E)
Advanced computer skills, including including word-processing, appropriate bioinformatics tools, LINUX and image processing software	(E)
Ability to direct the work of a small research team and motivate others to produce a high standard of work	(E)
Willingness to work as part of a team and to be open-minded and cooperative	(E)
Flexible attitude towards work	(E)
Discipline and regard for confidentiality and security at all times	(E)
Willingness to undertake any necessary training for the role	(E)
Willingness to travel both within the United Kingdom and abroad to conduct research and attend conferences	(E)
Willingness to work out of normal working hours if the requirements of the project demand	(E)

Further Information

Please note that job descriptions cannot be exhaustive, and the post-holder may be required to undertake other duties, which are broadly in line with the above key responsibilities.

[Our values](#) are at the root of everything we do and everyone in our community is expected to demonstrate Imperial:

- Respect
- Collaboration
- Excellence
- Integrity
- Innovation

Employees are also required to comply with all Imperial policies and regulations.

We are committed to equality of opportunity, to eliminating discrimination and to creating an inclusive working environment for all. We encourage candidates to apply irrespective of age, disability, marriage or civil partnership status, pregnancy or maternity, race, religion and belief, gender reassignment, sex, or sexual orientation. You can read more about our commitment [on our webpages](#).

Imperial is a proud signatory to the San-Francisco Declaration on Research Assessment (DORA), which means that in hiring and promotion decisions, we evaluate applicants on the quality of their work, not the

journal impact factor where it is published. For more information, see <https://www.imperial.ac.uk/research-and-innovation/about-imperial-research/research-evaluation/>

Imperial believes that the use of animals in research is vital to improve human and animal health and welfare. Animals may only be used in research programmes which are ultimately aimed towards finding new treatments and making scientific and medical advances, and where there are no satisfactory or reasonably practical alternatives to their use. Imperial is committed to ensuring that, in cases where this research is deemed essential, all animals in our care are treated with full respect, and that all staff involved with this work show due consideration at every level. [Find out more about animal research at Imperial.](#)

[October 2026]