London Centre for Nanotechnology
17-19 Gordon Street
London WC1H 0AH
www.london-nano.com

Title:	**Research Associate in Biophysics of Bacterial Killing by the Immune System**
Reference:	1663876
Grade:	UCL Grade 7
Salary:	Salary Range: £34,056 – £41,163 (including London Allowance) per annum
Terms and Conditions:	In accordance with the conditions of employment as laid down in the relevant UCL Staff policies; the position is funded for three years in first instance
Accountable to:	Professor Bart Hoogenboom

Job Summary:

This position is related to a project funded by the UK Medical Research Council for studying the biophysics and dynamics of bacterial killing by complement. Complement is a key part of the innate immune system and is our first line of defence against bacterial infections. Its activation leads to the formation of pore forming membrane attack complexes (MACs) to lyse bacteria. Most of our current understanding of the MAC results from studies of the MAC perforating single membrane model systems such as synthetic lipid bilayers and red blood cells. However, in physiological context, the MAC targets the much more complex and composite bacterial envelope, and – while of great medical relevance – its mechanisms of (anti)bacterial attack remain unclear. In this project, the postdoctoral research associate will apply advanced nanoscale microscopy techniques in the context of immunology/microbiology, to study how the MAC assembles on live bacteria and kills them. The research will be carried out in Bart Hoogenboom's research group at the London Centre for Nanotechnology, in close collaboration with Suzan Rooijakkers's lab at University Medical Centre Utrecht (the Netherlands).

Duties and Responsibilities:

- To develop and apply protocols for visualising membrane attack by pore forming proteins on live bacteria, using atomic force microscopy and fluorescence microscopy, as well as biochemical labelling.
- To conceive, design and implement experiments aimed at understanding the mechanisms of bacterial attack by the innate immune system.
- To design, carry out and analyse experiments.
- To communicate between the different biophysics and immunology/microbiology laboratories involved in this research collaboration.
- To contribute to the drafting and submission of papers to peer reviewed journals.
- To prepare progress reports on research for funding bodies as required.
- To contribute to the preparation and drafting of research bids and proposals.

- To contribute to the overall activities of the research team and department as required.
- To contribute to the induction and direction of other research staff and students as requested.
- To be responsible for ensuring that equipment is safe and maintained in working order.
- As duties and responsibilities change, the job description will be reviewed and amended in consultation with the postholder.
- The postholder will carry out any other duties as are within the scope, spirit and purpose of the job as requested by Professor Bart Hoogenboom.
- The postholder will actively follow UCL policies including Equal Opportunities and Race Equality policies.
- The postholder will maintain an awareness and observation of Fire and Health & Safety.

Person Specification

Essential Qualifications

Applicants should have a PhD Degree in a relevant area of Life Sciences or Physical Sciences.

Essential Experience

- Experience on advanced microscopy techniques.
- Experience in characterising biological samples at the level of single or few molecules.
- Experience in carrying out internationally competitive research, as demonstrated by a scientific publication track record in highly regarded international journals.
- Experience in successfully conceiving, designing and developing new experiments.
- Experience in multi-disciplinary working.
- Experience with analysing and interpreting experimental data.

Desirable Experience

- Experience with in-liquid atomic force microscopy.
- Experience with fluorescence microscopy.
- Experience with handling live bacteria.
- Experience with protein handing.
- Experience with research in the field of immunology and/or microbiology.
- Experience with biochemical analysis methods.

Essential skills and abilities

- Demonstrated ability for creative and original research of the highest impact.
- Ability to multi-task and organise own work with minimal supervision to meet deadlines.
- Ability to maintain a clear and up-to-date lab notebook and deliver written reports to the supervisory team and to the funding body.
- Excellent verbal communication skills and ability to relate appropriately to others and to work as part of a team.
- Ability to communicate results effectively at meetings and conferences.
- Excellent written communication skills and the ability to write clearly and succinctly to a level consistent with publication in highly regarded international journals.

London Centre for Nanotechnology

The London Centre for Nanotechnology is an interdisciplinary joint enterprise between University College London and Imperial College London. In bringing together world-class infrastructure and leading nanotechnology research activities, the Centre aims to attain the critical mass to compete with the best facilities abroad. Research programmes are aligned to three key areas, namely Planet Care, Healthcare and Information Technology and exploit core competencies in biomedical, physical and engineering sciences.

The Centre occupies a purpose-built eight storey facility in Gordon Street, Bloomsbury, as well as extensive facilities within different departments at South Kensington. LCN researchers have access to state-of-the-art clean-room, characterisation, fabrication, manipulation and design laboratories. This experimental research is complemented by leading edge modelling, visualisation and theory.

LCN has strong relationships with the broader nanotechnology and commercial communities, and is involved in much major collaboration. As the world's only such facility to be located in the heart of a metropolis, LCN has superb access to corporate, investment and industrial partners. LCN is at the forefront of training in nanotechnology, and has a strong media presence aimed at educating the public and bringing transparency to this emerging science.

About UCL

UCL is one of the world's top universities. Based in the heart of London, it is a modern, outward-looking institution. At its establishment in 1826, UCL was radical and responsive to the needs of society, and this ethos – that excellence should go hand-in-hand with enriching society – continues today.

UCL's excellence extends across all academic disciplines; from one of Europe's largest and most productive hubs for biomedical science interacting with several leading London hospitals, to world-renowned centres for architecture (UCL Bartlett) and fine art (UCL Slade School).

UCL is in practice a university in its own right, although constitutionally a college within the federal University of London. With an annual turnover exceeding £1 billion, it is financially and managerially independent of the University of London.

The UCL community

UCL's staff and former students have included 29 Nobel prizewinners. It is a truly international community: more than one-third of our student body – more than 35,000 strong – come from 150 countries and nearly one-third of staff are from outside the UK.

UCL offers postgraduate research opportunities in all of its subjects, and provides more than 200 undergraduate programmes and more than 400 taught postgraduate programmes. Approximately 54% of the student community is engaged in graduate studies, with about 29% of these graduate students pursuing research degrees.

Quality of UCL's teaching and research

UCL is independently ranked as the most productive research university in Europe (SIR).

It has 983 professors – the highest number of any university in the UK – and the best academic to student ratio of any UK university (*The Times*, 2014), enabling small class sizes and outstanding individual support.

In Research Excellence Framework 2014 (REF2014), UCL was rated the top university in the UK for 'research power' (the overall quality of its submission multiplied by the number of FTE researchers submitted). It was rated top not only in the overall results, but in each of the assessed components: publications and other research outputs; research environment; and research impact. REF2014 confirmed UCL's multidisciplinary research strength, with many leading performances across subject areas ranging from biomedicine, science and engineering and the built environment to laws, social sciences and arts and humanities.

Equality

UCL is proud of its longstanding commitment to equality and to providing a learning, working and social environment in which the rights and dignity of its diverse members are respected.

Some highlights below:

- **Race Charter Mark** - UCL holds a Bronze Race Equality Charter Mark award, recognising UCL's commitment to improving the representation, progression and success of minority ethnic staff and students.
- **Athena SWAN** - UCL holds an institutional Silver **Athena SWAN** award – this recognises our commitment to and impact in addressing gender equality. Departments at UCL are also engaged in the Athena SWAN charter, with 29 departments holding an award; 16 Silver and 13 Bronze.
- **Staff networks** - We have a number of staff networks that run a range of social and development activities, for example **Out@UCL**, **PACT**, **Enable@UCL**, **the race equality staff network**, **Astrea** and **UCL Women**.
- **B-MEntor** – **B-MEntor** is a mentoring scheme for black and minority ethnic staff. The mentoring scheme is a collaborative initiative with a number of London-based universities.
- **Sabbatical Leave following maternity** – UCL provides one term of sabbatical leave without teaching commitments for research-active academics returning from maternity, additional paternity, adoption or long-term carer's leave. This support for returners enables staff to more quickly re-establish their research activity.

Please see our **Equalities and Diversity Strategy 2015-2020** for information on our current priorities.

Location and working environment

Based in Bloomsbury, UCL is a welcoming, inclusive university situated at the heart of one of the world's greatest cities.

UCL's central campus is within easy reach of Euston, Kings Cross and Marylebone mainline stations, the new Eurostar terminal at St. Pancras and the following Underground stations - Euston Square, Warren Street, Goodge Street and Russell Square. Road connections to the M1 and M40 motorways give easy access to the north and west road networks. There are also good public transport links to Heathrow airport.

Application procedure

Further details about the post and the application procedure are available at www.london-nano.com. If you are unable to apply online please contact Denise Ottley at the London Centre for Nanotechnology, d.ottley@ucl.ac.uk or 17-19 Gordon Street, London WC1H 0AH, for advice. Informal enquiries about the position and project can be directed to Prof. Bart Hoogenboom, b.hoogenboom@ucl.ac.uk .