



The Post

College:	<u>College of Engineering, Mathematics and Physical Sciences (Living Systems Institute)</u>
Post:	Postdoctoral Research Fellow
Reference No:	P63551
Grade:	F
HERA:	RFEL
Reporting To:	Dr David Richards

This new full-time post is available from **1st January 2019** to **31st December 2021** and will be based at the Living Systems Institute (LSI).

Job Description

The Living Systems Institute (LSI)

The LSI is a major new initiative by the University of Exeter, designed to promote interdisciplinary research that transcends the boundaries of mathematics, engineering and the biological, medical and physical sciences. Its mission is to analyse living cells and organisms as integrated systems, with the aim of unravelling how diseases disrupt biological processes at the molecular, cellular and organismal level. Our vision is to build a team of researchers who will work together across disciplines to identify new ways to diagnose, treat and cure disease in plants and animals, especially humans. Our goal is to identify common signatures of disease, irrespective of host or the precise mechanism of disease pathogenesis.

Main purpose of the job:

You will join the multidisciplinary group of Dr David Richards, which specialises in studying the fundamental processes involved in phagocytosis by using a combined experimental-modelling approach. The successful candidate will carry out an exciting project to develop, implement and obtain time-lapse live-cell imaging of phagocytes engulfing a variety of targets, with applications to a number of medical conditions and the design of microparticle drugs. This will involve using a dual-micropipette setup to accurately control the position of both the cell and the target. Research questions will include how the shape and orientation of the target affect phagocytosis, which factors determine the shape of the phagocytic cup, and the role played by actin during uptake.

This project will be highly interdisciplinary and will be aligned with the aims and objectives of an exciting new research project funded by the MRC "The Fundamentals of Phagocytosis: Integrating Theoretical Models and Experiments". Although not required, there will be opportunity for the successful applicant (if interested) to be involved with the analysis and modelling aspects of this project, so enlarging their quantitative skillset. The project will involve interaction with international partners, and is likely to involve a month-long visit to collaborators in the US.

Applicants should have relevant expertise, which may include (but is not restricted to) experimental biophysics, biological engineering, biochemistry, cell biology, chemistry, physics, physiology, or neuroscience. The successful candidate will gain experience in the very latest cutting-edge techniques in a fascinating area of research. The unique and thriving interdisciplinary nature of the Living Systems Institute will offer an exciting and stimulating working environment at the interface between biology, physics, mathematics and medicine.

For more info on the group, see the group website at <http://www.exeter.ac.uk/davidrichards>.

Main duties and accountabilities:

1. To undertake research as appropriate to the field of study. The responsibilities may include all or some of the following:

- Acting as principal investigator on research projects;
- Developing research objectives, projects and proposals;
- Conducting individual or collaborative research projects;
- Identifying sources of funding and contributing to the process of securing funds;
- Extending, transforming and applying knowledge acquired from scholarship to research and appropriate external activities;
- Writing or contributing to publications or disseminating research findings using media appropriate to the discipline;
- Making presentations at conferences or exhibiting work in other appropriate events;
- Assessing, interpreting and evaluating outcomes of research;
- Developing new concepts and ideas to extend intellectual understanding;
- Resolving problems of meeting research objectives and deadlines;
- Developing ideas for generating income and promoting research area;
- Developing ideas for application of research outcomes;
- Deciding on/following research programmes and methodologies, often in collaboration with colleagues and sometimes subject to the approval of the head of the research programme on fundamental issues.

2. To contribute to teaching and learning programmes in the School and to supervise postgraduate research students.

3. To act as research team leader including:

- Mentoring colleagues with less experience and advising on their professional development;
- Coaching and supporting colleagues in developing their research techniques;
- Supervising the work of others, for example in research teams or projects;
- Developing productive working relationships with other members of staff;
- Co-ordinating the work of colleagues to ensure equitable access to resources and facilities;
- Dealing with standard problems and helping colleagues resolve their concerns about progress in research.

4. To routinely communicate complex and conceptual ideas to those with limited knowledge as well as to peers using high level skills and a range of media and to present the results of scientific research to sponsors and at conferences.

5. As determined by the nature of the project and at the direction of the PI, to plan, co-ordinate and implement research programme activity including:

- Managing the use of research resources and ensuring that effective use is made of them;
- Monitoring and reporting on the use of research budgets;
- Helping to plan and implement commercial and consultancy activities;
- Where appropriate, to plan and manage own consultancy assignments.

This job description summarises the main duties and accountabilities of the post and is not comprehensive: the post-holder may be required to undertake other duties of similar level and responsibility. Please visit the Human Resources website to view the Research Fellow role profiles.

Person Specification

Competency	Essential	Desirable
Attainments/Qualifications	PhD or equivalent qualification/experience in a relevant field of study such as Biochemistry, Physics, Engineering, Cell Biology, Chemistry, Biological Engineering or Neuroscience.	Be a nationally recognised authority in the subject area.
Skills and Understanding	Possess sufficient specialist knowledge in the discipline to develop/follow research programmes and methodologies. Record of research output in high quality publications.	Record of research output in nationally recognised journal on biophysics (broadly defined). Knowledge of biological physics, the immune system,

	Excellent written and verbal communication skills.	<p>phagocytosis, other types of endocytosis and micromanipulation.</p> <p>Knowledge of optics, microscope design and understanding of the workings of a microscope or other optical systems.</p> <p>Experience in optical microscopy (including fluorescence) and time-lapse microscopy.</p> <p>Practical experience with cell/tissue culturing.</p> <p>Experience of production of micron-sized plastic beads.</p> <p>Experience of quantitative data and image analysis.</p>
Prior Experience	Experience of managing research projects and research teams.	<p>Experience of acting as principal investigator on research projects.</p> <p>Success in obtaining grant funding (either internal or external).</p> <p>Familiarity or experience with designing, making, and using micropipettes for cell manipulation.</p> <p>Experience with cell biology experiments and working in a wet lab.</p> <p>Familiarity with cell/tissue culture.</p> <p>Experience of undergraduate/postgraduate teaching and supervision.</p> <p>Experience of working in an interdisciplinary research environment.</p>
Behavioural Characteristics	<p>Actively participate as a member of a research team.</p> <p>Able to communicate complex and conceptual ideas to a range of groups.</p> <p>Evidence of the ability to collaborate actively both internally and externally to complete research projects and advance thinking.</p> <p>Able to participate in and develop internal and external research networks.</p> <p>Able to balance the pressures of research, administrative demands and competing deadlines.</p>	<p>Able to identify sources of funding, generate income, obtain consultancy projects, or build relationships for future activities.</p> <p>Willingness to engage flexibly with unusual or creative concepts/methodologies.</p> <p>Passionate about interdisciplinary, curiosity-driven research.</p>
Circumstances	Willing to work flexibly to achieve project demands.	

Terms & Conditions

Our Terms and Conditions of Employment can be viewed [here](#).

Further Information

Please see our [website](#) for further information on working at the University of Exeter.