



UNIVERSITY OF
LINCOLN

UNIVERSITY OF LINCOLN JOB DESCRIPTION

JOB TITLE	Post-doctoral Research Associate in Experimental Biophysics or Bioengineering				
DEPARTMENT	Natural Sciences				
LOCATION	Lincoln Campuses				
JOB NUMBER	CHS310	GRADE	7	DATE	August 2026
REPORTS TO	Graziella Iossa				

CONTEXT

This is an externally-funded PDRA position supporting the Leverhulme project "*Biophysical and morphological coevolution of egg micropyles and sperm in insects*". You will work closely with an international team of researchers across multiple disciplines at the University of Lincoln, UK, in collaboration with the Tulane University, USA.

Insect eggs are incredibly intricate and complex structures which are poorly studied when compared to sperm. To fertilise insect eggs, sperm must pass through a tiny pore called a micropyle, which connected to a channel leading inside the egg. Through our previous work on insect egg and sperm, we have shown that sperm and egg micropyles co-evolve.

The aim of this project is to quantify and explore the form and function of insect egg micropyles across insects. The post you would hold sits at the experimental heart of this: fabricating nano-scale physical analogues of egg surfaces and micropylar pores, and imaging live sperm as they move across and through them. These experiments are complemented by evolutionary analysis and mathematical modelling carried out with the wider team.

This is a laboratory-based post and we are looking above all for a strong experimentalist. You will have a PhD (or close to completion) in experimental biophysics, bioengineering, applied physics or a closely allied discipline, with demonstrable hands-on experience of micro- and nanofabrication and of quantitative live-cell imaging. You will fabricate microfluidic devices and develop live imaging protocols to visualise sperm movement over engineered surfaces and through pores. You will also contribute to computational modelling of sperm movement alongside our collaborator Dr Adnan Morshed (Tulane University, USA) and write and run analysis code in R and/or Python. You will have excellent communication skills with the ability to talk to different audiences, as you will be collaborating with a team of researchers across multiple disciplines both in the UK and overseas.

JOB PURPOSE

The Post Doctoral Research Associate is responsible for conducting research on the project, in consultation with Dr Graziella Iossa, the Principal Investigator, and is expected to operate with a significant degree of autonomy. They are not expected to operate as an independent researcher.

The Post Doctoral Research Associate is required to bring specialist experimental biophysics and bioengineering skills – principally micro- and nanofabrication, microfluidics and quantitative live

imaging – to the delivery of the research. Device fabrication and imaging are the critical path of the project, and the post holder will lead on both. The Post Doctoral Research Associate will work closely with Professor Carl Soulsbury, whose laboratory houses the microfluidics and sperm-imaging facilities, with the international collaborator and mathematical modeller Dr Adnan Morshed and the PI. The main duties will include:

- Design, plan and conducting a programme of research investigation;
- Leading the design, fabrication and validation of novel microfluidic devices and nano-structured surfaces, and developing the live imaging and sperm-tracking methods needed to test them;
- Making a significant contribution to the dissemination of research results by publication in leading peer-reviewed journals, and by presentation at national and international meetings;
- Working independently and as part of a larger team of researchers, both internally and externally to develop new research links and collaborations and engage in knowledge transfer activities where appropriate;
- Contributing to the supervision of junior researchers and PhD students and acting as a mentor to less experienced colleagues;
- Evaluating methods and techniques used and results obtained by other researchers and relating such evaluations to your own research;
- Contributing, where relevant and necessary, your skills and expertise to other research projects and proposals within the Ecology and Evolution Research Group;
- Contributing to, and encouraging, a safe working environment.

These duties provide a framework for the role and should not be regarded as a definitive list. Other reasonable duties may be required consistent with the grade of the post.

KEY RESPONSIBILITIES

Literature Surveys
Undertake literature surveys and other investigations of the state-of-the-art, and prepare reports as required.
Programme of Research
Undertake a programme of research under the direction of the Principal Investigator, demonstrating a significant level of autonomy. Lead in the production of high-quality research outputs, including reports, papers and other publications of national/international standing.
Project Management
Perform project management activities, planning, scheduling, monitoring and reporting on progress of research projects.
Liaison and Networking
Identify and liaise with internal and external collaborators, and with colleagues in the Department, maintaining positive and effective working relationships.
Internal Research Activities
Participate in and help to organise internal research activities, including seminars, research meetings and conferences.
Continuous Professional Development
Undertake continuous professional development activities.
Grant Applications
Contribute to the production of grant applications.
Teaching Support
Engage in teaching support activities, up to a maximum of six hours per week, possibly including leading a small number of units (no more than two per annum). Aid in the supervision of postgraduate research students.

In addition to the above, undertake such duties as may reasonably be requested and that are commensurate with the nature and grade of the post.

ADDITIONAL INFORMATION

Scope and dimensions of the role

As a PDRA, you will have:

- A PhD (or close to completion) or PDRA experience in experimental biophysics, bioengineering, applied physics or an allied laboratory discipline;
- Experience of quantitative light microscopy and image analysis, for example phase-contrast, fluorescence or confocal imaging, high-speed video capture and automated cell or particle tracking;
- Experience of designing, building and troubleshooting microfluidic or lab-on-a-chip devices, and of working with them experimentally;
- Experience in creating, writing, enhancing, and running code in R and/or Python for image analysis, data handling and simulation;
- Confidence working with delicate biological material at the bench, for example gamete or cell handling, dissection and the preparation of live samples for imaging;
- Hands-on experience of micro- and/or nanofabrication of microfluidic devices;
- Strong analytical skills, with the ability to work accurately and carefully, designing, executing, and writing up research independently;
- A developing track record of peer reviewed publications in international journals;
- Excellent communication skills, both written and verbal and the ability to communicate your research at national and international conferences, to academics in other disciplines and to stakeholders;
- The ability to work well both independently and as part of a team;
- Strong initiative and a pro-active approach, with excellent organisational, planning and self-management skills, including the ability to prioritise workloads to meet deadlines/demand and deliver high quality work under pressure;
- A strong commitment to your own continuous professional development.

Useful additional experience:

- Broader biological training or a strong willingness to expand knowledge to allied areas such as ecology and evolution.
- Evidence of pursuing external funding to support research.

Key working relationships/networks

Internal	External
• Principal Investigator • Head of Research Group • Head of School • Other research and academic staff within the school	• Research collaborators • Sponsors and clients



UNIVERSITY OF LINCOLN **PERSON SPECIFICATION**

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JOB TITLE	Post Doctoral Research Associate	JOB NUMBER	CHS310
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Selection Criteria	Essential (E) or Desirable (D)	Where Evidenced Application (A) Interview (I) Presentation (P) References (R)
Qualifications:		
PhD (or close to completion) in experimental biophysics, bioengineering, applied physics or a closely allied laboratory discipline	E	A
Extensive knowledge specific to project/area	E	A/I
Experience:		
Extensive experience of relevant research methods	E	A/I
Experience of designing, fabricating and troubleshooting microfluidic devices	E	A/I
Experience of quantitative live-cell or high-speed light microscopy (phase-contrast, fluorescence and/or confocal) and of automated cell or particle tracking	E	A/I/P
Experience of computational modelling of low-Reynolds-number flow, flagellar propulsion or fluid-structure interaction	D	A/I
Experience of handling live biological samples for imaging, e.g. gametes, dissection, motility media	D	A/I
Authorship of research outputs of national/international standing	D	A/I
Experience of research in specific project area	D	A/I
Skills and Knowledge:		
Ability to design, conduct and project manage original research in the subject area	E	A/I
Excellent written communication, including the ability to write reports and research outputs	E	A/I
Ability to prioritise own workload and work to specified deadlines under pressure	E	A/I
Ability to communicate complex subjects orally	E	A/I
Skills specific to project/area	E	A/I
Proficiency in R and/or Python for image analysis, data handling and simulation	E	A/I
Practical problem-solving at the bench, including iterative device development and protocol troubleshooting	E	I/P
Competencies and Personal Attributes:		
Flexible approach to workload	E	I
Ability to work on own and as part of a team	E	I
Enthusiasm and commitment	E	I

Essential Requirements are those, without which, a candidate would not be able to do the job. **Desirable Requirements** are those which would be useful for the post holder to possess and will be considered when more than one applicant meets the essential requirements.

Author	Graziella Iossa	PBP	LW
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