

## UNIVERSITY OF LINCOLN JOB DESCRIPTION

JOB TITLE	Post Doctoral Research Associate in Ecological and Mathematical Modelling					
DEPARTMENT	Natural Sciences					
LOCATION	Lincoln Campuses					
JOB NUMBER	CHS205	GRADE	7	DATE June 2025		
REPORTS TO	Graziella Iossa					

#### CONTEXT

This is an externally-funded PDRA position supporting the UKRI/NERC Seedcorn Funding project "*Developing a framework of key predictors of antimicrobial resistance emergence and transmission in Chilean wastewater*". You will work closely with an international team of researchers and stakeholder across multiple disciplines from leading institutions in the UK (University of Lincoln, University of Surrey, University of Leeds, UKCEH) and Chile (Universidad de Desarrollo and MICROB-R). You will use a system modelling approach to a) quantify available data, b) knowledge gaps and associated risks to c) develop a risk assessment framework to prevent and reduce the spread of environmental antimicrobial resistance (AMR).

Antimicrobial resistance (AMR) – the phenomenon whereby microorganisms that were previously treatable with antimicrobials become untreatable – is predicted to overtake cancer as the leading cause of death within the next two decades. The role that humans and livestock components play in AMR has received much attention and thus is broadly understood. In contrast, the environmental component of resistance lags behind, despite mounting evidence of its key role in the development, transmission and spread of AMR.

Within the Latin American region, Chile represents one of the leading countries in the control of antibiotic resistance, with one of the lowest mortality rates associated to AMR. In the Chilean National Action Plan on AMR, a key policy document tackling the country's approach to this public health threat, self-reported progress on the implementation of the plan showed good progress in human, animal health, and agriculture, but no progress for the environmental sector. Our previous analysis of Latin American national action plans shows that this is a problem across the region, not just in Chile.

The aim of this project is to fill this gap by launching a new international network — a UK-Chile collaboration using a systems approach to tackle antimicrobial resistance in the environment—involving a feasibility study and system modelling of environmental AMR in wastewater. As part of the team, you will quantify available data, knowledge gaps and associated risks to develop a risk assessment framework to prevent and reduce the spread of environmental AMR. You will use data on AMR in wastewater to tackle the environmental threat of AMR.

You will have a PhD (or close to completion) in modelling complex systems or a closely allied discipline along with experience in creating, writing, enhancing, and running code in R. 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 for specialisms in mathematical and ecological modelling, skillsets related to the project to assist in the research delivery. The Post Doctoral Research Associate will work closely with the UK team and Chilean collaborators and the PI. The main duties will include:

- Designing, planning and conducting a programme of investigation, stakeholder engagement and policy development, in consultation with Dr Graziella Iossa;
- Generating independent and original research ideas and methods in modelling complex systems with an aim to extend the AMR in Chilean wastewater research portfolio;
- 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 Evolution and Ecology 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) in modelling complex systems or a closely allied discipline;
- Experience in creating, writing, enhancing, and running code in R;
- 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.

You may also have:

- Experience in a field of research relating to Ecology and/or AMR in the environment;
- Experience of, or an interest in science-policy translation and/or knowledge exchange;
- Evidence of pursuing external funding to support research.

Key working relationships/networks						
Internal	External					
<ul> <li>Principal Investigator</li> <li>Head of Research Centre</li> <li>Head of School</li> <li>Other research and academic staff within the school</li> </ul>	<ul> <li>Research collaborators</li> <li>Sponsors and clients</li> </ul>					



# UNIVERSITY OF LINCOLN PERSON SPECIFICATION

JOB TITLE	Post Doctoral Research Associate	JOB NUMBER		CHS205	
Selection Criteria		Essential (E) or Desirable (D)	Where Evidenced Application (A) Interview (I) Presentation (P) References (R)		
Qualificatio	ons:				
PhD or equive with a PhD p	E	Α			
Extensive kr	E	A/I			
Experience	:				
Extensive ex	E	A/I			
Authorship of standing	E	A/I			
Experience of	of research in specific project area	E	A/I		
Teaching su	D		A/I		
Skills and k	(nowledge:				
Ability to dea research in t	E		A/I		
Excellent wr write reports	E		A/I		
Ability to pri deadlines ur	E		A/I		
Ability to co	E		A/I		
Skills specifi	E	A/I			
Competencies and Personal Attributes:					
Flexible app	E		I		
Ability to wo	E		I		
Enthusiasm	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	GI	PBP	AG
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