UNIVERSITY OF LINCOLN
JOB DESCRIPTION

JOB TITLE	Research Fellow (Numerical Modelling)				
DEPARTMENT	School of Life Sciences				
LOCATION	Brayford Pool				
JOB NUMBER	COS493	**GRADE**	7	**DATE**	Feb 2018
REPORTS TO	Professor of Sensory Biology				

CONTEXT

The postholder will be part of a new interdisciplinary research group with the freedom to work on an exciting project for an extended period. The post is funded by an ERC Consolidator Award to the Professor of Sensory Biology, entitled '*The Insect Cochlea: A non-invasive path towards enhanced sound detectors*'. The project's overarching aim is to develop new technological improvements that constitute the grounds of the next-generation of miniature, super-sensitive acoustic sensors, using the katydid (or bush-cricket) ear as primary model.

In order to understand and predict ear function the project will integrate two major objectives: 1) develop models of low-amplitude ultrasonic energy detection (to explain hearing sensitivity and frequency analysis). 2) generate workable 3D geometries of the bush-cricket auditory system, and numerical solutions of it.

The sensory biology lab offers a dynamic research environment and facilities where the successful applicant will be a member of a multi-disciplinary group working closely together on a defined problem applying techniques from fields as diverse as acoustics, electro-physiology, hearing, material engineering, applied mathematics and biophysics.

JOB PURPOSE

The Research Fellow is responsible for conducting research on the project, as directed by the Professor of Sensory Biology, and is expected to operate with a significant degree of autonomy.

The post holder will be required to help supervise the work of more junior researchers.

KEY RESPONSIBILITIES

Literature Surveys
Undertake literature surveys and other investigations of the state-of-the-art, and prepare reports as required.
Programme of Research
Design and undertake programme of research under the direction of the Professor of Sensory Biology, demonstrating a significant level of autonomy. Lead in the production of high quality research outputs, including grant 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: weekly lab meetings, 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. Instruct students in basic programing using Matlab.

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
Using their skills and experience, the postholder will drive the numerical and analytical analyses required to develop predictive models of the bush-cricket hearing organ with iterative exchanges of results between this project and that of other group members. The postholder will carry full responsibility for the practical implementation of the numerical part of the project and for driving iterative exchanges with results from other group members. They will also be involved in the practical supervision of undergraduate and postgraduate students. The postholder will use both analytical and numeric methods to generate testable predictions and provide insight into the function of all steps of the hearing process of the bush-cricket tympanal organ (outer, middle, and inner ear components). Finite Element Modelling (FEM) and a numerical approach to fluid dynamics. The main topic of this project is to implement data from the physical reality of the hearing organ (mechanical, physiological, structural), collected by other project team members. The main objective of this project is the use of numerical analysis using 3D models of the bush-cricket ears, which will drive the production of theoretical circuitry (network analogs) of ear function. The postholder will help write and publish high quality peer-reviewed scientific papers. In addition to contributing to the development of research proposals and applications for external funding, will contribute to the dissemination of the results to the scientific community through presentation at international conferences and workshops, and to the general public through public lectures and interviews with the media where appropriate.

Key working relationships/networks	
Internal	**External**
• Professor of Sensory Biology • Head of Research Group • Head of School • Other research and academic staff within the school	• Research collaborators • Funder (ERC)

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PERSON SPECIFICATION

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Selection Criteria	**Essential (E) or Desirable (D)**	**Where Evidenced Application (A) Interview (I) Presentation (P) References (R)**
Qualifications:		
PhD or equivalent (good candidates may be accepted with a PhD pending, subject to publication record)	**E**	**A**
Experience:		
Postdoctoral experience	**D**	**A**
Extensive experience of relevant research methods	**E**	**A/I/P**
Authorship of research outputs of national/international standing	**E**	**A/I**
Experience of research in specific project area	**E**	**A/I/P**
Teaching support	**D**	**A/I**
Skills and Knowledge:		
Extensive knowledge specific to project/area	**E**	**A/I/P**
Ability to design, conduct and project manage original research in the subject area	**E**	**A/I/P**
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/P**
Skills specific to project/area	**E**	**A/I/P**
Competencies and Personal Attributes:		
Flexible approach to workload	**E**	**A/I**
Ability to work on own and as part of a team	**E**	**A/I**
Enthusiasm and commitment	**E**	**A/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	FM-Z	**HRBP**	SP