



UNIVERSITY OF
CAMBRIDGE
Department of Zoology

Further Information

University Lecturer in Invertebrate Developmental Neurobiology

Reference: PF12312

Salary range: £36,862 - £46,696 per annum

The Department of Zoology

Zoology is a large, multi-disciplinary Department whose members conduct research and teaching in areas ranging from molecular biology to behavioural ecology. Full information about us can be obtained from our web page <http://www.zoo.cam.ac.uk/>

We are a thriving Department and have consistently received the highest HEFCE research ratings. In the 2001 Research Assessment Exercise, the Department received a 5*, the highest possible rating, denoting world-class science. In the 2008 RAE, the Department contributed to an inter-Departmental submission of 216 academic staff in the School of Biological Sciences. Twenty per cent of the research was rated 4* (world-class) and 40 per cent was rated 3* (international quality). Our teaching is also very highly rated, both in external evaluations and by student feedback.

We number some 250 people, including 24 established University faculty, a further 13 independent group leaders holding prestigious external fellowships, and around 90 graduate students studying for PhD degrees. Nineteen members of the Department are Fellows of The Royal Society.

Zoology is based in the historic city centre of Cambridge, with a Sub-Department in the nearby village of Madingley. Some of our research groups are located within the Gurdon Institute of Cancer and Developmental Biology, close to the main Department building.

Staff of the Department are affiliated to wider initiatives that support research themes across the University. Of particular relevance to this post is the Cambridge Neuroscience Initiative, which brings together more than 500 neuroscientists from over thirty institutes and departments in Cambridge (see <http://www.neuroscience.cam.ac.uk>).

The School of the Biological Sciences

The School is one of six Schools in the University. The School includes the Faculty of Biology, which comprises Zoology and seven other departments, and the Faculty of Veterinary Medicine, which is a single department. The Wellcome Trust/Cancer Research UK Gurdon Institute, the Wellcome Trust Centre for Stem Cell Research and the Cambridge Systems Biology Centre are inter-departmental institutes within the School. The Sainsbury Laboratory is our newest institute. Further information can be obtained from the School website, www.bio.cam.ac.uk

The vacancy

The Department is seeking to recruit an outstanding scientist whose research is in the field of invertebrate developmental neurobiology. This is a field in which this Department has international prominence and which we are committed to reinforcing.

The position is offered on the following terms:

- Grade 9
- Salary range: £36,862 - £ 46,696
- Start date: 1 October 2013
- The appointment will be for an initial period of five years, with reappointment thereafter, to retirement, subject to satisfactory performance.

Information about living and working in Cambridge can be found at:

<http://www.jobs.cam.ac.uk/offer/>

Selection Criteria

- An outstanding research record (publications and grant funding)
- Demonstrated excellence in teaching undergraduates and supervising PhD students
- Track record in commitment to wider responsibilities in current or previous institution (for example, project leadership, mentoring, and effective committee membership)

Recruitment procedure

We plan the following process in making the appointment:

1. Closing date for applications: 12 noon, Monday 20 February 2012
2. Shortlisted candidates will be notified by Wednesday 29 February 2012.
3. Shortlisted candidates will be invited to visit the Department, to present a seminar on their research and to attend a formal interview, in the period 5 March - 15 March 2012
4. We expect to notify candidates of our decision by 23 March 2012.

How to apply

Applicants should send the following:

- A full CV, including a summary (<1000 words) of current research and future research plans.
- A covering letter setting out why you are applying and what you would bring to the role (2 sides A4 maximum).
- Two academic references (note, please, not just names of referees)
- A completed CHRIS 6 (Parts 1 and 3), available at:
<http://www.zoo.cam.ac.uk/zooone/administration/vacancy.html>

Please send these to the Departmental Administrator via email to: an286@cam.ac.uk

or by post to: The Departmental Administrator, Department of Zoology, University of Cambridge, Downing Street, Cambridge CB2 3EJ, UK

Please quote reference when applying: PF12312

Deadline: Monday 20 February at 12 noon.

Interviews/seminars are planned to take place in the week beginning **Monday 5 March 2012.**

The receipt of applications will not be acknowledged, unless this is explicitly requested. We will write to inform you only if you have been short-listed and invited for interview.

Informal enquiries may be addressed to the Head of Department, Professor Michael Akam, on hod@zoo.cam.ac.uk / 01223 336601.

University of Cambridge, Department of Zoology

University Lectureship in Invertebrate Developmental Neurobiology - Appendices

Appendix 1

Estate

The accommodation in the main Department includes one large and one small lecture theatre, and one very large teaching laboratory recently refurbished, which is used with other departments in teaching first and second year courses. There is an excellent library (300 m²) used by undergraduates and by research staff. The Department, including its teaching laboratories and library, is fully networked and with extensive wireless access.

The remainder of the Department consists of research laboratories and offices. We have facilities for confocal microscopy, tissue culture, histology, biochemistry, molecular biology, computing and instrument making. Further facilities are available elsewhere in the School of Biological Sciences: <http://www.bio.cam.ac.uk/services.html>

The University Museum of Zoology

The Museum of Zoology is home to a huge variety of recent and fossil animals. Our collections rival those of the major university museums world-wide, and are used for teaching and for academic study by researchers within and beyond the University. The Museum has Designated Status in recognition of its outstanding collections.

Sub-Department of Animal Behaviour

The Sub-Department of Animal Behaviour is situated in the village of Madingley, four miles west of Cambridge. As well as members of the Zoology Department, we also host researchers from the Departments of Experimental Psychology and Pharmacology. Since 2010, the site at Madingley has also been home to the Evolutionary Genetics Laboratory, staffed by researchers in the Evolution and Diversity research group of the Department of Zoology, and members of the Department of Genetics.

Site development

The Department is poised for major development when the Cambridge Conservation Centre is built. Scheduled to open in 2015, the Centre will be home to conservation NGOs and to conservation-related academics from Zoology and other Departments.

Appendix 2

Academic members of the Department

Head of Department and Professor of Zoology

M. Akam, FRS Developmental genetic basis of animal diversity

Director of Museum of Zoology and Professor of Zoology

P. Brakefield, FRS Evolution and diversity

Professors

W. Amos Evolutionary genetics
A. P. Balmford, FRS Conservation science
J.A. Clack, FRS The fish/tetrapod transition and early tetrapod faunas.
Early radiation of amniotes and amphibians
T.H. Clutton-Brock, FRS Behaviour; ecology; evolution
N.B. Davies, FRS Behavioural ecology
S.B. Laughlin, FRS Visual information processing; eye design; cell
signalling and neural circuit design
H. Skaer Developmental biology of epithelia
D.J. Smith Evolution of pathogens
W.J. Sutherland Conservation biology

Readers

H.A. Baylis Intracellular signalling
B.G. Hedwig Neural mechanisms of behaviour in insects
R. Kilner Behaviour; Ecology; Evolution
C. Jiggins Evolutionary genetics
R.A. Johnstone Evolutionary and functional modelling of animal
behaviour
N.I. Mundy Evolutionary genetics
R.C. Preece Malacology' Quaternary research

University Senior Lecturers

W. Federle Biomechanics of animal adhesion, insect-plant
interactions
W.A. Foster Insect evolution and ecology
A. Manica Population and conservation biology

University Lecturers

R. Asher Morphology and interrelationships of living and extinct
mammals
T. Krude Regulation of human DNA replication
B.J. McCabe Neural mechanisms of learning and memory

Affiliated Lecturer

D.C. Aldridge Freshwater mussels, Biofoulers and Invasive Species

Honorary Professor

R. Green Conservation biology of threatened bird species

Emeritus Professors

C.M. Bate, FRS	Developmental biology; synaptogenesis
Sir Patrick Bateson, FRS	Imprinting in birds, parent-offspring relations in mammals
M. Burrows, FRS	Neurobiology: integration in neuronal networks
C. P. Ellington, FRS	Animal mechanics
Sir John Gurdon, FRS	Amphibian embryology
R.A. Hinde, CBE, FRS	Inter-individual relationships
Sir Gabriel Horn, FRS	Neural mechanisms of learning and memory
E.B. Keverne, FRS	Behavioural neuroscience
R.A. Laskey, FRS, CBE	Eukaryotic DNA replication and nuclear protein import
S.H.P. Maddrell, FRS	Fluid secretion and control mechanisms in insect epithelia
P. Simpson, FRS	Conservation of genetic elements known from <i>Drosophila</i> and control of bristle patterns in other Diptera

Research Fellows and other Principal Investigators

R.S.K. Barnes	Biology of brackish waters
M. de L. Brooke	Molecular taxonomy and bird conservation
D. Burke	Protein structure, computational structural biology and infectious disease
J. Casal-Jimenez	Planar cell polarity
B.J. Denholm	<i>Drosophila</i> developmental biology
L.V. Dicks	Wildlife conservation
R.H.L. Disney	Natural history, taxonomy and phylogeny of the <i>Phoridae</i>
M.D.F. Ellwood	Diversity of arthropod communities in tropical rainforests
J.R. Flowerdew	Small mammal ecology
A.E. Friday	Mammalian evolution; evolutionary trees
T.A. Gardner	Sustainability science, biodiversity conservation, land-use change and tropical forests
M. Giannakou	Investigating ageing and Alzheimer's disease interactions using <i>Drosophila</i>
C. Green	Replication fork dynamics
L. Hautier	Mammalian evolution and morphology
M. Landgraf	Morphogenesis and patterning of dendrites
N.J. Lane	Intercellular junctions
P.A. Lawrence, FRS	Planar cell polarity
R. M. Merrill	Genetic basis of butterfly mate preferences
I. Miguel-Aliaga	The developmental and homeostatic crosstalk between the nervous and digestive systems
B. Olofsson	Molecular mechanisms coupling food perception and behaviour in <i>C-elegans</i>
S.R. Ott	Mechanisms of neural plasticity during swarm formation in the locust
A. Ozgul	Individual strategies, group dynamics and population regulation in cooperative breeders
I. Palacios	RNA processing and its relation to cell polarity

K. Peh	Wildlife ecology and conservation / management of biological resources
B.T. Phalan	Impact of agriculture on tropical faunas
E. Piddini	Competitive cell interactions in normal physiology and cancer
J. Pines	Cell cycle regulation
S. Rogers	behavioural and neuronal plasticity in locusts
H. Rowland	Evolutionary ecology of prey defences and predator behaviour
C. Russell	Pathogen evolution and epidemiology
C. Spottiswoode	Bird behavioural ecology and life histories
J. Stevenson-Hinde	Behavioural inhibition in young children
M. Stevens	Adaptive colouration and bird vision
H. ter Hofstede	Sensory ecology of bats and their insect prey
D.M. Vallejo	Epigenetic stability during DNA replication and its role in cancer
P. Zegerman	The regulation of replication initiation in eukaryotes

Departmental Administrator
J. Jacobs

Appendix 3

Research Groups

Our research is broadly based and organised around 7 main groups that form a network linked by the common threads of evolution and function. This structure has recently spawned new research areas in conservation biology and evolutionary genomics. The number of current research staff is over 100 including 13 research fellows on competitive national and international awards. Each research group receives direct support towards running costs, for equipment on the basis of competitive bids, and technical support to promote its research. Endowment funds within the Department give further research support, scholarships for undergraduates to work in laboratories during the summer and research studentships. Central Departmental services provide computing, machine-shop, HR, finance, purchasing, research grant and other administrative support. Further information about individual research groups can be found on the Department's website: <http://www.zoo.cam.ac.uk/zoostaff/index.html>

The group structure is flexible and specifically designed to enable and promote collaborative multidisciplinary research within the Department, the University, and both nationally and internationally. As a consequence in the last 5 years we have welcomed more than 150 international research visitors to the Department and have 162 collaborations with laboratories overseas. The multidisciplinary vitality and thrust is reinforced through weekly research student talks, group seminars and departmental tea talks, many with outside speakers. Interactions are also promoted by a communal tea room, a weekly happy hour and by an annual departmental research seminar day.

Animal Physiology

The Animal Physiology Group's greatest strength is in comparative animal physiology, offering a breadth of expertise graduate training for a wide range of techniques, and focusing on arthropods and vertebrates. Research is conducted at a number of different levels of biological organisation, from biochemical and tissue to organismal and ecological, includes a mixture of laboratory and field-based studies. We aim to understand the structural and functional capacities of organisms, their abilities to respond to environmental extremes, and how physiological adaptations to locomotion, activity metabolism and ion transport have arisen through evolutionary time. **Charlie Ellington** studies the aerodynamics, mechanics and physiology of insect flight, within the broader field of biomechanics. **Simon Maddrell** studies epithelial transport of insect Malpighian tubules and its control by peptides and other blood-borne agents. **Walter Federle** investigates the physical ecology of insect-plant interactions and the mechanisms of surface adhesion in animals.

Behavioural Ecology

The Behavioural Ecology Group focuses on the study of behavioural adaptations in relation to ecological and social conditions. **Bill Amos** (Molecular Ecology Group) studies the role of genetic differences in generating variation in survival and reproductive success and in developing DNA-based techniques for measuring relatedness and maternity. **Michael Brooke** (Behavioural Ecology Group) is interested in conservation biology, particularly the protection of island birds, the taxonomy of seabirds as well as plumage colours. **Tim Clutton-Brock** (Large Animal Research Group) studies the role of ecological differences in generating variation in survival and reproductive success in naturally regulated populations

and the evolution of mating strategies and cooperative breeding in animals. **Nick Davies** (Behavioural Ecology Group) studies how social organisation within a population reflects conflicts within and between the sexes, and coevolution of brood parasitic birds and their hosts. **Rufus Johnstone** (Behaviour and Evolution Group) uses game theoretical and genetic models to investigate evolutionary conflicts of interest and their resolution in contexts including communication, mate choice and parental care. **Rebecca Kilner** (Behavioural Ecology Group) uses avian family life as a model system for investigating the evolution of communication, the resolution of social conflicts and co-evolution between brood parasites and their hosts. **Nick Mundy** (Evolutionary Genetics Group) studies the molecular basis of adaptive phenotypic evolution in vertebrates, particularly the evolution of coat colour, olfaction and colour vision in primates, and plumage coloration in birds.

Cell Biology

This group aims to dissect the cellular and molecular networks that regulate animal biology. It focuses on fundamental research in two areas. The first is the mechanisms that regulate cell proliferation and the function of the nucleus. The second is intra- and intercellular signalling. We use a wide range of techniques including molecular, biochemical and genetic approaches, in vivo imaging and the analysis of whole animal function and behaviour. **Howard Baylis** investigates how intracellular signalling regulates the development and physiology of *C. elegans*. **Cath Green** studies how DNA replication is temporally and spatially controlled by protein-protein interactions at replication forks. **Torsten Krude** investigates the replication of chromosomal DNA and its control in proliferating mammalian cells, focusing on the functional roles of non-coding RNAs in this process. **Birgitta Olofsson** uses *C. elegans* to investigate how animals evaluate food and how they use this information to modify feeding behaviour. **Jonathan Pines** studies how cells initiate mitosis, and how they co-ordinate mitosis by ubiquitin-mediated proteolysis. **Philip Zegerman's** lab is interested in how the strict regulation of DNA replication is achieved during the cell cycle and when replication forks stall.

Developmental Biology

Our developmental biology focuses on *Drosophila* and *Xenopus*. The *Drosophila* work is carried out in the main Department, where five research groups (**Michael Bate, Matthias Landgraf, Peter Lawrence, Irene Miguel-Aliaga, Isabel Palacios, Helen Skaer**) cooperate and share recently refurbished facilities. One more *Drosophila* group is based at the Wellcome/CRUK Gurdon Institute (**Eugenia Piddini**). Their interests are wide ranging, encompassing cell signalling mechanisms, morphogenesis and the patterning of the epidermis; induction, formation and patterning of muscle; RNA processing and its relation to cell polarity; development of the nervous system and formation of synapses; the formation and function of visceral neurons and development of the Malpighian tubules and the control of cell survival and proliferation by cell interactions. These diverse groups are drawn together by their common interest in the embryology, developmental genetics and cell and molecular biology of *Drosophila* and their overall goal of using these to understand fundamental developmental mechanisms. The *Xenopus* work is based in the Wellcome/CR UK Gurdon Institute (**John Gurdon**). The group of the late Anne McLaren was based in the same Institute. Transgenic techniques, together with immunochemical and recombinant DNA approaches are used to analyze inductive interactions and mechanisms of cell differentiation with an emphasis on genes that regulate

mesoderm induction. The roles of growth factors and their receptors, signal transduction pathways, adhesion molecules and cytoskeletal components in vertebrate development are also under investigation, as are the mechanisms of nuclear reprogramming.

Neurobiology

The group aims to understand neural mechanisms that relate directly to the behaviour of an animal. We focus on sensory processing (visual, auditory, proprioceptive), motor control, and phenotypic plasticity and epigenetic remodelling in insects, birds and mice. Our approach spans the boundaries between molecular biology, neurobiology, theoretical modelling and neuroethology in the evolutionary context of the behaviour of the whole animal. **Simon Laughlin** combines experiment and theory to analyse the molecular and cellular factors that determine the energetic costs of information processing in neurons. **Berthold Hedwig** studies calcium dynamics in single neurons and acoustic communication in insects: how individual neurons generate the song and then enable it to be recognised by another insect. **Swidbert Ott** analyses mechanisms of epigenetic remodelling at the level of signalling pathways and identified neurons in locusts as they change between solitary and gregarious phases. **Malcolm Burrows** analyses the neuronal and mechanical mechanisms that generate rapid jumping movements in insects. **Brian McCabe** works on the neural mechanisms of imprinting in domestic chicks.

Ecology and Conservation Science

We work on how and why the size and composition of populations and communities changes over time and space, and why these changes matter. The bulk of our research focuses on applied questions in conservation, epidemiology and resource management. Approaches adopted include empirical observations, experiments, and theoretical modelling. **David Aldridge** specialises in freshwater ecology and conservation, particularly the ecology and control of invasive species. **Andrew Balmford** works on the costs and benefits of conservation, on identifying priority areas for intervention, and on reconciling conservation with other forms of land-use. **Rhys Green** looks at the effects of human land use and conservation management on populations of birds, and the effects of climate change on bird distributions. **Andrea Manica** studies the evolution of behavioural strategies under different social and ecological conditions, with an emphasis on the interaction between individual behaviours and population-wide phenomena. **Derek Smith** works on the phenotypic and genetic evolution of pathogens, particularly influenza virus, and their coevolution with acquired immunity in their host population. **William Sutherland** works on the causes of bird population decline, on predicting environmental change, and on evidence-based conservation.

Evolution and Diversity

Much of the research in this group is built around the collections of the Museum of Zoology and the interests of its curators. A major theme is the origin and radiation of tetrapods. **Jenny Clack** studies early tetrapod fossils from East Greenland, Scotland and elsewhere, which provide new evidence for the origin of tetrapods from their fish ancestors and their early diversification. **Rob Asher** focuses on how the many radiations of mammals, particularly insectivorangrade mammals from North America, Africa, and Madagascar, are interrelated. **William Foster** studies the ecology of insects living in tropical rainforest and oil palm plantations, and the evolution of social behaviour in aphids. **Richard Preece** studies land snail

diversity, both in the present and in the context of climate change over the last million years. **Chris Jiggins** works on the evolution of mimicry patterns and speciation in butterflies. Another major interest is 'Evo-Devo', the relationship between the processes of Development and Evolution. This theme links closely with the research of the Cell and Developmental biology groups. **Michael Akam's** interests centre on the evolution of body plans and patterning mechanisms within the arthropods. **Paul Brakefield** is extending experimental work on the ecology, 'Evo-Devo' and evolutionary genetics of a model species of mycalesine butterfly to describe pattern and process in parallel geographical radiations of the 250 or so related species in the Old World tropics.

Appendix 4

Teaching

The Department contributes to inter-departmental courses within the Natural Sciences Tripos in years 1 and 2. Animal Biology in the second year and Zoology in the third year are organised entirely within the Department, as is the third year Part II Biological & Biomedical Sciences (Zoology).

Year 1

- Biology of Cells
- Evolution and Behaviour
- Physiology of Organisms
- Mathematical Biology

Year 2

- Animal Biology
- Cell and Developmental Biology
- Ecology
- Neurobiology

Year 3

Zoology: we offer modular courses that encompass aspects of biological science ranging from cells, molecules and genes, to behaviour, ecosystems and evolution. Alongside the lectures and seminars associated with the 2 chosen modules per term, research projects with particular members of the Department are carried out in research laboratories throughout the Department.

Neuroscience: this is a modular interdepartmental course to which Zoology is a substantial contributor. The course takes a broad approach to the Neurosciences, covering the subject at many levels, from the molecular, through cellular, developmental and integrative, to the cognitive, behavioural and clinical.

Appendix 5

The University as an Employer

Equal Opportunities

The University of Cambridge is committed to equality of opportunity, supports and encourages under-represented groups and values diversity. We have a formal Equal Opportunities Policy, a Combined Equality Scheme which outlines how the policy is implemented and Diversity Networks for Women, Black and Minority Ethnic, Disabled and Lesbian, Gay, Bisexual and Transgender staff.

Employment with the University and progression within employment will be determined only by personal merit. We do this by applying criteria which are related to the duties and conditions of each particular post and the needs of the institution concerned.

Subject to the law, no applicant for a staff appointment or member of staff will be treated less favourably than another on the grounds of sex, gender reassignment, marital/civil partnership or parental status, race, ethnic or national origin, colour, disability, sexual orientation, religion, or age. Ability to perform the job will be the primary consideration.

The University of Cambridge also has a Rehabilitation of Offenders Policy, which explains that we welcome applications from a wide range of candidates and that having a criminal record will not necessarily prevent you from working with us. This will depend on the nature of the position and the circumstances and background of your offences.

A recruitment complaints procedure is available.

Benefits

Our employees are eligible for a wide range of competitive benefits and services. We give access to numerous discounts on shopping, health care, financial services and public transport. We also offer final salary pensions and tax-efficient bicycle and car lease schemes. Employees new to the University and relocating to Cambridge on a centrally funded appointment of two years or more have access to a Scheme for the Reimbursement of Relocation Expenses.

We have two nurseries and a holiday play scheme to help support those with childcare responsibilities and we offer various types of family-friendly leave to aid employees' work-life balance. In addition, our staff have generous annual leave entitlement and we operate a number of initiatives to promote health and well-being.