PhD studentship:
Mutation load dynamics in banded mongooses.

Supervisors: Prof Joe Hoffman (Bielefeld University, Germany) and Dr Hazel Nichols (Swansea University, United Kingdom).

An outstanding opportunity is available for a PhD student to work on mutation load dynamics in a cooperatively breeding mammal, the banded mongoose. The position is available in Joe Hoffman's research group (www.thehoffmanlab.com) at the Department of Evolutionary Population Genetics at Bielefeld University and is co-supervised by Hazel Nichols at Swansea University. The position is fully funded for three years.

The PhD project

Ever since Darwin, inbreeding depression has been recognized as a major evolutionary force affecting individual fitness and population viability. Consequently, in an era of unprecedented anthropogenic impacts on wild populations and global species declines, understanding the mechanisms underlying inbreeding depression is more pressing than ever. Traditional studies used genome-wide inbreeding as a proxy for the effects of deleterious mutations on fitness, but the specific contributions of these mutations remain poorly understood. Fortunately, advances in genome sequencing and bioinformatics now allow the prediction of deleterious mutations from whole-genome data, enabling investigation of their dynamics in wild populations.

This project will explore how predicted deleterious mutations influence fitness in the banded mongoose (*Mungos mungo*), a cooperatively breeding African mammal. In this species, inbreeding occurs at unusually high rates, with around 9% of pups resulting from father-daughter or brother-sister matings, offering a rare opportunity to study the dynamics of deleterious mutations. The PhD student will analyse their contributions to inbreeding depression using a long-term dataset spanning three decades, which includes molecular data from ~2,000 individuals, a multigenerational pedigree, and detailed behavioural and life-history data.

This PhD offers a unique opportunity to combine cutting-edge genomic approaches with rich ecological and behavioral data to uncover the genetic basis of fitness variation in a wild population.

Applicant's profile

We seek a bright and highly motivated student with a good first degree and an M.Sc. or equivalent in a relevant topic (e.g. population genomics, bioinformatics, molecular ecology, behavioural ecology). The ideal candidate will have strong quantitative skills, including proficiency in working in R and experience of writing custom scripts. Practical experience of handling, analysing and interpreting next generation sequence (NGS) data is strongly preferred, although additional training will be provided as needed. The candidate should also be able to work both independently and as part of a multidisciplinary team, and must demonstrate a high standard of spoken and written English.

The working environment

The PhD student will be based at the Department of Evolutionary Population Genetics at Bielefeld University, Germany (www.thehoffmanlab.com). Our group is located in the newly constructed Verhaltensforschung building, which features modern offices and state-of-the-art, fully equipped laboratories. The building currently hosts 11 principal investigators and more than 30 postdocs and PhD

students. It offers a stimulating, supportive and highly international research environment. The working language of the department is English.

Bielefeld is a city of 325,000 inhabitants with an attractive historical centre and easy access to the Teutoberger Wald for hiking and other outdoor pursuits. It is an affordable and pleasant city to live in and is well connected to most major European cities.

This project will be mainly carried out at Bielefeld University, but the PhD student will also have the opportunity to spend some time at Swansea University (https://www.swansea.ac.uk/staff/h.j.nichols). The successful applicant will therefore benefit from excellent opportunities for international travel and collaboration, while receiving a rigorous integrative training that will prepare her/him very well for a scientific career in evolutionary genetics / population genomics / molecular ecology / behavioural ecology.

Remuneration

This generous PhD studentship is funded by the German Science Foundation (DFG) for a period of three years and includes health insurance, pension contributions etc. The pay scale is TVL E13 (65%). Funding will also be available for the student to attend workshops and conferences.

Application procedure

To apply for this position, please provide: (i) a letter of motivation; (ii) a CV; (iii) copies of relevant degree certificates, (iv) a maximum 2-page statement of your research interests, including your relevant skills and experiences; (v) a publication list, if applicable, (vi) two confidential referee statements. All materials should be submitted to the online portal of Bielefeld University via the following link:
https://jobs.uni-bielefeld.de/job/apply/4737/research-position-m-f-d-phd-canddiate?page_lang=en
The reference for the position is: **Wiss25540**.

The application deadline is **30th January 2026** and online interviews will take place shortly afterwards. For further information, please see www.thehoffmanlab.com and http://hazelnichols.weebly.com. We also encourage you to contact Joe Hoffman (joseph.hoffman@uni-bielefeld.de) and / or Hazel Nichols (H.J.Nichols@Swansea.ac.uk) with any informal inquiries.

Bielefeld University has received a number of awards for its achievements in the provision of equal opportunity and has been recognized as a family friendly university. The University welcomes applications from women. This is particularly true with regard both to academic and technical posts as well as positions in Information Technology and Trades and Craft. Applications are handled according to the provisions of the state equal opportunity statutes. Applications from suitably qualified handicapped and severely handicapped persons are explicitly encouraged.

Representative publications

Wells, D., *et al.* (2018) A high quality pedigree and genetic markers both reveal inbreeding depression for quality but not survival in a cooperative mammal. *Molecular Ecology*, 27: 2271-2288. Doi: 10.1111/mec.14570.

Wells, D.A. *et al.* (2020) Inbreeding depresses altruism in a cooperative society. *Ecology Letters*, 23: 1460-1467. Doi: 10.1111/ele.13578.

Chen, R.S. *et al.* (2025) Predicted deleterious mutations reveal the genetic architecture of male reproductive success in a lekking bird. *Nature Ecology and Evolution*, 9: 1924–1937. Doi: 10.1038/s41559-025-02802-8.

Chen, R.S. *et al.* (2025). Early-life viability selection targets deleterious mutations in exons. *Current Biology*, 35: 5908–5914. Doi: 10.1016/j.cub.2025.10.043.