PhD studentship:
The natural history of inbreeding in a cooperative mammal.

Supervisors: Dr Joe Hoffman (Bielefeld University, Germany) and Dr Hazel Nichols (Liverpool John Moores University, UK)

This PhD studentship will investigate the causes and consequences of inbreeding in the banded mongoose *Mungos mungo*; a cooperatively breeding African mammal. Recent studies (Nichols et al 2012, Nichols et al 2014) have shown that inbreeding occurs regularly in this species, with around 9% of pups being the product of father-daughter or brother-sister matings. This frequency of inbreeding is highly unusual in a wild population, so this species presents us with a rare opportunity to investigate the causes and consequences of inbreeding.

The studentship will address the following questions:

1. What are the drivers of inbreeding? In particular, what are the social factors that shape inbreeding behaviour, and whether the propensity to inbreed is heritable?
2. Is inbreeding avoided, and if so, how? Here, you will investigate whether banded mongooses may be able to recognise relatives on the basis of dispersal, familiarity or phenotype matching (e.g. scent).
3. What are consequences of inbreeding in a cooperative mammal? Here, you will explore the tension between inbreeding depression and kin-selected helping behaviour. At its most basic level, inbreeding increases relatedness between group members, which may in turn increase the benefits of cooperation. Consequently, inbreeding could have important impacts on the distribution of helping behaviour within social groups.

During your PhD, you will use multigenerational data from a long-term study of the banded mongoose. We will exploit a large existing molecular dataset of around 2000 individuals genotyped at 40 microsatellite loci together with a large multigenerational pedigree. This will be used to establish levels of inbreeding and relatedness, which in turn will be linked to detailed individual-based behavioural and phenotypic data collected continuously over almost two decades. There will also be the opportunity for fieldwork at the study site in Uganda.

We seek a bright and highly motivated student who holds a good first degree and an M.Sc. or equivalent in a relevant topic (e.g. animal behaviour, evolutionary, conservation or quantitative genetics). The ideal candidate will have strong quantitative skills (including proficiency in R) and ideally some experience of working with pedigree data. The candidate should also be able to work both independently and as part of a multidisciplinary team. A high standard of spoken and written English is required.

The student will be jointly registered at the Department of Animal Behaviour at Bielefeld University, Germany (www.uni-bielefeld.de/biologie/vhf/index.html) and the School of Natural Sciences and Psychology, Liverpool John Moore's University (LJMU), UK (https://www.ljmu.ac.uk/about-us/faculties/faculty-of-science/school-of-natural-sciences-and-psychology). The department of Animal Behaviour in Bielefeld is the oldest of its kind in Germany and currently hosts six principal investigators, seven postdocs and twenty PhD students. It offers a stimulating international environment and an excellent research infrastructure including a brand new molecular laboratory. The working language of the Department is English. The School of Natural Sciences at Liverpool John Moores University is a diverse, interdisciplinary School with almost 100 academic staff. We have excellent facilities, with a large suite of newly refurbished molecular labs, and a wide range of expertise crossing the fields of behaviour, genetics, biochemistry and neurobiology. Both Universities offer a supportive environment with regular seminars, research group meetings and academic events. You will also have the opportunity to interact with cooperation partner Prof Mike

Cant (University of Exeter), and to attend regular conflict and cooperation group-meetings at the University of Cambridge.

Bielefeld is a small city with an attractive historical centre and easy access to the Teutoberger Wald for hiking and other outdoor pursuits. It offers a very high standard of living and is well connected to most major European cities. Liverpool is a large, dynamic and cultured city with a UNESCO world heritage water-front. It is an affordable and pleasant city to live in and is also close to the attractive beaches and nature reserves of the Wirral and Sefton Coast.

You will spend approximately half of your time in Bielefeld and half in Liverpool (although you will have some flexibility here). A joint PhD will provide you with an excellent opportunity for international travel and collaboration, and experience of working in diverse environments in the UK, Germany and Uganda.

This generous studentship is funded by the German Science Foundation (DFG) for a period of three years and includes health insurance. The pay scale is TVL E13 (65%) which is roughly equivalent to a minimum of €1450 per month net depending on tax class, marital status etc. Funding will also be available for travel between Bielefeld and Liverpool and for the student to attend conferences. To apply for the position, please provide: (i) a letter of motivation including a maximum 2-page statement of your research interests, relevant skills and experience; (ii) a CV including publication list; and (iii) names and contact details of three referees willing to write confidential letters of recommendation. All materials should be emailed **as a single PDF** file to: joseph.hoffman@uni-bielefeld.de with 'PhD application' in the subject line.

The application deadline is August 21st 2015 and interviews will take place shortly afterwards. The preferred start date is flexible and will depend on the timeframe of the most qualified applicant, but ideally will be in October 2015. For further information, please see www.thehoffmanlab.com and http://hazelnichols.weebly.com or contact Joe Hoffman (joseph.hoffman@uni-bielefeld.de) or Hazel Nichols (H.J.Nichols@ljmu.ac.uk) with any informal inquiries.

The University of Bielefeld is an equal opportunity employer. We particularly welcome applications from women. Given equal suitability, qualifications and professional achievement, women will be given preference, unless particular circumstances pertaining to a male applicant apply.

For representative publications, please see:
Nichols *et al*. (2014) *Biology Letters*, 10: 20140898
Hoffman *et al*. (2014) *PNAS*, 111: 3775-3780
Nichols *et al*. (2012) *Molecular Ecology*, 21: 5348-5362.