Photo credits: Gilbert Ludwig

Research Opportunity

The Hoffman Lab is looking for a motivated student to investigate inbreeding and mutation load dynamics in female black grouse (*Lyrurus tetrix*)

The project: understanding how deleterious mutations affect fitness is key for evolutionary biology. Recent bioinformatic advancements now allow us to predict deleterious mutations based on genomic data only. We previously showed that these predicted mutations reduce both mating success (Chen et al., 2025a) as well as early-life survival (Chen et al., 2025b) in black grouse males. However, to get a holistic understanding of black grouse mutation load dynamics, we require data on females, too.

While sexual selection research often focuses on male sexual traits, female-female competition is also thought to play an important role in reproduction (Karvonen *et al.* 1999). Moreover, female survival is affected by heterozygosity (Soulsbury & Lebigre, 2017), indicating that black grouse females suffer from inbreeding depression. Using whole genome sequencing data, we will investigate mutation load dynamics and inbreeding depression in female black grouse fitness using state-of-the-art methodological approaches.

Your profile: we are looking for a student who has obtained a MSc degree or is working on a MSc degree in a relevant topic (e.g. molecular ecology, behavioural ecology, population genomics). The ideal student will have bioinformatic experience using R and the command line (e.g. bash, python), experience analysing life-history data, and/or a strong motivation to learn about complex analytical pipelines. This project could either be a MSc thesis or a recent-graduate internship or similar, with a duration of $6 - 12$ months.

Renumeration: we cannot fund this project directly, but we can help you find funding if required, for example through the (Recent Graduate) Erasmus+ programme or the Bielefeld Young Researcher's fund.

Work environment: this project will be supervised by Rebecca Chen, with additional support from Prof. Carl Soulsbury from Lincoln University and Prof. Joe Hoffman. The candidate can either join the project remotely or join the Evolutionary Population Genetics department in Bielefeld, Germany.

Publications: Chen *et al.,* (2025a) *Nat Ecol Evol* **9** (1924-1937); Chen *et al.,* (2025b) *Curr Biol* **35** (23):5908-5914; Karvonen *et al.* (1999) *Anim Behav* **59**: 981-987; Soulsbury & Lebigre (2017) *J Ornithol* **159**: 93-101

If you are interested in this project or have any questions, please send an email to Rebecca Chen (rebecca.chen@uni-bielefeld.de). The first possible starting date is April 2026 and the project should be completed before March 2028.