

Disruption of genomic imprinting in hybrid house mice

Lead Supervisor: Dr Leslie Turner, Department of Biology & Biochemistry

Co-Supervisors: Prof Adele Murrell and Prof Jason Wolf, Department of Biology & Biochemistry

Project description:

Hybrid incompatibilities are a common mechanism of reproductive isolation between incipient species. Genomic imprinting is thought to contribute to hybrid defects in reproduction and development; in rodents, aberrant phenotypes related to loss of imprinting have been documented in several interspecies hybrids. The goal of this project is to characterise genome-wide imprinting in hybrids between house mouse subspecies, an important model for understanding the early stages of speciation, and measure potentially related placental growth defects. Understanding how loss of imprinting causes hybrid incompatibilities will provide novel insights into the speciation process, and the role of imprinted genes in development within species.

The student selected for this project will integrate approaches from evolutionary genomics and developmental biology to (1) characterise genome-wide patterns of imprinting in hybrids, and (2) determine effects of imprinting on placental growth. This project will provide broad training in a variety of techniques including genomic and transcriptomic (RNA-seq) analyses, molecular genetics, phenotyping, and histology.

This project builds on PI Turner's experience investigating hybrid dysgenesis in house mice, co-I Murrell's expertise in epigenetics, and co-I Wolf's expertise in evolutionary implications of imprinting.

Candidate:

Applicants should hold, or expect to receive, a First Class or high Upper Second Class UK Honours degree (or the equivalent qualification gained outside the UK) in a relevant subject. A master's level qualification would also be advantageous.

Applications:

Informal enquiries should be directed to Dr Leslie Turner, lmt38@bath.ac.uk.

Formal applications should be made via the University of Bath's [online application form](#).

On the application form, please ensure that you quote 'Evolution Education Trust' in the Finance section and the supervisor's name and project title in the 'Your research interests' section. Should you wish to be considered for more than project, quote the projects in order of preference and upload a separate personal statement relevant to each one.

Please see our Doctoral College website for [more information on how to apply](#) for a PhD at Bath.

Application deadline: 30 April 2019.

Interviews will take place in Bath on 14 June 2019.

Anticipated start date: 30 September 2019.

References:

- Turner LM**, Harr B. 2014. Genome-wide mapping in a house mouse hybrid zone reveals hybrid sterility loci and Dobzhansky-Muller interactions. *eLife* 3: e02504.
- Wolf JB**, Oakey RJ, Feil R. 2014. Imprinted gene expression in hybrids: perturbed mechanisms and evolutionary implications. *Heredity* 113: 167-175