We are looking for a motivated and competent candidate for a PhD thesis

Effects of prenatal stress on personality and group level behaviour of juvenile mound building mice

Context. Stress experienced by mothers during pregnancy has the potential to modulate the offspring's behavioural and physiological development. The effects of maternal stress on offspring phenotype might not necessarily be pathological but can adaptively adjust the offspring to challenging environments. For example, pregnant females experiencing social stress during high population density may produce offspring with behavioural types being well adjusted to cope with such high density situations. The resulting differences in offspring behavioural phenotype can have functional consequences at the individual level - but also at the level of the sibling group, for example when littermates interact in a collective task necessary for their survival.

Study species. In the mound building mouse (*Mus spicilegus*), juveniles from the same litter collectively build a large mound of soil and plant material in autumn. These mounds are essential for winter survival, as the juveniles stay in tunnels and burrows underneath, well protected from humidity and low temperatures. Presumably under high density situations, different sibling groups can join together to build the mound collectively (mixed-litter groups). First studies of our research team show that individual variation in the transport of mound building items are associated with an individual's personality type.

Research questions. In the proposed project, (*i*) the effects of maternal social stress on offspring personality and its consequences on the individual transport performance will be studied. (*ii*) At the group level, it will be studied how the distribution of personality types within a group of siblings affects the transport performance during mound building. (*iii*) Do prenatally stressed mixed-litter groups differ in transport performance from mixed-litter groups stemming from non-stressed mothers? It might be predicted that offspring from stressed mothers are particularly efficient to perform in mixed-litter groups. *(iv)* Do single-litter or mixed-litter groups from stressed mothers perform better under challenging environmental conditions (i.e. under an increased predation risk) than single-litter or mixed-litter groups from non-stressed mothers?

Methods. Pregnant females will be stressed by repeated social confrontations. Offspring personality types will be determined by repeated standardized behavioural tests. Individual differences in physiological stress responses will be quantified by infrared thermography and via faecal and serum corticosteroid levels. Individual and group level transport performance of mound building items will be quantified in experiments under laboratory conditions using RFID-based data loggers. An increased predation risk will be simulated by the presentation of predator odour. Data analysis will be performed by multifactorial statistical modelling.

Candidate. The successful candidate (with a Master in ethology, behavioural sciences or in a related field) should have experience in animal experimentation, preferably with mammals, and should have a good level of English. Knowledge in applied statistics (with R, SPSS etc.) will be advantageous.

Supervision. Prof. Heiko G. Rödel, *Laboratoire d'Ethologie Expérimentale et Comparée* (LEEC), *Université Paris 13, France*. Email: heiko.rodel@leec.univ-paris13.fr | Phone: +33(0)14940 3218 | website: http://leec.univ-paris13.fr https://scholar.google.com/citations?user=CYj8VnoAAAAJ&hl

Procedure. Applicants will be pre-selected based on their qualifications. Please send a short CV (incl. marks of licence/bachelor and master, and names + contact data of 2 referees) and a letter of interest by email to H.G. Rödel **before/until the 07 May 2018**. Do not hesitate to request further information by email or by phone.

The chosen candidate will then apply with this project to the Ecole Doctorale Galilée (Université Paris 13) for funding of a 3-year contract. Candidates should be willing come in person for the interview by the Ecole Doctorale (in late June). The thesis will start in September 2018.