

**Laboratoire d'Ethologie Expérimentale et Comparée - Thesis proposal 2021:**  
**Consequences of single parenthood and forced polygyny in a monogamous species  
on the emotional and behavioural profiles of the offspring**

## Context

The impact of the early environment on the behavioural and physiological development of young mammals is widely studied and documented (effects of maternal deprivation, predator stimuli, environmental instability, early weaning etc.). The family structures in which young individuals develop can also take a variety of forms, and constitute a variety of environments whose consequences on development remain poorly understood.

Monogamy is rare in mammals, but does exist in a few rodent species, including the mound building mouse *Mus spicilegus*. In this species, as in other monogamous rodents, although "1 male - 1 female" parental units are the most common, it is not uncommon to find parental units composed of 2 or even 3 females and 1 male in the wild (7). Constraints linked in particular to the local sex ratio would then push certain familiar and/or related females to settle with the same male. These "constrained" polygynous structures nevertheless have a strong impact on the reproductive success of the females, which will have fewer young per litter and litters spaced further apart in time compared to females alone with a male (6). Furthermore, in this species, the absence of the male within the parental unit constitutes a major trigger for the female which, when pregnant and lactating, extends her post-partum gestation period by about 8 days, thus enabling her to better distribute her energy resources (4).

In contrast, in polygynous rodents such as the house mouse (*Mus musculus domesticus*), communal nursing by familiar females contributes positively to the growth of young and their survival (9; 8). Individuals reared in this polygynous environment are also characterised during adulthood by less anxiety, and females develop more intense maternal behaviour (2). In the house mouse, generally considered a uniparental species, direct paternal investment (care of the young) is not considered to be of primary importance, but rather related to the circumstances of laboratory rearing (3; 1).

## Objectives

In the mound building mouse the absence of the father or the presence of supernumerary females are particularly stressful. It is well known in rodents that maternal stress shapes the future emotional profiles of offspring (5). Therefore, we expect that different parental environments would result in different emotional and behavioural profiles of young mound building mice.

The characterisation of the consequences of these two unusual parental conditions, compared to the biparental condition, on the emotional and behavioural profiles of the offspring is the main objective of this thesis. A parallel study will be carried out on the house mouse for which neither of these rearing conditions constitutes a situation of strong environmental stress.

One of the original features of this project is the study of a varied set of behavioural and physiological parameters aimed at clarifying the psychobiological characteristics of young individuals.

## References

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Applicants should submit a letter of motivation, a CV and a transcript of their Master 1 and 2 marks before 28/05/2021.