

How do we choose a partner? Neural circuits involved in inbreeding avoidance and mate selection

Results:

In this project we focused on assortative mate choice, that may contribute to the reproductive isolation of the two European subspecies of the house mouse, *Mus musculus musculus* and *Mus musculus domesticus*. We developed full mating and limited-contact paradigms. We found that receptive *musculus* females exhibit a robust preference to mate with males of the same subspecies. However, they mate readily with each male in no choice condition, and non-receptive females exhibit no preference. Moreover, when no physical contact is allowed, the female's preference is maintained regardless of their estrous state. These experiments establish an assortative mate preference assay appropriate for the investigation of its underlying substrates. Our results highlight the interplay between the chooser's internal state and the nature of the interaction with prospective mates and suggests that the decision is based on a comparison of the options available, rather than on an absolute preference.

We then interrogated the ontogeny of this preference, by performing adoption experiments where *musculus* females were raised in a *domesticus* environment. Our results show that female mouse mate preference has a hierarchical dependence on early postnatal life experience and the order of males encountered as an adult. Whereas females raised in their normal *musculus* environment display a robust homosubspecific preference, females fostered in a *domesticus* family prefer the first male encountered, regardless of subspecies. Thus, early life experience of *musculus* females, when and only when concordant with genetic self-identify, overrides sampling order effects, ensuring robust assortative choice. In the absence of this phylogenetic-ontogenetic match, simple primacy effects dominate mate preference.

Published works:

Zinck L and Lima SQ. (2013) Mate choice in *Mus musculus* is relative and dependent on the estrous state. PLoS ONE 8(6): e66064. doi:10.1371/journal.pone.006606

Area(s) of interest:

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