Rodent Behaviour – Session 1

The effect of animal personality on virus transmission in *Mastomys natalensis*

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Consistent differences in behaviour between individuals (i.e. animal personality) can affect fitness in a wide variety of species, including susceptibility to parasitism and pathogen infection. Indeed, individuals with a certain personality type could have a disproportional effect on the transmission dynamics. Studying the effects of animal personality on pathogen transmission is useful for epidemiological models and, in case of zoonotic diseases, for human health as well. Thus, good knowledge about the behavioural ecology of personality is required. Here, we used multimammate mice (*Mastomys natalensis*), a common pest species in sub-Saharan Africa and host for several zoonotic pathogens, such as *Lassa* virus, as a model system. Data were collected in Morogoro, Tanzania, between May and October 2017 in three 0.5 ha enclosures. During this period, we repeatedly recorded the behaviour of 207 individuals using the hole board test. We found that *Mastomys natalensis* expressed two personality traits: exploration of the holes in the arena (R=0.22, 95% CI: 0.15–0.27) and a jumping-grooming continuum (R=0.41, 95% CI: 0.36–0.44). These two personality traits where independent of each other and did not form a behavioural syndrome. However, both traits where significantly correlated with population density, where individuals became more explorative when density increased and spend less time grooming. There was no significant effect of individual differences in plasticity, suggesting that each individual reacts similar to these changes. Interestingly, home range size was not affected by these personality traits, but home range overlap was: individuals that consistently groomed more often had a larger overlap than those that did not. This may suggest these individuals may have a higher probability to come into contact with other individuals and infected excretions and hence become infected themselves. All together, these results may be important to understand changes in the transmission of infections when population size fluctuates.

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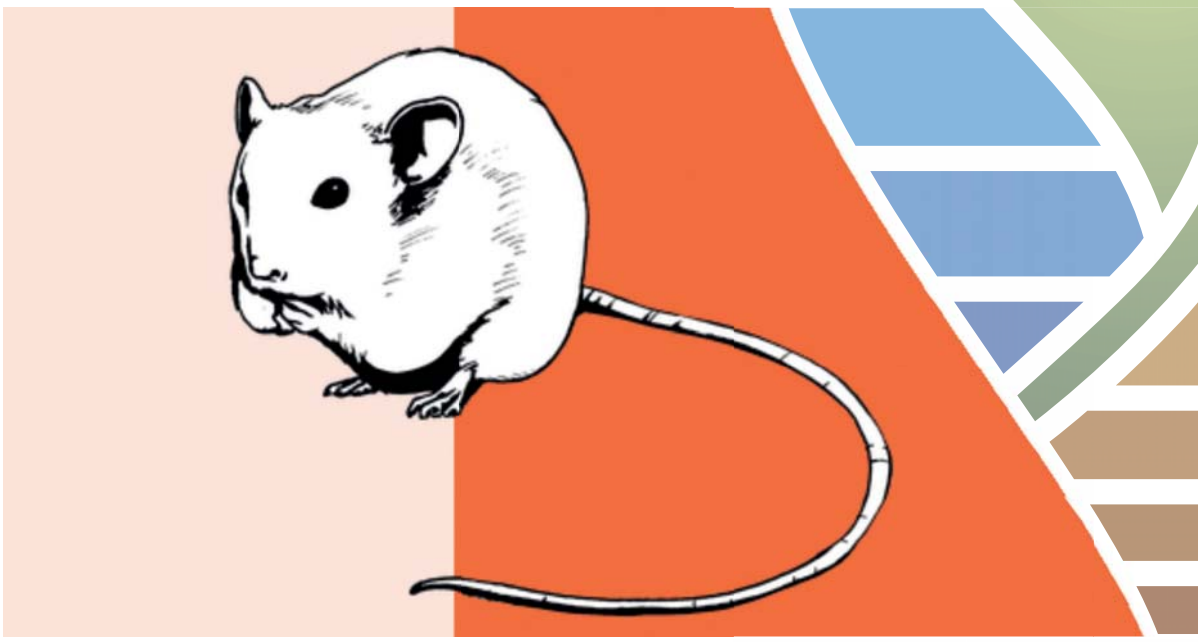

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