Function and mechanism of olfactory kin recognition in an avian model system

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Recognising close relatives has valuable evolutionary advantages, helping individuals to avoid costs of maladaptive inbreeding. The fact that body odours can be used to identify even unfamiliar kin points to the existence of covariation between genetic relatedness and odour similarity. Body odours consist of complex mixtures of chemicals from different sources and are modified by skin bacteria and other microbes. Using a songbird, the zebra finch (Taeniopygia guttata), this project aims to investigate the impact of skin microbe communities on individual body odours and how these microbe communities are determined by the genotype. Although songbirds use visual and acoustic cues for mate attraction and mate choice, and have long been assumed anosmic, it is now known that olfactory cues are important in assessing genetic relatedness or compatibility. In contrast to mammals, birds offer the opportunity to disentangle genetic and prenatal environmental effects, enabling us to increase our understanding of the genes that are important in determining olfactory kin labels as well as the impact of skin microbes on individual specific olfactory fingerprints.

Projektbeteiligte

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Zebra Finch chicks recognise parental scent, and retain chemosensory knowledge of their genetic mother, even after egg cross-fostering.
Timing matters: age-dependent impacts of the social environment and host selection on the avian gut microbiota.
The Power of Infochemicals in Mediating Individualized Niches.
Nestling odour modulates behavioural response in male, but not in female zebra finches.