

Adaptive significance of social touch in group-living mammals

Positive gentle physical contact, also referred to as social touch, is an important aspect of social relationships. Social touch has a major influence on development and health and provides a buffer against stress. Knowledge of the evolutionary background and adaptive significance (how it affects health, reproduction and longevity) of non-sexual social touch is scarce, limited to only a few species, and mostly within the context of parental care. In light of the COVID-19 pandemic, the reduction or absence of physical contact between humans due to social distancing measures globally has raised concerns for human mental and physical health. A better understanding of the role of touch on physiology and health across contexts is therefore urgently needed. Specifically, knowledge is needed of natural variation in social touch, while distinguishing the exact contribution of touch from social interactions in general, and its potential benefits for health and longevity. The **goal of this project** is to increase the understanding of the adaptive significance of social touch for group-living mammals. As social touch relates to the release of the stress-buffering neuropeptide oxytocin; the **main hypothesis** is that individuals that show high frequencies of affiliative social touch have better longevity prospects due to higher levels of oxytocin. The **methodology** is based on the integration of behavioural studies and physiology. First, we explore the natural variation in physical contact behaviour, and how early life experience, sex, age, social hierarchy and environmental conditions may shape this variation, and how touch relates to sociability as a personality trait (Aim 1). The project has a strong international collaboration, and a 6-month internship in the United Kingdom will contribute to studying Aim 1. Then, in a set-up controlling for the amount of social touch, we examine whether the quantity and quality of social touch relates to higher baseline oxytocin levels (Aim 2). This will be measured across multiple time points to assess fluctuations. A third trial investigates the effect of social touch on longevity, by measuring telomere shortening which reflects longevity (Aim 3). Restrictions in physical contact will be applied to elicit a strong contrast between treatments. In addition, the relationship between physical contact and fearfulness will be tested, to assess whether this reduces vigilance. The research questions will be studied in domestic pigs (*Sus scrofa*) as they are a versatile and relevant research model with translational value to both human and natural sciences. Their social structure of groups that remain in close proximity, and their rich behavioural repertoire of affiliative behaviours, allow hypotheses to be robustly addressed using substantial sample sizes. As they are actively used for research, their basic behaviour and physiology are well documented, which gives a solid foundation for the current work. Work on this **research topic** will contribute to knowledge in behavioural ecology and human behavioural studies, through addressing fundamental biological questions on the evolutionary relevance of affiliative touch within the context of social relationships. The project is expected to **result** in increased knowledge on the impact of social touch on behaviour, physiology and fitness in pigs. Due to the large similarity in physiology between pigs and humans, outcomes will form a basis for translation to human research. The project output will include databases, scientific publications, conference abstracts and media articles. In conclusion, this project contributes to a better understanding of natural variation in quantity and quality of social touch, and its relation to oxytocin and longevity.