

## **The importance of social relationships and social bonds for animals' behavioural expression, health and fitness – pigs as a model to explore the underlying physiological mechanism.**

In humans it is well known that social relationships, like friends and family, have a positive effect on health, wellbeing and lifespan. In animals, social relationships and especially social bonds are much less studied. Moreover, there is almost no information on the potential benefits of social contact for the animals' behaviour, health, and fitness. Our **project goal** is to increase the scientific understanding of positive social relationships in animals, and to investigate the physiological mechanisms that are involved in the short and long term benefits of social relationships. Addressing this **research topic** contributes to basic research in behavioural ecology, zoology and human behavioural studies, and can have positive outcomes in practice for the way that animals under human care are managed. In the **methodology** we apply novel approaches for behavioural observations and combine these with established methods for measuring physiology. Based on earlier work that confirms the importance of the early life environment on social skills, we will explore how early life experiences affect social behaviour, especially positive social behaviour, and how early life development affects the animal's ability to form positive social relationships (Aim 1). We then investigate the short term benefits of social relationships on behaviour and physiology (Aim 2), the long term benefits (Aim 3) and the effect on reproductive performance and longevity (Aim 4). The direct benefits that may be derived from social relationships will be studied in terms of stress reduction through social support, and by positive states induced through friendly social contact. Over time, social preferences may remain and may become long lasting social bonds. We will then investigate how social bonds influence growth, health and immunity, and how social relationships affect offspring numbers and offspring survival, and longevity as assessed through change in telomere length. The experimental designs will allow us to investigate whether the strength of the social relationship has a significant impact on the responses. These research aims will be studied in domestic pigs (*Sus scrofa*). Pigs are a valuable research model for human biology and have are an important livestock species. Each year over 1 billion pigs are produced for food consumption, in housing systems where social groups are frequently disrupted. As they are actively used for research, their basic behaviour and physiology (but not social relationships) are well documented which gives a solid foundation for the current work. The project is expected to **result** in increased knowledge on social relationships and especially social bonds in pigs, and an increased understanding of how social contact influences internal biological processes that improve the animal's health and fitness. The project output will include databases, scientific publications and media articles. The project has a strong international collaboration with the United Kingdom (UK), and part of the planned animal work will be aligned with a large scale UK funded research project on social competence in pigs. The expertise of the combined research teams, facilities and previous pilot work of the involved researchers provides this project with a high potential for impactful research with relevance across disciplines.