Examining Play Behaviour in Animals: An Evolutionary Perspective

Project ID: 3712

Supervisory team

Main supervisor: Dr Vikki Neville (University of Bristol)
Second supervisor: Dr Suzanne Held (University of Bristol)
Other supervisors: Prof. Michael Mendl (University of Bristol)
Collaborators: Dr Elizabeth Paul (University of Bristol)

Host institution: University of Bristol

Project description: Play behaviour is proposed as a unique indicator of animal welfare as it can indicate both positive and negative welfare states; it occurs more frequently when animals' biological needs are met and play itself is thought to be pleasurable; during illness or other fitness threat it is typically suppressed, even in young animals. However, interpreting play behaviour in terms of welfare is complicated by the fact that its frequency can be influenced by factors that are not directly related to an animal's welfare state. One key factor is individual variation in play behaviour; playfulness is thought to exist as a trait, such that some animals may be genetically predisposed to engage more frequently in play. Yet, as with other behavioural traits, playfulness may covary with other traits and interact with environmental factors, with important implications for welfare and for the interpretation of play as a welfare indicator. For example, trait playfulness might be associated with reward sensitivity, subjective effort costs, or exploratory behaviour. Furthermore, the extent to which play is expressed as environmental conditions improve or deteriorate may depend on an individual's trait playfulness.A further related question is why animals should play at all, given that play is energetically costly. One welfare-related hypothesis is that play helps animals to develop physical and cognitive resources, thereby improving their ability to cope with changing environments. The overarching aim of this PhD is to investigate playfulness as a trait, with a particular focus on the evolutionary pressures that may have shaped it and the environmental conditions that influence how it is expressed.Two species are particularly well suited to addressing these questions: humans and Drosophila. Both species have been shown to engage in locomotor play and exhibit individual differences in playfulness. Humans are particularly useful because they can report on their own wellbeing, and large amounts of behavioural data can be collected rapidly across a range of tasks. Drosophila, in contrast, are particularly valuable because their short lifespan makes them well suited to studies of experimental evolution. Behavioural studies in humans and Drosophila will be combined with statistical approaches, such as double hierarchical GLMs, to robustly quantify personality, behavioural plasticity, and interactions between the two.This PhD would suit a candidate with a background in biology, psychology, or animal behaviour. Training will be provided in the design and implementation of behavioural assays, as well as advanced statistical analysis.

Our aim as the SWBio DTP is to support students from a range of backgrounds and circumstances. Where needed, we will work with you to take into consideration reasonable project adaptations (for example to support caring responsibilities, disabilities, other significant personal circumstances) as well as flexible working and part-time study requests, to enable greater access to a PhD. All our supervisors support us with this aim, so please feel comfortable in discussing further with the listed PhD project supervisor to see what is feasible.