Impact of Human Emotion Odour on Dog Behaviour, Cognition and Welfare

Project ID: 3584

Supervisory team

Main supervisor: Prof Nicola Rooney (University of Bristol)
Second supervisor: Dr Carsten Muller (Cardiff University)
Non-academic (CASE) supervisor: Dr Claire Guest (Medical Detection Dogs)
Other supervisors: Prof Michael Mendl (University of Bristol)

Collaborators: Professor Kerstin Uvnäs-Moberg (Swedish University of Agricultural Sciences)

Host institution: University of Bristol

CASE partner: Medical Detection Dogs

Project description: Stress can have important consequences for animal behaviour, performance and welfare. In working dogs, physiological indicators of stress have been associated with poorer training performance (Rooney et al., 2019), highlighting the importance of understanding and managing stress in demanding working environments. Dogs share an exceptionally close relationship with humans, and evidence suggests that human emotional states can influence canine behaviour and physiology (Sundman et al., 2019). Dogs can detect and respond to human emotional states, but the mechanisms underlying these responses remain poorly understood.Seminal work by Parr-Cortes, undertaken as part of an SWBio-funded PhD supervised by the same team as this proposed studentship, provided the first evidence that human stress can influence dogs' decision making through odour alone. Parr-Cortes et al. (2024) demonstrated that dogs exposed to odours collected from unfamiliar people experiencing psychological stress were less likely to approach an ambiguous location in a cognitive bias task, suggesting a more cautious response. These findings raise important questions about the role of human emotional odours in shaping canine affective state, welfare and behaviour, and their impact on dog training.This PhD will investigate how dogs respond to odours associated with different human emotional states, including stress, relaxation and positive affect. We hypothesise that human emotional odours influence canine affective state beyond judgement bias alone, and that positive and negative emotional states are associated with distinct volatile chemical signatures that elicit different behavioural and physiological responses. Specifically, the project will: (1) characterise volatile compounds associated with different emotional states; (2) determine how these odours affect canine behaviour, cognition and physiology; and (3) examine how responses vary according to familiarity with the odour donor and across companion, hobby and working-dog populations.Behavioural and cognitive measures, including judgement bias, will be combined with physiological measures and chemical analyses, including gas chromatography-mass spectrometry (GC-MS). In collaboration with Kerstin Uvnäs-Moberg (Swedish University of Agricultural Sciences), the project will also explore physiological states associated with oxytocin release and deep relaxation. Findings could improve working-dog welfare and performance while providing new insights into interspecific communication.Based at Bristol Veterinary School, the student will join an internationally recognised Animal Welfare and Behaviour research community and benefit from collaborations with Medical Detection Dogs and wider working-dog networks. The project will provide advanced interdisciplinary training in animal behaviour, welfare science, cognition, physiological assessment, chemical analysis, experimental design and 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.