Developing markers of sentience in animals: Affect heuristics, interoception and valence detection

Supervisory team:
Main supervisor: Dr Elizabeth Paul (University of Bristol)
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Project description:
Contemporary public and political concern for animal welfare is predicated on assumptions that animals are sentient; that they have the capacity for positive and negative feelings (i.e. affective states including pain, pleasure, frustration, excitement, etc.). But for many years, the subject of animal sentience was thought to be outside the scope of scientific research – the subjective experiences of animals were seen as private and inaccessible to objective scrutiny. However, with the rise of both consciousness science (the study of the neural correlates of human conscious experiences) and affective neuroscience (the study of emotion-like states in non-human animals, particularly mammals), researchers have now begun to regard the study of sentience as an important and potentially tractable field of biological research.

This PhD will tackle the problem of animal sentience directly, developing and refining methods for assessing potential sentience markers in animals, including by seeking parallels with translational studies in humans who can verbally report their subjective states. In humans, subjective experiences of emotion or affect are thought to function as guides to learning and decision-making. For example, affect heuristics are often used to guide decisions: people refer to what they feel about a problem in order to come to a solution (i.e. they rely on so-called gut-feelings to make quick, efficient - though sometimes faulty - decisions). The aim of this project is to search for evidence of the use of affect heuristics in animals.

The species studied will be the Norway rat. You will investigate whether and to what extent rats are able to sense their own internal affective states via interoception (e.g. detecting arousal signalled by autonomic changes) and detection of valence (the positive or negative nature of a state). Further studies will be conducted to investigate whether they use these sensed internal affective states to guide decision-making.

The successful candidate is expected to have a background in biological sciences (inc. animal behaviour; animal welfare), experimental psychology, animal learning theory or animal neuroscience. They will learn about the care of rodents and their welfare, the design and running of learning-based and decision-making tasks, and about the experimental, psychological and philosophical challenges facing sentience research in the 21st century. This position will be appropriate for a hard-working and enthusiastic student with interests in animal behaviour and animal welfare, as well as the wider scientific, political and ethical and issues associated with the topic of animal sentience science.

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.