

Reference: 07/RW

Project: Using behavioural analysis tools to quantify livestock behaviour in biosecure animal housing

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Research Group: Animal Services

Project Summary:

Studying high hazard animal pathogens, such as foot-and-mouth disease virus (FMDV), requires specialised animal housing facilities. These must be fit to house livestock such as cattle and pigs, but also be constructed in such a way as to prevent release of pathogens into the environment. Behavioural analysis has been a powerful tool in optimizing the environment in which animals used in research are housed, as well as for early detection of disease [2]. There is relatively little information on livestock behaviour in a laboratory environment, with most available data generated within an on-farm setting [1]. The aim of this project will be to measure, and quantify, behaviours of livestock in a high containment environment and to contribute to a global network of organisations that carry out work of this nature.

Details:

The aims of the project will be achieved by developing a protocol for recording and analysing livestock behaviour using a state-of-the-art software based approach. The focus of this analysis will be on cattle and pigs, with a period of time being spent observing the different behaviour types that each of these species exhibit in high containment. Ethograms will be created from these observations, and integrated with the behavioural analysis software (Observer XT – Noldus).

High definition video will be captured from each room of animals, and will be examined using the state-of-the-art software to quantify and analyse the normal behaviours of these animals during the course of a 24-hour period. These baseline behaviours will then be used to assess the impact of enrichment / infection on the animals with one of the viral diseases, by analysing behaviours during one of the scientific studies being undertaken at Pirbright during the placement. This project is a rare opportunity that will provide the student with a well-rounded experience of research in animals at high containment as well as providing them with practical knowledge of analysing livestock behaviours which will be highly transferable to other research fields.

References for Suggested Reading:

1. de Weerd N, van Langevelde F, van Oeveren H, Nolet BA, Kolzsch A, Prins HH, et al. Deriving Animal Behaviour from High-Frequency GPS: Tracking Cows in Open and Forested Habitat. PLoS One. 2015;10(6):e0129030. doi: 10.1371/journal.pone.0129030. PubMed PMID: 26107643; PubMed Central PMCID: PMC4479590.
2. Measuring Behaviour: An Introductory Guide - Paul Martin