From mice to livestock: Exploring the potential of the gut-microbiome-brain axis regulation in animal production

SYMPOSIUM FUNDED BY THE NRN-LCEE RESEARCH DEVELOPMENT FUND
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Background

Over the past decade, a growing body of literature has demonstrated that the gut-brain axis (the bidirectional communication between the microbiome within the digestive tract and the brain) plays a key role in the normal neurodevelopment and behaviour of rodent models and in human subjects. Changes in the microbiota community structure have been associated with negative health outcomes, such as nutrition/metabolic related disorders and immune-mediated diseases. Additionally, the microbiota and its metabolites are likely to be involved in modulating behaviors and brain processes, including stress responsiveness, pain modulation and ingestive behavior. This raises the potential of targeting this system in other species, such as in livestock animals, in order to develop novel ways to modulate animal stress-susceptibility and feeding behaviour, and hence improving animal health, welfare and productivity.

Given the multidisciplinary nature of this approach, it is essential to improve our understanding of the interactions between animal physiology, gut microbiology, hormones, neurotransmitters and brain function. This can be achieved by strengthening the relationship between researchers and professionals of the different fields involved.

Objectives

The aim of this two-day symposium is to bring together experts on the fields of nutrition, microbiology, animal behaviour and neuroscience to:

- Share state-of-the art research on the microbiome-gut-brain axis.
- Develop a common agenda of priority research and funding bids to unravel the plural mechanisms by which microbiome modulates brain function.
- Generate dialogue and facilitate greater research collaboration across disciplines, sectors, research institutes and countries.
- Strengthen the scientific rigor of the field of neurocognition of livestock animals, including concepts, frameworks, measures and methods.

Format of the symposium

This activity will have an afternoon-morning format on 24-25 April 2017 at Aberystwyth University, and will include national and international speakers covering state-of-the-art research from different disciplines related to the gut microbiome, animal cognition and behaviour. Round-table discussions will also be organized with potential funders with the ultimate goal of developing a common agenda of research priorities and funding bids to unravel the mechanisms by which the microbiome modulates brain function, immune responsiveness and disease resistance of livestock animals.
Further information

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