RESEARCH UPDATE

BM-FARM

Biomarkers and Microbiome in Farms for Antimicrobial Resistance Management

This project is a collaboration between Teagasc & University College Dublin. It is aimed at developing markers of animal health in commercial pig farms. An integrated approach is being used in several farms, characterizing the physiological status of pigs and the microbiological environment where they live. The study explores interactions between pig, pathogen and environment, which often lead to clinical disease in farms.

Background

The factors leading to clinical disease in pig farms go beyond an interaction between animals and pathogens. Other elements play a role in this process, amongst which are the microbial populations that coexist with pigs, individual susceptibility and husbandry practices. A combined approach is thus needed to explain the complexity of clinical disease on pig farms. Ultimately, a better understanding of disease will result in lower levels of antimicrobial use and antimicrobial resistance.

Objectives

- To characterize the biomarker profile (physiological status) and microbiological environment of Irish pig farms
- To study the effect of farm interventions on the biomarker profile and microbiological environment

Study 1. Cross-sectional characterization of Irish farms for biomarker profile and microbial populations

For this study, several farms across the country are being visited and animals are sampled at four different production stages. Saliva is collected to study the physiological status of pigs in terms of inflammation, activation of the immune system, stress and oxidative stress. This manipulation-free approach also involves the collection of faecal and environmental samples. Analysis of environmental samples will describe the microbial populations that coexist with pigs and identify eventual pathogens present on farm, giving particular relevance to antimicrobial resistant bacteria.

Mario Ornelas

PhD student

Mario Ornelas is the PhD student working on the BM-FARM project. He is supervised by Edgar Garcia Manzanilla at Teagasc and Nola Leonard at UCD.

He has previously completed a degree in Veterinary Medicine at University of Lisbon.

Mario's research interests include pig health management and precision livestock farming.

For more information visit www.teagasc.ie/pigs

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