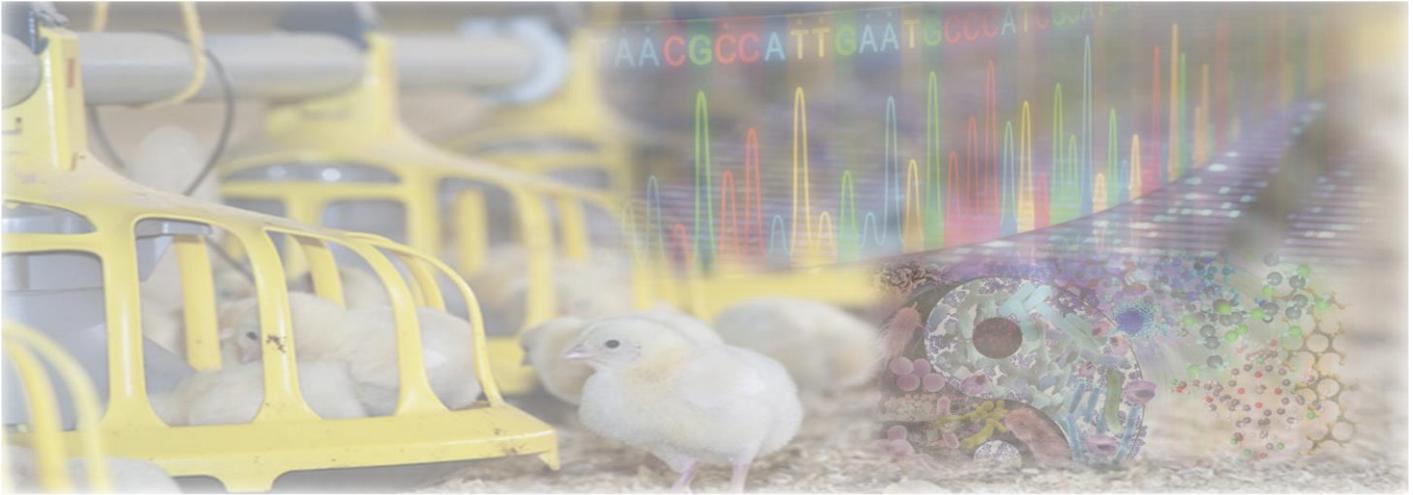


Microbiome



The Effect of Early Gut Viral and Bacterial Infections on Dysbacteriosis, Uneven Flock Performance and the role of Antibiotic Treatments in the Susceptibility of Broilers to Campylobacter Carriage/Infection

The aim of the project is to determine the effect of early gut viral and bacterial infections on microbial imbalance and uneven flock performance in broilers and the effect of antibiotic treatments on the gut microbiome, including carriage and/or infection of human pathogens such as *Campylobacter* spp. The gut microbiome analysis will help us to determine the probable effects of host pathogen interaction, which may lead to genome directed methods of disease control in poultry. Based on this information, biomarkers can be developed that will be useful for selection of treatments to prevent the disease. The intestinal microbiome in poultry tract functions as an interface between the host and antibiotic treatments may inhibit specific bacterial populations facilitating the growth of others. We will investigate the role of gut microbiota by comparing microbial community structure and functional gene content using Next Generation Sequencing techniques. The information generated will be vital for identification of potential performance of microbes associated with broilers and to finally understand how a 'poor competitor' like *Campylobacter* can reach high population concentrations (up to a billion cells per gram). The possibility of manipulating the intestinal microbiome of poultry through alternatives to antibiotics and managerial interventions will be identified which will improve poultry growth and health while reducing the food safety risks associated with *Campylobacter*.

Project Duration: 36 months (18M AFBI + 18M Teagasc)

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 Agri-Food and Biosciences Institute (AFBI), Northern Ireland, UK
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