

Targeted Project / AY 2023 -2024

Species-specific mechanisms determining interferon production during avian infection

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Research area: Comparative innate immunity

Project outline:

Birds are a globally important food source and hence require protection from infectious diseases. They are also susceptible to infection by zoonotic pathogens that move from species to species with potential to cause outbreaks of severe human disease. The poultry industry in the UK alone is responsible for the production of more than one million tonnes of meat and billions of eggs every year for consumption. This vast scale of farming necessitates that we understand which diseases pose a threat to the health of these birds and how we can counter those threats. This year alone bird flu, caused by the avian influenza virus, resulted in 43 million birds being culled across the EU.

In this study we will advance our understanding of how different bird species detect the presence of virus infections and respond by producing inflammatory mediators and other specialised defence mechanisms to fight off the infection. This innate immune response is essential for fighting infectious diseases, and we aim to identify how different birds respond to the same pathogens to trigger their innate defences. We will use a combination of computer-based analysis and experimental science to define differences between the innate immune systems of livestock birds; chickens, ducks and turkeys and to identify and determine the functions of new components of the innate immune systems of these livestock birds.

BBSRC DTP main strategic theme: Understanding the rules of life

BBSRC DTP secondary strategic theme: Bioscience for sustainable agriculture and food, Bioscience for an integrated understanding of health