

Antimicrobial Resistance (AMR) in Gamebirds: A One Health Approach to Understanding and Mitigating the Risk of AMR Evolution and Spread through Ecosystems

Project ID: 208

Supervisory team

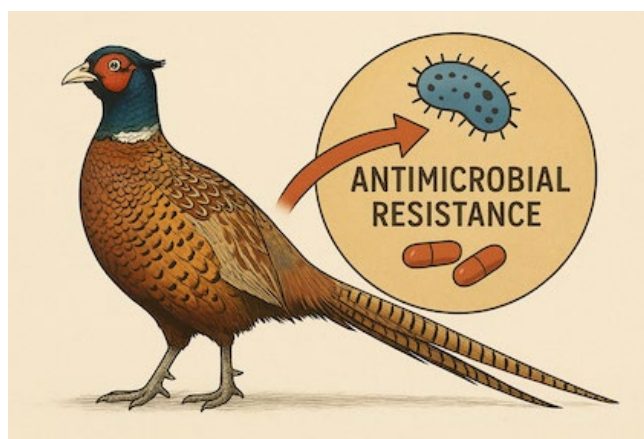
Main supervisor: Dr Barbara Tschirren (University of Exeter)

Second supervisor: Dr Irene Bueno Padilla (University of Bristol)

Other supervisors: Dr Xavier Harrison (University of Exeter), Prof Mario Recker (University of Exeter)

Host institution: University of Exeter (Penryn)

Project description: Antimicrobial Resistance (AMR) in Gamebirds: A One Health Approach to Understanding and Mitigating the Risk of AMR Evolution and Spread through Ecosystems. Antimicrobial resistance (AMR) is one of the most pressing challenges of the 21st century, exacerbated by the widespread use of antimicrobials in livestock. Among farmed animals, gamebirds present a unique risk: unlike other livestock they are released in large numbers into the wild, potentially facilitating the spread of resistant bacteria across ecosystems. In the UK, around 47 million pheasants are released annually for recreational shooting and their rearing often involves antibiotics, including some classified as 'last-resort' treatments.



This PhD project will adopt an integrative One Health framework to investigate the links between antimicrobial use in gamebird rearing and AMR dynamics. Specifically, you will: 1) Quantify how antimicrobial use influences AMR evolution in gamebirds 2) Track AMR prevalence throughout the rearing cycle 3) Assess how AMR propagates across trophic levels following release 4) Identify how landscape features and management practices shape AMR persistence and spread. Pheasants are released at clearly identifiable sites ('release woods'), which can be paired with matched control woodlands where no pheasants are released. This quasi-experiment provides a rare opportunity to quantify the impact of antimicrobial use in gamebird rearing on AMR occurrence and spread in space and time, and to identify evidence-based management strategies to minimise risk to human-, animal- and environmental health, and animal wellbeing. You will receive interdisciplinary training in state-of-the-art approaches and techniques that are highly sought-after by employers within and outside of academia, including project design and management, molecular techniques and bioinformatics, experimental in vivo skills, and mathematical modelling of complex biological systems. Fieldwork will involve sampling pheasants, soil and wildlife at replicated release and control sites, while laboratory analyses will integrate cutting-edge sequencing technologies (shotgun metagenomics and HT-qPCR) with ecological and epidemiological modelling and risk factor analyses. Based in a thriving, inclusive,

and multidisciplinary research environment, you will work closely with an interdisciplinary supervisory team at the University of Exeter Cornwall Campus and the University of Bristol whose complementary expertise spans wildlife ecology, molecular microbiology, veterinary sciences, epidemiology, and landscape modelling, positioning you at the forefront of AMR research at the human–animal–environment interface. Contact: Dr Barbara Tschirren: b.tschirren@exeter.ac.uk

Our aim as the SWBio DTP is to support students from a range of backgrounds and circumstances. Where needed, we will work with you to take into consideration reasonable project adaptations (for example to support caring responsibilities, disabilities, other significant personal circumstances) as well as flexible working and part-time study requests, to enable greater access to a PhD. All our supervisors support us with this aim, so please feel comfortable in discussing further with the listed PhD project supervisor to see what is feasible.