

SOA18

Pathogen-microbiome interactions, immune system & mechanisms of AMR (OO7 Action 1)

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| Priority area | Operational objective |
| Treatments & vaccines | To develop new interventions and treatments, or improve existing ones, against specific priority animal infectious diseases. |
| Key words | Partner participation |
| Microbiome, pathobiome, pathogens, immune system, AMR, animals, resilience, resistance, holobiont | AU, CSIC, DTU, ELGO-VRI, FLI, INRAE, IRTA, EDI-IVI, IZSLER, NVI, PIWet, UCPH, ULE, UNIPD, SURREY, WU, WR |
| Project summary | |
| <p>This project, led by a diverse team of European scientists, delves into the intricate world of harmful microbes and their genes within farm animals and fish. Focusing on the critical ecosystems within their lungs, guts, and skin, the project aims to understand how these microbes interact with the entire community of living organisms residing there. Utilizing cutting-edge techniques, the scientists will investigate how various factors, including the animals' immune response and genetics, environmental influences, and even human activities, shape these complex interactions.</p> | |
| Project objectives | Outcomes and impacts |
| <ul style="list-style-type: none"> • Understand the modulatory and dynamic mechanisms of the pathogen-holobiome crosstalk, integrating the interaction of multiple symbionts, host, and environment in a new understanding of disease etiology (Task 1). • Identify factors in the host-microbiota symbiont that contribute to the heterogeneity of infection of farm-producing animals and thus to a greater host robustness/resistance/tolerance to pathogens (Task 2). • Gain knowledge on immune mechanisms that contribute to protection against pathogens, how the gut microbiome composition and function regulate these, and how immune function can be modulated/enhanced by dietary interventions (Task 3). • Understand the transmission of acquired antimicrobial resistance (AMR) within animal pathobiotic systems at different levels (Task 4). | <ul style="list-style-type: none"> • This project tackles complex polymicrobial diseases affecting farm animals and fish in a changing world. Combining four tasks, it aims to achieve three major outcomes: • Reduce, prevent, control, and treat complex polymicrobial diseases while improving animal health and well-being. • Promote healthy and resistant animals, ultimately benefiting consumers and contributing to safer food supply and reduced use of antimicrobials. • Fill research gaps set by the EU. It will contribute to advancing scientific knowledge and meeting European Union research priorities. • This concerted effort ensures significant impacts: |

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- Reduced disease burden in animals:
Leading to improved animal welfare
and productivity.
- Contribution to EU research goals:
Advancing European leadership in
animal health, welfare, and food
safety.
- Safer food for consumers:
Promoting sustainable and
responsible food production
practices.