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ENVIRE: Interventions to control the dynamics of antimicrobial resistance from chickens through the environment



Nunzio Sarnino¹, Anika Friese¹, Tina Kabelitz², Lucie Collineau³, Mindaugas Malakauskas⁴, Marta Kuźmińska-Bajor⁵, Wejdene Mansour⁶, Roswitha Merle¹


Introduction



Use of antibiotics in broiler chicken production results in the increase of antimicrobial resistance.



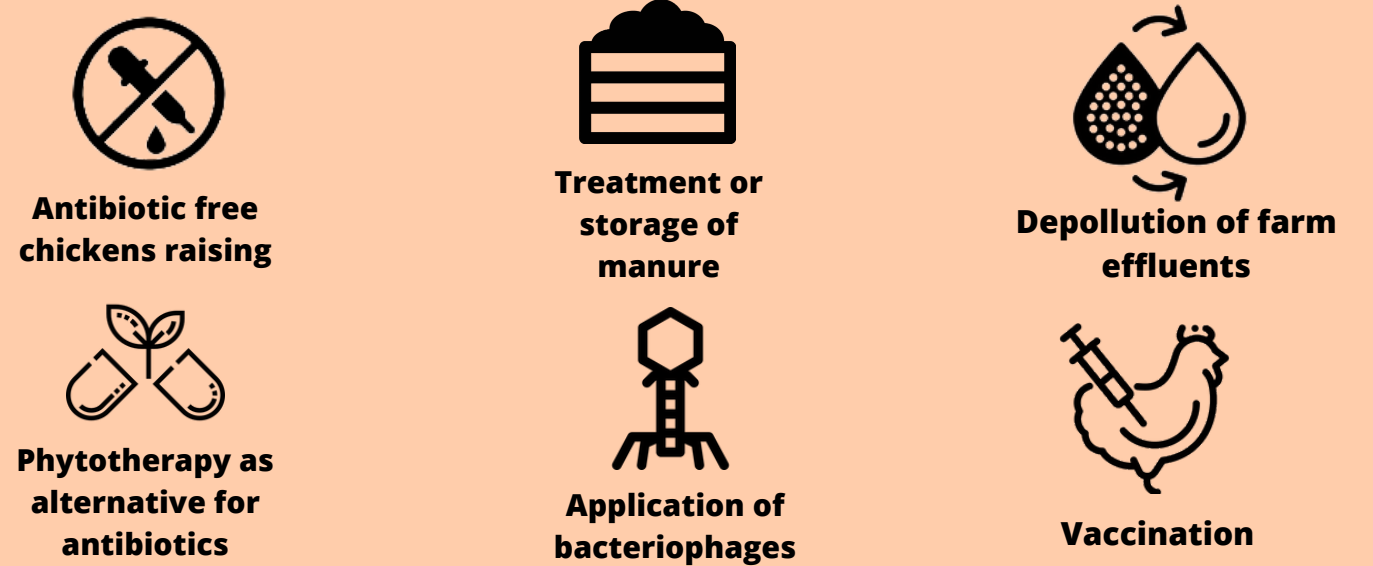
Our goal is to contribute to the reduction of the selection and the spread of antimicrobial resistance bacteria in broilers and from chicken farms to the environment, and ultimately to humans.



The focus will be laid on resistant *Enterobacteriaceae*, with a particular focus on ESBL *E. coli*.

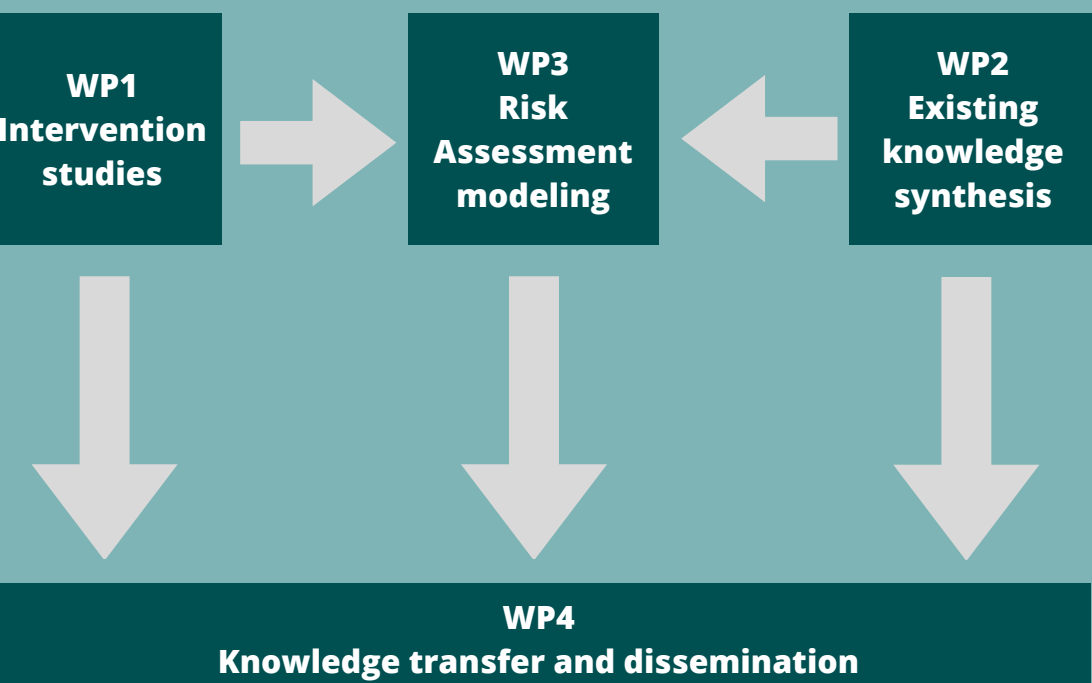
Methodology

Different intervention studies will investigate the potential of various on-farm measures:



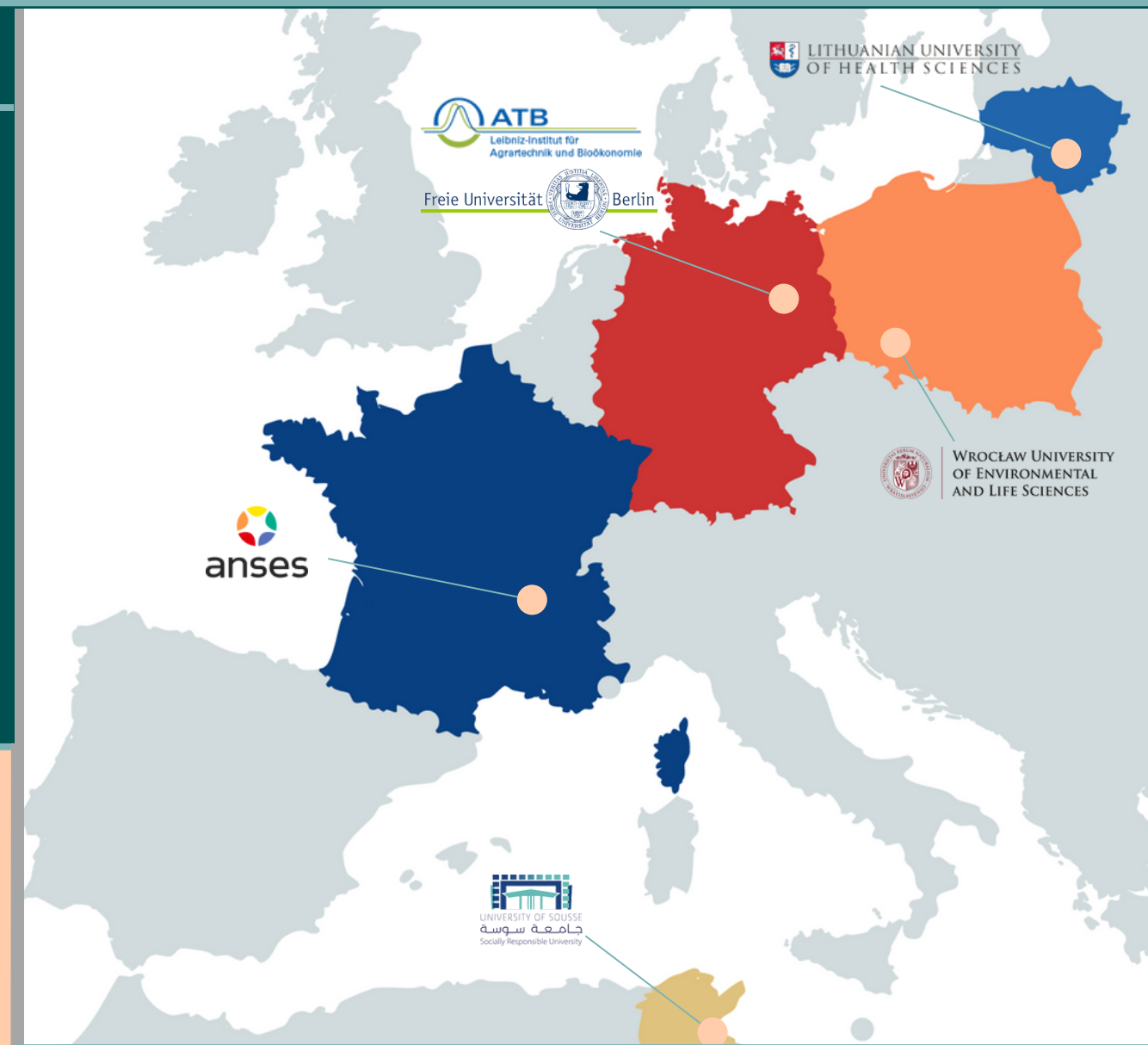
The results of these studies will be applied to the Quantitative Microbial Risk Assessment (QMRA) model (WP3), to evaluate their impact on human exposure.

Project structure



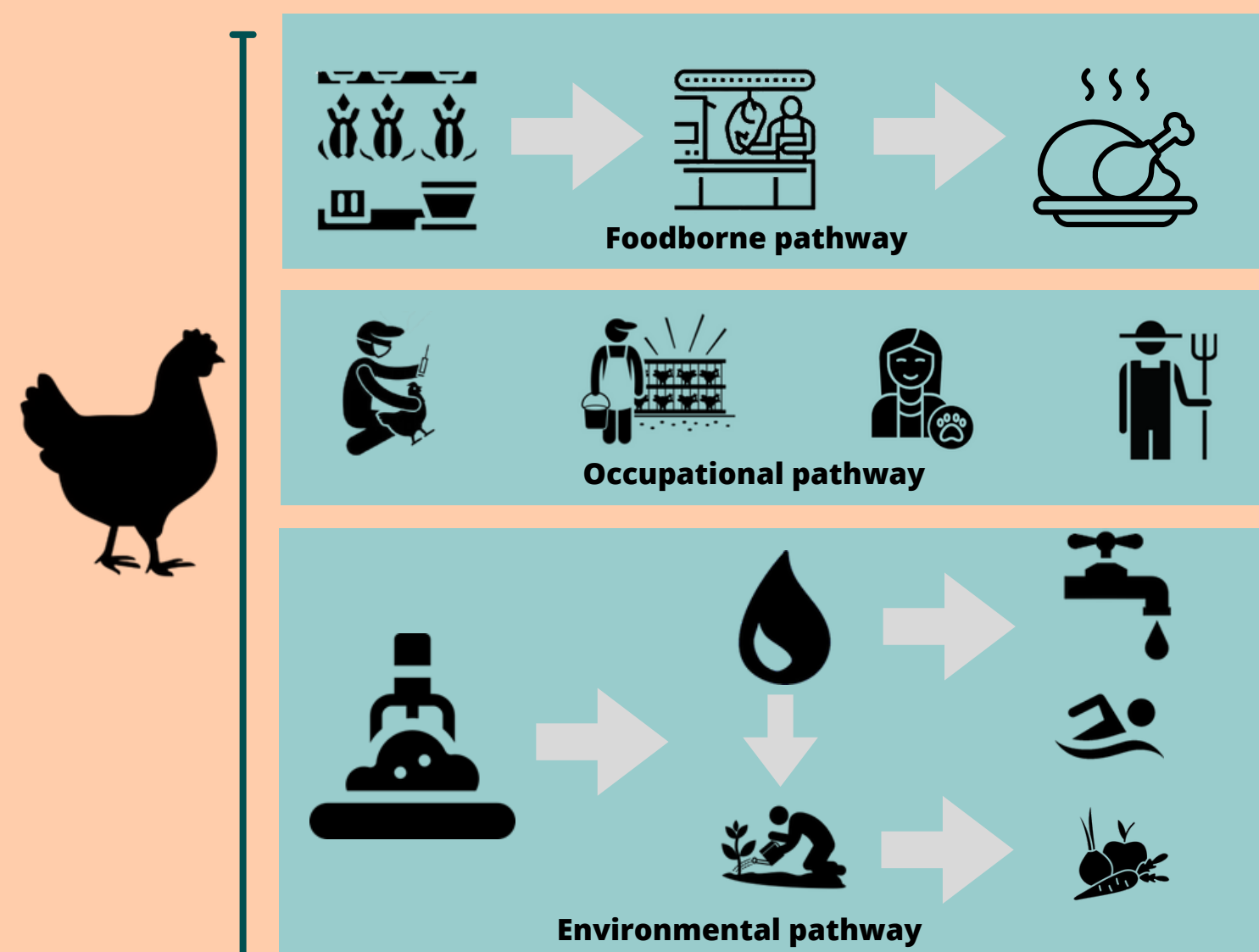
Project partners

- Germany:**
 - Freie Universität Berlin¹
 - Leibniz Institute for Agricultural Engineering and Bioeconomy e.V.²
- France:** French Agency for Food, Environmental and Occupational Health & Safety (ANSES)³
- Lithuania:** Lithuanian University of Health Sciences⁴
- Poland:** Wrocław University of Environmental and Life Sciences⁵
- Tunisia:** University of Sousse⁶



WP3 - Quantitative Microbial Risk Assessment model

Nunzio Sarnino¹, Lucie Collineau³, Roswitha Merle¹



A Quantitative Microbial Risk Assessment model is being developed to evaluate the effect of the selected interventions and to acknowledge the process of antimicrobial resistance selection, release, spread, and human exposure, via three pathways:

- I. foodborne** - via consumption of chicken products,
- II. occupational** - via direct contact with positive flocks,
- III. environmental** - via recreational swimming, consumption of contaminated drinking water and fresh produce contaminated through chicken manure spread.

