PROJECT SUMMARY

Recent studies in the USA, Asia, and our preliminary work in Europe have identified a new genus of the *Orthomyxoviridae* family, named Influenza D virus (IDV). This novel virus was shown to infect farm animals including swine and cattle, and to efficiently replicate and transmit in ferrets, the animal model of choice for transmission of many zoonotic pathogens including influenza A virus (IAV) to humans.

Our objective is to develop an integrated approach to not only assess the emergence threat associated with influenza D viruses' circulating in Europe, but also the role played by the virus in cattle respiratory disease complex and the risk it may play for human. By promoting transfer and exchange of knowledge and expertise between the partners we will pave the way towards scientific-based decision-making and development of effective strategies for cattle respiratory disease control, and risk assessment for Influenza D virus infections in Human.

The first question to answer relates to the role of IDV among respiratory pathogens of cattle and humans. A first work package will therefore be to survey IDV occurrence and prevalence in the 2 species in Europe and collect field data (samples for respiratory pathogens detection, bioaerosols, cloths from farm premises, but also questionnaires on biosecurity and mitigation measures) to understand IDV's place within its pathogens counterparts. In field samples collected at a given time it will however not be possible to understand the sequence of infection (which pathogen is more likely to infect first/second), nor whether the co-circulating pathogens act in synergy or antagonism in the host. A second work package will therefore enable answering more mechanistic questions using *in vitro* and *ex vivo* culture methods to better understand the field situation. All parts of the projects will act as support for the models for risk assessment (third work package) with clear benefits for both animal (cattle) health and public health.To estimate the IDV human risk exposure through aerosols in cattle farms at risk (viral circulation), a quantitative risk assessment modelling will be performed and refined using field (WP1) and experimental (WP2) data. Based on prospective scenarios analysis, the effect of medical (vaccination) and/or sanitary (biosecurity) mitigation measures will be evaluated through the previous modelling.

This project addresses the need for capacity building at EU level to improve the EU's scientific assessment capacity and international competitiveness. We will achieve this goal by promoting cross disciplinary cooperation between the partner institutes representing four European countries and a non-EU member State. The project will allow for sharing knowledge, skills, competencies and expertise in the field: it will enable capacity building within Europe. The output of the project will enhance European cooperation and generate a sustainable network necessary for detecting, preventing and responding to an emerging animal disease that could constitute a threat not only to animal health and welfare but also to European food production and directly or indirectly to human health.