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Impacts of Respiratory Mucus on Influenza Virus Stability, Transmission, and Immune Interactions

Inhalt

The remarkable zoonotic competence of Influenza A virus (IAV) warrants dedicated One Health vigilance. As the cause of four disruptive pandemics in the last century, pervasiveness into previously unaffected regions, and elevated incidence of human and animal infections, IAV continues to circulate across multiple host species. Most of the research on IAV entry has investigated interactions between viral proteins and cellular receptors. Still, the role of respiratory mucus in IAV transmission remains underexplored. As part of the Respiratory Mucus as a One Health Interface (ONEMUC) project, this study investigates the environmental stability of avian, human, and swine IAV strains in respiratory mucus under varying temperature, relative humidity, carbon dioxide concentration, and light spectrum conditions. Viral infectivity will be determined over time using TCID₅₀ assays and analyzed via exponential decay kinetics, revealing how mucus composition and environmental variables interact to modulate IAV persistence and zoonotic spillover risk. By systematically evaluating virus-mucus interactions across environmentally relevant conditions, this work aims to determine how respiratory mucus influences IAV persistence and transmission potential. These findings will provide a foundation for developing standardized assays to evaluate the environmental stability and potential zoonotic risk of emerging influenza viruses and viral variants under changing climatic conditions.

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Professional Status of the Speaker

PhD Student

Junior Scientist Status

Yes, I am a Junior Scientist.

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