ID der Kurzfassung : **201**

# The role of TMPRSS2 and other proteases ivation of influenza A virus in avian hostsn acti

## Inhalt

Wild birds, primarily waterfowl, and shorebirds are the natural host and reservoir for influenza A viruses (IAV). Infections with low pathogenic avian IAV (LPIAV) in wild birds are usually asymptomatic, with virus replication primarily in intestinal enterocytes and significant virus shedding in faeces. Transmission to other hosts causes high morbidity and low mortality. Proteases that cleave HA, the prime determinant of avian IAV pathogenicity in poultry, are yet unknown but are believed to be restricted to avian respiratory and intestinal tissues. We previously confirmed in vitro that the transmembrane serine protease 2 (TMPRSS2) cleaves IAV and influenza B virus (IBV) HA with a monobasic cleavage site. Later studies revealed that TMPRSS2 is vital for proteolytic activation of almost all IAV HA subtypes in murine and human airway cells and for IBV in human lung. We now aim to elucidate its role in HA activation of IAV with monobasic cleavage site in avian species. TMPRSS2 from small intestine and lung of adult chicken and duck, respectively were able to support proteolytic activation and multicycle replication of IAV of different HA subtype in transient protease expressing MDCK cells, indicating that TMPRSS2 provides a promising HA activating candidate. Ongoing studies aim to reveal mRNA tissue distributions of TMPRSS2- and other proteases via RT-qPCR and comprehensive transcriptome analyses are performed to characterize the virus-activating protease repertoire.

## Keywords

Avian Influenza, Host-Proteases, Tropism, TMPRSS2

## Registration-ID code

ZOO23-494

## Professional Status of the Speaker

PhD Student

## Junior Scientist Status

Yes, I am a Junior Scientist.

**Thema Einordnung:** Host-pathogen Interactions

**Typ des Beitrags:** Poster presentation