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Immunolabelling: West Nile Virus in Birds – important hosts and virus amplifier

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West Nile Virus (WNV), a zoonotic arbovirus with a mosquito-bird transmission cycle, can lead to severe disease in birds and dead-end hosts such as horses and humans. Its distribution has increased worldwide and the reported WNV cases in 2024 in birds and horses even exceeded the previous years. Recently we described the pathogenesis of WNV lineage 2 in-vivo in geese, showing in particular the early development of not only an encephalitis but also a ganglioneuritis in the enteric nerve system (ENS). Here we aim to clarify more in detail the role of immune cells during the progress of a WNV infection by using several immunohistochemical markers. Therefore, formalin-fixed and paraffin-embedded tissue samples, including ENS and brain, from in total 15 geese infected with WNV-2 and euthanised at five different time points as well as three control geese were stained using CD3 (T-cells), Pax-5 (B-cells), Mum-1 (plasma cells) and Lectin RCA-1 (microglia). Preliminary results show a marked immune reaction in ENS and brain. T cells were present in up to 90% of the plexus of the intestine, already starting 6 dpi and only slowly decreased in the following dpi. A similar process was seen with the encephalitis. These findings are being supplemented with results from naturally infected wild birds. Taken together, the immune mechanisms involved in WNV infections is not yet clarified in its entirety and the study presented here will add new insights in the early pathogenetic progress.

Keywords

West Nile Virus, Immunohistochemistry (IHC), pathogenesis, avian

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Postdoc

Junior Scientist Status

No, I am not a Junior Scientist.

Author: Dr SCHMITZ, Anna (Friedrich-Loeffler-Institut, Federal Research Institute for Animal Health, Institute of Novel and Emerging Infectious Diseases, Greifswald-Insel Riems, Germany)

Co-authors: Dr FAST, Christine (Friedrich-Loeffler-Institut, Federal Research Institute for Animal Health, Institute of Novel and Emerging Infectious Diseases, Greifswald-Insel Riems, Germany); Dr GROSCHUP, Martin (Friedrich-Loeffler-Institut, Federal Research Institute for Animal Health, Institute of Novel and Emerging Infectious Diseases, Greifswald-Insel Riems, Germany); Dr ZIEGLER, Ute (Friedrich-Loeffler-Institut, Federal Research Institute for Animal Health, Institute of Novel and Emerging Infectious Diseases, Greifswald-Insel Riems, Germany)

Presenter: Dr SCHMITZ, Anna (Friedrich-Loeffler-Institut, Federal Research Institute for Animal Health, Institute of Novel and Emerging Infectious Diseases, Greifswald-Insel Riems, Germany)

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