HCF 5

Influenza Virus Polymerase Complex Plays a Crucial Role in Enhanced Tissue Tropism and Lymphocyte Depletion in Mice

°*Guelsah Gabriel (1), Karin Klingel (2), Oliver Planz (3), Astrid Herwig (1), Hans-Dieter Klenk (1)

(1) Institut fuer Virology, Philipps Universitaet Marburg, Marburg, Germany; (2) Abteilung für Molekulare Pathologie, Institut für Pathologie, Universitätsklinikum Tübingen, Tuebingen, Germany; (3) Institut fuer Immunologie, Friedrich-Loeffler-Insitut, Tuebingen, Germany

Previously, we have shown that adaptation of the highly pathogenic avian influenza virus (HPAIV) SC35 (H7N7) to mice is mediated by 7 mutations in the polymerase subunits and in the nucleoprotein.

Here, we have compared the pathology caused by infection with SC35 and its mouse-adapted variant SC35M (H7N7) in mice. The HPAIV SC35 causes a mild bronchiolitis resulting in low pathogenicity in mice. On the other hand, the highly mouse-pathogenic SC35M leads to severe hemorrhagic pneumonia accompanied by neurotropism. Further, mice infected with SC35M present high virus titers in their blood suggesting systemic infection while no virus could be detected in the blood of SC35 infected animals.

Comparison of the immune response upon low and high pathogenic infection revealed that SC35M causes severe lymphocyte depletion in mice. Furthermore, mice infected with SC35 mount a T-cell response while SC35M infected animals fail to induce an adequate T-cell response.

Taken together, these data suggest that influenza virus polymerase plays a crucial role in enhanced tissue tropism and lymphocyte depletion in mice.

Corresponding author:
Gabriel, Guelsah
guelsah.gabriel@path.ox.ac.uk
Phone: ++44 1865 275579
Fax: ++44 1865 275556