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Comparative immunological investigations in mice after infection with mouse-adapted variants of a classical H1N1 Swine Influenzavirus and the pandemic H1N1/2009 Influenzavirus

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H1N1 Swine Influenzaviruses (SIV) are endemically distributed in pigs and together with H3N2 viruses the main cause of respiratory diseases in that reservoir host. In 2009 the human population was faced with a new H1N1 strain which also originated from pigs (S-OIV) and caused the first (human) influenza pandemic of the 21st century ('pig flu'). Previous investigations in pigs after infection with representatives of SIV and S-OIV revealed considerable differences in the immune response.

To compare the cellular and humoral immune response in mice, we generated mouse-adapted variants of the classical H1N1 SIV A/Swine/Belzig/2/01 and the S-OIV A/Regensburg/D6/09 by passaging the viruses in the lungs of C57BL/6 mice. Subsequently, we determined differences in genome sequences and mouse virulence of the adapted variants compared to their parental strains. Finally, we infected C57BL/6 mice with the mouse-adapted SIV and S-OIV variants to identify differently regulated factors of the immune system that may as well contribute to the altered immune response in pigs.

We will present the amino acid substitutions and the differences in virulence (LD_{50} and viral load in lungs) observed after mouse-adaptation as well as the results of the immunological investigations in mice.

Key words: Swine Influenzavirus, pandemic Influenzavirus, adaptation to mice, cellular immunity, humoral immunity