

## **TWINCORE - Seminar**

Tuesday April 16<sup>th</sup>, 2019, 5 p.m.

TWINCORE Lecture Hall 0.020

# MHC class II proteins mediate cross-species entry of bat influenza viruses



## **Prof. Dr. Ulrike Stertz**

In 2012 and 2013 two novel influenza A viruses were discovered in South American bat species. Remarkably, the hemagglutinin of these bat influenza viruses was found not to bind the canonical influenza virus receptor, sialic acid, or any other glycan, despite high sequence and structural homology with conventional influenza A virus hemagglutinins. Using transcriptomic profiling of susceptible versus non-susceptible cells, in combination with genome-wide CRISPR/Cas9-based screening, we identified the MHC-II complex HLA-DR as crucial entry factor for bat influenza viruses. CRISPR/Cas9-mediated knockout of HLA-DR rendered susceptible cells completely resistant to bat influenza but not conventional influenza virus infection, whereas ectopic expression of HLA-DR in non-susceptible cells conferred susceptibility to bat influenza virus infection. Expression of MHC-II complexes from three different bat species, mice, pigs or chickens also conferred susceptibility. Notably, infection of mice with bat influenza virus resulted in robust virus replication in the upper respiratory tract, whereas mice deficient for MHC-II were resistant to infection. Collectively, our data identify MHC-II from multiple species as crucial entry determinant for bat influenza virus, suggesting the potential for broad vertebrate tropism.

## **Who is Ulrike Stertz?**

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Before:

- Postdoctoral Fellow in the laboratory of Prof. Peter Palese, Department of Microbiology, Icahn School of Medicine at Mount Sinai Hospital, New York, U.S.

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