VEN 19

Development of an Influenza Pseudovirus Based Assay to Analyze the Inhibitory Capacity of Peptides Selected by Phage Display

*Thomas Haarmann (1), Daphna Meroz (2), Nir Ben-Tal (2), Maria Sakarellos-Daitsiotis (3), Stephan Pleschka (4), Oliver Planz (5), Dorothee von Laer (1), °Ursula Dietrich (1)

(1) Georg-Speyer-Haus, Institute for Biomedical Research, Frankfurt; (2) Tel Aviv University, Tel Aviv, Israel; (3) University of Ioannina, Ioannina, Greece; (4) Institute for Medical Virology, Giessen, Germany; (5) Friedrich-Loeffler Institute, Tübingen, Germany

The threat of a major human influenza pandemic, in particular from highly pathogenic avian influenza viruses (HPAIV) like H5N1, has emphasized the need for new antiviral drugs and therapeutic strategies to combat these pathogens.

We have constructed retroviral virus particles pseudotyped with either human or avian influenza hemagglutinin, neuraminidase and matrix proteins in different combinations and investigated their infectivity in a single-round infection assay. The assay is based on the transmission of the marker gene (GFP) to target cells and directly dependent on the function of the envelope proteins enabling the virus to enter the host cell. Therefore, this assay can be ideally used to measure the inhibitory potency of potential inhibitors of viral entry.

Additionally, we expressed the hemagglutinin receptor-binding domain (RBD) of human and avian influenza viruses. The pseudotyped viruses and the RBDs can be used in phage display library screenings to directly identify peptides mimicking the host cell receptor thereby potentially inhibiting viral entry.

To investigate the specificity and affinity of viral entry inhibitors in a solid-phase immunoassay we use sialic acid coupled to an artificial sequential oligopeptide carrier (SOC). This enables us to perform these assays in a small-scale microplate format.

Corresponding author:
Dietrich, Ursula
Ursula.Dietrich@em.uni-frankfurt.de
Phone: ++49 69 63395-216
Fax: ++49 69 63395-297