In vitro study of Influenza virus-like particles with a model cell membrane

Mahsa Mohammadian[1], Ralf Seemann[1] and Jean-Baptiste Fleury[1]

[1] Department of Experimental Physics and Center for Biophysics, Saarland University, Germany

A crucial step for viral infections is the penetration of a virus particle in a cell where it might be replicated. In principle, the trimeric viral hemagglutinin protein binds to sialic acid, commonly Neu5Ac, to adhere to host cells (1). We are using virus-like particles (VLP), a non-infectious variant of influenza viral particles, and study their fusion properties with a model cell membrane. As model membrane, a bilayer is formed in a 3D microfluidic device by contacting two lipid monolayer decorated water-oil interfaces. After the formation of the bilayer, VLPs are dispersed near the bilayer and their fusion with the bilayer is studied by fluorescence microscopy and electrophysiological measurements (Patch Clamp). Our model system aims at defining the interactions between the virus particles and cell membranes which is essential to combat viral infections and improve viral vectors as therapeutic agents.

References:

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