

Project 1.6 Analysis of the fusion properties of the fragments of RSV (respiratory syncytial virus) and HPIV (human parainfluenza viruses)

Supervisor: prof. dr hab. Jakub Włodarczyk / dr Remigiusz Worch

Laboratory: Laboratory of Cell Biophysics

www: <https://www.nencki.edu.pl/laboratories/laboratory-of-cell-biophysics/>

Background:

Human respiratory syncytial virus (hRSV) and human parainfluenzavirus (HPIV) are widely considered the most significant viral pediatric pathogens worldwide. These enveloped viruses are presented with the problem of fusing the two lipid bilayers during their entry into host cells. The class I fusion proteins are unrelated in sequence and exhibit distinct structural features. In the case of hRSV and HPIV membrane fusion mediated by fragments of their F proteins is poorly characterized in terms of structure-function relationship.

Aim:

Characterization of the fusion properties of the F protein fragments from hRSV and HPIV in artificial membrane systems. A variety of optical techniques will be used (fluorescence spectro- and microscopy, dynamic light scattering) in parallel to molecular dynamics simulation performed in collaboration.

Requirements:

- MSc (or soon perspective) in biophysics/biochemistry/biotechnology/pharmacy or relative disciplines,
- scientific curiosity,
- knowledge of basic laboratory techniques,
- good knowledge of English