Master thesis project: studying BMP as a cofactor for influenza virus entry

Period: Fall 2023 – spring/summer 2024  
Location: Laboratory of Molecular Biophysics, Department of Cell and Molecular Biology, BMC, Uppsala Universitet  
Supervisor: Peter Kasson (kasson@gmail.com) and Ana Villamil Giraldo (anavillamilgiraldo@gmail.com)

Background
The Kasson lab studies the physical mechanisms underpinning viral entry of enveloped viruses, using model viruses like influenza, SARS-CoV-2, HIV and Zika virus. We are currently looking for a motivated and curious master student interested in undertaking their thesis project with us.

Project outline
The project will aim to build on our previous work demonstrating that influenza virus fusion is dependent on the phospholipid BMP, which is exclusively found in the endosomal/lysosomal membrane (Mannsverk, Villamil Giraldo, and Kasson 2022). The project outline includes, but is not limited to:

1. Measuring fusion between liposomes containing BMP and influenza viral particles (see schematic below) and assessing to what extent an anti-BMP antibody can block/perturb fusion.
2. Attempting to inhibit viral entry and replication of influenza viral particles with target cells, using an anti-BMP antibody.
3. If time permits, attempt to reduce cellular BMP levels, and measure the effect on viral entry/fusion.

Virus-liposome fusion assay:

Who are we looking for?
The prospective student should have a background in biophysics, biochemistry, virology or the equivalent. Basic practical laboratory skills are essential. But most importantly, we are looking for a motivated, curious student willing to learn new things and with an interest in the subject.