

Size Characterization of Plasma Membrane Vesicles, Virus Particles, and Synthetic Vesicles

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Primary CNF Tools Used: Malvern NS300 NanoSight

Abstract:

The CNF's Malvern NS300 NanoSight was used to determine the concentration and size distribution of various biologically relevant particles, including viruses and plasma membrane vesicles.

Summary of Research:

Our research investigates interactions of biologically relevant particles (viruses, microvesicles, plasma membrane vesicles) on a supported lipid bilayer and with synthetic vesicles. Most of the particles used are generated in-house and as such, it is important to characterize them (diameter, size distribution, concentration of particles) to ensure that we are using the similar quality and concentration of particles across various experiments for consistency. The concentration is especially important as too much or too little of the plasma membrane vesicles used to form the supported lipid bilayer will influence the bilayer's diffusivity and patchiness and varying concentration of viral particles may impact fluorescent dye incorporation.

Typical sizes of viruses, plasma membranes vesicles, and synthetic vesicles that we use range from 100-200 nm and typical values of concentration are on the order of 10^8 particles/mL for plasma membrane particles, 10^{10} particles/mL for viruses and 10^{12} particles/mL for synthetic vesicles.

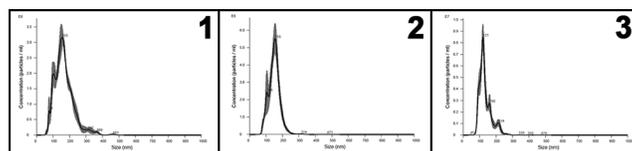


Figure 1, left: Concentration vs. size (nm) distribution plot for virus like particles. **Figure 2, center:** Concentration vs. size (nm) distribution plot for pseudotyped virus particles. **Figure 3, right:** Concentration vs. size (nm) distribution plot for synthetic vesicles.

