

Supporting Information for

Lipid membrane supported on artificial extracellular matrix made of polyelectrolyte multilayers: towards nanoarchitectonics of cellular interface

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Abbreviations: HA - sodium hyaluronate, PLL - poly-L-lysine, PEM – polyelectrolyte multilayers, POPC - 2-oleoyl-1-palmitoyl-sn-glycero-3-phosphocholine, POPG - 2-oleoyl-1-palmitoyl-sn-glycero-3-phospho-rac-(1-glycerol) sodium salt, NBD-DMPE - N-(NBD-aminododecanoyl)-1,2-ditetradecanoyl-sn-glycero-3-phosphoethanolamine sodium salt. The liposomes POPC/POPG/Cholesterol/NBD-DMPE 7/2/1/0.5_w and POPC/Cholesterol/NBD-DMPE 9/1/0.5_w are referred as PC-PG^{NBD} and PC^{NBD} liposomes, respectively.

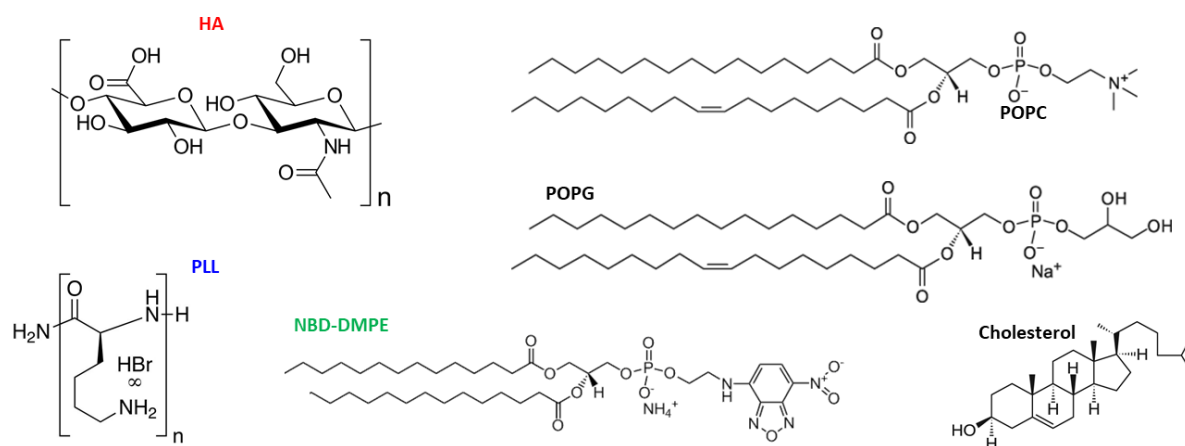


Figure S1. Chemical structures of the lipids and polymers used in this study.

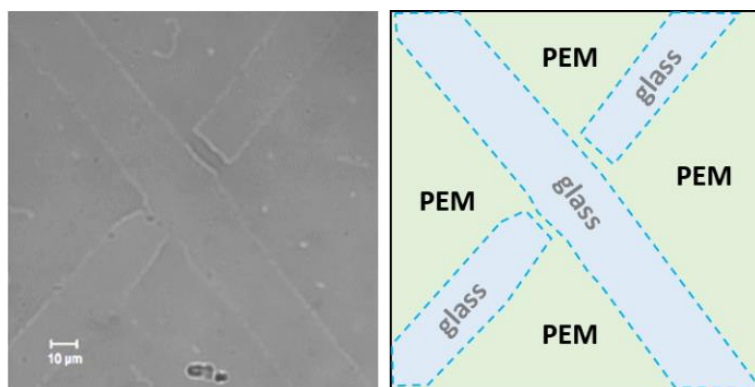


Figure S2. Light transmittance image of (HA/PLL)₂₄ film deposited on the glass coverslip and cross-scratched with the needle. Scratched areas represent uncoated glass surface as a control for each experiment.

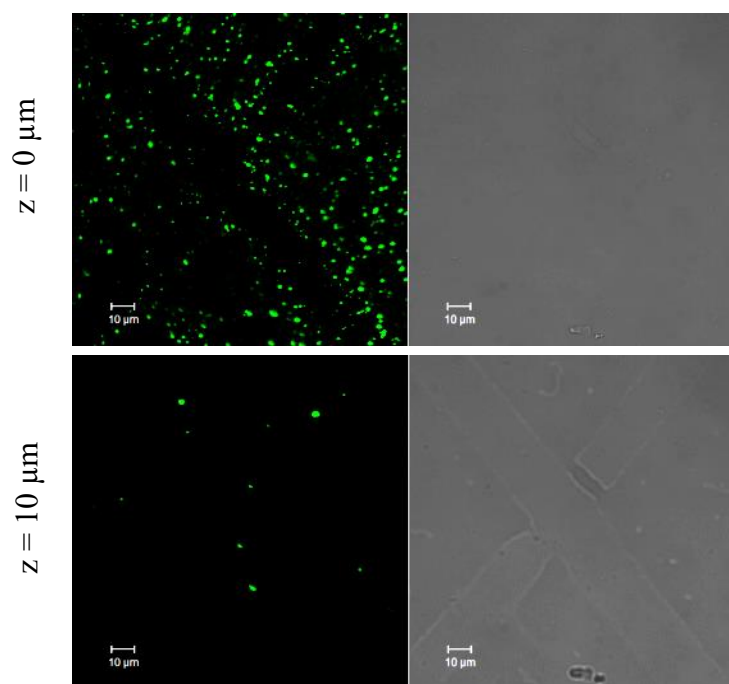


Figure S3. Confocal and light transmittance images of (HA/PLL)₂₈)₂₄ film incubated with 50 μM (total lipids) PC-PG^{NBD} liposome suspension at different z -distances from the top of the film. At $z = 0$ μm, the scratch is in focus. Plenty of PC-PG^{NBD} liposome aggregates is clearly seen. At $z = 10$ μm, the scratch is out of focus. The aggregates of PC-PG^{NBD} liposomes are also clearly seen in a lower amount, likely due to their fast sedimentation.

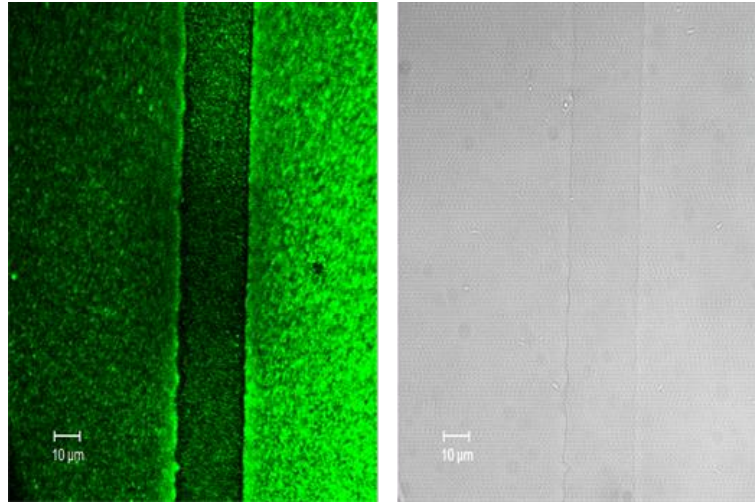


Figure S4. CLSM images of (HA/PLL280)₂₄ multilayers planar films incubated with the suspension of PC^{NBD} liposomes (50 µM total lipids in Tris buffer solution pH 7.4) for 20 minutes.

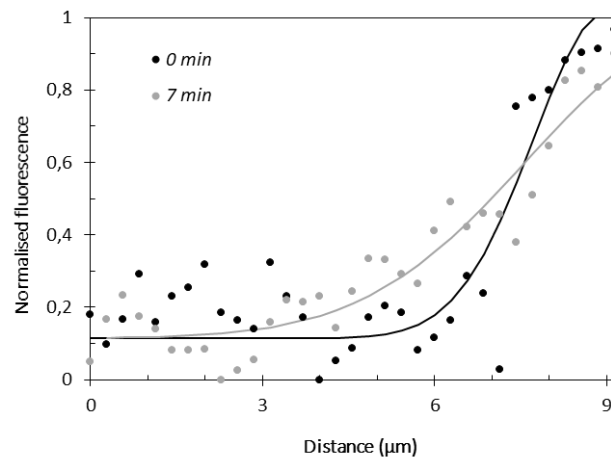


Figure S5. Normalized PE-NBD fluorescence profiles after photobleaching (black) and after 7 minutes after the fluorescence recovery (grey) fitted with Gaussian function (half-Gaussians are shown). Lipid coating was supported on (HA/PLL280)₂₄ multilayers by their incubation with the suspension of PC-PG^{NBD} liposomes (50 µM total lipids in Tris buffer solution pH 7.4) for 20 minutes.

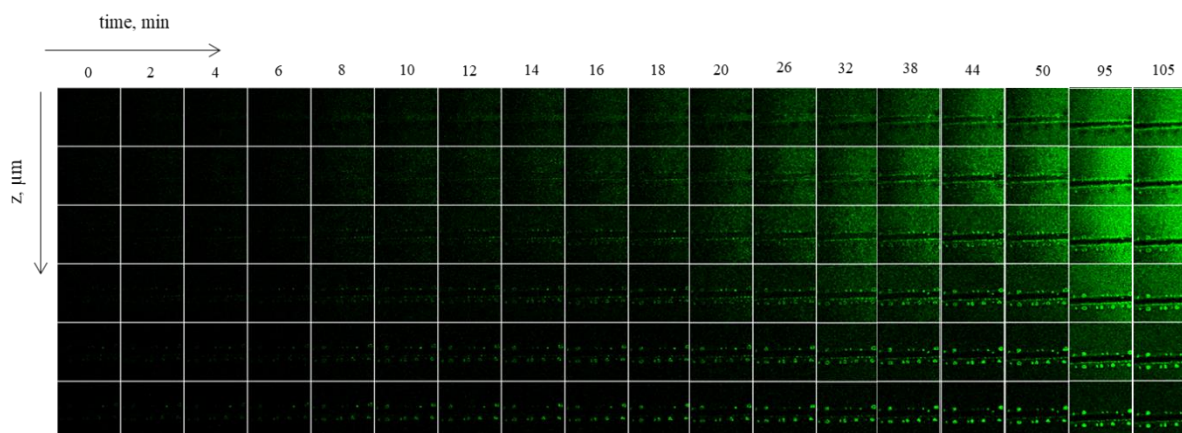


Figure S6. Confocal images of (HA/PLL280)₂₄ multilayer film at different time points and at different distance (z) from the surface of the multilayers after addition of 50 μ M (total lipids) PC-PG^{NBD} liposome suspension in Tris buffer pH 7.4. Each image is 145 \times 145 μ m.

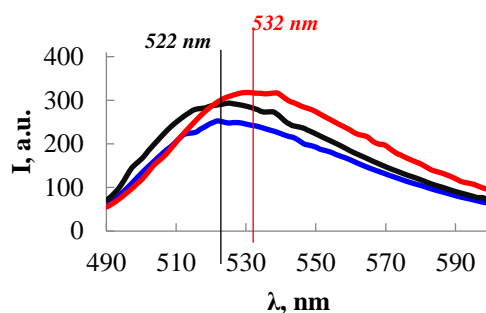


Figure S7. Emission spectra of PC-PG^{NBD} non-reacted with PEMs (red) and after incubation with (HA/PLL₂₈₀)₂₄ multilayers for 15 (black) and 120 minutes (blue).

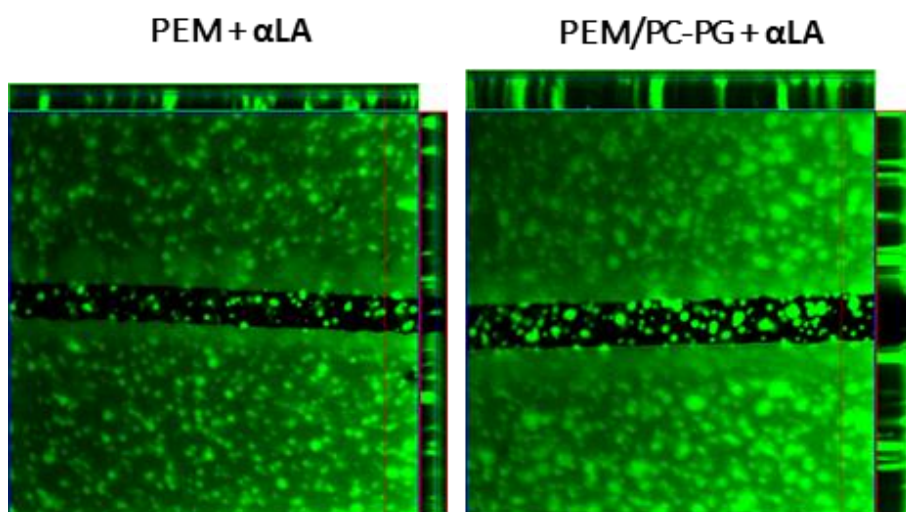


Figure S8. Confocal images of uncoated (HA/PLL280)₂₄ multilayers (left) and (HA/PLL280)₂₄ coated with PC-PG liposomes (right) after incubation with α -lactalbumin-FITC for 30 minutes. Incubation medium: Tris buffer solution pH 7.4. Each image is 145 \times 145 μ m.