

Supplementary Information

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Title : Charge-Selective Membrane Protein Patterning with Proteoliposomes

Movie 1. *In situ* observation of the formation of negatively charged TP-patterned SLB (DOPC 80%/DOPS 20%/Texas red-PE 0.5%/PR in red) and the backfilling using TP-free zwitterionic liposomes (DOPC 100%/NBD-PE 3% in green) by confocal microscopy. Rinsing of excess proteoliposomes was done at approximately 20 min 30 s and TP-free liposomes was injected at approximately 25 min 44 s. Rinsing of excess TP-free liposomes was done at approximately 46 min 57 s.

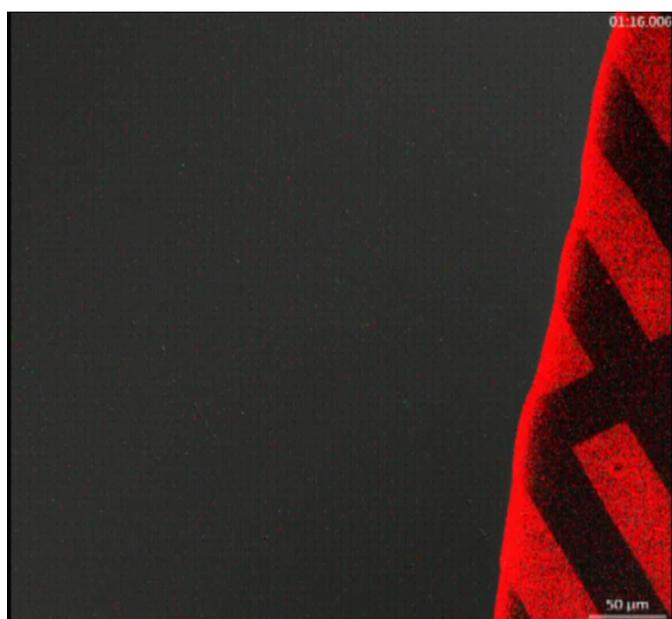


Fig. S1. Fluorescence microscope images of selective adsorption of differently charged liposomes on APTES patterned glass: the formation of (a) negatively charged SLBs (DOPC 80%/DOPS 20%/Texas red-PE 0.5%) on positively charged APTES patterns and (b) zwitterionic SLB (DOPC 100%/Texas red-PE 0.5%) with PBS buffer on positive APTES patterns and non-patterned area. Scale bar: 40 μm . Patterned line widths: 33 μm .

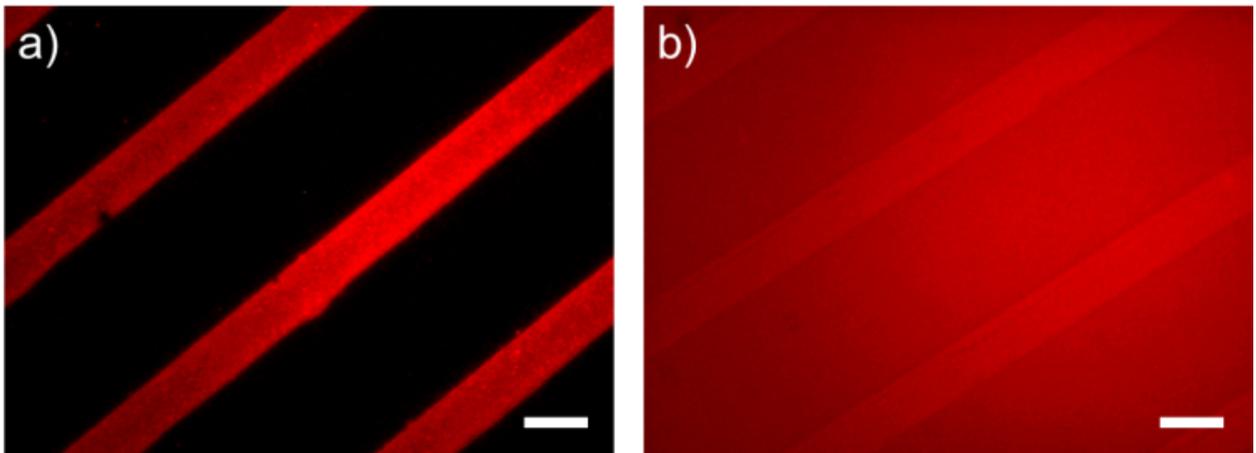


Fig. S2. Confocal microscope images of PR-patterned SLBs with various sized and shaped patterns on glass substrates: PR embedded SLB with Texas red-PE in red colours (a–g); backfilled TP-free SLB with NBD-PE in green. Scale bar: 50 μm . The sizes of patterns (red colours): (a) line (40 μm , width); (b) diamond (35 μm , side); (c) square (55 μm , side); (d) square (5.5 μm , side); (e) hexagon (23 μm , side); (f) triangle (50 μm , side), circle (40 μm , diameter) and square (35 μm , side). The letters, ‘PROTEIN’ have been patterned with PR embedded SLB in red, and backfilled TP-free SLB in green.

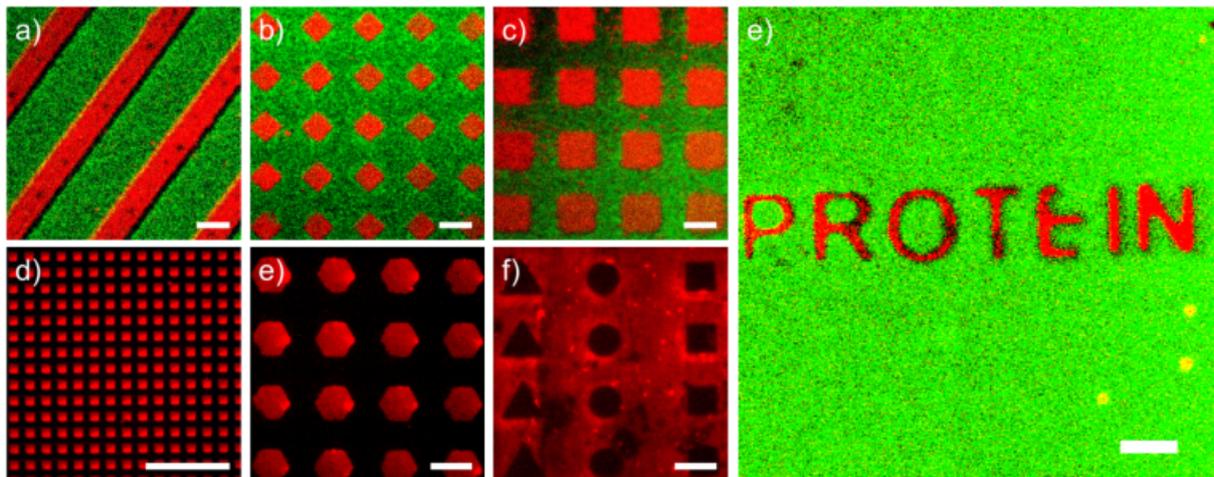


Fig. S3. a) in situ X-ray reflectivity curves of differently prepared SLBs on APTES functionalized Si wafers: TP-free SLBs (top), PR-embedded SLBs at P/L = 1/500 (middle) and APTES monolayers (bottom). All samples were measured in water. b–c) AFM images ($5\ \mu\text{m} \times 5\ \mu\text{m}$) of different adsorption preference of b) negatively charged SLBs (DOPC 80%/DOPS 20%) formed on APTES functionalized Si wafer and c) zwitterionic SLB (DOPC 100%) formed on hydrophilic Si wafer at the same concentration of SUV solutions ($50\ \mu\text{g/mL}$).

