Soft Matter **C1SM05659**

Formation of specific receptor-ligand bonds between liquid interfaces

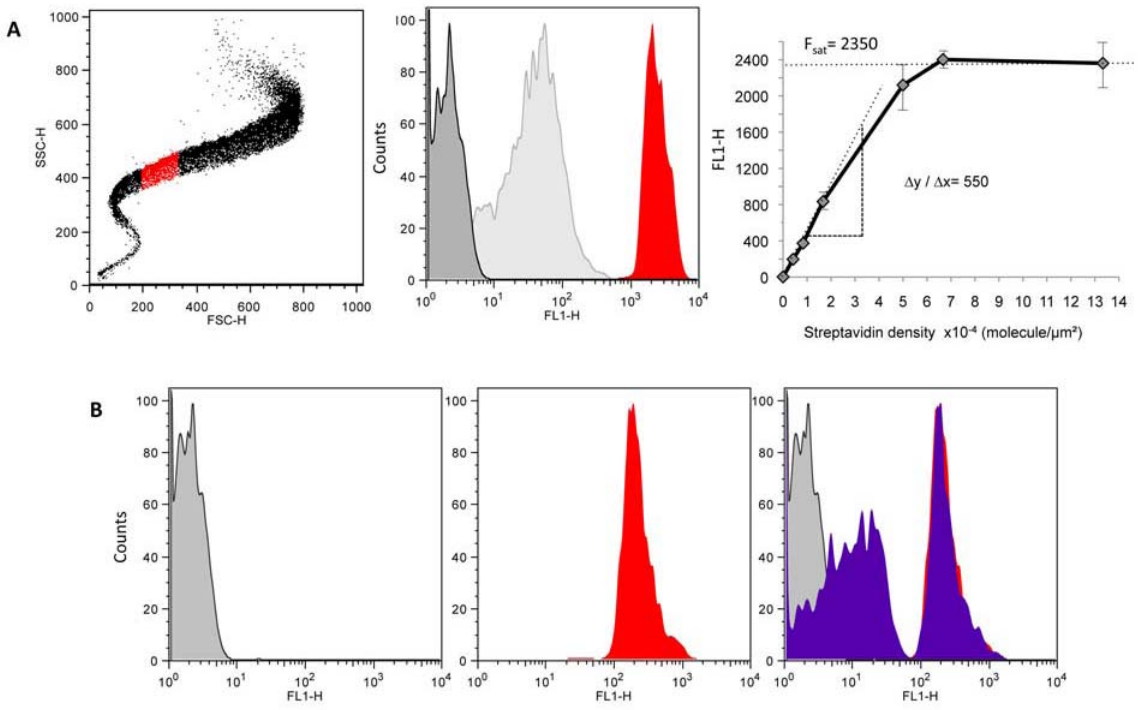

Figure S1: Droplet streptavidin binding sites titration in flow cytometry. (A) Flow cytometry dot plot of side versus forward scattering of a grafted emulsion (Left). The events gated for the analysis selecting droplets with a size of 5±0.2 µm in diameter is shown in red. Middle graph shows the histograms from a biotin-grafted emulsion in the absence of fluorescent streptavidin (dark gray), from a non-grafted emulsion in the presence of a saturating concentration of fluorescent streptavidin (light gray) and from a grafted emulsion in the presence of a saturating concentration of fluorescent streptavidin. The graph on the right shows the titration curve of a sample of droplets grafted with 5 mg/ml biotin. The streptavidin surface concentration given on the abscissa is derived from the total amount of streptavidin added to the sample divided by the total droplet surface. The droplet surface density is obtained from the fluorescence intensity at the plateau divided by the slope of the linear part of the curve at low streptavidin concentration as explained in the text, i.e. (4±0.3)x104 molecule/µm2 for an emulsion grafted with an aminobiotin concentration of 5mg/ml.(B) Fluorescence histograms obtained from samples of droplets grafted with 5mg/ml aminobiotin in the absence of fluorescent streptavidin (left), in the presence of a non saturating concentration of fluorescent streptavidin (middle) and from a sample left to equilibrate with a non-saturating concentration of fluorescent streptavidin for 15 min and then added with a fresh droplet aliquot. This led to two distinct droplet populations indicating that no significant free streptavidin remained in the sample after the initial coupling.

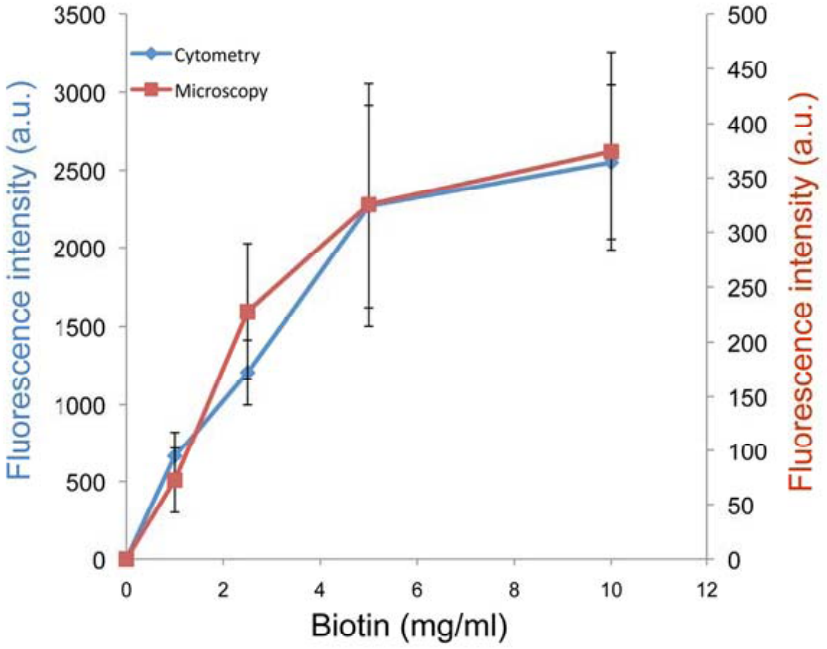

Figure S2: Grafting of the droplets at various streptavidin binding sites surface density. The droplets are grafted with aminobiotin concentrations from 1 to 10 mg/ml. Then the surface density of streptavidin binding sites was titrated using fluorescent streptavidin. The density was maximum for an aminobiotin concentration of 5mg/ml and saturated above.

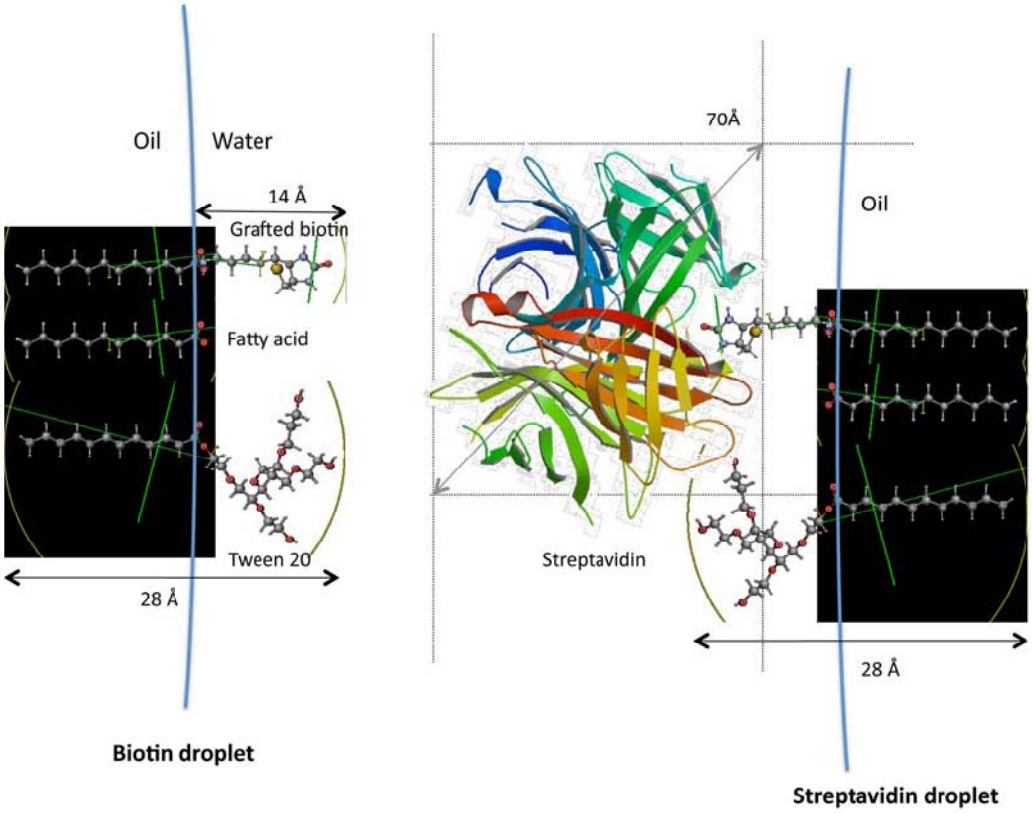

Figure S3: Sketch of the droplet interface showing the main distances of the model system. Fatty acids, grafted biotin and tween20 molecules have been drawn using Marvin sketch software, a chemical editor for drawing chemical structures which also enabled distance measurements. The streptavidin molecular model is from Protein Data bank (PDB, DOI:10.2210/pdb1swc/pdb).