Illuminating Epidermal Growth Factor Receptor Densities on Filopodia through Plasmon Coupling

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Supporting Information

Figure S1. a) Darkfield image of a patch of A431 cells stained for EGFR with Au NPs functionalized with anti-EGFR monoclonal antibody. b) Corresponding SEM image of a section of the labeled cell surface ($\rho = 9.9 \text{ NPs}/\mu\text{m}^2$). The anti-EGFR antibody (clone 29.1.1) functionalized particles were obtained following the same procedure as described for the anti-Biotin antibody functionalized particles in the Methods sections. The NPs were incubated with the fixed cells for 3 h in 0.5x PBS. The NP concentration was 0.39 nM.

Figure S2: UV-Vis spectra of anti-biotin functionalized 40 nm Au NPs in 0.5x PBS. The recorded spectra show no systematic spectral shift or broadening over a total observation time of 225 min. The observed behavior confirms that the particles are stable in the chosen buffer.

Figure S3: Cluster size distribution of 40 nm anti-biotin functionalized Au nanoparticles after incubation in 0.5x PBS for 3 h. The particles were immobilized by incubation of a solution of immunolabels on a BSA-biotin functionalized silicon chip in a water saturated atmosphere. After removal of the immunolabel solution the silicon chip was blow-dried and inspected in the SEM.

Figure S4: a-e) SEM images of dorsal cell surfaces with the following NP densities (ρ) a) 4.3, b) 15.2, c) 24.8, d) 67.0, e) 78.9. Spatial analyses of the NP distributions in a)-c) using the Hopkins statistical analysis [Jain, A. K.; Dubes, R. C. Algorithms for Clustering Data; Prentice Hall: Englewood Cliffs, NJ, 1988] are shown in f)-h). The Hopkins statistics tests spatial randomness. A distribution centered at 0.5 identifies a random distribution, whereas a value closer to 1 indicates clustering. The results in f)-h) confirm significant clustering of the NP labels at low to medium ρ values.