Electronic Supplementary Information

Enhanced cell membrane enrichment and subsequent cellular internalization of quantum dots via cell surface engineering: illuminating plasma membranes with quantum dots

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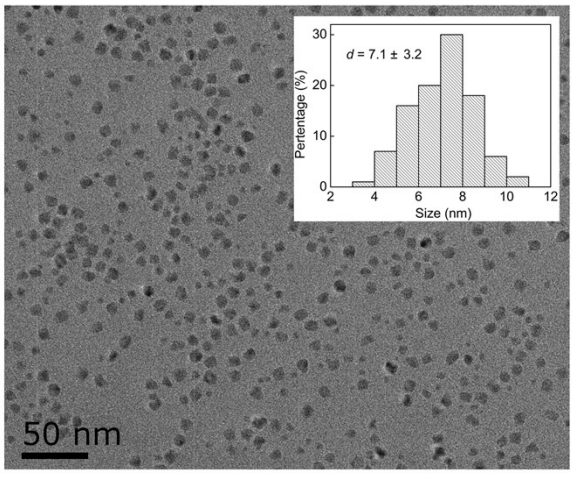

Fig. S1 TEM image of QDs-avidin (0.3 mM). The diameter of QDs-avidin is ~7 nm with a narrow size distribution.

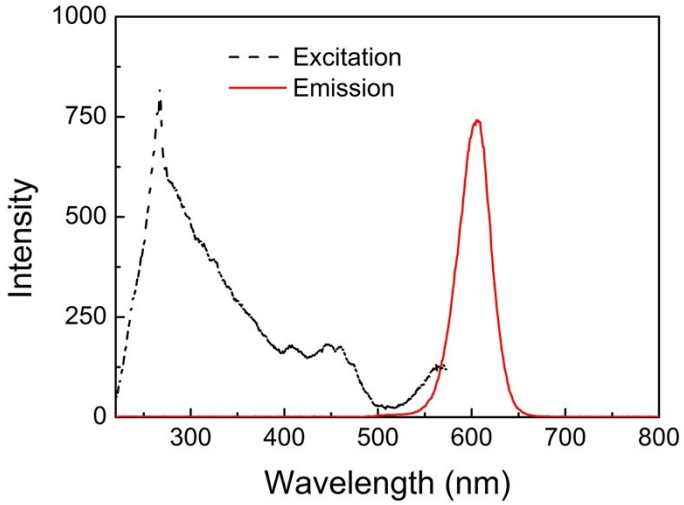

Fig. S2 Fluorescence spectra of QDs-avidin (1 nM). The maximum emission wavelength of QDs-avidin is 605 nm, while the excitation wavelength locates from 200 to 500 nm.

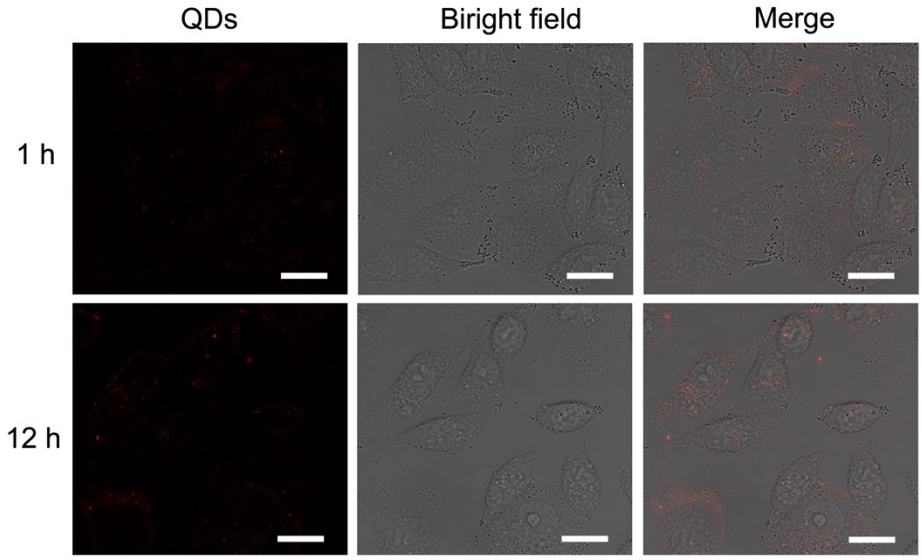

Fig. S3 Confocal fluorescence images of A549 cells incubated with QDs-avidin (20 nM) in the absence of cell surface engineering reagent for 1 and 12 h, respectively. Scale bars are 20 μm.

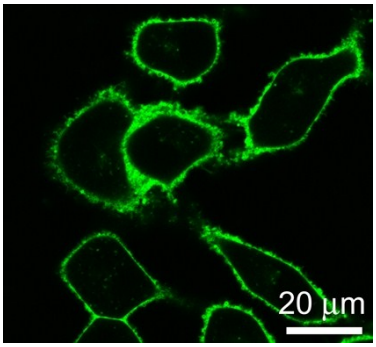

Fig. S4 Confocal fluorescence image of A549 cells incubated with cholesterol-PEG2k-FITC (10 μg/mL) at 37°C for 1 h.

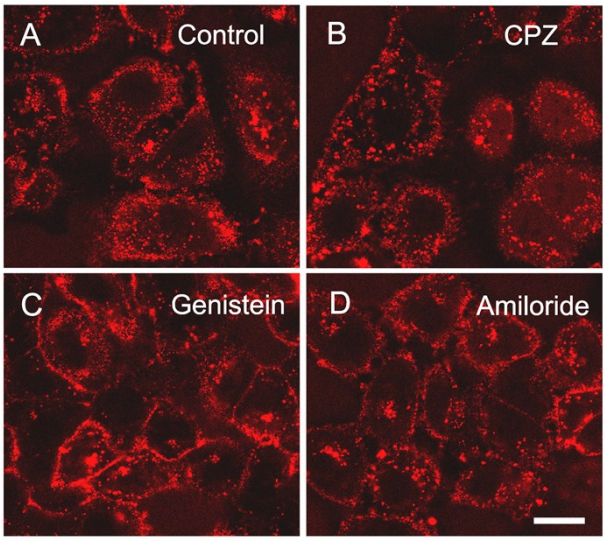

Fig. S5 Confocal fluorescence images demonstrating the internalization of QDs within A549 cells after incubating without (A) or with various endocytosis inhibitors such as (B) chlorpromazine (CPZ, 5 μg/mL), inhibitor of clathrin-mediated endocytosis, (C) genistein (50 μg/mL), inhibitor of caveolae-mediated endocytosis and (D) amiloride (10 μg/mL), inhibitor of macropinocytosis. Scale bar is 20 μm.

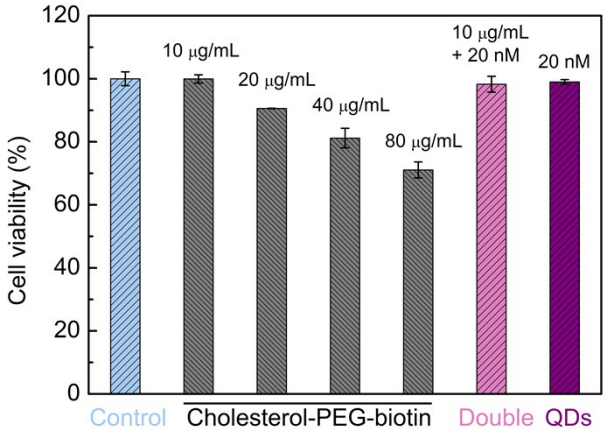

Fig. S6 Cell viability of A549 cells after incubation with different reagents for 24 h. "Double" means "cholesterol-PEG2k-biotin (10 μg/mL) and QDs-avidin (20 nM)".

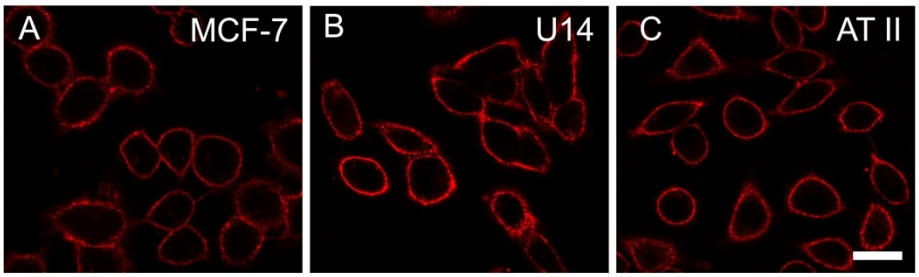

Fig. S7 Confocal fluorescence images of MCF-7 (A), U14 (B) and AT II cells (C) after treating the cells with cholesterol-PEG2k-biotin (10 μg/mL) and QDs-avidin (20 nM). Scale bar is 20 μm.