SUPPORTING INFORMATION

Delivering Quantum Dot-Peptide Bioconjugates to the Cellular Cytosol: Escaping from the Endolysosomal System

James B. Delehanty, Christopher E. Bradburne, Kelly Boeneman, Kimihiro Susumu, Dorothy

Farrell, Bing C. Mei, Juan B. Blanco-Canosa, Philip E. Dawson, Hedi Mattoussi and Igor L.

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Fig. S1 QD-CPP internalization and colocalization within the endolysosomal pathway. HEK 293T/17 cells were incubated with 510 nm DHLA-PEG-capped QDs appended with CPP (QD:CPP ratio 1:25) at a QD concentration of 60 nM for 1 h. Fluorescent markers for endosomes, lysosomes and Golgi complex were included. After 1 h, the cells were washed, fixed and stained with DAPI (A) or supplied with fresh media and cultured for 4, 24 or 72 h prior to fixation and DAPI-staining (B). In panel (A) the DAPI, QD and marker signals are shown individually and merged while in panel (B) only the merged images are shown. Arrows indicate areas of colocalization. Scale bar is 10 μ m.



Fig. S2 Intracellular stability of Cy3 dye. (A) Cy3-labeled transferrin was incubated with HEK 293T/17 cells (no QDs) to monitor the stability of the Cy3 dye within endocytic vesicles over a three day period in culture at 1, 4, 24 and 72 h after transferrin uptake.



Fig. S3 Pyrenebutyrate-mediated delivery of QD-CPP assemblies. (A) 550 nm QDs (100 nM) capped with DHLA-PEG ligands and decorated with 25 CPP per QD were incubated with HEK 293T/17 cells in PBS containing 100 μ M pyrenebutyrate for 30 min at 37 °C. QDs were localized exclusively at the plasma membrane. (B) Upon further incubation for 3 h in DMEM/HEPES at 37 °C, the QDs were internalized and adopted a punctate morphology. Imaging was performed on live cells (nuclei are not stained).



Fig. S4 PULSinTM-delivery of QDs. Shown are individual DIC, DAPI, QD and AlexaFluor647transferrin images of COS-1 (A) and HEK 293T/17 cells (B) 1 d after PULSinTM-mediated delivery of 520 nm QDs (100 nM final QD concentration) capped with a 1:1 mixed surface of DHLA and DHLA-PEG ligands. Scale bar is 10 μm.



Fig. S5 Attempted endosomal release of QD-CPP conjugates. HEK 293T/17 cells were incubated with 510 nm QDs capped with DHLA-PEG ligands and complexed with CPP (25 CPP per QD) in the presence of endosome disrupting agents. The QD-CPP conjugates were codelivered with (A) 0.5 M sucrose or (B) 0.5 mM chloroquine. AlexaFluor 647-labeled transferrin was used as a marker for endosomal disruption. In the case of both agents, the disruption of endosomes was apparent as evidenced by the diffuse appearance of the labeled transferrin. The QD signal, however, remained largely punctate and not dispersed throughout the cytosol. Scale bar is 10 μ m.