

SUPPORTING INFORMATION

Ultrasensitive, multiplexed detection of cancer biomarkers directly in serum by using a quantum dot-based microfluidic protein chip

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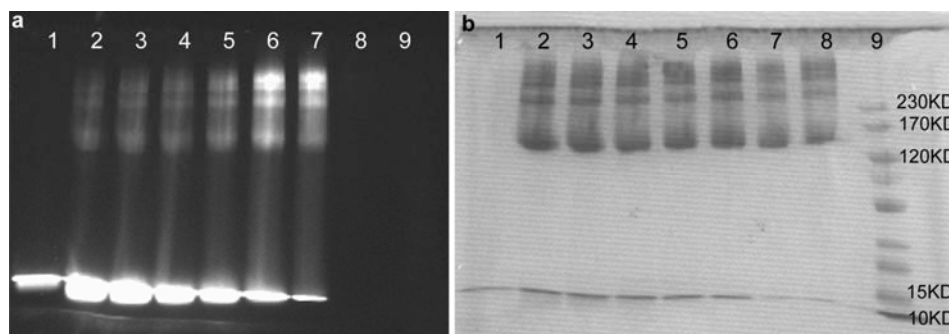


Figure S1. Verification of QD-IgG conjugates and optimization of conjugation conditions by SDS-PAGE. **(a)** Luminescence image under UV illuminated; **(b)** Stained by coomassie blue. Lane 1: QDs; Lane 2-7: QDs-IgG conjugates; lane 8: Goat anti-mouse IgG; lane 9: Protein Marker. Molecular weights are marked on the side in kiloDalton (kDa). From lane 2 to lane 7, the molar ratio between QDs: EDC= 1:0; 1:200; 1:400; 1:600; 1: 800; 1:1000 respectively.

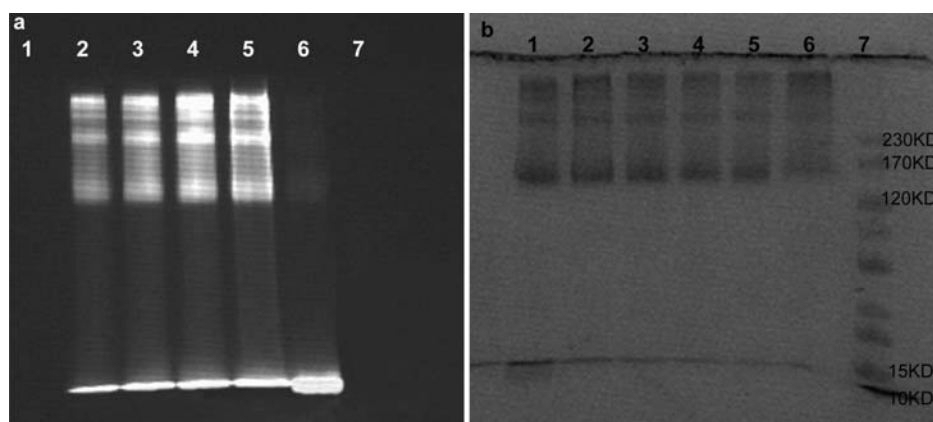


Figure S2. Optimization of conjugation conditions by SDS-PAGE. **(a)** Luminescence image under UV illuminates; **(b)** Stained by coomassie blue. Lane 1: Goat anti-mouse IgG; lane 2-6: QD-IgG conjugates; lane 7: Protein Marker. Molecular weights are marked on the side in kiloDalton (kDa). From lane 2 to lane 6, the molar ratio between QDs: EDC: NHS= 1:800:0; 1:800:800; 1:800:1600; 1:800:2400; 1:0:0 respectively.

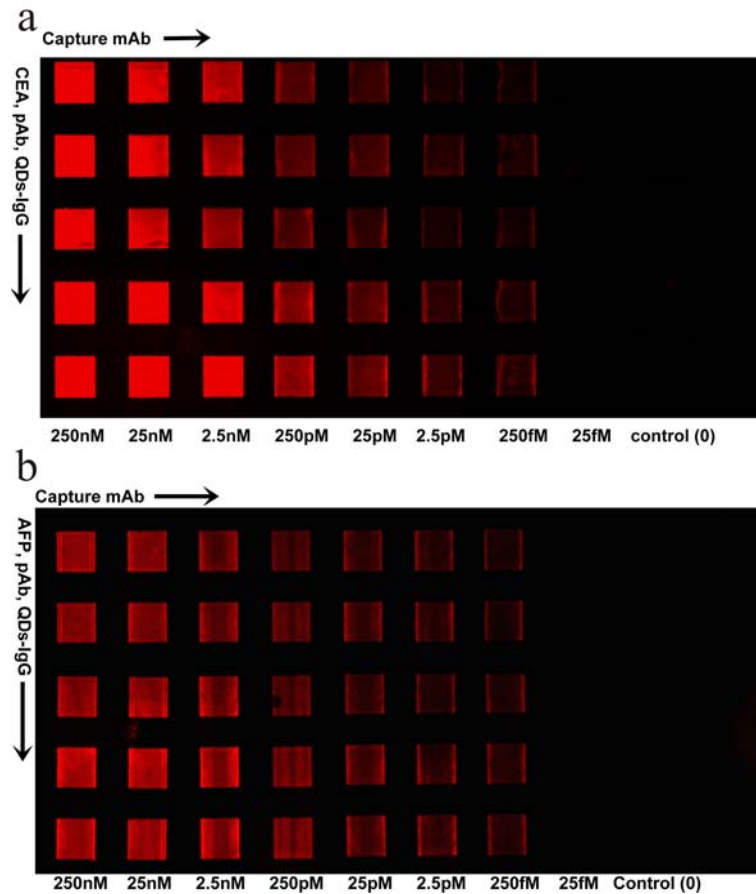


Figure S3. The fluorescent images of parallel detection of CEA (a) and AFP (b) samples (Concentrations of CEA and AFP ranged from 25 fM to 250 nM) in five parallel microfluidic channels were captured. Arrows indicate the flow directions.

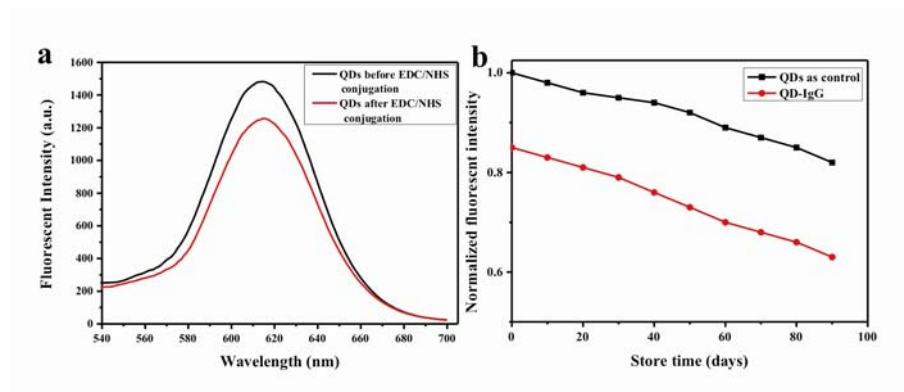


Figure S4 (a) The effect of covalent conjugation on the fluorescent intensity of QDs. The fluorescent spectra were recorded at QDs concentration of 100 nM excited at 520 nm. (b) The fluorescent stability of QDs (without bioconjugation as control) and QD-IgG. The fluorescent intensities were recorded at

QDs concentration of 100 nM excited at 520 nm with an interval of 10 days. The QDs and QD-IgG were stored at 4 °C in a dark.