

Supporting Information

Photoelectrochemical aptasensor for mucin 1 based on DNA/aptamer linking of quantum dots and TiO₂ nanotube arrays

Jiuying Tian, Tao Huang and Jusheng Lu*

*Jiangsu Key Laboratory of Green Synthetic Chemistry for Functional Materials,
School of Chemistry and Chemical Engineering, Jiangsu Normal University, Xuzhou
221116, People's Republic of China*

*Corresponding author at: School of Chemistry and Chemical Engineering, Jiangsu Normal University, 101 Shanghai Road, Xuzhou 221116, People's Republic of China.

E-mail: lujusheng@sina.com; Tel.: +86-516-83403165.

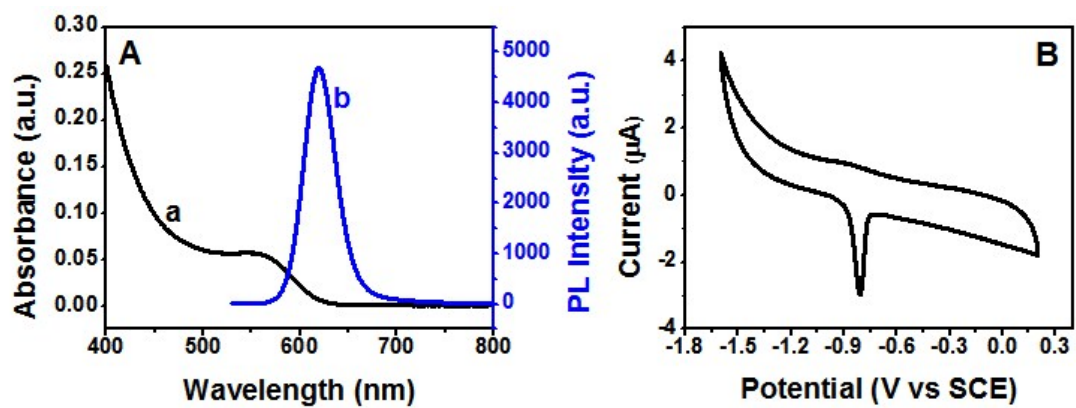


Fig. S1 (A) UV-vis spectra (a) and PL spectra (b) of CdTe QDs; (B) Cyclic voltammogram of

CdTe QDs in 10 mM anaerobic PBS solution (pH 7.4), scan rate, 0.1 V s^{-1} .

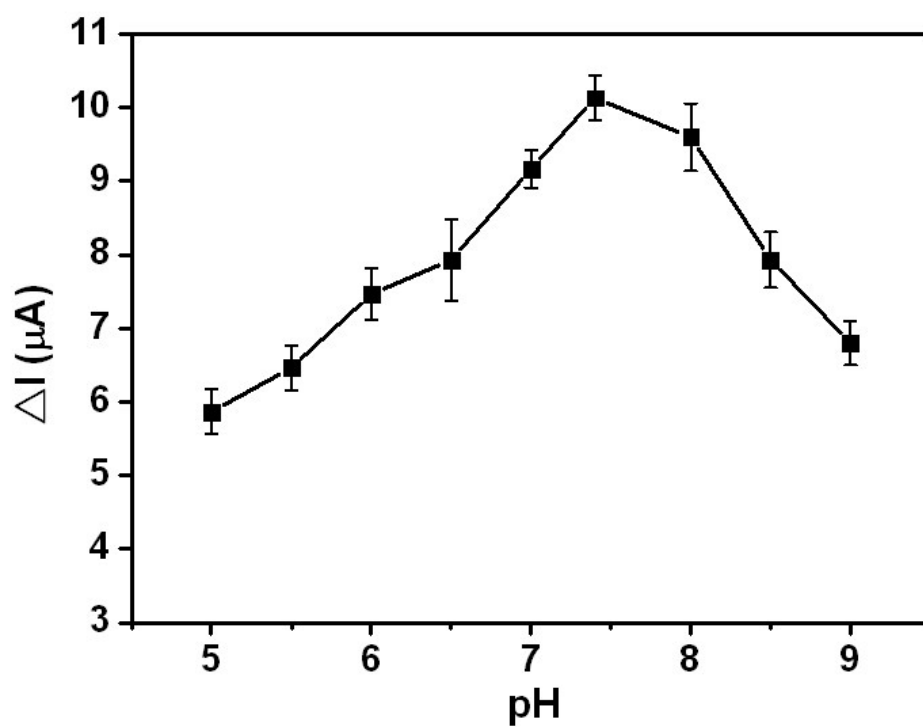


Fig. S2 Influence of pH value on the photocurrent response change ($\Delta I=I_0-I$) of the aptasensor when the aptasensor was immersed in the 10 mM PBS solution containing 100 nM MUC1.

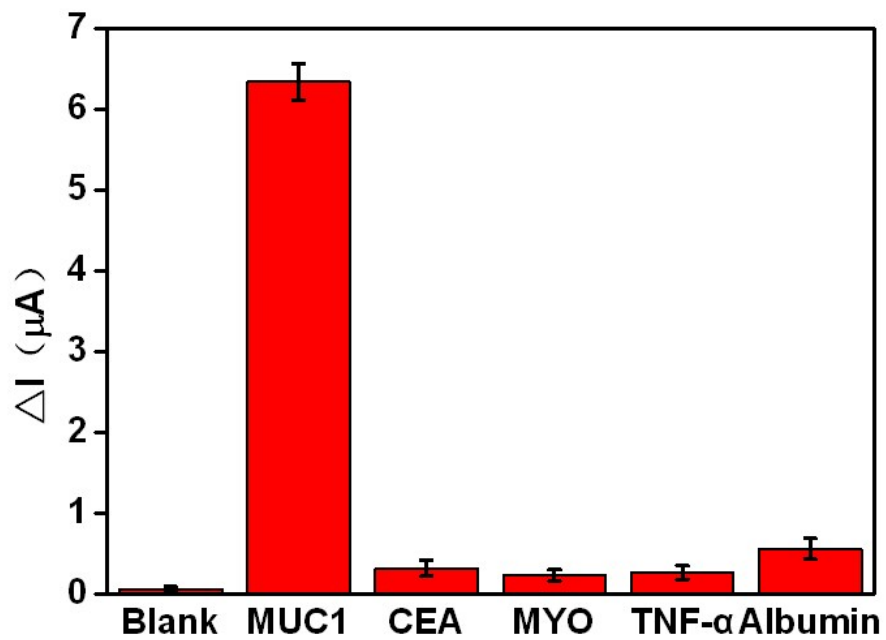


Fig. S3 The changes of the photocurrent response (ΔI) of the TiO_2 NT/aptamer/c-DNA@QD aptasensor after incubation with 10 nM of MUC1, 1 μM of CEA, 1 μM of MYO 1 μM of TNF- α , or 1 mM of albumin for 2 h.

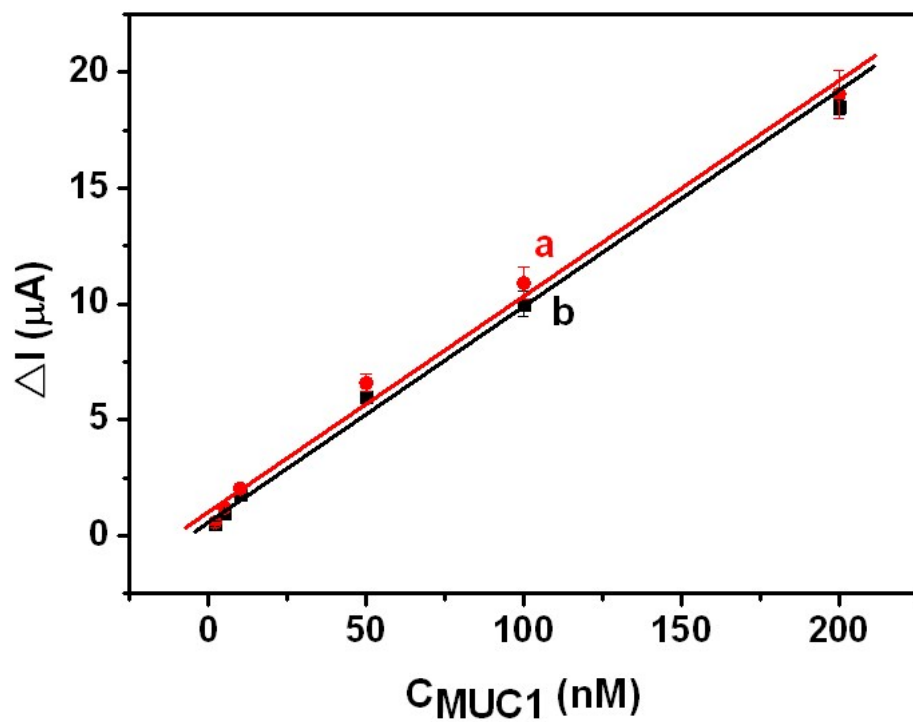


Fig. S4 Calibration curve of photocurrent response change of the aptasensor (ΔI) versus MUC1 concentration when the aptasensor was in the serum solution (a) or PBS solution (b).

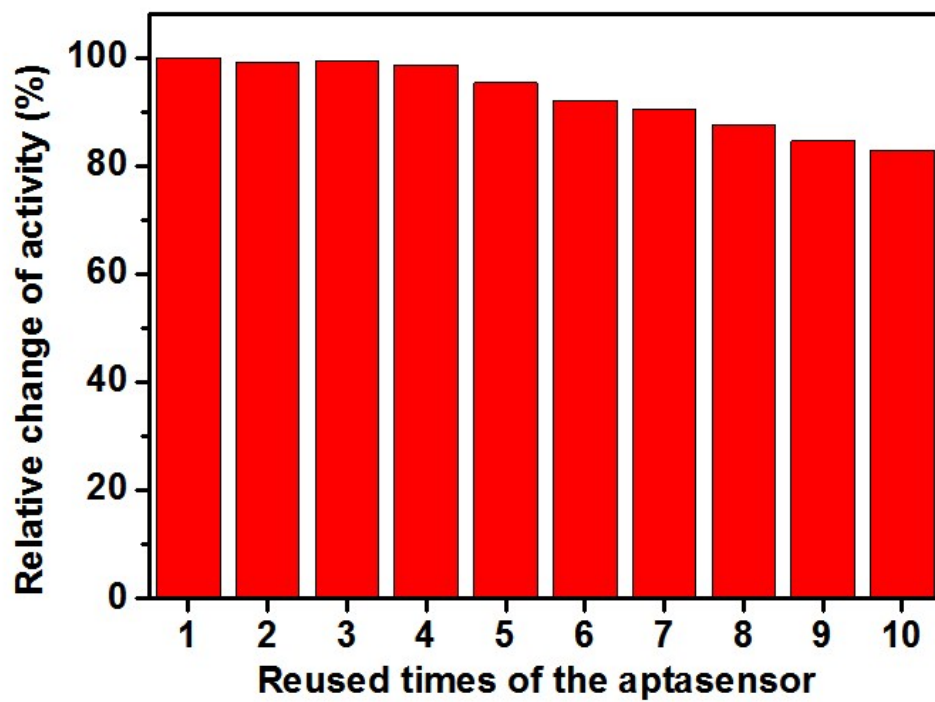


Fig. S5 Relative change of activity when the developed aptasensor was repeat used after regeneration.

Table S1 Determination of MUC1 added in healthy human serum with the proposed aptasensor

(mean \pm SD, n=6)

Sample ^a	Concentration of MUC1 detected (nM) ^b	Concentration of MUC1 added (nM)	Concentration obtained with aptasensor (nM)	Recovery (%)
Serum 1	Not detected	10	9.85 \pm 0.42	98.5
Serum 2	Not detected	50	51.4	102.8
Serum 3	Not detected	100	105.2 \pm 3.9	105.2

^a Human serum samples were provided by Xuzhou Central Hospital, P.R. China.

^b The measured value of the serum sample was diluted 20 times.