

Supporting Information for
A novel aptasensor based on MUC-1 conjugated CNSs for
ultrasensitive detection of tumor cells

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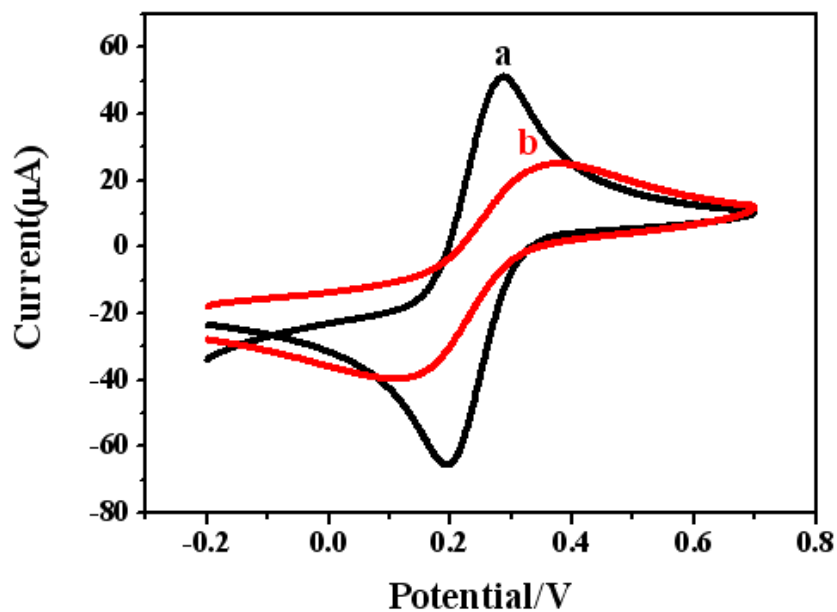


Fig. S1 Cyclic voltammetric response of GCE (a) and Aptamer/CNSs-COOH/GCE (b) in $[\text{Fe}(\text{CN})_6]^{3-/4-}$ (10 mM, 1:1) containing 1.0 M KCl solution.

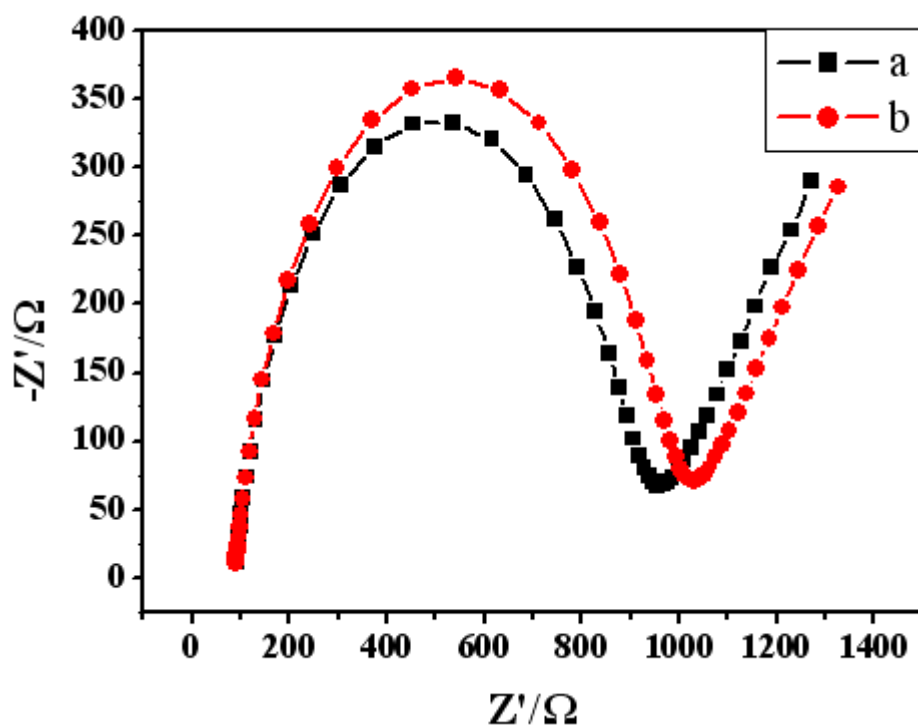


Fig. S2 Nyquist diagrams of electrochemical impedance spectra recorded from 0.1- 10^5 Hz for $[\text{Fe}(\text{CN})_6]^{3-/4-}$ (10 mM, 1:1) in 1.0 M KCl at Aptamer /CNSs-COOH fabricated aptasensor before (b) and after 15 days (a).

Table S1. The electron-transfer resistance and other fitting parameters for different modified electrodes measured by EIS and calculated by simplified Randles electrical circuit.

Electrode	R_s (Ω)	R_{et} (Ω)	C (nF)
GCE	90.6±0.5	142±1	768.3±1.0
CNSs-COOH/GCE	92.9±0.4	683.0±10.7	932.5±2.1
Apt/CNSs-COOH/GCE	97.9±1.3	891.0±15.2	710±3.6
DLD-1/Apt/CNSs-COOH/GCE	116±1.9	1682±18.2	720±6.4

Table S2. Experiment parameters of EIS

	Fig.3 (Fabrication process)	Fig. 5 (detection process)
Frequency scan	0.1-100000 Hz	0.1-100000 Hz
Amplitude	0.005 V	0.005 V
Set potential	0.251 V	0.251 V
Open circuit potential determination	0.251 V	0.251 V

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Table S3. MTT data with exposing to various concentrations of CNSs-COOH for 24h

C(mg/ml) Abs Value	0.25	0.5	1.0	1.25	对照(0)	空白
1	1.518	1.457	1.436	1.335	1.667	0.319
2	1.505	1.413	1.452	1.356	1.572	0.309
3	1.494	1.471	1.442	1.262	1.553	0.302
4	1.498	1.468	1.431	1.477	1.529	0.306
5	1.502	1.406	1.426	1.363	1.535	0.311
6	1.507	1.482	1.438	1.225	1.523	0.305

Table S4. MTT result with various concentrations of CNSs-COOH for 48 h.

C(mg/ml) Abs Value	0.25	0.5	1.0	1.25	对照(0)	空白
1	1.494	1.463	1.406	1.345	1.605	0.326
2	1.513	1.354	1.415	1.409	1.584	0.309
3	1.482	1.483	1.435	1.267	1.515	0.303
4	1.468	1.410	1.371	1.356	1.535	0.302
5	1.504	1.403	1.386	1.404	1.567	0.301
6	1.517	1.501	1.378	1.125	1.578	0.314