Electronic Supplementary Material (ESI) for Analytical Methods.

Aptamer-gold nanoparticles-signal probe bioconjugates amplify electrochemical signal for the detection of prostate specific antigen

Mengyao Li, Wenjuan Zhang and Yuzhong Zhang*

School of Chemistry and Materials Science, Anhui Key Laboratory of Chem-Biosensing, Anhui Normal University, Wuhu 241002, People's Republic of China

* Corresponding author. Tel: +86 553 3869303; Fax: +86 553 3869303

E-mail address: zhyz65@mail.ahnu.edu.cn (Y. Zhang)

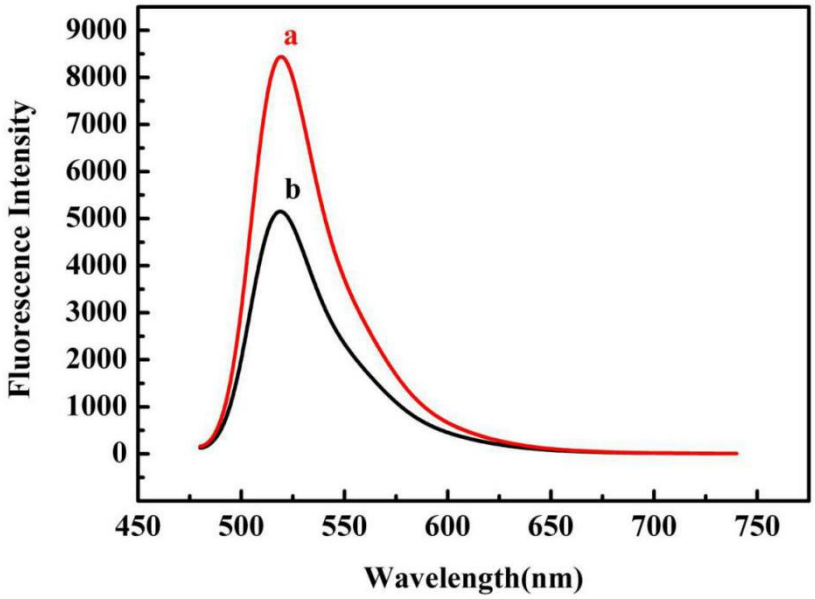

Fig.S1. Fluorescence curves of the unreacted signal sequence labeled with FAM in the supernate in absence (a)and and presence of Au NPs(C). $C_{Au\ NPs}$ =0.1 mg mL^{-1}

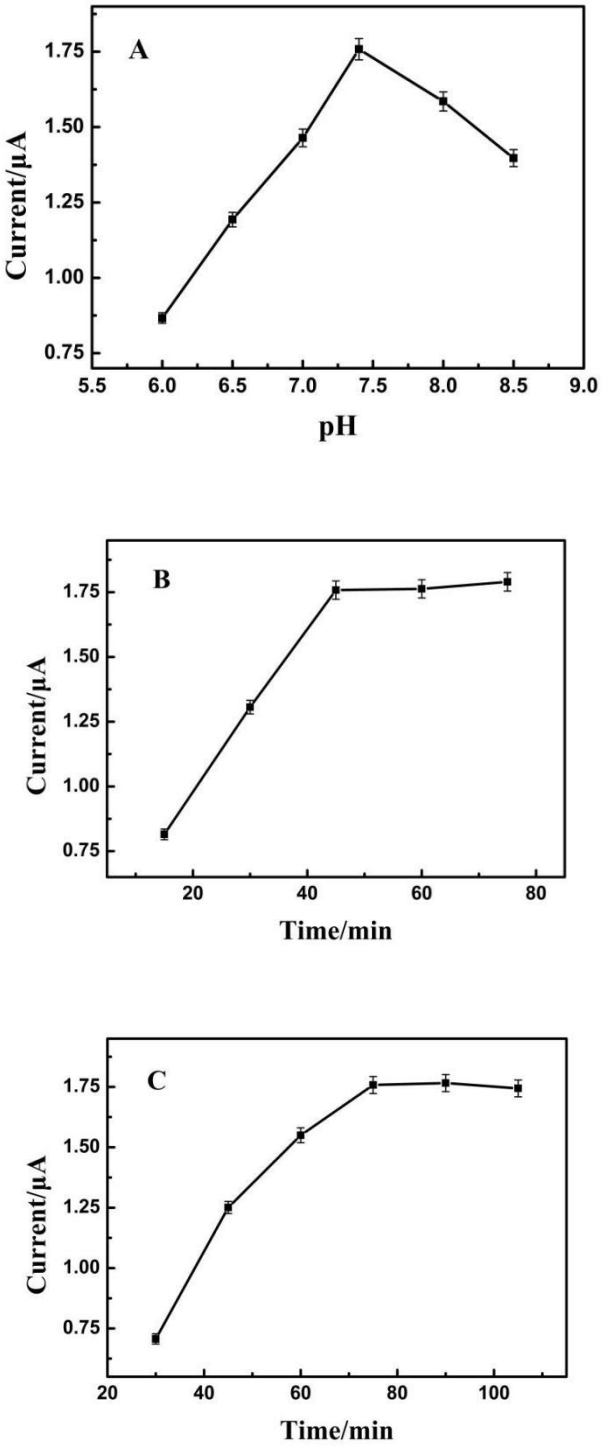

Fig S2 Optimization of experimental conditions (A) pH values; (B) The incubation time between Ab and PSA and (C) The incubation time between PSA and aptamer- Au NPs–signal probe. Conditions: C_{PSA}=1.0 ng mL^{-1} ; $C_{aptamer}$ = 1.0 μM

Detection method	Recognition element	Linear range (ng mL^{-1})	Detection limit (ng mL^{-1})	Analysis time (min)	References
Electrochemical	Aptamer	0.125 ~ 200	0.05	65	[8]
Electrochemical	Biotinated aptamer	0.25 ~ 200	0.25	50	[19]
Electrochemical	Antibody-antigen	0.0001 ~75	3.3×10^{-5}	160	[23]
Electrochemical	Antibody- Aptamer	0.05 ~ 100	0.017	110	[24]
Fluorescence	Dye-labeled aptamer	0.50 ~ 300	0.2	105	[29]
Electrochemical	Aminated aptamer	1 ~ 100	1.0	160	[30]
Electrochemical	Aptamer-MIP hybrid receptor	0.10 ~ 100	0.001	130	[31]
Electrochemical	Antibody	0.05 ~50	0.015	120	[32]
Electrochemical immunoassay	Antibody	0.01 ~ 10	0.002	120	[33]
Chemiluminescence	Dye-labeled aptamer	1.9 ~ 125	1.0	30	[34]
Colorimetric assay	PSA peptide	0.1 ~ 100	0.1	5	[35]
Surface plasmon resonance	Aptamer beacon	0.1 ~ 50	0.091	20	[36]
Electrochemical	Aptamer	1 ~ 300	0.28	50	[37]
Electrochemical	Antibody- Aptamer	0.001~75	3.0×10^{-3}	120	This work

Table S.1 Analytical performance of various analytical method of PSA