

Supporting Information

Polydopamine with tailorable photoelectrochemical activities for highly sensitive immunoassay of tumor markers

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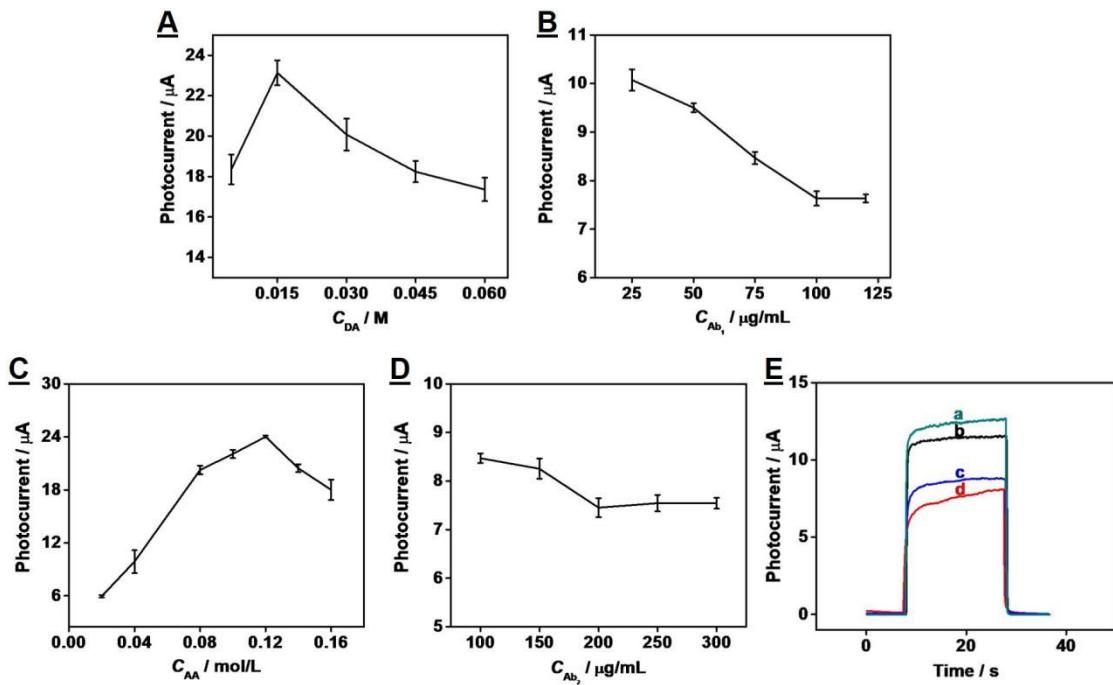


Figure S1. Effects of the concentration of (A) DA, (B) Ab_1 immobilized on the $\text{PDA}_{\text{film}}/\text{TiO}_2/\text{FTO}$, (C) AA, (D) and Ab_2 for constructing the $\text{PDA}-\text{Ab}_2$ bioconjugates, on the PEC response of the PEC immunosensor, and (E) the photocurrent responses of different photoelectrodes: (a) $\text{BSA}/\text{Ab}_1/\text{PDA}_{\text{film}}/\text{TiO}_2/\text{FTO}$, (b) $\text{CEA}/\text{BSA}/\text{Ab}_1/\text{PDA}_{\text{film}}/\text{TiO}_2/\text{FTO}$, (c) $\text{PDA}_{70}-\text{Ab}_2/\text{CEA}/\text{BSA}/\text{Ab}_1/\text{PDA}_{\text{film}}/\text{TiO}_2/\text{FTO}$, and (d) $\text{PDA}_{120}-\text{Ab}_2/\text{CEA}/\text{BSA}/\text{Ab}_1/\text{PDA}_{\text{film}}/\text{TiO}_2/\text{FTO}$, respectively.

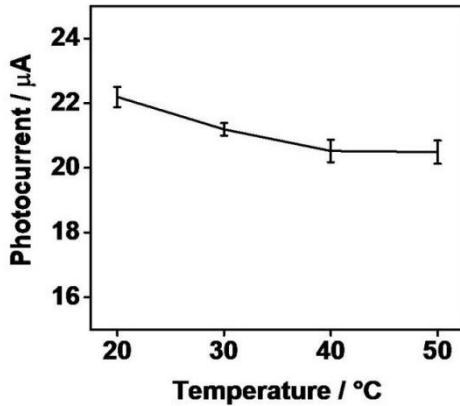


Figure S2. The photocurrent response of the $\text{PDA}_{\text{film}}/\text{TiO}_2/\text{FTO}$ at different temperatures. As the temperature increased from 20 to 50 °C, the photocurrent of the $\text{PDA}_{\text{film}}/\text{TiO}_2/\text{FTO}$ slightly decreased from 22.19 to 20.29 μA .

Table S1. Comparison of analytical performance of the PDA based PEC sensing strategy with the reported literatures.

PEC signal amplification tags	Linear range ($\text{ng}\cdot\text{mL}^{-1}$)	Detection limit ($\text{pg}\cdot\text{mL}^{-1}$)	Reference
HRP	$1.0\times10^{-4}\sim50$	0.037	(1)
his- Fe_3O_4	$5.0\times10^{-5}\sim1.0$	0.018	(2)
CuO NP	$1.0\times10^{-2}\sim50$	1.2	(3)
nPCN-224	$1.0\times10^{-3}\sim10$	0.560	(4)
$\text{SiO}_2/\text{PDA-Au}$	$1.0\times10^{-4}\sim10^2$	0.03	(5)
SiO_2/ALP	$1.0\times10^{-3}\sim10^2$	0.03	(6)
$\text{CdSe}/\text{BiVO}_4$	$1.0\times10^{-2}\sim50$	0.5	(7)
$\text{PDA}_{\text{sphere}}/\text{PDA}_{\text{film}}$	$1.0\times10^{-4}\sim10^3$	0.04	This method

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