Supporting Information

Fabrication of bifunctional G-quadruplex-hemin DNAzymes for colorimetric detection of apurinic/apyrimidinic endonuclease 1 and microRNA-21

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1. Optimization of incubation time.

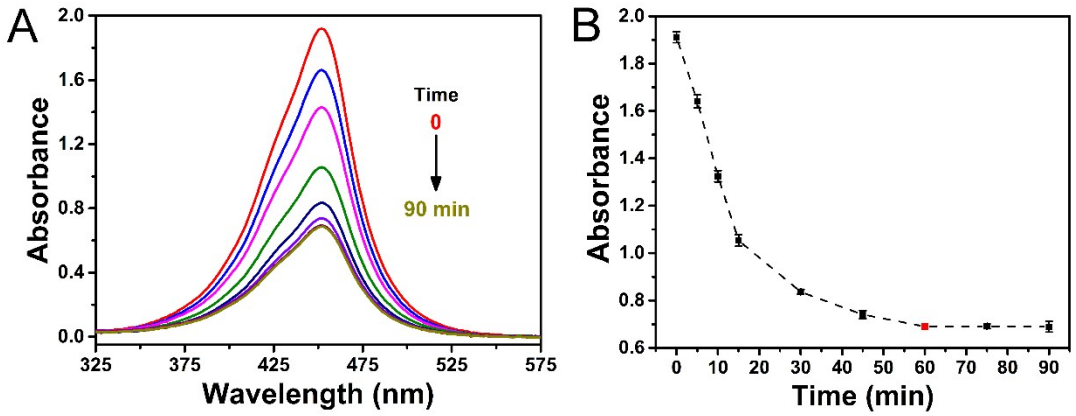

Figure S1. (A) UV-vis absorption spectra of G-DNAzymes in TMB-H_2O_2 reaction system with different incubation time of APE1 from 0 to 90min. (B) $A_{450\ nm}$ of UV-vis absorption spectra as a function of incubation time.

2. Comparison of different APE1 biosensors.

Table S1. Comparison of analytical performances of different APE1 biosensors.

Method	Probe	Linear range	Limit of detection	References
Electrochemistry	Au nanoparticles decorated graphene nanosheets	0.1 - 80 pg/mL	0.04 pg/mL	S1
Electrochemistry	Ni-Au nanochains	0.01 - 100 pg/mL	3.9 fg/mL	S2
Electrochemiluminescence	Ru (II) complex functionalized coil-like nanocomposite	0.001 - 1 pg/mL	0.3 fg/mL	S3
Fluorescence	Double-strand DNA binding dye	0.024 - 2 U/mL	0.024 U/mL	S4
Fluorescence	DNA tetrahedrons	5 - 80 pM	5 pM	S5
Fluorescence	Double-loop frayed-end chimeric fluorescent probe	0.1 - 5.0 U/mL	0.1 U/mL	S6
Colorimetry	G-DNAzyme	2.5 - 22.5 U/mL	1.8 U/mL	This work

3. Comparison of different miRNA-21 biosensors.

Table S2. Comparison of analytical performances of different miRNA-21 biosensors.

Method	Probe	Linear range	Limit of detection	References
Electrochemistry	Hairpin DNA immobilized on magnetic beads	2.5 fM - 25 nM	0.12 fM	S7
Electrochemiluminescence	DNA scissors	0.5 fM - 10 pM	0.17 fM	S8
Electrochemiluminescence	Copper nanoclusters	100 aM - 100 pM	19.05 aM	S9
Photoelectrochemistry	Bi_2WO_6@Bi_2S_3 and alkaline phosphatase	1 fM - 1 nM	0.26 fM	S10
SERS	Au-decorated silicon nanowire arrays substrate	1.0 fM - 10.0 nM	0.34 fM	S11
Fluorescence	G-quadruplexes and silver nanoclusters	10 nM - 400 nM	0.45 nM	S12
Fluorescence	MoS_2 nanosheets	100 fM - 1 nM	75.6 aM	S13
Colorimetry	Hairpin DNA and gold nanoparticles	10 pM - 1 μM	0.89 pM	S14
Colorimetry	G-DNAzyme	100 fM - 10 nM	73 fM	This work

4. References

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