Supporting Information

Symmetric exponential amplification reaction based DNA nanomachine for the fluorescent detection of nucleic acids

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Table S1. All the oligonucleotide sequences involved in this study.

Sequence Name	oligonucleotide sequences (5'-3')
P-HP6	CCCGCCCTACCCACCTCAGCGTGCTGCAGAGACCGGCGCACAGAGCCTCAGCACGCGT
P-HP8	CCCGCCCTACCCACCTCAGCGCGTAGCCAGAGACCGGCGCACAGAGCCTCAGCTACGCGTA
P-HP10	CCCGCCCTACCCACCTCAGCGTAAGCCAGAGACCGGCGCACAGAGCCTCAGCTTACGCGTAA
Target DNA	TTCCTCTGTGCGCCGGTCTCTCCT
MT1	TTCCTCTGTGCGCCGGTCTATCCT
MT2	TTCCTCTGTGCGCCAGTCTATCCT
MT3	TTCCTCTGTACGCCAGTCTATCCT
NC	AGAGGTAGTAGGTTGCATAGTTGA
SP	CCCGCCCTACCCACCTCAGCAGGAGAGACCGGCGCCTCAGCAGGAGAGACCGGCGCTT
The produced G-triplex fragment	TGAGGGGGCGGGATGGGT

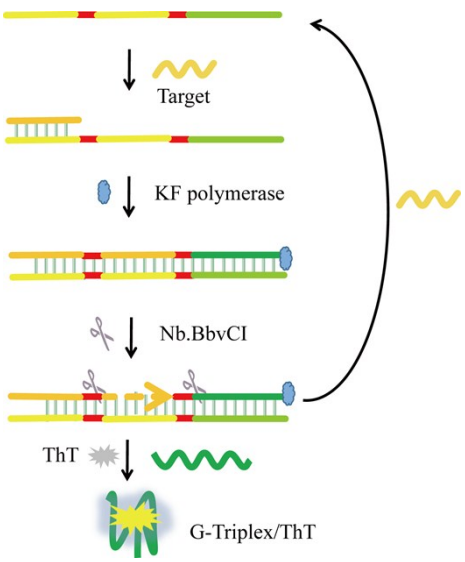

Fig. S1. Schematic of the classical exponential amplification reaction (EXPAR).

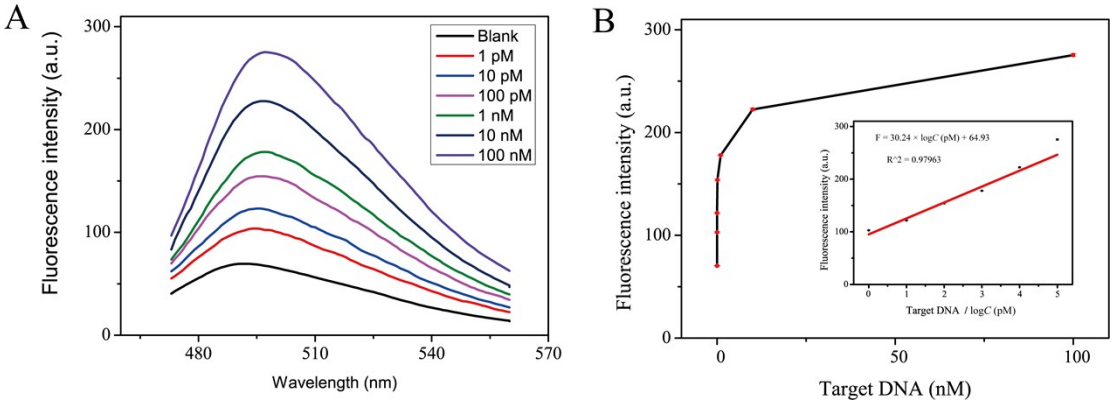

Fig. S2. Capability of classical EXPAR based DNA nanomachine to quantify target DNA. (A) Fluorescence spectra of various concentrations of target DNA (0 , 1 pM, 10 pM, 100 pM, 1 nM, 10nM and 100 nM). (B) The dose-response curves of fluorescence intensity and various concentrations of target DNA. (Inset) The linear correlation between fluorescence intensity and the logarithm of target DNA concentration.

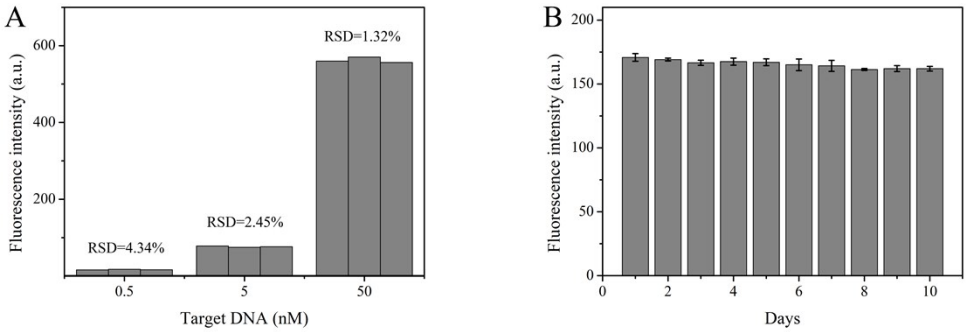

Fig. S3. (A) Reproducibility of the proposed sensor among three times detection in different concentration of target samples. (B) Stability of the proposed sensor during 10 days storage at 4℃. The error bars represent the standard deviations of three parallel experiments for each concentration of target DNA.

Table S2. Comparison of the proposed method for nucleic acids detection and those reported in literature.

Methods	Detection modes	Sensitivity	Linear range	References
EXPAR	Fluorescence	91 pM	0.5 nM - 50 nM	[1]
P-MB based SDA	Fluorescence	100 pM	0.1 nM - 75 nM	[2]
Dual-CNDP based EXPAR	Fluorescence	50 pM	0.05 nM - 150 nM	[3]
DFA-machine	Colorimetric	10 pM	0.01nM - 150 nM	[4]
Reverse-SDA	Fluorescence	1 nM	1 nM - 100 nM	[5]
DHMB-based SDA	Colorimetric	4 pM	4 pM - 400 nM	[6]
MI-MB-based system	Fluorescence	0.5 nM	0.5 nM - 400 nM	[7]
Toehold mediated SDA	Fluorescence	0.08 nM	0.08 nM - 200 nM	[8]
N-RCA and S-SDA	Fluorescence	5 pM	5 pM - 20 nM	[9]
S-EXPAR	Fluorescence	10 pM	10 pM - 300 nM	This work

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