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Parallel $[TG(GA)_3]_n$-homoduplexes/thioflavin T: An intense and stable fluorescent indicator for label-free biosensing

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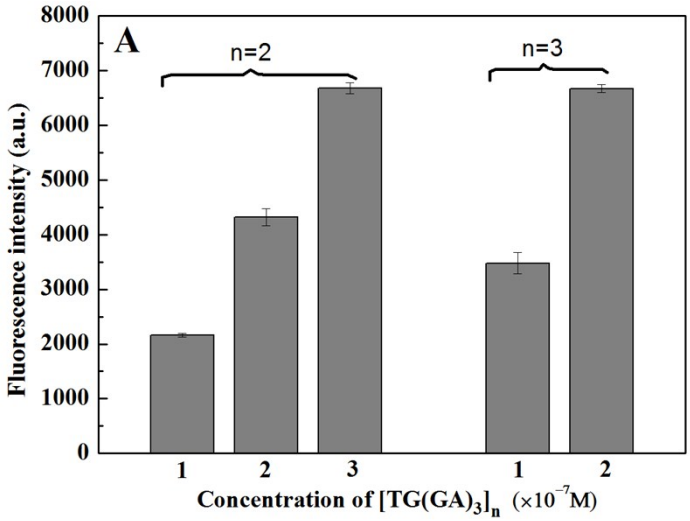
Table S1 Sequence of the used oligonucleotides

Name	Sequence (5'-3')
$(GA)_{10}$	GA GA GA GA GA GA GA GA GA GA
$(GA)_{10}TG$	GA GA GA GA GA GA GA GA GA GA TG
$(GA)_{10}TGTG$	GA GA GA GA GA GA GA GA GA GA TGTG
$TG(GA)_{10}$	TG GA GA GA GA GA GA GA GA GA GA
$TGTG(GA)_{10}$	TGTG GA GA GA GA GA GA GA GA GA GA
$TG(GA)_{10}GT$	TGGA GA GA GA GA GA GA GA GA GA GT
$TG(GA)_{10}TG$	TGGA GA GA GA GA GA GA GA GA GA TG
$[TG(GA)_5]_2$	TG GAGAGAGAGA TG GAGAGAGAGA
$(GA)_5$	GAGAGAGAGA
$(GA)_5TG$	GAGAGAGAGA TG
$TG(GA)_5$	TG GAGAGAGAGA
$TG(GA)_5TG$	TG GAGAGAGAGA TG
$[(GA)_5TG]_2$	GAGAGAGAGA TG GAGAGAGAGA TG
$[(GA)_5TG]_2TG$	GAGAGAGAGA TG GAGAGAGAGA TG TG
$TG[GA]_2TG[GA]_2$	TG GAGA TG GAGA
$TG[GA]_3TG[GA]_3$	TG GAGAGA TG GAGAGA
$TG[GA]_4TG[GA]_4$	TG GAGAGAGA TG GAGAGAGA
$TG[GA]_5TG[GA]_5$	TG GAGAGAGAGA TG GAGAGAGAGA
$TG[GA]_6TG[GA]_6$	TG GAGAGAGAGAGA TG GAGAGAGAGAGA
$TG[GA]_7TG[GA]_7$	TG GAGAGAGAGAGAGA TG GAGAGAGAGAGAGA
$TG[GA]_8TG[GA]_8$	TG GAGAGAGAGAGAGAGA TGGAGAGAGAGAGAGAGA
$TG[GA]_9TG[GA]_9$	TG GAGAGAGAGAGAGAGAGA TG GAGAGAGAGAGAGAGAGA
$TG[GA]_{10}TG[GA]_{10}$	TG GAGAGAGAGAGAGAGAGAGA TG GAGAGAGAGAGAGAGAGAGA
$[TG(GA)_3]_2$	TGGAGAGA TGGAGAGA
$[TG(GA)_3]_3$	TGGAGAGA TGGAGAGA TGGAGAGA
$[TG(GA)_3]_4$	TGGAGAGA TGGAGAGA TGGAGAGA TGGAGAGA
$[TG(GA)_3]_5$	TGGAGAGA TGGAGAGA TGGAGAGA TGGAGAGA TGGAGAGA
$[TG(GA)_3]_6$	TGGAGAGA TGGAGAGA TGGAGAGA TGGAGAGA TGGAGAGA TGGAGAGA

C-[TG(GA)$_3$]$_3$	TCT CTC CAT CTC TCC ATC TCT CCA
G4	AGGG TTAGGG TTAGGG TTAGGG TTAGGG
miRNA-21	UAG CUU AUC AGA CUG AUG UUG A
ps-Template	TCTCTCCATCTCTCCATCTCTCCATCTTGACTCTCAACATCAGTC TGATAAGCTA-phosphate
G4-Template	CCCTAACCCTAACCCTAACCCTTCTTGACTCTCAACATCAGTCT GATAAGCTA-phosphate



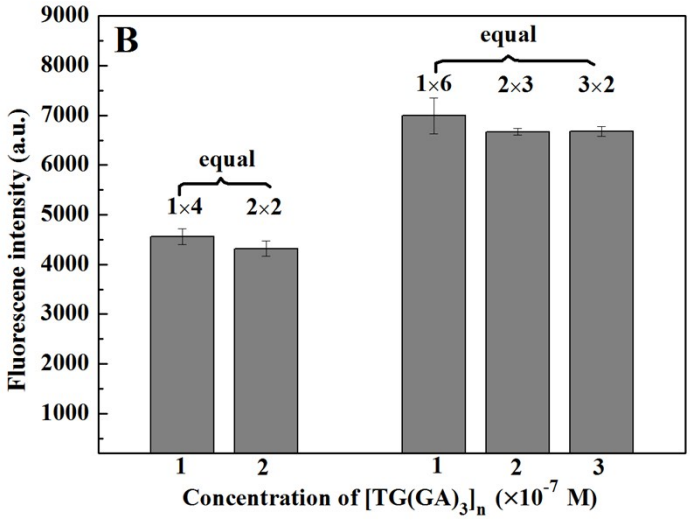


Figure S1. (A) The fluorescence intensity variation of $[TG(GA)_3]_n$/ThT with the increasing concentration of $[TG(GA)_3]_n$; (B) Comparison of the fluorescence intensity of $[TG(GA)_3]_n$/ThT when C × n (where C is the concentration of $[TG(GA)_3]_n$, and n is the number of $TG(GA)_3$ motifs) is equal.

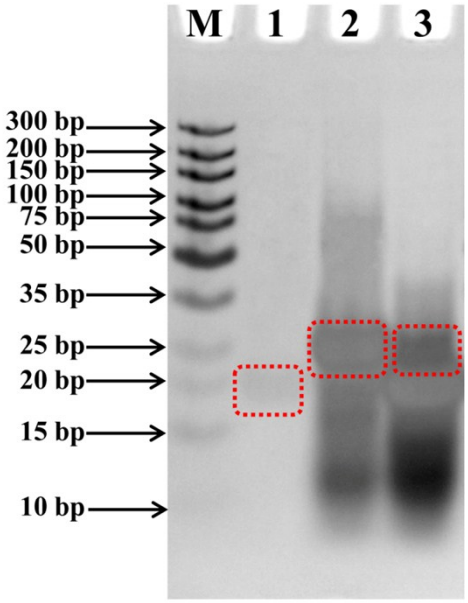


Figure S2 Polyacrylamide gel electrophoresis verification of the structure of parallel $[TG(GA)_3]_3$ homoduplex in 5 mM Tris-HCl (7.4), 20 mM Mg^{2+} buffer. Lane M: Marker; Lane 1: C-$[TG(GA)_3]_3$; Lane 2: The mixture of C-$[TG(GA)_3]_3$ and $[TG(GA)_3]_3$; Lane 3 : $[TG(GA)_3]_3$.

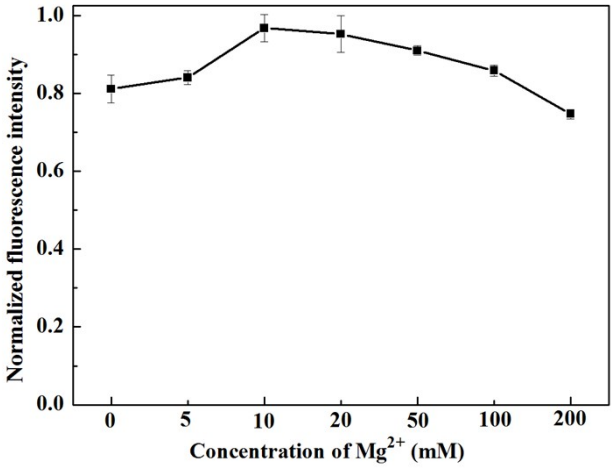


Figure S3 The fluorescence intensity change of [TG(GA)3]3/ThT with the increase concentration of Mg^{2+}. Experimental condition: 100 nM DNA strands, 20 μM ThT in 5 mM Tris-HCl (pH=7.4).

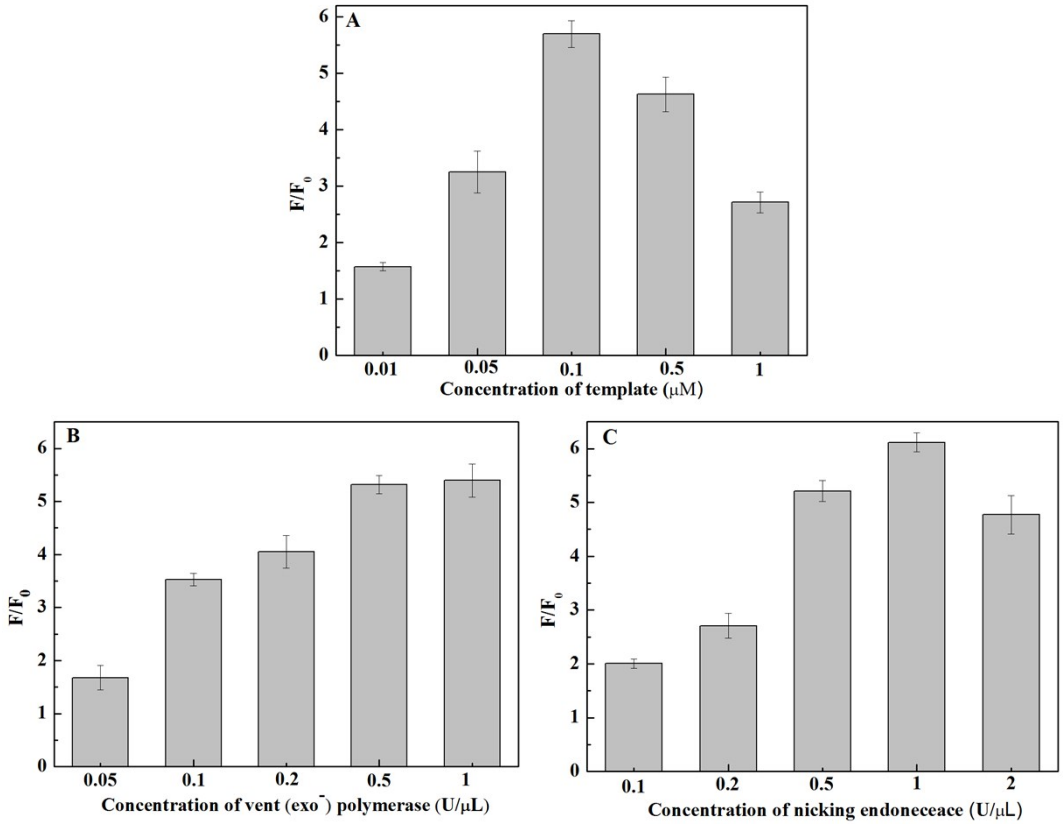


Figure S4. Effects of EXPAR reaction conditions on the sensitivity of $[TG(GA)_3]_3$ system: (A) concentration of template, (B) amount of Vent (exo-) polymerase, (C) amount of Nt.BstNBI.

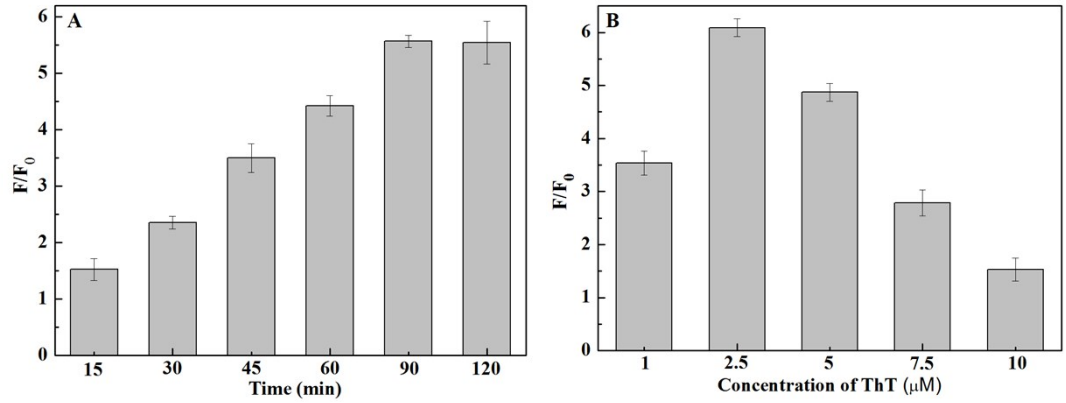


Figure S5. Effects of time (A) and ThT concentration (B) on the sensitivity of $[TG(GA)_3]_3$/ThT–EXPAR system.

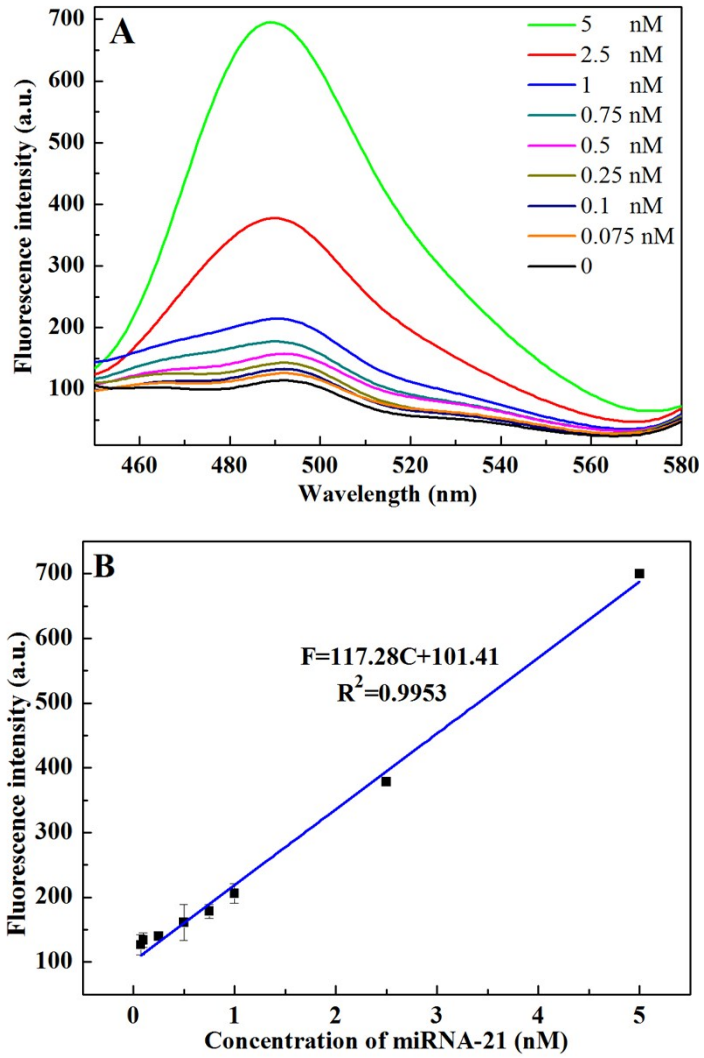


Figure S6. (A) Fluorescence spectra of the $[TG(GA)_3]_3$/ThT–EXPAR strategy system in the presence of miRNA-21 with concentrations from 0 to 5 nM; (B) The calibration curve between fluorescence intensity at 490 nm and miRNA-21 concentrations.

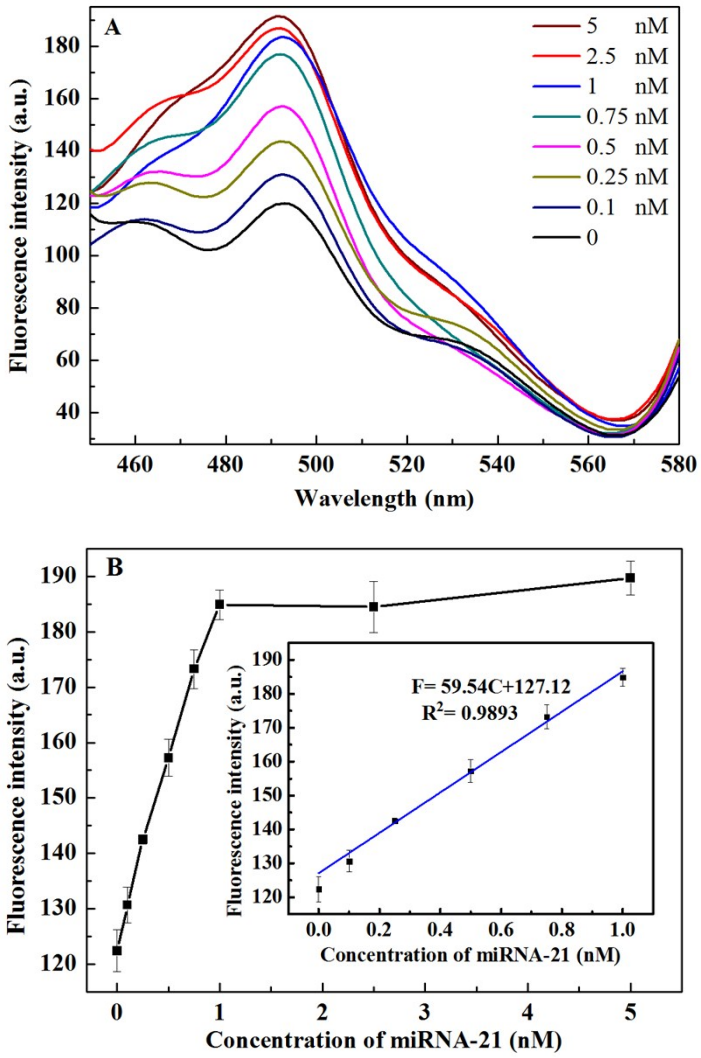


Figure S7. (A) Fluorescence emission spectra of G_4/ThT–EXPAR strategy in the presence of miRNA-21 concentrations from 0 to 5 nM; (B) The calibration curve between fluorescence intensity and the concentration of miRNA.