

Supplementary Information

Sensitive mutant DNA biomarkers detection based on magnetic nanoparticles and nicking endonuclease assisted fluorescence signal amplification

Na Li, Zhong Feng Gao, Bei Hua Kang, Nian Bing Li,* and Hong Qun Luo*

Key Laboratory of Eco-environments in Three Gorges Reservoir Region (Southwest University), Ministry of Education, School of Chemistry and Chemical Engineering, Chongqing 400715, China. E-mail address: linb@swu.edu.cn, luohq@swu.edu.cn; fax: +86-23- 68253237; Tel: +86-23-68253237

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Table S1 Sequence of oligomers used in this study

Oligonucleotide	Sequence (5' to 3') description ^a
Hairpin capture probe (HP)	biotin- <i>CCACG</i> <u>GGATC</u> TGAC↓TGTCGTGG-FITC
Mutant human p53 gene target (T)	ACAGTCAGATCC
Single-base mismatched sequence (T1)	ACAGTCAAATCC
Three-base mismatched sequence (T3)	GCAGTCTGAACC
Five-base mismatched sequence (T5)	GCATTCTGAGCT
Non-complementary sequence (nDNA)	GGTTCTGACAGA

^a The HP contains three functional regions: (1) two italic parts at the ends represent the complementary sequences of the stem arm; (2) the bold sequence is complementary to the target DNA; (3) **GGATC** is the recognition sequence of Nt.AlwI enzyme, and the arrow indicates the nicking position.

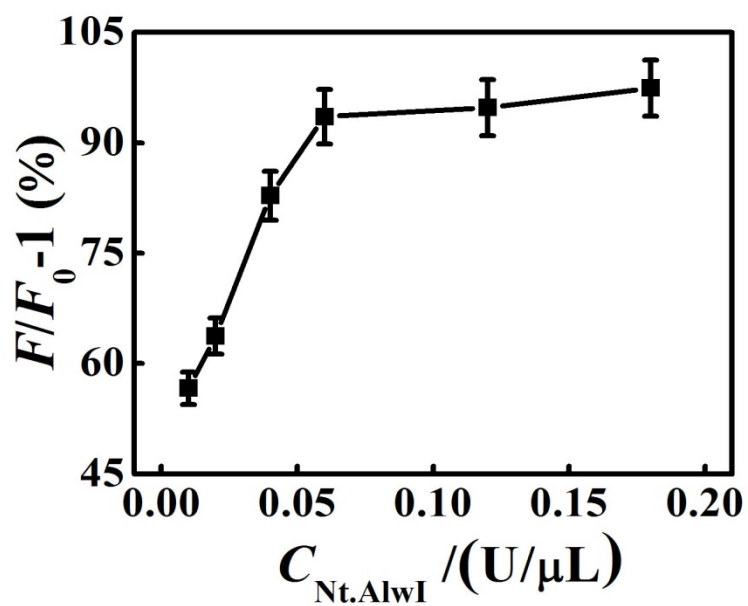


Fig. S1 Effect of the Nt.AlwI enzyme concentration, $C_{\text{Nt.AlwI}}$, on fluorescence signal increase percentage ($F/F_0 - 1$). Concentrations: MNPs (0.4 mg/mL), hairpin DNA (7.0×10^{-8} mol/L), the mutant target DNA (8.0×10^{-12} mol/L).

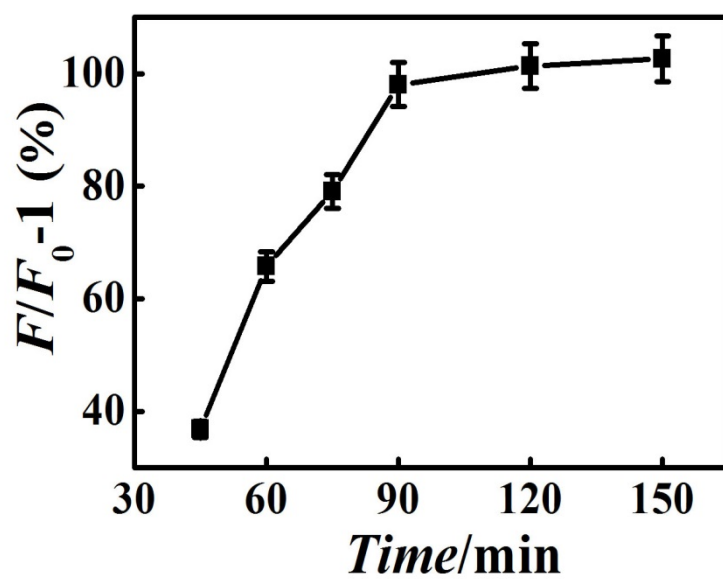


Fig. S2 Effect of incubation time on fluorescence signal increase percentage ($F/F_0 - 1$).

Concentrations: MNPs (0.4 mg/mL), hairpin DNA (7.0×10^{-8} mol/L), the mutant target DNA (8.0×10^{-12} mol/L), Nt.AlwI enzyme (0.06 U/ μ L).

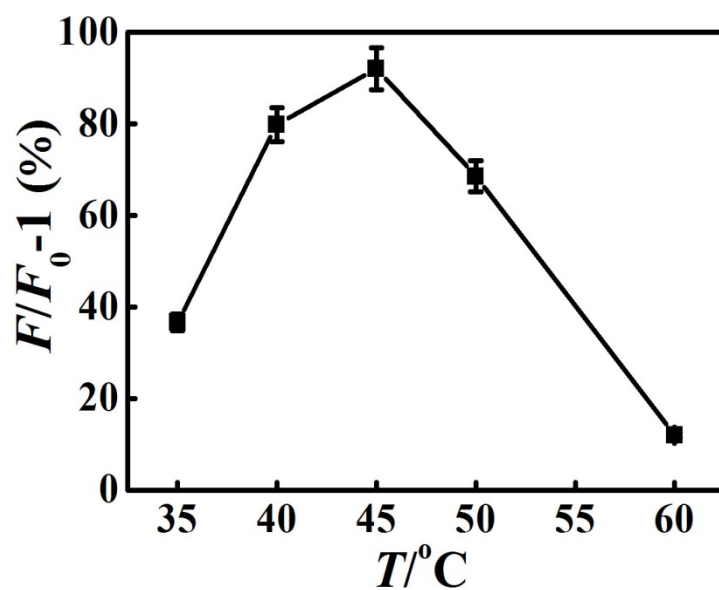


Fig. S3 Effect of incubation temperature on fluorescence signal increase percentage ($F/F_0 - 1$). Concentrations: MNPs (0.4 mg/mL), hairpin DNA (7.0×10^{-8} mol/L), the mutant target DNA (8.0×10^{-12} mol/L), Nt.AlwI enzyme (0.06 U/ μ L).