Electronic Supplementary Information (ESI)

Fidelity quantification of mercury(II) ion via circumventing biothiols-induced sequestration in enzymatic amplification system

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The authors declare no competing financial interest.

Results and Discussion

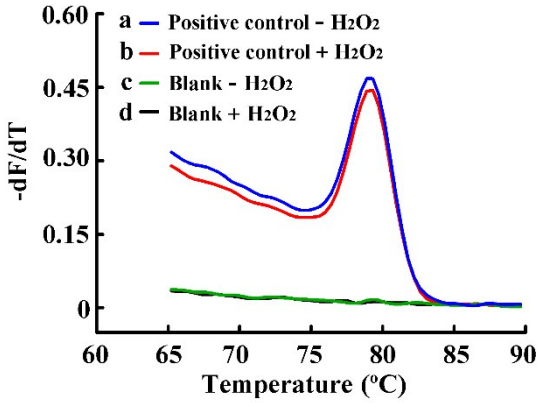

Fig. S1. The melting curve analysis of polymerase reaction in the presence of 20 nM complementary primer (positive control) before (a) and after (b) the addition of H_2O_2 (0.01%), with corresponding blank controls without primer (c, d), respectively.

$$RS^- + H_2O_2 \longrightarrow RSOH + H_2O_2 \qquad (1)$$

$$RSOH + RSH \longrightarrow RSSR + H_2O \qquad (2)$$

Fig. S2. The mechanism of the redox reaction between H_2O_2 and biothiol. H_2O_2 reacts with biothiol to produce sulfenic acid (Reaction 1) initially, and reaction with excess biothiol to give the disulfide (Reaction 2) immediately occurs next.

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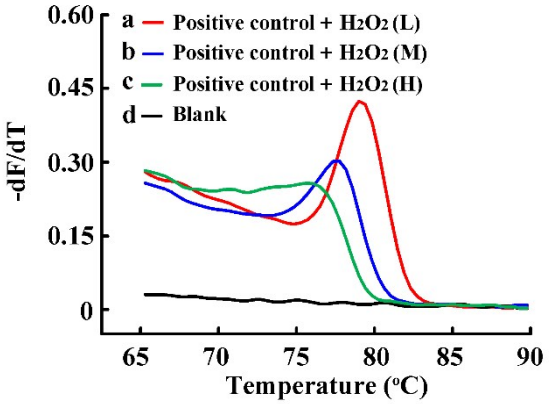

Fig. S3. The melting curve analysis of polymerase reaction in the presence 20 nM complementary primer (positive control) after the addition of H_2O_2 with low (0.01%, a), medium (1%, b) and high (2%, c) concentration, with corresponding blank controls without primer (d), respectively. The bracketed capital letters represent the low, medium and high concentration of H_2O_2, respectively.

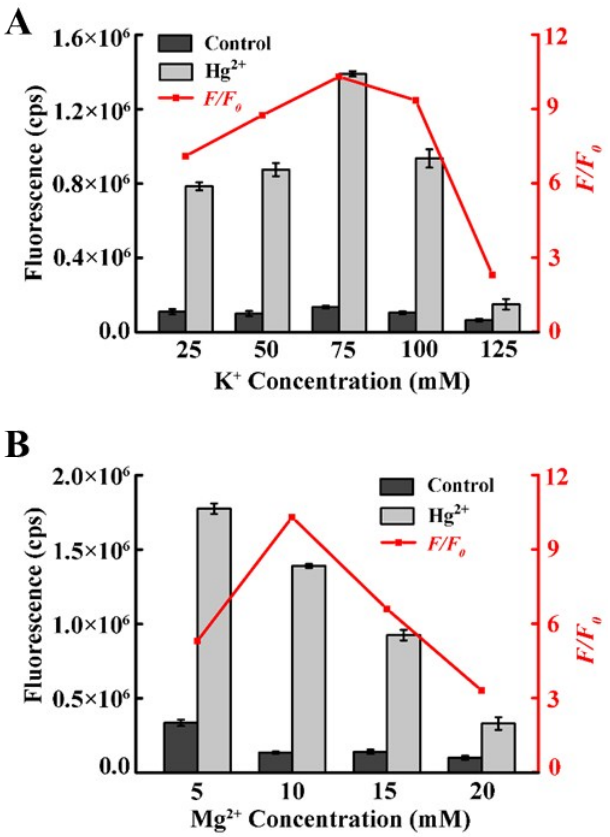

Figure S4. The effect of potassium ion (A), magnesium ion (B) concentration on the fluorescence response of the sensing system, respectively.

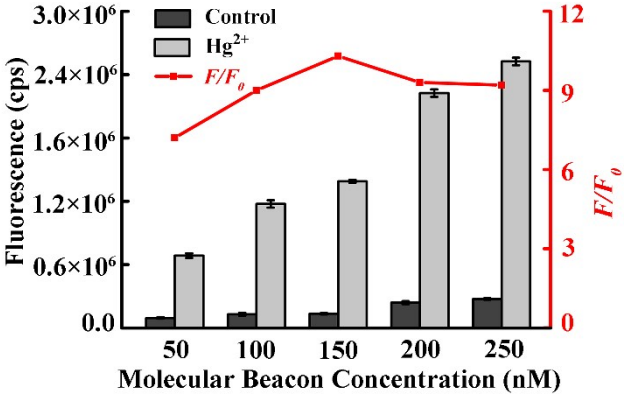

Figure S5. The effect of molecular beacon concentration on the fluorescence response of the sensing system.

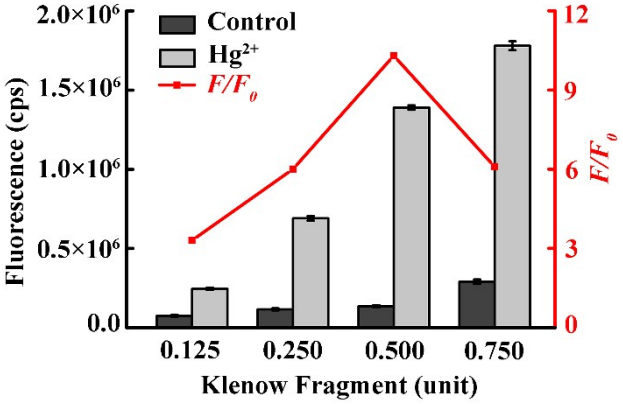

Figure S6. The effect of Klenow Fragment concentration on the fluorescence response of the sensing system.

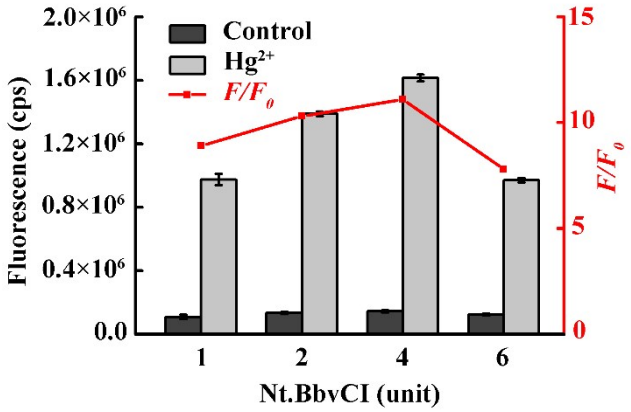

Figure S7. The effect of Nt.BbvCI concentration on the fluorescence response of the sensing system.