

## Supporting information

### A double stranded Aptamer for high-sensitive fluorescent detection of Glutathione S-transferases

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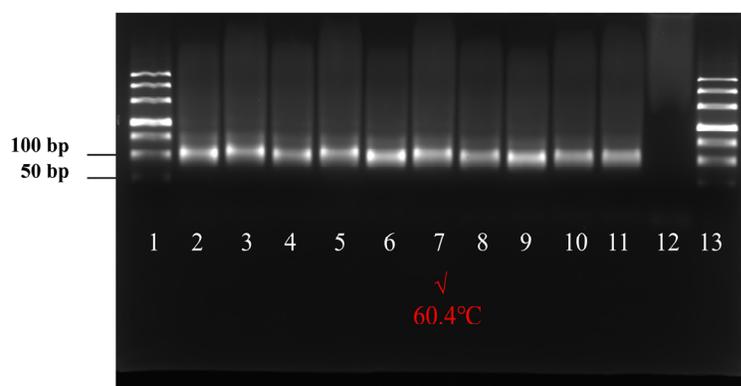
Figure S1. Gel electrophoresis images of PCR annealing temperature.

Figure S2. Optimization of the number of PCR cycles and validation of batch amplified products.

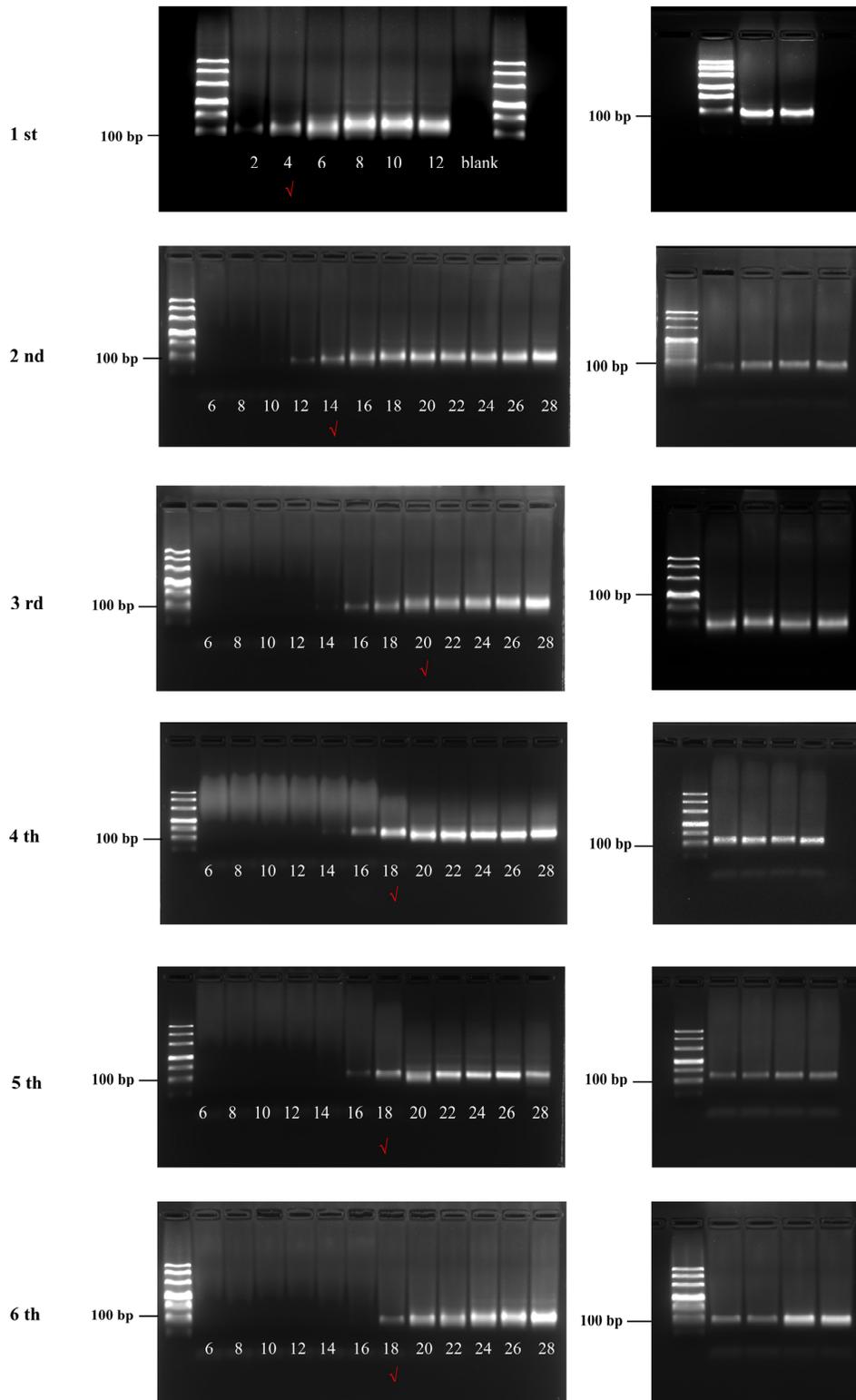
Figure S3. Homology analysis of candidate sequences using Clustal X. Sequence.

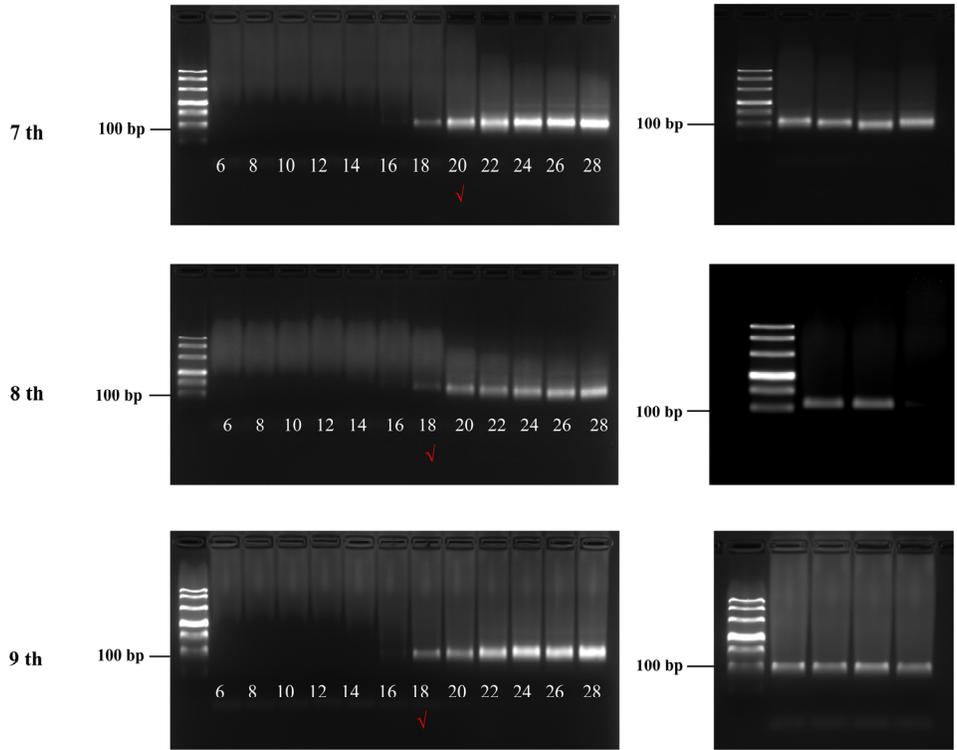
Figure S4. Binding of candidate sequences to S100A9/GST protein.

Figure S5. The secondary structures of four selected aptamers.

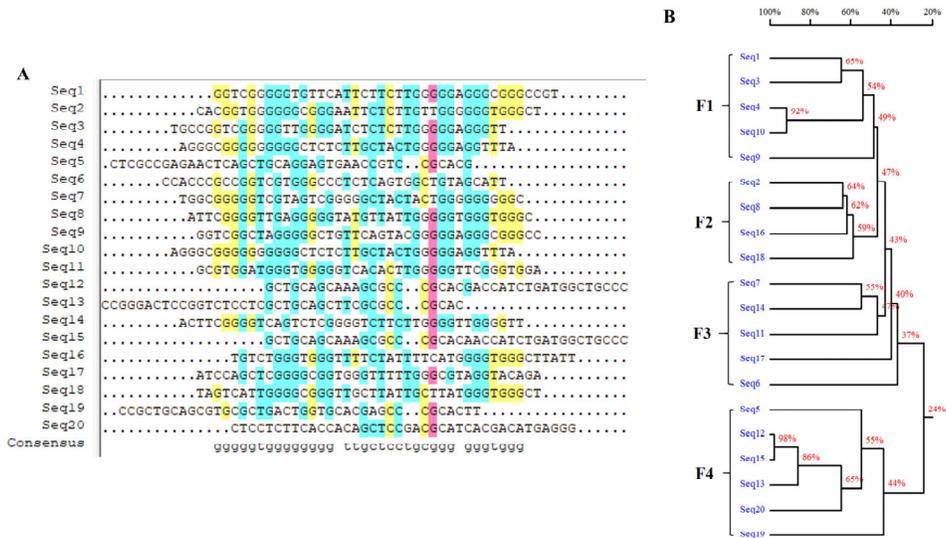


**Figure S1.** Gel electrophoresis images of PCR annealing temperature. 1-13: DNA Marker, 55.2°C, 55.8°C, 56.7°C, 57.8°C, 59.1°C, 60.4°C, 61.7°C, 62.9°C, 63.9°C, 64.6°C, blank, DNA Marker.

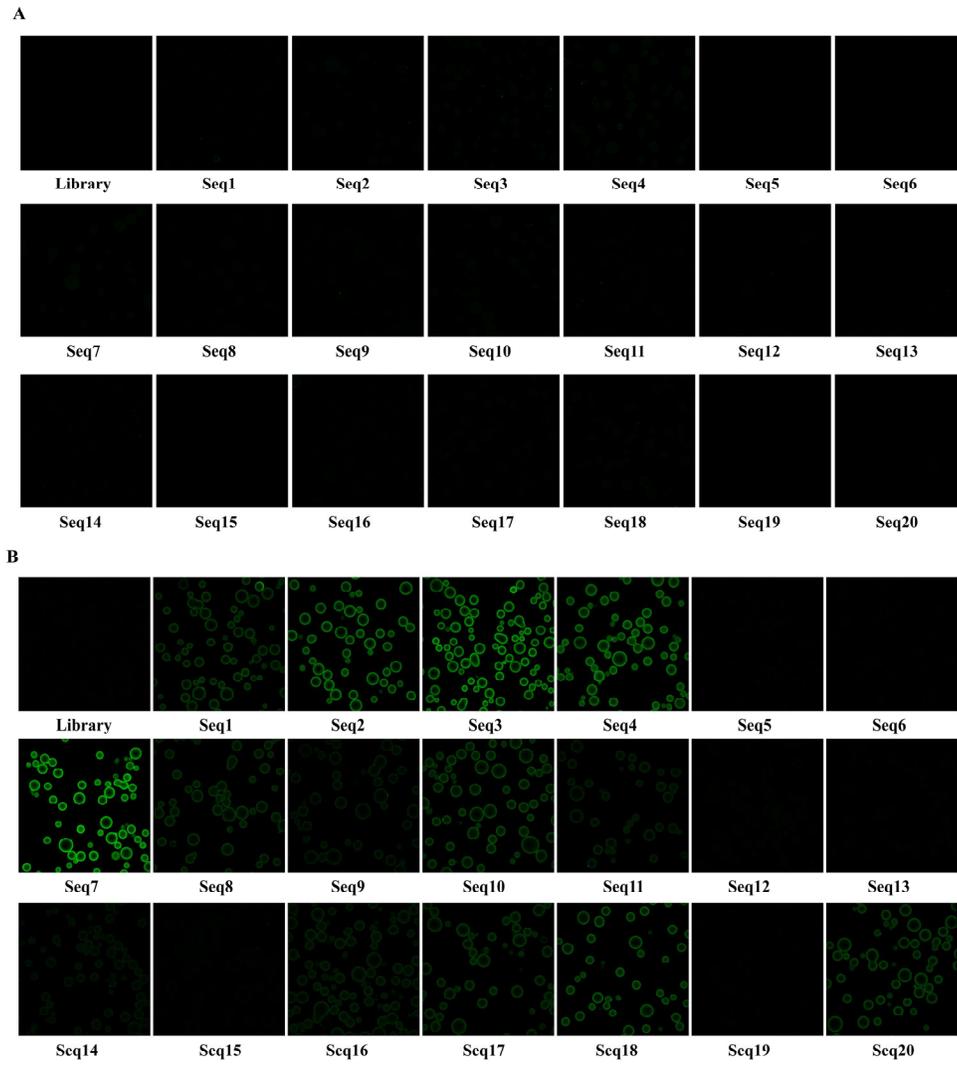




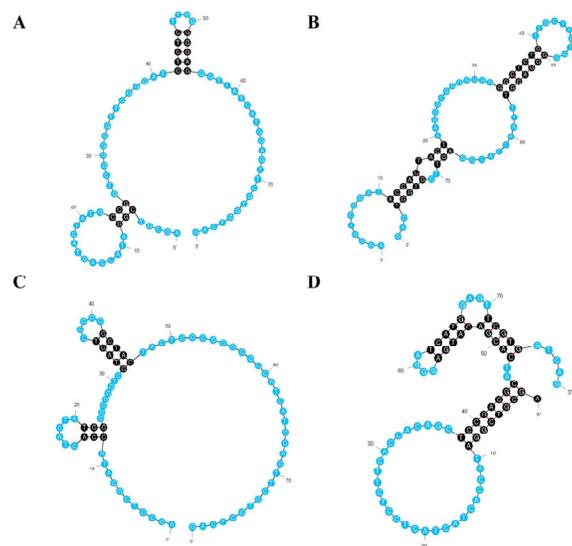
**Figure S2.** Optimization of the number of PCR cycles and validation of batch amplified products. On the left is the optimization of the number of PCR cycles, and on the right is the product verification results of batch amplification under the optimal number of cycles.



**Figure S3.** Homology analysis of candidate sequences using Clustal X. Sequence. Pink represents homology greater than 75%, green represents homology greater than 50%, and yellow represents homology greater than 33%. (The representative aptamers exhibit a significant presence of conservative motifs "GGG" and "TGG", which may play a crucial role in target recognition and binding.)



**Figure S4.** (A) Binding of candidate sequences to S100A9 protein. (B) Binding of candidate sequences to GST proteins.



**Figure S5.** The secondary structures of four selected aptamers. (A) Seq3; (B) Seq4; (C) Seq7; (D) Seq20.