

Selection and Characterization of DNA Aptamers for Constructing Aptamer-AuNPs Colorimetric Method for Detection of AFM1

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Supplementary Materials:

Table S1. Conditions for 12 rounds of MGO-SELEX screening

| SELEX Round | ssDNA Added (pmol) | Time (min) | Counter SELEX | Recovery |
|-------------|--------------------|------------|---------------|----------|
| 1 | 1000 | 120 | N | 10.08% |
| 2 | 500 | 120 | N | 12.33% |
| 3 | 500 | 120 | N | 15.61% |
| 4 | 200 | 100 | N | 22.94% |
| 5 | 200 | 100 | N | 26.15% |
| 6 | 100 | 80 | ZEN(100pmol) | 30.38% |
| 7 | 100 | 80 | OTA(100pmol) | 36.59% |
| 8 | 100 | 80 | FB1(100pmol) | 42.37% |
| 9 | 100 | 80 | DON(100pmol) | 47.86% |
| 10 | 100 | 80 | T-2 (100pmol) | 50.70% |
| 11 | 50 | 60 | N | 52.71% |
| 12 | 50 | 60 | N | 52.33% |

Table S2. Aptamer sequence and its Kd value

| Apt | Sequence (5'-3') | Length (nt) | Kd (nmol/L) |
|-----|---|-------------|-------------|
| 1 | AGCAGCACAGAGGTCAGATGGGATGTGAGGTGGCTCTCGTATCTATAGATTTTGACGAGACCTATGCGTGCTACCGTGAA | 80 | 19.02±1.939 |
| 2 | AGCAGCACAGAGGTCAGATGAGGTACTTGTGCCGCGTTAATCGAGTGCTTTGCTCTCGGACCTATGCGTGCTACCGTGAA | 80 | 30.90±2.711 |
| 3 | AGCAGCACAGAGGTCAGATGGGATGTGAGGTGGCTCTCGTATCTATAGATTTTGACGAGGCCTATGCGTGCTACCGTGAA | 80 | 26.95±4.133 |
| 4 | AGCAGCACAGAGGTCAGATGTCGTCTCACGACTTCTTTCTTGCGCTGTCGGCCGAGAAACCTATGCGTGCTACCGTGAA | 80 | 12.15±1.91 |
| 5 | AGCAGCACAGAGGTCAGATGGGATGTGAGGTGGCTCTCGTATCTATAGATTTTGCGGAGACCTATGCGTGCTACCGTGAA | 80 | 8.12±1.509 |
| 6 | AGCAGCACAGAGGTCAGATGGGATGTGAGGTGGCCCTCGTATCTATAGATTTTGACGAGACCTATGCGTGCTACCGTGAA | 80 | 12.44±2.74 |
| 7 | AGCAGCACAGAGGTCAGATGGGATGTGGGTGGCTCTCGTATCTATAGATTTTGACGAGACCTATGCGTGCTACCGTGAA | 80 | 11.71±3.795 |
| 8 | AGCAGCACAGAGGTCAGATGAGCCAGGGGCGGCGCAAATTTCCGCTAAAATTTGAAGACCTATGCGTGCTACCGTGAA | 80 | 16.80±3.32 |
| 9 | AGCAGCACAGAGGTCAGATGGGATGTGAGGTGGCTCCCGTATCTATAGATTTTGACGAGACCTATGCGTGCTACCGTGAA | 80 | 14.53±3.08 |
| 10 | AGCAGCACAGAGGTCAGATGGGACGTGAGGTGGCTCTCGTATCTATAGATTTTGACGAGACCTATGCGTGCTACCGTGAA | 80 | 8.78±1.713 |
| 11 | AGCAGCACAGAGGTCAGATGGGATGTGAGGCGGCTCTCGTATCTATAGATTTTGACGAGACCTATGCGTGCTACCGTGAA | 80 | 14.53±2.47 |
| 12 | AGCAGCACAGAGGTCAGATGGGATGTGAGGTGGCTCTCGTATCTATAGATTTTGACGAGACCTATGCGTGCTACCGTGAA | 80 | 27.07±3.52 |
| 13 | AGCAGCACAGAGGTCAGATGTGTCTGAGGGGTACCCCTTCGTTGACTTTGTGCGACAACTCCTATGCGTGCTACCGTGAA | 80 | 35.62±4.392 |
| 14 | AGCAGCACAGAGGTCAGATGGGATGCGAGGTGGCTCTCGTATCTATAGATTTTGACGAGACCTATGCGTGCTACCGTGAA | 80 | 19.05±2.61 |
| 15 | AGCAGCACAGAGGTCAGATGGGATGTGAGGTGACTCTCGTATCTATAGATTTTGACGAGACCTATGCGTGCTACCGTGAA | 80 | 22.06±3.29 |
| 16 | AGCAGCACAGAGGTCAGATGCGCGGAGACCGTTTGGTCGGAGCGTTTGCAATTGACGAAAACCTATGCGTGCTACCGTGAA | 80 | 20.12±3.011 |
| 17 | AGCAGCACAGAGGTCAGATGGGATGTGAGGTGGCTCTCGTACCTATAGATTTTGACGAGACCTATGCGTGCTACCGTGAA | 80 | 13.86±2.485 |
| 18 | AGCAGCACAGAGGTCAGATGGGATGTGAGGTGGCTCTCGTATCTATAGACTTTGACGAGACCTATGCGTGCTACCGTGAA | 80 | 13.87±2.57 |
| 19 | AGCAGCACAGAGGTCAGATGGGATGTGAGGTGGCTCTCGTATCTATAGATTTTGACGGGACCTATGCGTGCTACCGTGAA | 80 | 18.75±2.085 |
| 20 | AGCAGCACAGAGGTCAGATGGGATGTGAGGTGGCTCTCGCATCTATAGATTTTGACGAGACCTATGCGTGCTACCGTGAA | 80 | 30.73±3.80 |
| 21 | AGCAGCACAGAGGTCAGATGGGGTGTGAGGTGGCTCTCGTATCTATAGATTTTGACGAGACCTATGCGTGCTACCGTGAA | 80 | 16.47±3.39 |
| 22 | AGCAGCACAGAGGTCAGATGGGATGTGAGGTGGCTCTCGTATCTATGGATTTTGACGAGACCTATGCGTGCTACCGTGAA | 80 | 19.12±3.11 |
| 23 | AGCAGCACAGAGGTCAGATGGGATGTGAGGTGGCTCTCGTATCTACAGATTTTGACGAGACCTATGCGTGCTACCGTGAA | 80 | 18.01±3.555 |
| 24 | AGCAGCACAGAGGTCAGATGGGATGTGAGGTGGCTCTCGTGTCTATAGATTTTGACGAGACCTATGCGTGCTACCGTGAA | 80 | 18.64±3.24 |
| 5T1 | AGGTCAGATGGGATGTGAGGTGGCTCTCGTATCTATAGATTTTGCGGAGACCT | 53 | 10.53±1.59 |
| 5T2 | GGGATGTGAGGTGGCTCTCGT | 21 | 10.04±1.34 |
| 5M | AGCAGCACAGAGGTCAGATGGGATGTCCGGTGGCTCCCGTATCTATAGATTTTGCGGAGACCTATGCGTGCTACCGTGAA | 80 | - |

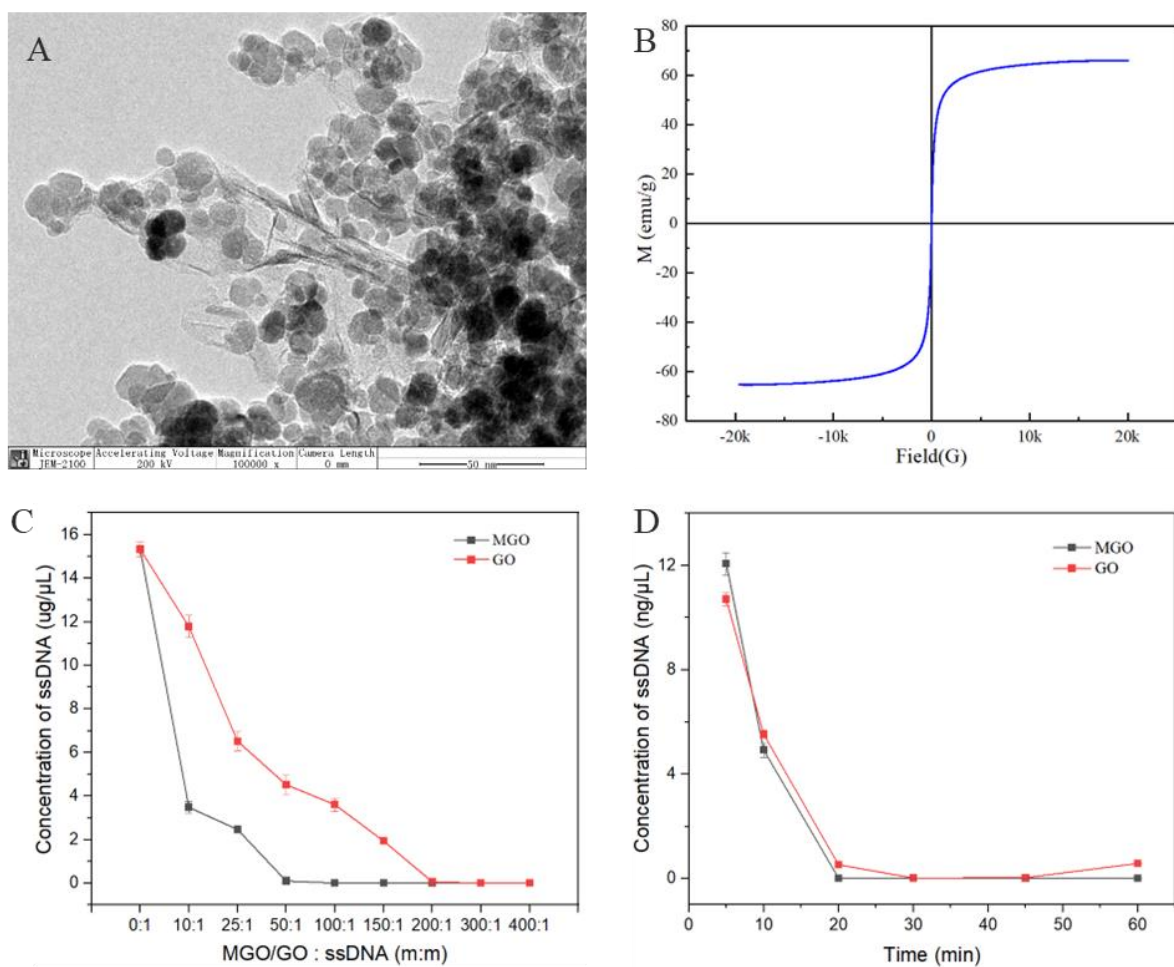


Figure S1. (A)TEM and (B)VSM of MGO, Comparison of the (C) mass ratio and (D) incubation time of MGO and GO to ssDNA library.

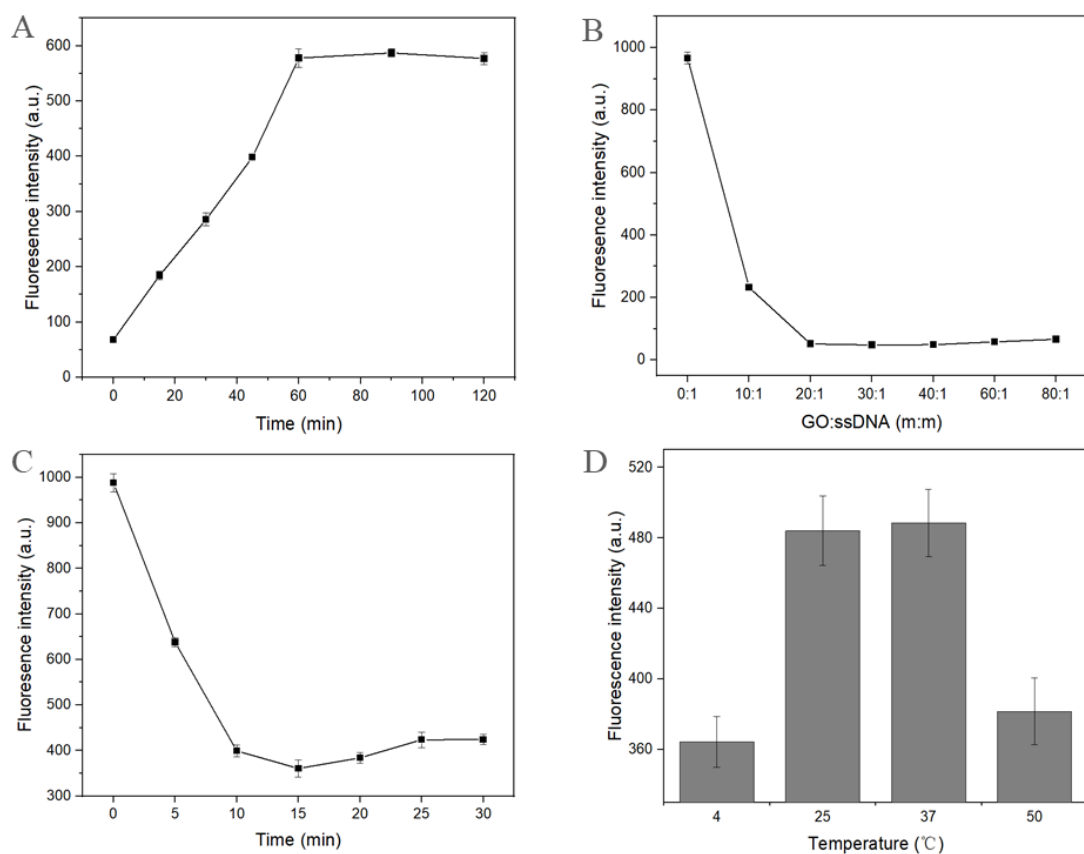


Figure S2. Optimization of the binding affinity conditions. (A) Binding time of aptamer and AFM1, (B) Mass ratio of GO and FAM-labeled aptamers, (C) Quenching time, (D) Working temperature.

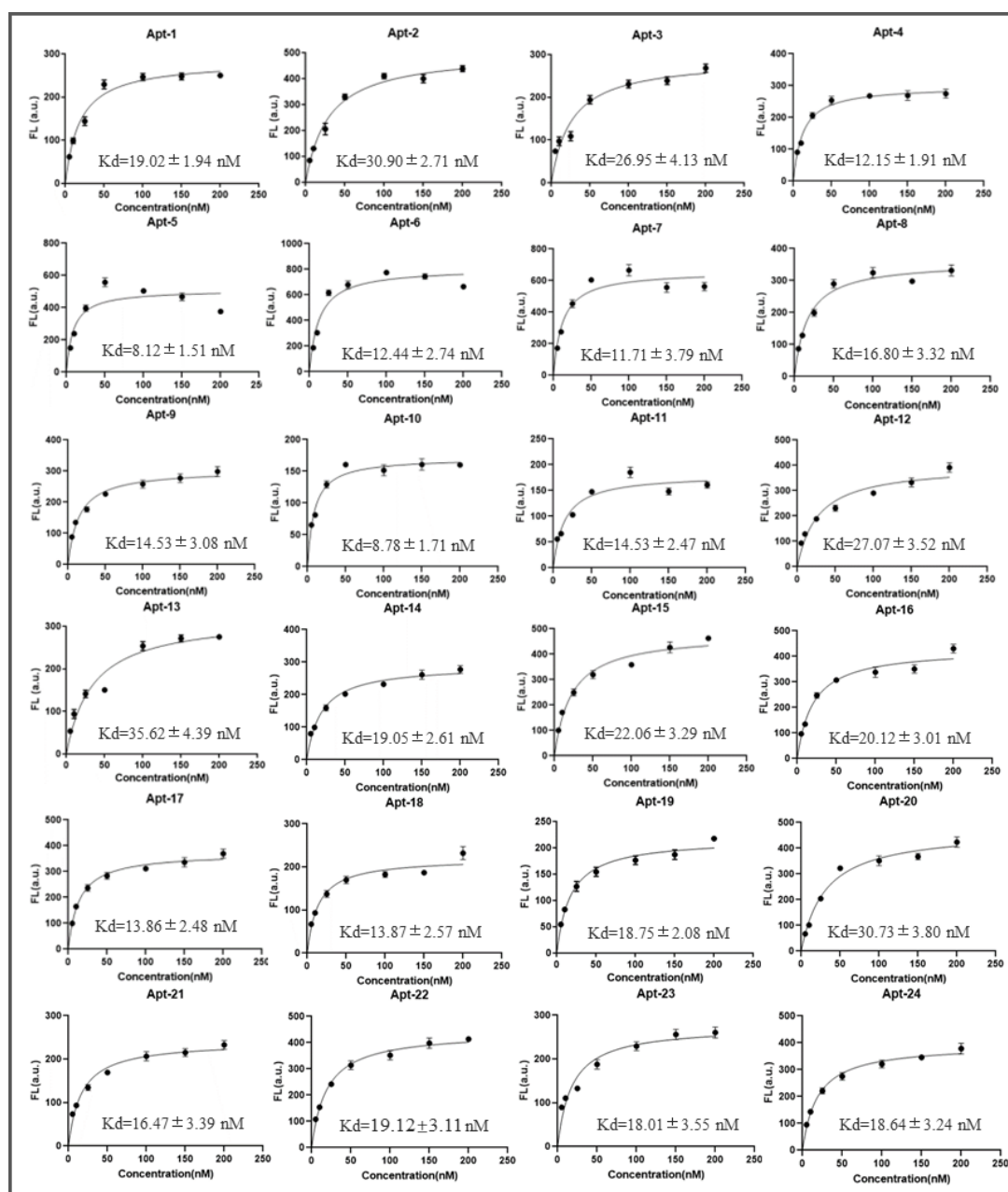


Figure S3. Affinity nonlinear fitting curve of 24 aptamers.

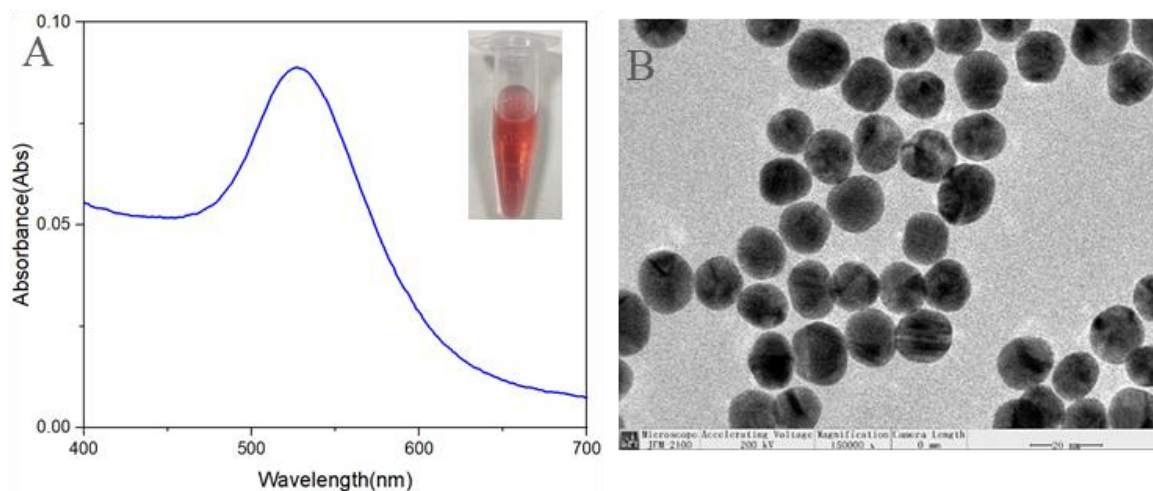


Figure S4. UV absorption curve (A) and TEM (B) of AuNPs.

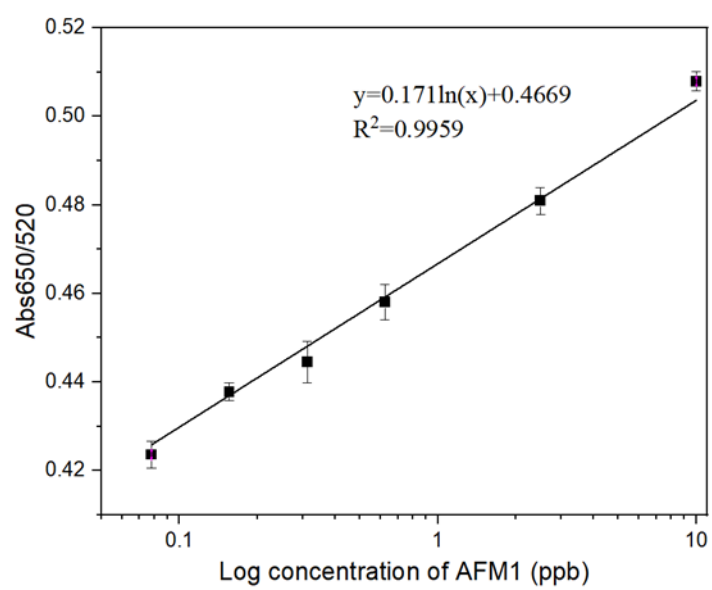


Figure S5. Detection curve developed in the milk extract.