

## Supporting Information

### **Target-induced cyclic DNzyme formation for colorimetric and chemiluminescence imaging assay of protein biomarker**

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**Table S1** DNA sequences used in this work.

| Name         | Sequence (from 5' to 3')                                                                        |
|--------------|-------------------------------------------------------------------------------------------------|
| DNA1         | 5'-<br>ACTACTTATTGTCCCGGGTGGGCAGGACTTTTTTTATCACATCAGGCTC<br>TATGCTATTG-SH-3'                    |
| DNA2 (4-bp)  | 5'-SH-<br>TACGTCCAGAACTTTACCCATCTTTTTTTA <b>CCTG</b> TTGAGGGTGGGCCCT<br>AACGA-3'                |
| DNA2 (6-bp)  | 5'-SH-<br>TACGTCCAGAACTTTACCCATCTTTTTT <b>GTCTG</b> TTGAGGGTGGGCCCT<br>AACGA-3'                 |
| DNA2 (8-bp)  | 5'-SH-<br>TACGTCCAGAACTTTACCCATCTTTT <b>AAGTCCTG</b> TTGAGGGTGGGCCC<br>TAACGA-3'                |
| DNA2 (10-bp) | 5'-SH-<br>TACGTCCAGAACTTTACCCATCTT <b>AAAAGTCCTG</b> TTGAGGGTGGGCCC<br>TAACGA-3'                |
| DNA3(2)      | 5'-TA <b>ACCCTCCCCACCCGGG</b> ACAAT-3'                                                          |
| DNA3(3)      | 5'-A <b>GGGCCCACCCTCCCCACCCGGG</b> ACAATAA-3'                                                   |
| DNA4(1)      | 5'-GGGTTGGGCGGGATGGG-3'                                                                         |
| DNA4(2)      | 5'- <b>CCCGGGTGGGGAGGGT</b> GGGCCC-3'                                                           |
| DNA4(3)      | 5'- <b>CCCGGGTGGGGAGGGTGGGCCCT</b> CAATTT-3'                                                    |
| DNA5         | 5'-<br>GGTAAAGTTCTGGACGTATCTCCCATTTGTAGTATCTTGTAGTATCTCCC<br>ACCAGTCATAGAGCCTGATGTGATTTTTTTT-3' |

**Table S2** Assay results of CEA in clinical serum samples using the proposed and reference methods.

| Samples | Reference method<br>(ng/mL) | Colorimetric method<br>(ng/mL) | Relative<br>error (%) | CL imaging assay<br>(ng/mL) | Relative<br>error (%) |
|---------|-----------------------------|--------------------------------|-----------------------|-----------------------------|-----------------------|
| 1       | 0.88                        | 0.85                           | -3.41                 | 0.89                        | 1.14                  |

|   |        |        |       |        |       |
|---|--------|--------|-------|--------|-------|
| 2 | 9.83   | 9.51   | -3.26 | 10.22  | 3.97  |
| 3 | 54.93  | 58.70  | 6.86  | 51.41  | -6.41 |
| 4 | 92.51  | 85.84  | -7.21 | 95.81  | 3.57  |
| 5 | 171.90 | 184.10 | 7.10  | 157.01 | -8.66 |