

## Supplementary Information

### Ultrasensitive detection of microRNAs based on cascade amplification strategy of RCA-PER and Cas12a

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S1. Table S1-2. The original values in Fig. 3.

Table.1 original values in supplementary information of **Fig. 3A**.

| Wave length | Fluorescence value |        |        |        |        |        |       |
|-------------|--------------------|--------|--------|--------|--------|--------|-------|
|             | 100 nM             | 10 nM  | 1 nM   | 100 pM | 10 pM  | 1 pM   | black |
| 535         | 124.4              | 117.7  | 63.6   | 38.5   | 24.2   | 16.3   | 12.8  |
| 539         | 1196.4             | 1134.7 | 608.3  | 372.9  | 234.9  | 159.6  | 127   |
| 543         | 3115.3             | 2961.5 | 1588.4 | 984.2  | 616.5  | 419.7  | 339.6 |
| 547         | 5158               | 4913   | 2642.2 | 1655.3 | 1032.6 | 702.1  | 575.9 |
| 551         | 6714.6             | 6401.5 | 3453.4 | 2185.8 | 1359.4 | 923.8  | 763.8 |
| 555         | 7356.2             | 7013.9 | 3806.4 | 2427.4 | 1502.1 | 1022.4 | 851.1 |
| 559         | 6902.7             | 6578.1 | 3591.6 | 2299.5 | 1418.3 | 969    | 808.7 |
| 563         | 5700.8             | 5426.4 | 2977   | 1908.6 | 1177.6 | 811.4  | 674.5 |
| 567         | 3920.9             | 3727.6 | 2053.2 | 1318.8 | 815    | 566.1  | 467.8 |
| 571         | 2185.5             | 2076.8 | 1141.3 | 739.3  | 456.6  | 318.5  | 261.5 |
| 575         | 698.2              | 663.6  | 361.8  | 237    | 145.9  | 102.5  | 83.4  |
| 579         | 19                 | 18     | 9.7    | 6.5    | 3.9    | 2.8    | 2.3   |

Table.2 original values in supplementary information of **Fig. 3B**.

| concentration | Fluorescence value |          |          |
|---------------|--------------------|----------|----------|
|               | positive           | negative | ratio    |
| 10 pM         | 1018.7             | 534.8    | 1.904824 |
|               | 1189.1             | 558.7    | 2.128334 |
|               | 1088.4             | 544.5    | 1.998898 |
| 100 pM        | 1409.7             | 426.5    | 3.305275 |
|               | 1336.6             | 439.1    | 3.043954 |
|               | 1423.3             | 470.1    | 3.027654 |
| 1 nM          | 1993.4             | 327.7    | 6.083003 |
|               | 2106.2             | 414.3    | 5.083756 |
|               | 2417.7             | 382.9    | 6.314181 |
| 10 nM         | 3784.7             | 426.5    | 8.873857 |
|               | 2843.8             | 327.7    | 8.678059 |
|               | 2396.1             | 309.1    | 7.75186  |
| 100 nM        | 6019.5             | 615.4    | 9.781443 |
|               | 6957.1             | 636.7    | 10.92681 |
|               | 7185.9             | 655.9    | 10.95579 |