

## Electronic Supporting Material

### **Programmable DNA barcode-encoded exponential amplification reaction for the multiplex detection of miRNAs**

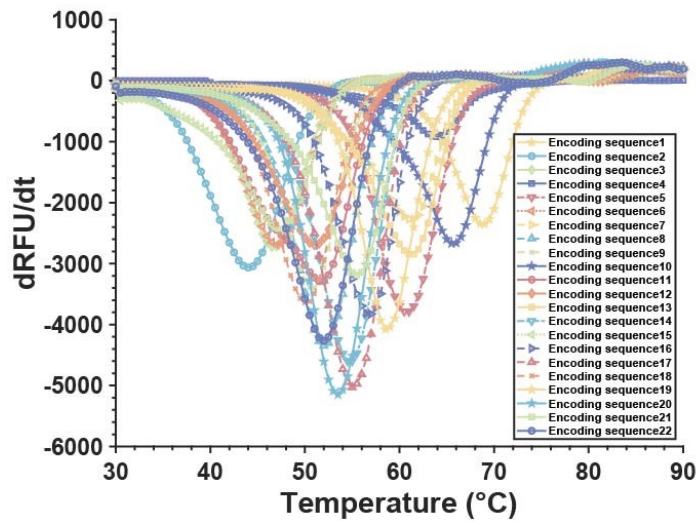
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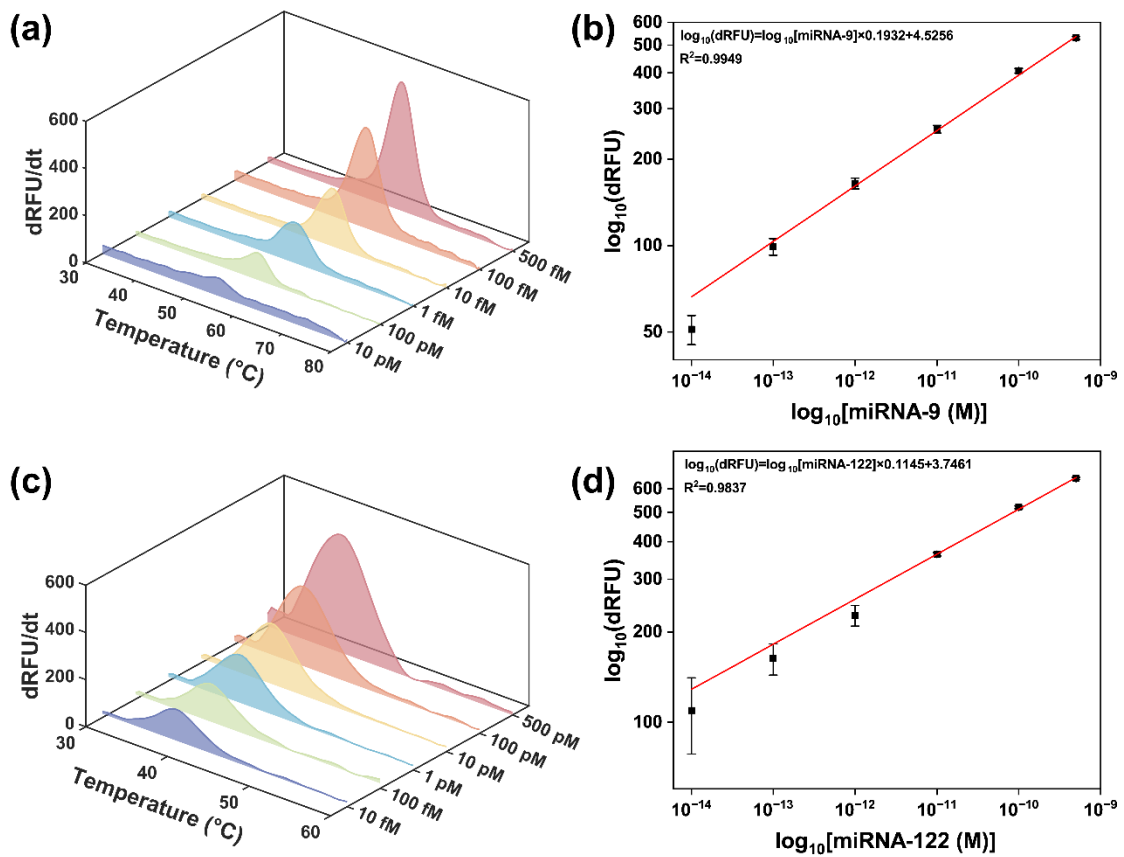
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**Figure S1** The melting curve of the one or two mutations to the original encoding sequence.



**Figure S2** Sensitivity and specificity of the E-EXPAR. (a) and (c), Melting curve of miRNA detection system at various concentrations of miRNA-9 or miRNA-122 from 10 fM to 500 pM. (b) and (d) The linear relationship between the logarithmic rate of fluorescence change and the concentration of miRNA-9 or miRNA-122.

**Table S1** Sequences of the designed oligonucleotides

<b>Oligonucleotides</b>	<b>Sequence (from 5' to 3')</b>
Q1	GTGGAGTAGTTGGATGAAGTAGGG
Q2	GTGGAGTAGTTGGATGTAGTAGGG
Q3	GTGGAGTAGTTAGATGAAGTAGGG
Q4	GTAGAGTAGTTGGATGAAGTAGGG
Q5	GTGGAGTAGACGGATGAAGTAGGG
Q6	GTGAAGTAGTTGGATAAAGTAGGG
Q7	GTGGAGTCCTTGGATGAAGTAGGG
Q8	GTGAAGTAGTTGGATCAAGTAGGG
Q9	GTGAAGTACTTGGATAAAGTAGGG
Q10	GTGGAAATGTTGGATGAAGTAGGG
Q11	GTGAAGTAGTTGGATCCAGTAGGG
Q12	GTGAAGTAGGTGGATCAAGTAGGG
Q13	GTGATGTAGTTGGATCAAGTAGGG
Q14	GTGAGGTAGTTGGATCAAGTAGGG
Q15	GTGAAGGAGTTGCATGAAGTAGGG
Q16	GTGAAGTAGTTGCTTGAAGTAGGG
Q17	GTGAAGTAGTTCGATAAAGTAGGG
Q18	GTGAAGTAATTGGATAAAGTAGGG
Q19	GTGAAGTAGATGGATAAAGTAGGG
Q20	GTGAACTAGTTGGATAAAGTAGGG
Q21	GTGAAGTAGTTGAATAAAGTAGGG
Q22	GTCGAGTAGTTGAATAAAGTAGGG
Probe	HEX-CCCTACTTCATCCAACACTCCAC-p'
MI-21	UAGCUUAUCAGACUGAUGUUGA
template21	CCCTACTTCATCTGGAGACTCAACATCAGTCTGATAAGCTAGGAGACTCAACAT CAGTCTGATAAGCTA-p'
mi-9	UCUUUGGUUAUCUAGCUGUAUGA
template9	CCCTACTTCATCCAAGGACTCCACTCATACAGCTAGATAACCAAAGAGGAGACT CATACAGCTAGATAACCAAAGA-p'
mi122	UGGAGUGUGACAAUGGUGUUUG
Template122	CCCTACTTTATCCAAGTACTTCACGGAGACCAAACACCATTGTCACACTCCATT GGAGACCAAACACCATTGTCACACTCCA-p'
mi9:forward primer	CGCGTCTTTGGTTATCTAGCTGTATGA
mi21:forward primer	CGCGCTAGCTTATCAGACTGATGTTGA
mi122:forward primer	CGTGGAGTGTGACAATGGTGTGTTG
MI141	UAACACUGUCUGGUAAAGAUGG
MI155	UUAAUGCUGAUCGUGAUAGGGGU
MI199a	ACAGUAGUCUGCACAUUGGUUA

M1	AAGCTTATCAGACTGATGTTGA
M2	CCGCTTATCAGACTGATGTTGA

**Table S2** Comparison of the reported fluorescence platforms for miRNAs detection

Amplification method	Detection limit	Multiple detect	Time	Reference
Exponential amplification reaction-triggered three dimensional bipedal DNA walkers	10 fM	/	70 min	[1]
Cas12a-mediated cascade amplification	1 aM	/	110 min	[2]
nicking-assisted exponential amplification	100 aM	/	60 min	[3]
DNAzyme-assisted Rolling circle amplification	10 fM	/	5 h	[4]
Rolling Circular Amplification (RCA)- Assisted CRISPR/Cas9 Cleavage (RACE)	90 fM	Yes	2 h 35 min	[5]
Catalytic hairpin assembly gel assay	10 fM	Yes	3 h	[6]
alkaline phosphatase-assisted isothermal reaction	180 aM	Yes	8 h	[7]
E-EXPAR	1.3 fM	Yes	70 min	This work

## References

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