

Supplementary Information

Sensitive detection of RNA based on concatenated self-fuelled strand displacement amplification and hairpin-AgNCs

Yahui Guo,^a Mofan Wang,^a Fumiao Shen,^a Zhigang Hu,^c Hongliu Ding,^{*b} Weirong Yao^{*a} and He Qian^a

- a. State Key Laboratory of Food Science and Technology, National Centre for Technology Innovation on Fast Biological Detection of Grain Quality and Safety, School of Food Science and Technology, Jiangnan University, Wuxi, China.*
- b. Suzhou Institute of Supervision and Inspection on Product Quality, Suzhou, China.*
- c. Wuxi Children's Hospital, Wuxi People's Hospital affiliated to Nanjing Medical University, Wuxi, China.*

Corresponding authors: WR.Yao (yaoweirongcn@jiangnan.edu.cn); HL.Ding (hollior@163.com)

Table S1. Names and sequences of the oligonucleotides used in this work.

No.	Name	Sequence (5'-3')
1	Temp-1	CATGTCAACTAATCCCTCAGCAAACGTGACTGATGTTG AGCCTCAGCTCAACATCAGTCTGATAAGCTAAAAAA
2	Temp-2	GCAACTCAATGAACCCTCAGCAAACCAATGAACTAACC TCAGCCATGTCAACTAATCCC
3	Prime1	TGAGGGCTCAACATCAGTCACAGTTTGC
4	Prime2	TGAGGGATTAGTTGACATG
5	Prime3	TGAGGGTTCATTGAGTTGC
6	Hairpin DNA	TAATATGCAACGAACGATGCAACGTTTCGATGCCCCCCC GCATCGAACGTTGCATCGTTTCGTTGCATATTA GCAACTCAATGAACAAAA
7	miRNA-21	UAGCUUAUCAGACUGAUGUUGA
8	miRNA-27b	UUCACAGUGGCUAAGUUCUGC
9	miRNA-18a	UAAGGUGCAUCUAGUGCAGAUAG
10	miRNA-200c	UAAUACUGCCGGGUAAUGAUGGA
11	miRNA-125b	UCCCUGAGACCCUAACUUGUGA
12	miRNA-221	AGCUACAUUGUCUGCGGGUUUC
13	miRNA-451	AAACCGUUACCAUACUGAGUU

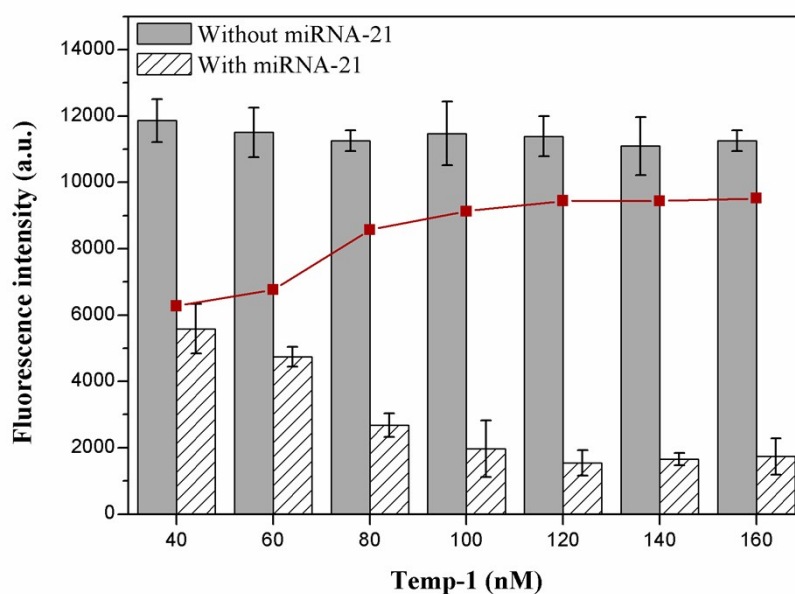


Figure S1. Fluorescence intensities of this SFAF-based sensing system with (F) and without (F0) 1.0 nM miRNA-21 in the presence of different concentrations Temp-1. The red line showed the intensity changes (F0-F).

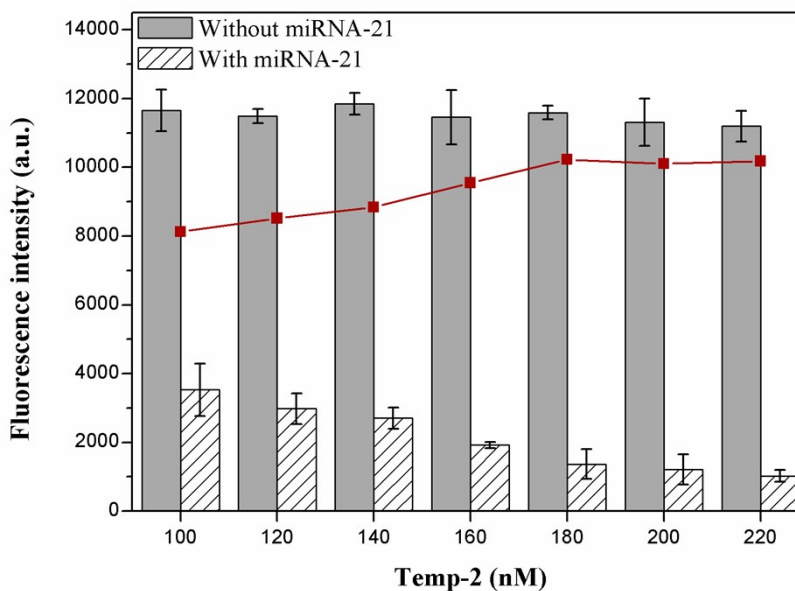


Figure S2. Fluorescence intensities of this SFAF-based sensing system with (F) and without (F0) 1.0 nM miRNA-21 in the presence of different concentrations Temp-2. The red line showed the intensity changes (F0-F).

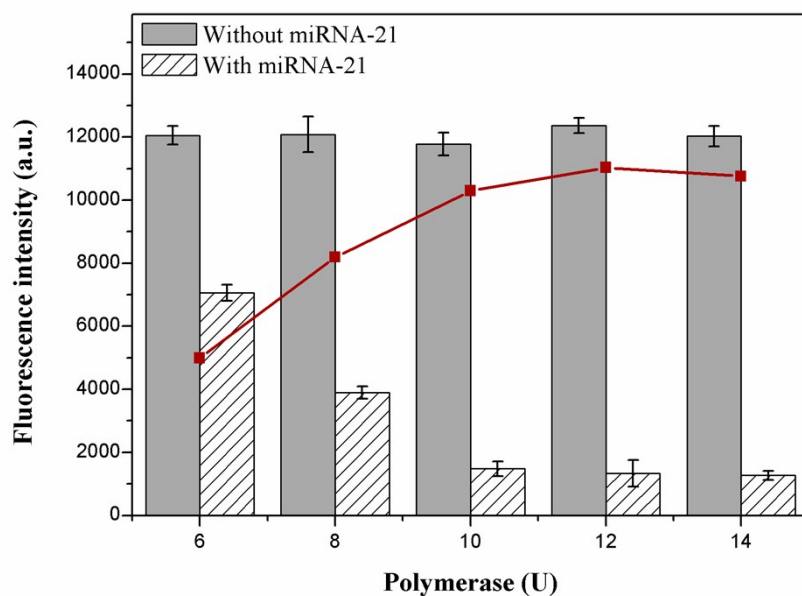


Figure S3. Fluorescence intensities of this SFAF-based sensing system with (F) and without (F0) 1.0 nM miRNA-21 in the presence of different units of Klenow Fragment. The red line showed the intensity changes (F0-F).

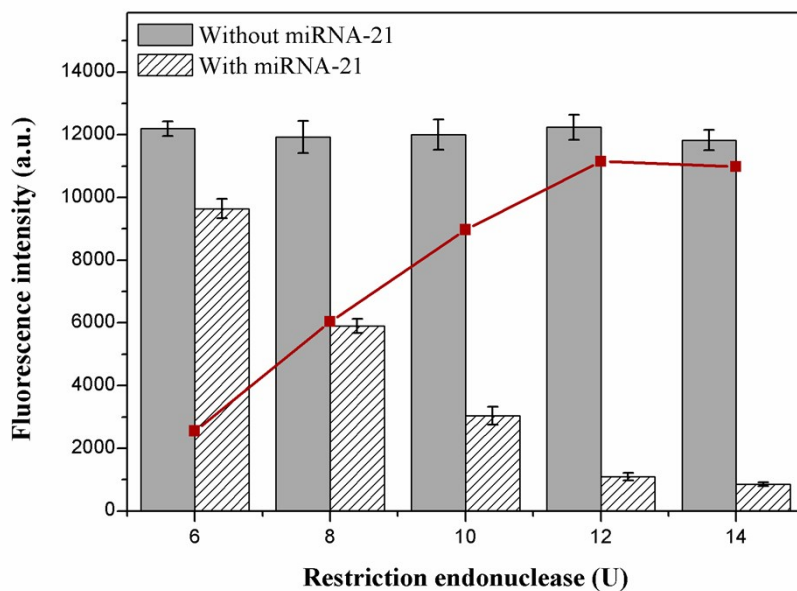


Figure S4. Fluorescence intensities of this SFAF-based sensing system with (F) and without (F0) 1.0 nM miRNA-21 in the presence of different units of Nb.Bpu10I. The red line showed the intensity changes (F0-F).

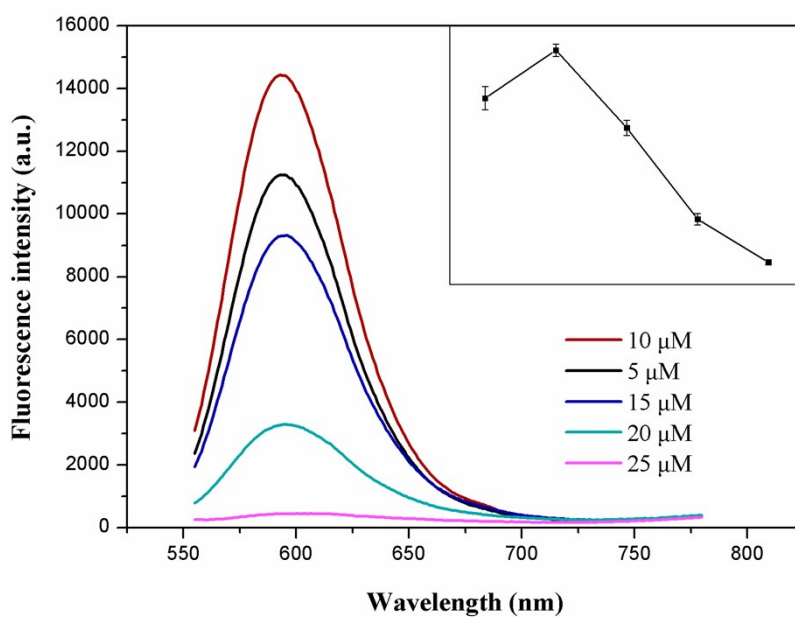


Figure S5. The fluorescence spectra of the Hairpin-AgNCs synthesized using different concentrations of $[AgNO_3]$. Inset: the change of fluorescence intensity with the increase of concentration of $[AgNO_3]$.

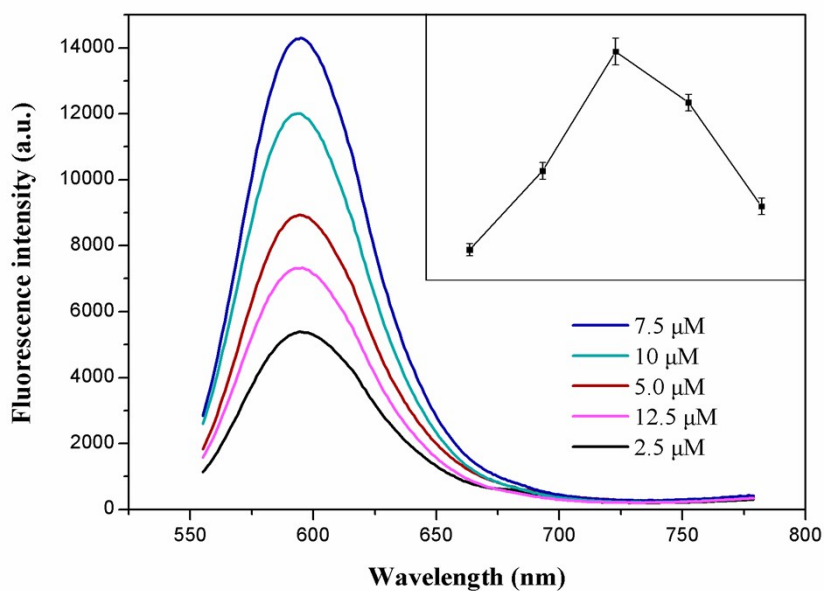


Figure S6. The fluorescence spectra of the Hairpin-AgNCs synthesized using different concentrations of $[NaBH_4]$. Inset: the change of fluorescence intensity with the increase of concentration of $[NaBH_4]$.

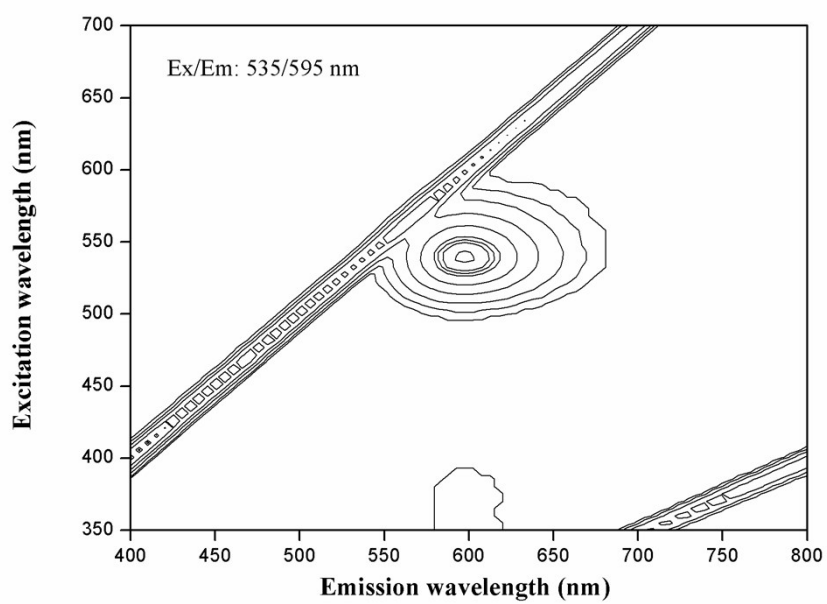


Figure S7. The three-dimensional fluorescence spectrum of the Hairpin-AgNCs.

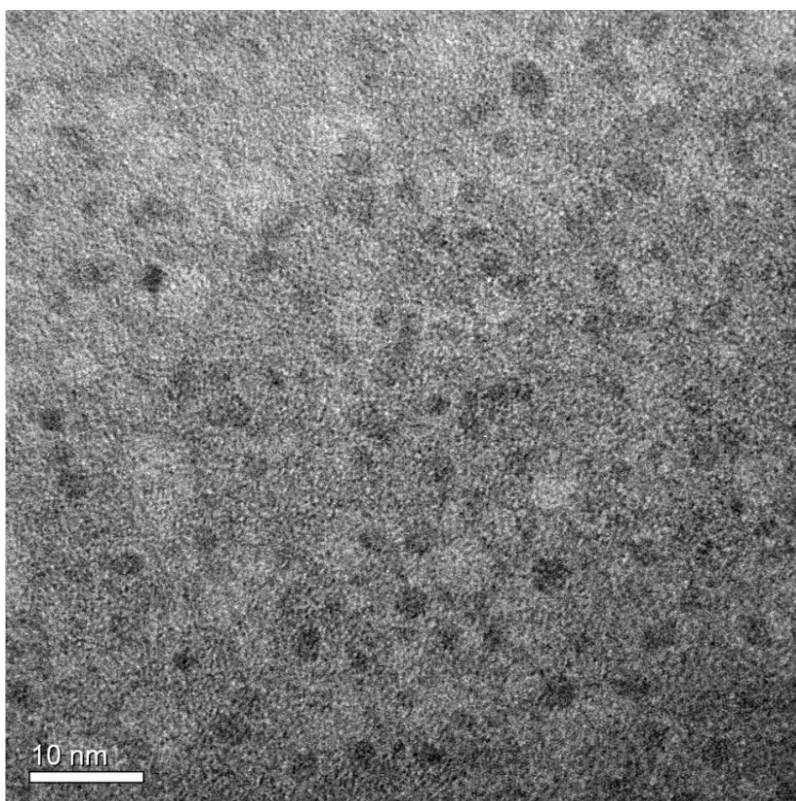


Figure S8. The TEM image of the Hairpin-AgNCs.

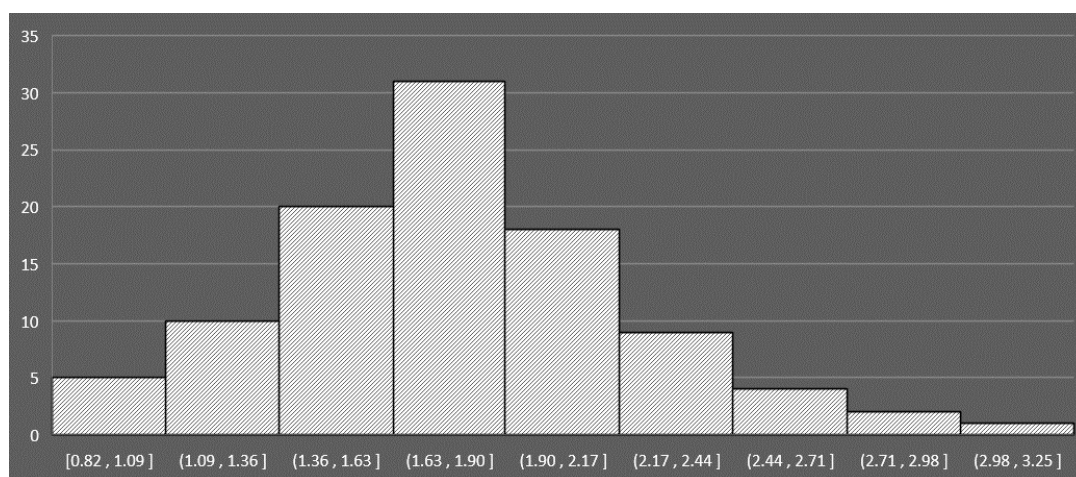


Figure S9. The size distribution analysis of the Hairpin-AgNCs in the TEM image by using the ImageJ software. The calculated average diameter was 1.78 nm.