Electronic Supplementary Material (ESI) for Analyst.

Ultrasensitive and simple fluorescence biosensor for *mecA* gene of *Staphylococcus aureus* detection by using exonuclease III-assisted cascade signal amplification strategy

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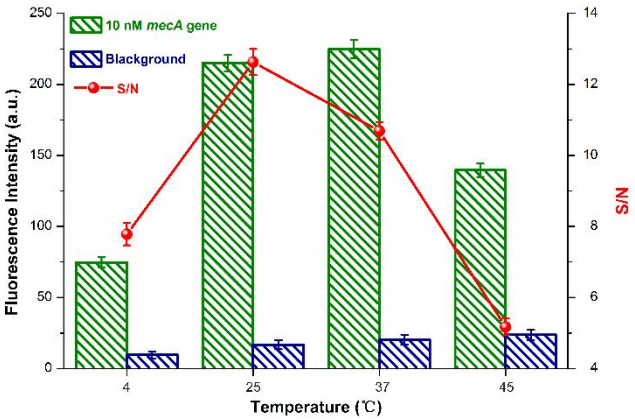

Fig. S1 Effect of the reaction temperature on the response of the sensing system. The histograms represent fluorescence intensity of the solution in the presence of 10 nM *mecA* gene (green) and in the absence of target (blue), respectively. The red line represents the S/N ratio. The corresponding error bars represent the standard deviation of three independent measurements obtained at each reaction temperature.

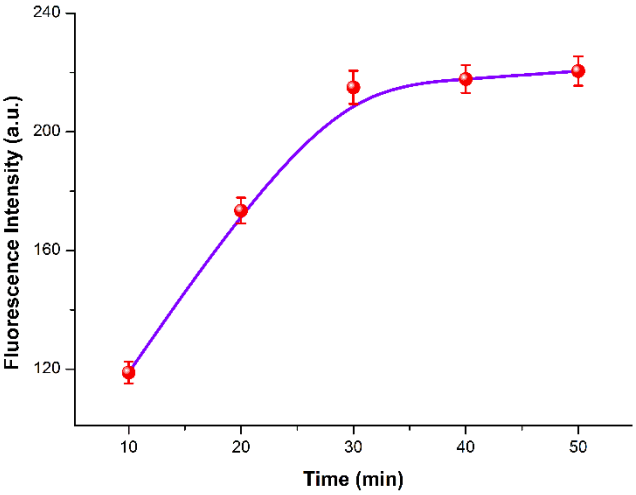

Fig. S2 Effect of the reaction time of signal amplification on the fluorescence intensity of the proposed method for the *mecA* gene (10 nM) detection. Reactions were performed at room temperature.

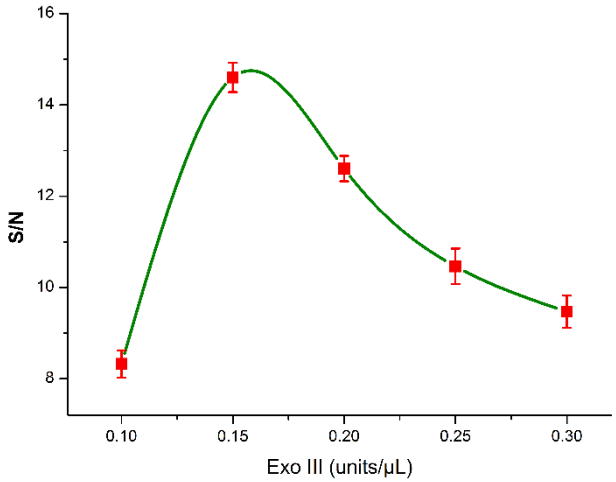

Figure. S3 Effect of the Exo III concentration on the performance of the sensing system. The *mecA* gene concentration is 10 nM. Incubation temperature and reaction time were 25 °C and 30 min, respectively.

Table. S1 Comparison of analytical methods capable of sensing *mecA* gene

Method	Linear range	Detection Limit	References
Thin-film biosensor base on TMS and HRP	—	10 fM	1
FRET biosensor base on GQPS and AuNPs	—	1 nM	2
Isothermal strand displacement polymerization reaction	75 fM-200 pM	63 fM	3
Electrochemical biosensor using AuNPs	50-250 pM	23 pM	4
Electrochemical biosensor based on MSP and TSP	10 fM-100 nM	10 fM	5
Fluorescence biosensor base on grapheme oxide	12.5 pM-3.125 nM	6.25 pM	6
Thin-film biosensor base on TMS and HRP	—	1 fM	7
Fluorescence biosensor base on Exo III-based signal amplification	10 fM-100 nM	2.4 fM	This work

Reference

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