Electronic Supplementary Material (ESI) for Analyst.

Ultrasensitive and simple fluorescence biosensor for detection of the *Kras* gene by using the three-way DNA junction-driven catalyzed hairpin assembly strategy

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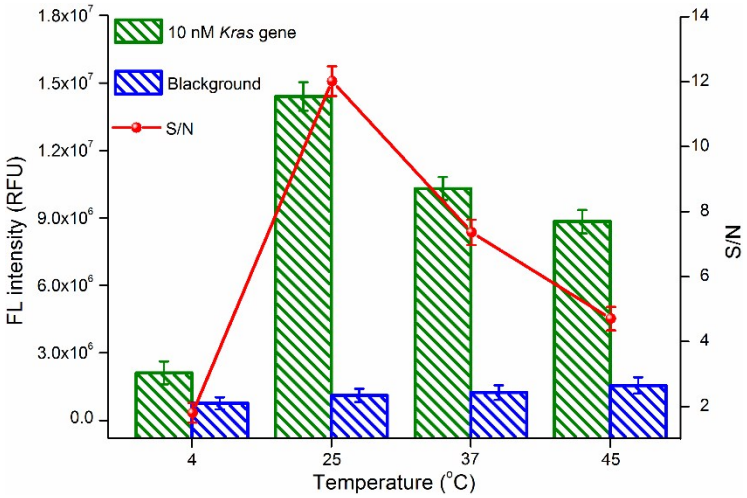

Fig. S1 Effect of the reaction temperature on the response of the sensing system. The histograms represent the fluorescence intensity of the solution in the presence of 10 nM *Kras* gene (green) and in the absence of the *Kras* gene (blue), respectively. The red line represents the S/N ratio. The corresponding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

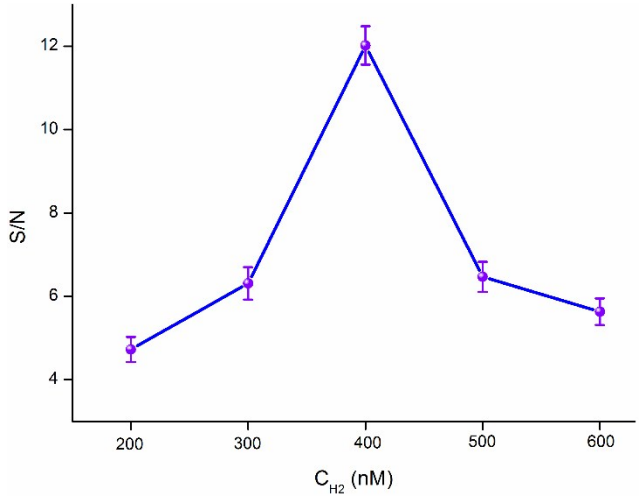

Fig. S2 Effect of the H2 concentration on the performance of the sensing system. The *Kras* gene concentration is 10 nM. Reactions were performed at 25 °C.

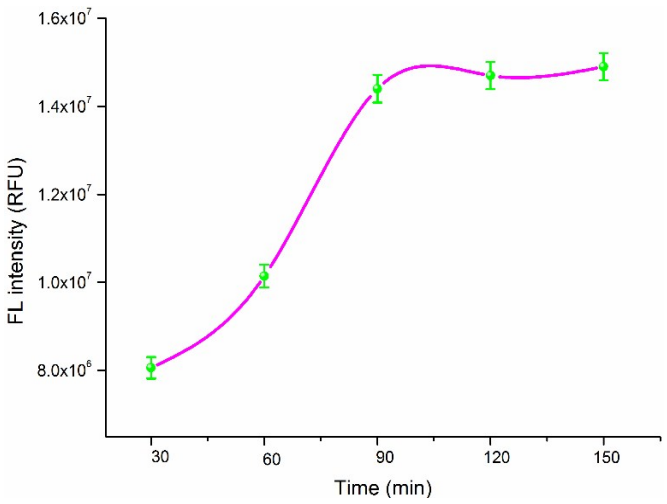

Figure. S3 Effect of the reaction time of the signal amplification on the fluorescence intensity of the proposed method for the detection of the *Kras* gene (10 nM). Incubation temperature and H2 concentration were 25 °C and 400 nM, respectively.

Table. S1 Comparison of the analytical methods capable of sensing the *Kras* gene

Method	Linear range	Detection Limit	References
Electrochemical biosensor based on clamp assay	168 fM−168 pM	168 fM	1
Electrochemical biosensor based on functional composite nanofibers	100 fM−100 pM	30 fM	2
Colorimetry biosensor base on enzyme-amplified ligation on magnetic beads	50 pM-20 nM	30 pM	3
Colorimetry biosensor base on chain anadiplosis-structured DNA nanowires	100 fM-100 nM	100 fM	4
Fluorescence biosensor base on loopback rolling circle	100 fM−20 nM	16 fM	5
Fluorescence biosensor base on double-hairpin molecular-beacon	50 pM-20 nM	50 pM	6
Fluorescence biosensor base on toehold mediated strand displacement reaction	2 pM-10 nM	1.8 pM	7
Fluorescence biosensor base on CHA	10 fM−100 nM	2.7 fM	This work

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