

Electronic Supplementary Information (ESI) for Analyst

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**Fe₃O₄@polydopamine and Exo III-assisted homogeneous
biorecognition reaction for convenient and ultrasensitive detection
of kanamycin antibiotic**

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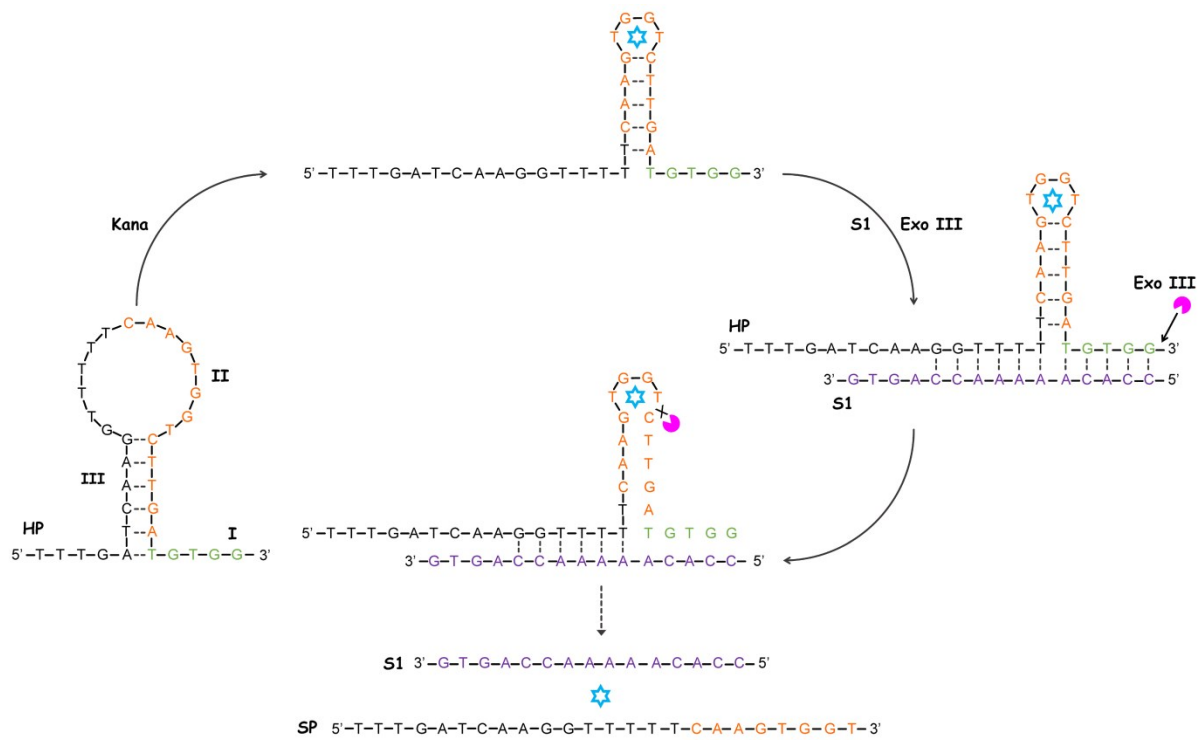


Fig. S1 Schematic illustration of the base sequence design of HP to show the target-biorecognition triggered release of SP under the assistance of the enzymatic reaction of Exo III

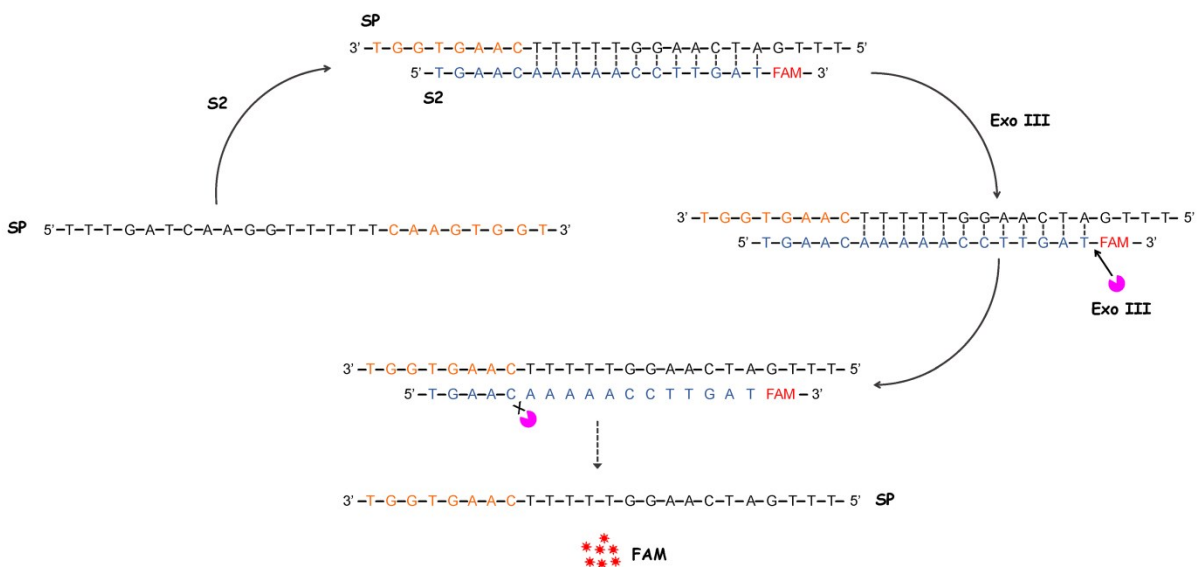


Fig. S2 Schematic illustration of the DNA hybridization between SP and S2 for triggering the Exo III-catalyzed digestion of S2 to release FAM labels

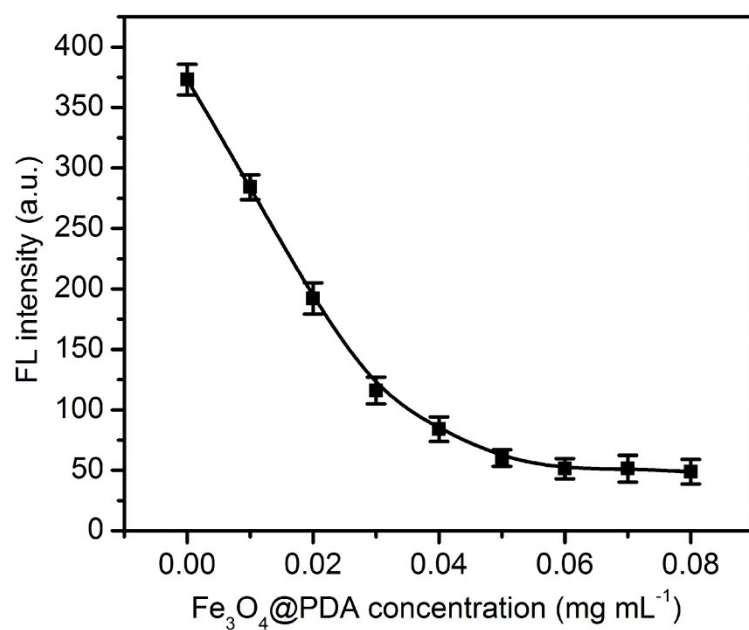


Fig. S3 Effect of the Fe₃O₄@PDA concentration on the fluorescence signal response of 1.0 μM S2

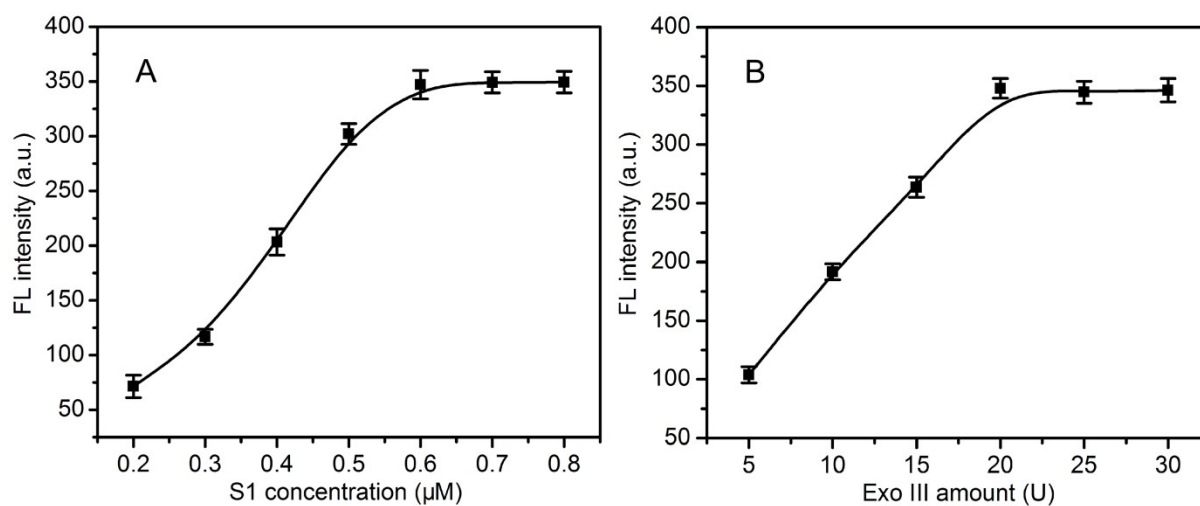


Fig. S4 Effects of the S1 concentration (A) and Exo III amount (B) on the fluorescence signal responses of 100 ng mL⁻¹ Kana

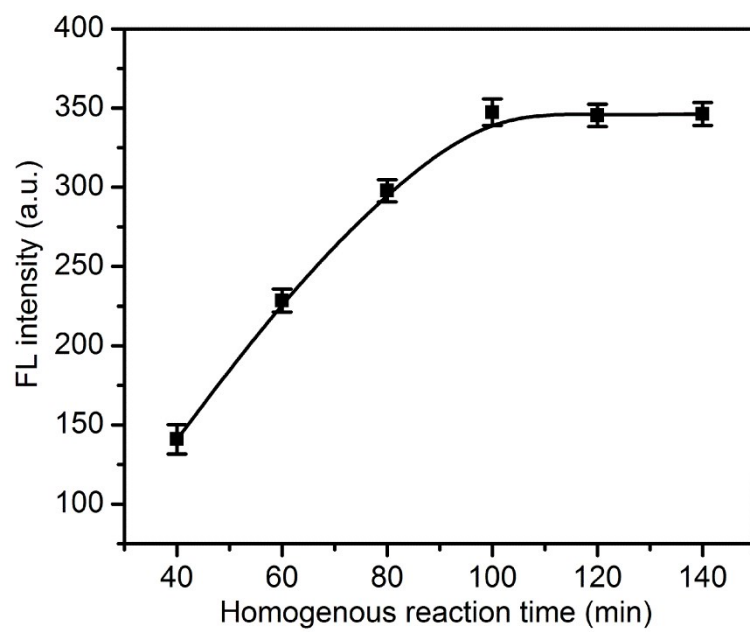


Fig. S5 Effect of the homogeneous reaction time on the fluorescence signal response of 100 ng mL⁻¹ Kana

Table S1 The overview on the specific features of the biosensing methods previously reported for Kana detection

Detection method	Signal transduction strategy	Linear range	LOD	Ref.
Colorimetric	Aptamer biorecognition-triggered DNAzyme liberation for colorimetric analysis	0.1 pg mL ⁻¹ – 10 ng mL ⁻¹	0.045 pg mL ⁻¹	6
Fluorescent	Aptamer biorecognition-induced polymerase-catalyzed amplification for ratiometric fluorescent signal output	1–80 nM	0.29 nM	17
Fluorescent	Aptamer biorecognition-regulated surface plasmon enhanced energy transfer between silver nanoclusters and gold nanoparticles	5–50 nM	1 nM	21
Electrochemical	Aptamer biorecognition-induced electrochemical signal decrease of a graphene-thionine nanocomposite modified electrode	0.5 pg mL ⁻¹ – 50 ng mL ⁻¹	0.42 pg mL ⁻¹	36
Electrochemical	Aptamer biorecognition-induced electrochemical signal response of Au@Pt core-shell nanoparticles labeled by thionine	1 pM–1 μM	0.16 pM	37
Colorimetric	Aptamer biorecognition-triggered hairpin switch and nicking enzyme-cleaved release of platinum nanoparticle probe	0.5 pg mL ⁻¹ – 200 ng mL ⁻¹	0.2 pg mL ⁻¹	38
Fluorescent	Aptamer biorecognition-triggered three-dimensional DNA walking to release dye labels	5–2000 pM	1.23 pM	39
Fluorescent	Fe ₃ O ₄ @PDA and Exo III-assisted aptamer biorecognition reaction to release dye labels	0.1 pg mL ⁻¹ – 100 ng mL ⁻¹	0.023 pg mL ⁻¹	This Work