Electronic Supplementary Material (ESI) for Analyst.

Supplementary Information

Fluorescent aptasensor for ATP based on functional DNAzyme/walker and terminal deoxynucleotidyl transfease-assisted formation of DNA-AgNCs

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SI-1 Sequences and Instruments

SI-1.1. sequences

S1: HS-5'-TTTTTTTTTTTTTTCACTATrAGGAAGAGA-3'
S2: 5'-TGCGGAGGAAGGTTTTTTTTTTTTTTT-3'-SH
S3: 5'-ACCTGGGGGAGTA$(T)_{46}$GTCTCTTCTCCGAGCCGGTCGAAATAGT-3'

SI-1.2. Instruments

A UV-Vis spectrophotometer was used to scan the complete wavelength of the ultraviolet absorption spectrum of nanomaterials (Hitachi, U-3900). By using a Nanoparticle Size and Zeta Potential Analyzer, hydration particle sizes (DLS) and zeta potentials were assessed (British Malvern Instruments Co., Ltd., ZEN3700). Transmission electron microscopy (TEM) was used to characterize the morphologies of nanomaterials (Japan Electronics Co., Ltd., JEM-2100). The BioTek microplate reader was used to determine fluorescence. The X-ray diffraction method was used to characterize qualitative investigation of material composition (XRD, D8, AXS, Germany). Gel images were captured using a C300 system (Azure Biosystems, USA).

Table S1. Comparison of the performance of the aptasensor in this work and the relevant methods in the references for ATP detection.

Detection Method	LOD (nM)	Detection range (nM)	Reference
Electrochemiluminescence	0.17	0.5-2.5×10^3	1
SERS	0.4	1–2×10^2	2
Colorimetry	1×10^2	0–5×10^3	3
Electrochemical	0.05	0.1–1×10^6	4
Fluorescent	1.01	3–2.5×10^3	5
Fluorescent	0.27	5–1×10^4	This work

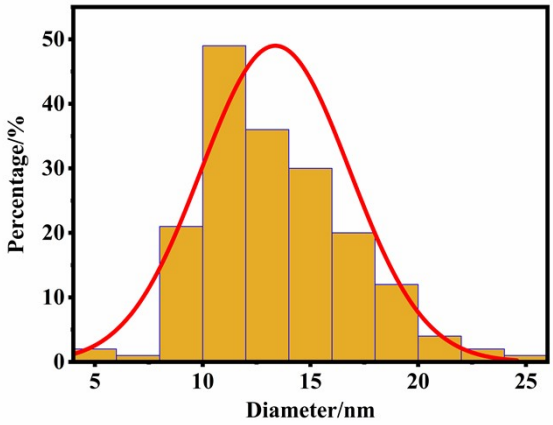

Fig. S1. The particle size distribution of Fe_3O_4@Au.

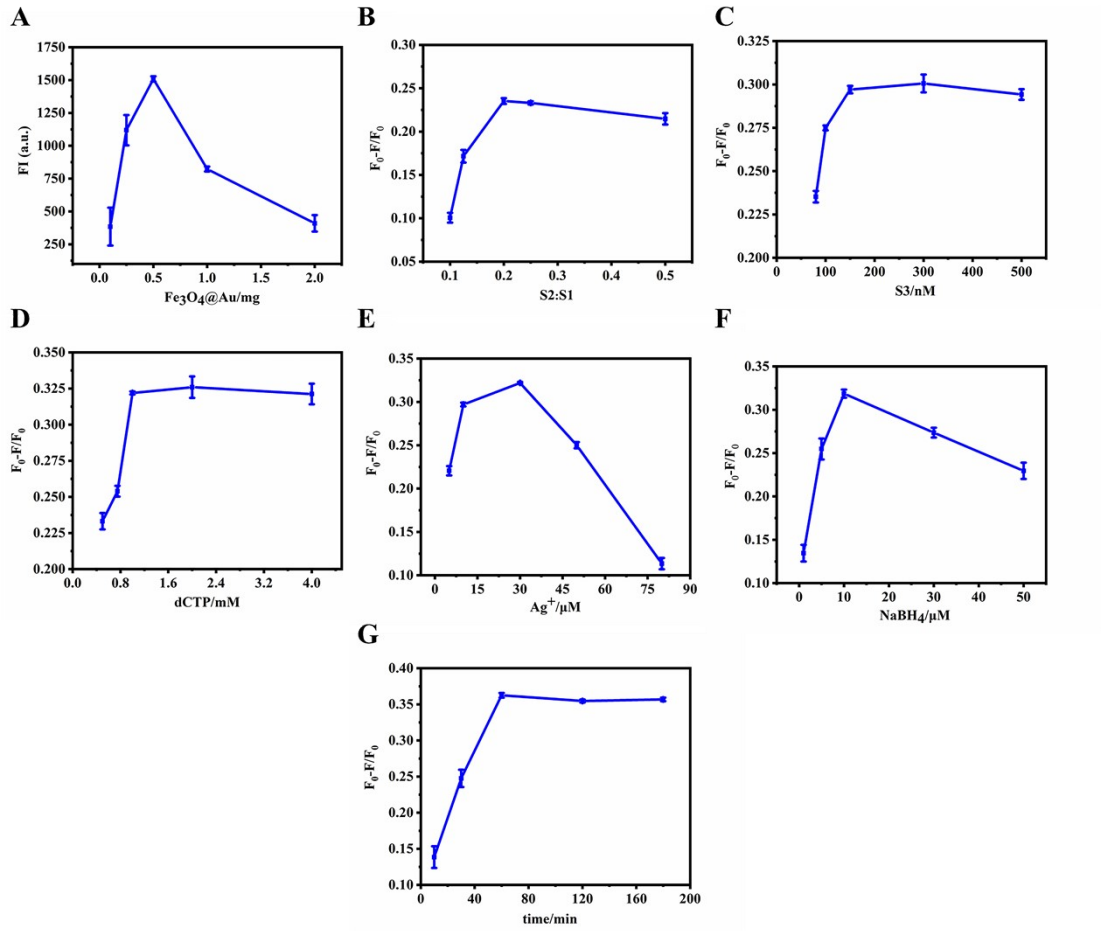

Fig. S2. Optimization of the experimental conditions. (A) The amount of Fe_3O_4@Au, (B) the ratio of S1 to S2, (C) the concentration of S3, (D) the dosage of dCTP, (E) the dosage of Ag^+, (F) the dosage of $NaBH_4$, and (G) the incubation time.

Reference

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