Electronic Supplementary Material (ESI) for Analyst.

Supporting Information

Ultrasensitive Detection of Tumor-Derived Small Extracellular Vesicles Based on Nonlinear Hybridization Chain Reaction Fluorescence Signal Amplification and Immunomagnetic Separation

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General experimental section

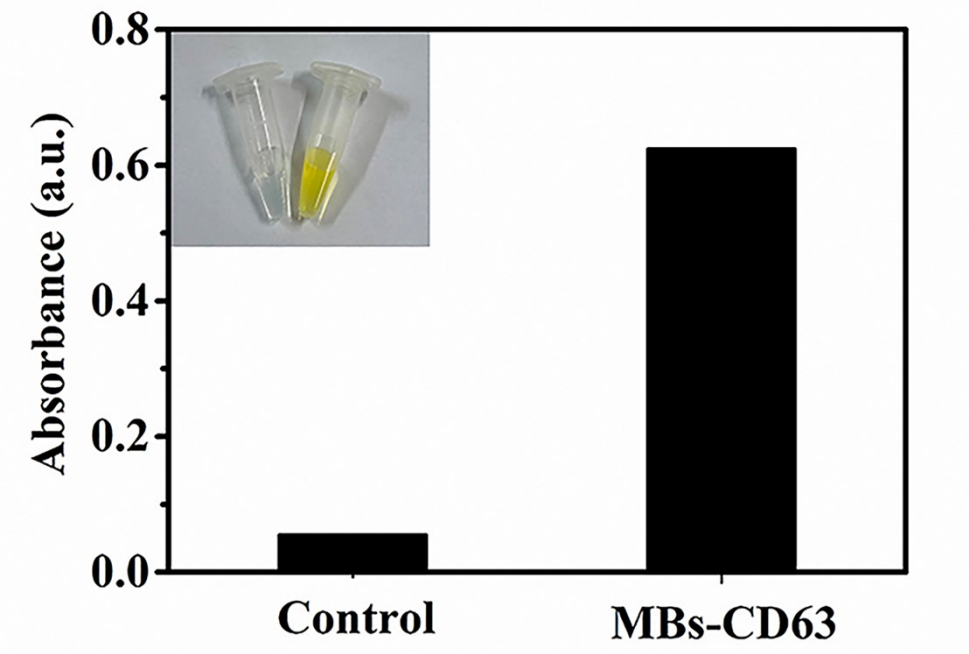

Figure S1. Absorption intensities at 450 nm for bare (control) and MBs-CD63. Inset is the corresponding digital photo.

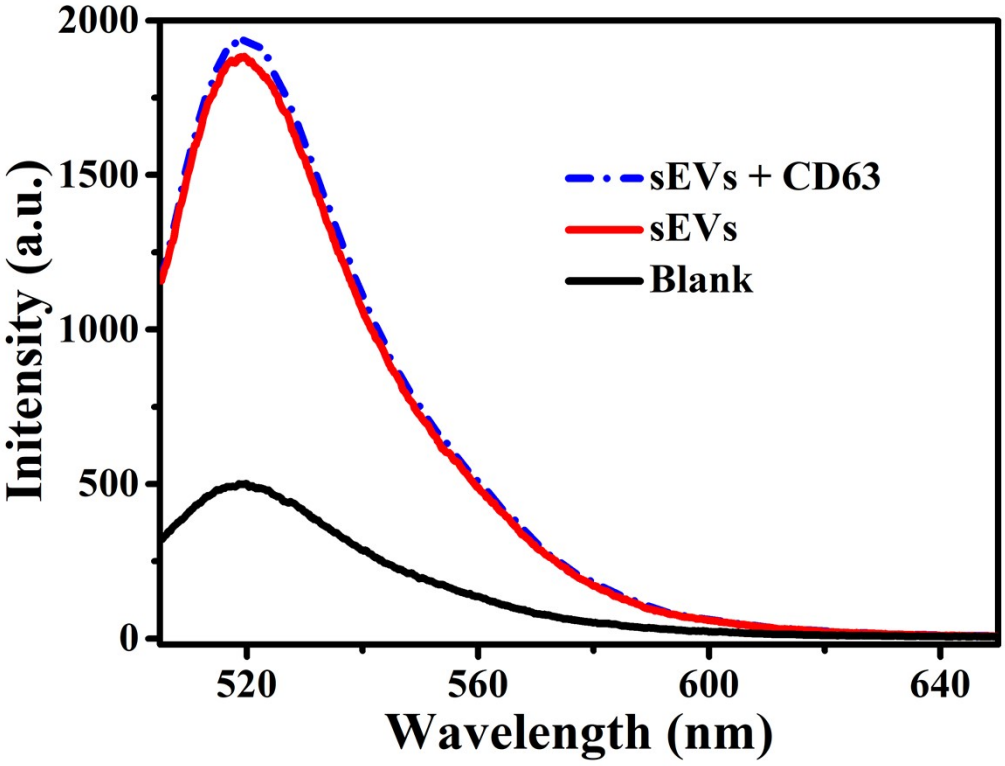

Figure S2. Fluorescence spectra for sEVs detection *via* nHCR with or without free CD63 protein.

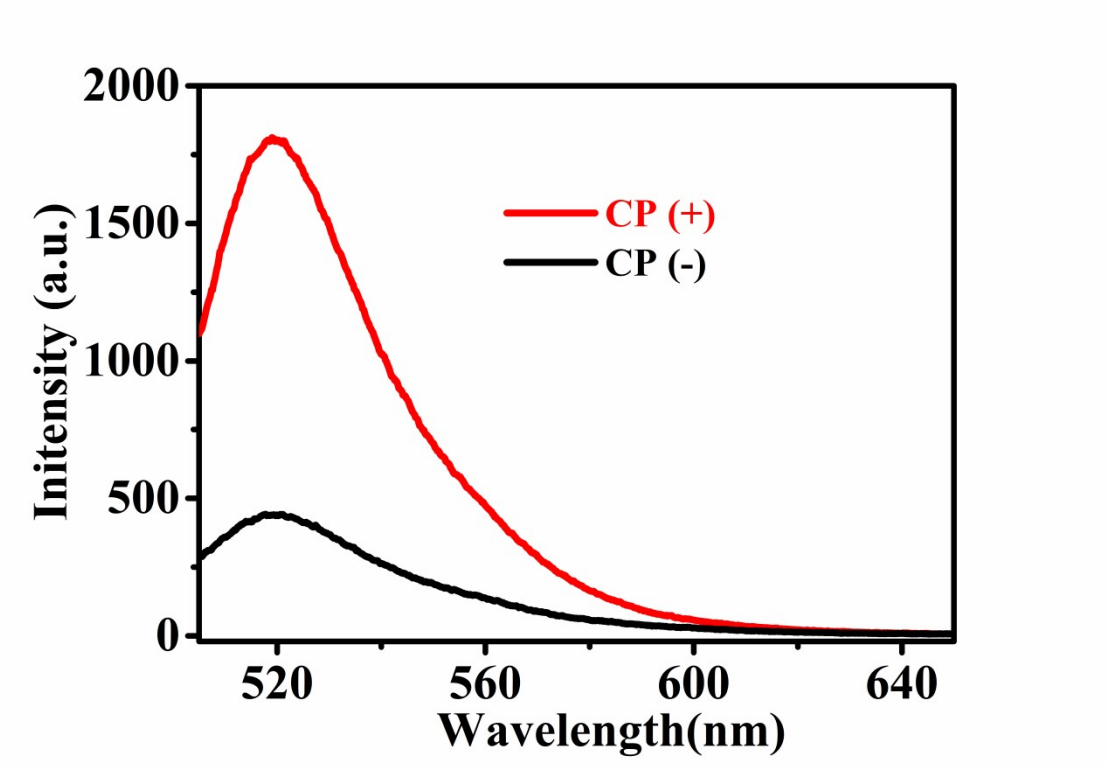

Figure S3. Fluorescence spectra corresponding to lanes 6 and 7 in **Figure 3 (B)**.

Table S1. Summary of DNA sequence information used in this work

Name (abbreviation)	Sequences (5' to 3')	Modification
H1	TTTTTTTTTTTTTTTAACCGAATCCTAGACTCAAAGTAGTCTAG GATTC	5'Biotin, 3'FAM
H2	TTTTTTTTTTTTTAGTCTAGGATTCGGTTAAGAATCCTAGACTA CTTTG	5'Biotin, 3'FAM
CP	AGTCTAGGATTCGGTTAA	3'cholesterol
CCP	GAATCCTAGACT	3'FAM

Table S2. Comparison of the present method with other approaches for sEVs detection.

Detection Method	Sensing Strategy	LOD (particles/μL)	Linear range (particles/ μL)	Ref.
Fluorescence	GO nanoprobe / enzyme-mediated signal amplification	1.6×10^2	1.6×10^2 - 1.6×10^5	1
Fluorescence	Dual signal amplification platform based on rolling circle amplification	1.0×10^2	1.0×10^3 - 1.0×10^5	2
Fluorescence	Bivalent cholesterol anchored enzyme-free DNA circuits signal amplification	1.29×10^3	5.5×10^3 - 1.1×10^7	3
Fluorescence	TdT-catalyzed polymerization based on steric hindrance-controlled signal amplification	4.8×10^2	1.66×10^3-1.66×10^6	4
Fluorescence	Bicolor exosomal phenotyping based on multivalence-actuated DNA nanomachines	33	4.5×10 - 4.5×10^5	5
Electrochemistry	Aptamer-based exonuclease III (Exo III)-assisted recycling amplification	12	3.4×10^1 - 3.4×10^5	6
Electrochemistry	Electrochemical aptasensor based on click chemistry and the DNA HCR for signal amplification	96	1.12×10^2 - 1.12×10^8	7
Colorimetry	Enzyme-catalyzed metallization of Au nanorods and hybridization chain reaction	1.6×10^2	1.4×10^3 - 9.0×10^6	8
Colorimetry	HRP-catalyzed H_2O_2-mediated oxidation of TMB	2.2×10^3	1.8×10^4 - 7.9×10^5	9
Raman scattering	A novel Raman probe based on self-assembly of gold nanoparticles in triangular pyramid DNA	1.1×10^2	3.125×10^4-1.0×10^6	10
Electrochemilum inescence	Aptamer-binding DNA walking machine for signal amplification	60	2.0×10^2 – 7.5×10^4	11
Fluorescence	Nonlinear HCR fluorescence signal amplification based on immunomagnetic separation	80	2.0×10^2 – 8.0×10^6	This work

References

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