Electronic Supplementary Material (ESI) for Analytical Methods.

Supplementary materials

Enzymatically-generated long polyT Templated-Copper Nanoparticles for Versatile Biosensing Assay of DNA-related Enzymes Activity

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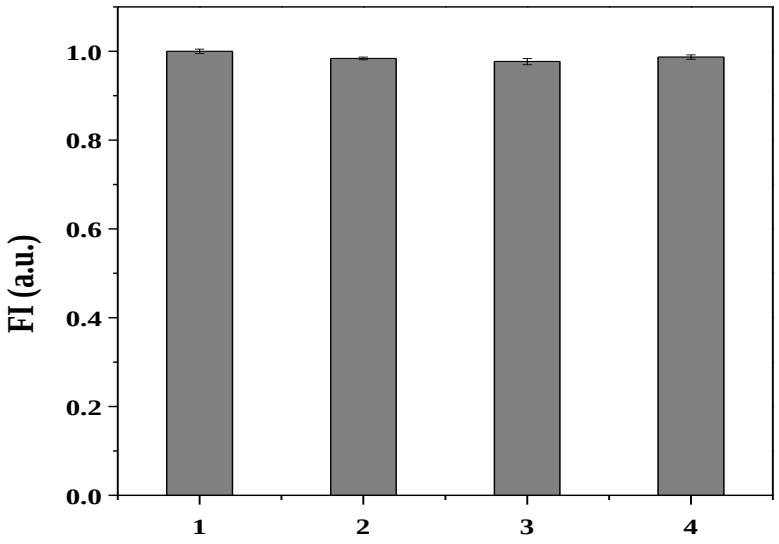

Figure S1. Fluorescence responses at 625 nm of DNA-CuNPs templated by 1μM T_{40} (1) or (1) with TdT buffer (2), 1 mM dTTP (3), or 400 U/mL TdT (4).

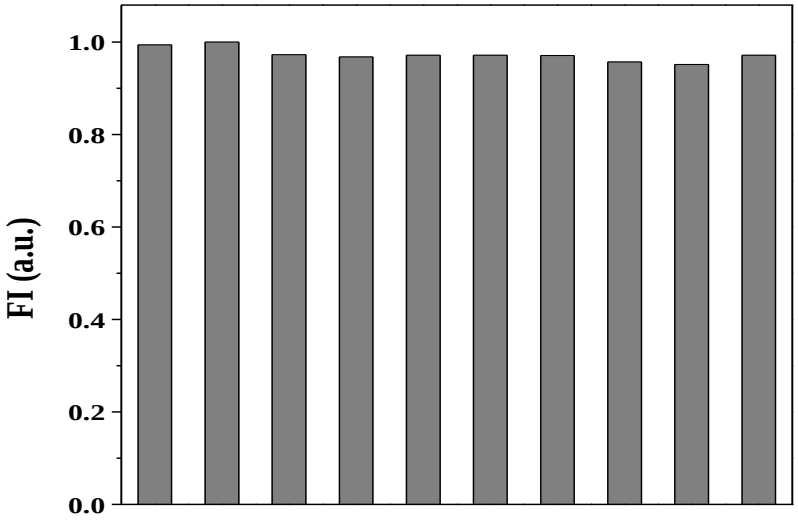

Figure S2. Detection of repeatability of DNA-CuNPs as biosensor involving ten samples in the pressence of 400 U/mL TdT.

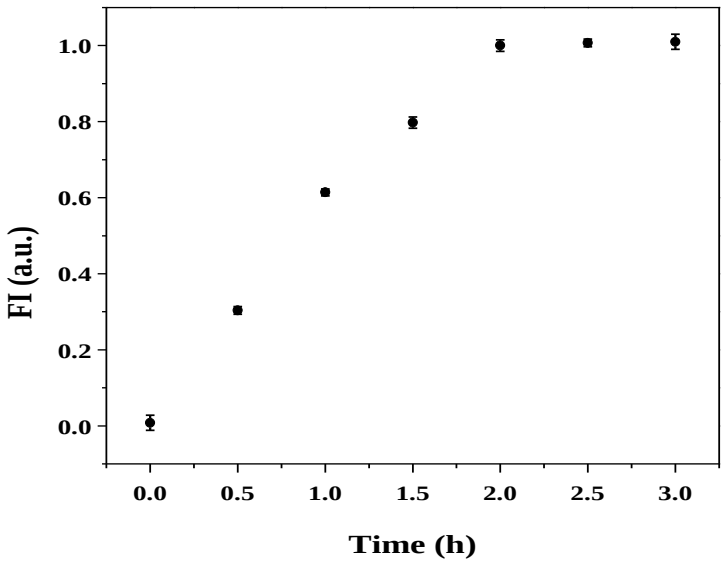

Figure S3. Influence of polymerization time on the formation of fluorescent CuNPs in the presence of 1 μM DNA-P records at λ_{em} = 625 nm.

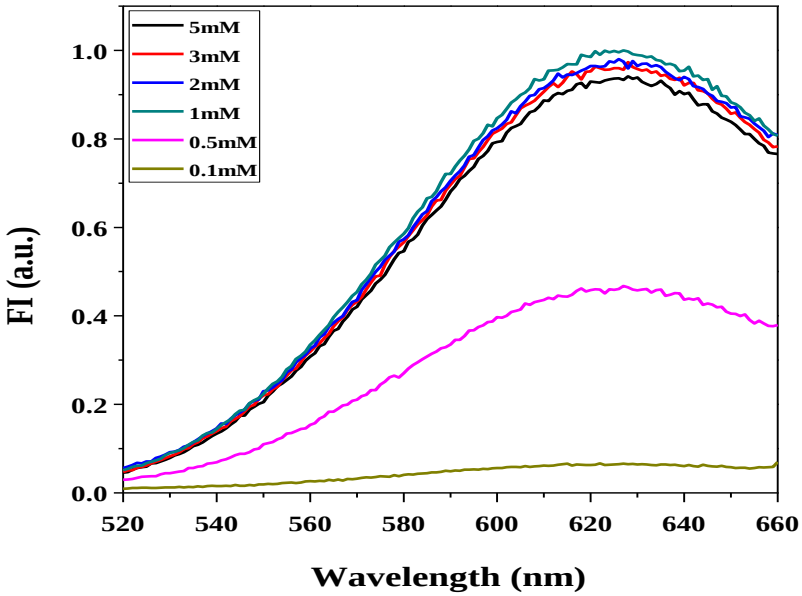

Figure S4. Influence of dTTP concentration on the formation of fluorescent CuNPs in the presence of 1 μM DNA-P records at λ_{em} = 625 nm.

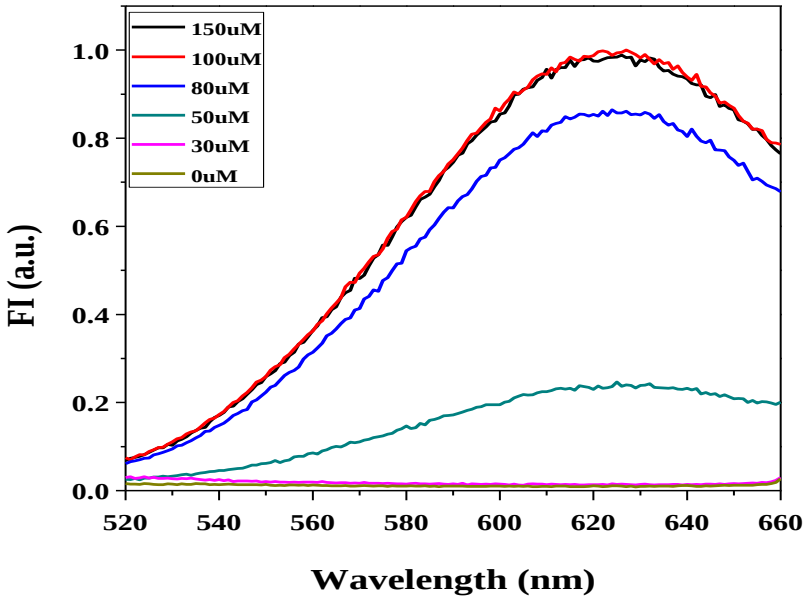

Figure S5. Influence of Cu^{2+} concentration on the formation of fluorescent CuNPs in the presence of 1 μM DNA-P records at λ_{em} = 625 nm.

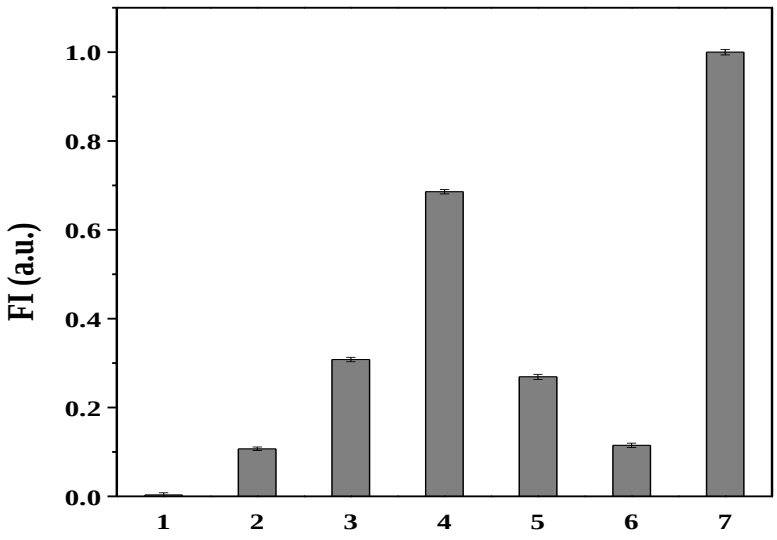

Figure S6. Fluorescence spectra of DNA-CuNPs synthesized by T_{40} of 0 μM (1), 0.1 μM (2), 1 μM (3), 2 μM (4), 4 μM (5), 6 μM (6) and by 0.1 μM TdT-generated DNA-P-polyT (7).

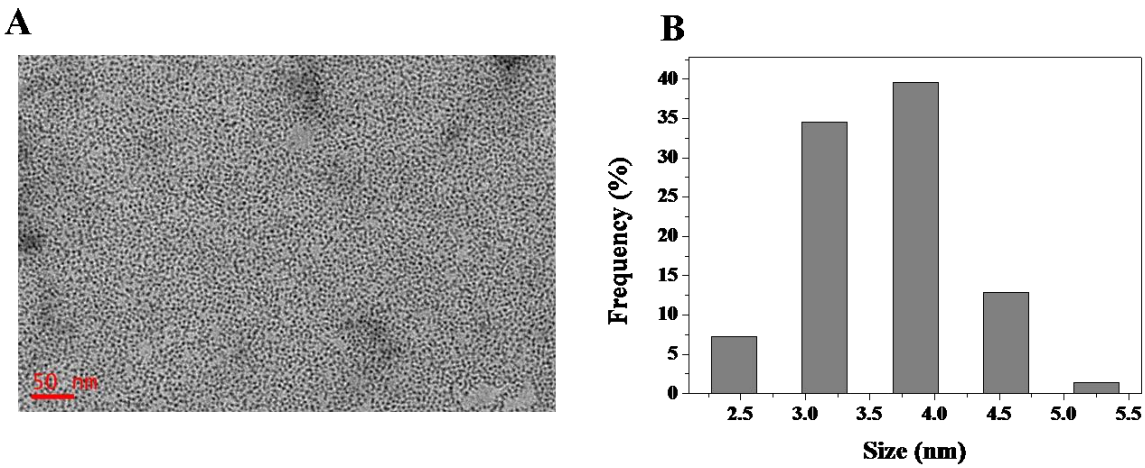

Figure S7. (A) TEM characterization of DNA-CuNPs templated by T_{40}. And **(B)** DNA-CuNPs diameters supported by T_{40}.

Table S1. Measurement results of TdT in complex biological medium.

Number	Added/U	Found/U	Recovery/%	RSD/%
1	1	0.92	92.11	3.49
2	1.5	1.41	93.56	1.78
3	2	1.81	90.67	2.34
4	3	2.79	93.31	3.25
5	4	3.75	93.08	1.76

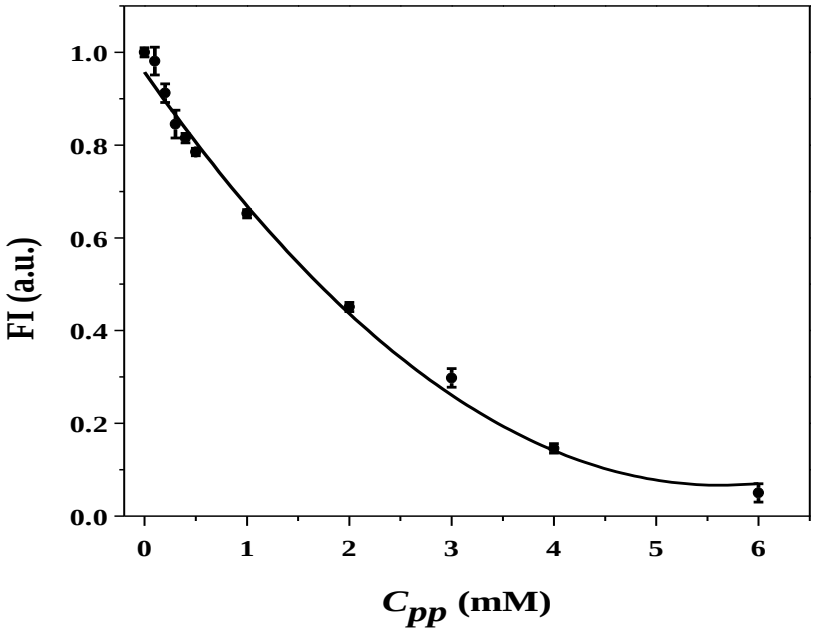

Figure S8. Assay of the inhibition of tetrasodium pyrophosphate (PP) on TdT. The inhibitor analysis was conducted by incubation of 400 U/mL TdT with varying concentrations of PP in the presence of 1 μM DNA-P and 1 mM dTTP. IC_{50} = 1.85 mM.

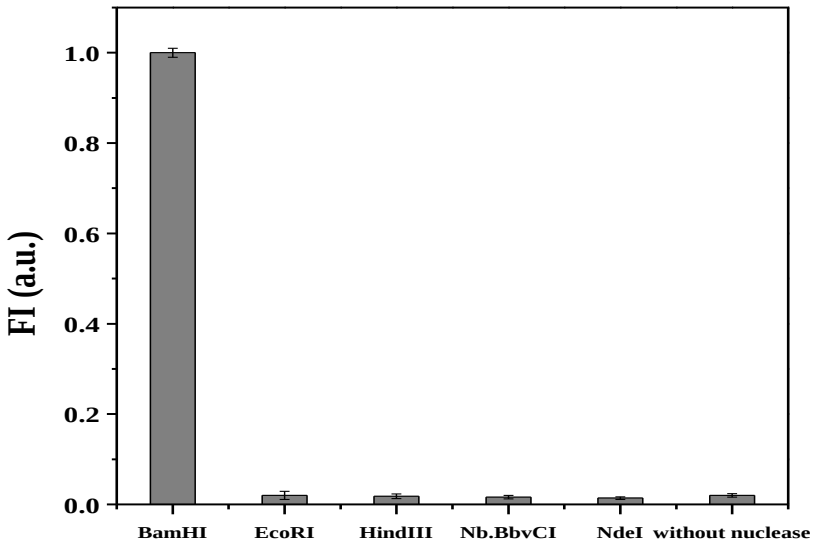

Figure S9. The fluorescence responses of the proposed biosensing system based on TdT-generated DNA-CuNPs to BamHI (25 U/mL) and other non-target enzymes. The concentration of non-target enzyme was 120 U/mL.

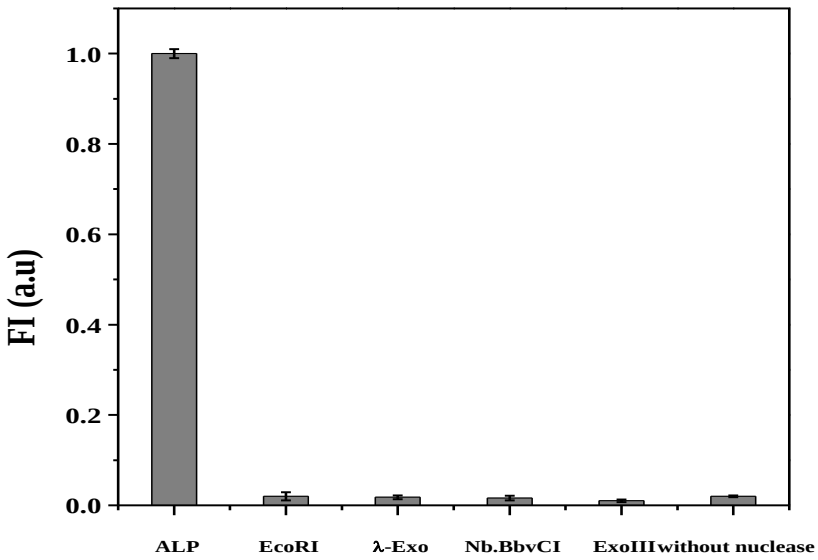

Figure S10. The fluorescence responses of the proposed biosensing system based on TdT-generated DNA-CuNPs to ALP (1 U/mL) and other non-target enzymes. The concentration of non-target enzyme was 120 U/mL.