Supporting Information

Label-Free Cyclic Assembly of G-quadruplex Nanowires for Cascade Amplification Detection of T4 Polynucleotide Kinase Activity and Inhibition

Zhilu Shi, Xiafei Zhang, Rui Cheng, Baoxin Li and Yan Jin*

Key Laboratory of Applied Surface and Colloid Chemistry, Ministry of Education, Key Laboratory of Analytical Chemistry for Life Science of Shaanxi Province, School of Chemistry and Chemical Engineering, Shaanxi Normal University, Xi'an 710119, China

* To whom correspondence should be addressed. Tel: 86-29-81530726**;** Fax: 86-29-81530727; Email: jinyan@snnu.edu.cn
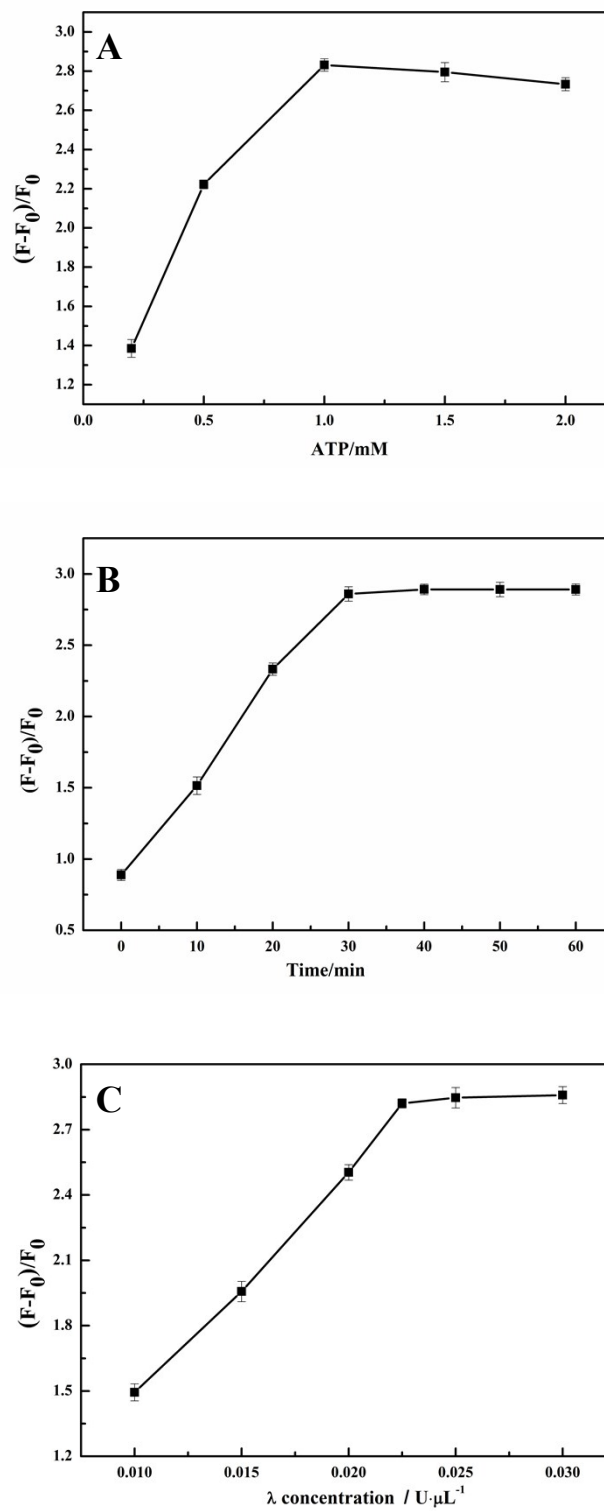
Figure S1.

Figure S1. (A) ATP effect of the phosphorylation. (B) The effect of the phosphorylation time. (C) The effect of the λ exo concentration on the assay.
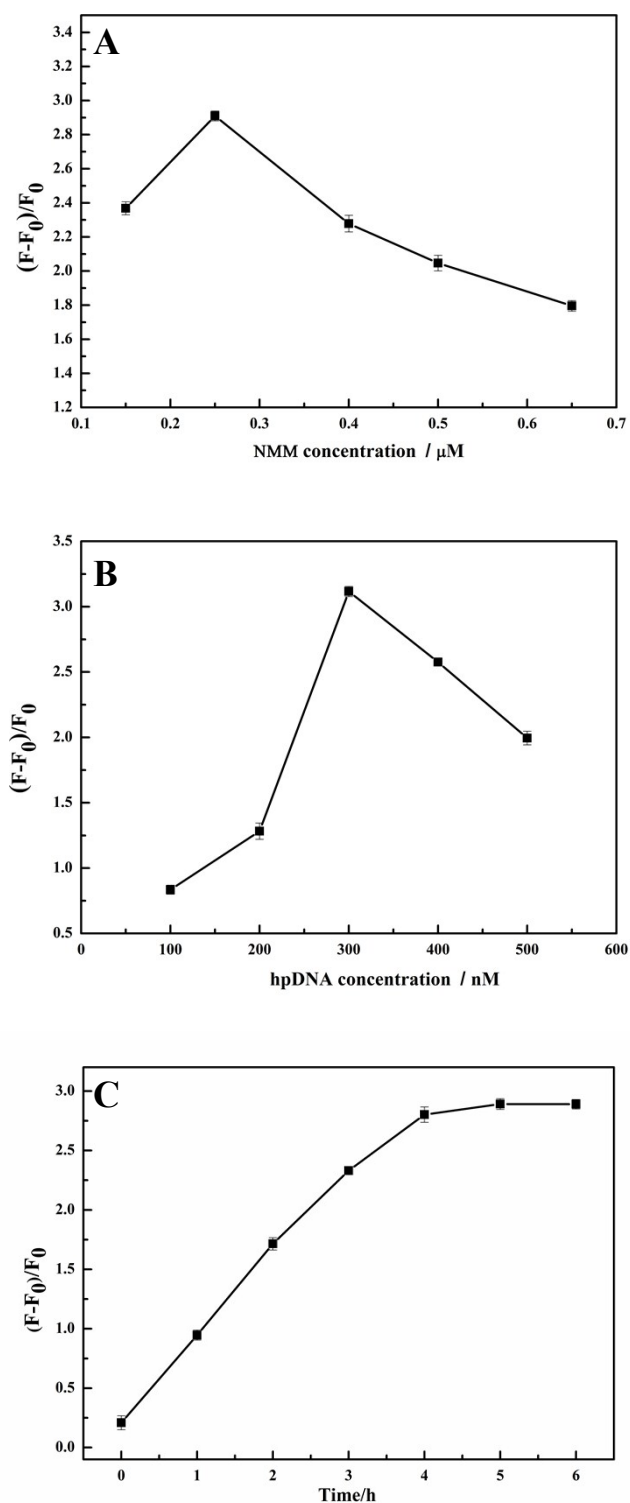
Figure S2.

Figure S2. Effect of factors on the amplification efficiency. (A) Fluorescence efficiency with the concentration of the NMM. (B) Dependence of H2, H3 concentration on the fluorescence efficiency. (C) Dependence of fluorescence enhancement on the reacting time.
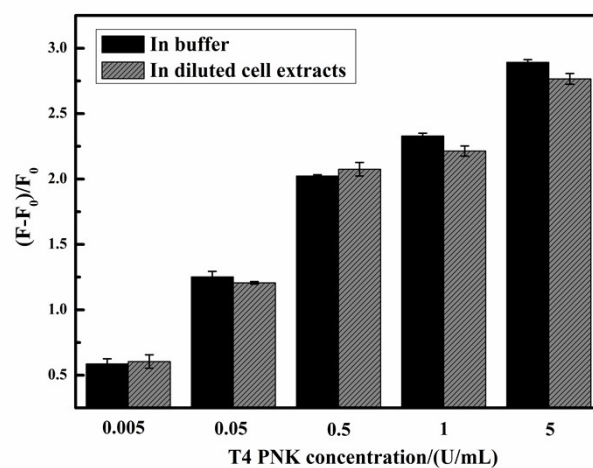
Figure S3.

Figure S3. Fluorescence response for detecting T4 PNK activity in pure buffer and diluted cell extracts (1%) respectively. Error bars were calculated from four replicate measurements.
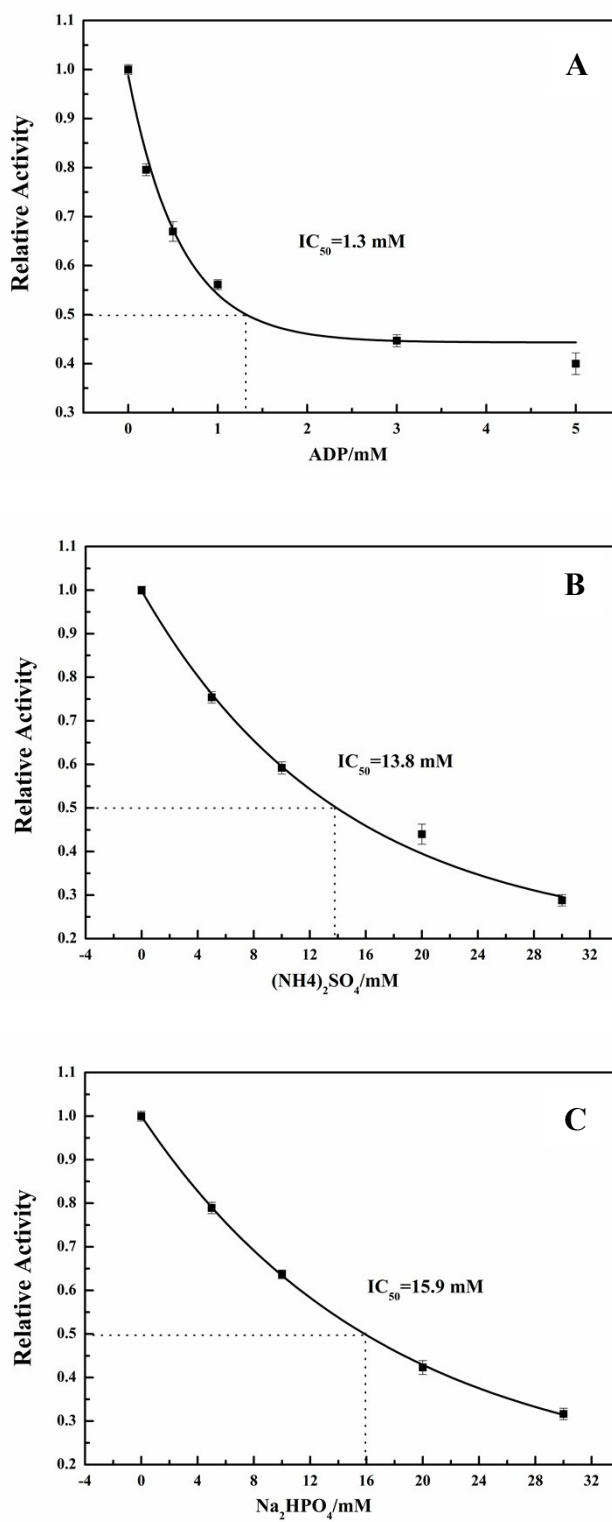
Figure S4.

Figure S4. Inhibition effects of (A) ADP, (B) $(NH_4)_2SO_4$, and (C) Na_2HPO_4 on phosphorylation.

Table S1 Comparison of different assays for T4 PNK activity detection

Signal readout	Label-free	Amplification	LOD[a] (U/mL)	Linear range (U/mL)	Selectivity	b
Fluorescence	−	−	0.02	0-0.25	Good	1
Fluorescence	+	−	0.001	0.001-5	Good	2
Fluorescence	−	+	0.000004	0.00001 - 0.001	Good	3
Fluorescence	+	+	0.043	0-2.7	Good	4
Fluorescence	−	+	0.003	0-0.2	Good	5
Photoelectrochemical	+	+	0.001	0.002-0.1	Not given	6
Fluorescence	−	+	0.001	0.1-1.0	Not given	7
Colorimetric	+	−	Not given	0.0385-1.3533	Not given	8
Luminescence	+	+	0.0018	0.002-0.05	Good	9
fluorescence	−	+	0.005	0.005-0.2	Not given	10
luminescence	+	−	0.05	0.05-1.0	Good	11
fluorescence	−	+	0.001	0.001-0.05	Good	12
electrochemistry	−	+	0.02	0.05-10.0	Not given	13
Fluorescence	−	+	0.01	0.01-1.0	Good	14
Fluorescence	+	+	0.0001	0.0005-1.0	Good	15
Fluorescence	−	+	0.00037	0.001-5	Good	c

[a] LOD, limit of detection, b reference, c this work.

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