Supporting Information

Sensitive Determination of Formamidopyrimidine DNA Glucosylase with Phosphate Group-Modulated Multi-Enzyme Catalysis and Fluorescent Copper Nanoclusters

Junyao Li,[a] Mengyang Zhang,[a] Huaisheng Wang,[a] Jie Wu,[a] Ruixue Zheng,[a] Jiahui Zhang,[a] Yan Li,[a] Zhaoyin Wang,*[a] and Zhihui Dai*[a]

[a]Jiangsu Collaborative Innovation Center of Biomedical Functional Materials and Jiangsu Key Laboratory of Biofunctional Materials, School of Chemistry and Materials Science, Nanjing Normal University, Nanjing, 210023, P. R. China.

[b]Department of Chemistry, Liocheng University, Liaocheng, 252059, P. R. China

*Tel./Fax: +86-25-85891051. E-mail: daizhihuii@njnu.edu.cn (Z. Dai) and inzo@163.com (Z. Wang).

List of contents:

1. Morphology of ssDNA-3-templated CuNCs.

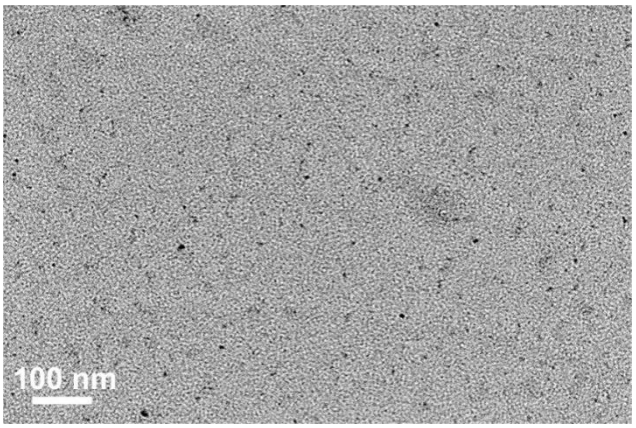

Fig. S1 TEM image of ssDNA-3-templated CuNCs.

2. Diameter analysis of ssDNA-3-templated CuNCs.

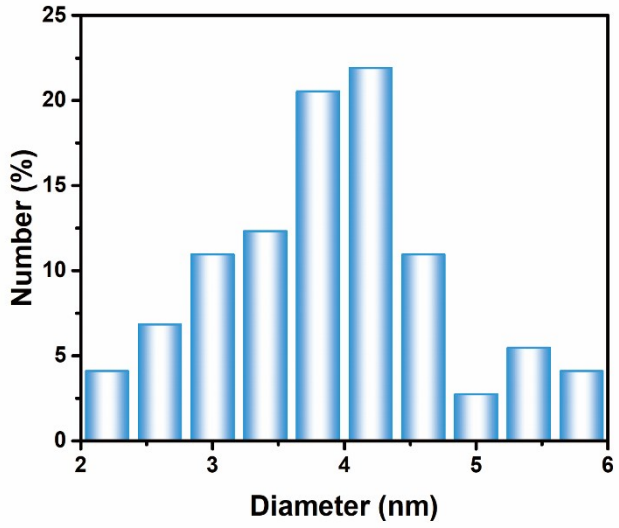

Fig. S2 Diameter distribution of ssDNA-3-templated CuNCs.

3. Optimization of the dosage of λ Exo.

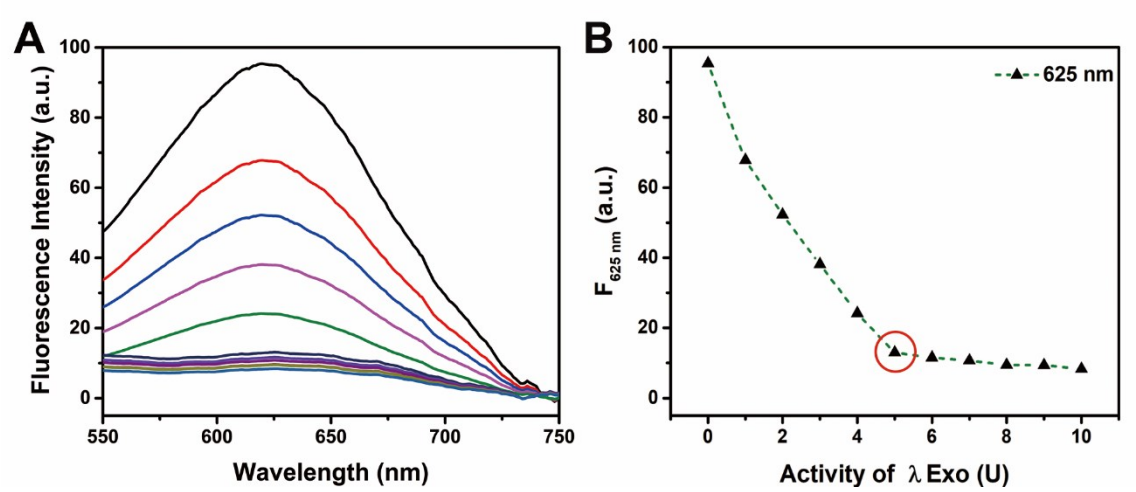

Fig. S3 (A) Fluorescence emission spectra of dsDNA-1-templated CuNCs with λ Exo at varying activities in the absence of Fpg. (B) Effect of λ Exo on the fluorescence intensity at 625 nm of dsDNA-1-templated CuNCs.

4. Optimization of the dosage of Exo I.

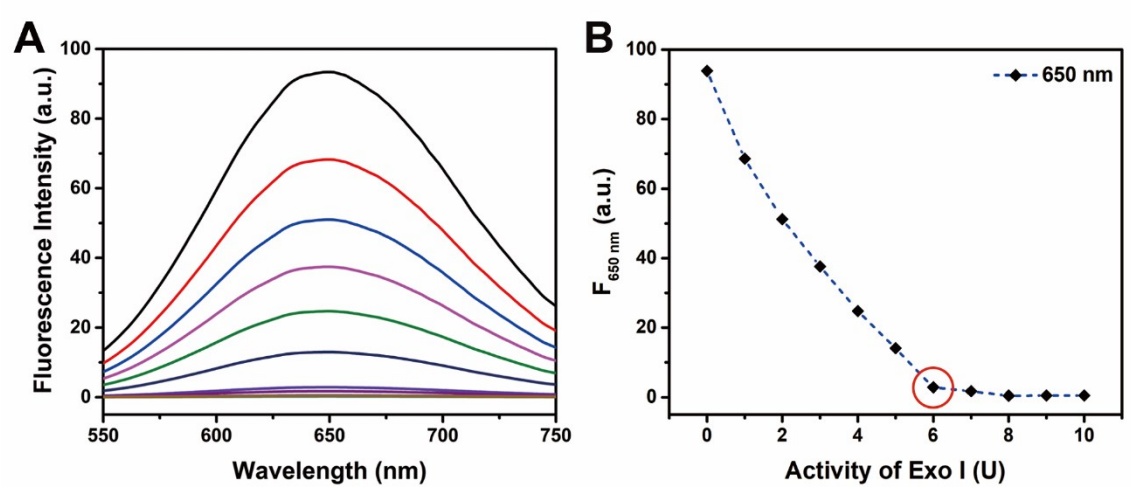

Fig. S4 (A) Fluorescence emission spectra of poly(T)-templated CuNCs with different activities Exo I in the absence of Fpg. (B) Effect of Exo I on the fluorescence intensity at 650 nm of poly(T)-templated CuNCs.

5. Fluorescence spectra of CuNCs with different concentrations of Fpg.

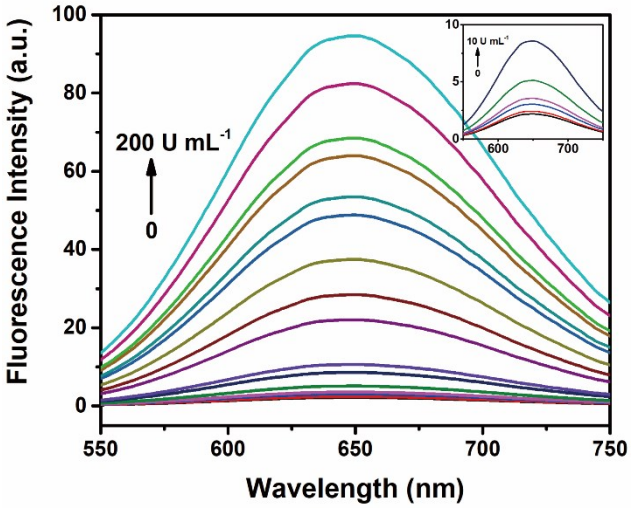

Fig. S5 Dependence of fluorescence intensity on concentrations of Fpg from 0 to 200 U mL^{-1}. Inset: Dependence of fluorescence intensity on concentrations of Fpg from 0 to 10 U mL^{-1}.

6. Comparison of analytical performances of relevant biosensors.

Table S1. Comparison of analytical performances of different approaches for analyzing enzymes eliminating 8-oxoG.

Method	**Signal probe**	**Detection limit (U mL^{-1})**	**Linear range (U mL^{-1})**	**Real sample detection**	**Ref.**
Colorimetry	Gold nanoparticle	0.7	0.7 - 64	Not reported	S1
Colorimetry	$ABTS^{2-}$	0.01	0.05 - 16	Not reported	S2
Electrochemistry	Methylene blue	0.015	0.1 - 20	Diluted human serum	S3
Electrochemistry	Nile blue	1.0	1.0 - 1000	Not reported	S4
Fluorescence	Pyrrolo-dC	1.25	1.25 - 50	Diluted human serum	S5
Fluorescence	FAM	1.033	1.033 - 100	Diluted human serum samples	S6
Fluorescence	CuNCs	0.01	0.1 - 200	Diluted human serum	This work

7. Related references.

S1. Z. Wu, Z. K. Wu, H. Tang, L. J. Tang and J. H. Jiang, *Anal. Chem.*, 2013, **85**, 4376-4383.

S2. S. Liu, H. Wu, J. Jiang, G. Shen and R. Yu, *Anal. Methods*, 2013, **5**, 164-168.

S3. F. Liu, T. Gao, Z. Ye, D. Yang, Z. Wang and G. Li, *Electrochem. Commun.*, 2015, **50**, 51-54.

S4. M. A. McWilliams, F. H. Anka, K. J. Balkus and J. D. Slinker, *Biosens. Bioelectron.*, 2014, **54**, 541-546.

S5. C. Y. Lee, K. S. Park and H. G. Park, *Biosens. Bioelectron.*, 2017, **98**, 210-214.

S6. J. Song, F. Yin, X. Li, N. Dong, Y. Zhu, Y. Shao, B. Chen, W. Jiang and C. Z. Li, *Analyst*, 2018, **143**, 1593-1598.