

Electronic Supplementary Information

Electrochemical aptasensor based on DNA-templated copper nanoparticles and RecJf exonuclease-assisted target recycling for lipopolysaccharide detection

Shunbi Xie^{*,a}, Shuting Liang^a, Liangliang Tian^b, Ge Ding^a, Meiting He^a, Haojie Li^a,
Heshan Yang^{*,a}

a Chongqing Key Laboratory of Environmental Materials and Remediation Technologies, College of Chemistry & Environmental Engineering (Chongqing University of Arts and Sciences), Chongqing 402160, PR China.

b School of Electronic Information and Electrical Engineering (Chongqing University of Arts and Sciences), Chongqing 402160, PR China.

* Corresponding authors: Shunbi Xie, Heshan Yang

E-mail addresses: xieshunbi@163.com

F-Tel.: +86-023-61162815

Table S1 Oligonucleotide sequences used in this assay

Oligonucleotide	Sequence (5' to 3')
LPS aptamer	CTT CTG CCC TCC TTC CTA GCC GGA TCG CGC TGG CCA GAT GAT ATA AAG GGT CAG CCC CCC AGG AGA CGA GAT AGG CGG ACA CT
c DNA	NH ₂ -AGT GTC CGC CTA TCT CGT CTC CTG GGG GGC TGA CCC TTT ATA TCA TCT GGC CAG CGC GAT CCG GCT AGG AAG GAG GCG GGC AGA AG

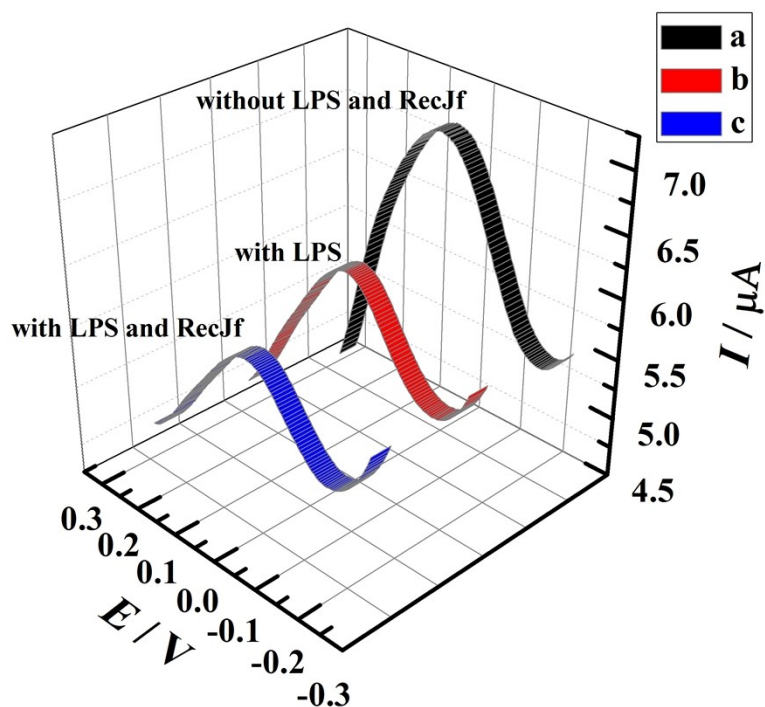


Fig. S1 Comparison of DPV signals for presence or absence of target and RecJf exonuclease. DPV signals for the absence of LPS and RecJf exonuclease (a), DPV signals for the presence of LPS (b), DPV signals for the presence of LPS and RecJf exonuclease (c).

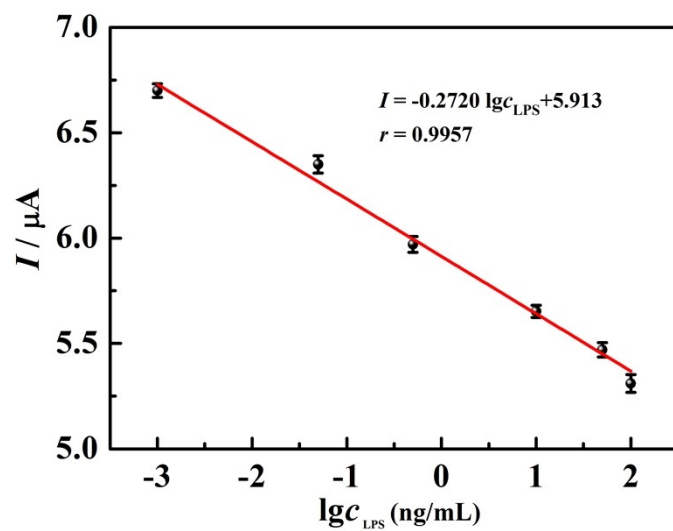


Fig. S2 The calibration plot for current vs. logarithm of the LPS concentration for the absence of RecJf exonuclease.

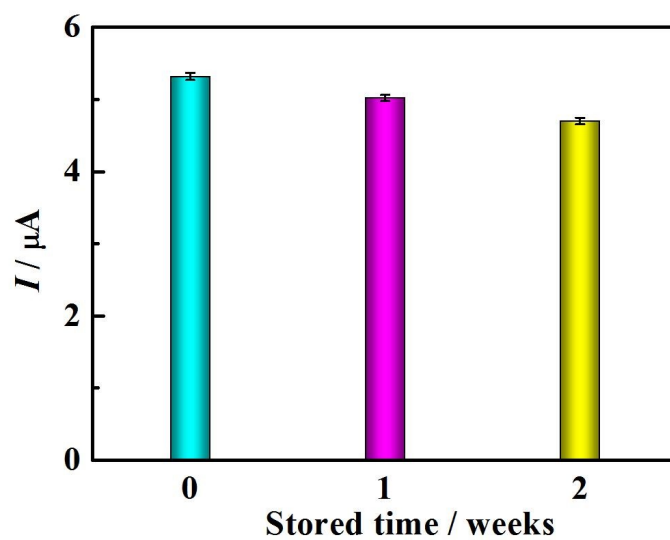


Fig. S3. The stability of biosensor for 0 week, 1 week and 2 weeks, respectively.

Table S2. The analytical performance of the proposed method compared with other LPS electrochemical detection method.

Analytical method	Materials	Linear range	Detection limit	detection time	Ref.
DPV	graphene and gold nanoparticles	10 fg/mL~ 50 ng/mL	8.7 fg/mL	180 min	1
DPV	(4-(ferrocenylacetamido) phenyl) boronic acid	1.0 pg/mL~ 1 ng/mL	0.34 pg/mL	45 min	2
DPV	copper-based metal-organic framework collaborative amplification of dual enzymes (Exo III and terminal deoxynucleotidyl transferase)	1.0 pg/mL~ 1.0 ng/mL	0.29 fg/mL	65 min	3
Chronocoulometry	Ce-based metal-organic frameworks	2.5 pg/mL~ 1 ng/mL	1.0 pg/mL	215 min	4
DPV	nafion/polypyrrole/graphene oxide	50 fg/mL~ 10 pg/mL	33 fg/mL	195 min	5
DPV	copper ion-assisted gold nanoparticle aggregates	0.01 ng/mL~ 3.0 ng/mL	3.5 pg/mL	25 h	6
DPV	silver nanoparticles decorated titanium dioxide nanotube/functionalized reduced graphene oxide	10 fg/mL~ 100 ng/mL	3.3 fg/mL	63 min	7
CV	DNA-templated copper nanoparticles	17 fg/mL~ 100 ng/mL	5 fg/mL	60 min	8
DPV		10 fg/mL~ 100 ng/mL	6.8 fg/mL	90 min	This work

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