Supplementary Materials

For

Colorimetric Detection and Killing of Bacteria by Enzyme-Instructed Self-Aggregation of Peptide-Modified Gold Nanoparticles

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Table S1. High performance liquid chromatography (HPLC) peaks of CF_4KY_P.

Peak	Time	Height	Area	Conc.
1	7.433	1498.536	15566.402	0.2921
2	8.840	1201.502	22311.703	0.4187
3	9.638	8790.235	89428.344	1.6783
4	9.832	305713.250	4919143.000	92.3199
5	10.188	25168.014	171152.031	3.2121
6	10.479	6480.615	45130.223	0.8470
7	10.872	3519.667	53393.016	1.0021
8	11.752	1166.092	12243.196	0.2298

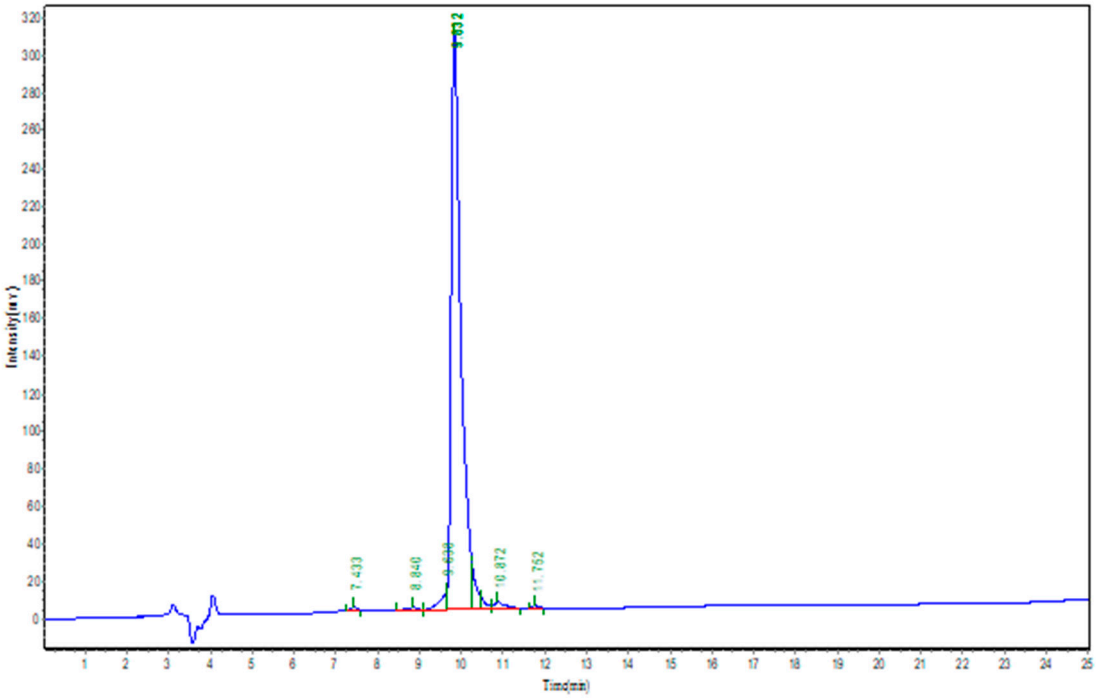

Figure S1. HPLC spectra of CF_4KY_P.

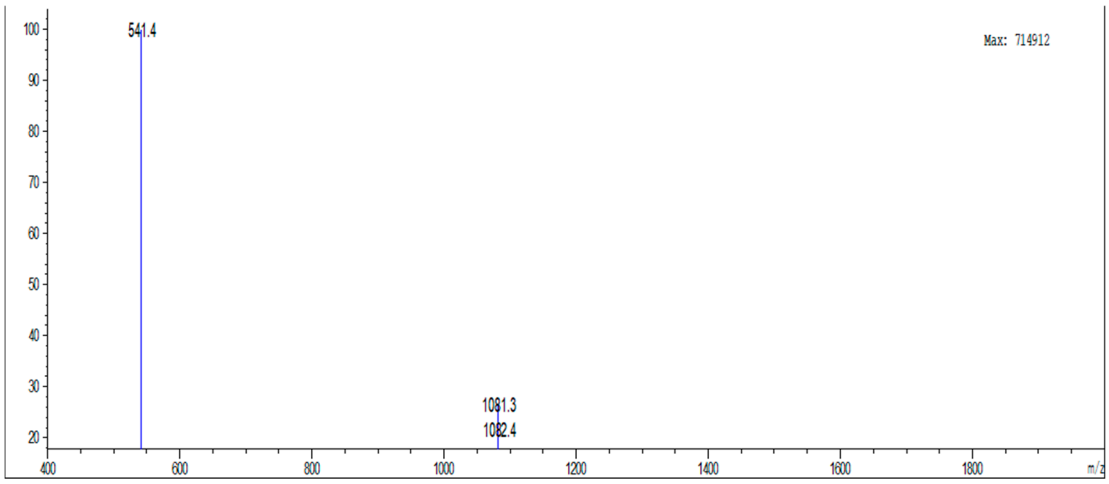

Figure S2. Mass spectra of CF_4KY^p (MW= 1081.17)

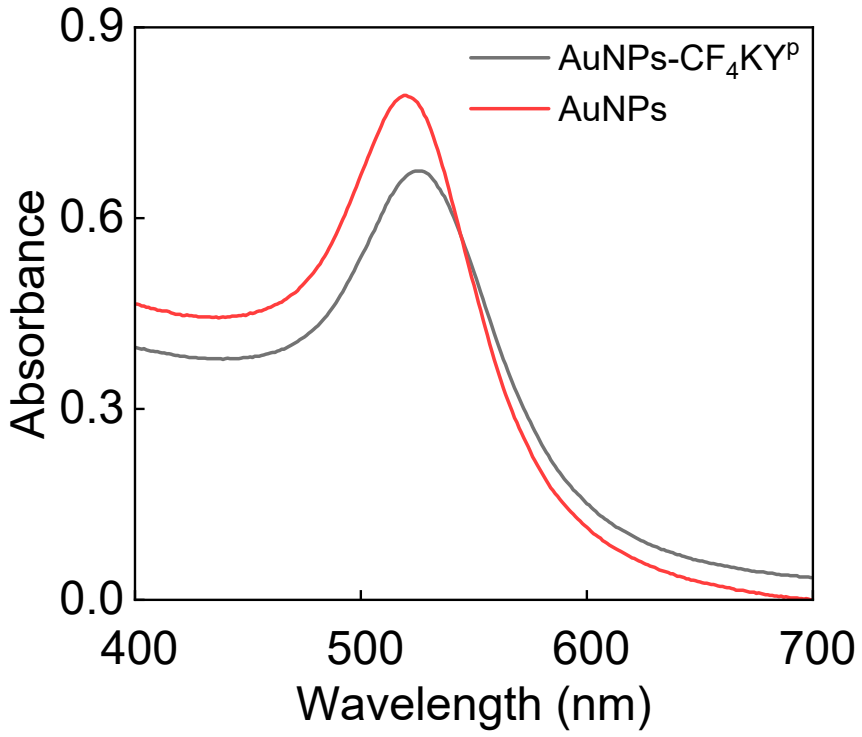

Figure S3. UV–vis spectra of AuNPs and AuNPs-CF_4KY^p.

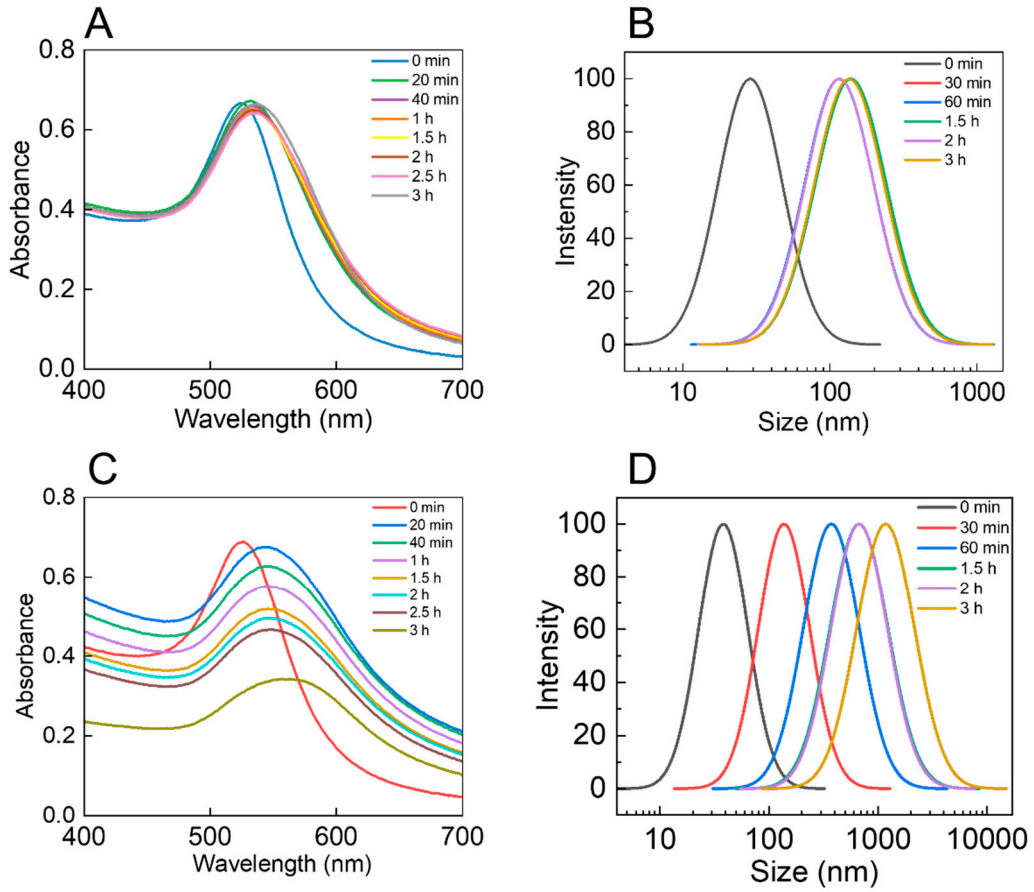

Figure S4. (A) UV–vis spectra and (B) hydrodynamic size profiles of AuNPs-CF_4KY^P-1 before and after the addition of ALP. (C) UV–vis spectra and (D) hydrodynamic size profiles of AuNPs-CF_4KY^P-2 before and after the addition of ALP. Experiments were repeated three times.

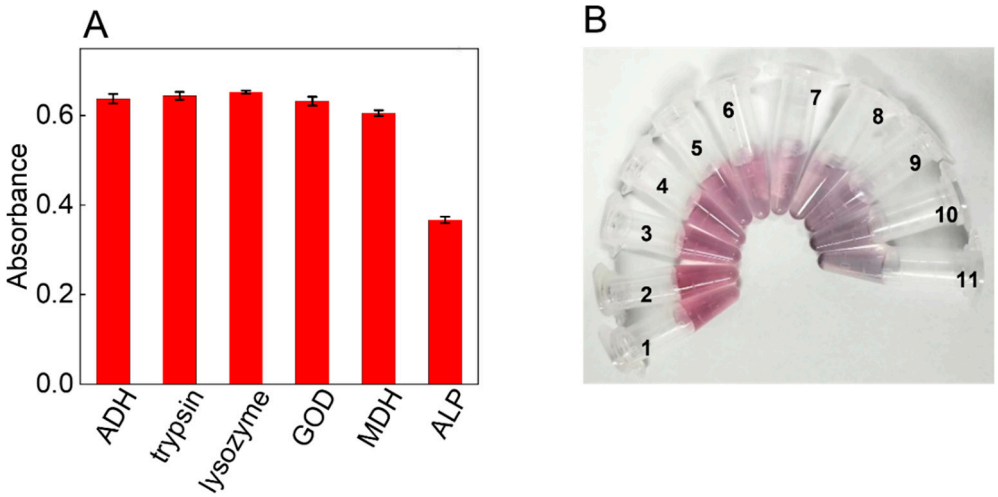

Figure S5. (A) The absorbance changes (530 nm) of the AuNPs-CF_4KY^P after incubating with different enzymes. Data are presented as mean ± S.D. Error bars were obtained from three replicate experiments. (B) The picture of AuNPs-CF_4KY^P solutions at different concentrations of ALP. 1, 2 $U{\cdot}mL^{-1}$; 2, 2.2 $U{\cdot}mL^{-1}$; 3, 2.4 $U{\cdot}mL^{-1}$; 4, 2.6 $U{\cdot}mL^{-1}$; 5, 2.8 $U{\cdot}mL^{-1}$; 6, 3.0 $U{\cdot}mL^{-1}$; 7, 3.2 $U{\cdot}mL^{-1}$; 8, 3.4 $U{\cdot}mL^{-1}$; 9, 3.6 $U{\cdot}mL^{-1}$; 10, 3.8 $U{\cdot}mL^{-1}$; 11, 4 $U{\cdot}mL^{-1}$). Experiments were repeated three times.

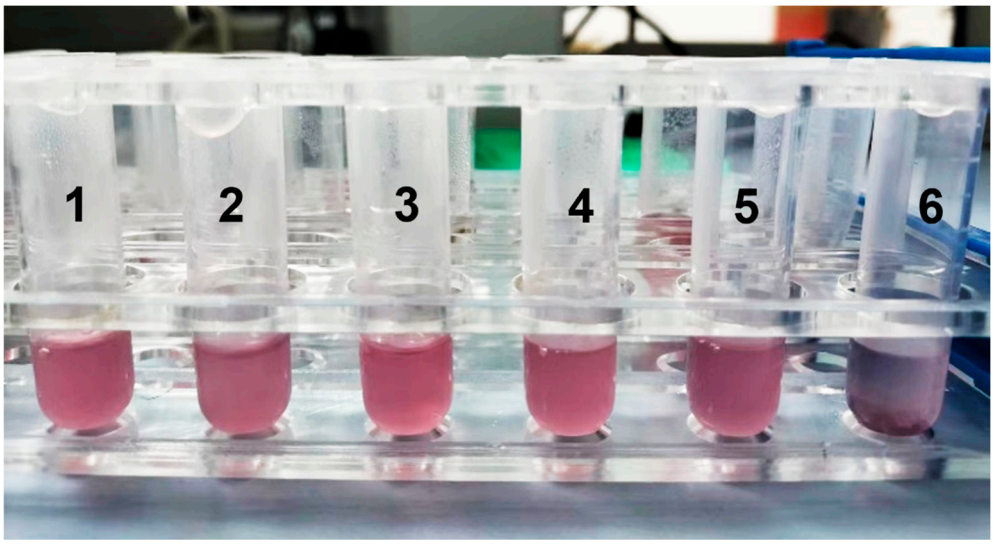

Figure S6. The picture of AuNPs- CF_4KY^P solutions after incubating with different bacteria. 1, *E. coli*; 2, *K. pneumoniae*; 3, *A. baumannii*; 4, *S. aureus*; 5, *DH-5α;* 6, *S. typhimurium*. Experiments were repeated three times.

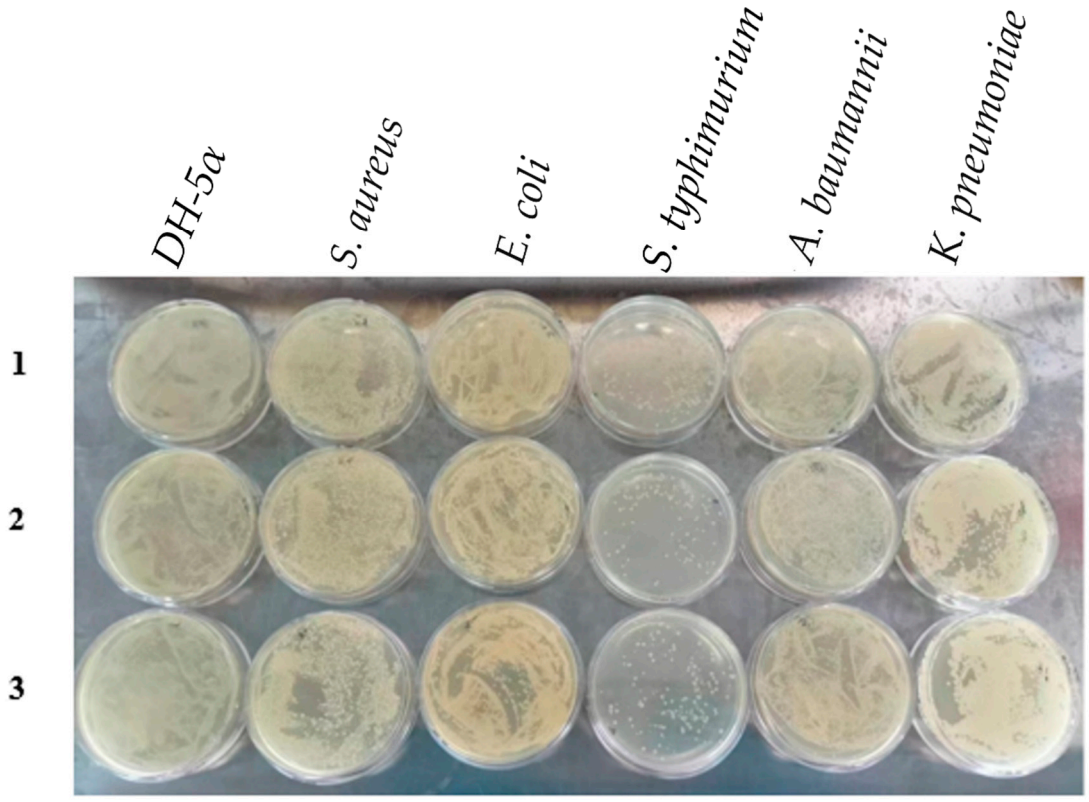

Figure S7. Colony growth image of different bacteria after incubating with AuNPs- CF_4KY^P.

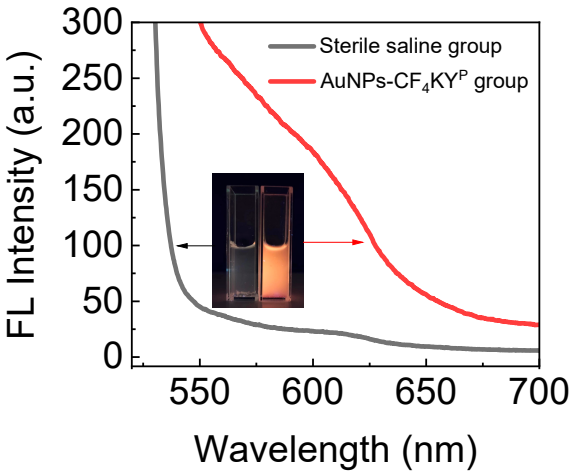

Figure S8. ROS fluorescence spectra of *S. typhimurium* after incubating with AuNPs-CF_4KY^P or sterile saline. The inset fluorescence image is the *S. typhimurium* solutions after incubating with a commercial bacteria ROS kit (BBoxiProbeO13).

Table S2. Typical research work on colorimetric detection of bacteria in the past five years.

Detection of bacteria	Detection limit (CFU·mL $^{-1}$)	Antimicrobial performance	References
Salmonella typhimurium	7	80%	This work
Salmonella typhimurium	61	—	[1]
Escherichia coli	24	—	[2]
Bacillus subtilis	2	—	[2]
E. coli ATCC 25922	10	80%-90%	[3]
S.aureus ATCC 25323	10	80%-90%	[3]
Escherichia coli	3.38×10^6	90%	[4]
Salmonella typhimurium	2.65	—	[5]
MRSA	1	—	[6]
E. coli WT3110	10^2	—	[7]
S. aureus ATCC 25923	10^2	—	[7]
S. aureus and E. coli	—	>90%	[8]
Escherichia coli O157:H7	4.1	—	[9]
Escherichia coli O157:H7	10	—	[10]
Escherichia coli ATCC25922	1.02×10^3	—	[11]
gram-positive bacterium	10^2	—	[12]
gram-negative bacterium	10^2	—	[12]
Escherichia coli ATCC 8739	100/44	—	[13]
Salmonella typhimurium	1	—	[14]
Streptococcus pneumoniae	65	—	[15]
S. aureus (ATCC 29213)	80	—	[16]

Escherichia coli ATCC25922	7.48×10^3	—	[17]
S.aureus ATCC29213	3.3×10^3	—	[17]
Salmonella typhimurium	56	—	[18]
Staphylococcus aureus	120	—	[19]

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