

Repeat protein mediated synthesis of gold nanoparticle: Effect of protein shape on the morphological and optical properties

Supporting information

Table S1. Molecular design of recombinant CTPRn proteins with different lengths and aspect ratios but same surface exposed residues.

Concensus sequence of CTPR protein: 34 amino acid residues

AEAWYNLGNAYYKQGDYQKAIEYYQKALELDPNN

Recombinant CTPRs	# of amino acid residues	Mw (kDa)	Aspect ratio
n=3	107	12.5	1.1
n=6	213	25	1.9
n=18	629	74.1	4.6

Table S2. Particle size of Au NPs synthesized in the presence of CTPR3 protein with different ratios of [HAuCl₄]/[CTPR].

Sample	[HAuCl ₄]:[CTPR]	Size(nm)
MOPS-Au	0	33.3±9.7
CTPR3-Au-1000	1000:1	18.8±11.7
CTPR3-Au-400	400:1	15.9±8.8
CTPR3-Au-100	100:1	14.6±6.5
CTPR3-Au-20	20:1	14.1±5.6
CTPR6-Au-1000	1000:1	16.9±7.6
CTPR6-Au-400	400:1	13.9±5.7
CTPR6-Au-100	100:1	12.3±5.1
CTPR6-Au-20	20:1	11.2±4.1
CTPR18-Au-1000	1000:1	N/A
CTPR18-Au-400	400:1	16.5±8.8
CTPR18-Au-100	100:1	13.8±8.3

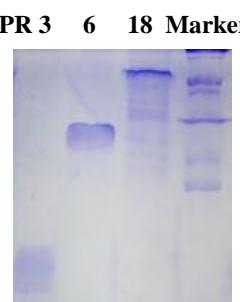


Figure S1. (b) SDS-PAGE gel of CTPR3,6,18 stained with coomassie blue.

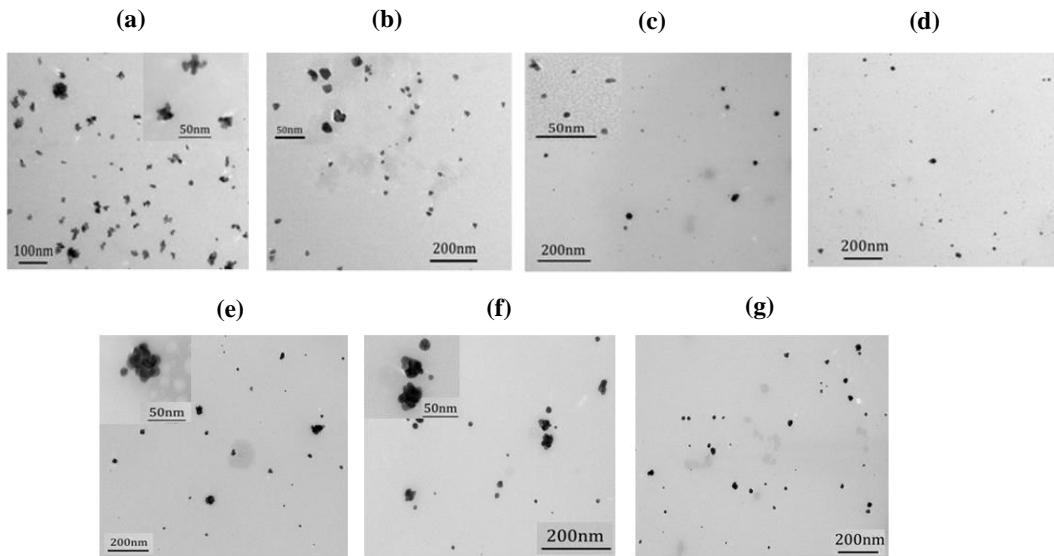


Figure S2. TEM images (a) CTPR6-Au-1k (b) CTPR6-Au-400 (c) CTPR6-Au-100 (d) CTPR6-Au-20 (e) CTPR18-Au-1k (f) CTPR18-Au-400 (g) CTPR18-Au-100. (inset showing magnified CTPR-Au NPs)

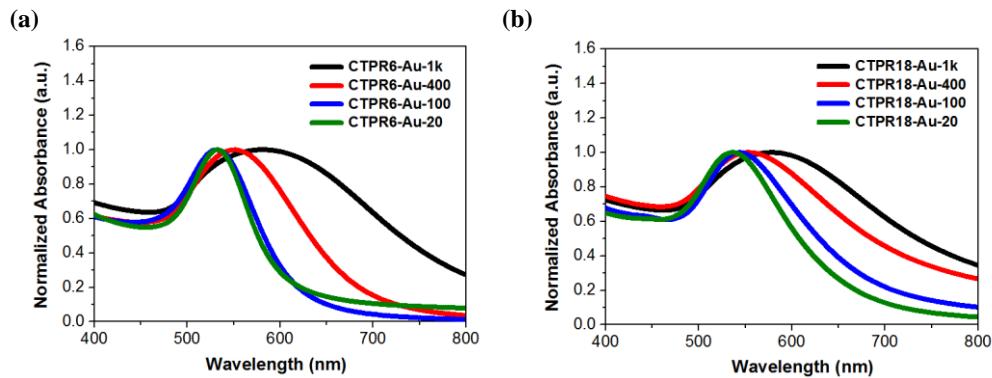


Figure S3. UV-vis spectra of (a) CTPR6-Au NPs and (b) CTPR18-Au NPs prepared with different ratio of $[HAuCl_4]/[CTPR]$.

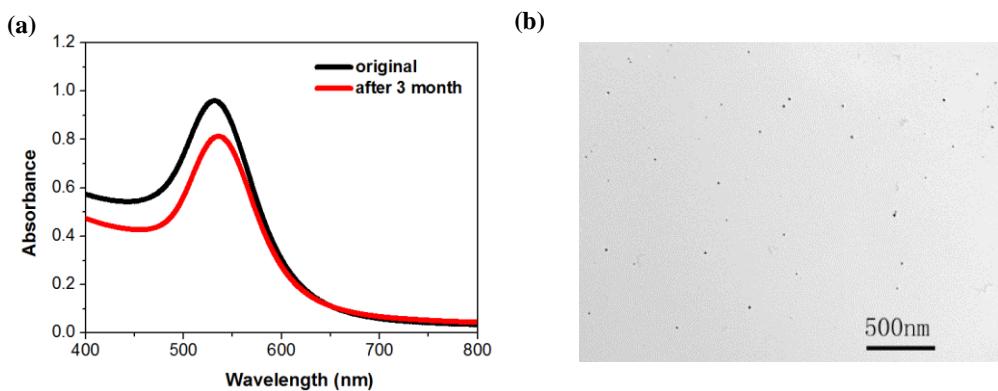


Figure S4. (a) UV-vis spectra and (b) TEM images of CTPR3-Au-20 before and after store at 4 °C for 3 months.

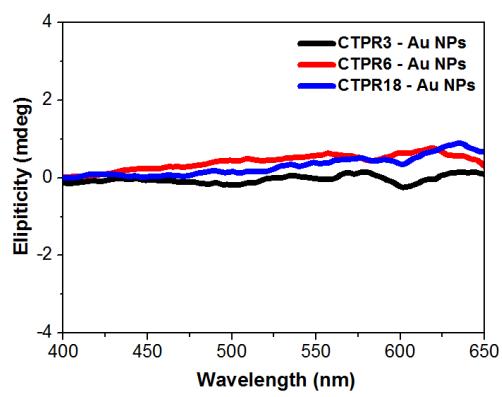


Figure S5. CD spectra of CTPR-Au-100 samples after ligand exchange using 2-mercaptoethanol.