Supporting Information:

Ultrastable BSA-capped gold nanoclusters with polymer-like shielding layer against reactive oxygen species in living cells

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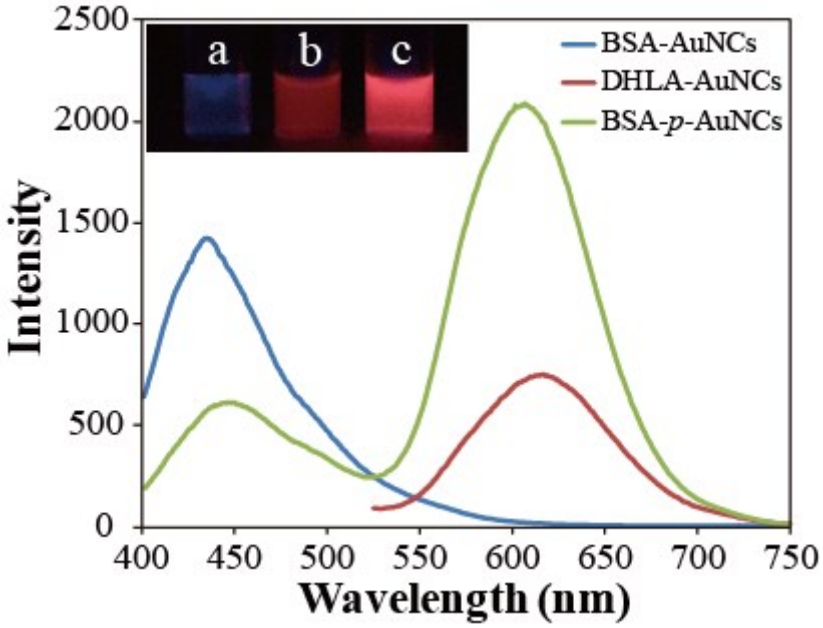

Fig. S1 Fluorescence spectra of the BSA-AuNCs, DHLA-AuNCs, and the as-prepared BSA-*p*-AuNCs. Inset: photograph of (a) BSA-AuNCs; (b) DHLA-AuNCs; (c) as-prepared BSA-*p*-AuNCs under 365 nm UV light.

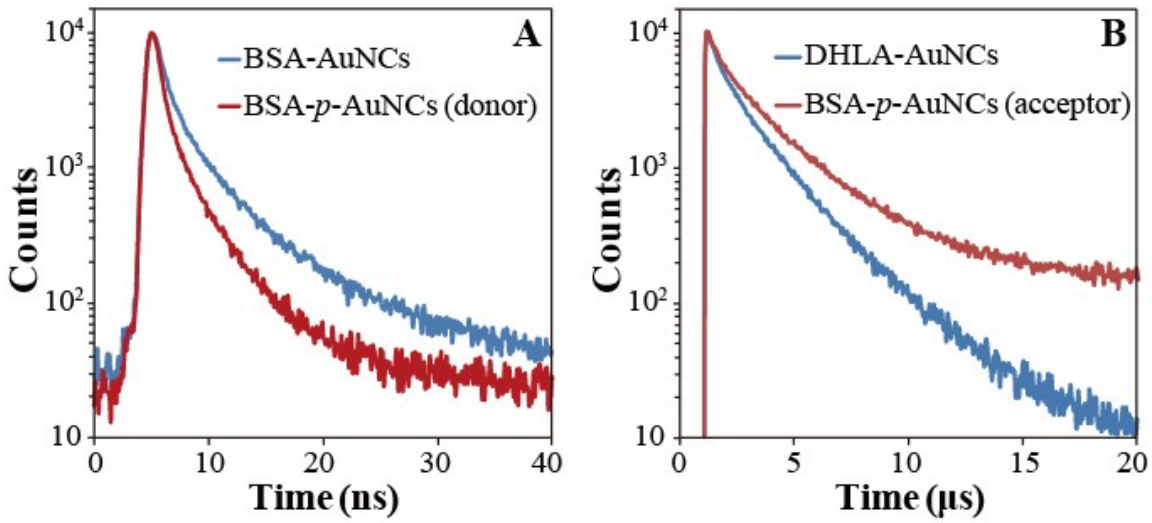

Fig. S2 Fluorescence decays for (A) donor (BSA-AuNCs) and (B) acceptor (DHLA-AuNCs) in the precursors and the as-prepared BSA-*p*-AuNCs.

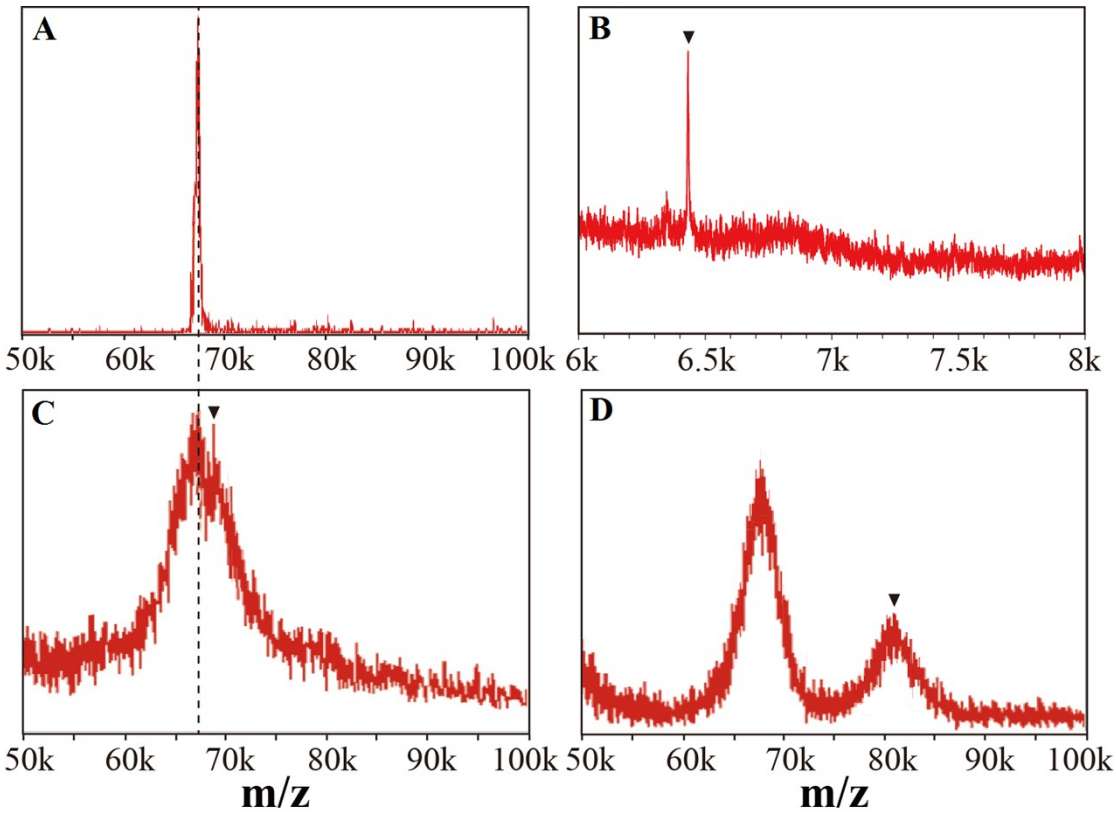

Fig. S3 MALDI-TOF MS spectra of (A) free BSA, (B) DHLA-AuNCs, (C) BSA-AuNCs, and (D) as-prepared BSA-*p*-AuNCs.

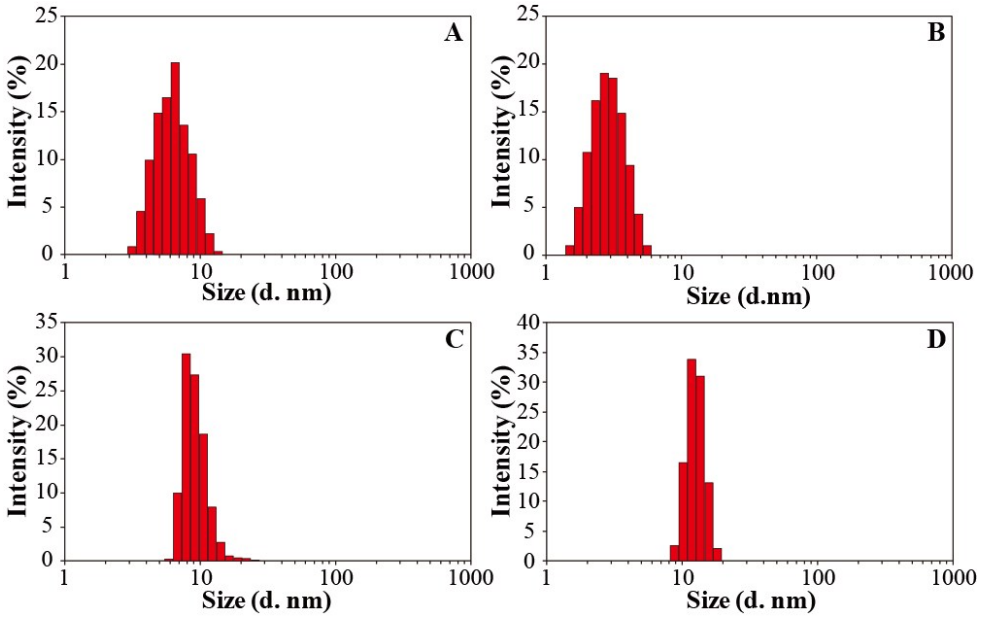

Fig. S4 DLS measurements for (A) free BSA, (B) DHLA-AuNCs, (C) BSA-AuNCs, and (D) as-prepared BSA-*p*-AuNCs.

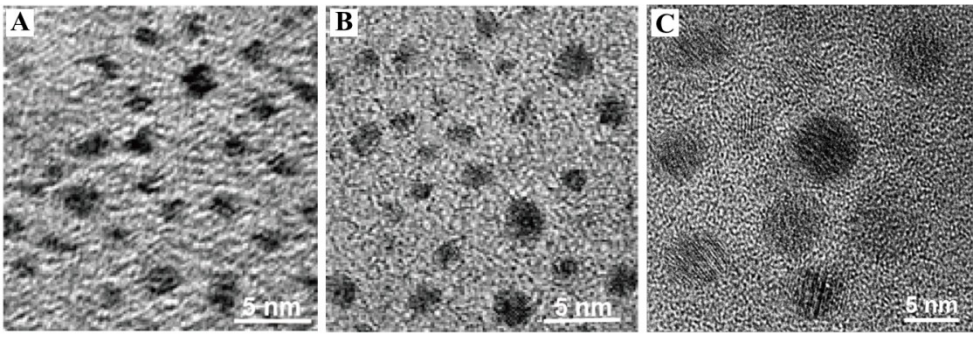

Fig. S5 HRTEM images of (A) DHLA-AuNC precursors, (B) BSA-AuNC precursors, and (C) as-prepared BSA-*p*-AuNCs.

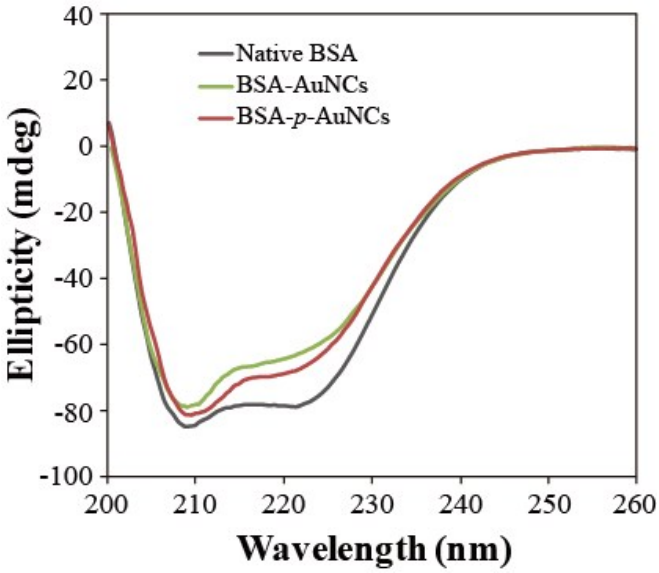

Fig. S6 CD spectra of BSA in different samples.

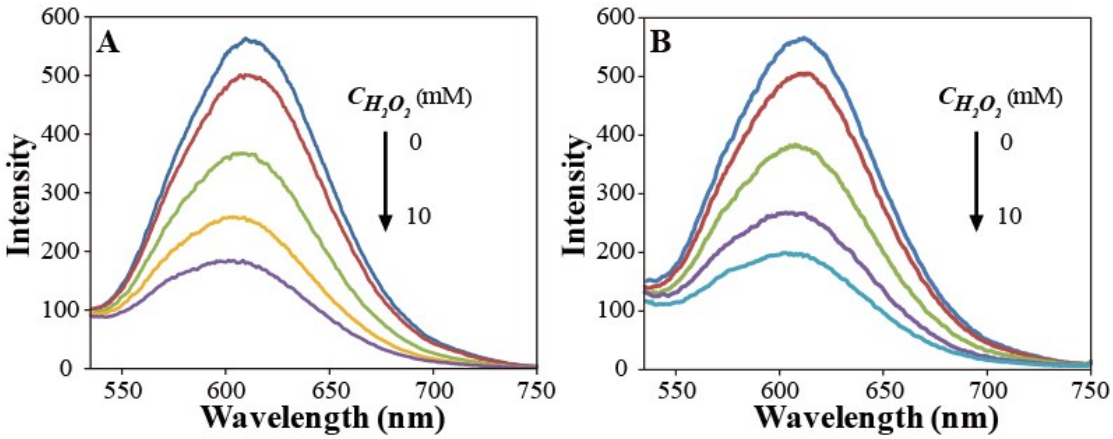

Fig. S7 Stability of red-emitting (A) BSA-AuNCs and (B) DHLA-linked BSA-AuNCs in the presence of H_2O_2 (0, 0.1, 1.0, 5.0, 10.0 mM). The concentration of clusters was 20 μM, and the reaction time was 10 min.

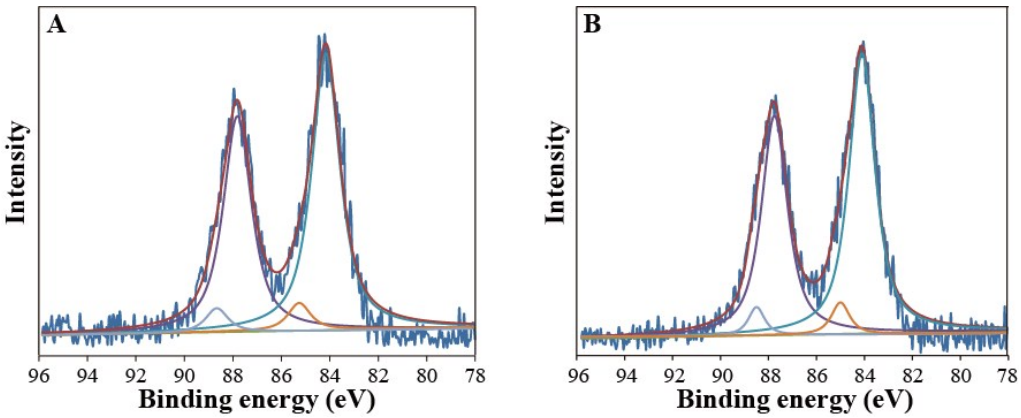

Fig. S8 XPS spectra showing the binding energy of Au 4f of (A) the as-prepared BSA-*p*-AuNCs and (B) that exposed to 10 mM H_2O_2.

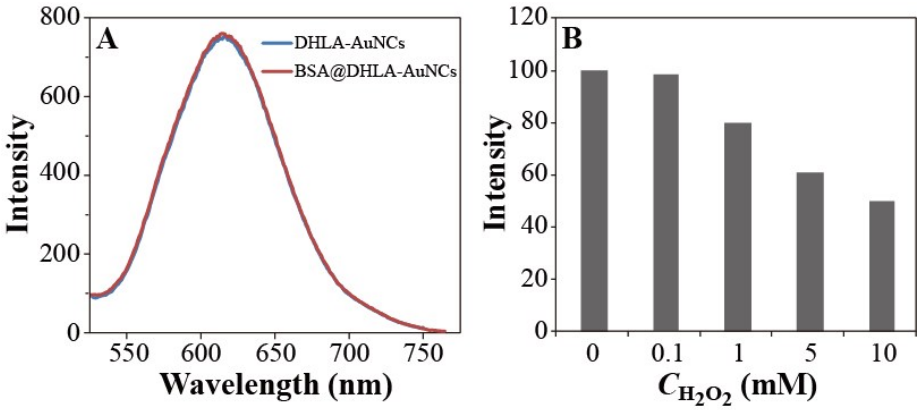

Fig. S9 (A) Fluorescence spectra of the DHLA-AuNCs and the BSA-adsorbed DHLA-AuNCs (BAS@DHLA-AuNCs). (B) Stability of the BAS@DHLA-AuNCs exposed to various concentrations of H_2O_2.

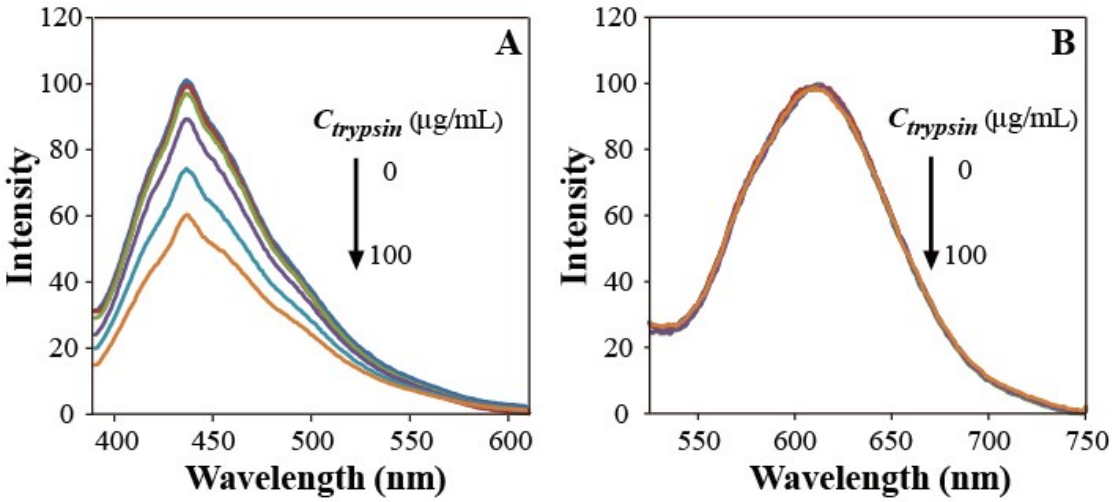

Fig. S10 Fluorescence spectra of (A) BSA-AuNC precursors and (B) DHLA-AuNC precursors in the presence of trypsin (0, 0.01, 0.1, 1.0, 10.0, 100 μg/mL).

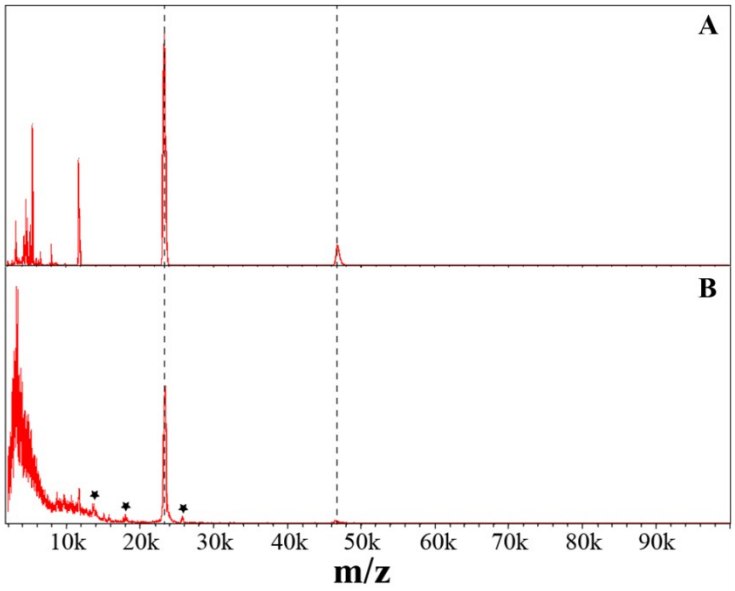

Fig. S11 MALDI-TOF MS spectra of (A) free trypsin, (B) as-prepared BSA-*p*-AuNCs treated with trypsin.

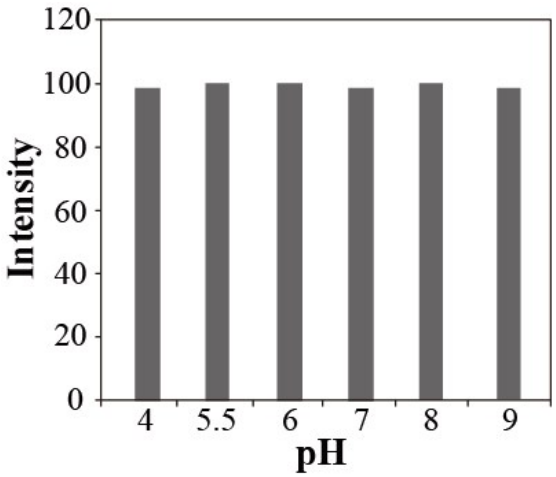

Fig. S12 The influence of the pH in the fluorescence of BSA-*p*-AuNCs.

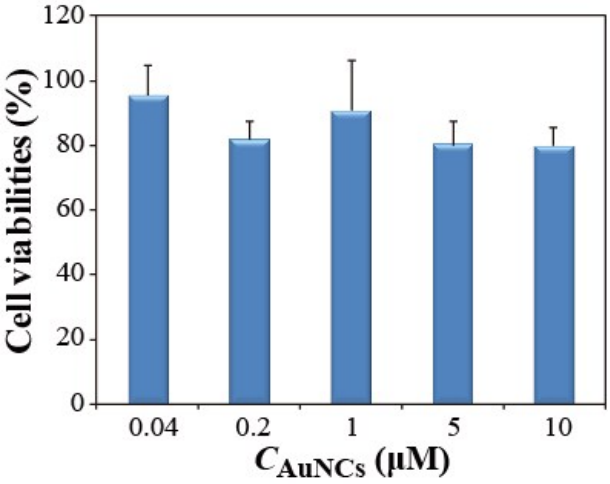

Fig. S13 Cell viability of HeLa cells as assessed by MTT assay for cells exposed to the as-prepared BSA-*p*-AuNCs at various concentrations for 12 h.

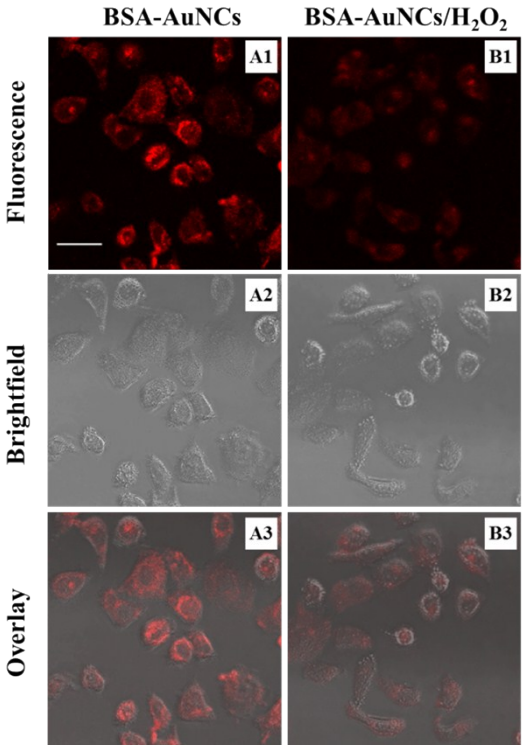

Fig. S14 Confocal fluorescence microscopy images of HeLa cells: (A) incubated with 1 μM red-emitting BSA-AuNCs for 6 h at 37 °C; (B) incubated with 1 μM red-emitting BSA-AuNCs for 6 h at 37 °C with 1 mM H_2O_2 added for the final 10 min. Scale bar, 40 μm.

Table S1 Time resolved fluorescence data for DHLA-AuNCs, BSA-AuNCs, and as-prepared BSA-*p*-AuNCs.

Species	τ_1	τ_2	τ_3	B_1 (%)	B_2 (%)	B_3 (%)	χ^2	τ
DHLA-AuNCs	0.358 μs	1.559 μs	3.383 μs	9.55	61.26	29.19	1.014	1.977 μs
BSA-AuNCs	0.675 ns	2.579 ns	8.010 ns	36.46	39.15	24.38	1.081	3.209 ns
BSA-*p*-AuNCs (donor)	0.350 ns	1.499 ns	4.567 ns	44.67	35.71	19.62	1.078	1.588 ns
BSA-*p*-AuNCs (acceptor)	0.400 μs	1.722 μs	3.756 μs	5.98	47.43	46.59	1.014	2.591 μs