Supporting Information

Fabrication of Multifunctional Monometallic Nanohybrids for Reactive Oxygen Species-Mediated Cell Apoptosis and Enhanced Fluorescence Cell Imaging

Shengqiang Hu[†], Baoyu Ye[†], Hailin Tang[‡], Fan Wu[†], Xinyao Yi[†], Tiantian Yi[†], Daohong Wu[†], Ling Wu[†], Jianxiu Wang*[†]

[†]College of Chemistry and Chemical Engineering, Central South University, Changsha, Hunan 410083, P. R. China

[‡]SunYat-Sen University Cancer Center, State Key Laboratory of Oncology in South China, Collaborative Innovation Center for Cancer Medicine, Guangzhou, Guangdong 510060, P. R. China

*Corresponding author

E-mail: jxiuwang@csu.edu.cn

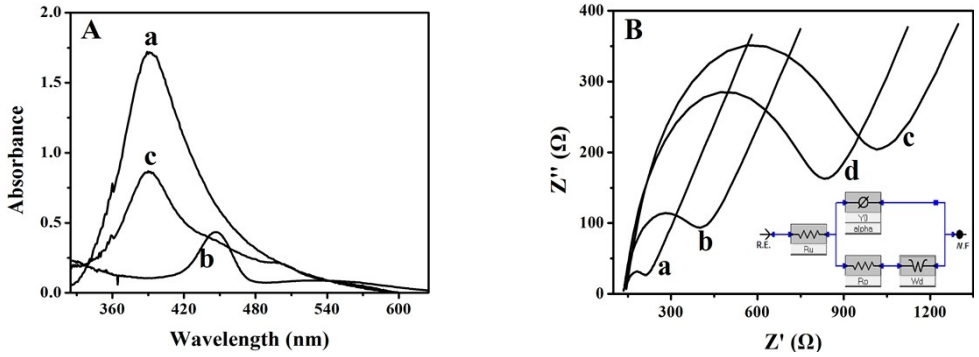

Figure S1. (A) UV-vis absorption spectra of Ag NPs (a), Ag NCs (b) and Ag NHs (c). (B) EIS profiles at the bare Au electrode (a), and the electrode modified with Ag NPs (b), Ag NPs that were covered with thiolated dC_{12} (c), and Ag NHs (d) in an aqueous solution containing 0.1 M KCl + 5 mM $[Fe(CN)_6]^{3-/4-}$ (1:1). The inset shows the modified Randles equivalent circuit for fitting the EIS data.

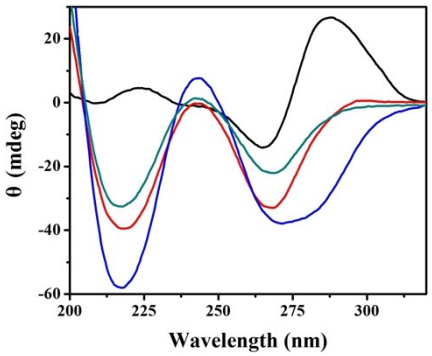

Figure S2. CD spectra of polycytosine dC_{12} (black), dC_{12} anchored on the surface of Ag NPs (blue), Ag^+ coordinated with dC_{12} that was pre-anchored on the surface of Ag NPs (red), and Ag NHs (dark cyan).

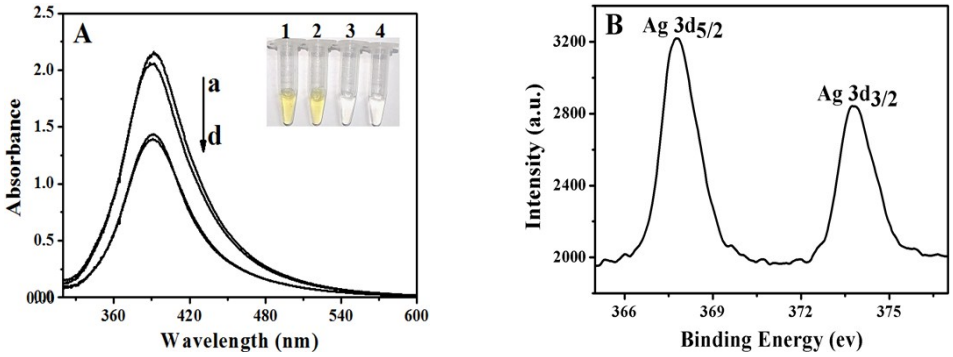

Figure S3. (A) UV-vis absorption spectra of Ag NPs (a), Ag NPs incubated with thiolated dA_{12} (b), thiolated dC_{12} (c), and dC_{12} (d). The inset shows the photographs of

Ag NPs (1), Ag NPs incubated with thiolated dA_{12} (2), thiolated dC_{12} (3), and dC_{12} (4) under visible light. (B) Ag 3d XPS spectra of the Ag NHs.

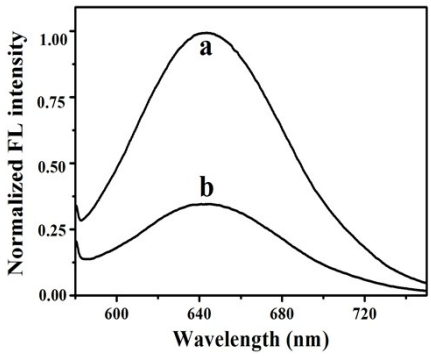

Figure S4. Normalized fluorescence spectra of Ag NCs (a) and the bimetallic nanohybrids of Au NPs-Ag NCs (b) when excited at 575 nm.

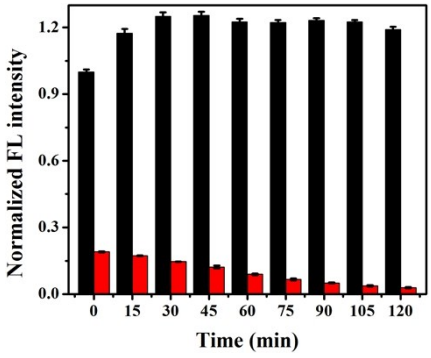

Figure S5. Normalized fluorescence intensity of Ag NHs (black) and Ag NCs (red) that were saturated with dissolved oxygen for different time periods at 37 ℃.

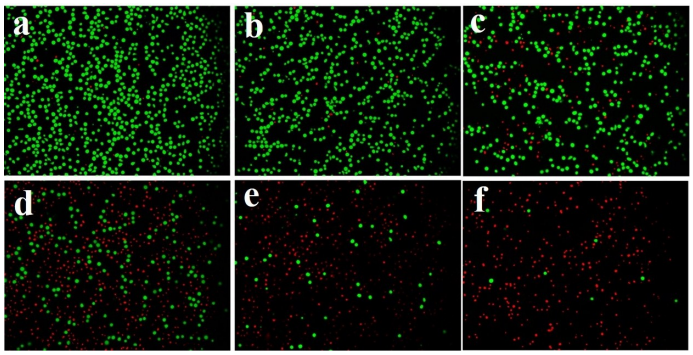

Figure S6. Fluorescence images of CCRF-CEM cells after treatment with sgc8c-functionalized Ag NHs with various concentrations (from a to f: 0, 14, 21, 28, 35, 42 μM) for 9 h.

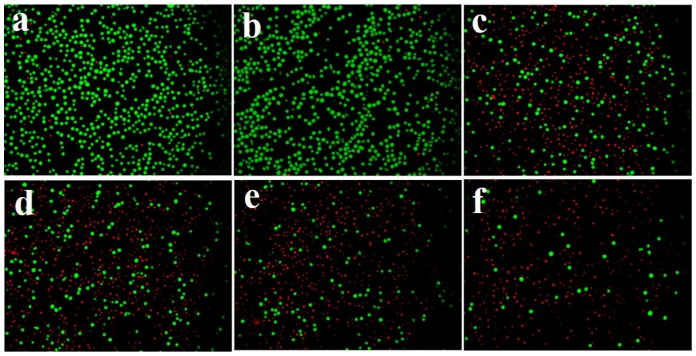

Figure S7. Fluorescence images of CCRF-CEM cells after treatment with 28 μM sgc8c-functionalized Ag NHs for different time periods (from a to f: 0, 3, 6, 9, 12, 24 h).

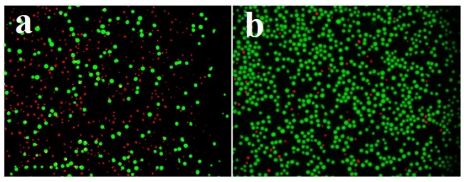

Figure S8. Fluorescence images of CCRF-CEM cells after treatment with PBS (a) and 25 mM vitamin C (b) for 3 h, followed by incubation with 28 μM sgc8c-functionalized Ag NHs for 9 h.

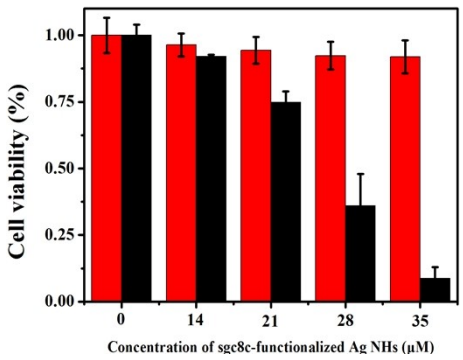

Figure S9. CCK-8 assay of cell viability of L929 (red) and CCRF-CEM (black) cells after treatment with 0, 14, 21, 28, 35 μM sgc8c-functionalized Ag NHs for 24 h. The cells in PBS were taken as 100% viable.

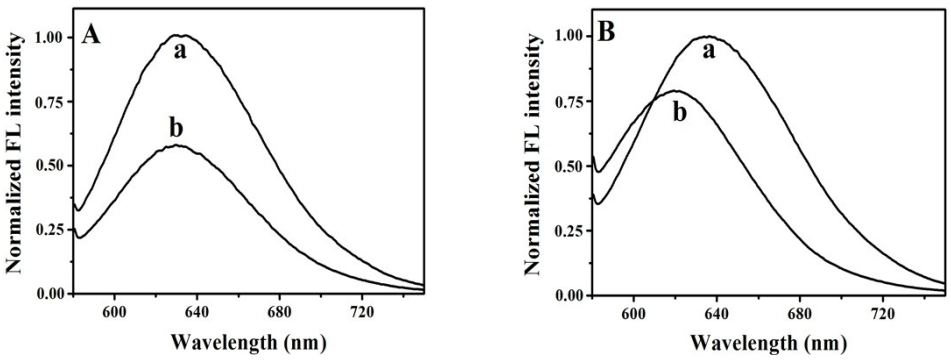

Figure S10. (A) Fluorescence emission spectra of AS1411-functionalizied Ag NHs (a) and sgc8c-functionalizied Ag NHs (b). (B) Fluorescence emission spectra of AS1411-functionalizied Ag NHs in the absence (a) and presence (b) of cell culture medium.

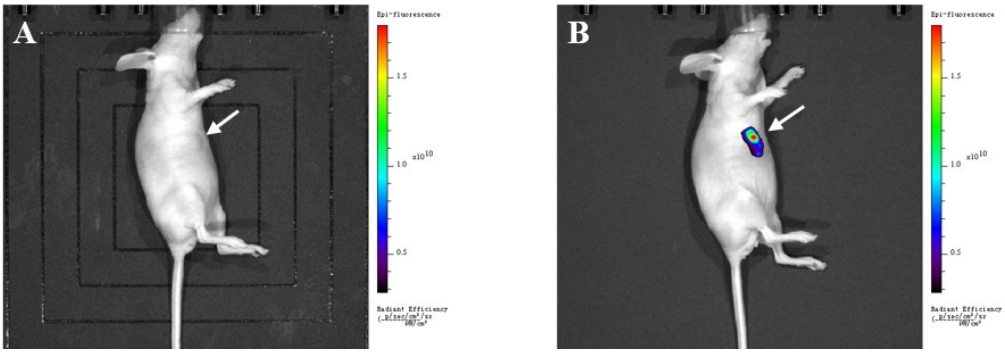

Figure S11. In vivo fluorescence images of HeLa tumor-bearing nude mice before (A) and at 24 h after (B) injection of AS1411-functionalizied Ag NHs.

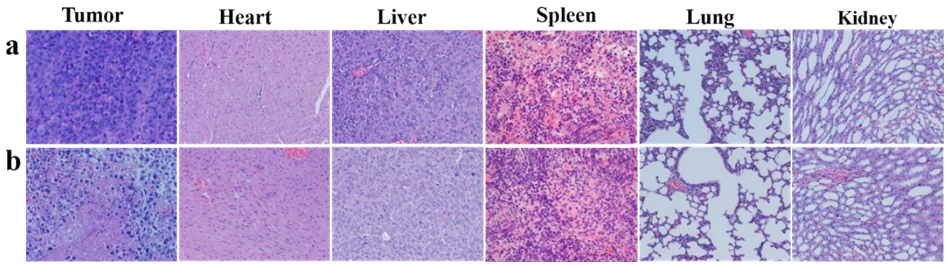

Figure S12. H&E stained images of tumor, heart, liver, spleen, lung, and kidney tissue slices from HeLa tumor-bearing nude mice after treatment with PBS (a) and AS1411-functionalized Ag NHs (b) for 14 days.

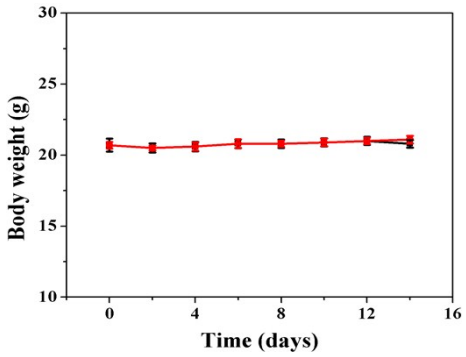

Figure S13. Body weight of HeLa tumor-bearing nude mice after treatment with PBS (black) and AS1411-functionalized Ag NHs (red) for different days.