Metronidazole-Modified Au@BSA Nanocomposites for Dual Sensitization of Radiotherapy in Solid Tumors

Qijun Du,^{a,b} Ho-Yin Yuen,^c Jingke Pan,^{a,b} Chenwei Sun,^{a,b} Di Wu,^{a,b} Jie Liu,^{a,b} Guohua Wu,^{*d} Xin Zhao^{*c} and Shuqi Wang^{*a,b,e,f}

^{a.} College of Biomedical Engineering, Sichuan University, Chengdu 610065, China.

^{b.} National Engineering Research Center for Biomaterials, Sichuan University, Chengdu 610065, China.

^{c.} Department of Applied Biology and Chemical Technology, The Hong Kong Polytechnic University, Hong Kong 999077, China.

^d Luoyang Key Laboratory of Clinical Multiomics and Translational Medicine, Henan Key Laboratory of Rare Diseases, Endocrinology and Metabolism Center, The First Affiliated Hospital, and College of Clinical Medicine of Henan University of Science and Technology, Luoyang 471003, China

^{e.} Tianfu Jincheng Laboratory, City of Future Medicine, Chengdu 641400, China

^{f.} Clinical Research Center for Respiratory Disease, West China Hospital, Sichuan University, Chengdu 610065, China



Fig. S1 (a) SEM images of ABMN NCs under hypoxic conditions. (b) Dynamic light scattering characterization of ABMN NCs under hypoxic condition.



Fig. S2 Cell uptake experiments using HepG2 cells, (a) before and (b) after the addition of the ABMN NCs. Black deposits scattered across the cell monolayer indicate the presence of endocytosis of suspending nanoparticles.



Fig. S3 The intracellular marker of hypoxia (red) was measured by Ru(ddp).



Fig. S4 AM/PI staining used for evaluating the *in vitro* RT effect on HepG2 cells after exposure to X-ray irradiation (2 Gy) for different groups (bar = $200 \mu m$).



Fig. S5 Quantitative analysis of γ -H₂AX fluorescence intensity of different groups under normoxic (a) and hypoxic (b) conditions. *P < 0.05 and **P < 0.01, versus the ABMN + RT group.



Fig. S6 Colony of HepG2 cells treated with different formulations. The irradiation dose was 2 Gy.



Fig. S7 Photographs of mice in each group on day 22 after treatment.



Fig. S8 Quantitative analysis of tunnel fluorescence intensity after various treatments. *P < 0.05 and **P < 0.01, versus the AB + RT group.



Fig. S9 CT images of liver cancer tissues in nude mice before and after injection of the ABMN NCs.



Fig. S10 Blood routine analysis of the mice treated with ABMN NCs.