## Supporting Information:

## PEG-grafted arsenic trioxide-loaded mesoporous silica nanoparticles endowed with pH-triggered delivery for liver cancer therapy

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**Fig. S1** Representative TEM image of PEG-MSN after adjustment of contrast and exposure. Scale bar: 20 nm. The maximum thickness of the PEG layer is about 20 nm. The white circle in the right image is the PEG layer, and the black part inside the white circle is the MSN.



Fig. S2 Hemolysis test of PEG-MSN with different concentrations.



Fig. S3 In vitro accumulative release profiles of ATO from the culture medium containing 10% FBS within 24 h.



Fig. S4 Viability of H22 cells exposed to different concentrations of ATO for 24 h.



**Fig. S5** (A) BSA adsorption rate and (B) TA adsorption rate of MSN and PEG-MSN in different pH.



**Fig. S6** Representative H&E staining images of major organs from different groups. Magnification of heart and kidney sections: 200×; Magnification of liver, spleen, and lung sections: 100×.



**Fig. S7** (A) Hematological parameters of the blood samples and (B) biochemical parameters of mice after different treatments for hepatic and renal functions.