

Supporting Information

Intelligent Responsive Nanoplatfom based on DNA Nanoflowers/Mn:CuS Hybrid for Targeted and Synergistic Cancer Therapy

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CONTENTS

Fig. S1: Gel electrophoresis assay of the RCA process.

Fig. S2: Gel electrophoresis assay of the RCA products under simulated lysosomal conditions.

Fig. S3: High-resolution XPS spectra of Mn:CuS@DNA-NFs.

Fig. S4: Identification of reactive oxygen species (ROS) by electron spin resonance (ESR) spectroscopy.

Fig. S5: Time-course GSH consumption catalyzed by Mn:CuS@DNA-NFs at pH 5.0 and 7.4.

Fig. S6: UV-vis absorption spectra of pure DOX and the unbound DOX in the supernatant.

Fig. S7: ICP-OES quantification of the residual Cu in DOX@Mn:CuS@DNA-NFs after 12 h incubation under various conditions ($n = 3$).

Fig. S8: Fluorescence imaging of the tumor-bearing mice after administration of PBS, free DOX and DOX@Mn:CuS@DNA-NFs.

Fig. S9: Representative H&E staining of major organs and tumors from mice after different treatments.

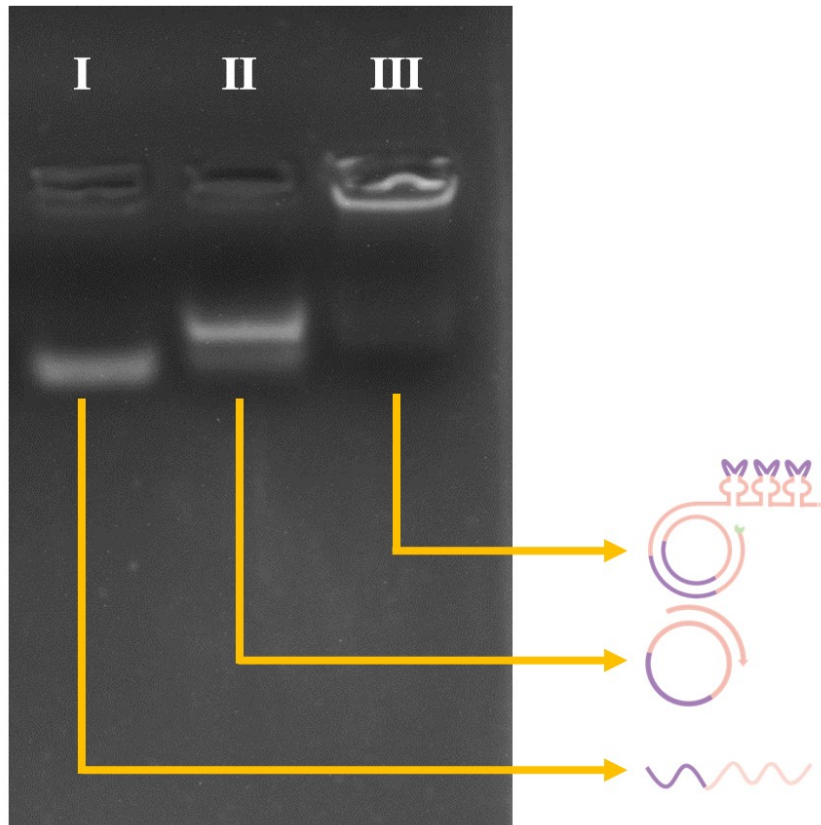


Fig. S1. Gel electrophoresis assay of the RCA process. (I) template, (II) circular DNA structure between the template and primer in the presence of T4 DNA ligase, (III) RCA product.



Fig. S2. Gel electrophoresis assay of the RCA products under simulated lysosomal conditions. (i) DNA ladder. The RCA products were incubated for 30 min in (ii) PBS at pH 7.4, (iii) PBS at pH 5.0, and (iv) in the presence of 0.02 U/ μ L Exonuclease I.

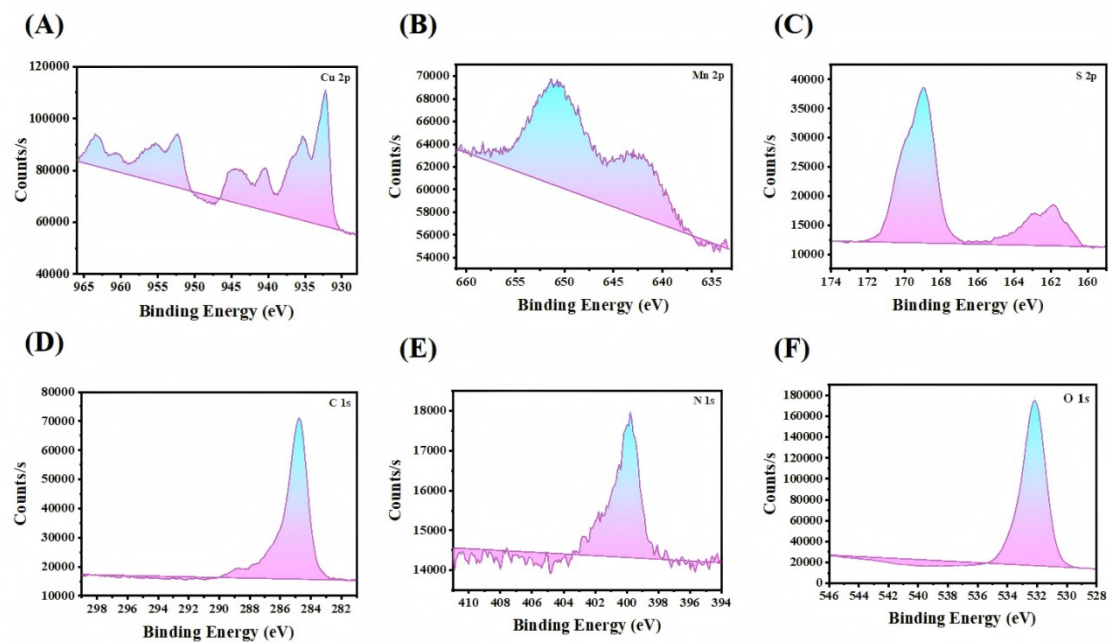


Fig. S3. High-resolution XPS spectra of Cu 2p, Mn 2p, S 2p, C 1s, N 1s and O 1s in Mn:CuS@DNA-NFs.

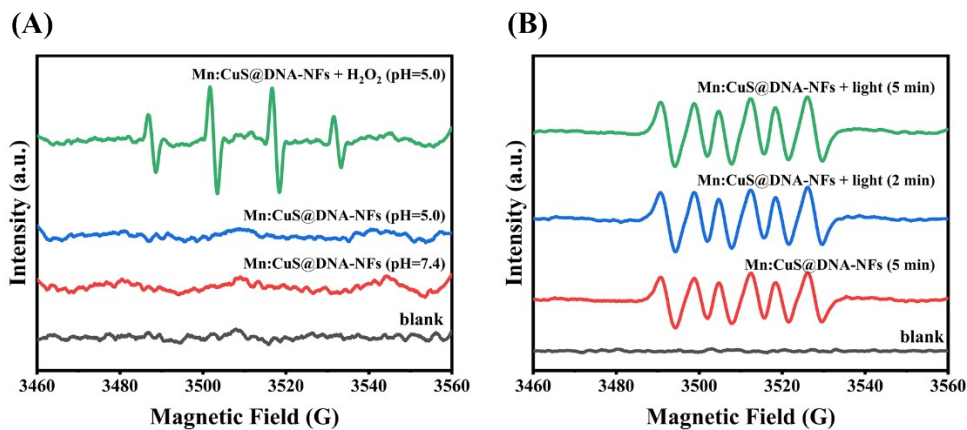


Fig. S4. Identification of reactive oxygen species (ROS) by electron spin resonance (ESR) spectroscopy. (A) ESR spectra of DMPO- \cdot OH adducts generated by Mn:CuS@DNA-NFs under different conditions (Blank, pH 7.4, pH 5.0, and pH 5.0 + H_2O_2). (B) ESR spectra of DMPO- $\text{O}_2^{\cdot-}$ adducts generated by Mn:CuS@DNA-NFs in methanol under different conditions (Blank, in the dark for 5 min, NIR irradiation for 2 min, and NIR irradiation for 5 min).

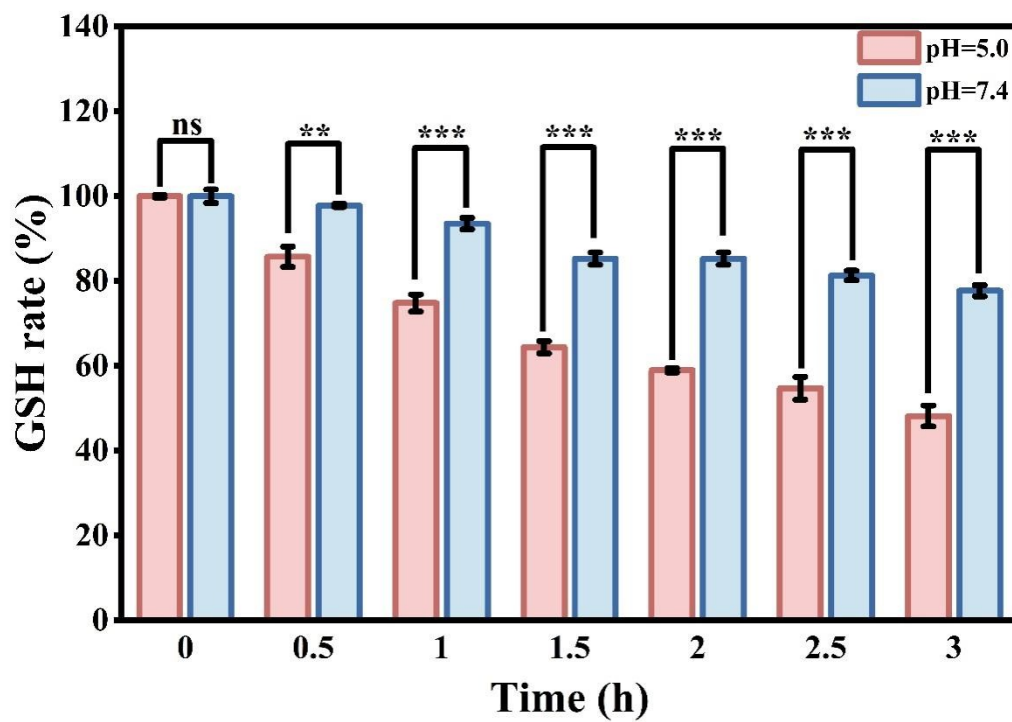


Fig. S5. Time-course GSH consumption catalyzed by Mn:CuS@DNA-NFs at pH 5.0 and 7.4.

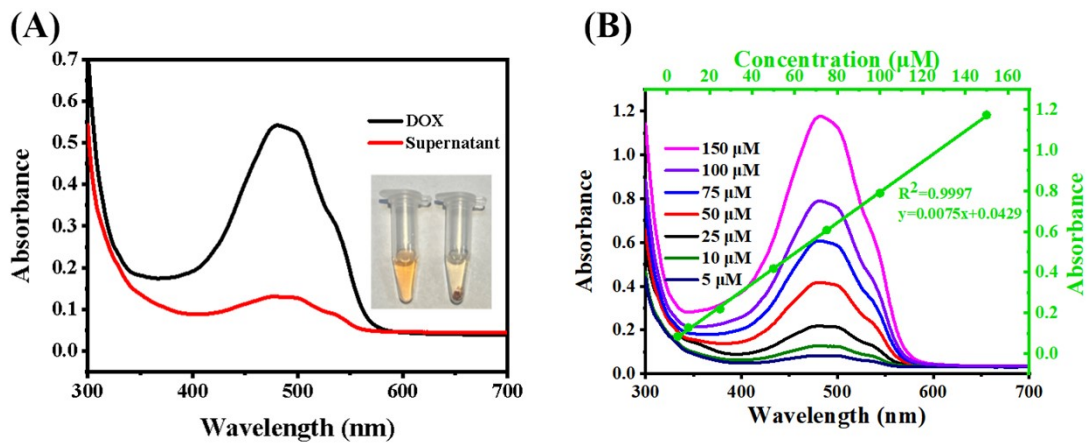


Fig. S6. (A) UV-vis absorption spectra of pure DOX (black curve) and the unbound DOX in the supernatant (red curve). The inset showed the photographs of pure DOX (left) and the supernatant (right). (B) UV-vis absorption spectra of DOX with various concentrations, and the linear relationship between the absorption intensity and DOX concentration (green curve).

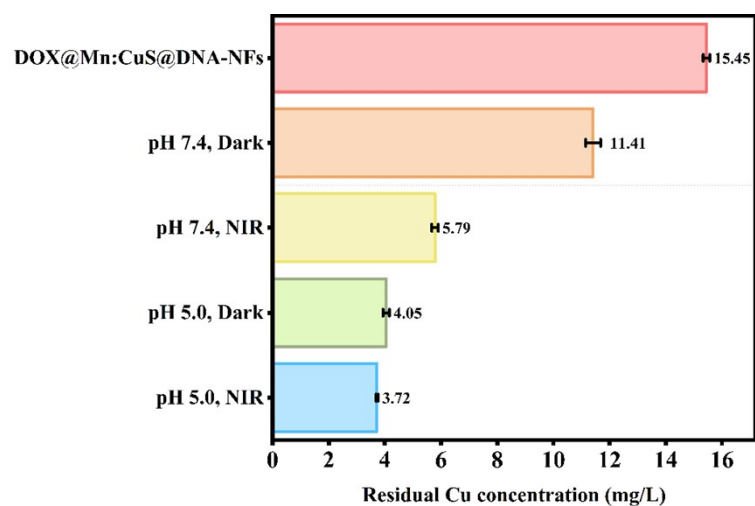


Fig. S7. ICP-OES quantification of the residual Cu in DOX@Mn:CuS@DNA-NFs after 12 h incubation under various conditions ($n = 3$).

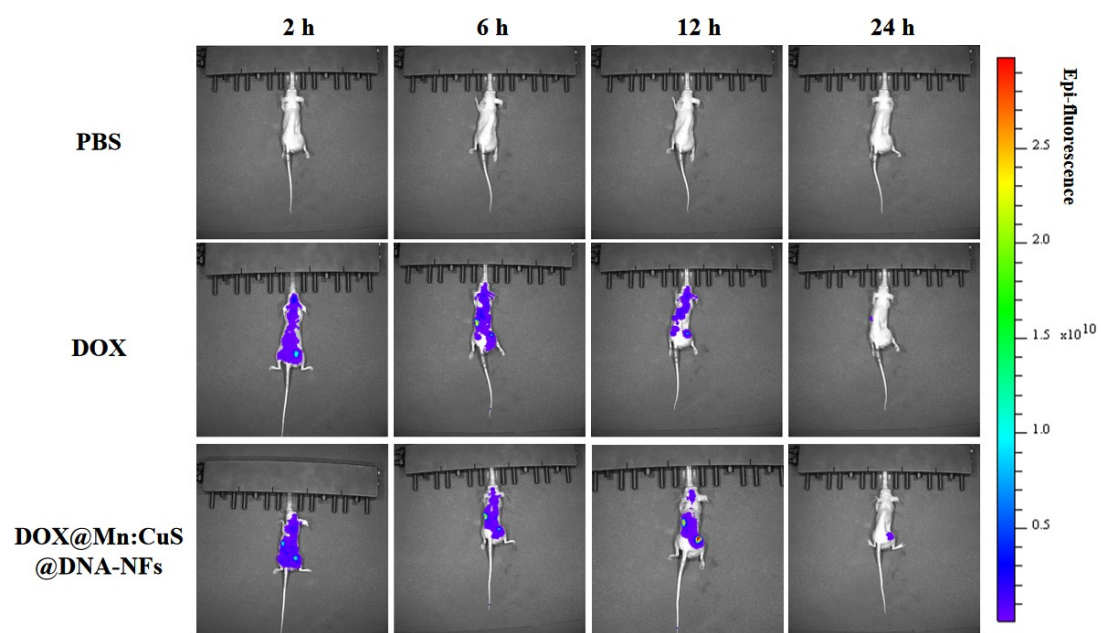


Fig. S8. Fluorescence imaging of the tumor-bearing mice at 2 h, 6 h, 12 h and 24 h post-injection of PBS, free DOX and DOX@Mn:CuS@DNA-NFs.

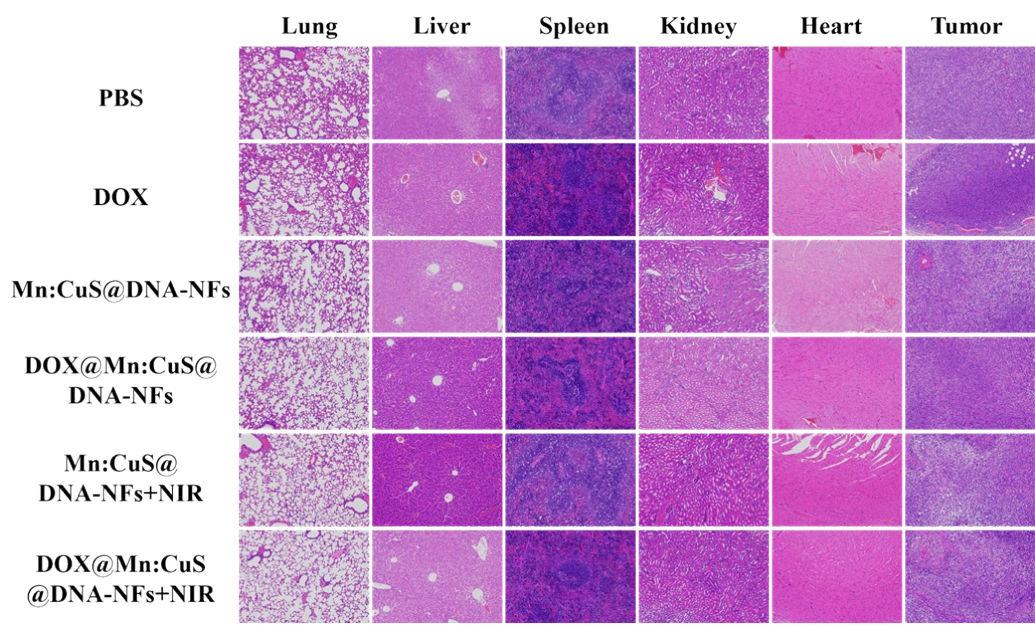


Fig. S9. Representative H&E staining of major organs and tumors from mice after different treatments.