

**This version of the Supplementary Information, uploaded on 19/06/2019, replaces the previous version that was first published on 13/12/2018**

Changes have been made to Fig. S9b and Fig. S11 in the corrected Supplementary Information.

## Supporting Information

### **Explosible Nanocapsules Excited by Pulsed Microwave for Efficient Thermoacoustic-Chemo Combination Therapy**

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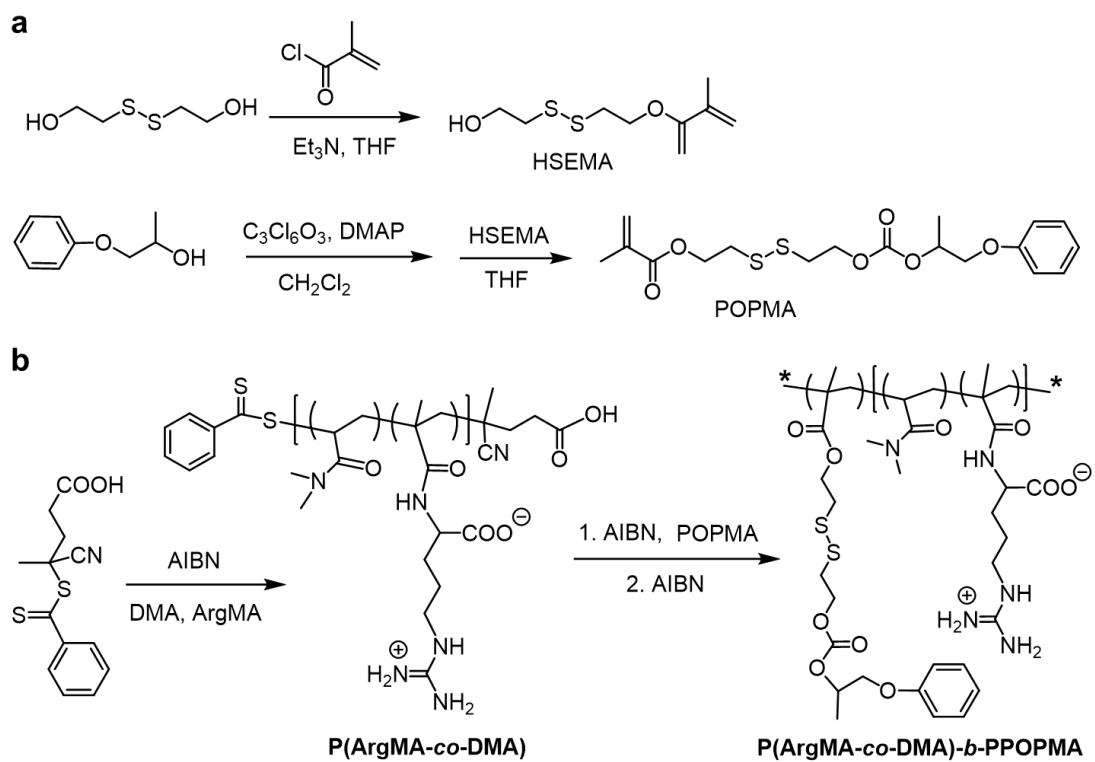
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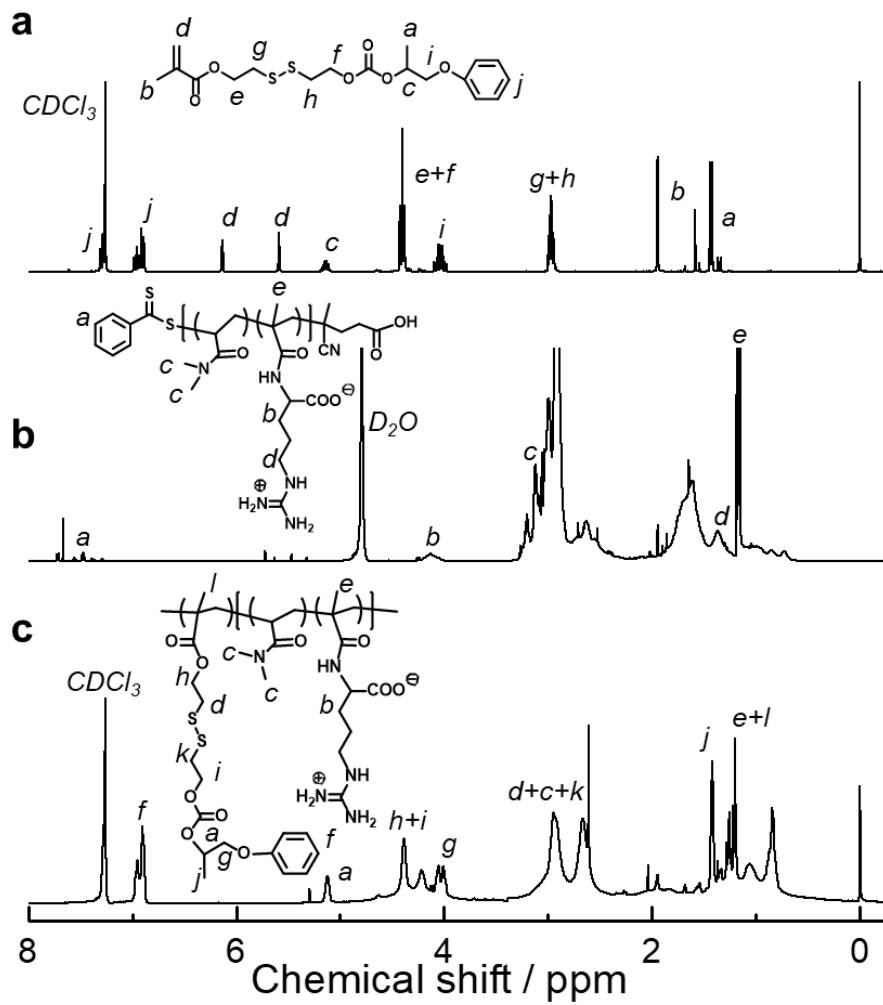
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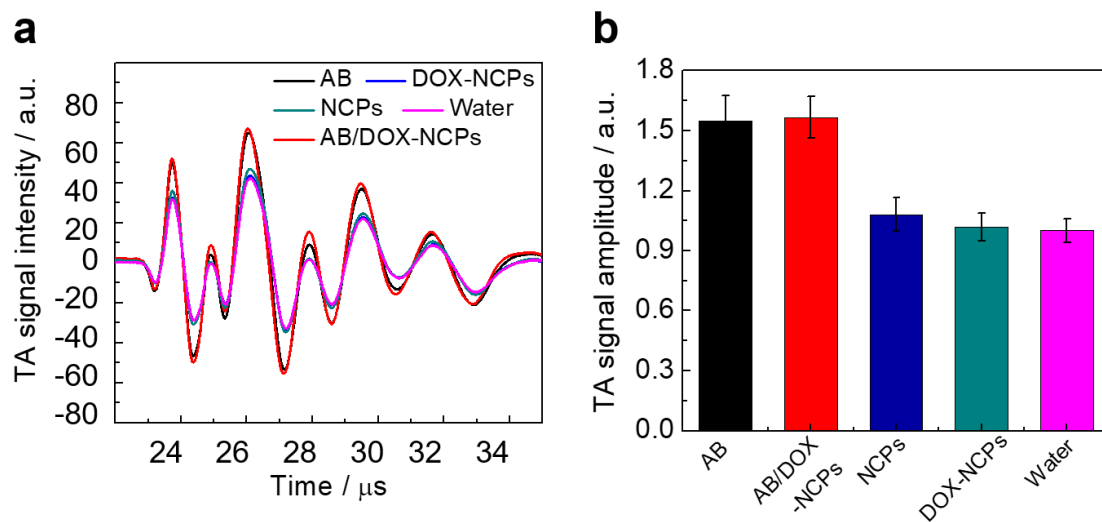
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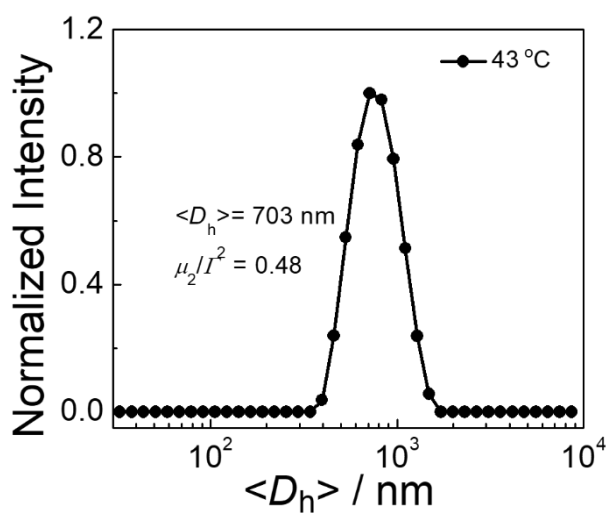
**Scheme S1.** Synthetic routes employed for (a) POPMA, (b) P(ArgMA-co-DMA) and P(ArgMA-co-DMA)-b-PPOPMA.



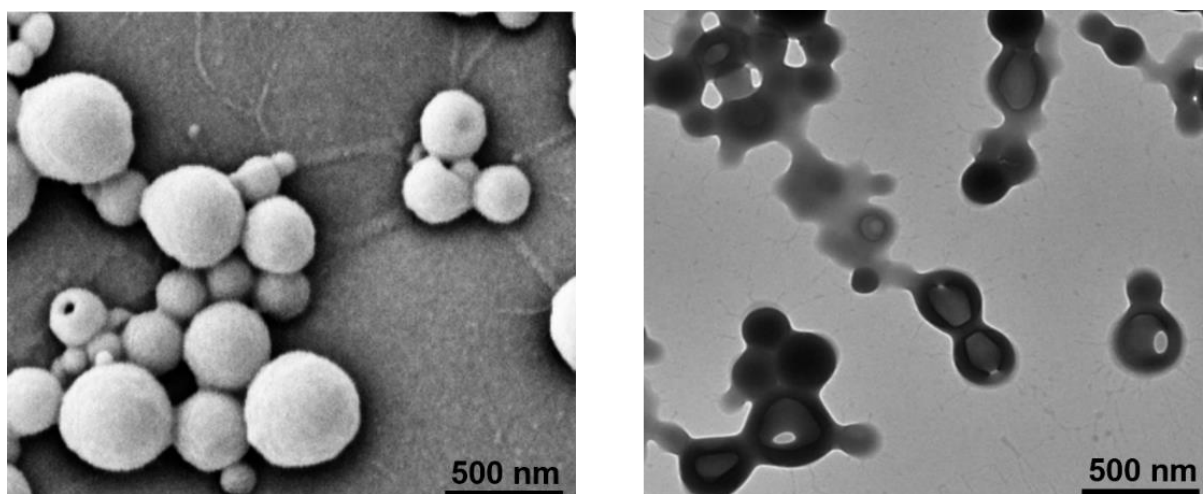
**Fig. S1**  $^1\text{H}$  NMR spectra of (a) POPMA in  $\text{CDCl}_3$ , (b) P(ArgMA-co-DMA) in  $\text{D}_2\text{O}$ , and (c) P(ArgMA-co-DMA)-b-PPOPMA in  $\text{CDCl}_3$ .



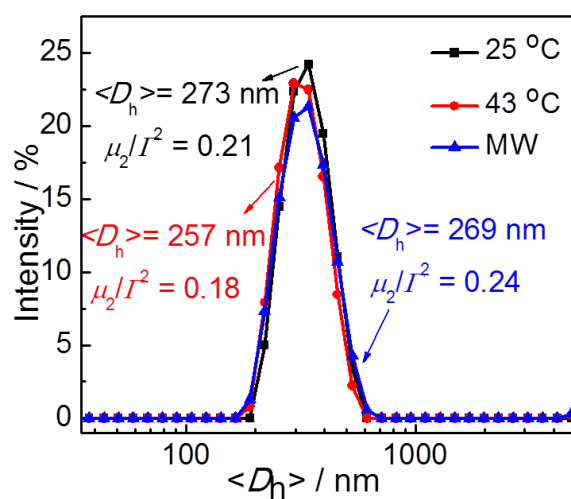
**Fig. S2** (a) Thermoacoustic signals of water, aqueous ammonium bicarbonate solution ( $\text{NH}_4\text{HCO}_3$ ), blank NCPs, DOX-NCPs, and AB/DOX-NCPs upon irradiation with pulsed microwave. (b) Statistics for the peak values in (a), the ratio of values to water.



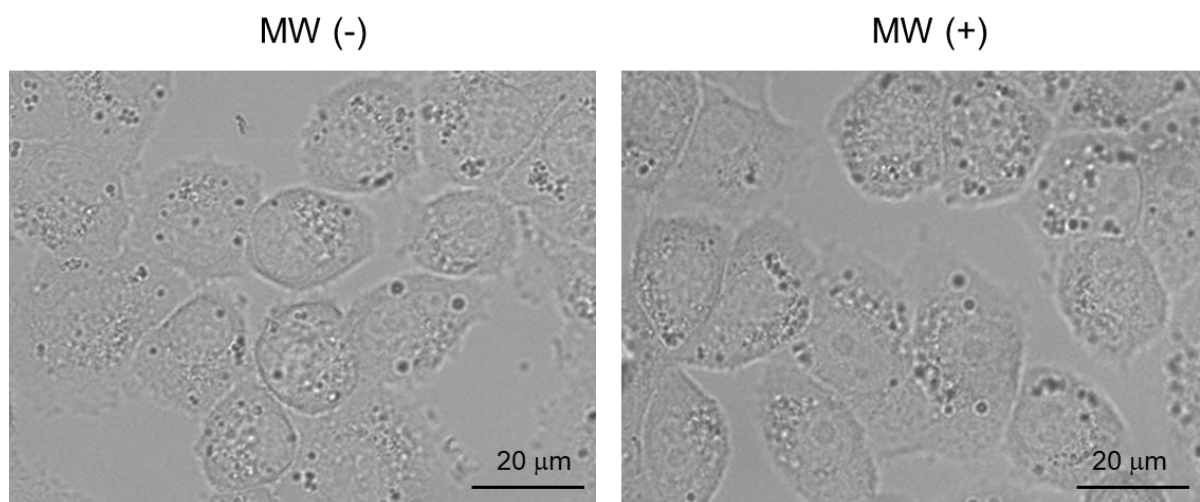
**Fig. S3** Hydrodynamic diameter distribution of AB/DOX-NCPs obtained by dynamic light scattering (DLS) analysis at 43 °C.



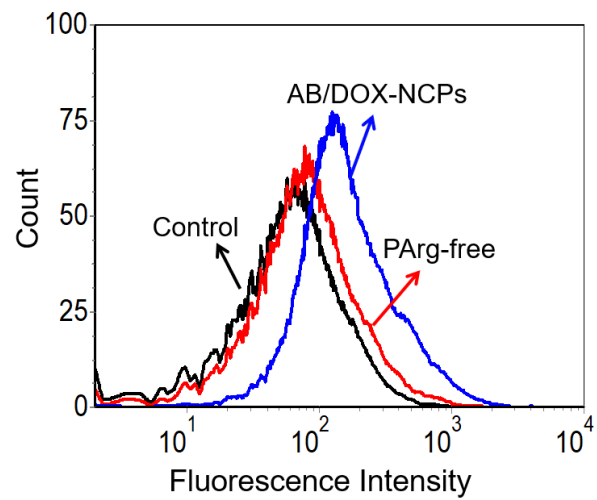
**Fig. S4** SEM and TEM images of the AB/DOX-NCPs at 43 °C.



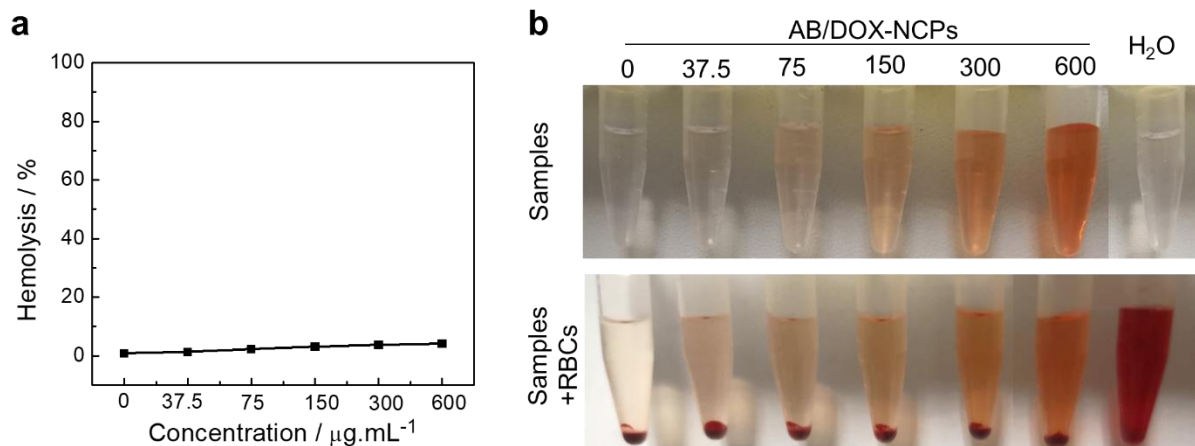
**Fig. S5** Size distribution of AB-free and DOX-loaded NCPs determined by dynamic light scattering (DLS) at 25 °C, 43 °C and upon irradiation by pulsed microwave.



**Fig. S6** CLSM images of 4T1 cells treated with pulsed microwave irradiation (repetition frequency of 80 Hz) for 10 min (left) and without microwave irradiation (right). No detectable abnormality is observed.

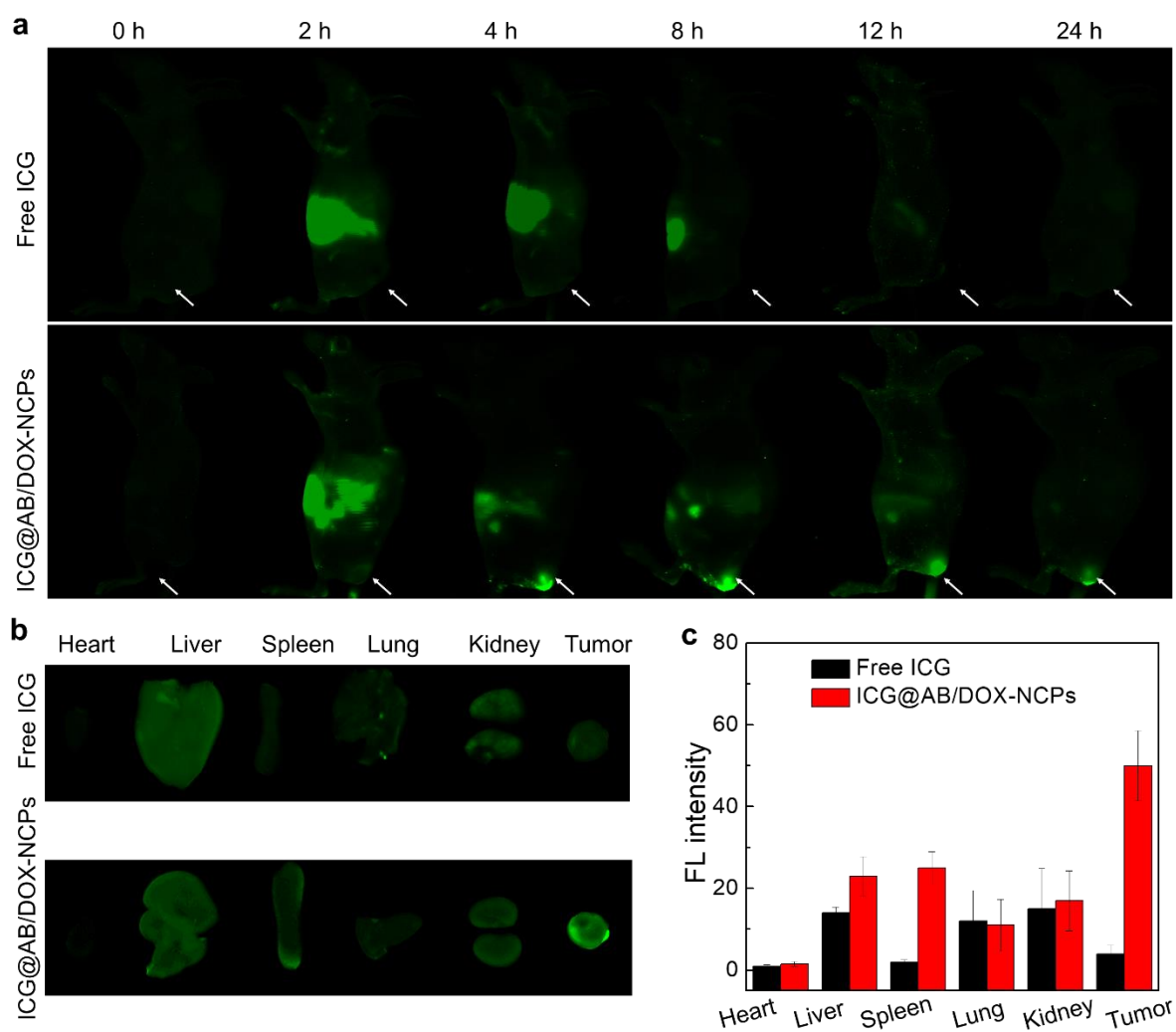


**Fig. S7** (a) Flow cytometric analysis of 4T1 cells after incubating with AB/DOX-NCPs and PArg-free AB/DOX-NCPs for 1 h at 4 °C.

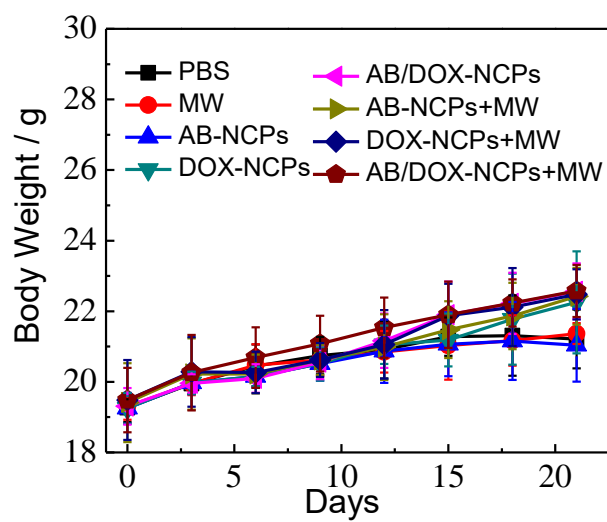


**Fig. S8** (a) Hemolytic percent of red blood cells (RBCs) after incubating with AB/DOX-NCPs at various concentrations (0, 37.5, 75, 150, 300, 600  $\mu\text{g mL}^{-1}$ , dispersed in PBS solution) for 4 h, using deionized water (+) as a positive control. (b) Photographs of samples in the hemolysis test.

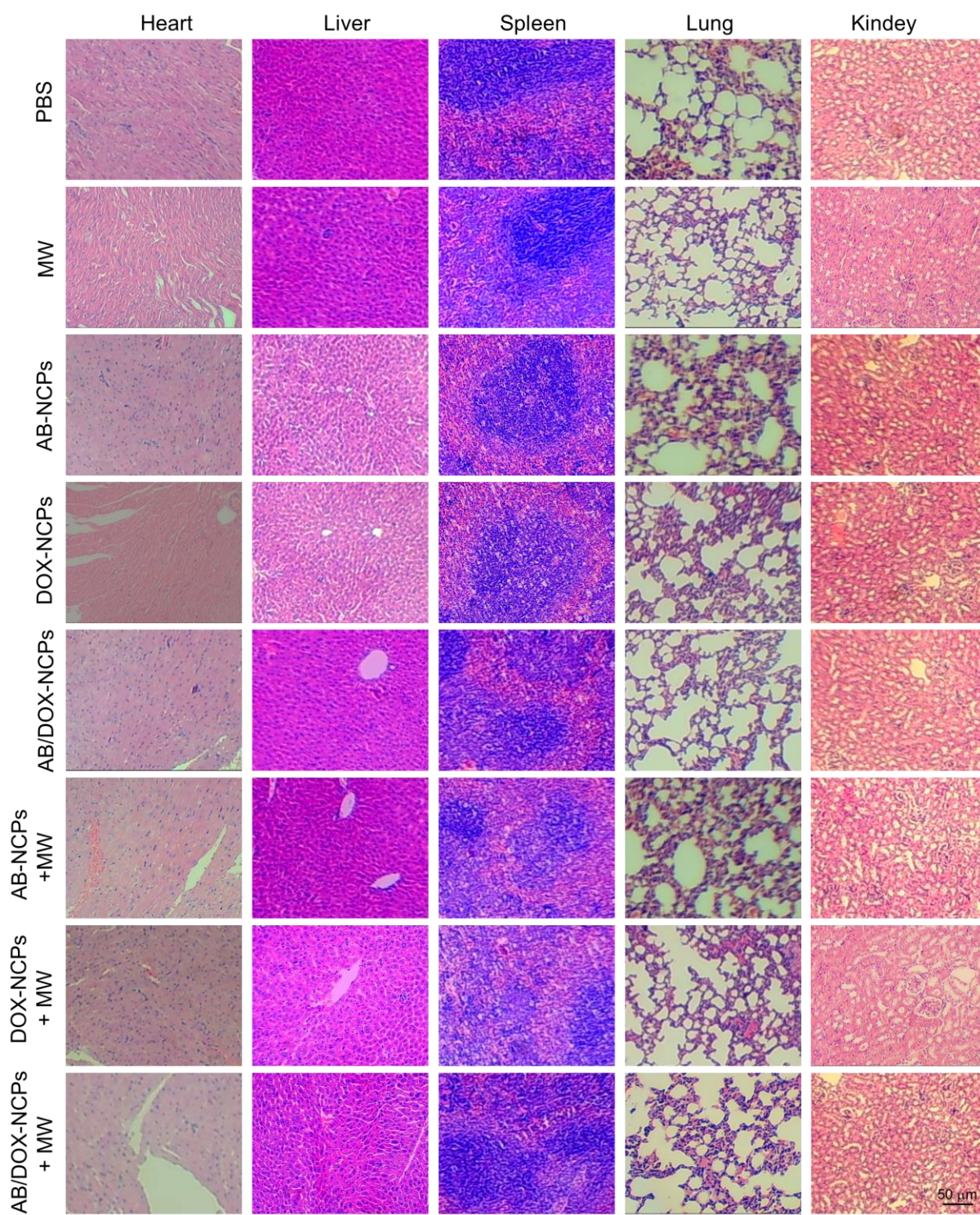




**Fig. S9** *In vivo* biodistribution analysis for the AB/DOX-NCPs. 4T1 tumor-bearing mice were intravenously injected with free ICG, ICG-loaded AB/DOX-NCPs, respectively. (a) Fluorescence images of tumor bearing mice after post-injection at various durations. (b) Fluorescence imaging of major organs and tumors at 24 h post-injection. (c) Statistical fluorescence intensity of major organs and tumors at 24 h post-injection.



**Fig. S10** Relative body weights of 4T1 tumor-bearing mice in various groups during the 21-day evaluation period. Error bars indicate standard deviations, n=5.



**Fig. S11** H&E stained images of tissue sections from the major organs of the mice after various treatments.