

Supplementary Information

Metal-organic framework-based pyroptosis nanotuner with long blood circulation for augmented chemotherapy

Weichu Zhu,^a Jian Xu,^a Xianxian Yao,^a Shuting Mai,^a Dan Shu^a and Wuli Yang^{a,}*

^a State Key Laboratory of Molecular Engineering of Polymers and Department of Macromolecular Science, Fudan University, 220 Handan Road, Shanghai 200433, P.R.China. Email: wlyang@fudan.edu.cn.

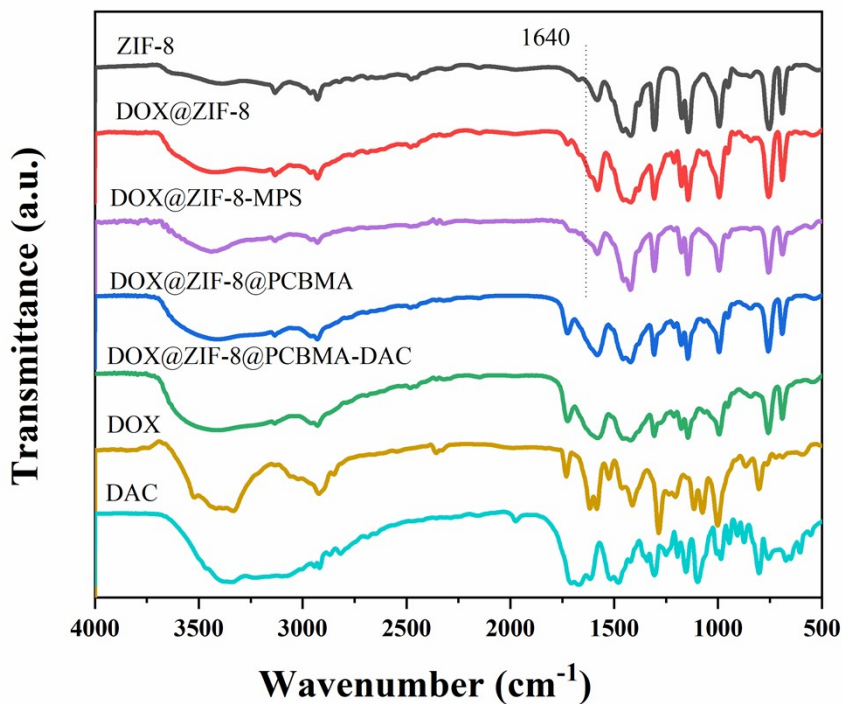


Fig. S1 FT-IR spectra of DAC, DOX, DOX@ZIF-8, DOX@ZIF-8-MPS, DOX@ZIF-8@PCBMA and DOX@ZIF-8@PCBMA-DAC. The peak at 1640 cm⁻¹ belongs to carbon-carbon double bonds of MPS.

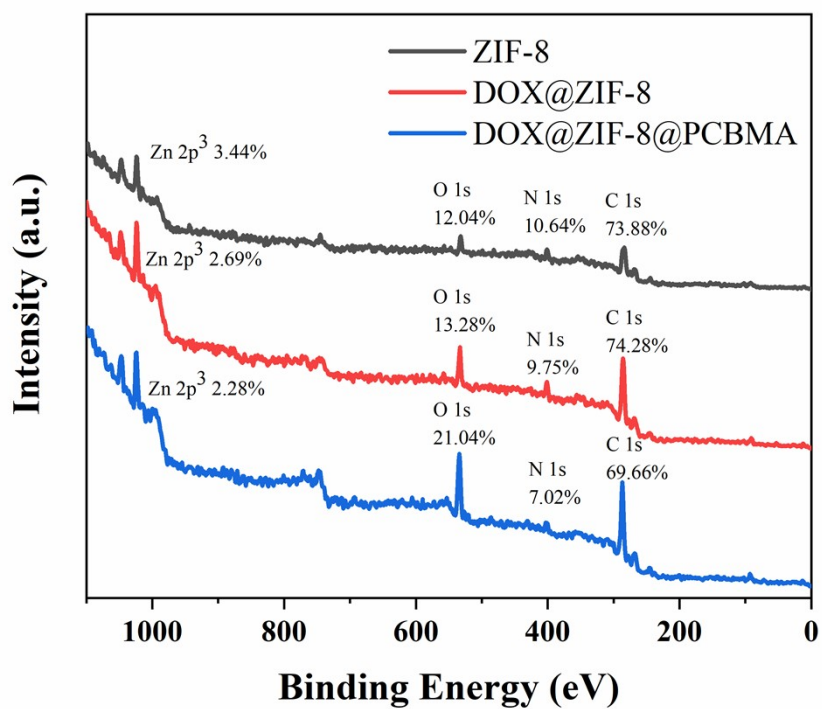


Fig. S2 XPS spectra of ZIF-8, DOX@ZIF-8 and DOX@ZIF-8@PCBMA.

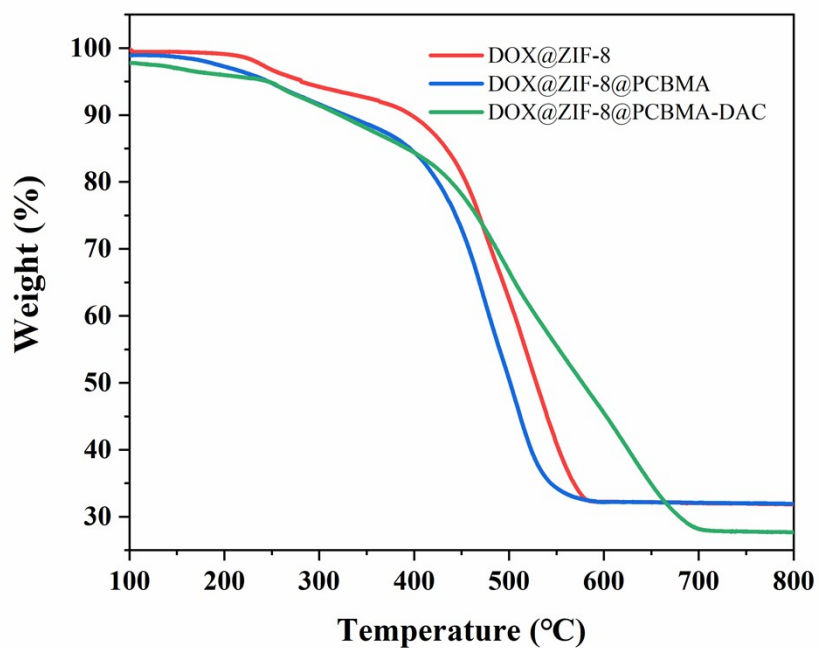


Fig. S3 TGA analysis of DOX@ZIF-8, DOX@ZIF-8@PCBMA and DOX@ZIF-8@PCBMA-DAC.

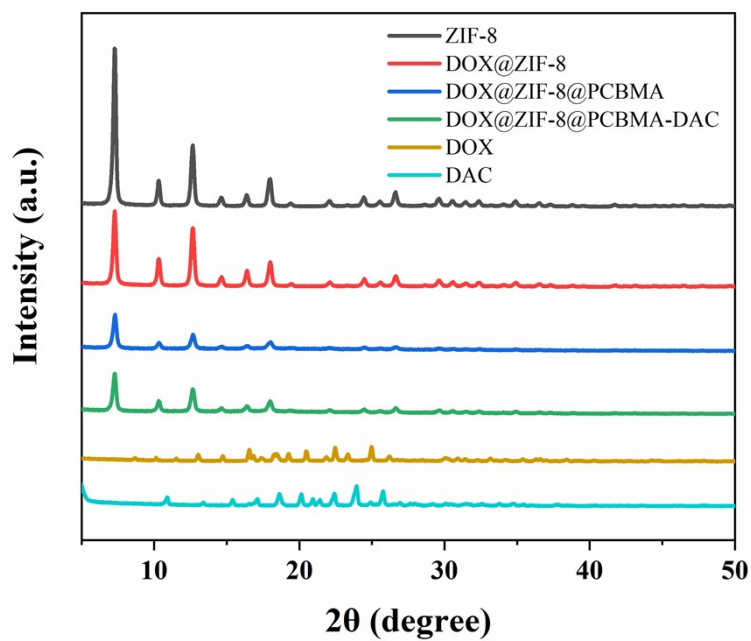


Fig. S4 XRD patterns of DAC, DOX, ZIF-8, DOX@ZIF-8, DOX@ZIF-8@PCBMA and DOX@ZIF-8@PCBMA-DAC.

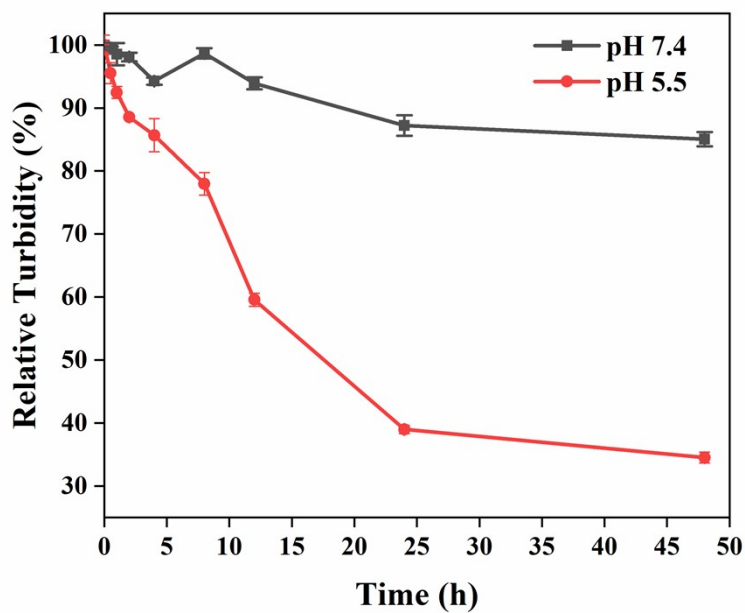


Fig. S5 The relative turbidity of DOX@ZIF-8@PCBMA after incubation at pH 7.4 and pH 5.5 for various times.

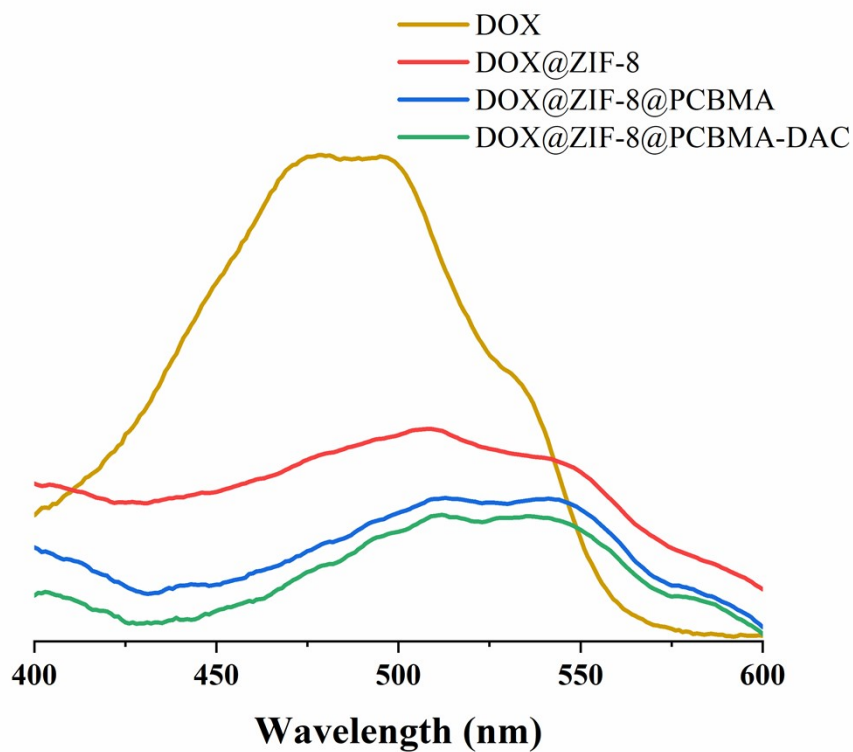


Fig. S6 UV-Vis spectra of DOX, DOX@ZIF-8, DOX@ZIF-8@PCBMA and DOX@ZIF-8@PCBMA-DAC.

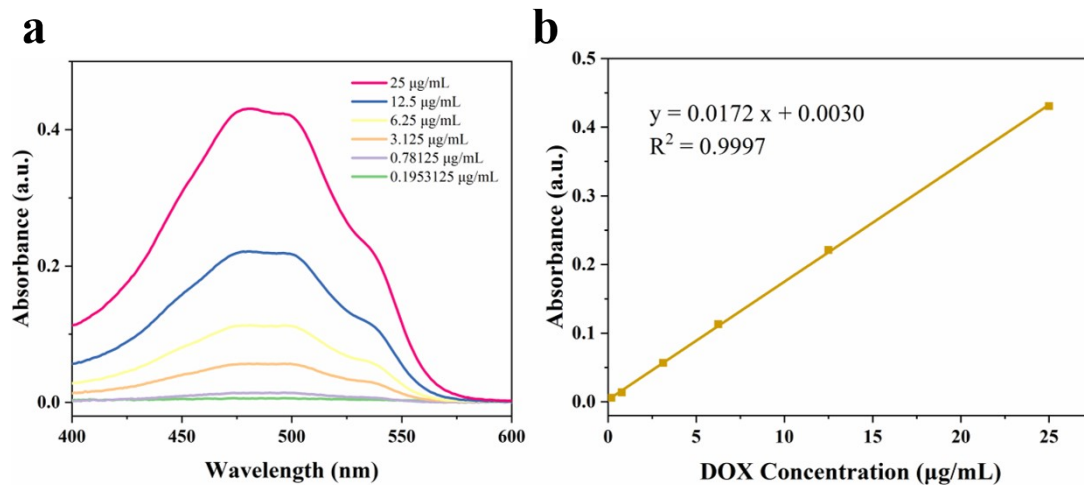


Fig. S7 (a) UV-Vis absorbance spectrum and (b) standard curve of DOX.

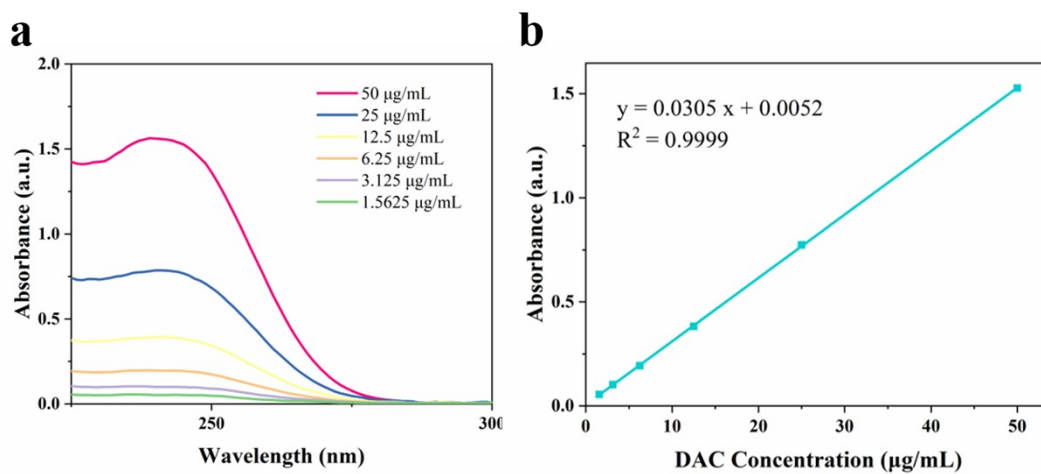


Fig. S8 (a) UV-Vis absorbance spectrum and (b) standard curve of DAC.

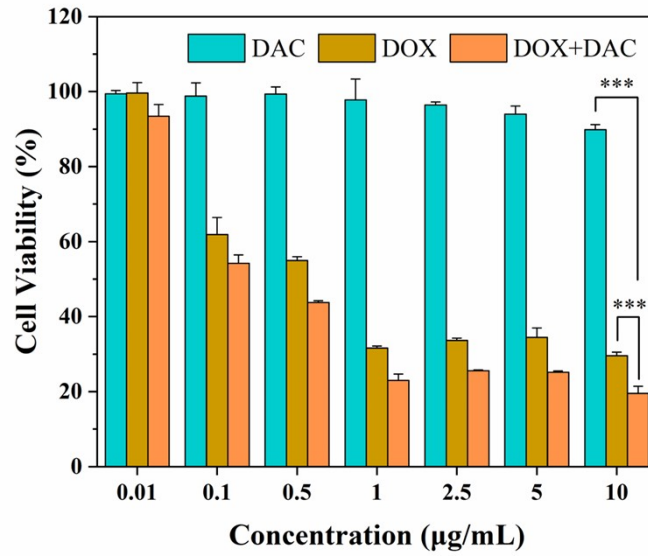


Fig. S9 Cell viability of EMT6 after incubation with different groups for 24 h.

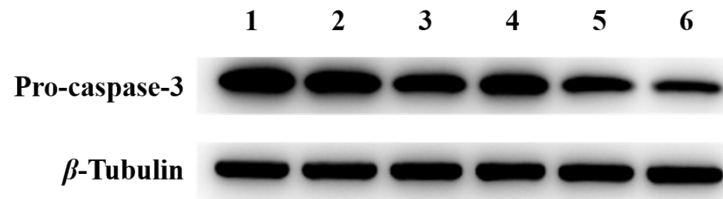


Fig. S10 Western blot analysis of pro-caspase-3 protein expression in EMT6 cells after incubation with different groups. All groups: (1) control, (2) DAC, (3) DOX, (4) DOX@ZIF-8, (5) DOX@ZIF-8@PCBMA and (6) DOX@ZIF-8@PCBMA-DAC.

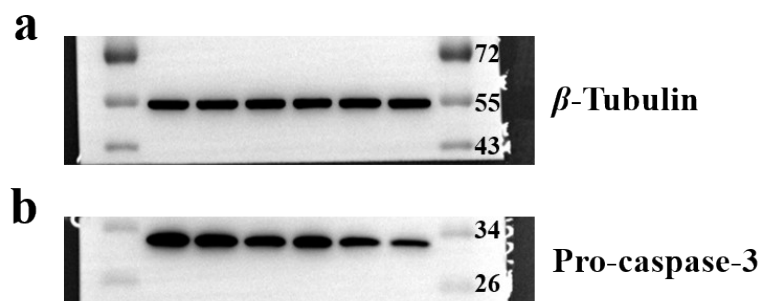


Fig. S11 Unprocessed images of Western blot results of β -Tubulin and pro-caspase-3 protein expression in EMT6 cells after incubation with different groups.

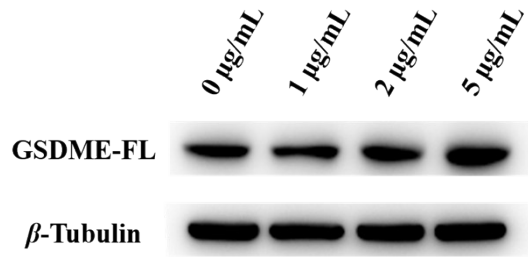


Fig. S12 Western blot analysis of GSDME-FL protein expression in EMT6 cells after incubation with different concentrations of DAC.

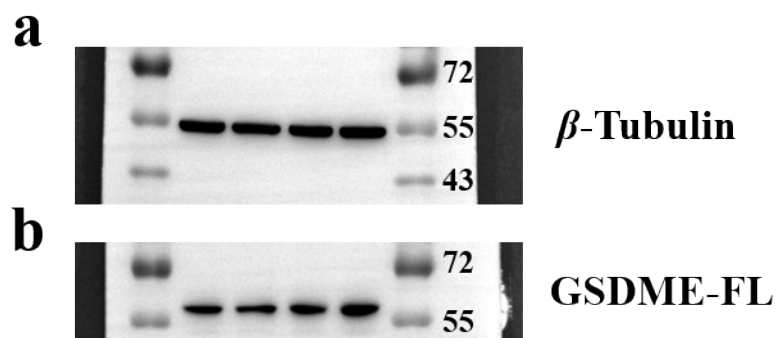


Fig. S13 Unprocessed images of Western blot results of β -Tubulin and GSDME-FL protein expression in EMT6 cells after incubation with different concentrations of DAC.

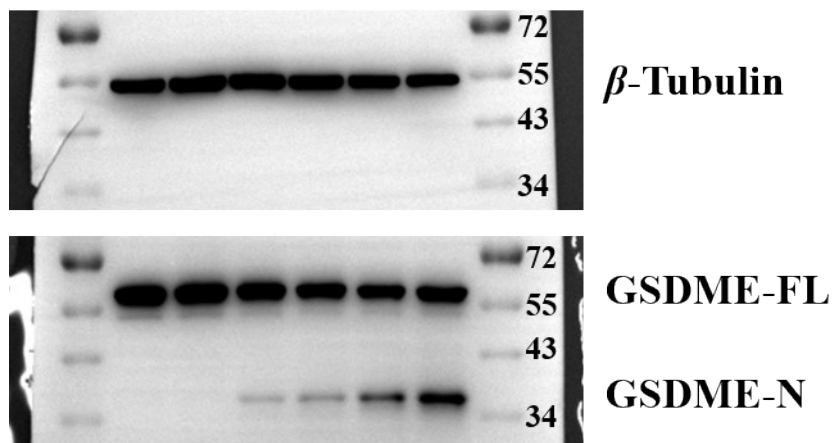


Fig. S14 Unprocessed images of Western blot results of β -Tubulin, GSDME-FL and GSDME-N after incubation with different groups.

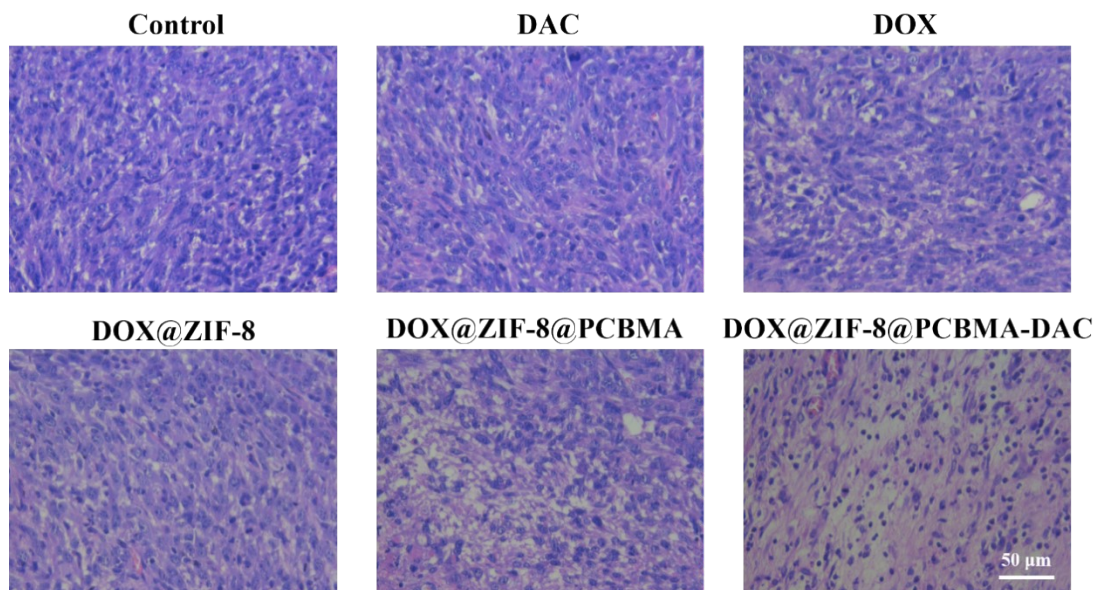


Fig. S15 The H&E staining of tumor in each group after 14-day treatment.

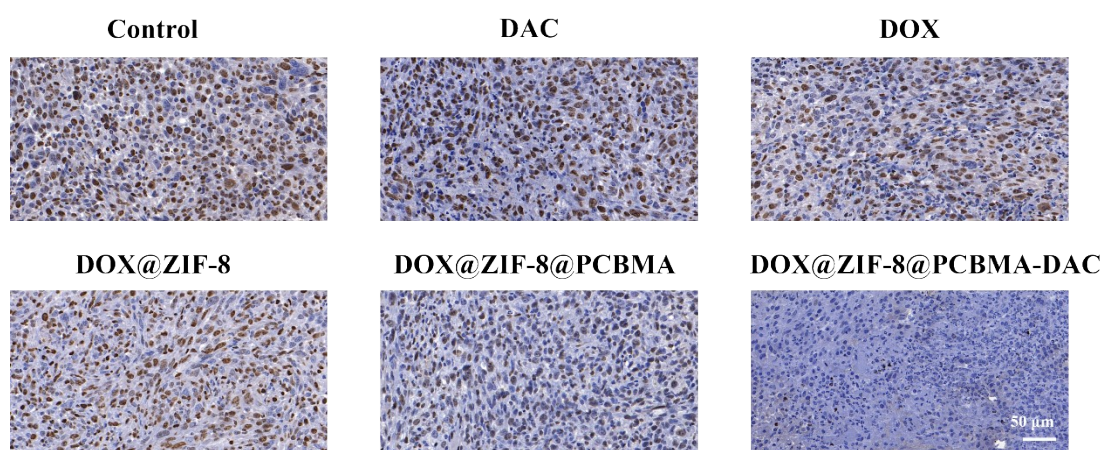


Fig. S16 The Ki67 staining of tumor in each group after 14-day treatment.

Table S1. Recipes and DOX loading efficiency of DOX@ZIF-8.

Sample	Zn(NO ₃) ₂ ·H ₂ O (mg)	2-methylimidazole (g)	DOX (mg)	Loading efficiency (%)
1	200	2	10	1.8
2	200	2	20	5.3
3	200	2	30	7.2
4	200	2	40	10.6
5	200	2	50	12.3

Table S2. Whole blood analysis of mice after injection with DOX@ZIF-8@PCBMA for 7 d and 14 d.

	Unit	Control	7 d	14 d
WBC	10 ⁹ /L	6.0 ± 1.1	6.4 ± 0.5	6.1 ± 1.2
Lymph	10 ⁹ /L	5.4 ± 0.3	5.6 ± 0.5	5.1 ± 1.6
RBC	10 ¹² /L	10.0 ± 0.8	10.2 ± 0.4	10.4 ± 0.6
HGB	g/L	159 ± 8	165 ± 6	159 ± 11
HCT	%	49.3 ± 1.5	50.2 ± 4.3	51.8 ± 7.9
MCV	fL	47.1 ± 0.8	47.7 ± 1.0	48.2 ± 0.9
MCH	pg	16.3 ± 0.3	16.4 ± 0.2	16.0 ± 0.3
MCHC	g/L	333 ± 7	331 ± 7	335 ± 7
PLT	10 ⁹ /L	671 ± 85	650 ± 78	658 ± 103

WBC: white blood cell; Lymph: lymphocyte; RBC: red blood cell; HGB: hemoglobin; HCT: hematocrit; MCV: mean corpuscular volume; MCH: mean corpuscular hemoglobin; MCHC: mean corpuscular hemoglobin concentration; PLT: platelet.