## Supplemental Information

## pH-Responsive nanomicelles for breast cancer near-infrared fluorescence imaging and chemo/photothermal therapy

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**Figure S1.** <sup>1</sup>H NMR of DOX, CA-DOX, Cy7, Cy7-PEG and Cy7-PEG-CA-DOX in DMSO-d<sub>6</sub>.



Figure S2. CMC determination of Cy7-PEG-CA-DOX using pyrene solubilization method.

Compound	IC <sub>50</sub> ( µg / mL)			
	4T1	HepG2	MCF-7	Hela
DOX	6.20 ±0.49	8.13 ±0.12	8.49 ±1.02	12.79 ±0.83
Cy7-PEG-CA-DOX	4.70 ±0.40	7.30 ±0.42	6.46 ±0.69	5.21 ±0.78
Cy7-PEG-CA-DOX+Laser	$1.07 \pm 0.40$	3.25 ±0.23	2.56 ±0.20	3.59 ±0.43

Table S1. The IC50 values of native DOX and DOX derivatives on tumor cells.



**Figure S3.** Hemolysis test of Cy7-PEG-CA-DOX at different concentrations (25, 50, 100, 200, 400 μg/mL).



**Figure S4.** The mean diameter changes of Cy7-PEG-CA-DOX micelles in H<sub>2</sub>O over 7 days.



**Figure S5.** Flow cytometry was used to detect the fluorescence intensity of DOX and Cy7 in 4T1 cells after treat with Cy7-PEG-CA-DOX for 2 h, 4 h, 6 h and 8 h.



**Figure S6.** Confocal microscopy images of 4T1 after incubation with Cy7-PEG-CA-DOX for 6 h. Lyso Tracker and Mito Tracker were used to stain lysosomes and mitochondria, respectively.



**Figure S7.** Fluorescence images (a) and corresponding fluorescence intensities (b) of major organs and tumors of tumor-bearing mice at 12, 48, and 72 h after Cy7-PEG-CA-DOX injection.



Figure S8. H&E-stained tissue sections of major organs of 4T1 tumor-bearing mice after treating with different formulations.