

Supplementary Materials

Active Tumor Permeation and Uptake of Surface Charge-Switchable Theranostic Nanoparticles for Imaging-Guided Photothermal/Chemo Combinatorial Therapy

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Table S1. Therapeutic indices (TI) of different treatments.

	PBS	Free DOX	Free ICG	ICG/DOX-loaded NHTPNs	ICG-loaded NHTPNs+laser	ICG/DOX-loaded TPNs+laser	ICG/DOX-loaded NHTPNs+laser
TI	0	11.9 ± 2.2	12.1 ± 2.6	26.9 ± 4.1	44.8 ± 3.5	30.3 ± 4.4	73.5 ± 2.6

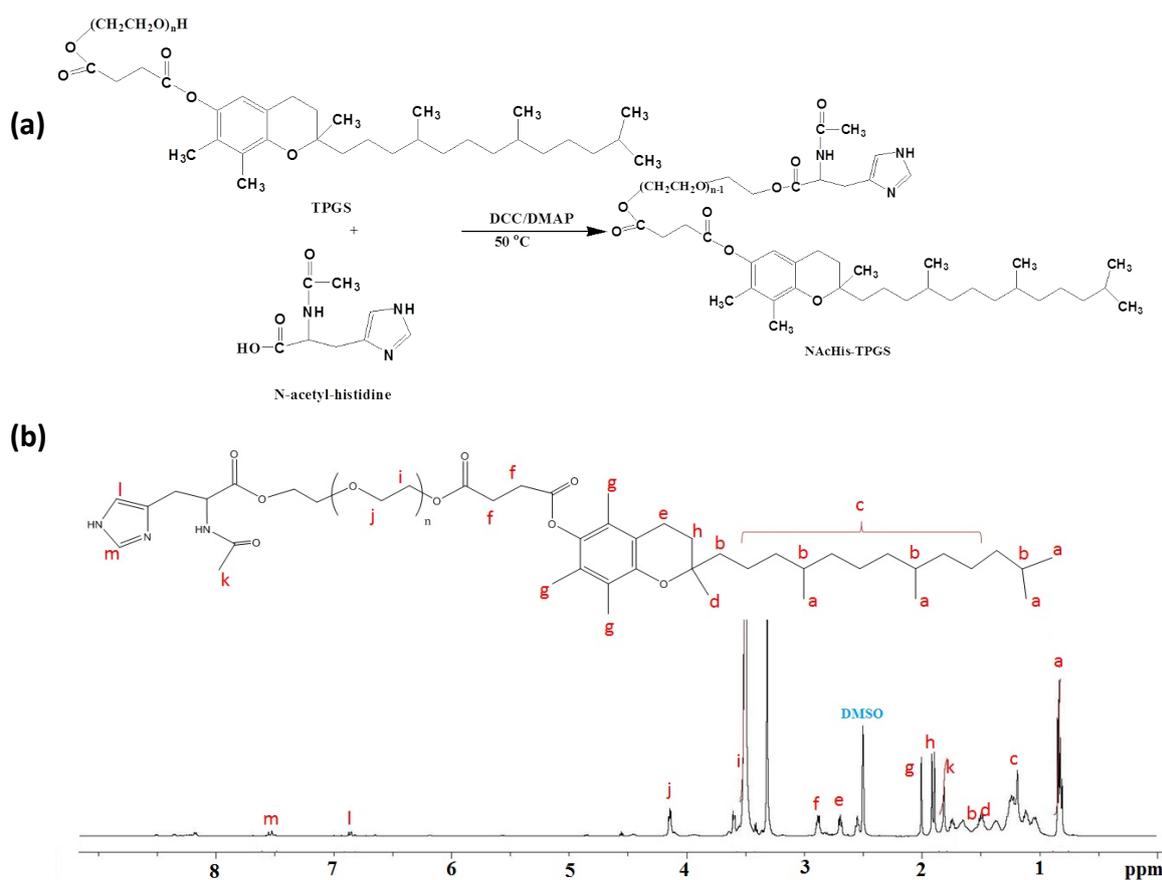


Figure S1. (a) Synthetic route and (b) ^1H -NMR spectrum of NAcHis-TPGS.

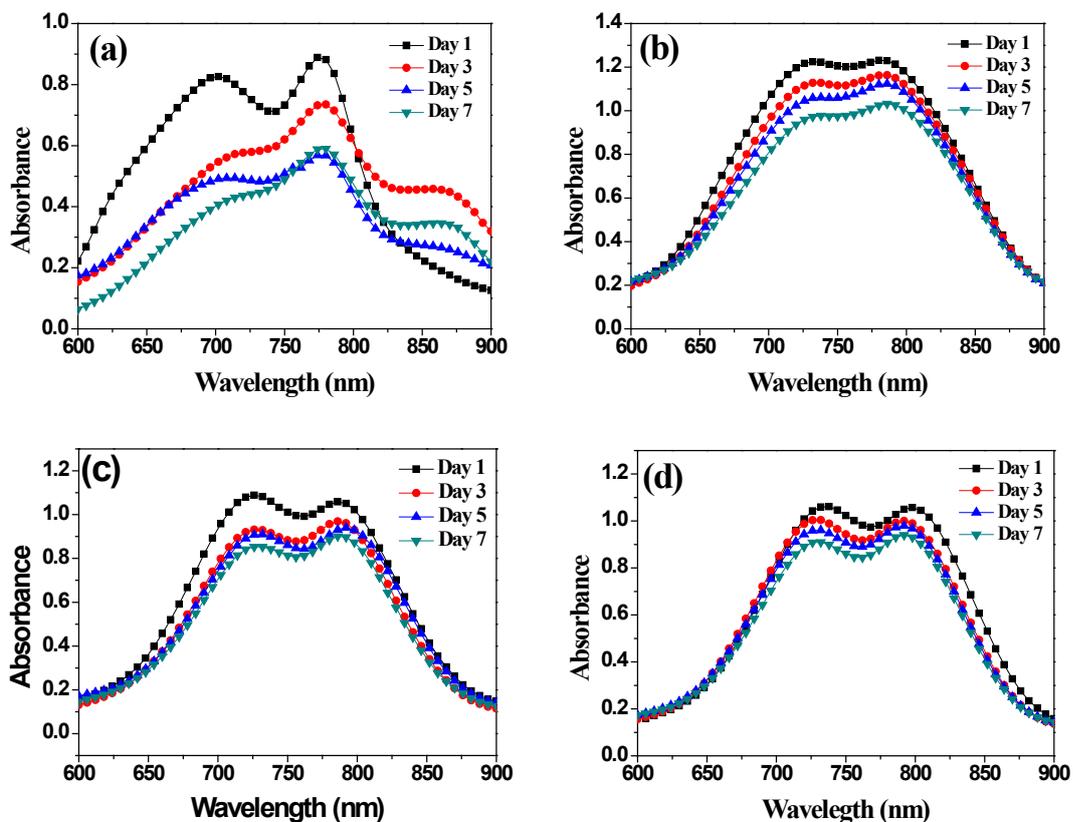


Figure S2. UV/Vis absorption spectra of (a) free ICG, (b) ICG/DOX-loaded TPNs, (c) ICG-loaded NHTPNs, and (d) ICG/DOX-loaded NHTPNs in PBS.

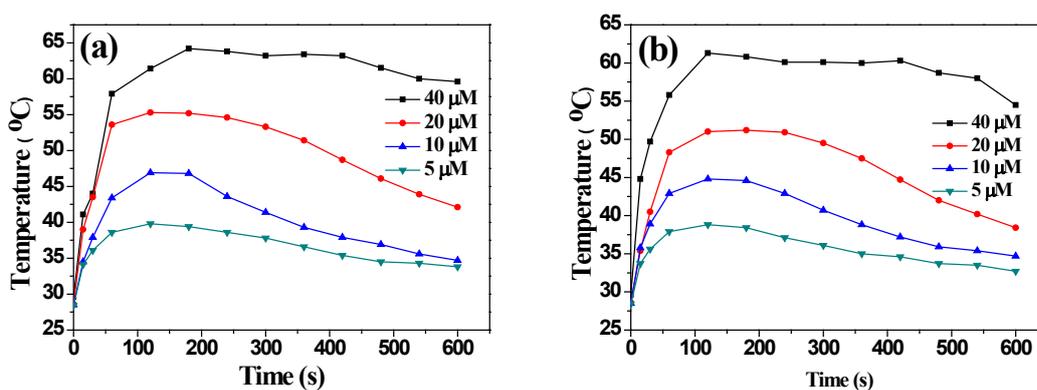


Figure S3. Temperature profiles of aqueous dispersions of (a) ICG/DOX-loaded NHTPNs and (b) ICG/DOX-loaded TPNs upon NIR irradiation (808 nm, 1.0 W/cm²).

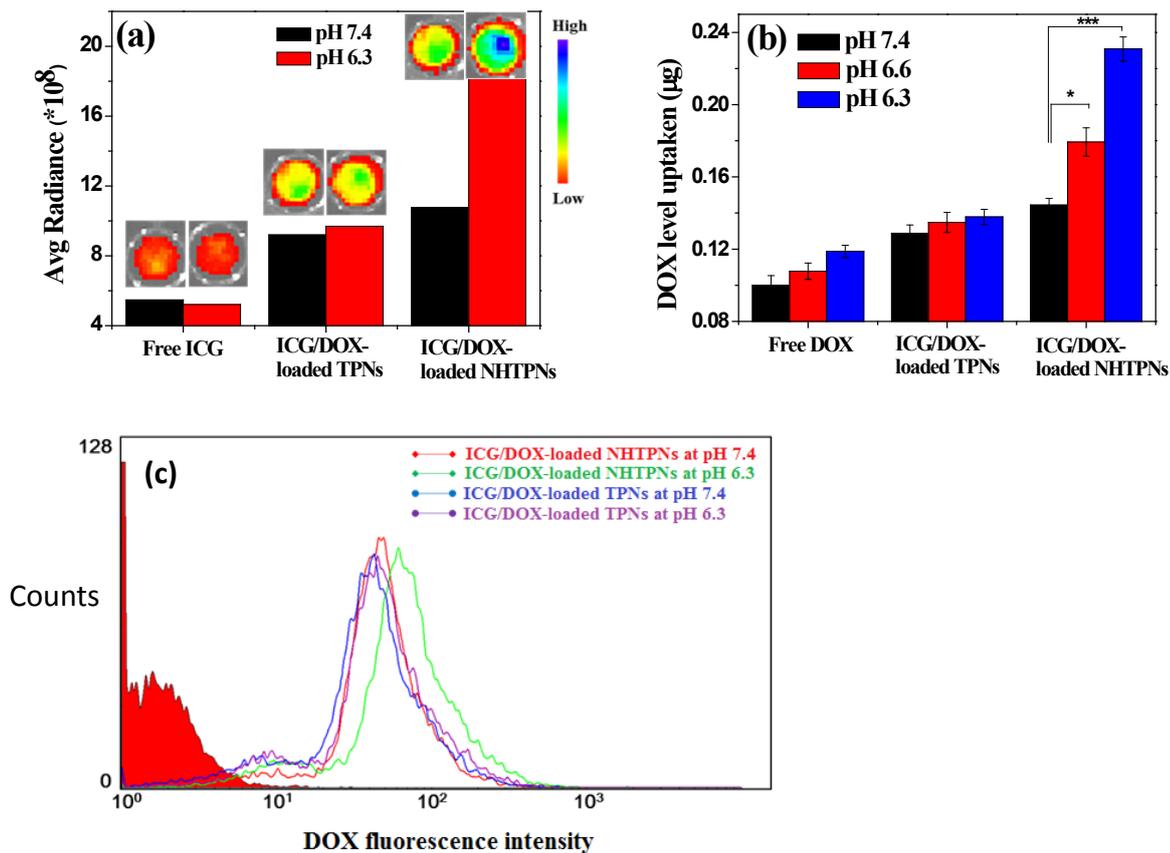


Figure S4. (a) NIR fluorescence images and intensities of ICG from MCF-7 cells incubated for 3 h with free ICG and ICG/DOX-loaded TPNs and NHTPNs at pH 7.4 and 6.3, respectively (ICG concentration = 20 μM). (b) Intracellular DOX amounts of MCF-7 cells incubated for 3 h with free DOX and ICG/DOX-loaded TPNs and NHTPNs at pH 7.4, 6.6 and 6.3 (DOX concentration = 20 μM). (c) Flow cytometric histograms of MCF-7 cells treated with ICG/DOX-loaded NHTPNs and TPNs at pH 7.4 and 6.3 for 3 h (DOX concentration = 20 μM).

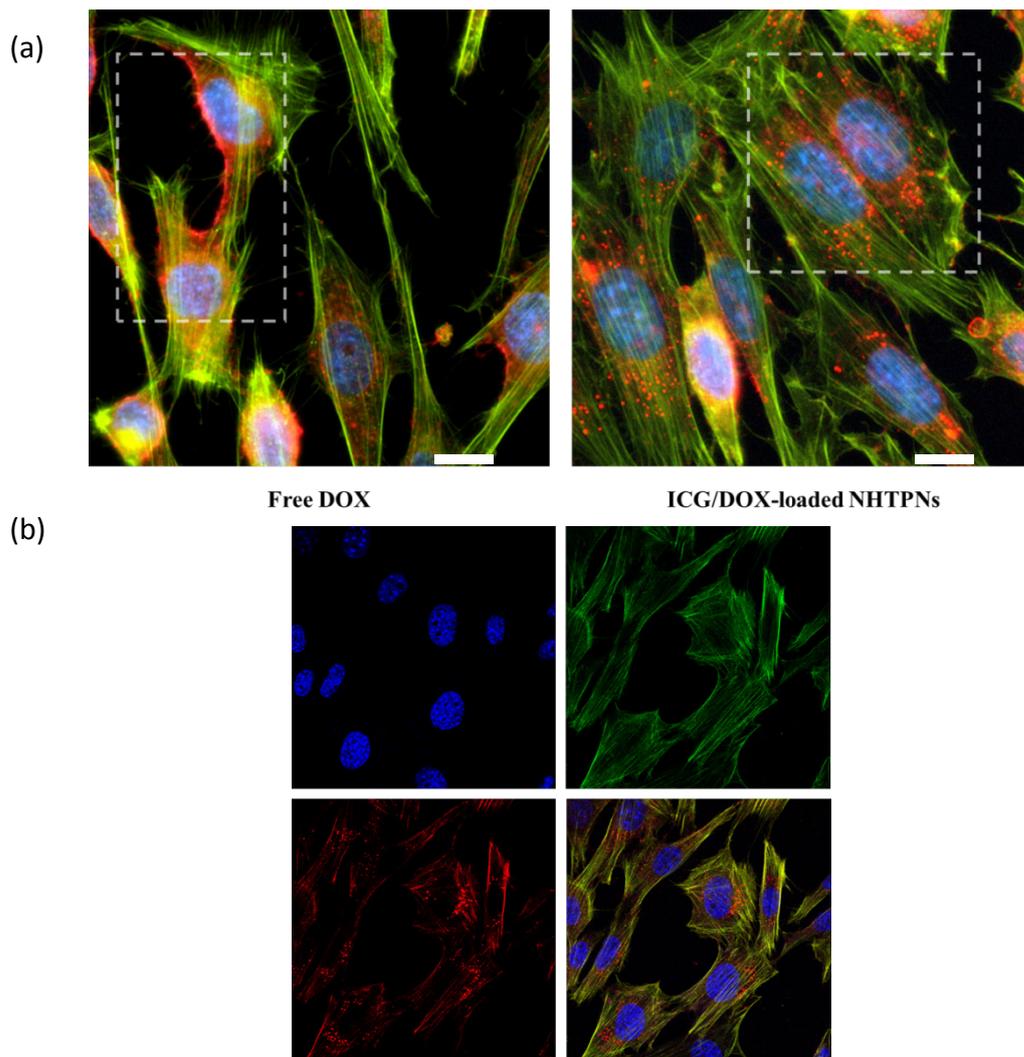


Figure S5. (a) Fluorescence images of TRAMP-C1 cells incubated with free DOX and ICG/DOX-loaded NHTPNs at pH 6.3 for 1.5 h (DOX concentration = 20 μ M). Scale bars are 25 μ m. (b) Laser scanning confocal microscopic images of TRAMP-C1 cells treated with ICG/DOX-loaded NHTPNs at pH 6.3 for 1.5 h (DOX concentration = 20 μ M). Nuclei and F-actin cytoskeletons were stained with Hoechst 33342 and F-actin marker, respectively.

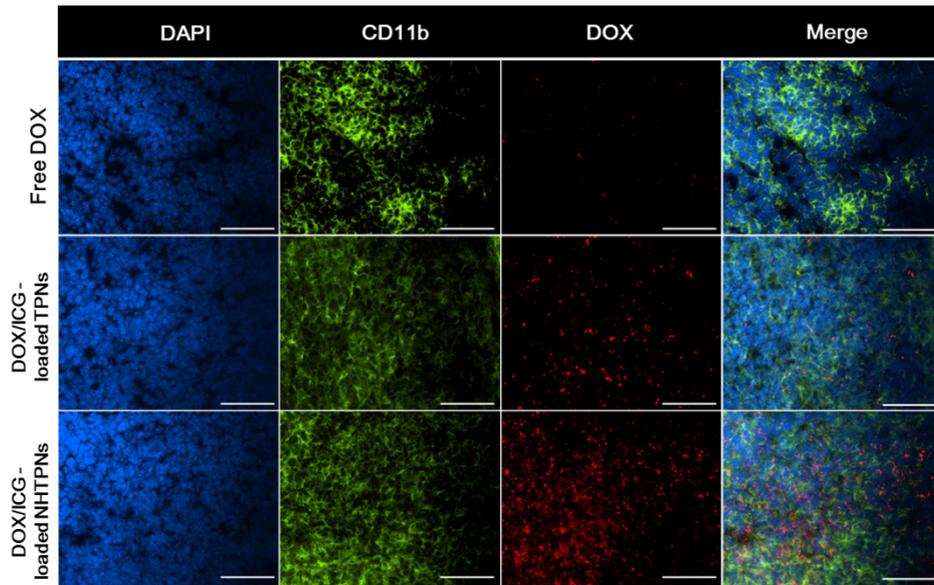


Figure S6. Intratumoral distribution of free DOX and ICG/DOX-loaded TPNs and NHTPNs, respectively, in relation to the loci of TAMs examined by immunofluorescence microscopy. Tumor cell nuclei and TAM were stained with DAPI and CD11b marker, respectively. Scale bars are 50 μm .

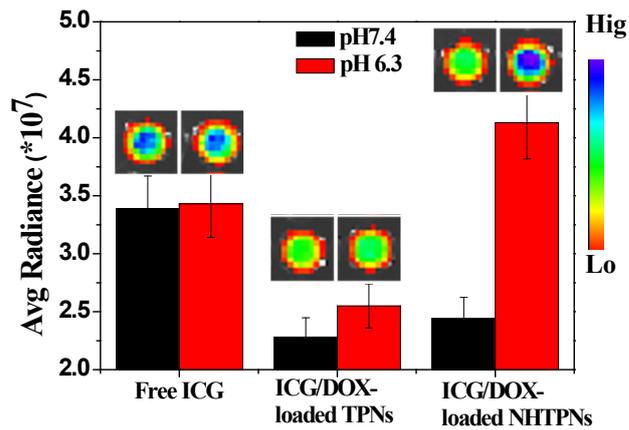


Figure S7. Fluorescence images and intensities of ICG from RAW 264.7 cells incubated with free ICG and ICG/DOX-loaded TPNs and NHTPNs at pH 7.4 and 6.3, respectively.

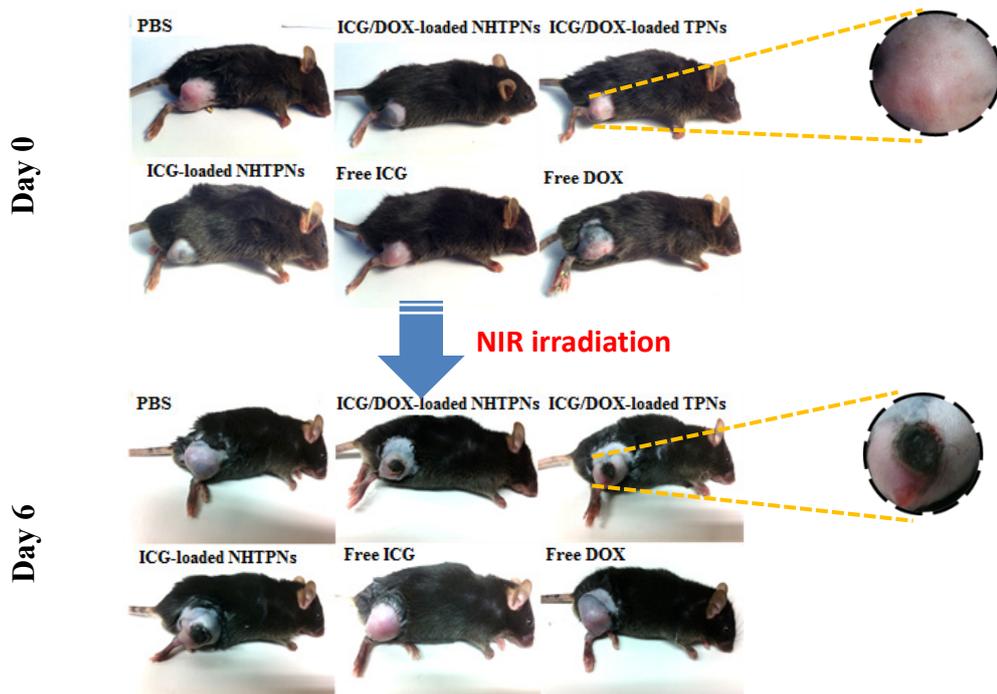


Figure S8. Representative photographs of TRAMP-C1 tumor-bearing mice treated with various formulations at day 0 prior to NIR laser treatment and at day 6 post irradiation (808 nm, 1.0 W/cm², 5-min duration).

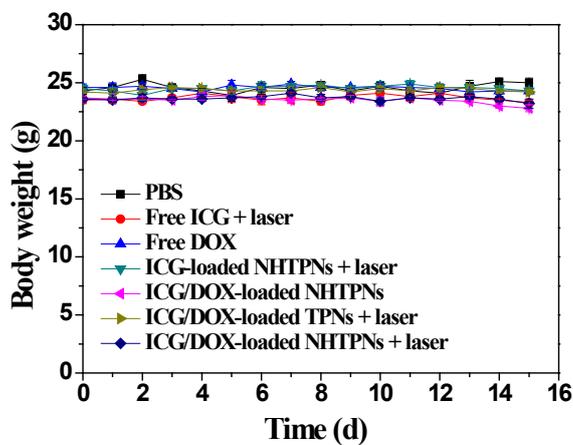


Figure S9. Body weight of tumor-bearing mice receiving different treatments with and without the NIR irradiation.

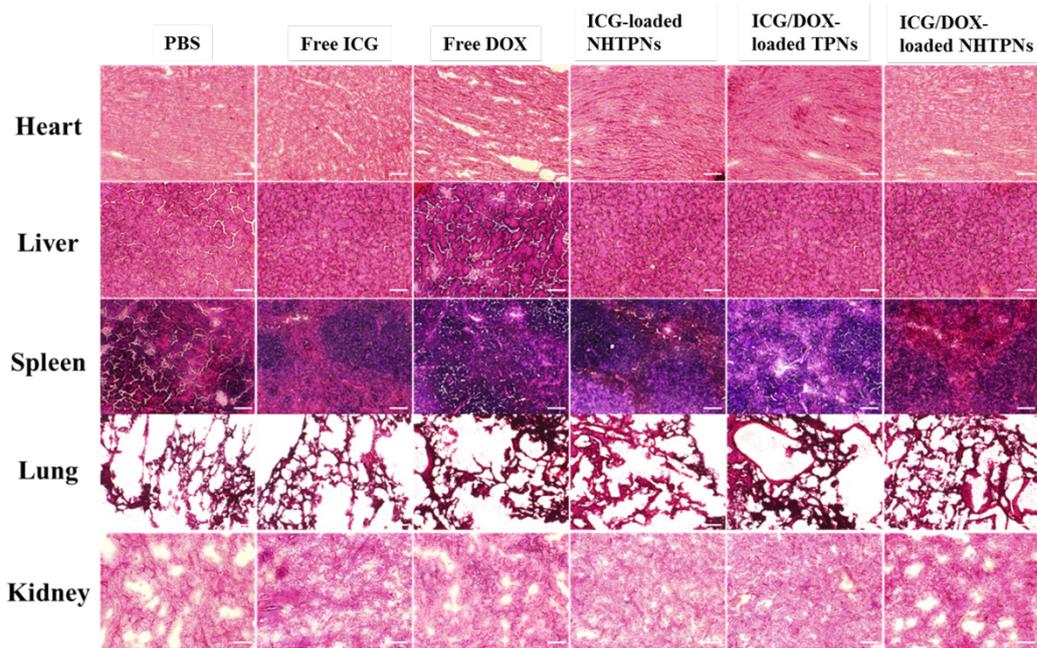


Figure S10. H&E-stained images of major organs. The TRAMP-C1 tumor-bearing mice receiving different formulations and NIR irradiation were sacrificed 15 days post treatment. Scale bars are 100 μ m.