Supplementary Material

A pH-responsive, Endosomolytic Liposome Functionalized with Membrane-anchoring, Comb-like Pseudopeptides for Enhanced Intracellular Delivery and Cancer Treatment

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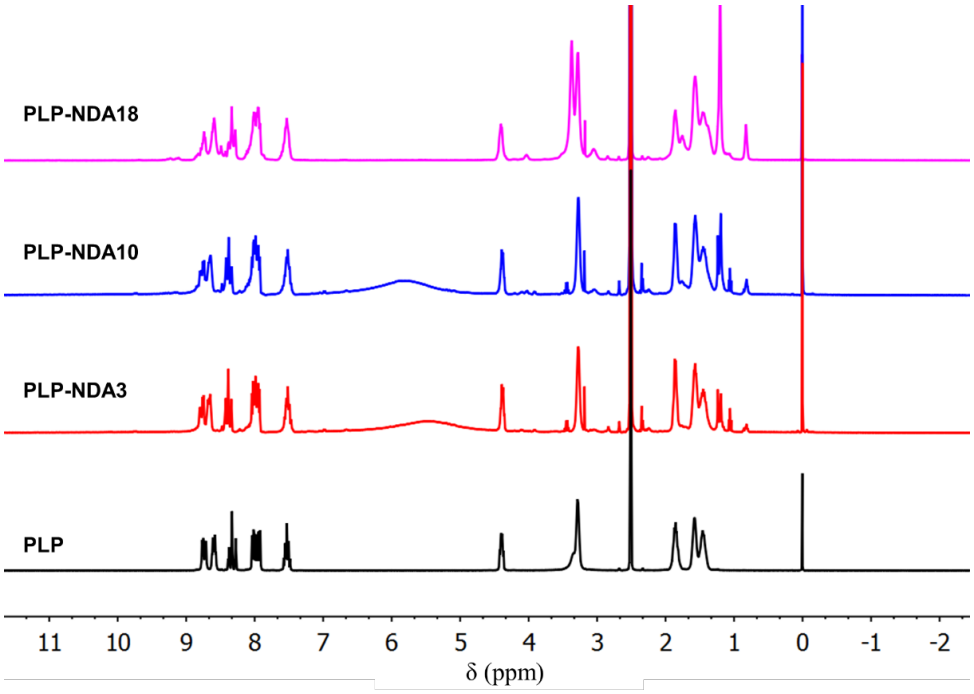

Figure S1. ^{1}H-NMR spectra of PLP, PLP-NDA3, PLP-NDA10 and PLP-NDA18 in acidic form in d_6-DMSO at room temperature.

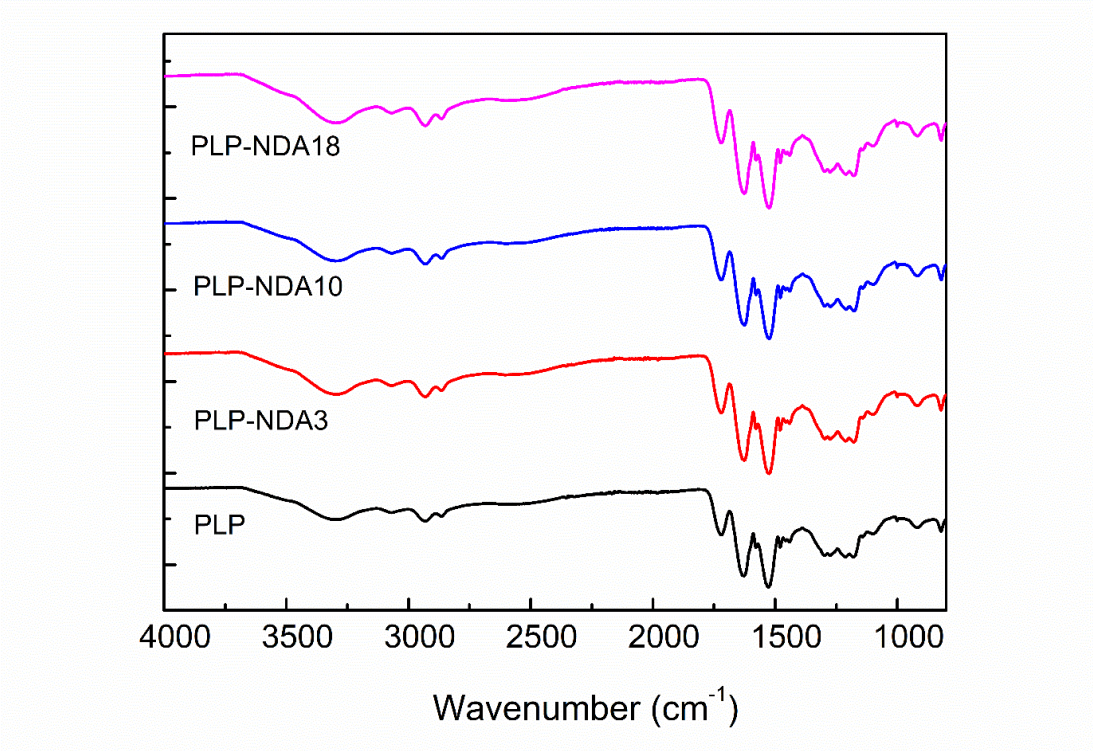

Figure S2. FT-IR spectra of PLP, PLP-NDA3, PLP-NDA10 and PLP-NDA18 in acidic form.

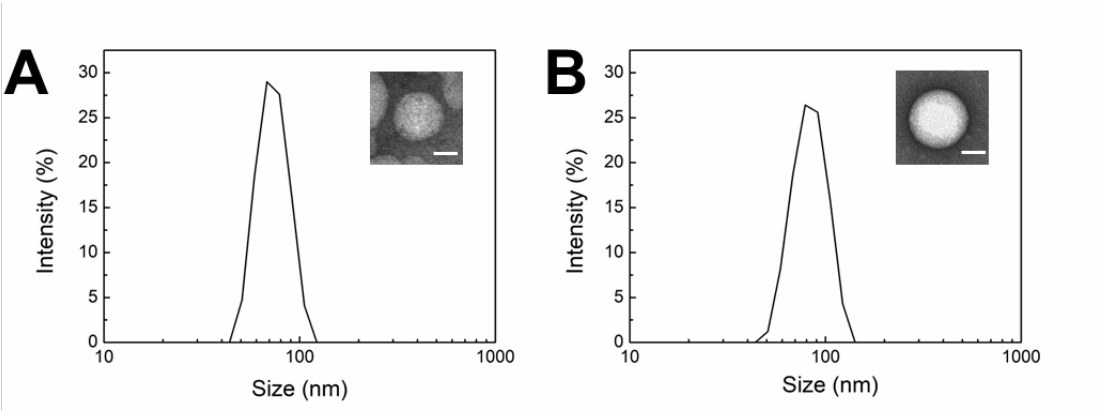

Figure S3. Dynamic light scattering (DLS) size distribution and transmission electron microscopy (TEM) morphology of (A) the bare liposomes (bare LP) and (B) PLP-NDA18-coated liposomes (PLP-NDA18-LP). Scale bar: 40 nm.

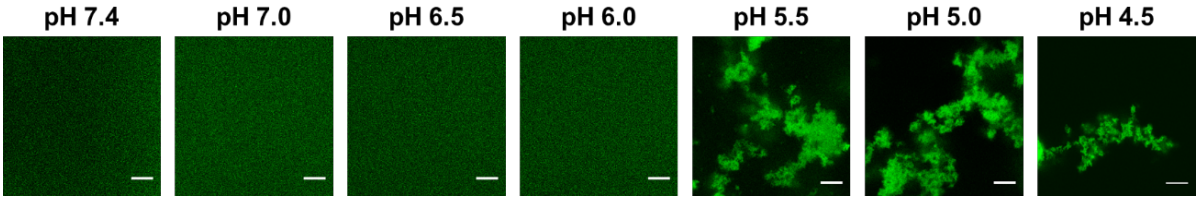

Figure S4. Confocal microscopy images of FITC labelled PLP-NDA18-coated liposomes at various pHs. Scale bar: 40 μm.

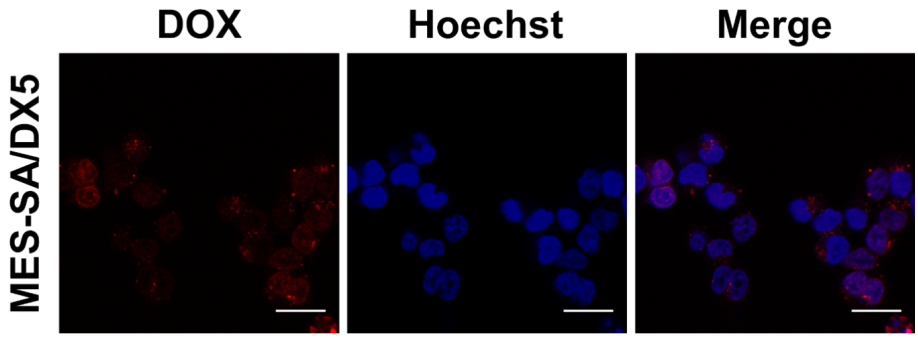

Figure S5. Confocal microscopy images of MES-SA/DX5 cells showing subcellular DOX distribution. Cells were treated with 2.5 μM free DOX for 1 h before imaging (scale bar 20 μm).

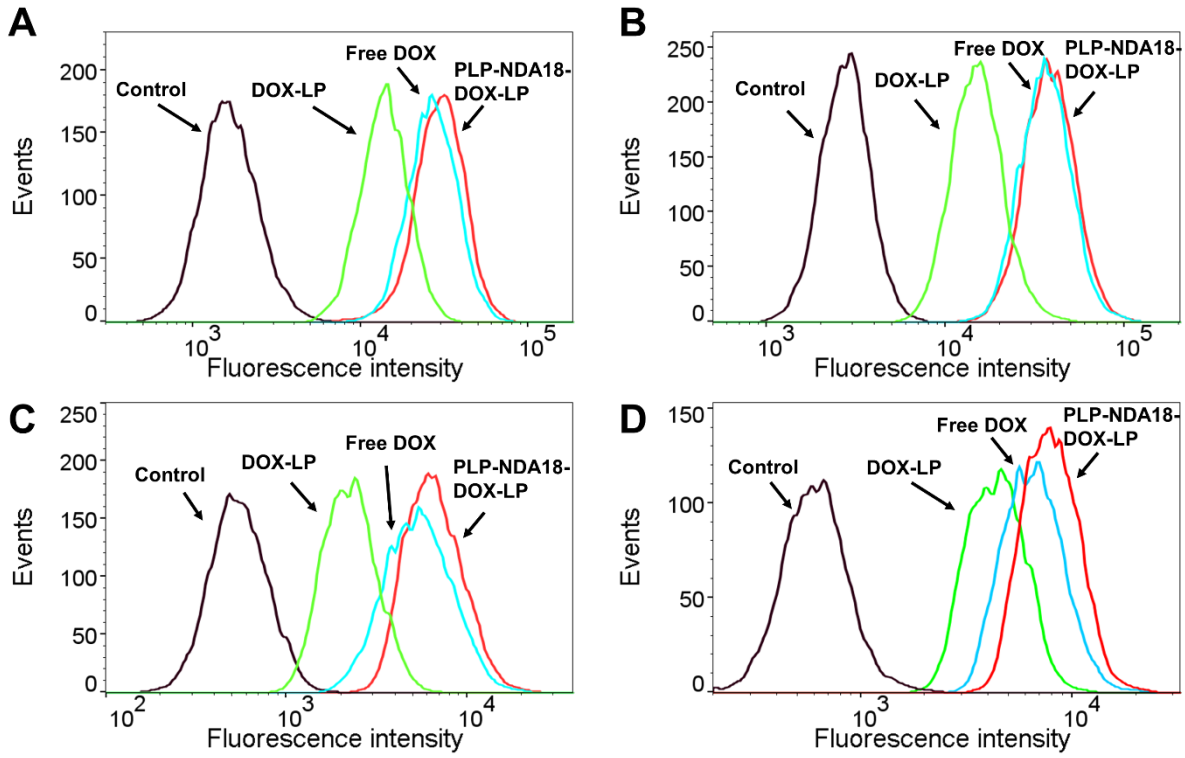

Figure S6. Cellular uptake of DOX quantitatively analyzed by flow cytometry and presented as representative histogram plots. All the samples were analyzed after 1 h of treatment of (A) HeLa, (B) A549, and (C) MES-SA cells with free DOX, DOX-loaded bare liposomes (DOX-LP), and DOX-loaded, PLP-NDA18-coated liposomes (PLP-NDA18-DOX-LP), respectively, at the fixed equivalent DOX dosage of 2.5 μM. (D) MES-SA/DX5 cells were treated with free DOX, DOX-LP, and PLP-NDA18-DOX-LP, respectively, at the fixed equivalent DOX concentration of 5 μM for 1 h before flow cytometry measurements.

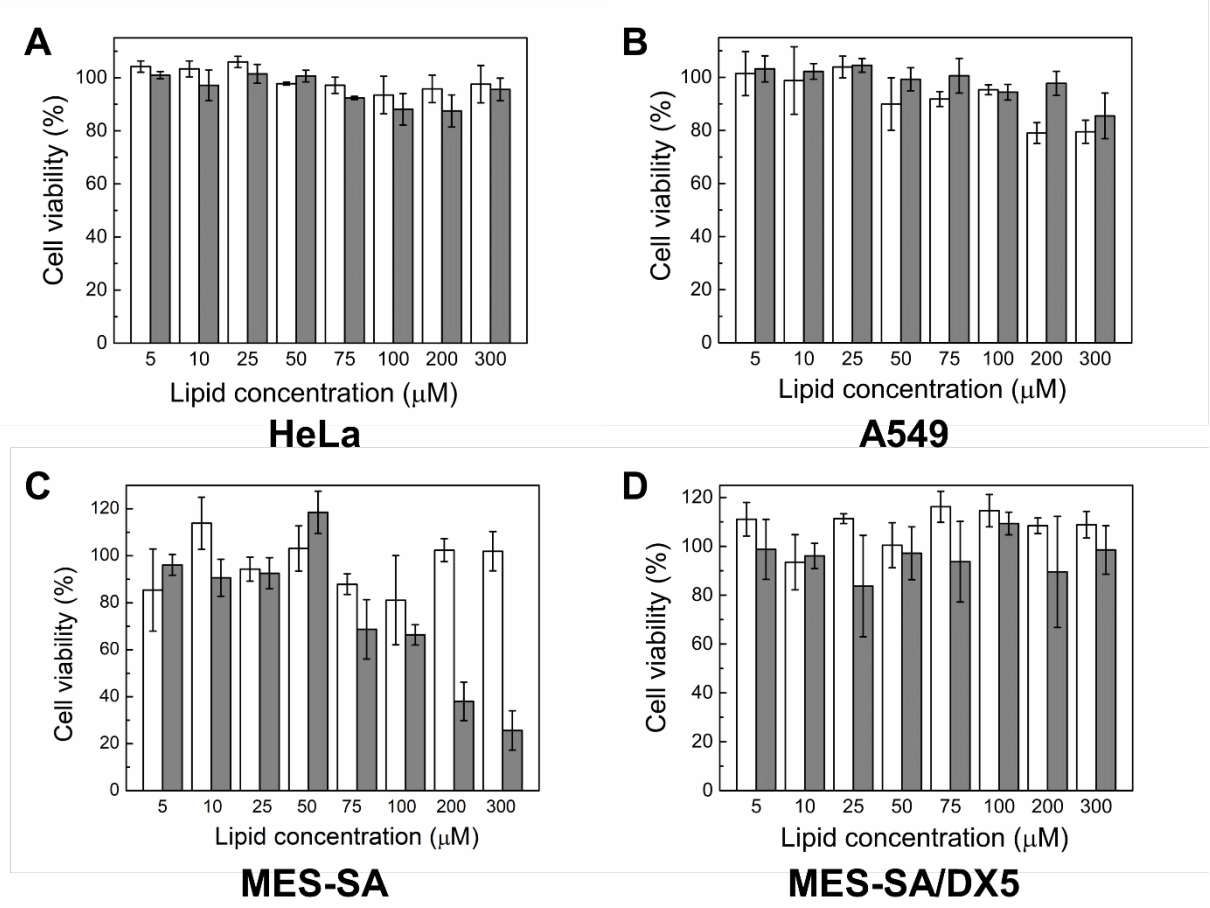

Figure S7. Concentration-dependent relative viabilities of (A) HeLa, (B) A549, (C) MES-SA, and (D) MES-SA/DX5 cells treated with the liposomes with (close columns) or without (open columns) PLP-NDA18 coating for 24 h as determined by Alamar Blue assay. The polymer-to-lipid ratio of the PLP-NDA18-coated liposomes was fixed at 2.85:100. Mean ± S.D. (n=3).

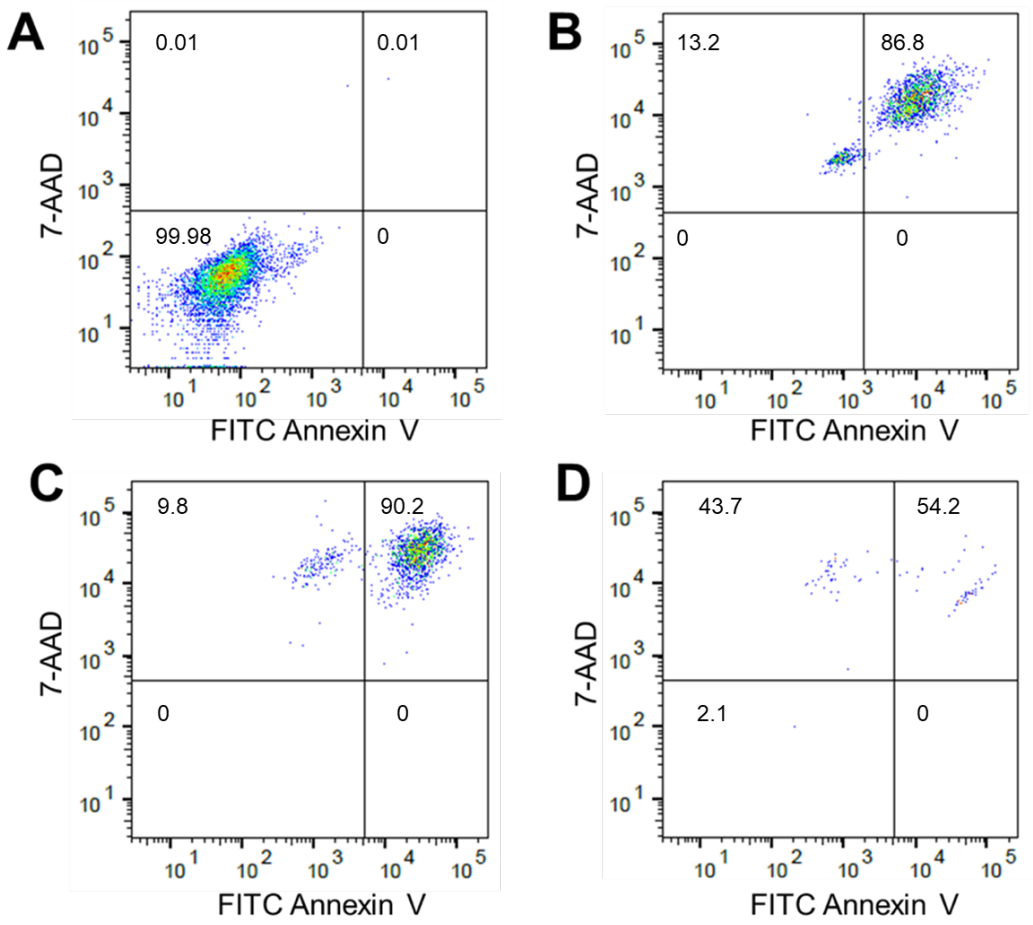

Figure S8. Representative flow cytometry scatterplot of A549 cells after 24 h of incubation with (A) serum-free culture medium alone, (B) free DOX, (C) DOX-loaded bare liposomes (DOX-LP), and (D) DOX-loaded, PLP-NDA18-coated liposomes (PLP-NDA18-DOX-LP). DOX dosage in free DOX solution or the liposomal samples was fixed at 2.5 μM. Mean ± S.D. (n=3).

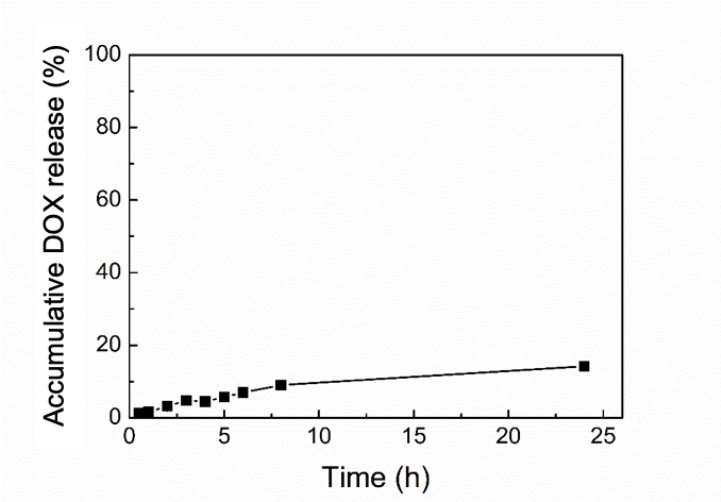

Figure S9. Accumulative DOX release from the DOX-loaded, PLP-NDA18-coated liposomes at pH 7.4. Mean ± S.D. (n=3).