Supplementary Information

From Phage Display to Nanoparticle Delivery: Functionalizing Nanoparticles with Multivalent Peptides Improves Targeting to a Cancer Biomarker

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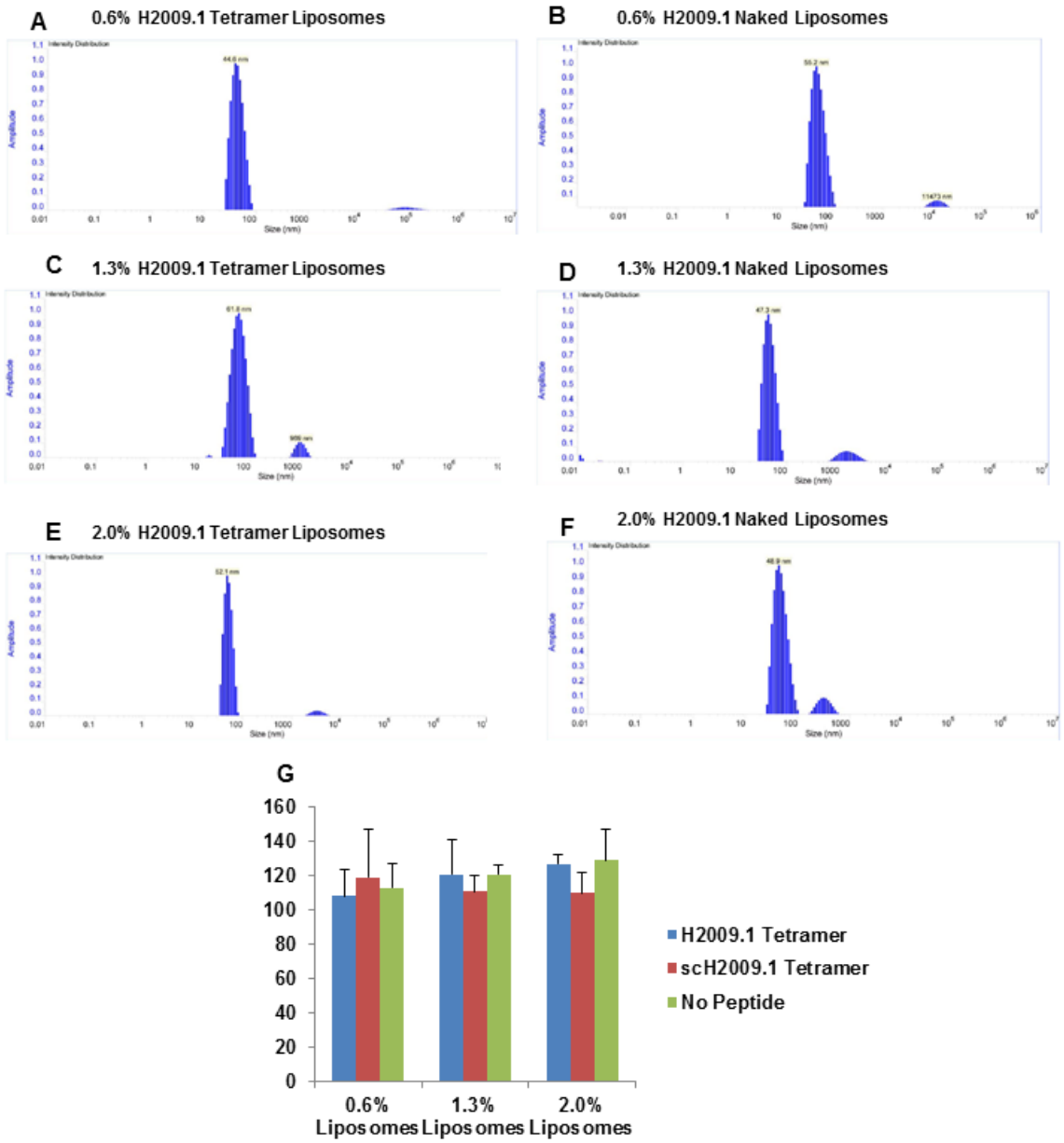

Figure 1S. The liposomes are approximately 100 nm in diameter. Representative intensity graphs displaying the size distribution of the liposomes as determined by dynamic light scattering. A: 0.6% H2009.1 tetrameric liposomes B: 0.6% naked liposomes C: 1.3% H2009.1 tetrameric liposomes D: 1.3% naked liposomes E: 2.0% H2009.1 tetrameric liposomes F: 2.0% naked liposomes G: Average diameter of the liposomes. Error bars represent standard deviation of at least 3 independent liposome preparations.

Table S1. Liposome Formulations			
	Formulation (molar percentages)		
Lipid	**0.64%**	**1.3%**	**2.0%**
HSPC[a]	65%	65%	65%
Cholesterol	32%	32%	32%
DSPE-PEG$_{2000}$[b]	2.5%	1.9%	1.2%
DSPE-PEG$_{2000}$-Maleimide[c]	0.64%	1.3%	2.0%

[a] Hydrogenated soy phosphatidylcholine. [b] 1,2-distearoyl-*sn*-glycero-3-phosphoethanolamine-N-[carbonyl-methoxypolyethyelene glycol-2000]. [c] 1,2-distearoyl-*sn*-glycero-3-phosphoethanolamine-N-[maleimide(polyethylene glycol)-2000].

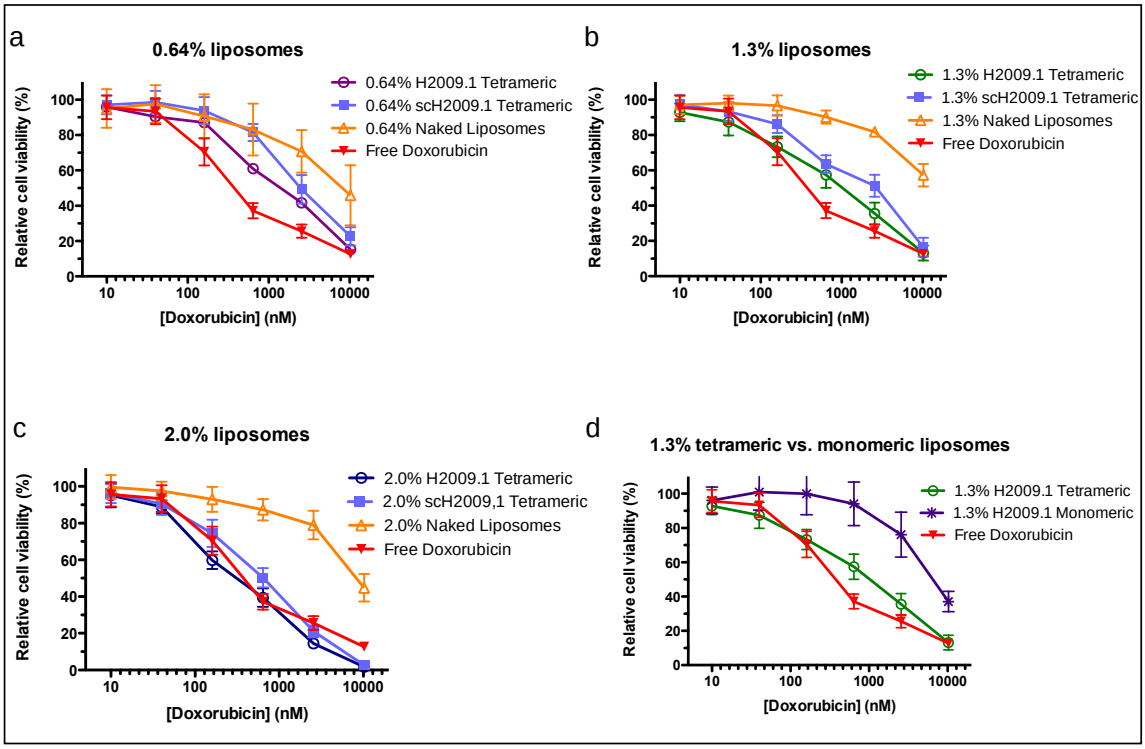

Figure S2. H2009.1 tetrameric liposomes are selectively cytotoxic against $\alpha_v\beta_6$-expressing cells. H2009 cells were incubated with liposomes for 1 hour before washing to remove non-internalized drug and adding fresh media. At 120 hours, cell viability was determined and normalized to non-treated cells using the ATP-based CellTiter-Glo® Luminescent Cell Viability Assay. (a-c) Viability for cells treated with tetrameric peptide liposomes. (d) Viability for cells treated with 1.3% H2009.1 tetrameric verses 1.3% H2009.1 monomeric liposomes.

Table S2. IC_{50} Values of Different Liposome Formulations on $\alpha_v\beta_6$-Negative H1299 Cells[a]

Drug Formulation	IC50 on H1299 cells (nM)
1.3% H2009.1 Tetrameric	3700 ± 130
1.3% scH2009.1 Tetrameric	3500 ± 400
1.3% Naked	-
Free Doxorubicin	1400 ± 58

[a] Cells were incubated with liposomes for 1 hour followed by a 120 hour recovery in media.