Supporting Information

Identification of a Moderate Affinity CD22 Binding Peptide and *In Vitro* Optimization of Peptide-Targeted Nanoparticles for Selective Uptake by CD22+ B-Cell Malignancies

Baksun Kim^{1,a}, Jaeho Shin^{1,a}, Tanyel Kiziltepe^{a,b,c}, and Basar Bilgicer^{a,b,c,*}

¹These two authors contributed equally to this work and are co-first authors

^aDepartment of Chemical and Biomolecular Engineering, University of Notre Dame, Notre Dame, IN 46556

^bHarper Cancer Research Institute, University of Notre Dame, Notre Dame, IN 46556 ^cAdvanced Diagnostics and Therapeutics, University of Notre Dame, Notre Dame, IN 46556;

Peptide	Linker (EG units)	# Lysine Residue	Expected Mass (Da)	Observed Mass (Da)	Purity
PV1	18	3	4070.36	4072.40	
PV2	18	3	4209.37	4211.39	
PV3	0	3	2129.36	2132.36	>98%
	2	3	2288.45	2290.396	
	8	0	2009.23	2011.29	
		1	2296.42	2298.32	
		2	2424.51	2426.46	
		3	2552.61	2554.52	
	18	0	2591.57	2593.63	
		1	2878.75	2880.69	
		2	3006.85	3009.80	
		3	3134.94	3137.89	
	30	3	3734.29	3738.25	
	45	3	4181.58	4189.5	

Supplementary Table 1. Mass Spectrometry Analysis of Lipid Conjugate Molecules.

Supplementary Table 2. Particle Size and Polydispersity of Selected Liposome Formulation.

Nanoparticle	Formulation	Particle Size (nm)	Polydispersity
Control	95/5/5 DSPC/CHOL/mPEG2000	105.25 ± 0.76	0.057
PV3 (K ₃) ¹	90/5/5/5 DSPC/CHOL/mPEG2000/PV3(K ₃)-Pep	104.44 ± 0.21	0.094
PV3 (K ₃) ²	90/5/5/5 DSPC/CHOL/mPEG2000/PV3(K ₃)-Pep	115.16 ± 0.08	0.062

¹Targeting peptides contain EG8 linker

²Targeting peptides contain EG18 linker



Supplementary Figure 1. Synthesis of Peptide Conjugated Lipid Molecules. Schematic steps of synthesizing peptide lipid conjugates with various number of lysine and linker length.