Supporting Information

Design of Hybrid Lipid/Retroviral-Like Particle Gene Delivery Vectors

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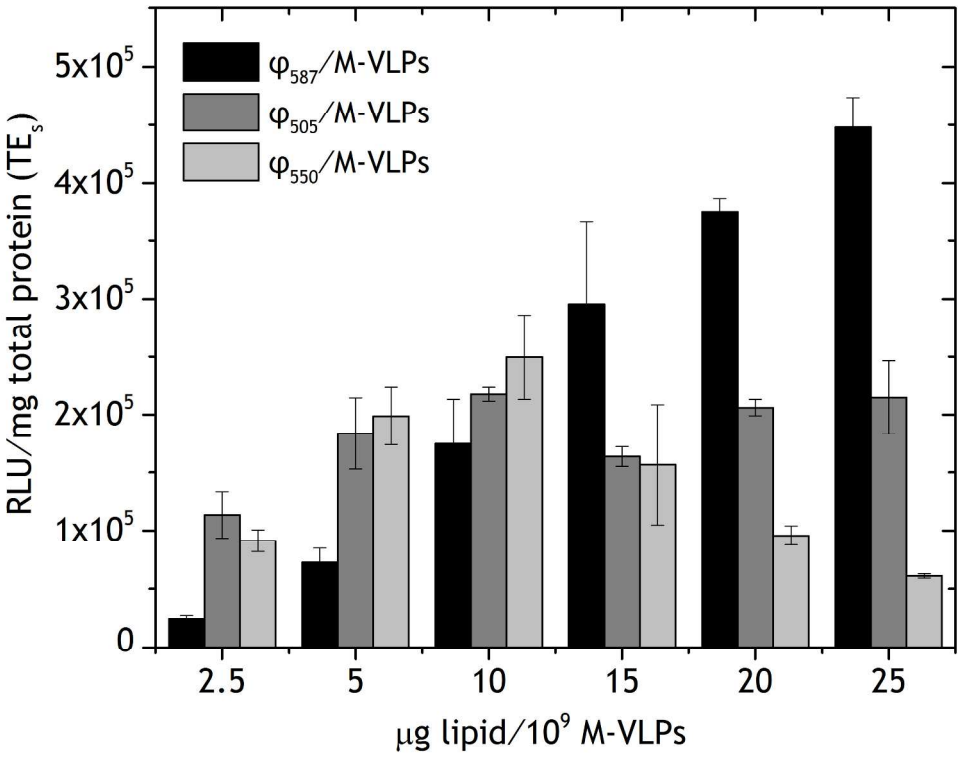

Figure S1: Transfection efficiency of φ_{587}/M-VLP, φ_{505}/M-VLP and φ_{550}/M-VLP in KB cells with 2 x 10^9 M-VLP/well of a 12- well tissue culture plate. Vectors were formed using M-VLP density of 5.1 x 10^9 particles/ml and lipid:M-VLP ratios of 2.5-25 μg/10^9 M-VLP. RLU/mg total protein = relative light units per mg of total protein in cellular lysate. Error bars indicate standard deviation (n=3).

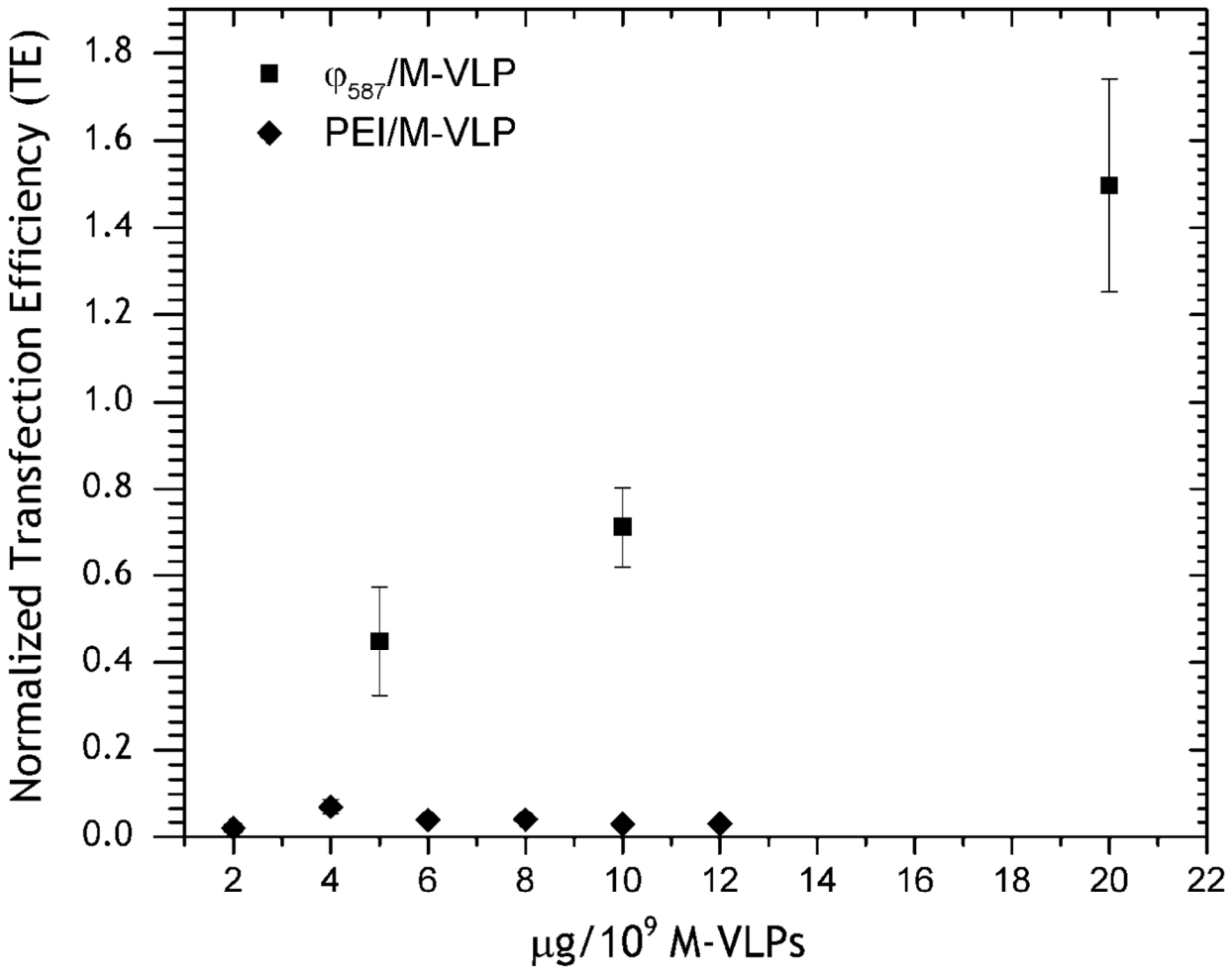

Figure S2: Transfection of HEK293 cells with φ_{587}/M-VLP and PEI/M-VLP at 1 x 10^9 M-VLP/well of a 12- well tissue culture plate. Vectors were formed using M-VLP density of 10 x 10^9 particles/ml and at lipid:M-VLP ratios of 2-20 μg/10^9 M-VLP. Normalized transfection efficiency represents RLU/mg total protein (relative light units per mg of total protein in cellular lysate) normalized to amphotropic murine leukemia viruses (11 x 10^9 MLV-A/well). Error bars indicate standard deviation (n=3).

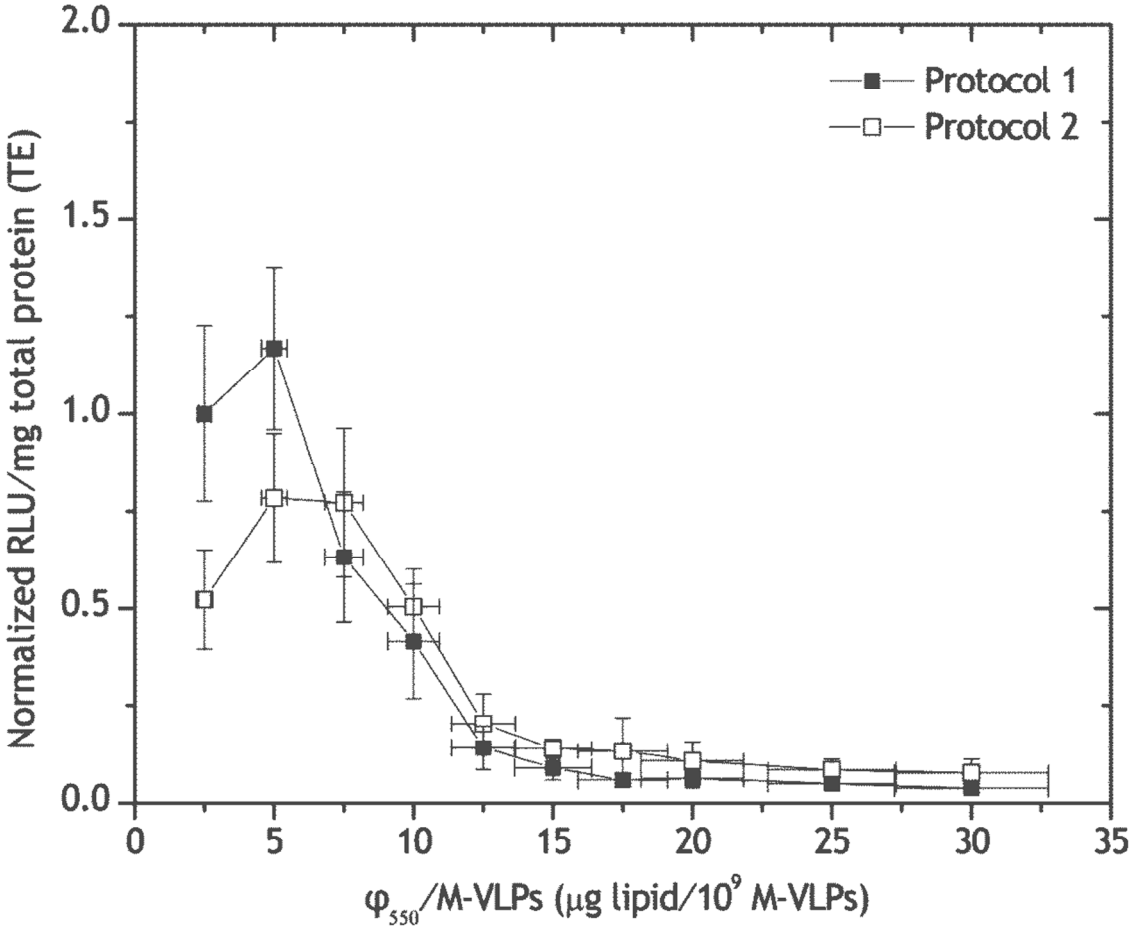

Figure S3: Transfection of HEK293 cells with φ_{550}/M-VLP formed via protocol 2 at 1 x 10^9 M-VLP/well of a 12-well tissue culture plate. Normalized RLU/mg total protein = relative light units per mg of total protein in cellular lysate normalized to the same measurement at a lipid stoichiometry of 2.5 μg/10^9 M-VLP of φ_{550}/M-VLP formed via protocol 1. Error bars indicate standard deviation (n=3).

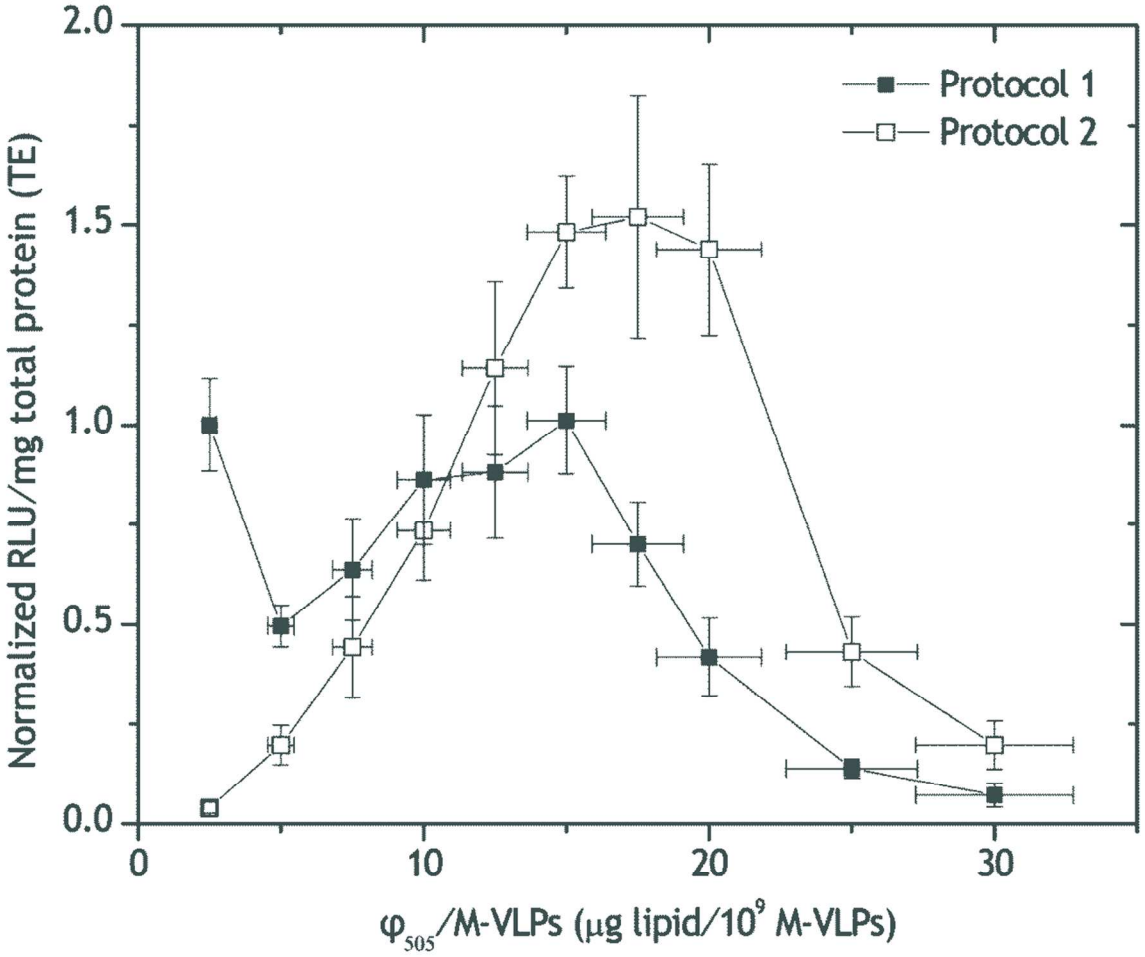

Figure S4: Transfection of HEK293 cells with φ_{505}/M-VLP formed via protocol 2 at 1 x 10^9 M-VLP/well of a 12-well tissue culture plate. Normalized RLU/mg total protein = relative light units per mg of total protein in cellular lysate normalized to the same measurement at a lipid stoichiometry of 2.5 μg/10^9 M-VLP of φ_{505}/M-VLP formed via protocol 1. Error bars indicate standard deviation (n=3).

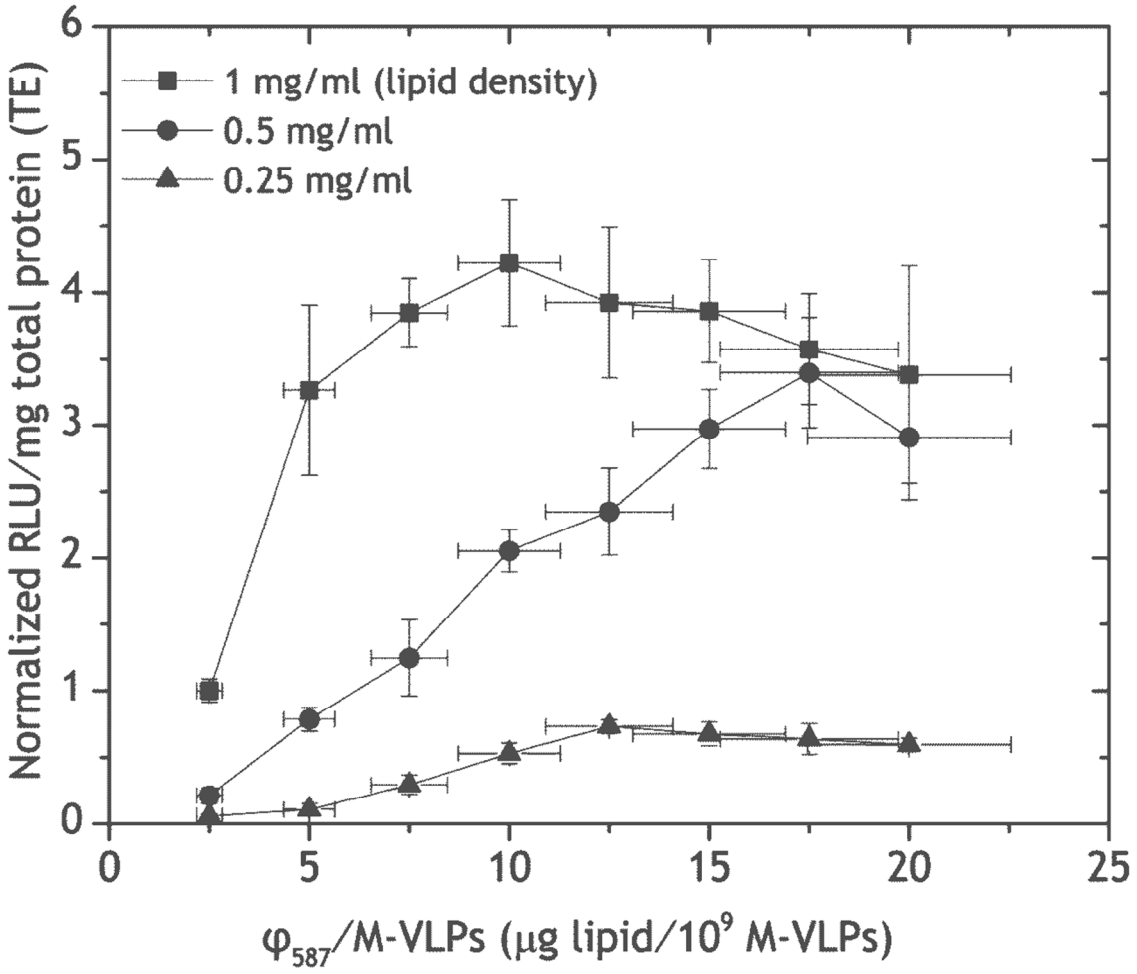

Figure S5: Transfection of HEK293 cells with φ_{587}/M-VLP formed by associating M-VLP with liposomes at concentrations of 1, 0.5 and 0.25 mg/ml via protocol 2 using M-VLP density of 16.4 x 10^9 particles/ml with 1 x 10^9 M-VLP/well of a 12-well tissue culture plate. RLU/mg total protein = relative light units per mg total protein in cell lysate normalized to the same measurement at a lipid stoichiometry of 2.5 μg/10^9 M-VLP for φ_{587}/M-VLP formed using a lipid concentration of 1 mg/ml. Error bars indicate standard deviation (n=3).

Table S1: Sizes, measured via dynamic light scattering, and zeta potential, via ZetaPALS, of φ_{587}/M-VLP, φ_{505}/M-VLP and φ_{550}/M-VLP formed via Protocol 2 at three different stoichiometries using liposomes at three different concentrations of 1, 0.5 and 0.25 mg/ml. Mean ± SEM (n=2). The size of M-VLP without addition of any lipid was 101 ± 2 nm and the zeta potential was -6.8 ± 1.2 mV.

Size (nm)

		Lipid/M-VLP ratios (μg/10^9 M-VLP)		
Type	Only Lipid	5	10	20
φ_{587}/M-VLP (1 mg/ml)	144 ± 6	336 ± 12	443 ± 21	921 ± 204
φ_{505}/M-VLP (1 mg/ml)	139 ± 2	327 ± 21	286 ± 7	456 ± 25
φ_{550}/M-VLP (1 mg/ml)	119 ± 4	364 ± 14	372 ± 12	2604 ± 292
φ_{587}/M-VLP (0.5 mg/ml)		315 ± 12	364 ± 14	1196 ± 354
φ_{505}/M-VLP (0.5 mg/ml)		246 ± 7	197 ± 29	350 ± 10
φ_{550}/M-VLP (0.5 mg/ml)		240 ± 6	350 ± 18	2275 ± 176
φ_{587}/M-VLP (0.25 mg/ml)		242 ± 7	323 ± 12	634 ± 94
φ_{505}/M-VLP (0.25 mg/ml)		224 ± 7	218 ± 6	317 ± 25
φ_{550}/M-VLP (0.25 mg/ml)		226 ± 6	285 ± 14	1986 ± 354

Zeta Potential (mV)

		Lipid/M-VLP ratios (μg/10^9 M-VLP)		
Type	Only Lipid	5	10	20
φ_{587}/M-VLP (1 mg/ml)	5.08 ± 1.9	-2.1 ± 2.7	5.7 ± 1.7	20.3 ± 1.2
φ_{505}/M-VLP (1 mg/ml)	10.6 ± 2.3	-1.2 ± 2.0	4.3 ± 2.3	11.0 ± 1.4
φ_{550}/M-VLP (1 mg/ml)	2.7 ± 2.1	-1.7 ± 1.7	15.9 ± 1.4	9.1 ± 2.1
φ_{587}/M-VLP (0.5 mg/ml)		-7.4 ± 2.2	7.2 ± 1.7	21.9 ± 0.7
φ_{587}/M-VLP (0.25 mg/ml)		-4.7 ± 1.5	6.4 ± 2.3	21.1 ± 1.7