

Supporting Information

Chemically tunable cationic polymer-bonded magnetic nanoparticles for gene magnetofection

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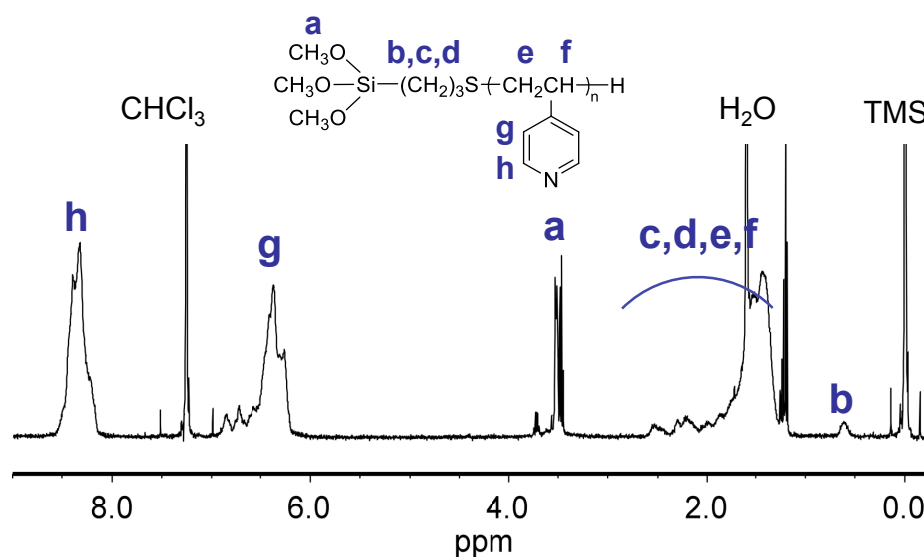


Figure S1 NMR spectrum of VP_n.

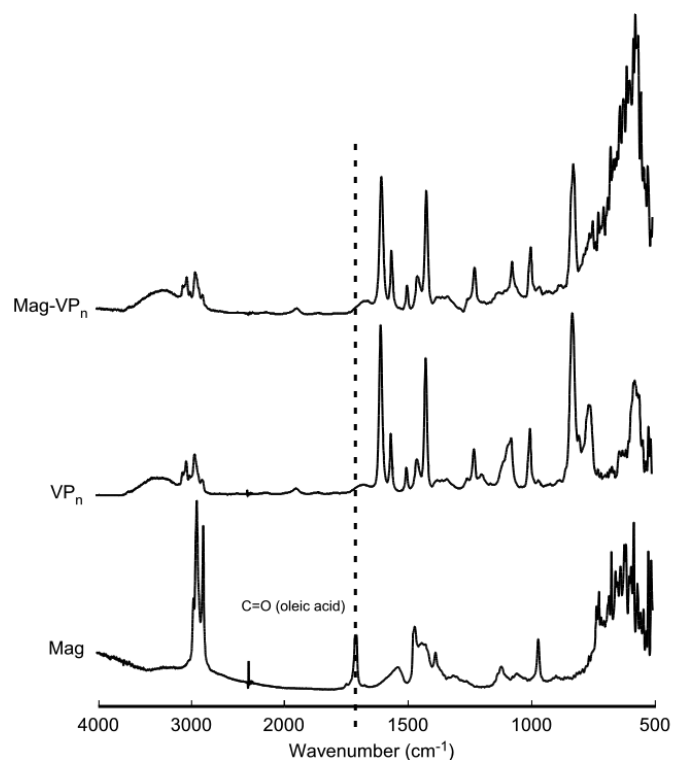


Figure S2 FT-IR spectra of Mag, VP_n and Mag-VP_n.

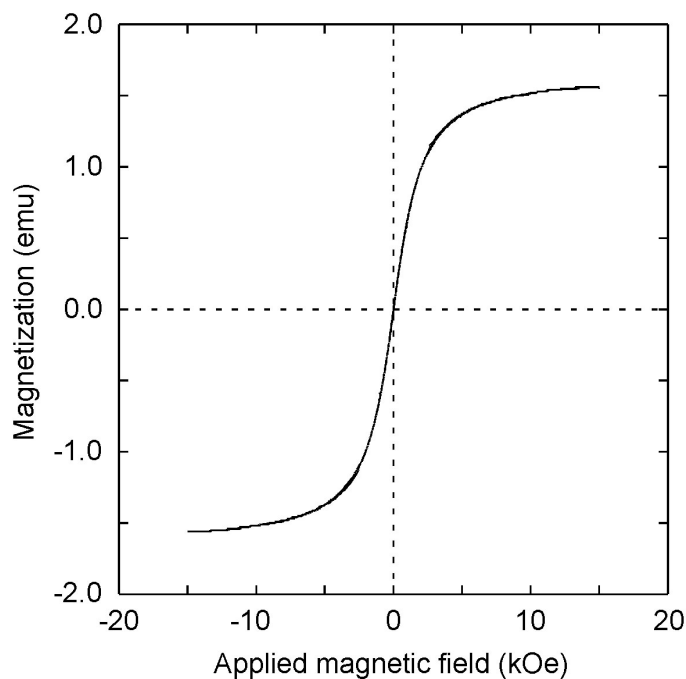


Fig. S3 Magnetization curve of the magnetic nanoparticles (Mag).
Mag contains ca. 37.9% wt of iron oxides (Fe_3O_4 and $\gamma\text{-Fe}_2\text{O}_3$).

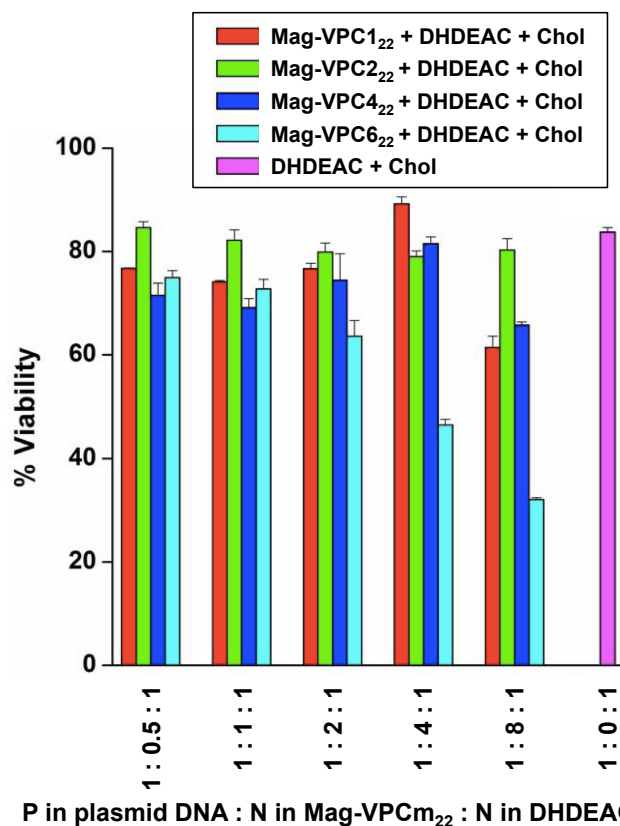


Fig. S4 Cytotoxic evaluation of Mag-VPCm₂₂ with various alkyl side chains on CHO cells using MTT assay. The cationic liposomal system, monocationic lipid (*N,N*-di-*n*-hexadecyl-*N,N*-dihydroxyethylammonium chloride (DHDEAC)) and co-lipid (cholesterol (Chol)) at 1:1 molar ratio, was used as a reference.

Table S1 Preparation of buffer solutions of Mag-VPCm₂₂/plasmid DNA complexes with various N/P ratios

	N/P ratio	Aqueous solution of plasmid DNA ^{*a} [μL]	Aqueous dispersion of Mag-VPCm ₂₂ ^{*b} [μL]	10×HEPES buffer solution ^{*c} [μL]	Loading buffer solution ^{*d} [μL]	Water [μL]	Total [μL]
Control	0	1.0	0.0	2.0	4.0	13.0	20.0
Mag-VPC1 ₂₂	0.5	1.0	0.5	2.0	4.0	12.5	20.0
	1.0		1.1			11.9	
	2.0		2.1			10.9	
	4.0		4.3			8.7	
	8.0		8.6			4.4	
Mag-VPC2 ₂₂	0.5	1.0	0.5	2.0	4.0	12.5	20.0
	1.0		0.9			12.1	
	2.0		1.9			11.1	
	4.0		3.7			9.3	
	8.0		7.5			5.5	
Mag-VPC4 ₂₂	0.5	1.0	0.5	2.0	4.0	12.5	20.0
	1.0		0.9			12.1	
	2.0		1.9			11.1	
	4.0		3.8			9.2	
	8.0		7.5			5.5	
Mag-VPC6 ₂₂	0.5	1.0	0.6	2.0	4.0	12.4	20.0
	1.0		1.1			11.9	
	2.0		2.2			10.8	
	4.0		4.5			8.5	
	8.0		8.9			4.1	

*a: 0.55 mg/mL (P = 1.65 nmol/μL)

*b: 0.50 mg/mL (N = 1.54 nmol/μL (Mag-VPC1₂₂), N = 1.77 nmol/μL (Mag-VPC2₂₂),
N = 1.75 nmol/μL (Mag-VPC4₂₂), N = 1.48 nmol/μL (Mag-VPC6₂₂))

*c: pH 7.6

*d: Invitrogen Corporation (Carlsbad, CA)