

Supplementary Information

Thermoresponsive cationic dendronized copolymers and their corresponding nanogels as smart gene carriers

Di Wu,^{‡a} Jianhui Wu,^{‡a} Pei Tao,^{‡a} Yi Yao,^a Jing Wang,^b Dongfei Liu,^c Fuxue Chen,^b Biyi Xu,^a Wen Li,^{*a} and Afang Zhang^a

^a. Department of Polymer Materials, School of Materials Science and Engineering, Shanghai University, Nanchen Street 333, Shanghai 200444, China.

^b. School of Life Science, Shanghai University, Nanchen Street 333, Shanghai 200444, China.

^c. State Key Laboratory of Natural Medicines, Department of Pharmaceutics, China Pharmaceutical University, Nanjing 210009, China

*E-mail: wli@shu.edu.cn. Tel: +86-21-66138044

[‡] These authors contribute equally to this work.

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Table S1. Conditions for and results from the copolymerization of **MG1-OEt** and **MG1-Boc**.

Polymers	Feed Ratio (MG1-OEt:MG1-Boc)	$M_n \times 10^5$ (kDa) ^a	PDI ^a	Actual Ratio ^b	T_c (°C) ^c
P1	15:1	3.02	2.60	12:1	41.1
P2	30:1	1.84	2.19	26:1	37.3

^a Measured by GPC.

^b Calculated from ¹H NMR spectra (Fig.S11 and Fig.S12) by comparing the integrations of peak a (from OEG dendrons) to peak c (from Boc groups).

^c Determined by turbidity measurements using UV/Vis spectroscopy.

Table S2. The elemental analysis results and the calculated molar ratio of **MG1-OEt/MG1-NH₃⁺** within the NGs.

Sample	C (wt%)	N (wt%)	C/N	Calculated molar ratio of MG1-OEt/MG1-NH₃⁺
NGs	64.37	0.18	363.95	36:1

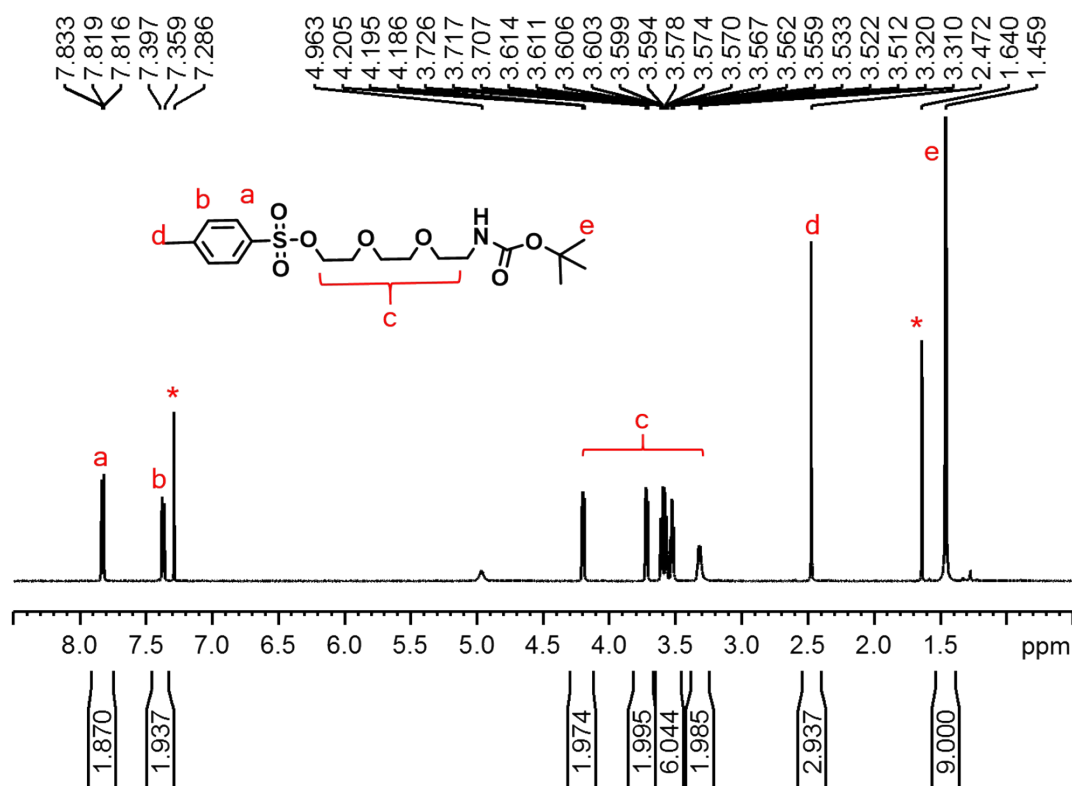


Figure S1. ¹H NMR spectrum of compound **2** in CDCl₃. Signals from solvents are marked with asterisks.

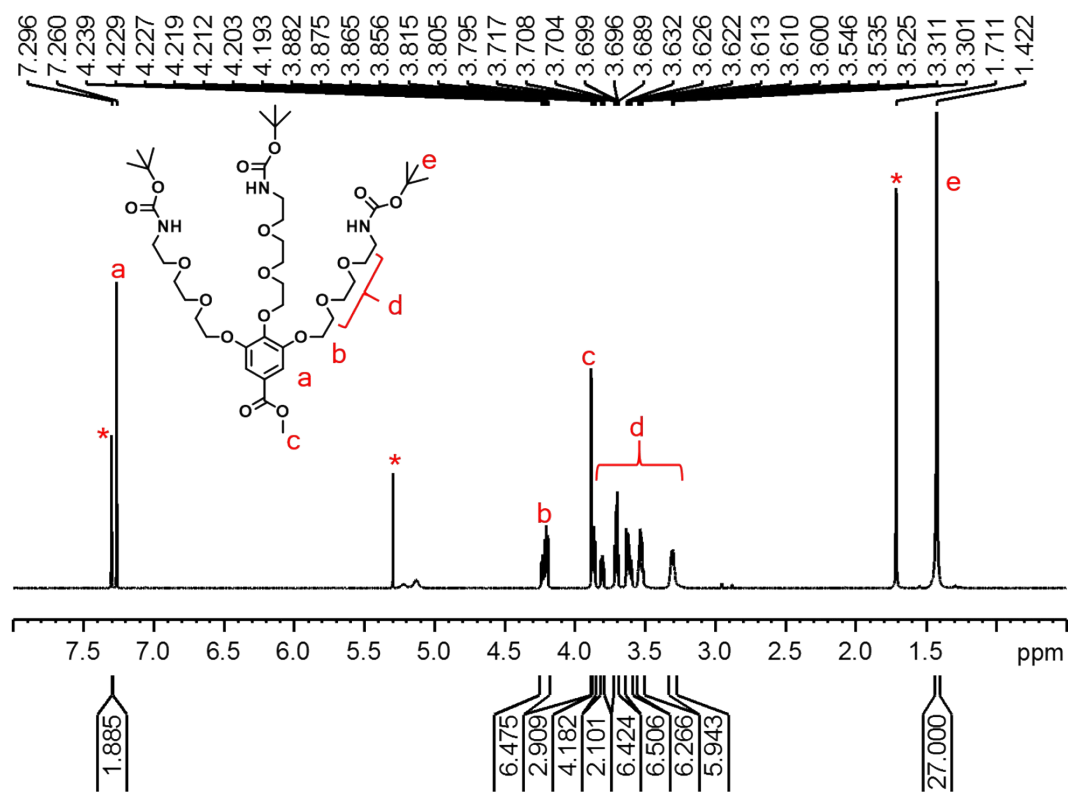


Figure S2. ¹H NMR spectrum of compound **3** in CDCl₃. Signals from solvents are marked with asterisks.

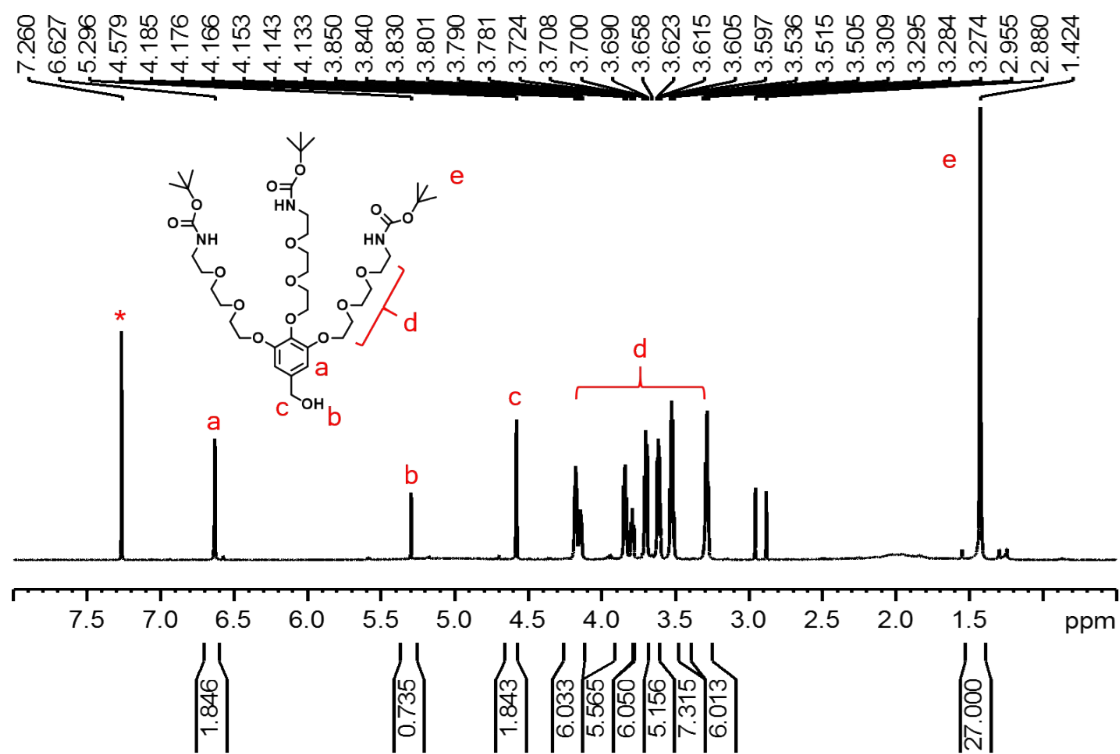


Figure S3. ¹H NMR spectrum of compound **4** in CDCl₃. Signals from solvents are marked with asterisks.

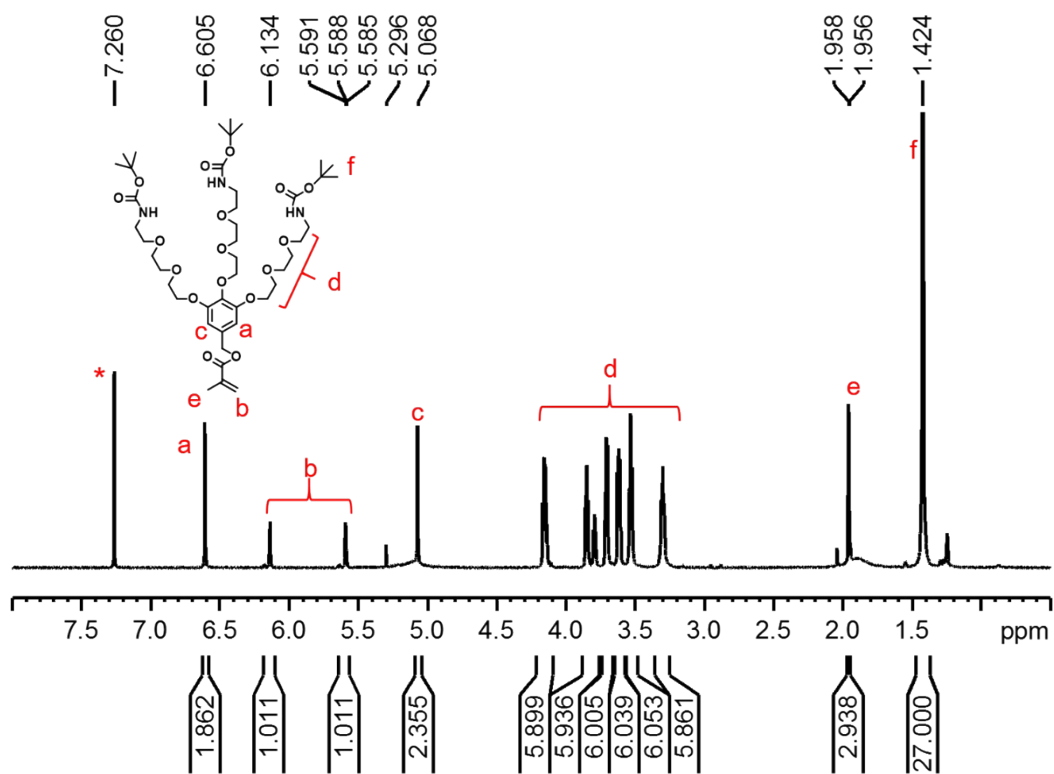


Figure S4. ¹H NMR spectrum of MG1-Boc in CDCl₃. Signals from solvents are marked with asterisks.

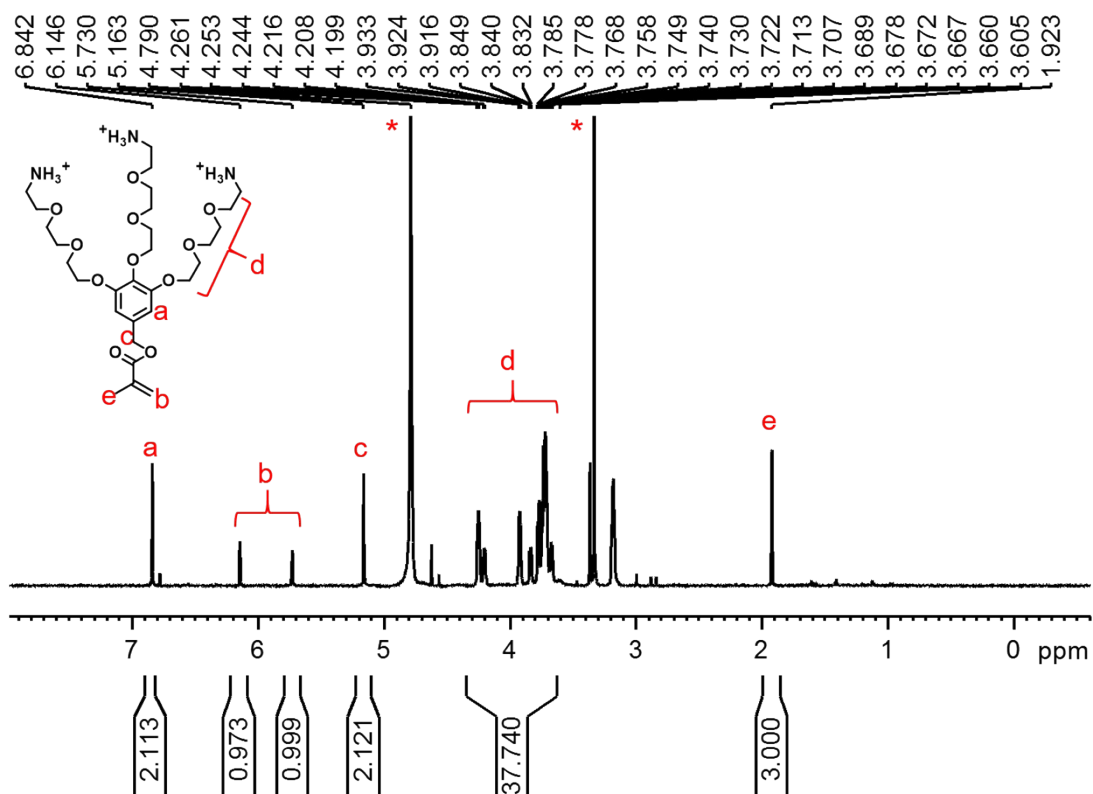


Figure S5. ¹H NMR spectrum of MG1-NH₃⁺ in CDCl₃. Signals from solvents are marked with asterisks.

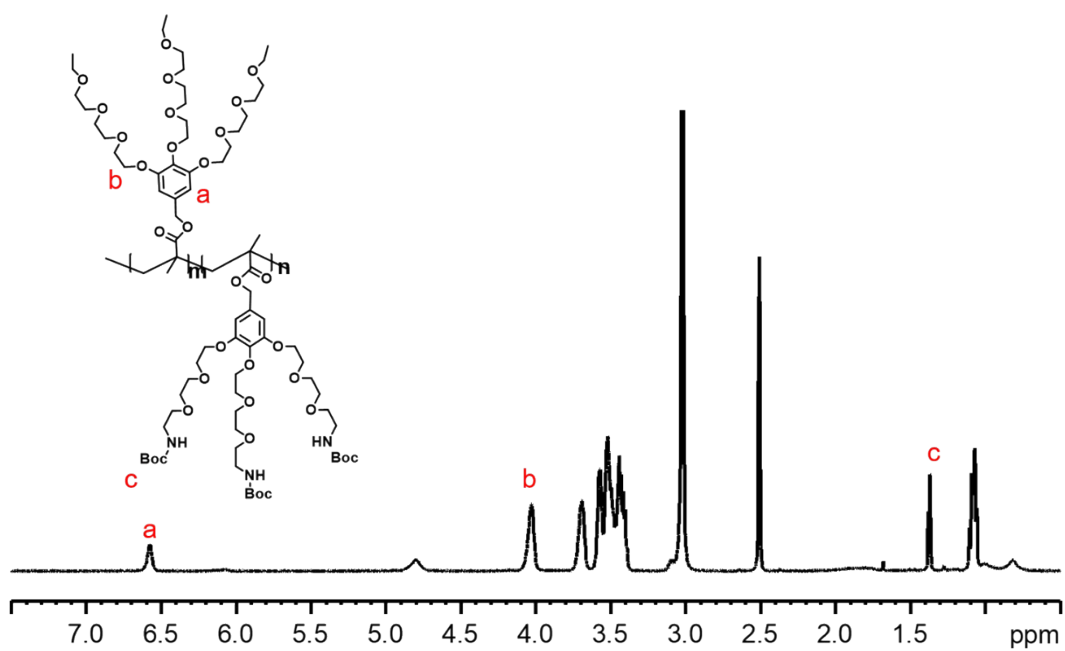


Figure S6. ^1H NMR spectrum of **P1-Boc** in d_6 -DMSO.

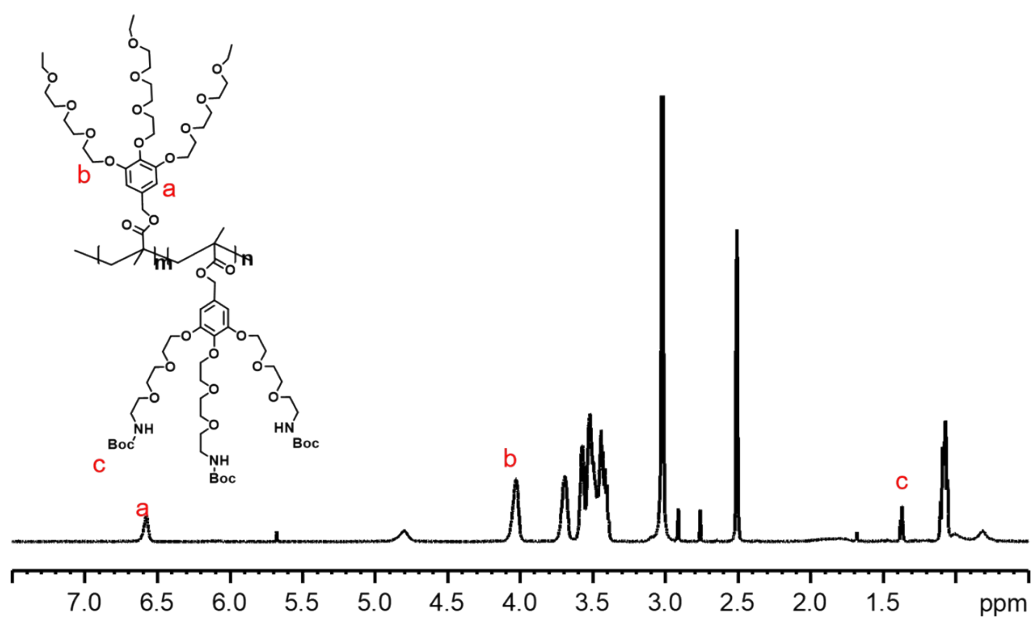


Figure S7. ^1H NMR spectrum of **P2-Boc** in d_6 -DMSO.

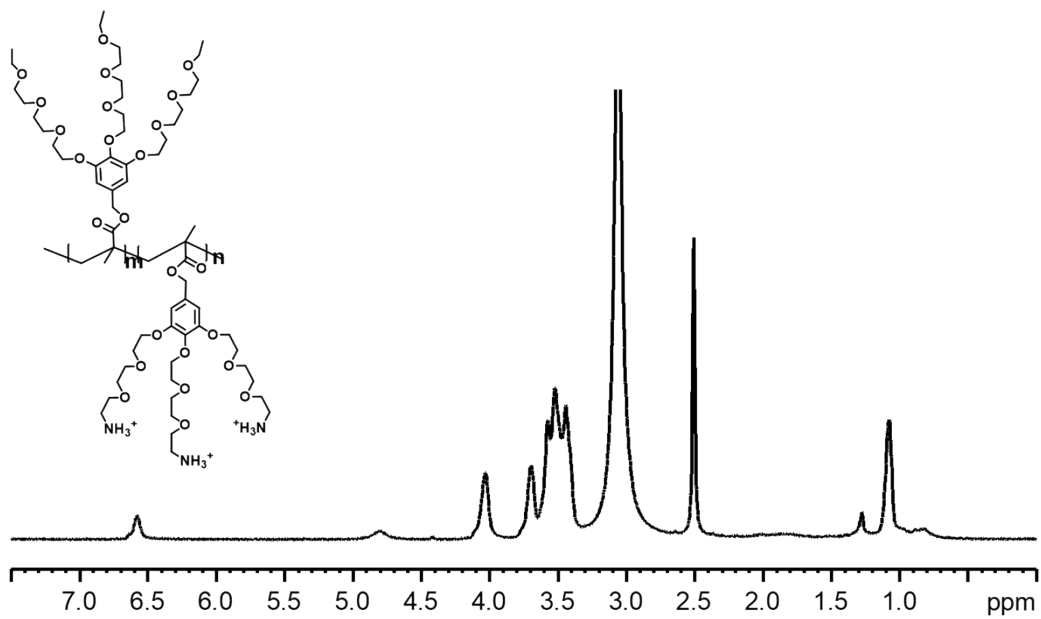


Figure S8. ¹H NMR spectrum of P1 in *d*₆-DMSO.

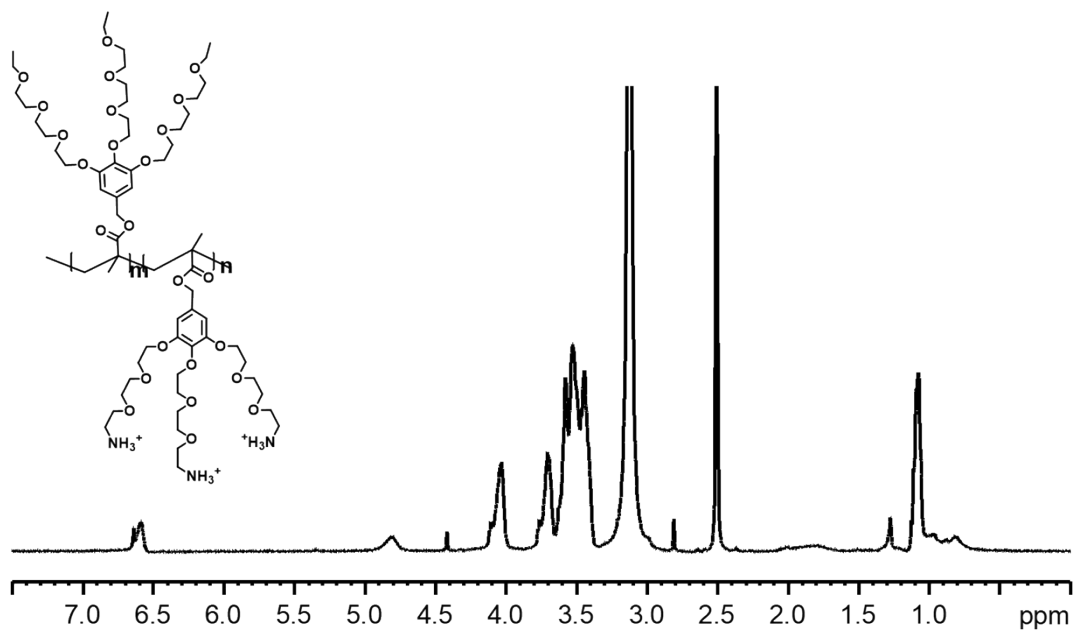


Figure S9. ¹H NMR spectrum of P2 in *d*₆-DMSO.

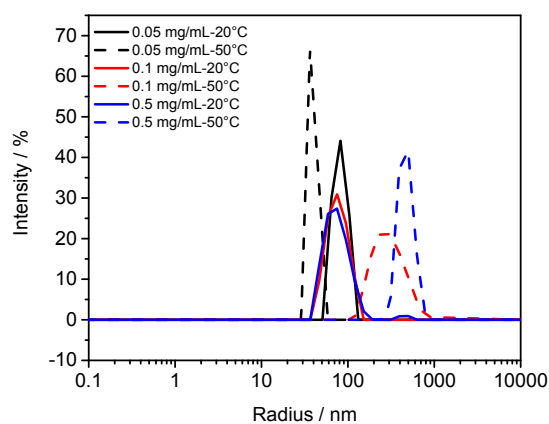


Figure S10. Hydrodynamic radius of NGs by dynamic light scattering in pH=7.4 PBS buffer at different concentration and temperature.

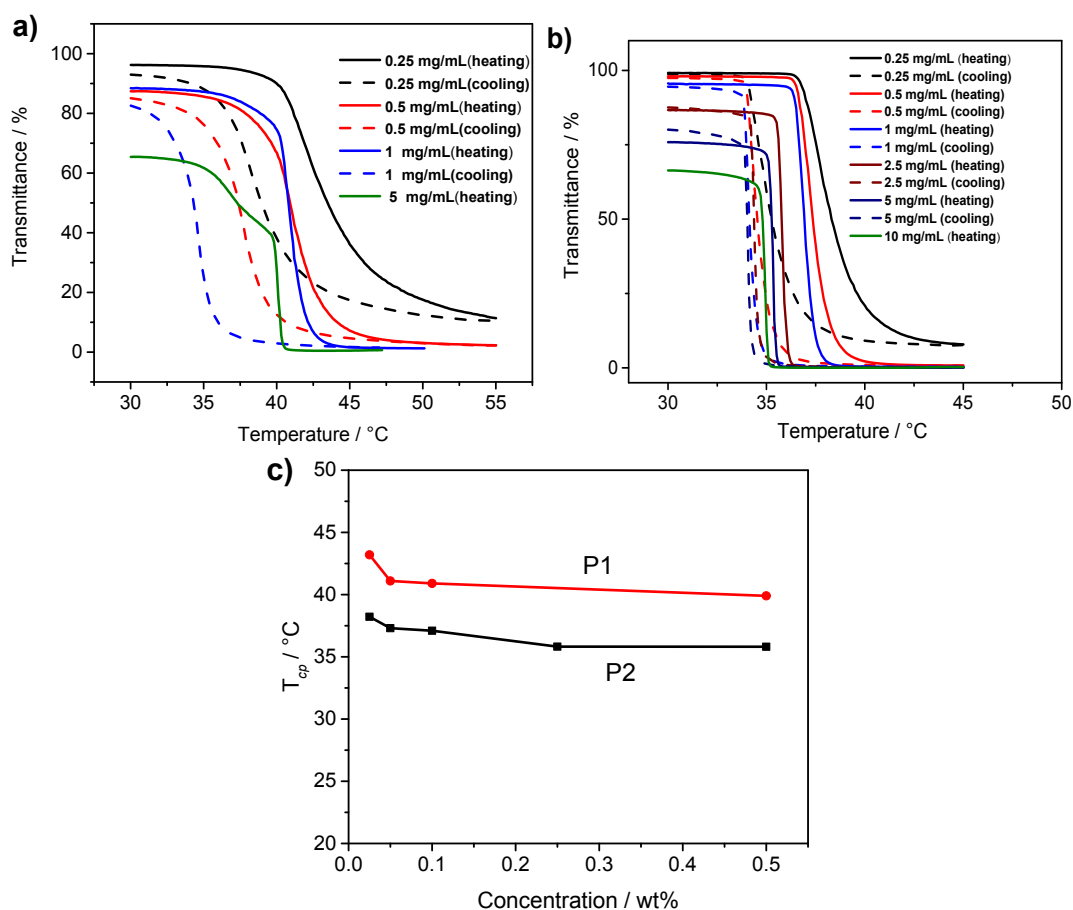


Figure S11. Plots of transmittance vs temperature for **P1** (a) and **P2** (b) in pH=7.4 PBS buffer at different concentrations, as well as (c) dependence of T_{cp} of **P1** and **P2** on solution concentrations.

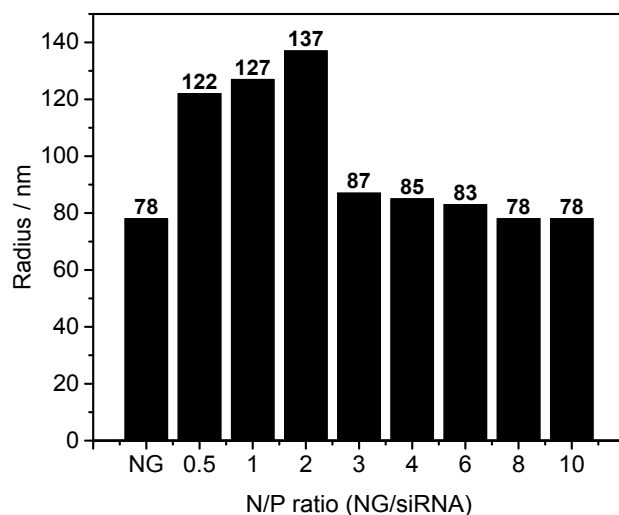


Figure S12. R_h of NGs/siRNA complexes at different N/P ratios at room temperature. The complexes were incubated for 30 min before measurements ($C = 0.02 \text{ mg}\cdot\text{mL}^{-1}$).

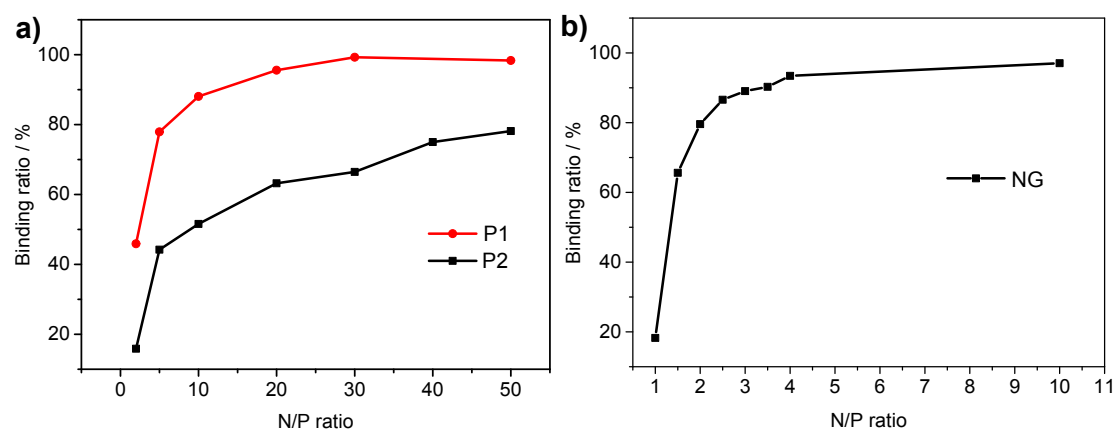


Figure S13. Quantitative siRNA binding ability of **P1** and **P2** (a), as well as **NGs** (b) by adding fluorescent dye EB using fluorescence spectrophotometer. $C = 0.05 \text{ mg}\cdot\text{mL}^{-1}$.

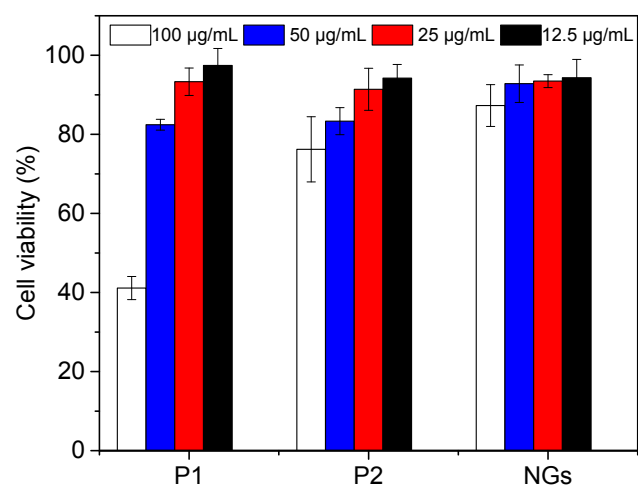
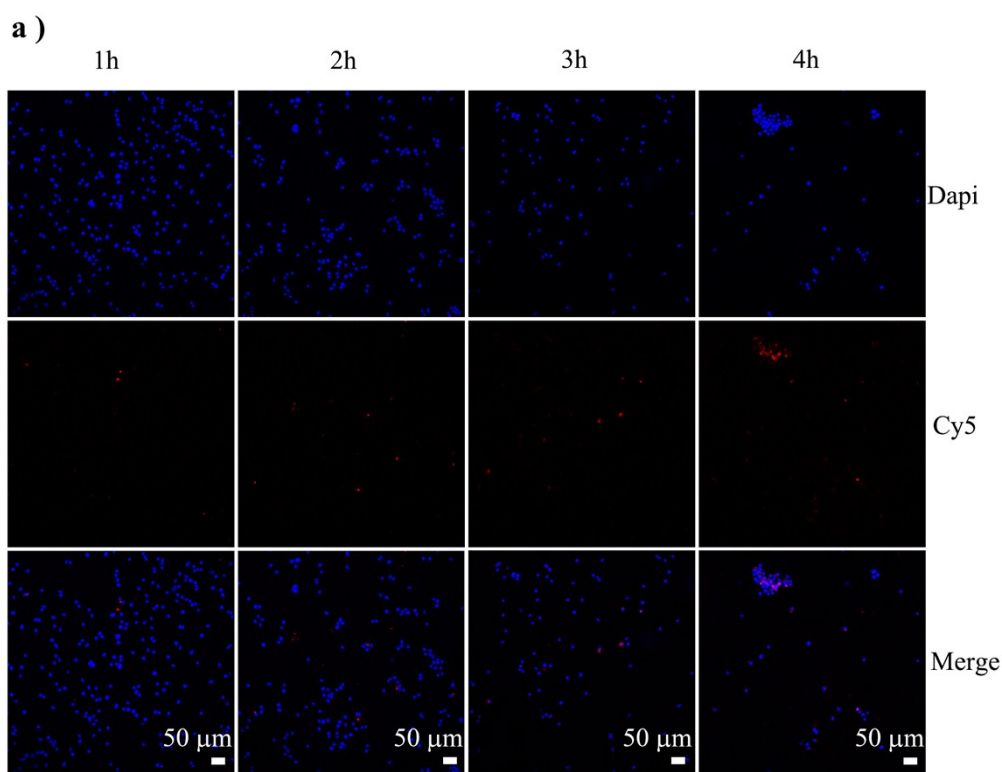
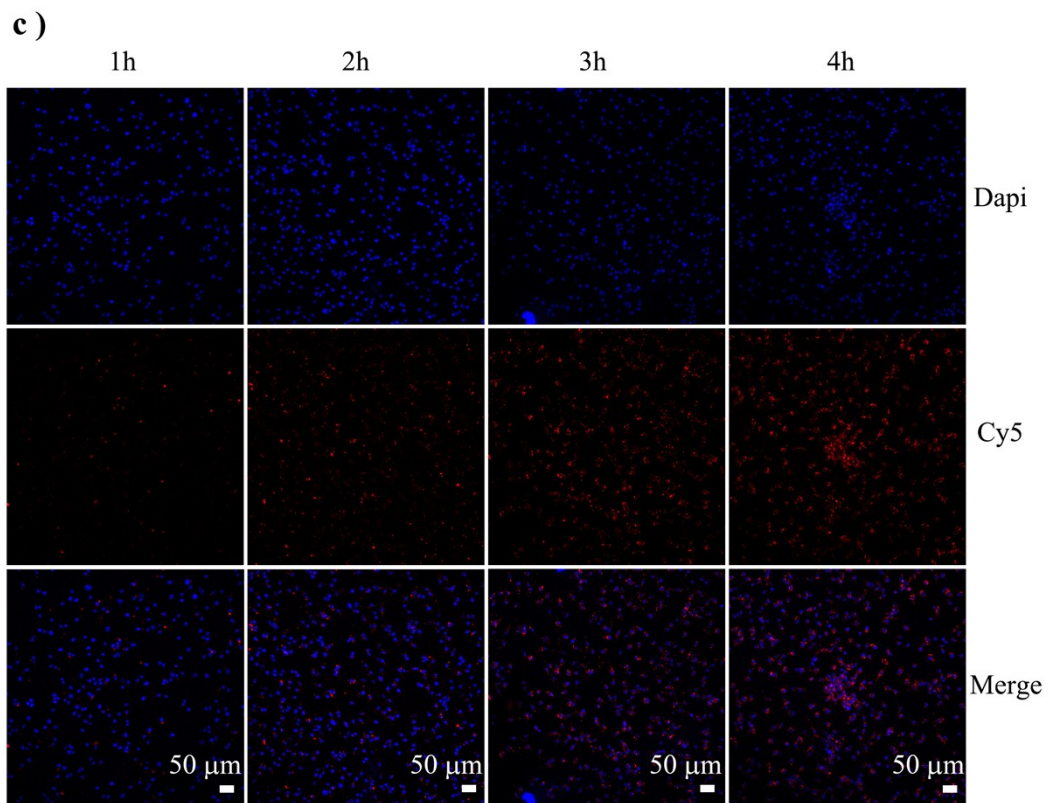
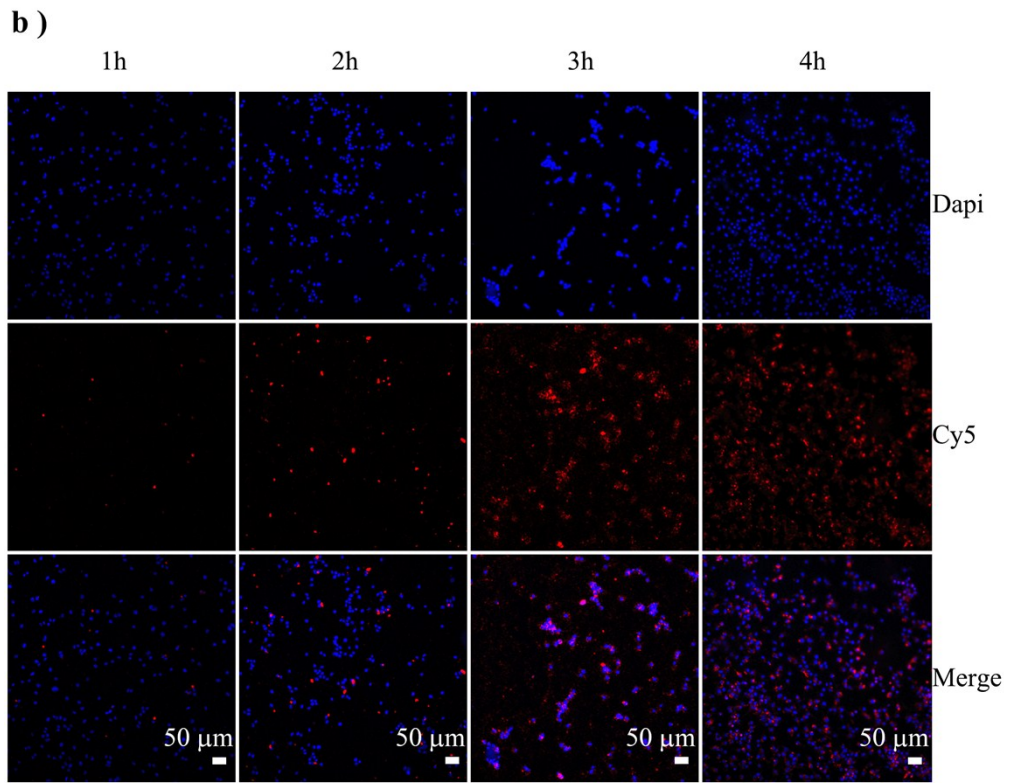


Figure S14. Cell viability of BV2 cells after incubation with cationic polymers **P1**, **P2** and **NGs** at different concentrations.





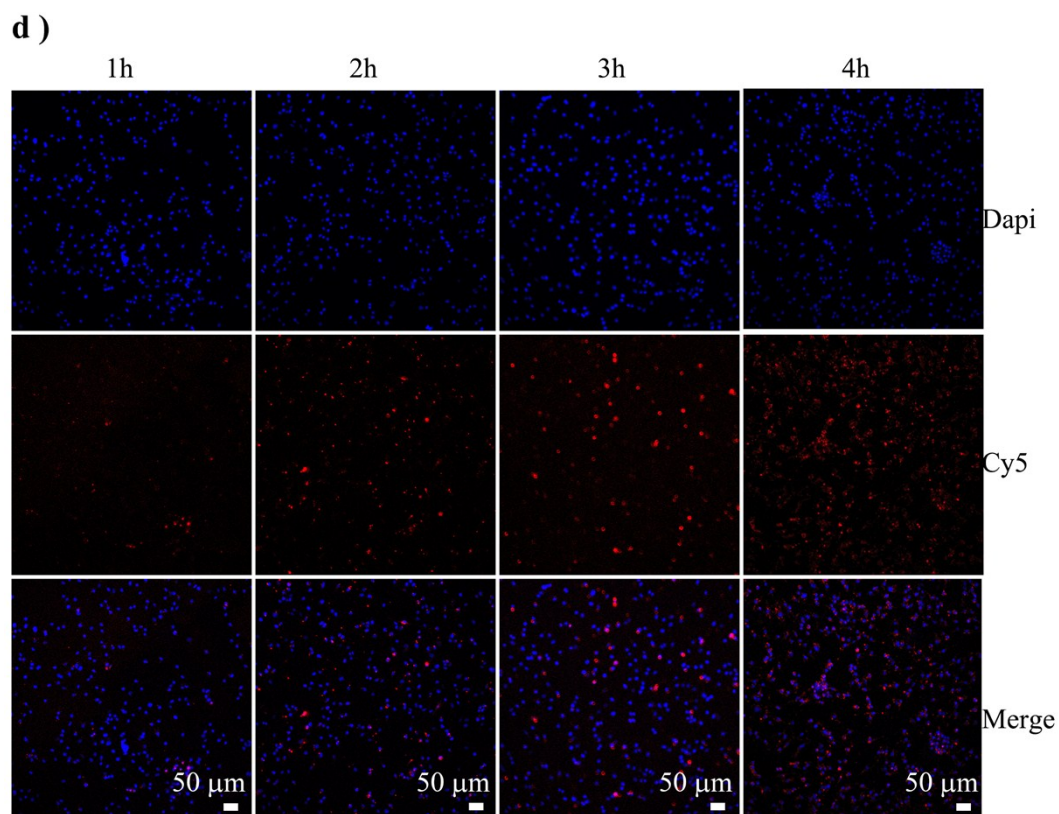


Figure S15. CLSM images of BV2 cells after being treated with Cy5-siRNA/**P1** (a), Cy5-siRNA/**P2** (b), Cy5-siRNA/**NGs** (c), Cy5-siRNA/Lipofectamine 3000 (d) complexes for 1-4 h at N/P ratio of 10.