

Supporting Information

A Facile Strategy to Prepare Hyperbranched Hydroxyl-Rich Polycations for Effective Gene Therapy

Shun Duan,^{a,b,c} Bingran Yu,^{a,b,c} Chunxiao Gao,^{a,b,c,d} Wei Yuan,^{d,*} Jie Ma,^d and Fu-Jian Xu^{a,b,c,*}

^aState Key Laboratory of Chemical Resource Engineering, Beijing University of Chemical Technology, Beijing 100029 China

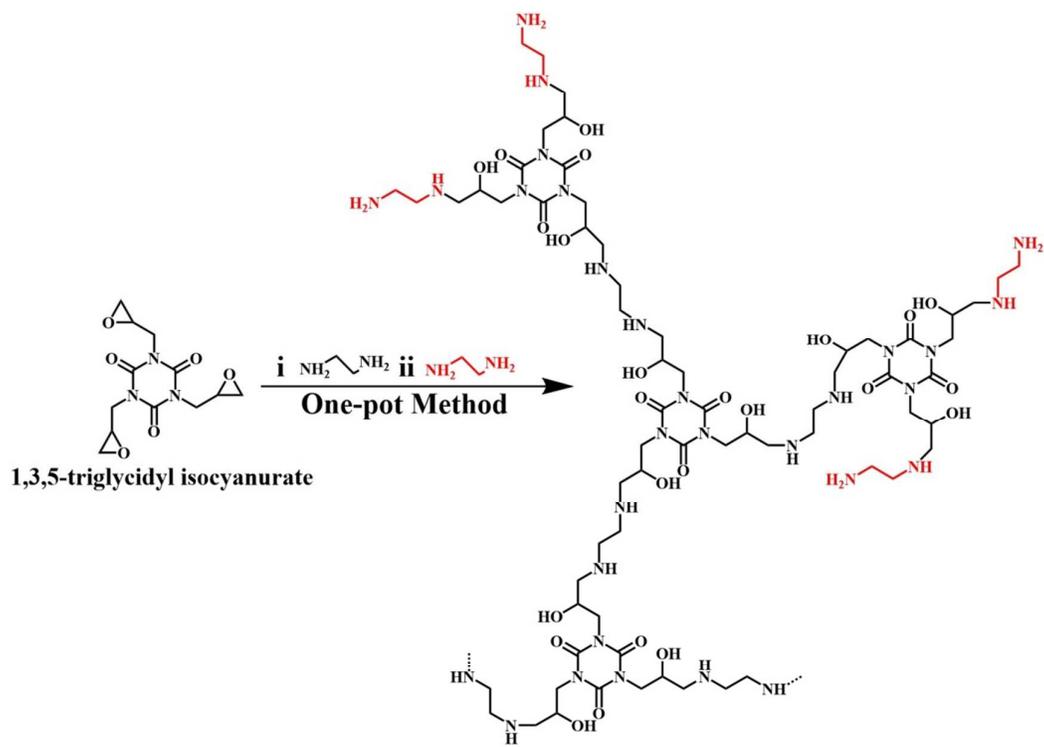
^bKey Laboratory of Carbon Fiber and Functional Polymers (Beijing University of Chemical Technology), Ministry of Education, Beijing 100029 China

^cBeijing Laboratory of Biomedical Materials, Beijing University of Chemical Technology, Beijing 100029 China

^dState Key Laboratory of Molecular Oncology, Cancer Institute & Hospital, Chinese Academy of Medical Sciences, Beijing 100021, China

* To whom correspondence should be addressed

E-mail addresses: xufj@mail.buct.edu.cn (F.J.X); yuanwei7568@163.com (W. Yuan)



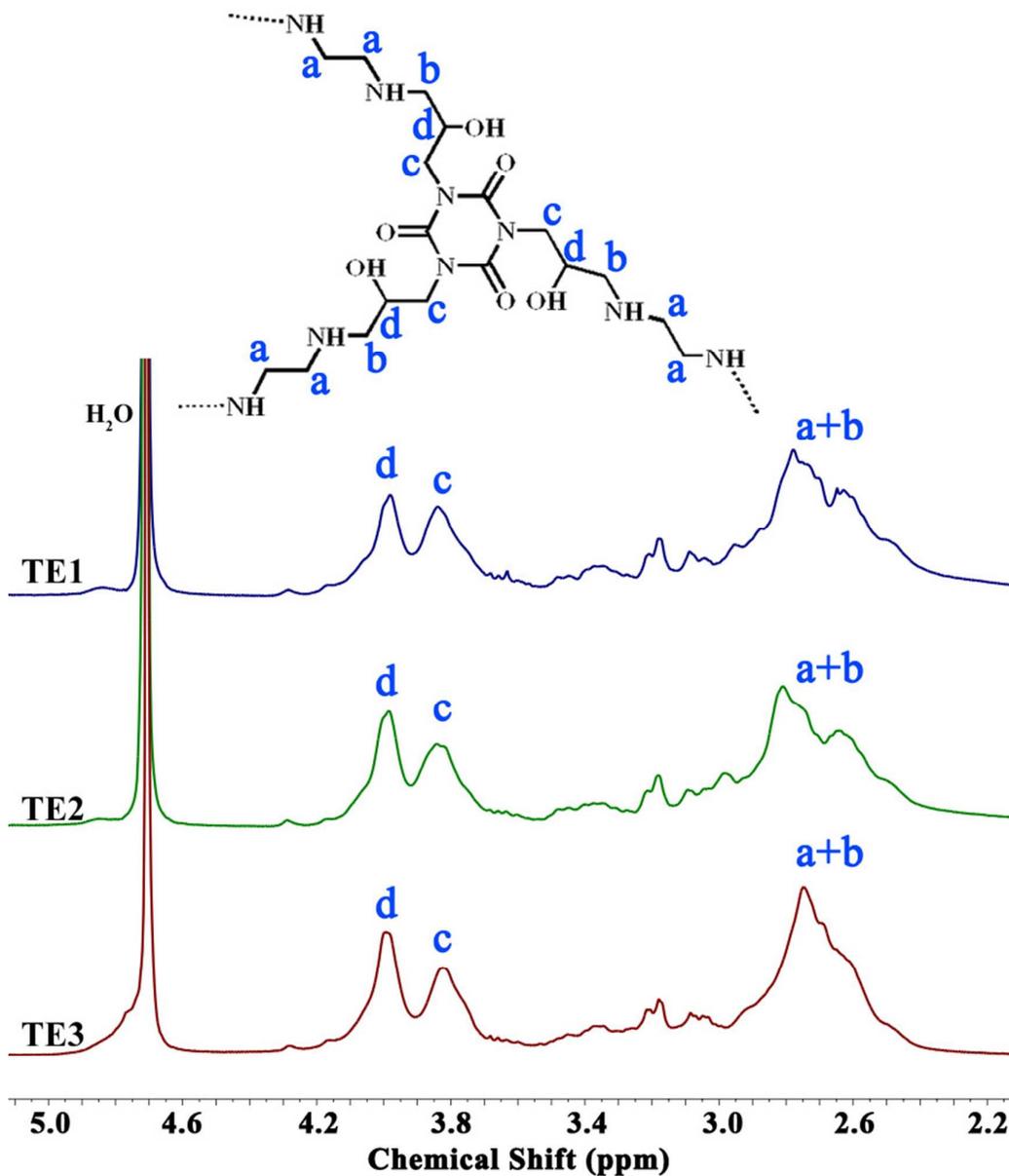


Figure S2 Typical ^1H NMR spectra of TE1, TE2 and TE3.

The chemical shift at $\delta = 2.40\sim 2.95$ attributed to the methylene protons ($\text{N}-\underline{\text{CH}_2}-\underline{\text{CH}_2}-\text{N}$ and $\text{N}-\underline{\text{CH}_2}-\text{CH}$). The signals at $\delta = 3.70\sim 3.90$ attributed to the methylene protons ($\text{N}-\underline{\text{CH}_2}-\text{CH}$). The signals at $\delta = 3.90\sim 4.20$ attributed to the methenyl protons ($\text{CH}_2-\underline{\text{CH}}-\text{CH}_2$).

Table S1 Characterization of TE

Sample	TGIC dosage (mmol)	ED dosage (mmol)	DMSO dosage (mL)	Reaction time (h)	M_n^a ($\text{g}\cdot\text{mol}^{-1}$) ^a	PDI ^a
TE1	0.5	0.75	5	48	6.5×10^3	1.12
TE2	1	1.5	5	48	10.2×10^3	1.34
TE3	2	3	5	48	14.2×10^3	1.88

^aDetermined by GPC results. $\text{PDI} = M_w/M_n$

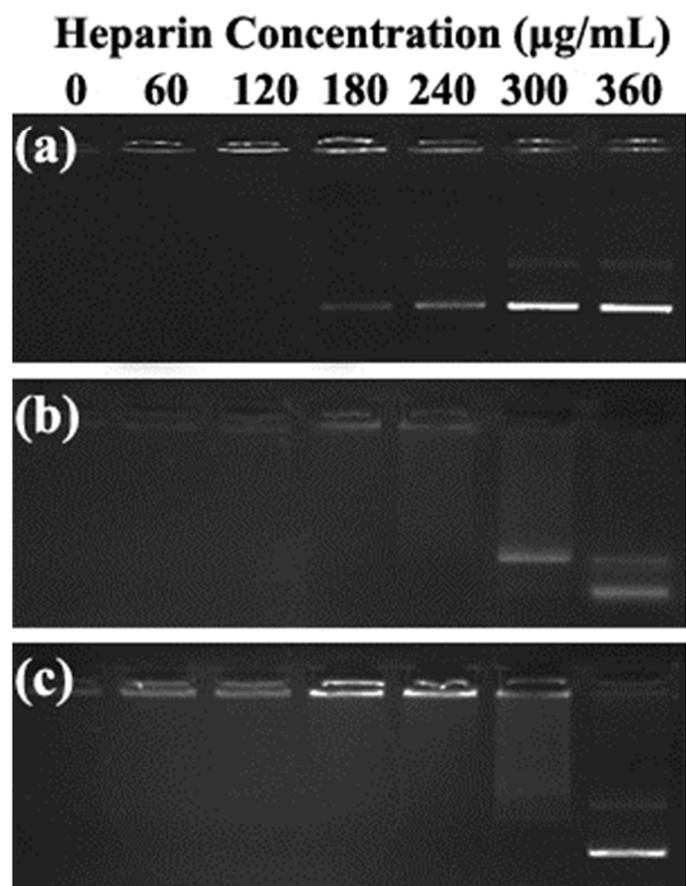


Figure S3 Stability of (a) TE1/pDNA, (b) TE2/pDNA and (c) TE3/pDNA complexes. All the complexes were formed at the mass ratio of 30, and were exposed to heparin sulfate salt solution at various concentrations.

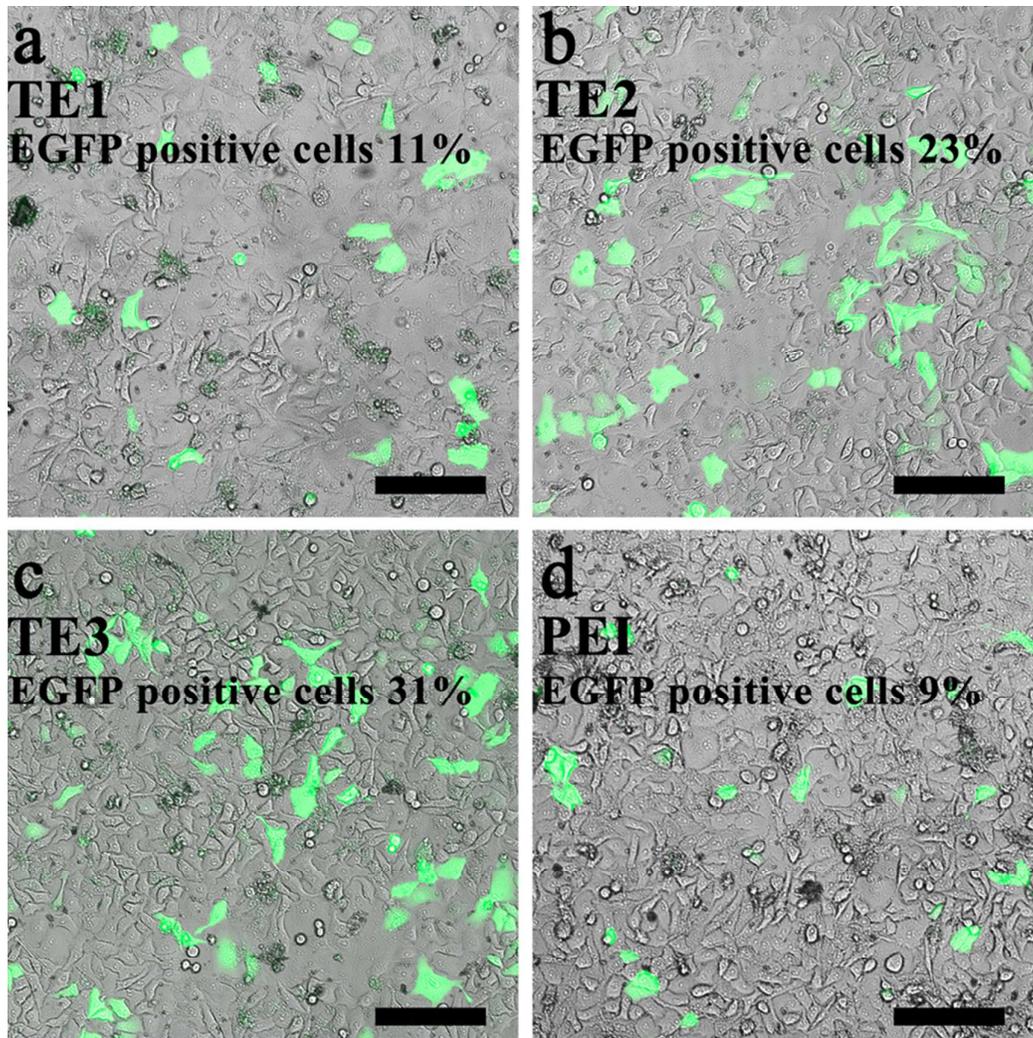


Figure S4 Typical merged images of EGFP expression mediated by TE/pDNA (a, b, c) complexes at the mass ratio of 30 and PEI/pDNA (d) complexes at its optimal transfection condition (scale bar = 200 μ m).