Supporting Information

Bioreducible polymers as a determining factor for polyplex decomplexation rate and transfection

Hee Sook Hwang[†,‡], Han Chang Kang[‡,§], You Han Bae[†,#,]*

[†] Department of Pharmaceutics and Pharmaceutical Chemistry, The University of Utah,

421 Wakara Way, Suite 318, Salt Lake City, Utah 84108, USA

[§] Department of Pharmacy and Integrated Research Institute of Pharmaceutical Sciences, College

of Pharmacy, The Catholic University of Korea, 43 Jibong-ro, Wonmi-gu, Bucheon-si,

Gyeonggi-do, 420-743, Republic of Korea

[#] Utah-Inha Drug Delivery Systems (DDS) and Advanced Therapeutics Research Center, 7-50

Songdo-dong, Yeonsu-gu, Incheon, 406-840, Republic of Korea

[‡] HSH and HCK equally contributed to this work.

* Correspondence to:

Professor You Han Bae, Ph.D., Department of Pharmaceutics and Pharmaceutical Chemistry,

The University of Utah, 421 Wakara Way, Suite 318, Salt Lake City, Utah 84108, USA.

Tel: +1-801-585-1518; Fax: +1-801-585-3614.
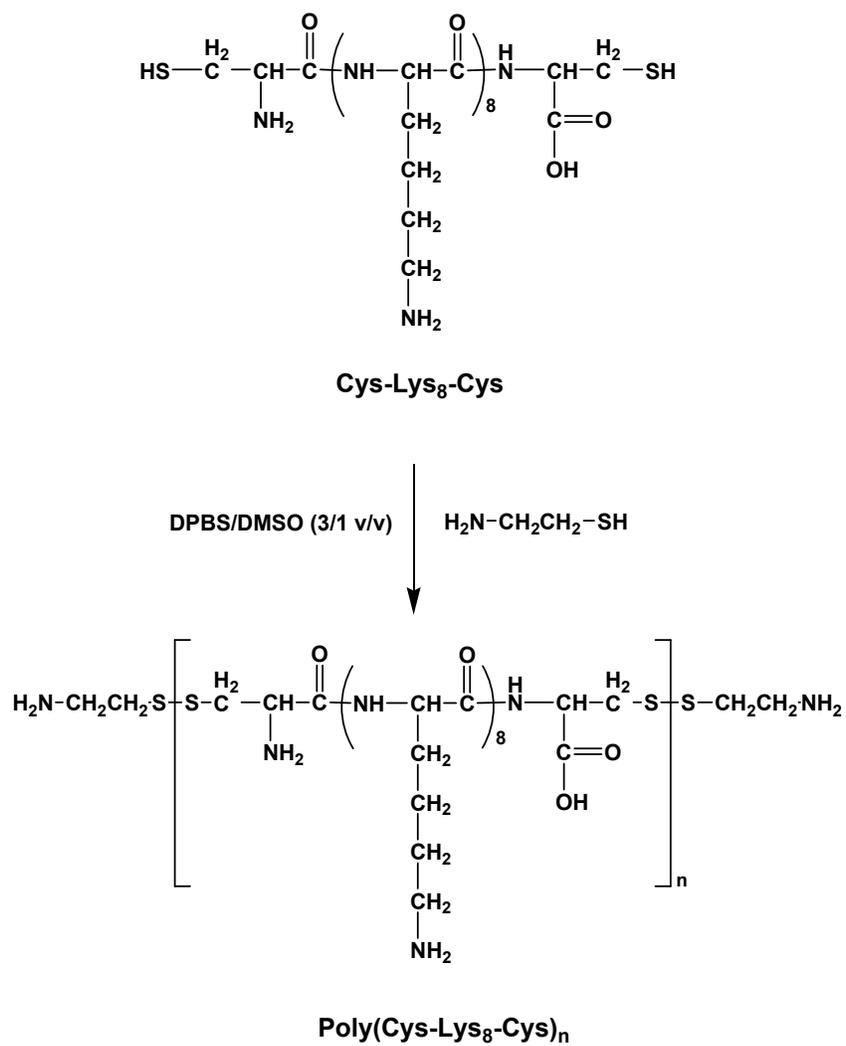
E-mail address: you.bae@utah.edu

Cys-Lys$_8$-Cys

DPBS/DMSO (3/1 v/v)   H$_2$N−CH$_2$CH$_2$−SH

Poly(Cys-Lys$_8$-Cys)$_n$

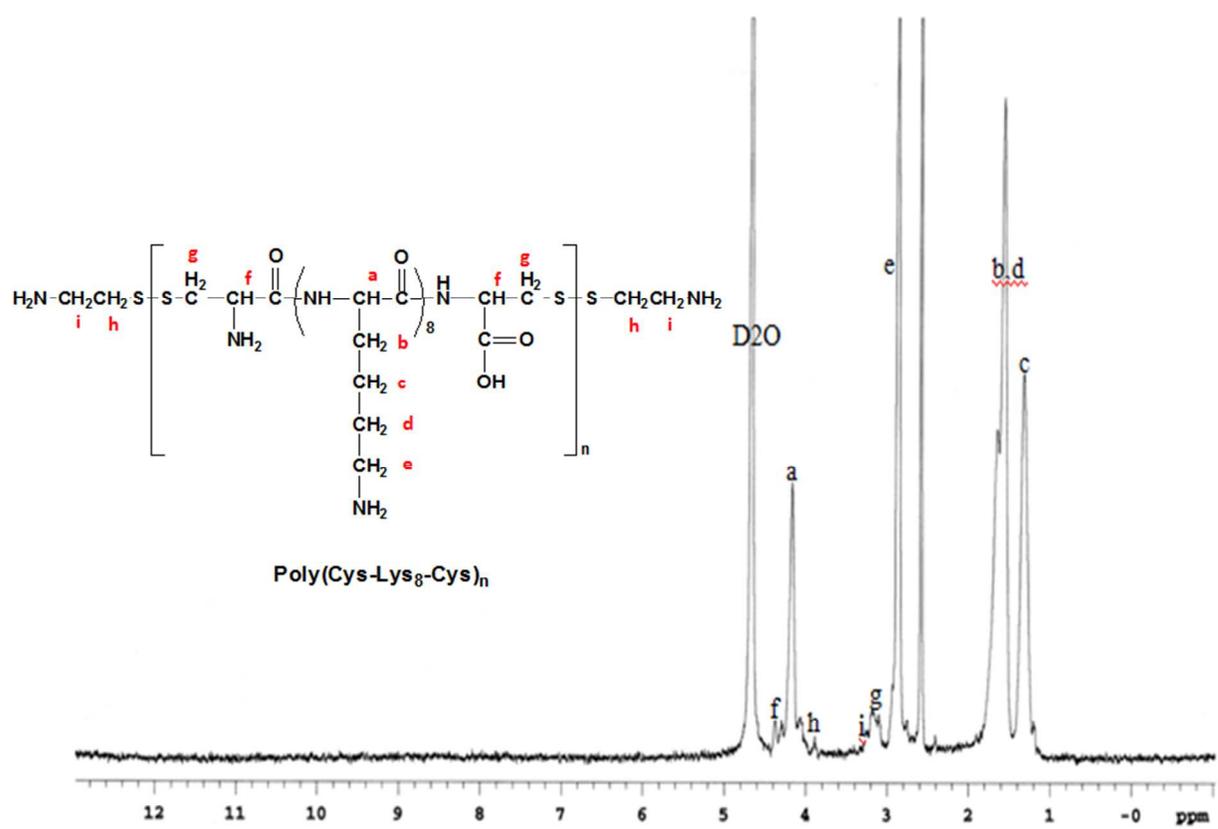Figure S1. Synthetic scheme of reducible poly(Cys-Lys$_8$-Cys) (RPLL)
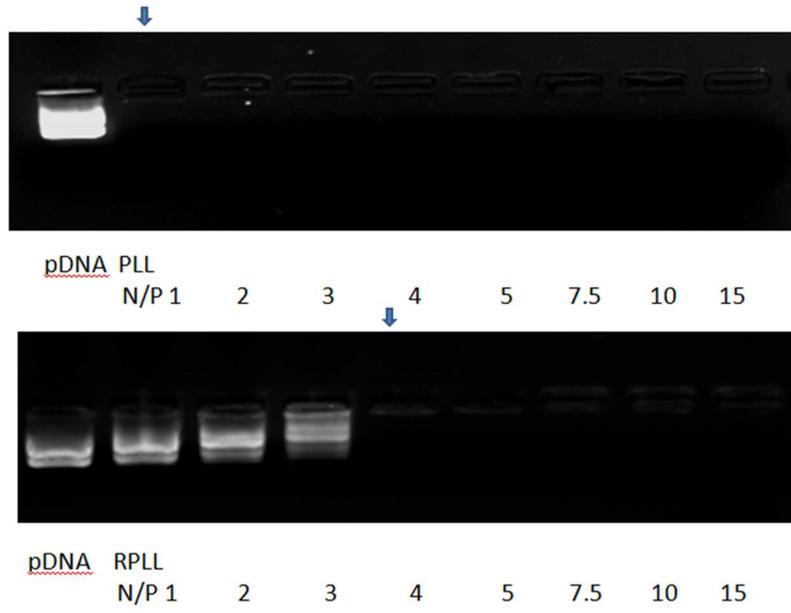
Figure S2. ^{1}H-NMR analysis of RPLL in D$_2$O

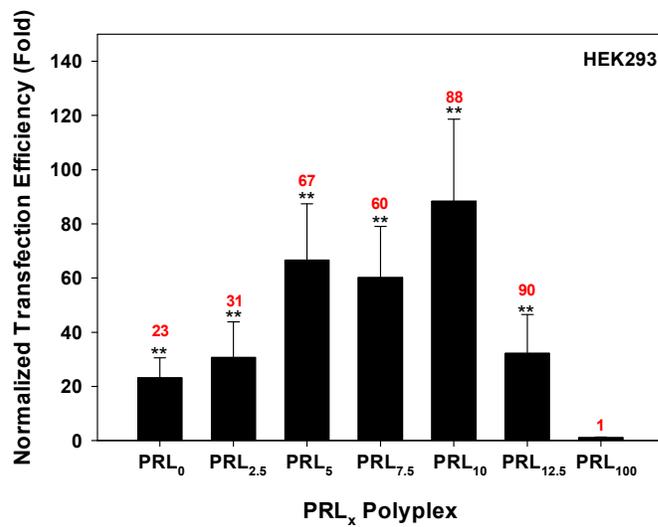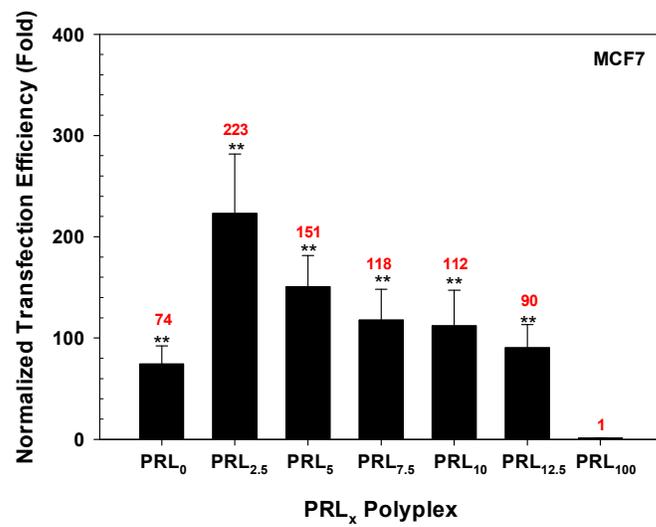Figure S3. Condensation of pDNA with either PLL or RPLL in agarose gel

Figure S4. Normalized Transfection efficiencies of $PLL_{100-x}RPLL_x/pDNA$ complexes (PRL_x polyplexes) (N/P 5) in MCF7 cells and HEK293 cells. PLL/pDNA and RPLL/pDNA complexes were denominated as PRL_0 and PRL_{100} polyplexes, respectively. Transfection efficiency of PRL_{100} polyplexes was set as a unity. ** $p<0.01$ vs. PRL_{100} polyplex (Mean ± Standard Error; n ≥ 4)
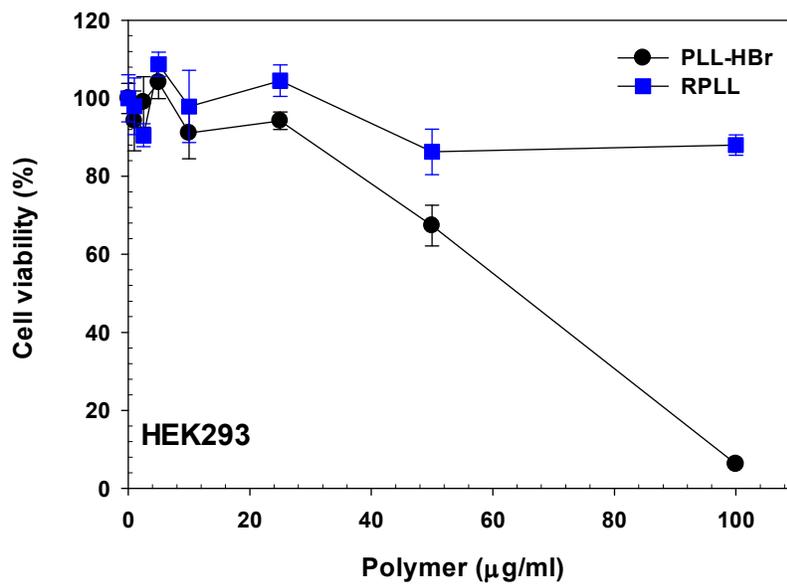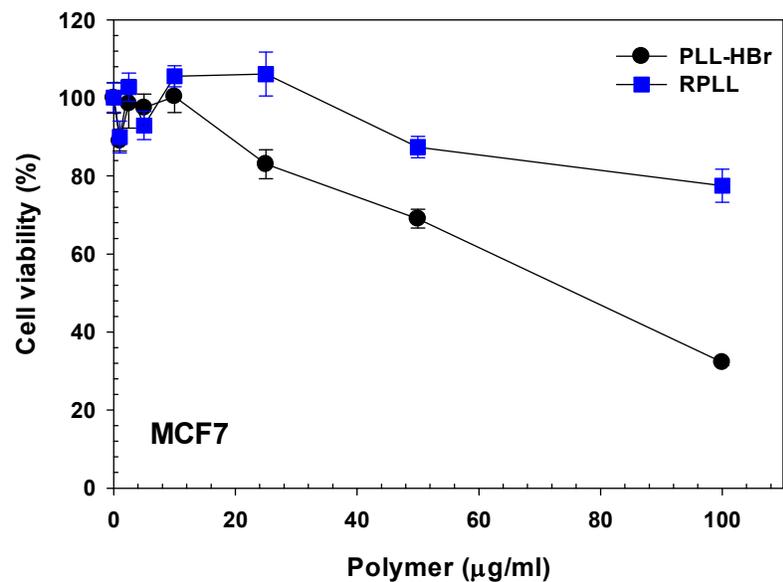
Figure S5. Dose-dependent cytotoxicity of PLL and RPLL in MCF7 and HEK293 cells. The cells were exposed to the polymers for 24 hr in the serum-containing medium. (Mean ± Standard Error; n = 6)