

ARTICLE

Electronic Supplementary Information

Thiourea modified polyethylenimine for efficient gene delivery mediated by the combination of electrostatic attraction and hydrogen bond

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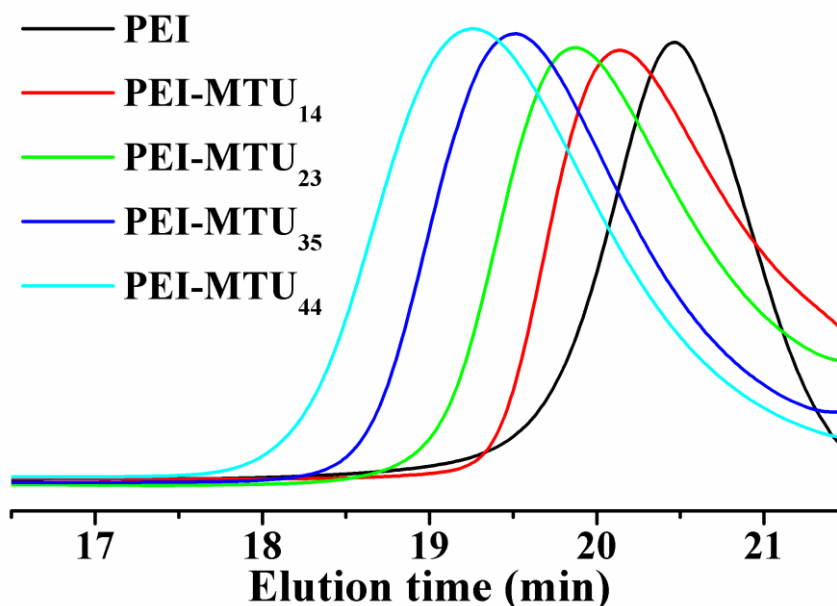


Fig. S1 GPC chromatograms of PEI and PEI-MTUs.

Table S1 Molecular characterizations of PEI-MTUs.

Notes	Theoretical M_n (kDa)	Resultant M_n (kDa)	Resultant M_w (kDa)	PDI	Theoretical M_w/M_n , PEI	Resultant M_w/M_n , PEI
PEI	10.0	2.40	2.80	1.16	1	1
PEI-MTU ₁₄	10.9	2.60	3.30	1.24	1.09	1.09
PEI-MTU ₂₃	11.7	2.90	3.70	1.31	1.17	1.18
PEI-MTU ₃₅	12.6	3.10	3.90	1.25	1.26	1.29
PEI-MTU ₄₄	13.4	3.40	4.60	1.37	1.34	1.41

All of the polymers including PEI exhibited much smaller M_n s than theoretical value. It could be explained by the following reasons: 1) PEI and PEI-MTUs were highly branched polymers that got much smaller hydrodynamic radii in solutions compared with linear polymers; 2) PEI and its derivatives contained a number of amino groups that will enhance the interaction between

polymer and column and lengthen the elution time; 3) the standard samples used in this work were linear PEGs, which were quite different from the PEI and PEI-MTUs in chemical structure.

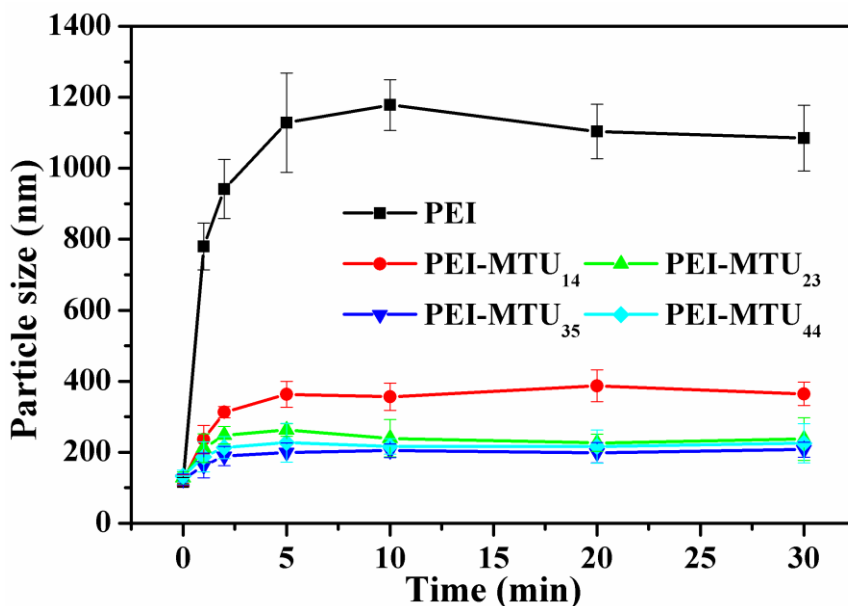


Fig. S2 Stability of carrier/DNA complexes in the presence of BSA. Particle sizes of the complexes were determined at different time points after added into BSA solution. Data were shown as mean \pm standard deviation ($n = 3$).

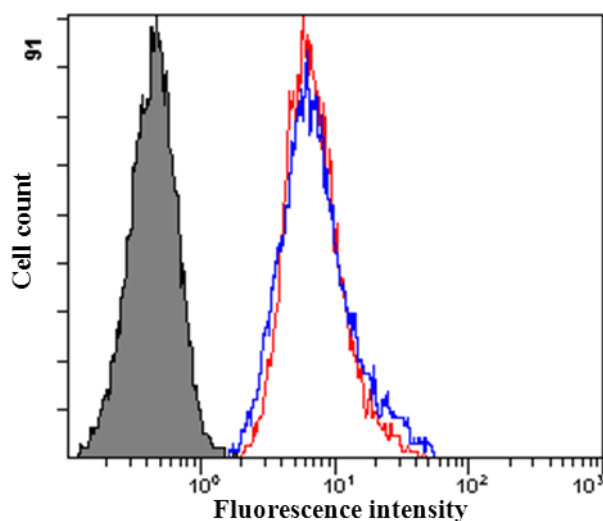


Fig. S3 Cellular uptake analyses by flow cytometry toward HeLa cells after co-incubation for 4 h: PBS (gray), PEI/DNA (red) and PEI-MTU₃₅/DNA (blue).

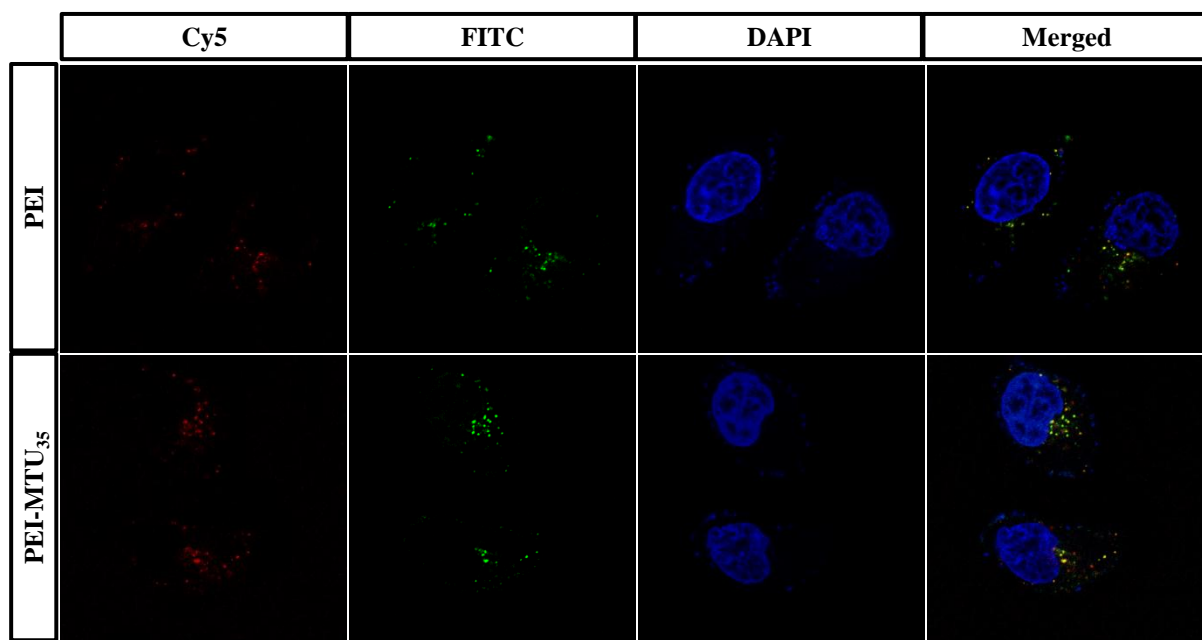


Fig. S4 CLSM microimages of HeLa cells after incubation with PEI/pDNA or PEI-MTU₃₅/pDNA complexes for 1 h. pDNA was labelled with Cy5, PEI and PEI-MTU₃₅ were labelled by FITC and the cell nuclei were labelled by DAPI.

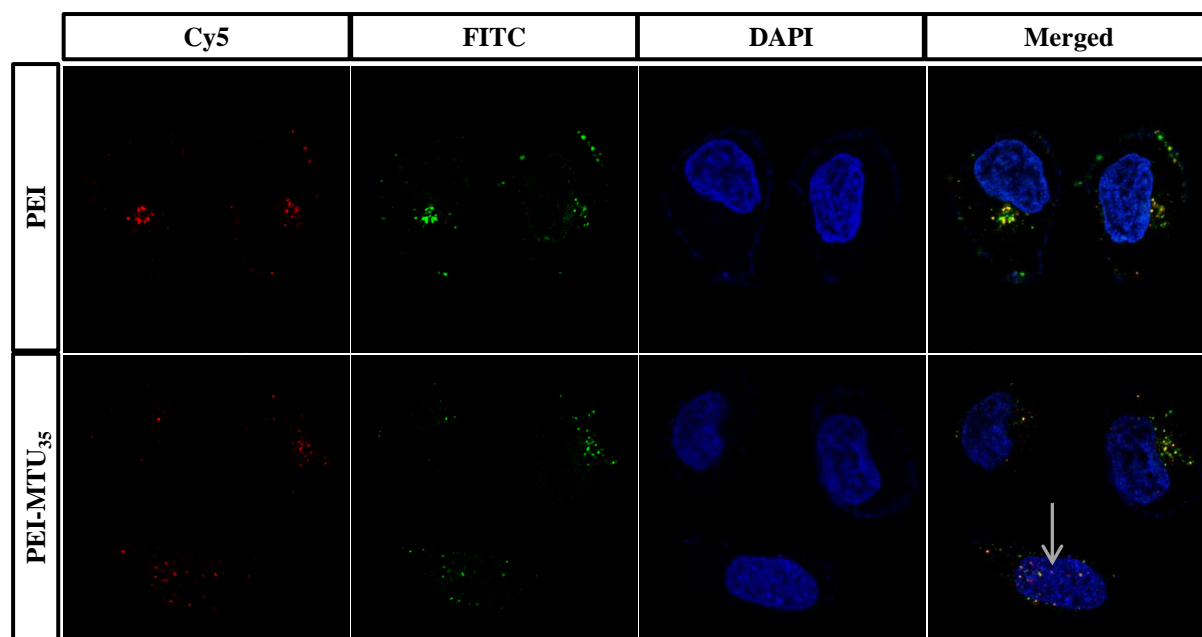


Fig. S5 CLSM microimages of HeLa cells after incubation with PEI/pDNA or PEI-MTU₃₅/pDNA complexes for 2 h. pDNA was labelled with Cy5, PEI and PEI-MTU₃₅ were labelled by FITC and the cell nuclei were labelled by DAPI.

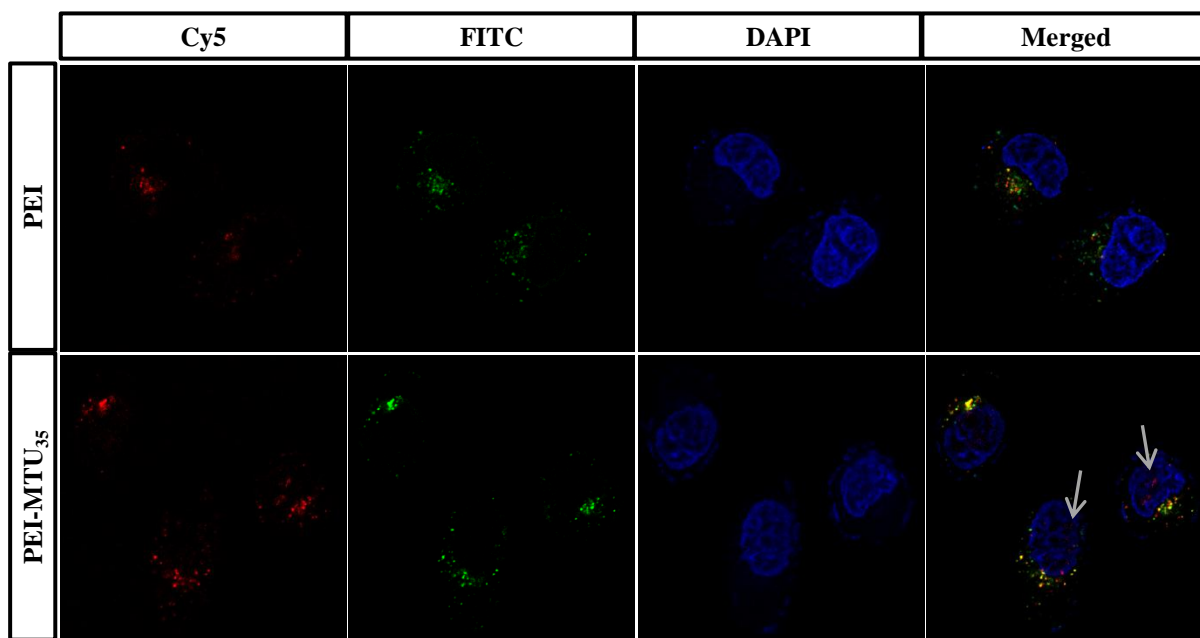


Fig. S6 CLSM microimages of HeLa cells after incubation with PEI/pDNA or PEI-MTU₃₅/pDNA complexes for 8 h. pDNA was labelled with Cy5, PEI and PEI-MTU₃₅ were labelled by FITC and the cell nuclei were labelled by DAPI.