ATP-activated decrosslinking and charge-reversal vectors for siRNA delivery and cancer therapy

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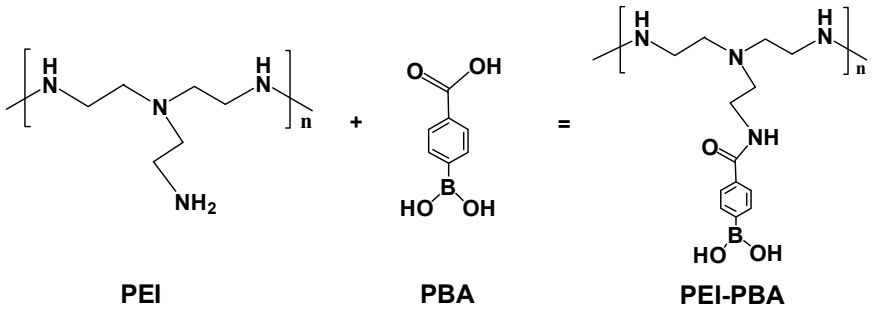

Figure S1. Synthesis procedure of PEI-PBA.

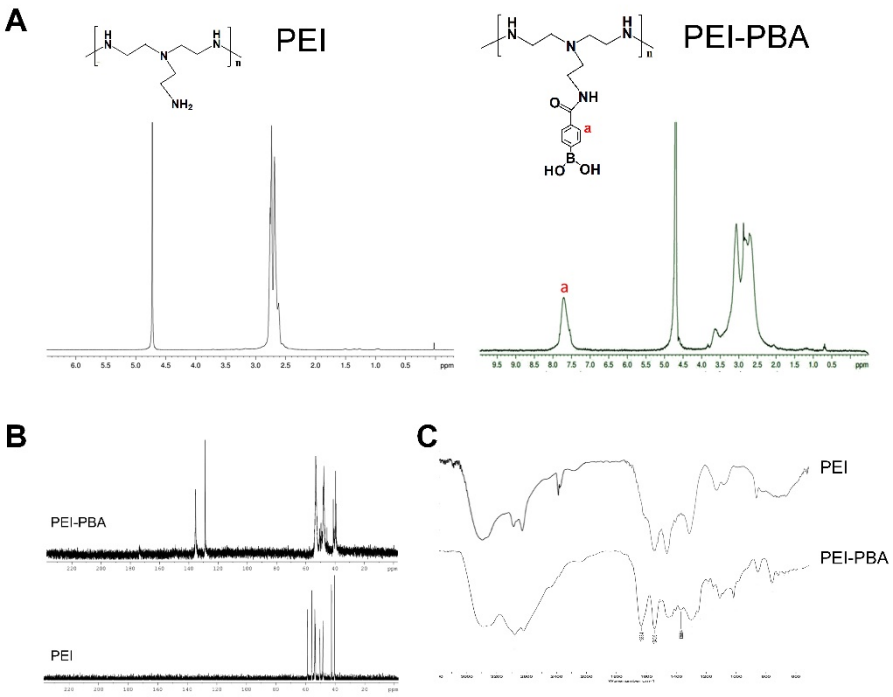

Figure S2. Characterization of PEI-PBA. **(A)** The ^{1}H NMR spectra **(B)** ^{13}C-NMR spectra and **(C)** the FTIR spectrum of PEI and PEI-PBA.

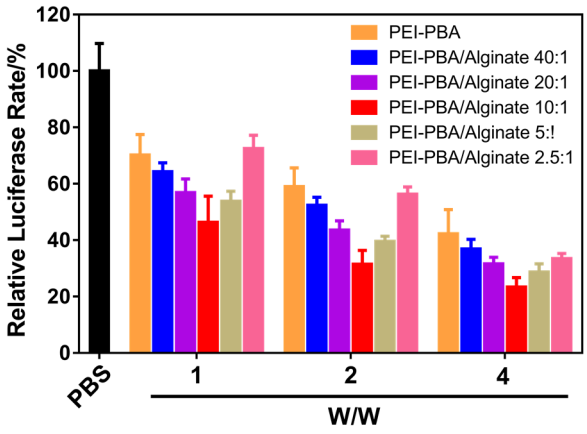

Figure S3. Luciferase silencing of CrossPPA/siLuc on 4T1 cells at different w/w ratios of PEI-PBA/Alginate (n=3).

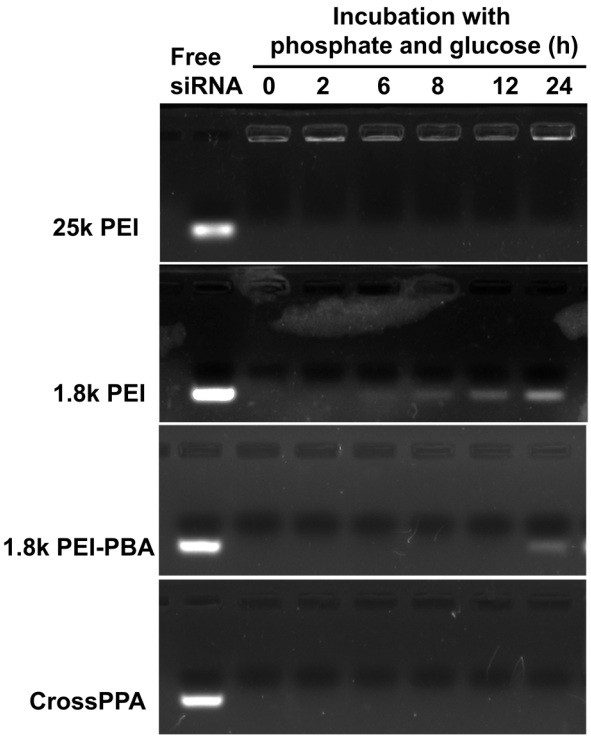

Figure S4. Stability of polyplexes in phosphate and glucose.

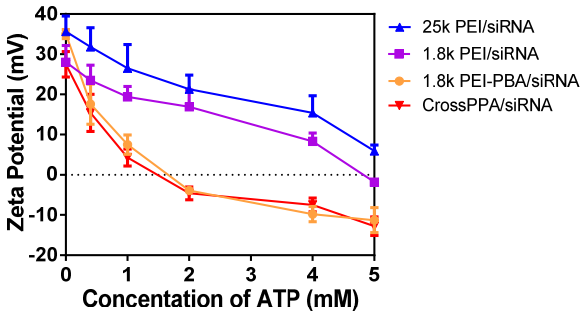

Figure S5. Charge reversal of 25k PEI/siRNA, 1.8k PEI/siRNA, PEI-PBA/siRNA and CrossPPA/siRNA with the different amount of ATP adding.

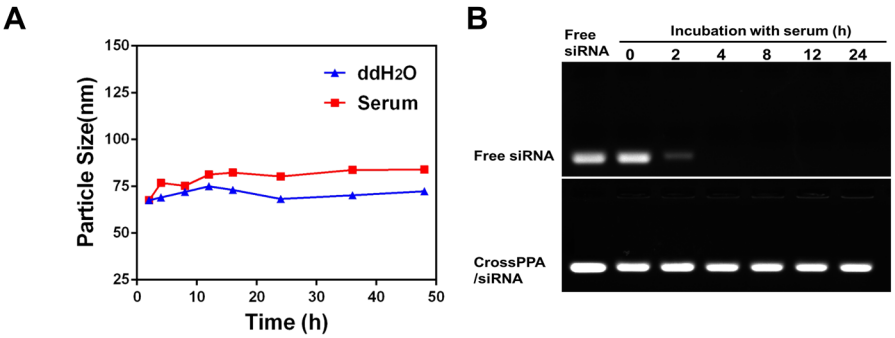

Figure S6. (A) Colloidal stability and serum stability of CrossPPA/siRNA polyplex. **(B)** Serum stability of naked siRNA and CrossPPA/siRNA, determined by agarose gel electrophoresis.

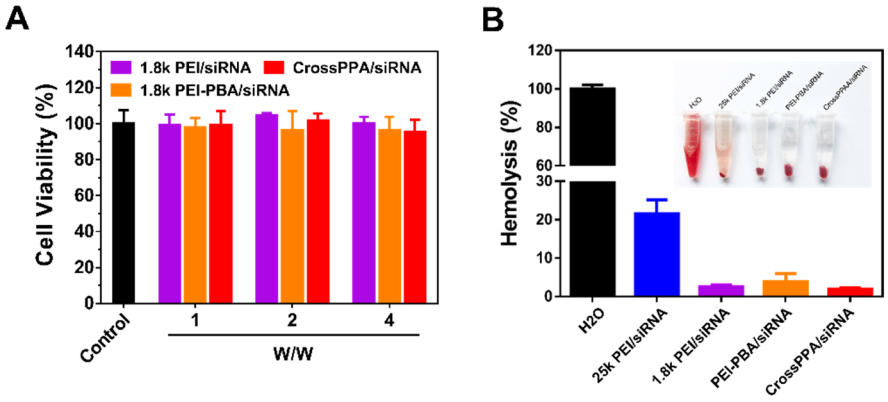

Figure S7. (A) Cytotoxicity of different polyplexes at various w/w ratios. **(B)** Hemolysis assay of 25k PEI, 1.8k PEI, PEI-PBA and CrossPPA polyplexes.

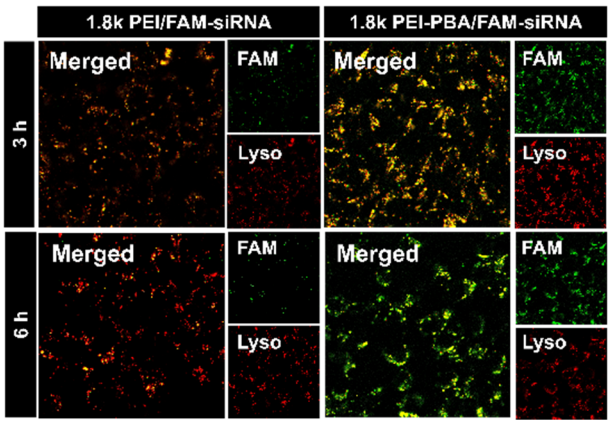

Figure S8. Endosomal escape of 1.8k PEI/siRNA and 1.8k PEI-PBA/siRNA in 4T1 cells, siRNA was labeled with FAM and lysosome/endosome was stained with LysoTracker Red.

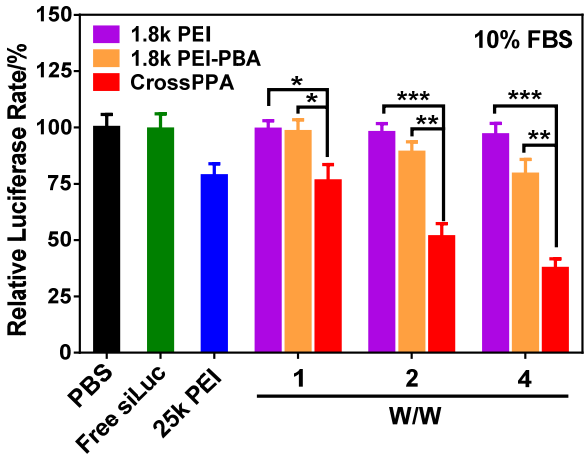

Figure S9. siLuc transfection and gene silencing under 10% FBS condition. Bars shown are mean± SD (n= 3). * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

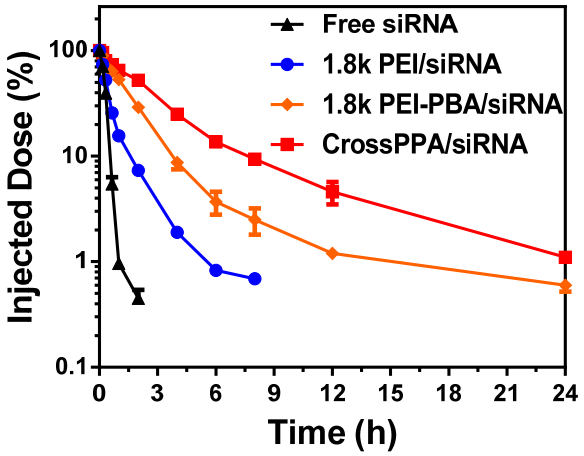

Figure S10. Pharmacokinetics study of Free siRNA, 1.8k PEI/siRNA, 1.8k PEI-PBA/siRNA and CrossPPA/siRNA.

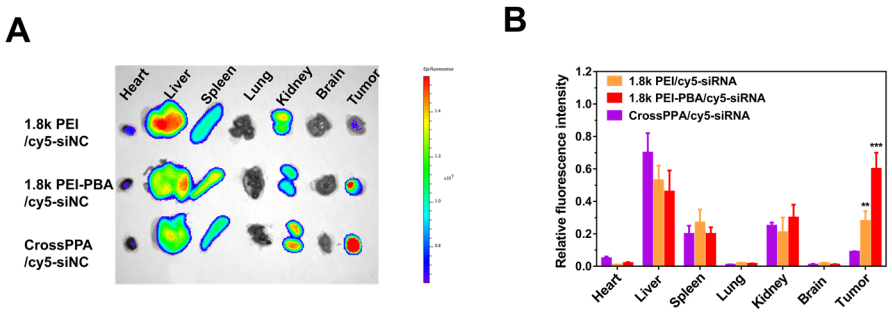

Figure S11. (A) Fluorescence signals of *ex*-organs and tumors at 48h. **(B)** Fluorescence quantitative analysis. Bars shown are mean± SD (n= 3). **p < 0.01, ***p < 0.001.

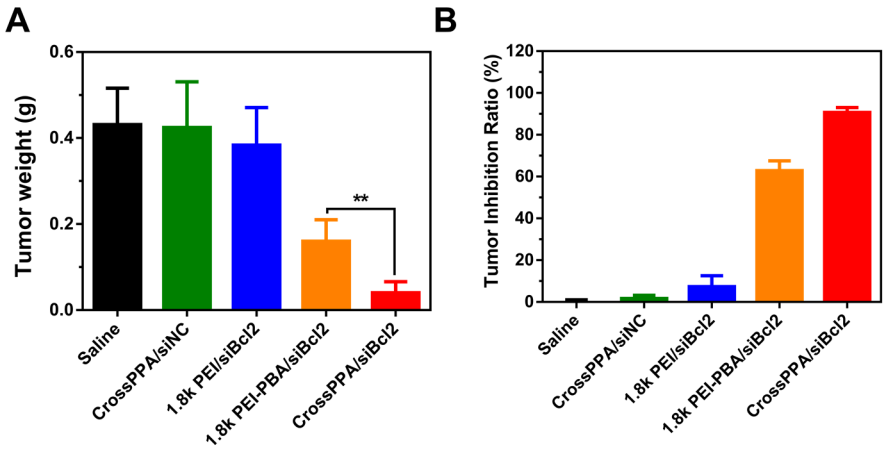

Figure S12. (A) Tumor weight analysis of each group. Data are shown as mean ± SD (n= 6). **p<0.01. **(B)** Tumor inhibition analysis of each group.

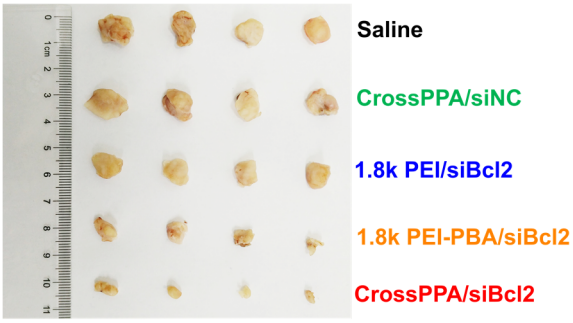

Figure S13. Representative images of *ex*-tumors, taken on Day 20.

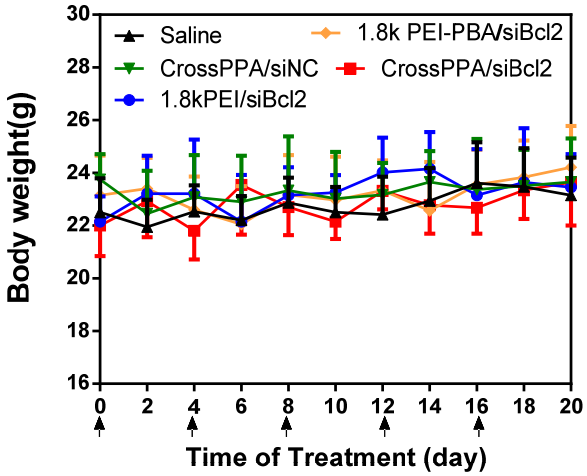

Figure S14. Graph showing the change in the body weights of 4T1 tumor-bearing mice over the treatment period.

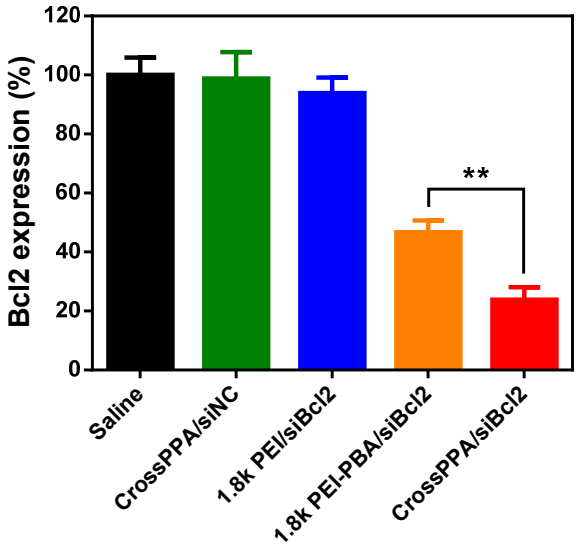

Figure S15. Semiquantitative analysis of the western blot bands by Image J software.