Supporting Information

Preparation of polycation with hydroxyls for enhanced delivery of miRNA in osteosarcoma therapy†

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† Electronic supplementary information (ESI) is available from the RSC Publications website or the authors.

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Table S1
Polymer characterization

Sample	Reaction time (h)	M_n (g/mol)[c]	PDI[c]	Monomer repeat units[c]
PGMA-1[a]	4	8.1×10^3	1.21	56
PGMA-2[b]	4	11×10^3	1.18	76

[a] PGMA was synthesized at the feed ratio ([EBA]:[CuBr]:[PMDETA]:[GMA]) of 1:0.2:0.4:45 at room temperature with 90 μL EBA initiator.

[b] PGMA was synthesized at the feed ratio ([EBA]:[CuBr]:[PMDETA]:[GMA]) of 1:0.2:0.4:60 at room temperature with 70 μL EBA initiator.

[c] Determined from GPC. PDI=weight-average molecular weight/number -average molecular weight (M_w/M_n).

Table S2
Sequences of mimics used in this study

Species	Gene	Sequence (5'-3')
Human	miR-NC	UUUGUACUACACAAAAGUACUG
	miR-223-3p (miR-223)	UGUCAGUUUGUCAAAUACCCCA

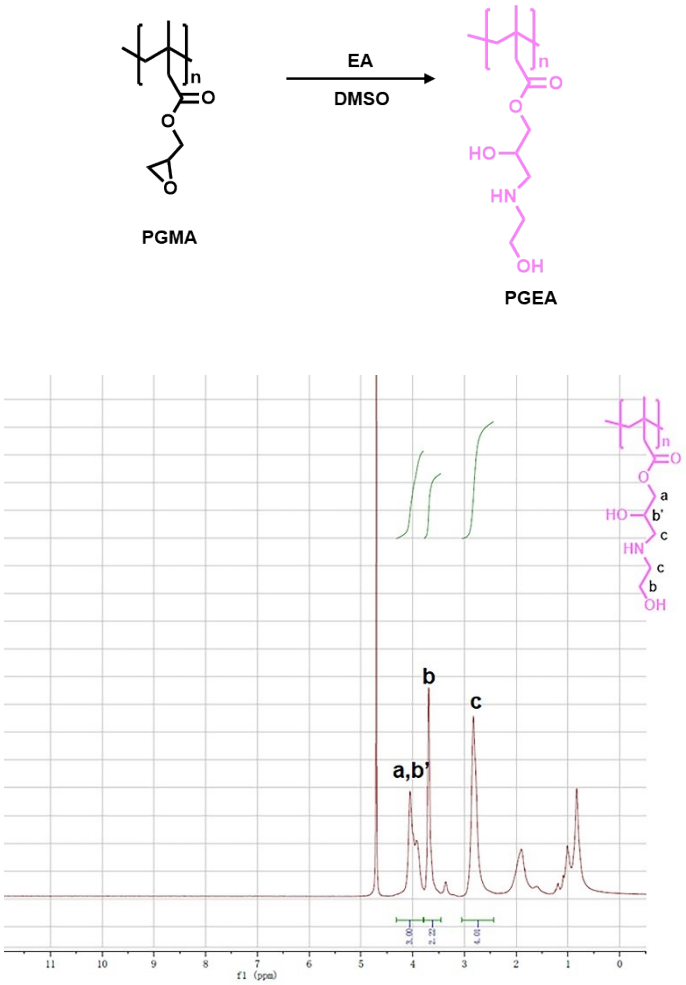

Fig. S1. Synthetic route and typical ^{1}H NMR (400 MHz) spectra in D_2O of PGEA polycation.

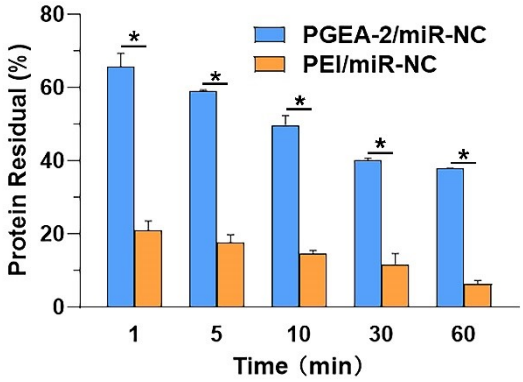

Fig. S2. Protein absorption assay of PGEA-2/miR-NC and PEI/miR-NC complexes treated with excess BSA. (*$p < 0.05$)

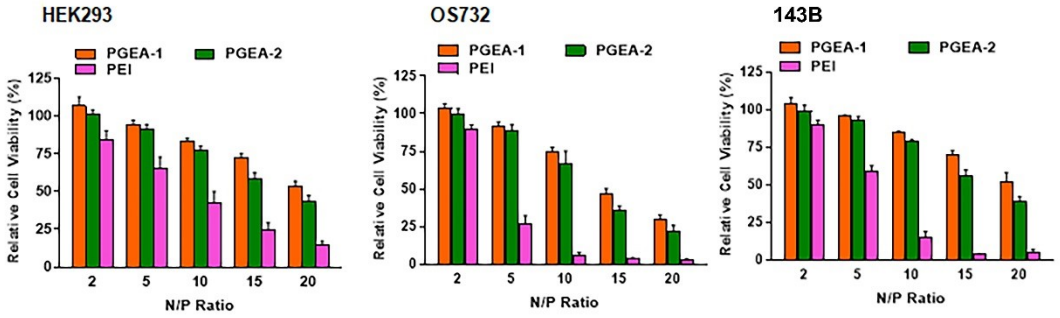

Fig. S3. Cytotoxicities in various cell lines after 24 h incubation with different vectors.

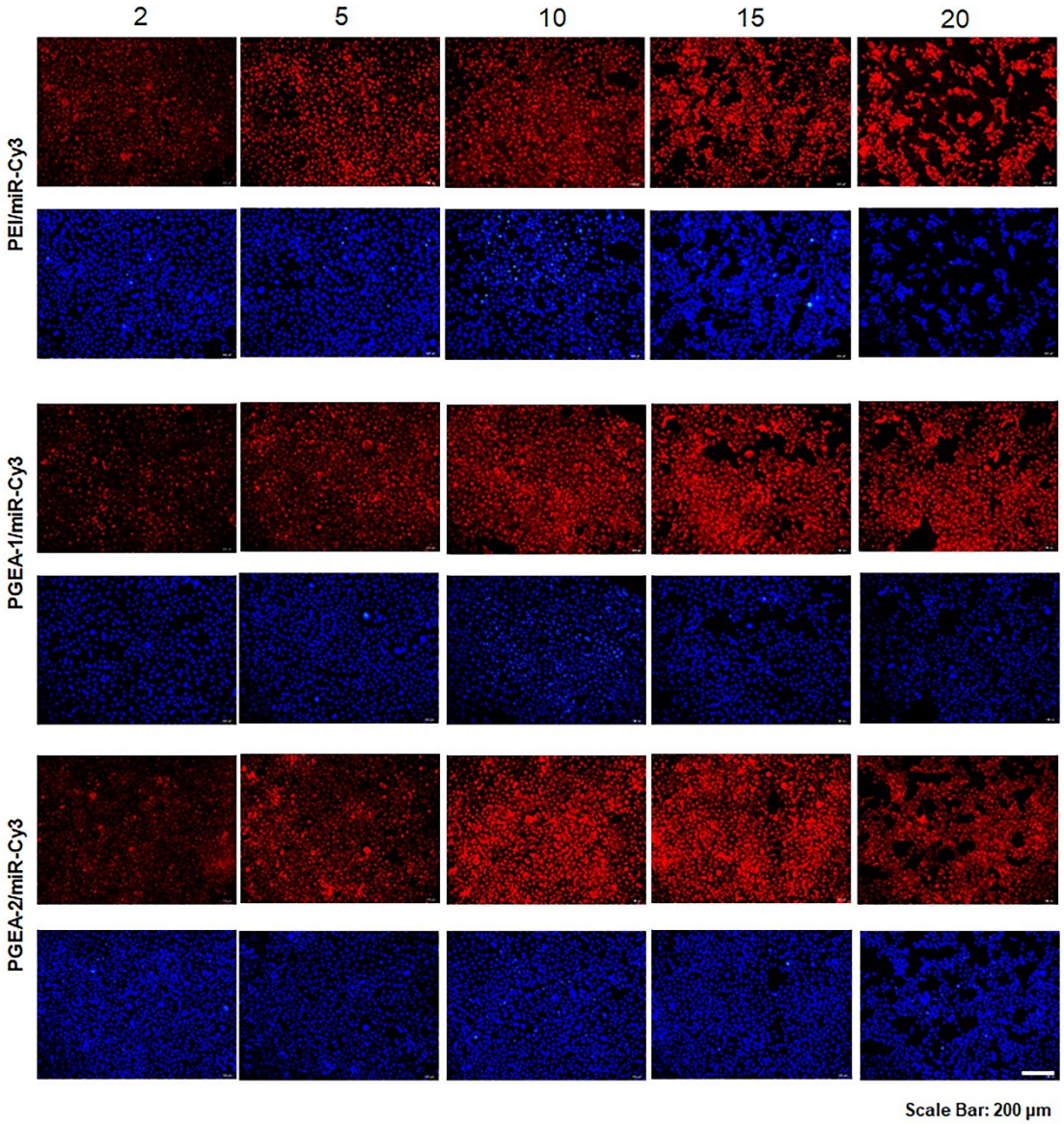

Fig. S4. Transfection efficiencies mediated by different vectors in HEK293 cells (Red: miR-Cy3; Blue: nucleus labeled with DAPI).

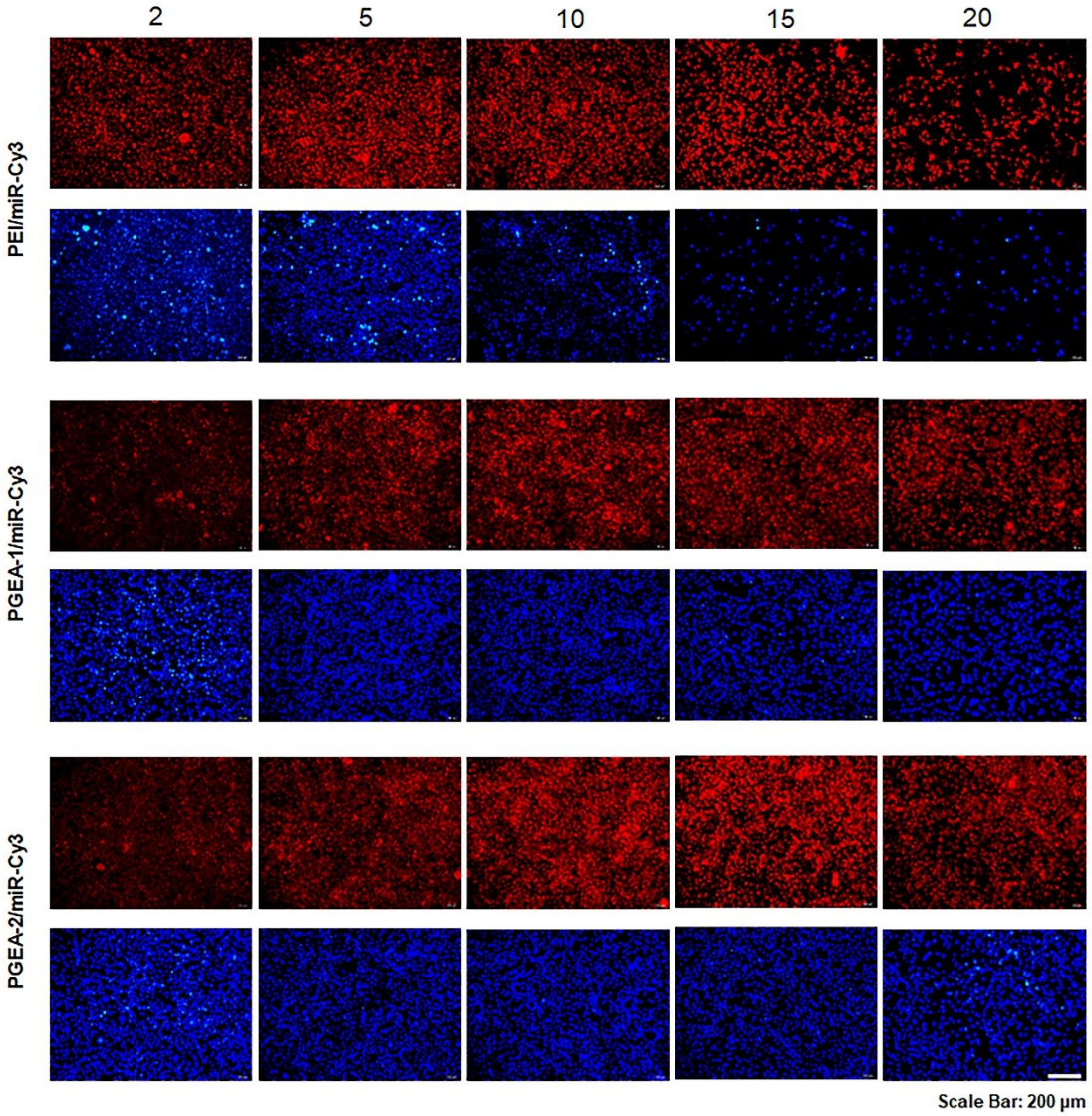

Fig. S5. Transfection efficiencies mediated by different vectors in OS732 cells (Red: miR-Cy3; Blue: nucleus labeled with DAPI).

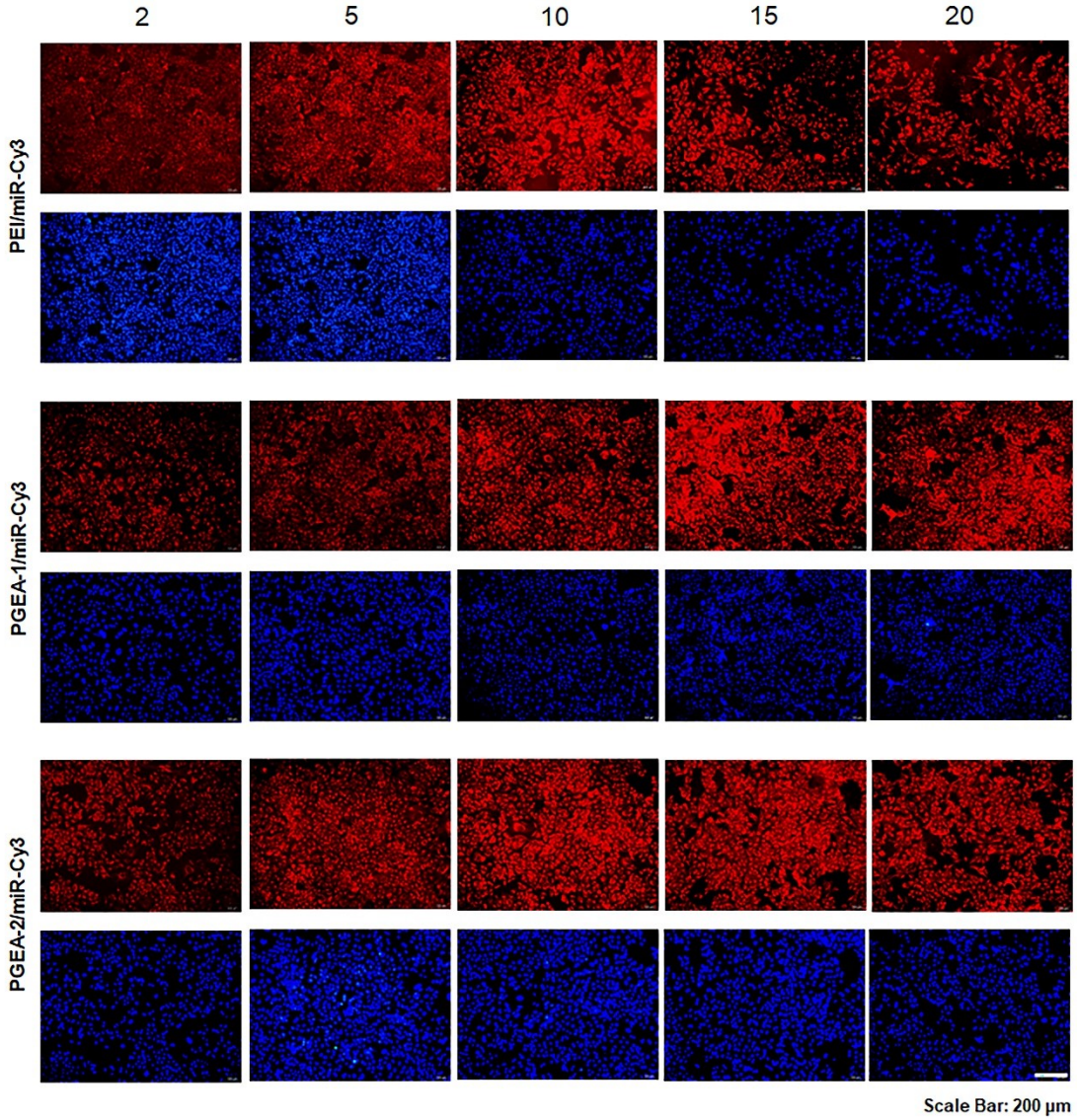

Fig. S6. Transfection efficiencies mediated by different vectors in 143B cells (Red: miR-Cy3; Blue: nucleus labeled with DAPI).

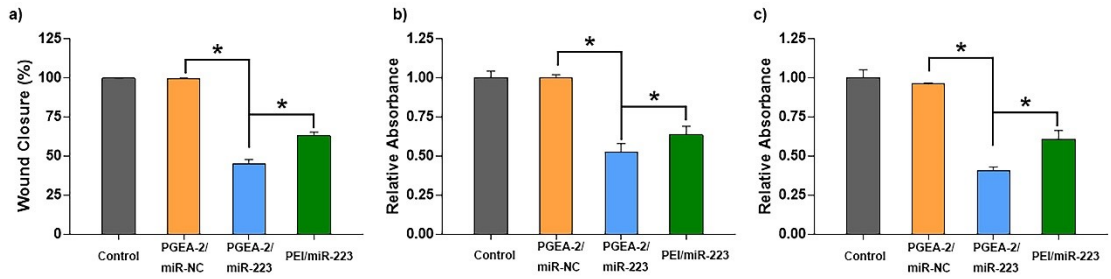

Fig. S7. Statistical analysis of a) wound healing, b) invasion and c) clonogenic assays in different treatment groups. (*p < 0.05)

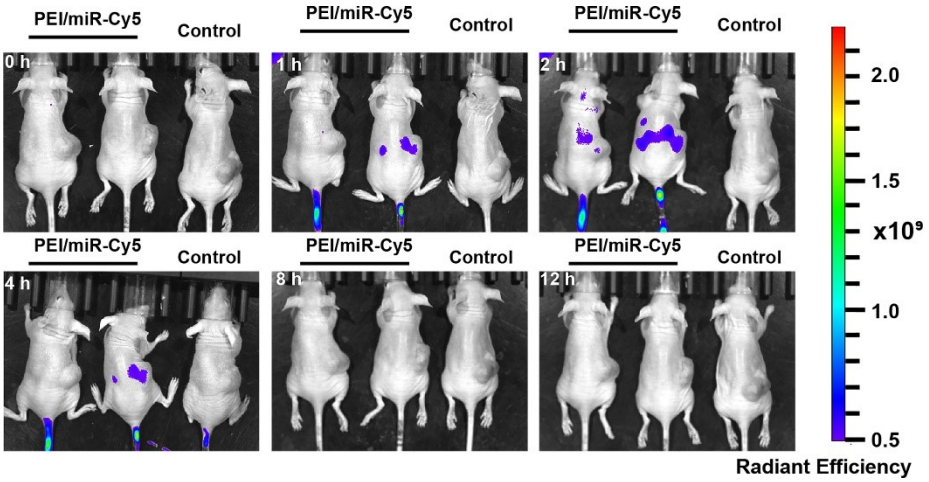

Fig. S8. The accumulation of PEI mediated miRNA delivery in mice with osteosarcoma.

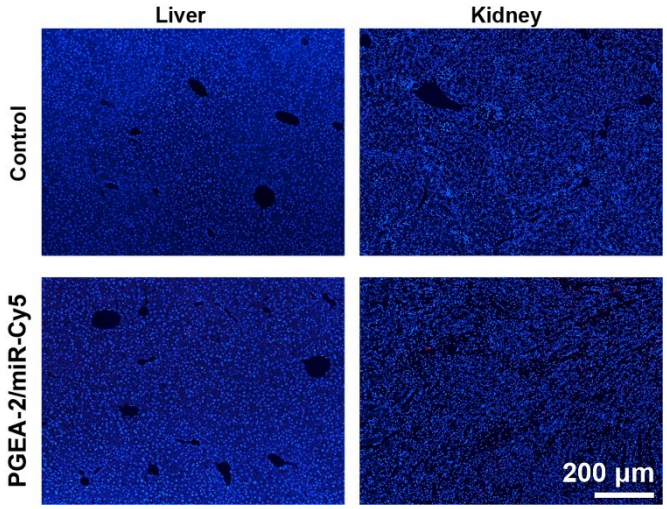

Fig. S9. Representative images show the accumulation of PGEA-2/miR-Cy5 system in mice liver and kidney after 12 h (Blue: necleus stained with DAPI; Red: miR-Cy5).