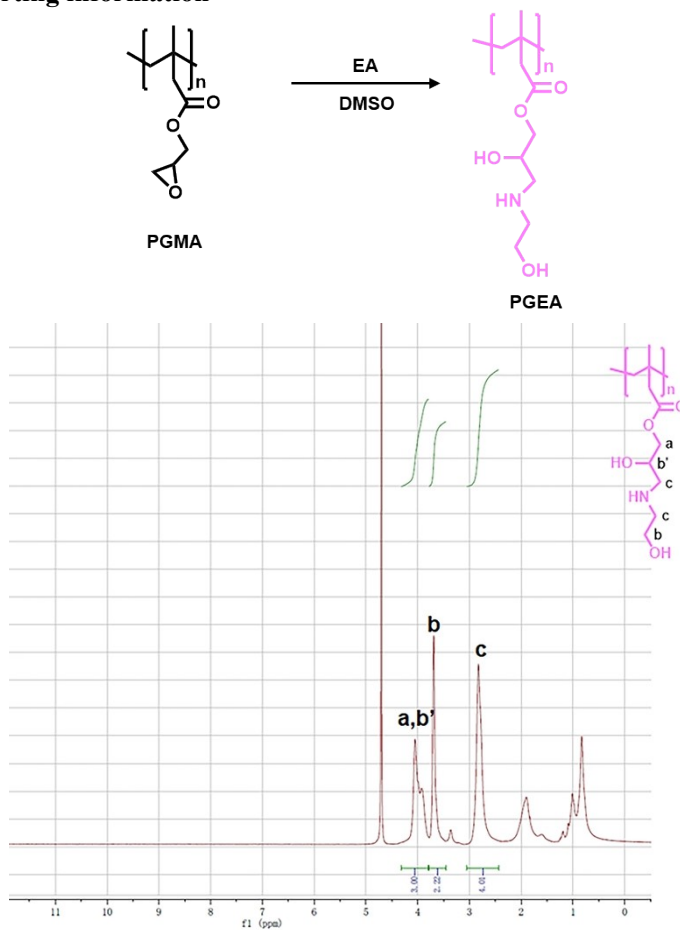
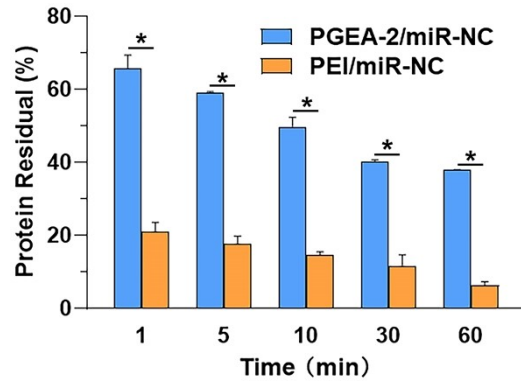


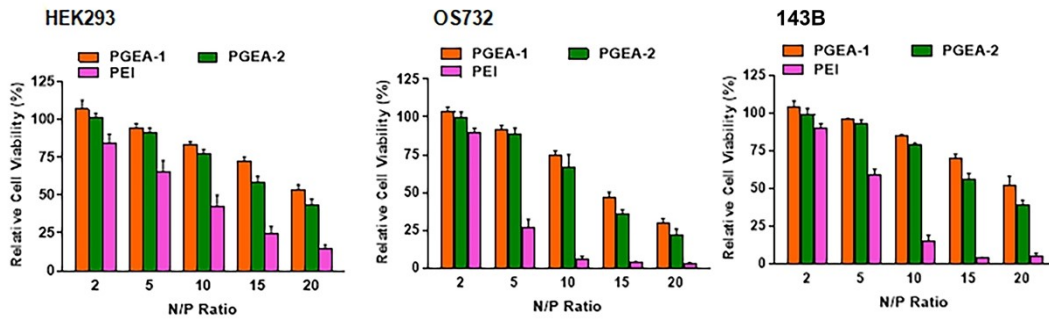
Figures S1-S9 in supporting information



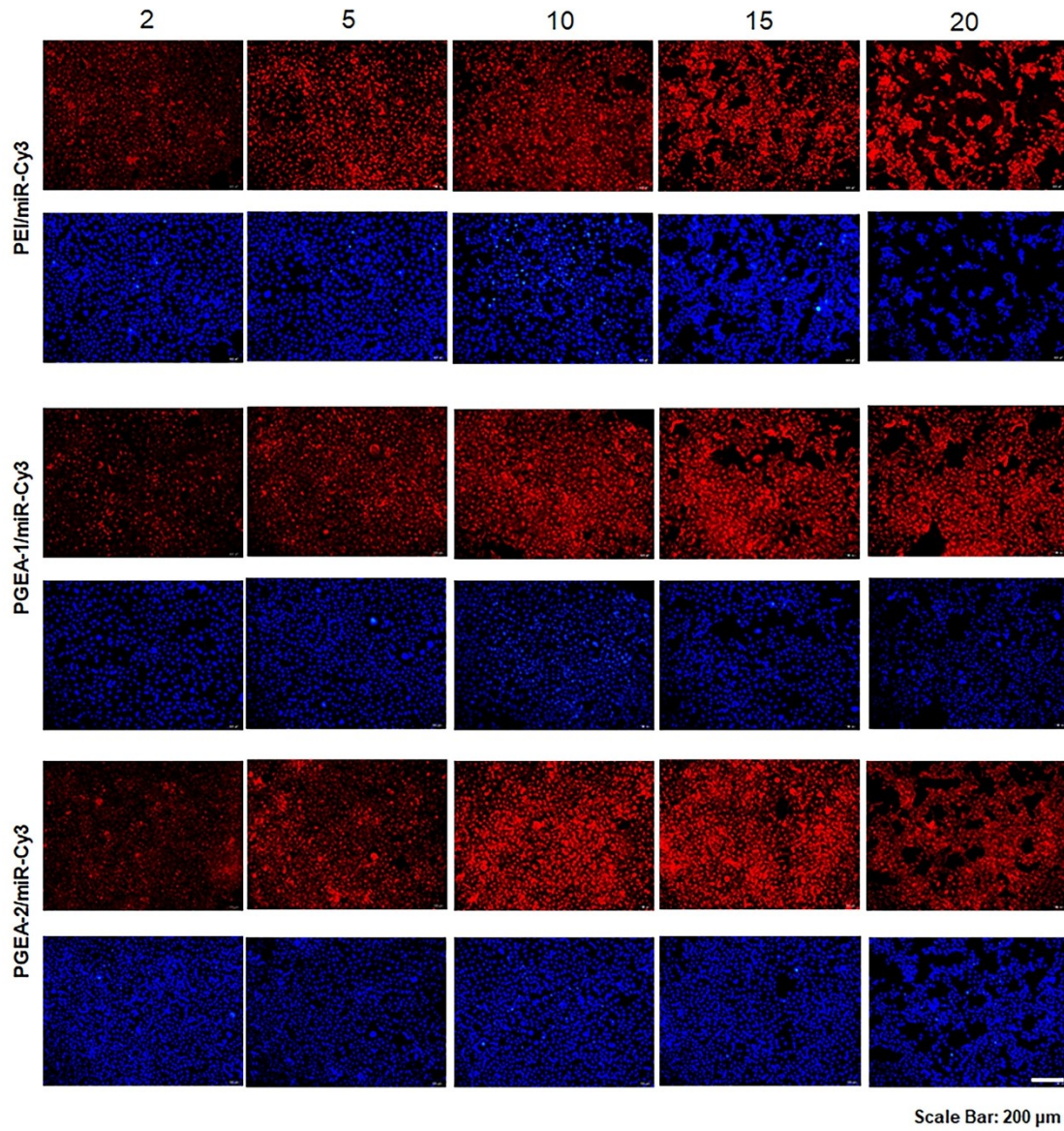
**Fig. S1.** Synthetic route and typical  $^1\text{H}$  NMR (400 MHz) spectra in  $\text{D}_2\text{O}$  of PGEA polycation.



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

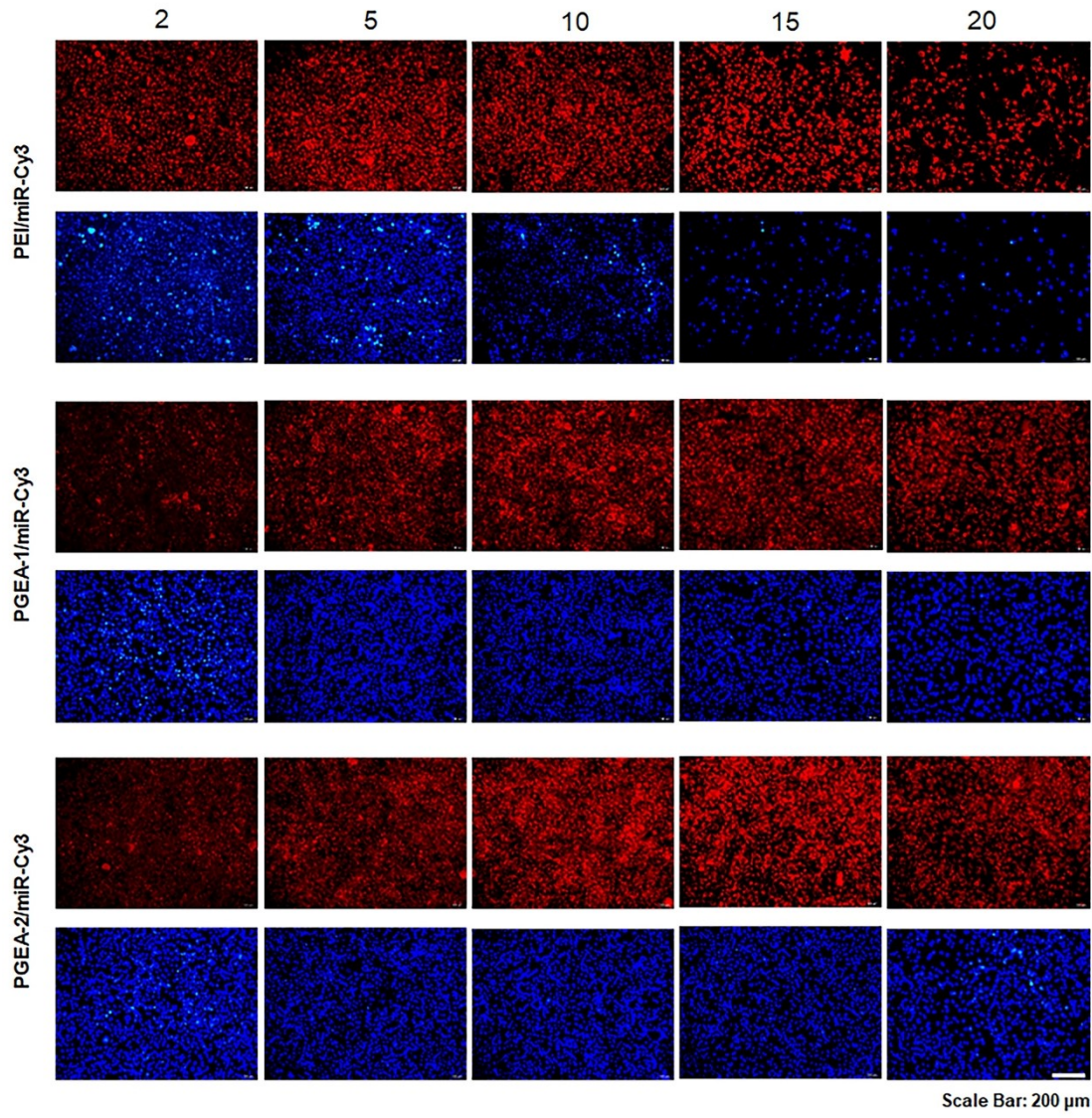


**Fig. S3.** Cytotoxicities in various cell lines after 24 h incubation with different vectors.

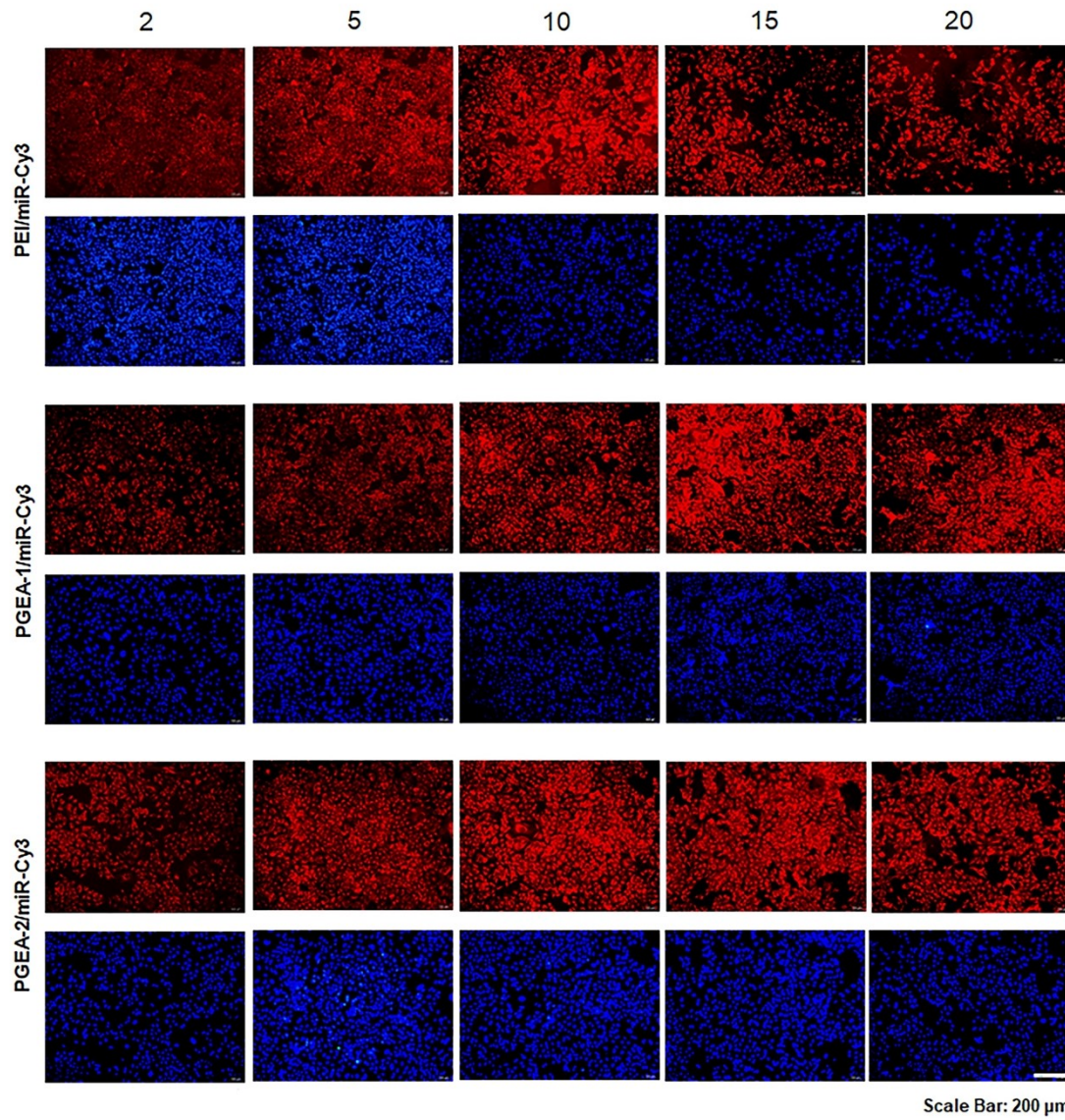


**Fig. S4.** Transfection efficiencies mediated by different vectors in HEK293 cells (Red: miR-Cy3; Blue: nucleus labeled with DAPI).



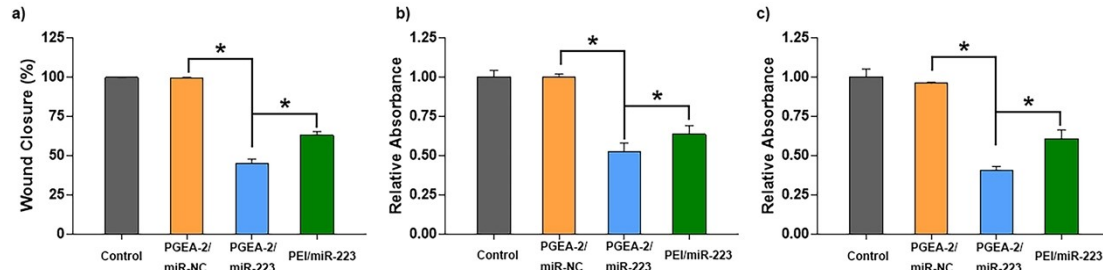


**Fig. S5.** Transfection efficiencies mediated by different vectors in OS732 cells (Red: miR-Cy3; Blue: nucleus labeled with DAPI).

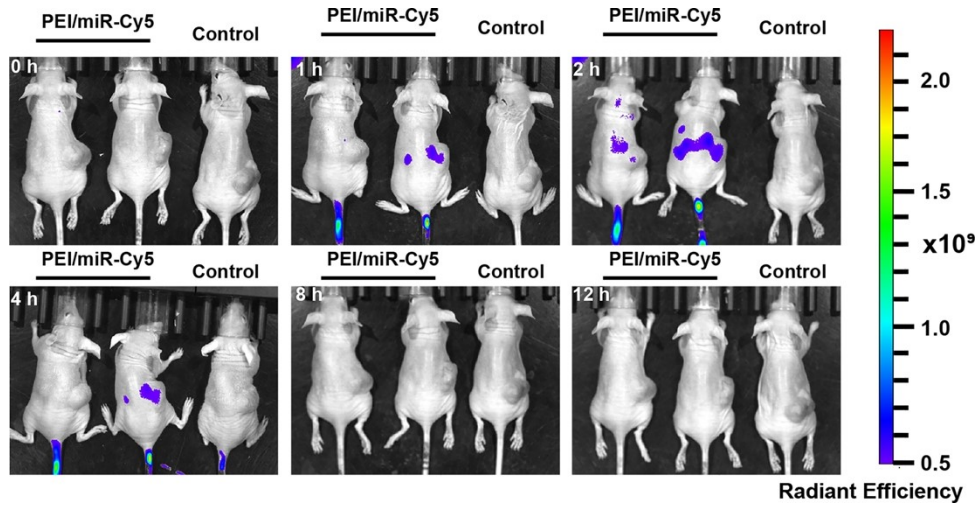


**Fig. S6.** Transfection efficiencies mediated by different vectors in 143B cells (Red: miR-Cy3; Blue: nucleus labeled with DAPI).

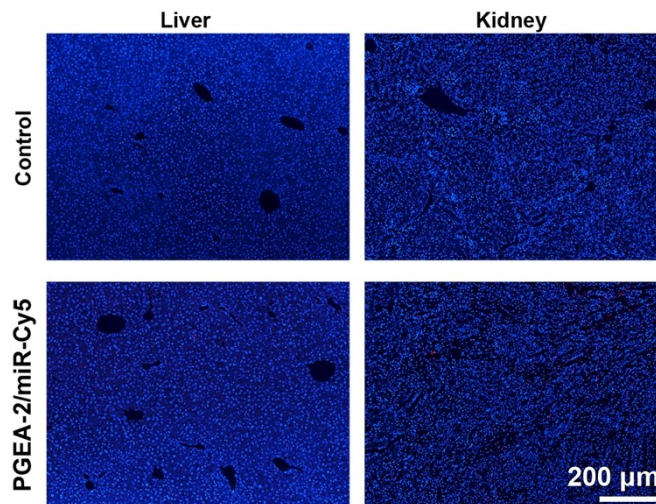




**Fig. S7.** Statistical analysis of a) wound healing, b) invasion and c) clonogenic assays in different treatment groups. (\* $p < 0.05$ )



**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: nucleus stained with DAPI; Red: miR-Cy5).