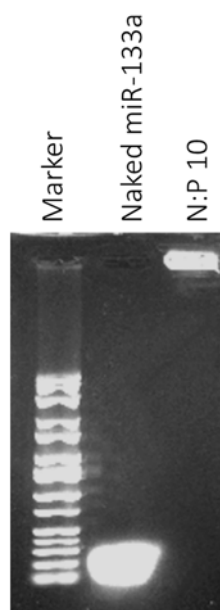
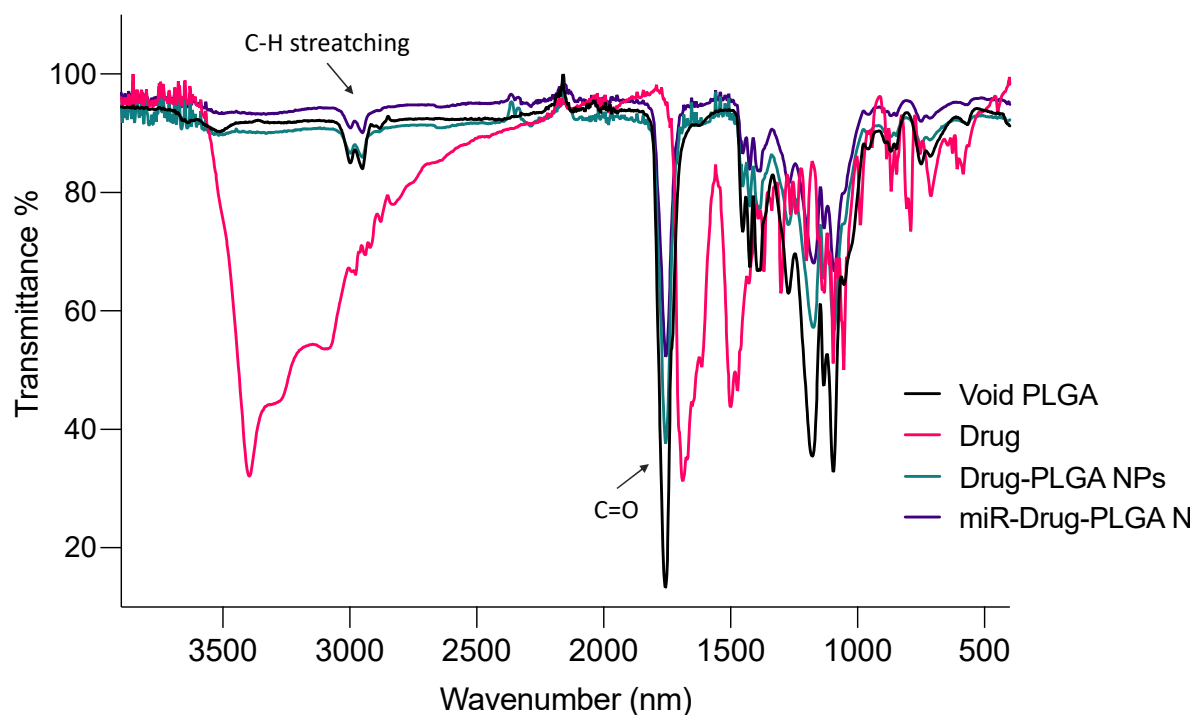


## Supplementary material



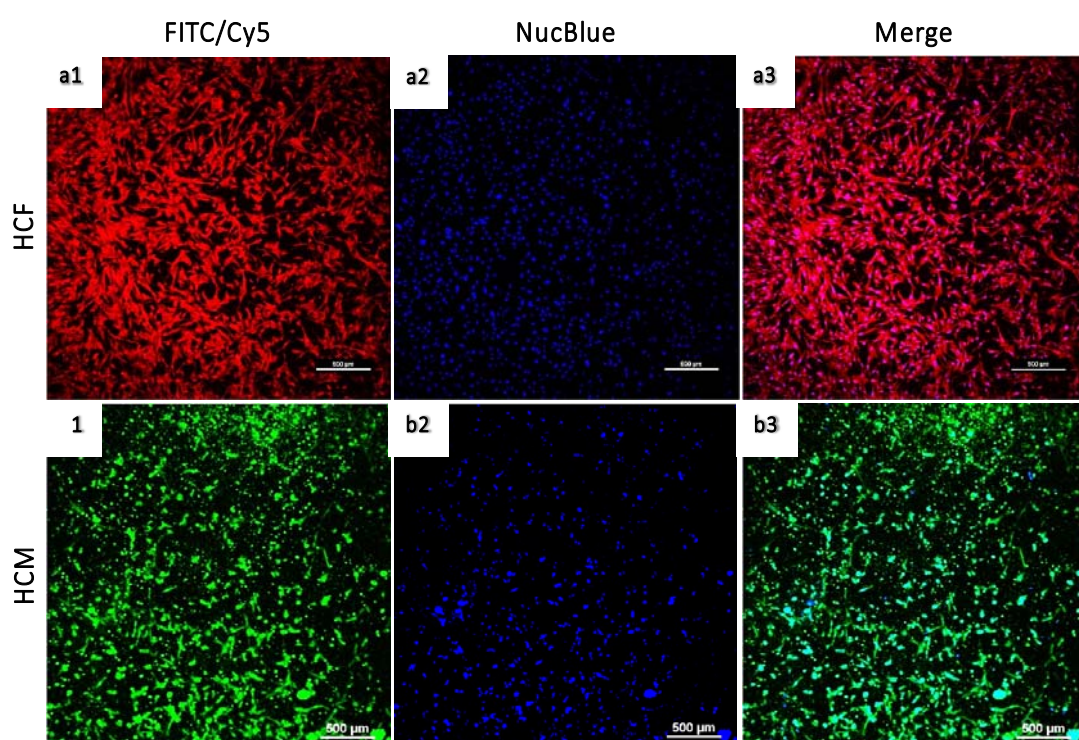
**Figure S1.** : Gel retardation assay of N:P ratio 10. The polyplexes were formed by self-assembly mechanism. Briefly, miR-133a was added to PEI (1mg/mL) at a N:P ratio of 10 and incubated for 30 mins at room temperature. Following the incubation, the polyplexes were loaded on 1% agarose gel with gel red and electrophoresed for 100 V for 30 mins. The bands were visualized using ultraviolet illuminator. The formation of polyplexes were confirmed by the retardation of miR-133a bands.



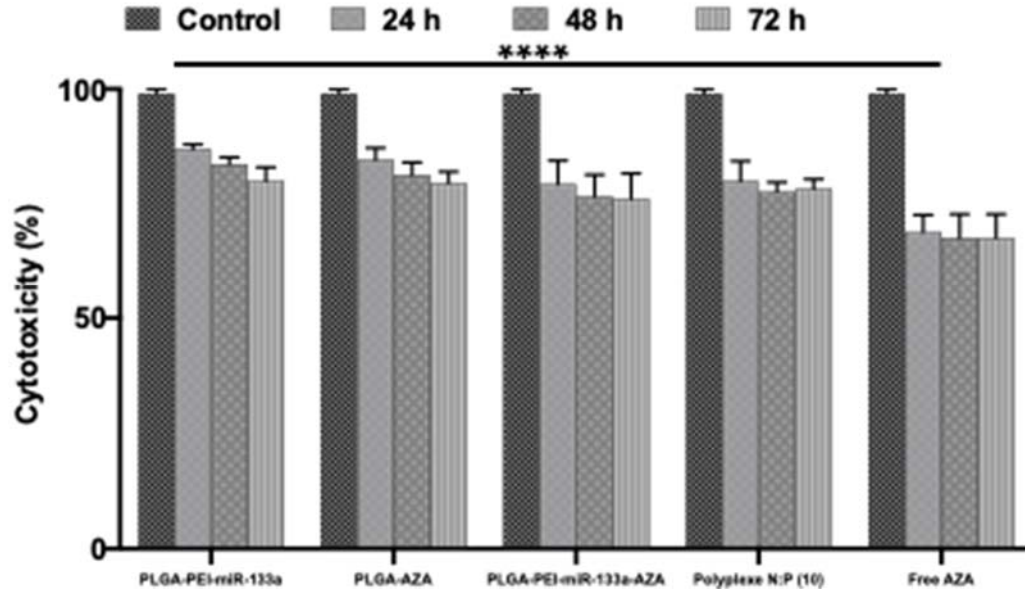
**Figure S2.** FTIR spectra for Void PLGA NPs, Drug, PLGA-AZA NPs and PLGA-PEI-miR-133a-AZA NPs.

**Table S1.** Main peaks of PLGA NPs FTIR spectra.

Peak position (Wavenumber $\text{cm}^{-1}$ )	Assignments
3000	Asymmetric $\text{CH}_3$ stretching
2952	Asymmetric $\text{CH}_2$ stretching
1754	Carbonyl $\text{C}=\text{O}$ stretching (alkyl groups)
1454	C-H bending of $\text{CH}_3$
1425	CH bending of O-CH, (of glycolic acid) and OH in plane bending
1392	C-H bending of $\text{CH}_3$
1268	C-O stretching of carboxylic acid
1180	C-C-O stretching from ester
1093	O-C-C stretching from ester
958	OH bending



**Figure S3.** Cellular Uptake of PEI-Cy5miR-133a (a1-a3) and PLGA-FITC (b1-b3) and Nanospheres using confocal microscopy in HCF and HCM respectively. The nanospheres were labelled with FITC (green/Cy5(Red)). The cells were incubated with PLGA-FITC NPs/Cy5-miR-133a for 4 h to evaluate cellular internalization of the polymer into the cell. (a1) shows PEI-Cy5-miR-133a uptake by HCF cells. (b1) shows FITC particle internalization by HCM cells. (Scale bar= 500  $\mu\text{m}$ ).



**Figure S4.** Cell viability were evaluated to assess the compatibility of HCM treated with PLGA NPs PLGA-PEI-miR-133a, PLGA-AZA and PLGA-PEI-miR-133a-AZA at a concentration of 100  $\mu$ g/mL in comparison with miR-133a polyplexes (50nM was used to for complex with PEI at an N:P ratio 10) , free drug ( 1 mg/mL) and control for 24 h, 48 h and 72 h. The cell viability of all PLGA NPs were 80% viable at all time point. The ratios of PLGA NPs at all doses and time points demonstrated that the experiment was extremely statistically significant, with  $p < 0.05$  (\*  $p \leq 0.05$  \*\*  $p \leq 0.01$  \*\*\*  $p \leq 0.001$  \*\*\*\*  $p \leq 0.0001$ ). experiment was extremely statistically significant, with  $p < 0.05$  (\*  $p \leq 0.05$  \*\*  $p \leq 0.01$  \*\*\*  $p \leq 0.001$  \*\*\*\*  $p \leq 0.0001$ ).