Electronic Supplementary Material (ESI) for Biomaterials Science. This journal is © The Royal Society of Chemistry 2021

## **Supplementary Information for**

## Cationic polymer synergizing with chemotherapeutics and re-purposing antibiotics against cancer cells

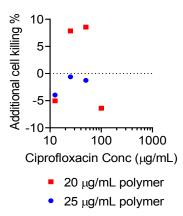
Yiran Zheng,\*a,b Jessica Kng,b Chuan Yang, b James L. Hedrick,c Yi Yan Yang, \*b

<sup>a</sup>College of Pharmaceutical Sciences, Soochow University, Suzhou 215123, P. R. China. Email: <a href="mailto:yrzheng@suda.edu.cn">yrzheng@suda.edu.cn</a>

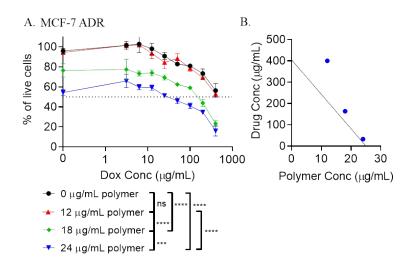
<sup>b</sup>Institute of Bioengineering and Nanotechnolgy, Agency for Science Technology and Research. 31 Biopolis way, Singapore 138669. Email: <a href="mailto:yyyang@ibn.a-star.edu.sg">yyyang@ibn.a-star.edu.sg</a>

<sup>c</sup>IBM Almaden Research Center, 650 Harry Road, San Jose, CA 95120, USA

\*Corresponding authors



Supplementary Figure 1: Percentage of MCF-7 cells killed more than additive effects by combination therapy at certain antibiotic concentrations in the presence of polymer at 20 µg/mL. Additive effects = percentage of cells killed by ciprofloxacin alone + percentage of cells killed by polymer alone. Synergistic effect is observed when additional cell killing is positive and antagonistic effect is observed when additional cell killing is negative.



Supplementary Figure 2: Guanidinium-functionalized polymer failed to elicit synergistic effects with the chemotherapeutic drug Dox in treating cancer cells. (A) Killing efficacy of different concentrations of Dox and polymer in MCF-7 ADR cancer cells. (B) Isobologram analysis representing an antagonistic effect between Dox and polymer in MCF-7 ADR cancer cells. Solid line was drawn from IC<sub>50</sub> values of Dox and polymer alone. Value above the line indicates an antagonistic effect at the polymer concentration tested. Statistically analysis was done by two-way ANOVA followed by Tukey's multiple comparison test. \*\*\* p < 0.001, \*\*\*\* p < 0.001.