

Electronic Supplementary Information (ESI)

of

Carrier-free Nanodrug-based Virus-Surface-Mimicking Nanosystems for Efficient Drug/Gene co-Delivery

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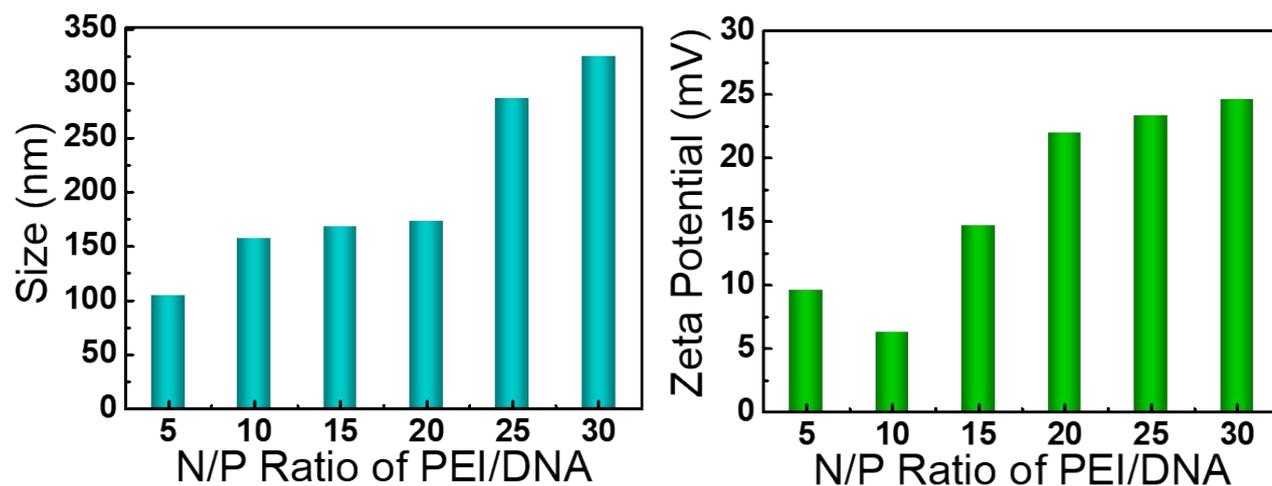


Fig. S1. DLS data of PEI/DNA nanocomplexes at various N/P ratios.

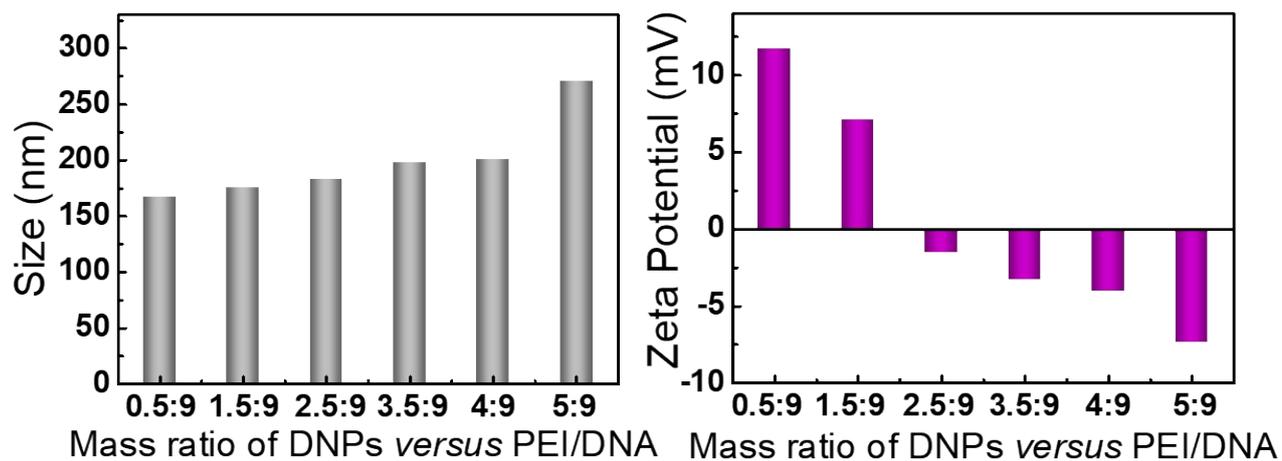


Fig. S2. DLS data of PEI/DNA@DNPs nanoparticles at different mass ratios of DNPs *versus* PEI/DNA nanocomplexes. The N/P ratio was fixed at 20.

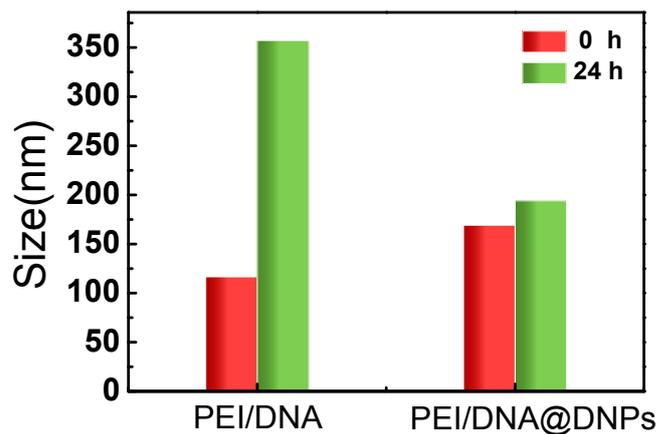


Fig. S3. Variation in the hydrodynamic diameters of PEI/DNA and PEI/DNA@DNPs in 10% serum-containing PBS buffer solution after standing at room temperature for 24 h.

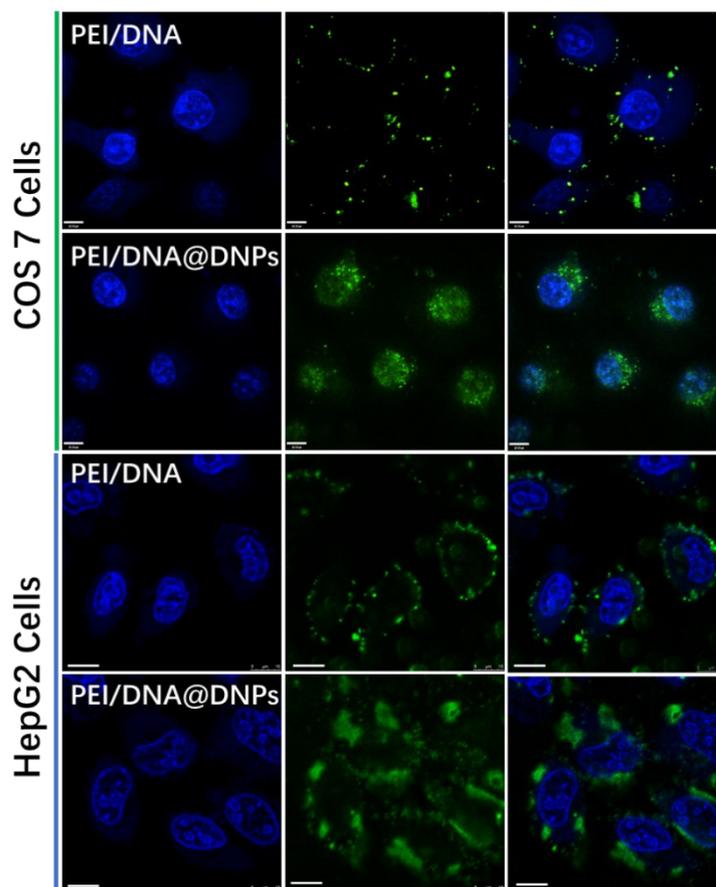


Fig. S4. Confocal images of COS7 and HepG2 cells after 4 h treatment with PEI/DNA and PEI/DNA@DNPs nanoparticles. The concentration of DNA was fixed at $4 \mu\text{g mL}^{-1}$. The mass ratio of DNPs *versus* PEI/DNA was fixed at 4:9. DNA was stained green by YOYO-1 and nuclei were stained by Hoechst 33342. The scale bar was $10 \mu\text{m}$.

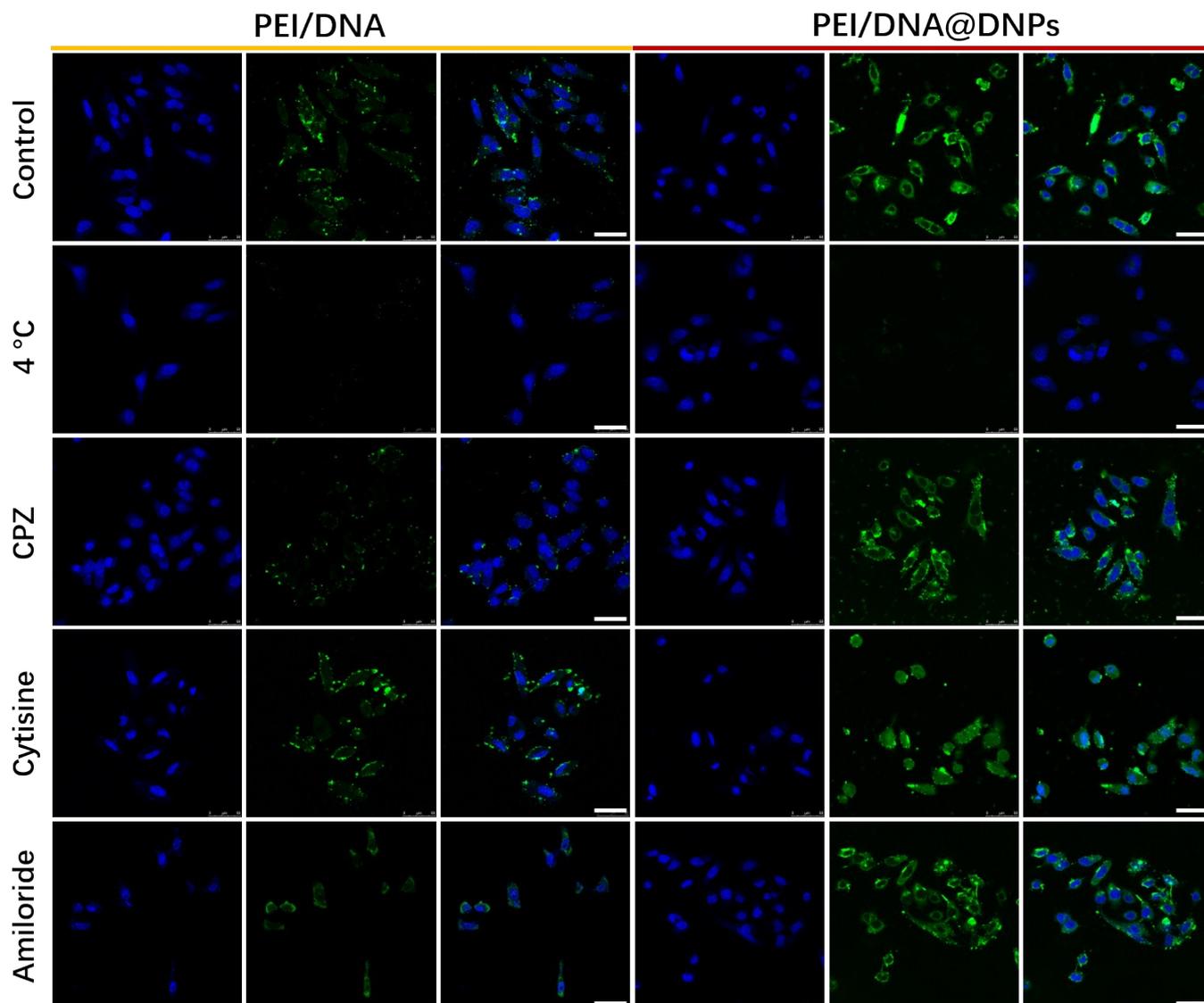


Fig.S5. Confocal microscopy images displaying intracellular uptake of PEI/DNA and PEI/DNA@DNPs (green fluorescence). The DNA was stained green by YOYO-1 and the cell nuclei were stained blue by molecular probe of Hoechst 33342. Scale bars: 50 μm .

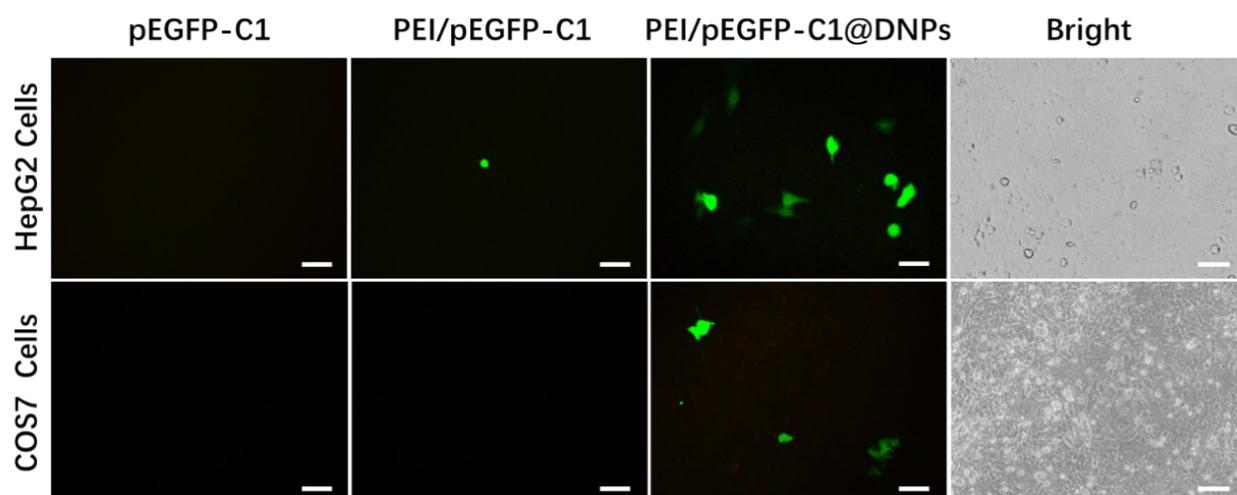


Fig. S6. Microphotographs of enhanced green fluorescent protein expression mediated by PEI/pEGFP-C1 and PEI/pEGFP-C1@DNPs in COS7 and HepG2 cells. The concentration of pEGFP-C1 was fixed at $4 \mu\text{g mL}^{-1}$. The mass ratio of DNPs *versus* PEI/DNA was fixed at 4:9. Scale bars: $50 \mu\text{m}$.

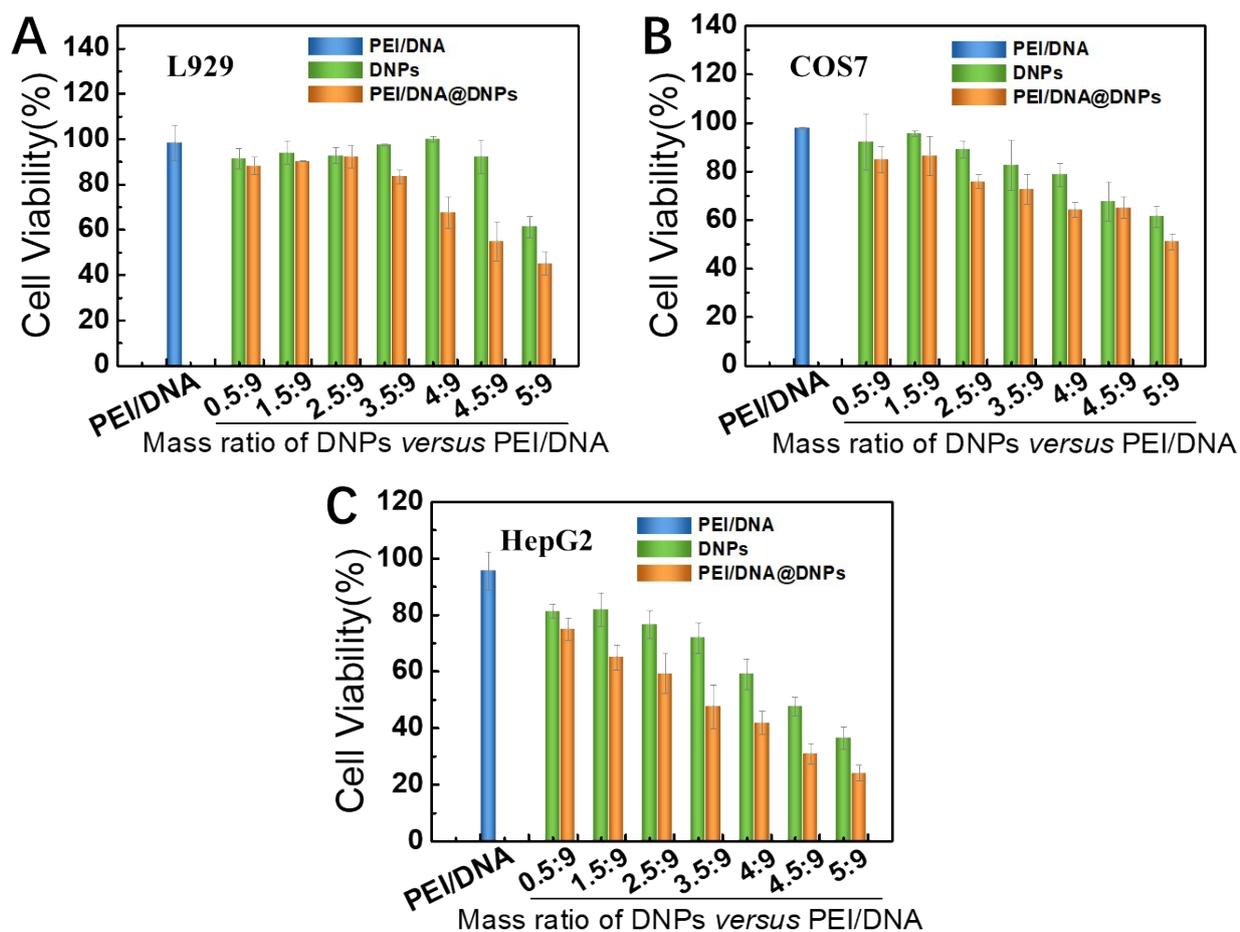


Fig. S7. *In vitro* cytotoxicity profiles of PEI/DNA, DNPs and PEI/DNA@DNPs in L929 (A), COS7 (B) and HepG2 (C) cells after 48 h incubation. The N/P ratio was fixed at 20.

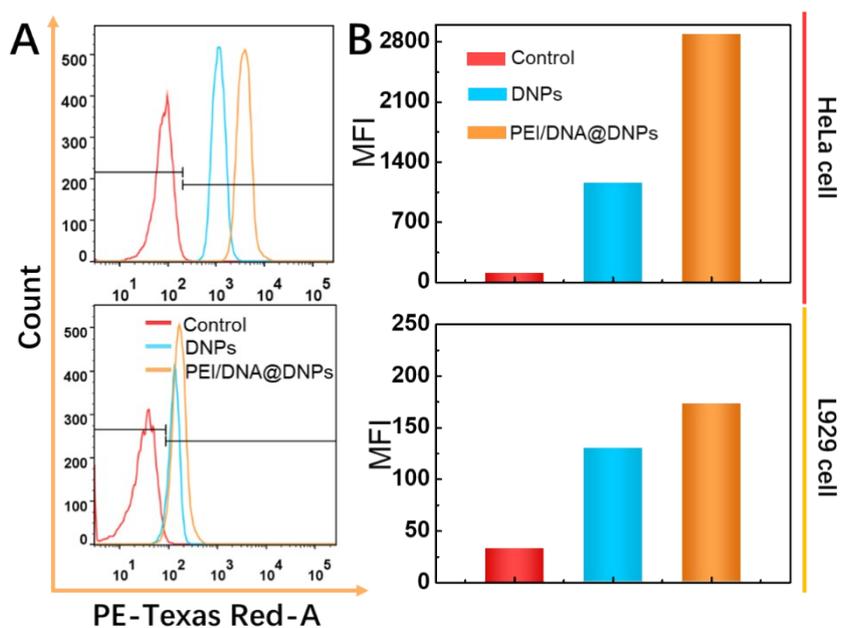
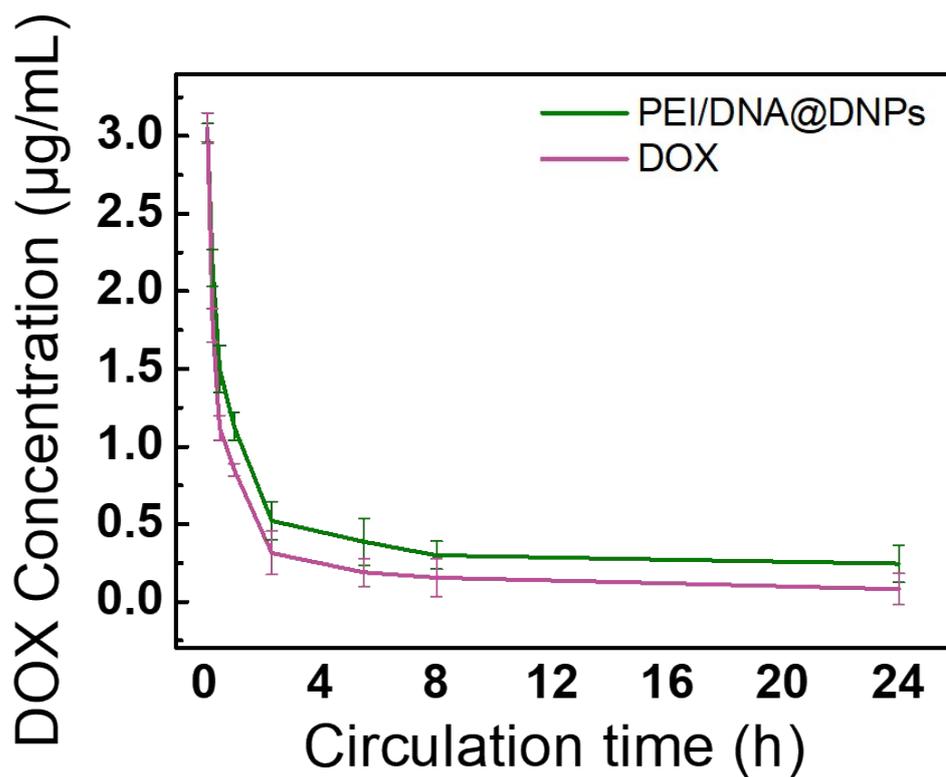


Fig. S8. Flow cytometry profiles of HeLa and L929 cells after incubation with DNPs and PEI/DNA@DNPs for 4 h (A) as well as the comparison of mean fluorescence intensity inside cells by quantification analysis(B). Blank cells were used as control. The mass ratio of DNPs *versus* PEI/DNA polyplexes was fixed at 4:9.



Parameters	$t_{1/2}$ (h)	$AUC_{(0-t)}$ (mg·h/L)
PEI/DNA@DNPs	2.9 ± 0.2	9.3 ± 0.4
DOX	2.0 ± 0.3	5.2 ± 0.3

Fig. S9. Pharmacokinetics of DOX after intravenous injection of the DNPs and DOX at a DOX dose of 2.0 mg/kg.