

## Supplementary Information Appendix

### Polysorbate 80-containing ionizable lipid nanoparticles for mRNA delivery

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#### Supporting Information Figures

Table S1 Formulation of iLNPs with diverse molar ratio of PS80

Name	MC3 (%)	DOPC (%)	Chol (%)	PS80 (%)
1	50	10	39.8	0.2
2	50	10	39.6	0.4
3	50	10	39.4	0.6
4	50	10	39.2	0.8
5	50	10	39.0	1.0

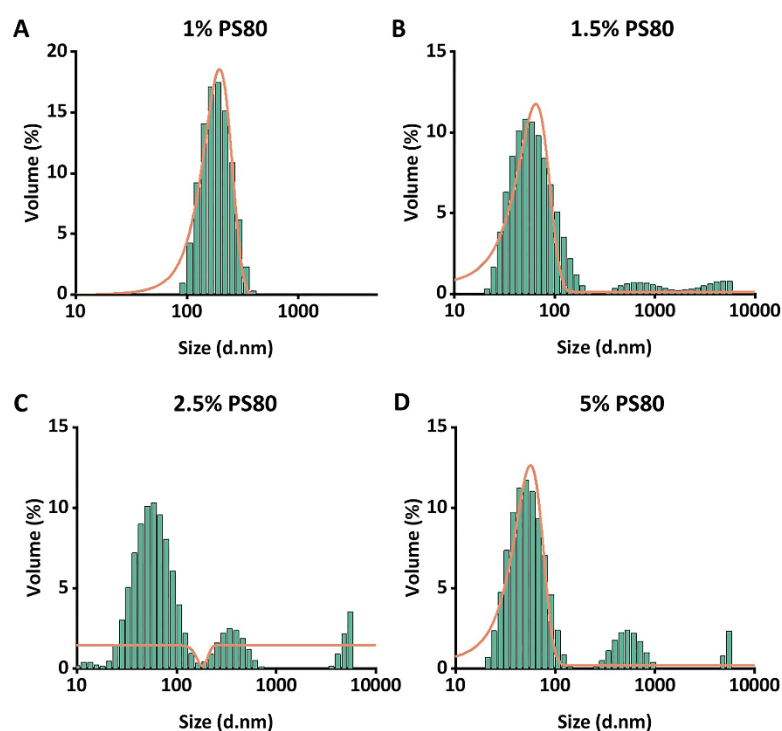


Figure S1† Size distribution of 1.0% (A), 1.5% (B), 2.5% (C), and 5.0% (D) PS80-iLNPs detected by DLS.

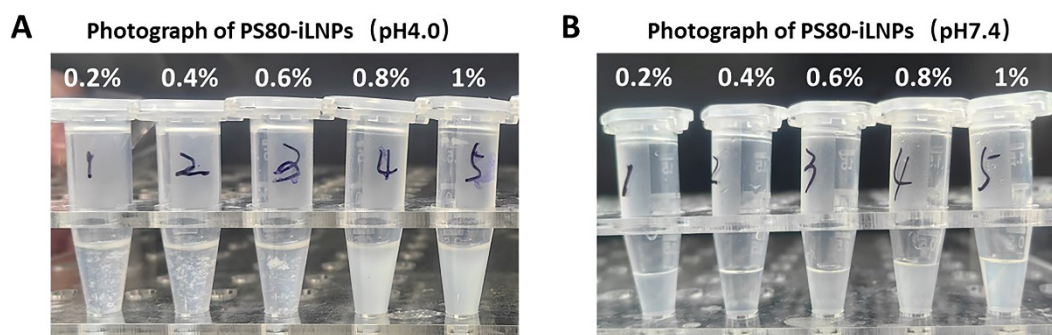


Figure S2† Photographs of iLNPs disperse state containing different molar ratio PS80 in pH 4 (A) and pH 7.4 (B).

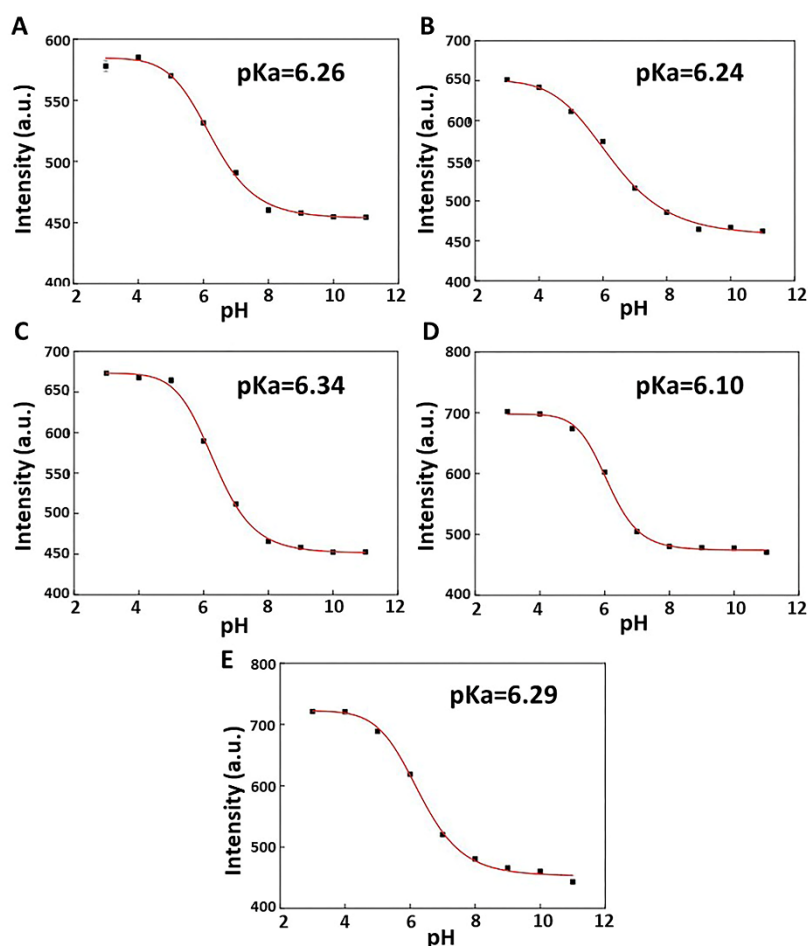


Figure S3† TNS assay. Fluorescence values of 0.2% (A), 0.4% (B), 0.6% (C), 0.8% (D), 1.0% (E) PS80-iLNPs (0.2 - 1.0%) at different pH values and S-type fitting curves.

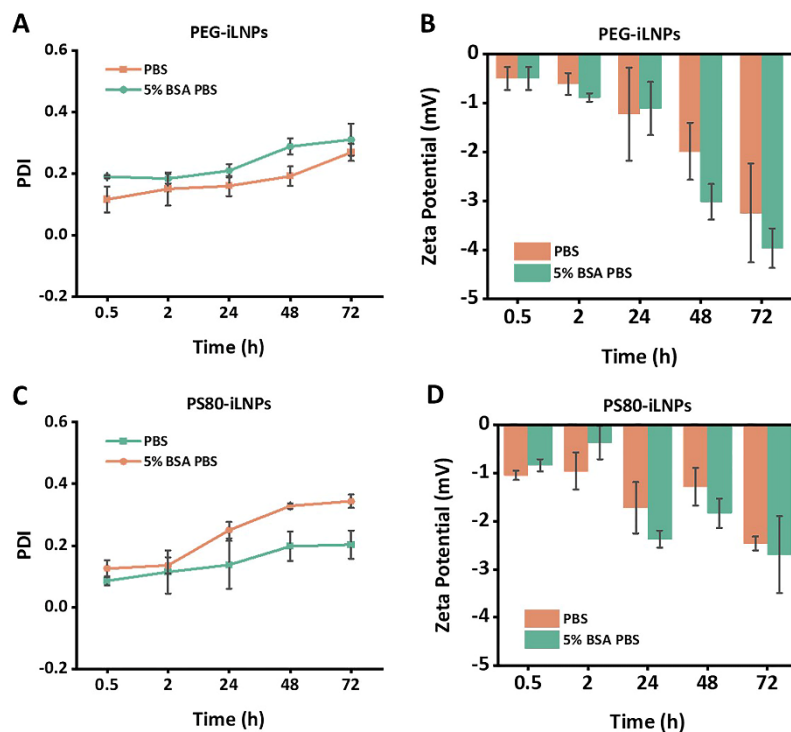


Figure S4† The PDI and  $\zeta$ -potential of PEG-iLNPs (A, B) and PS80-iLNPs (C, D) in different medium conditions with different incubation time periods characterized by DLS.

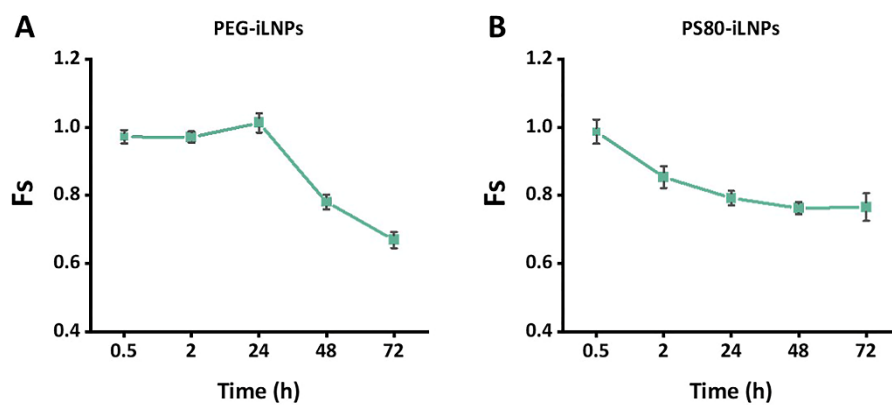


Figure S5† Fs value of PEG-iLNPs (A) and PS80-iLNPs (B) in different medium conditions with different incubation time periods.

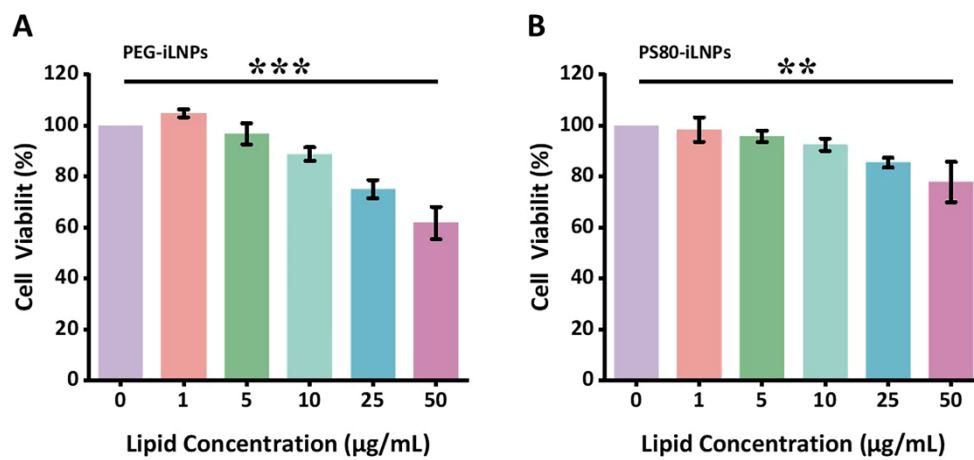


Figure S6† Cell viability of PEG-iLNPs (A) and PS80-iLNPs (B) after incubation in different lipid concentration for 24h.

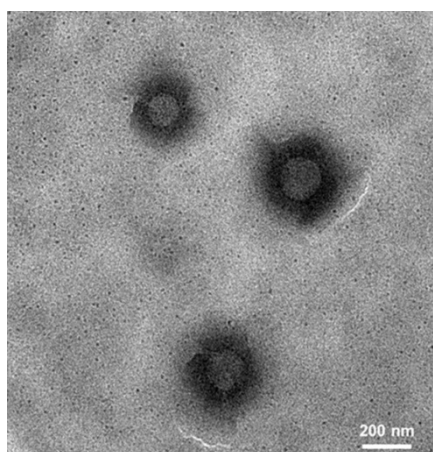


Figure S7† TEM image of PS80-iLNPs.

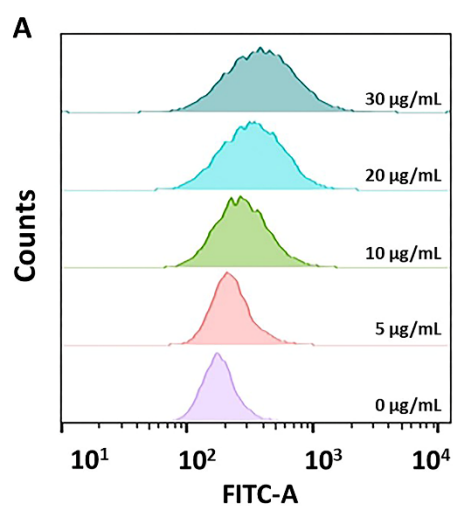


Figure S8† Flow cytometry of Hep2 cells incubated with different concentrations of PS80-iLNPs for 4 h.

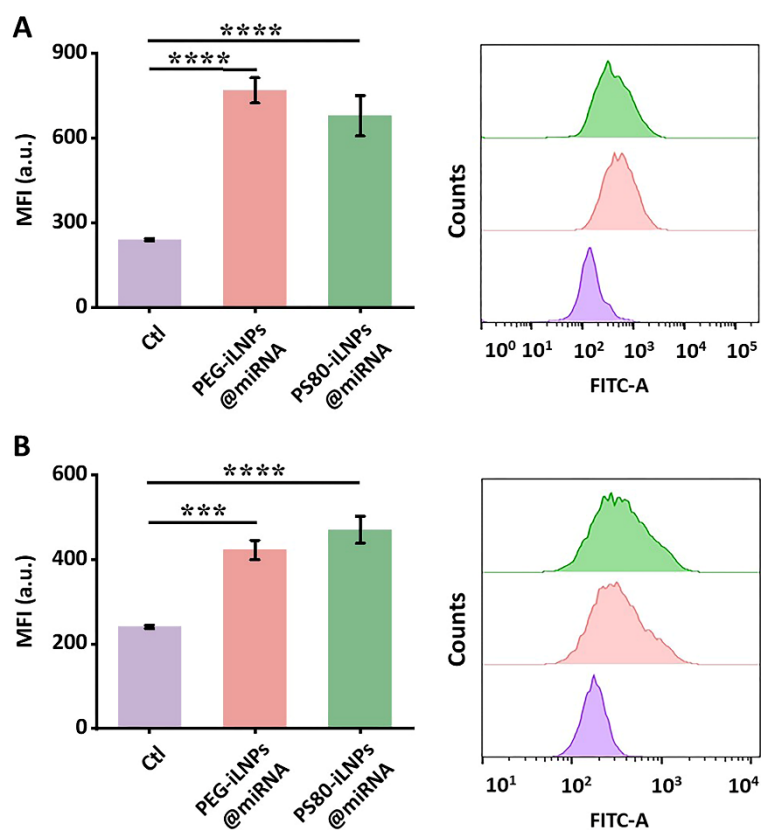


Figure S9† Cellular uptake of iLNPs in (A) serum-free DMEM and (B) 10% FBS DMEM.