

Supplementary information for

Fluorinated ionizable lipid improves mRNA delivery efficiency of lipid nanoparticle

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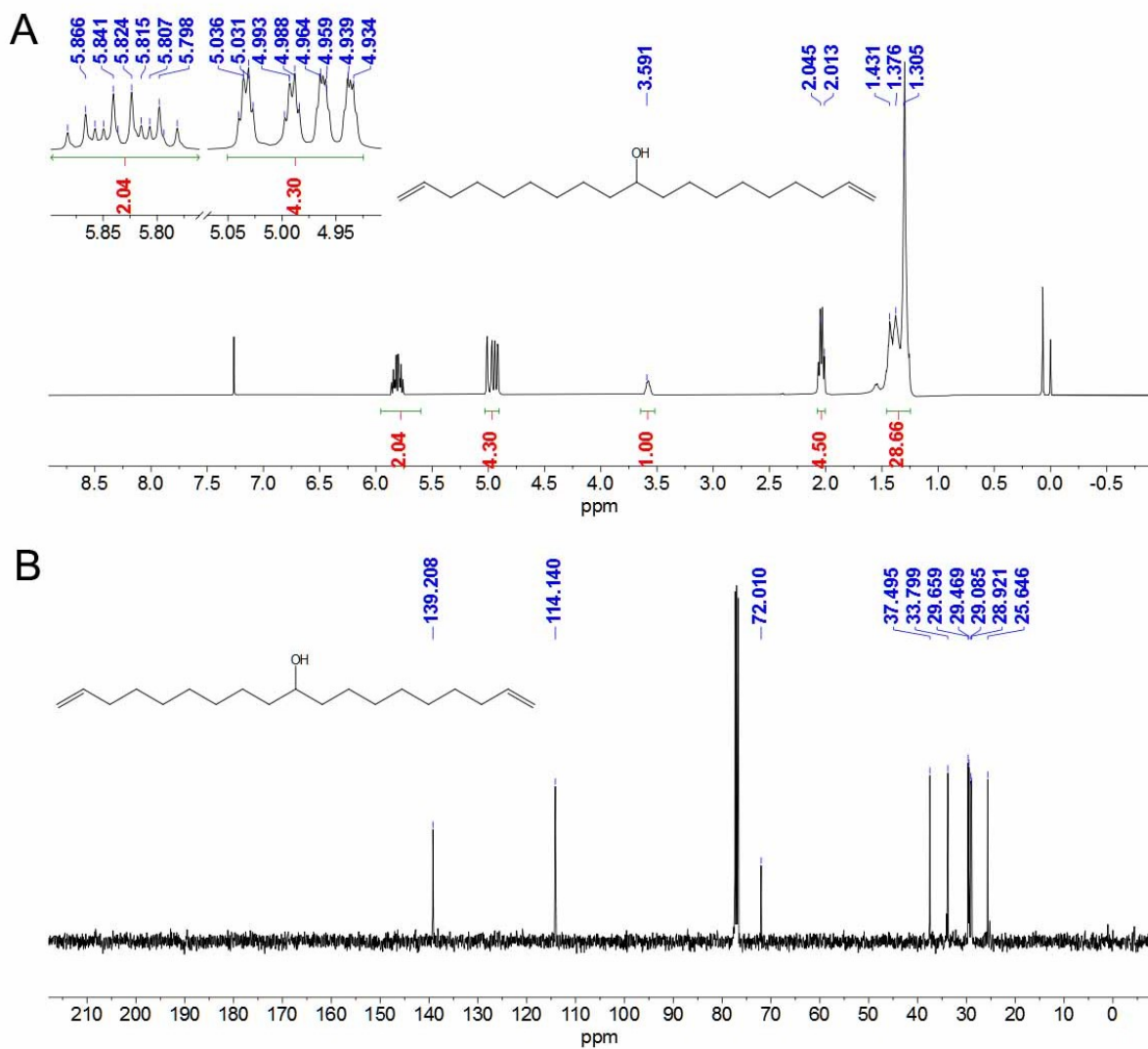


Figure S1. ¹H (A) and ¹³C NMR (B) spectra of nonadeca-1,18-dien-10-yl-8-bromooctanoate.

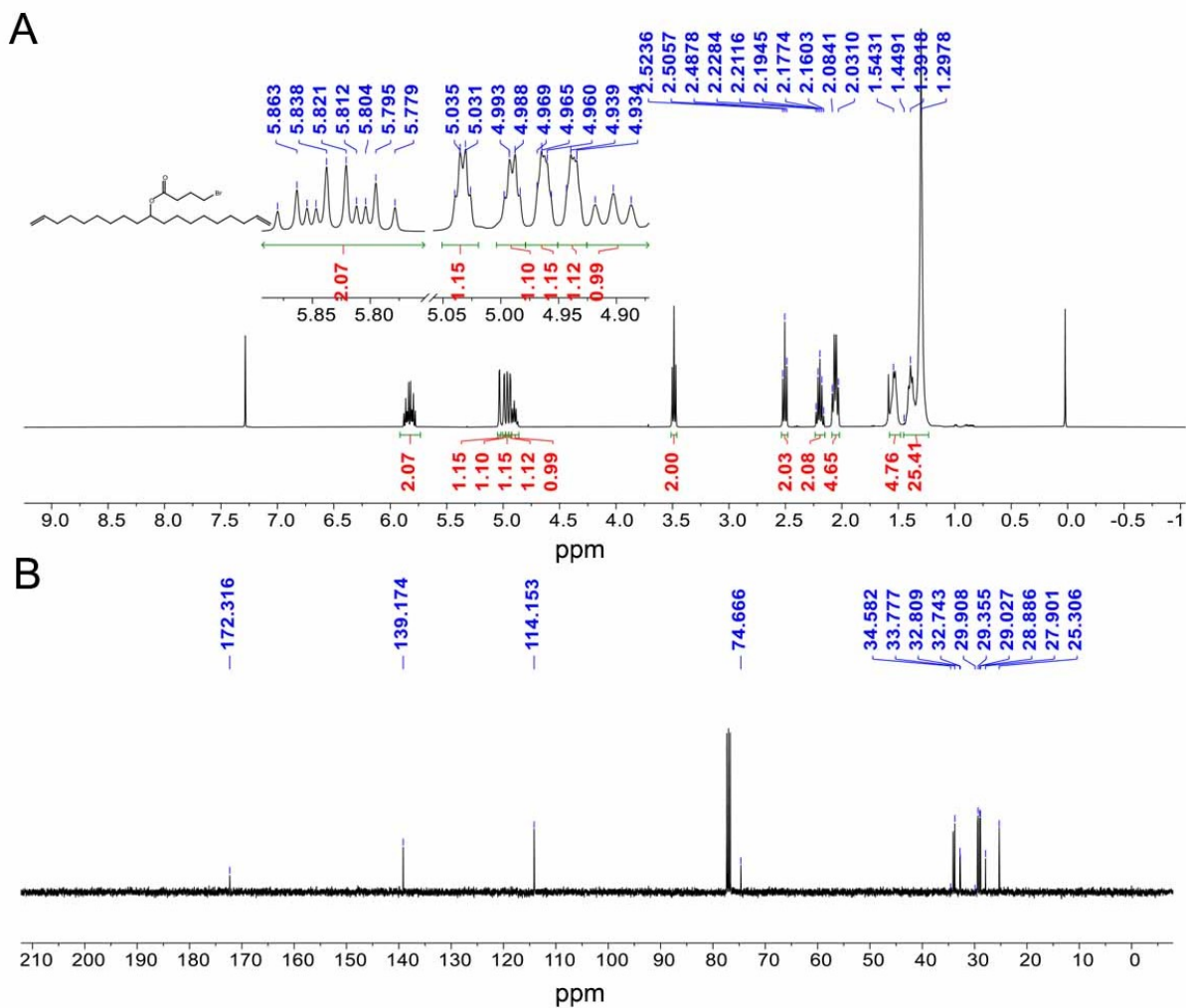
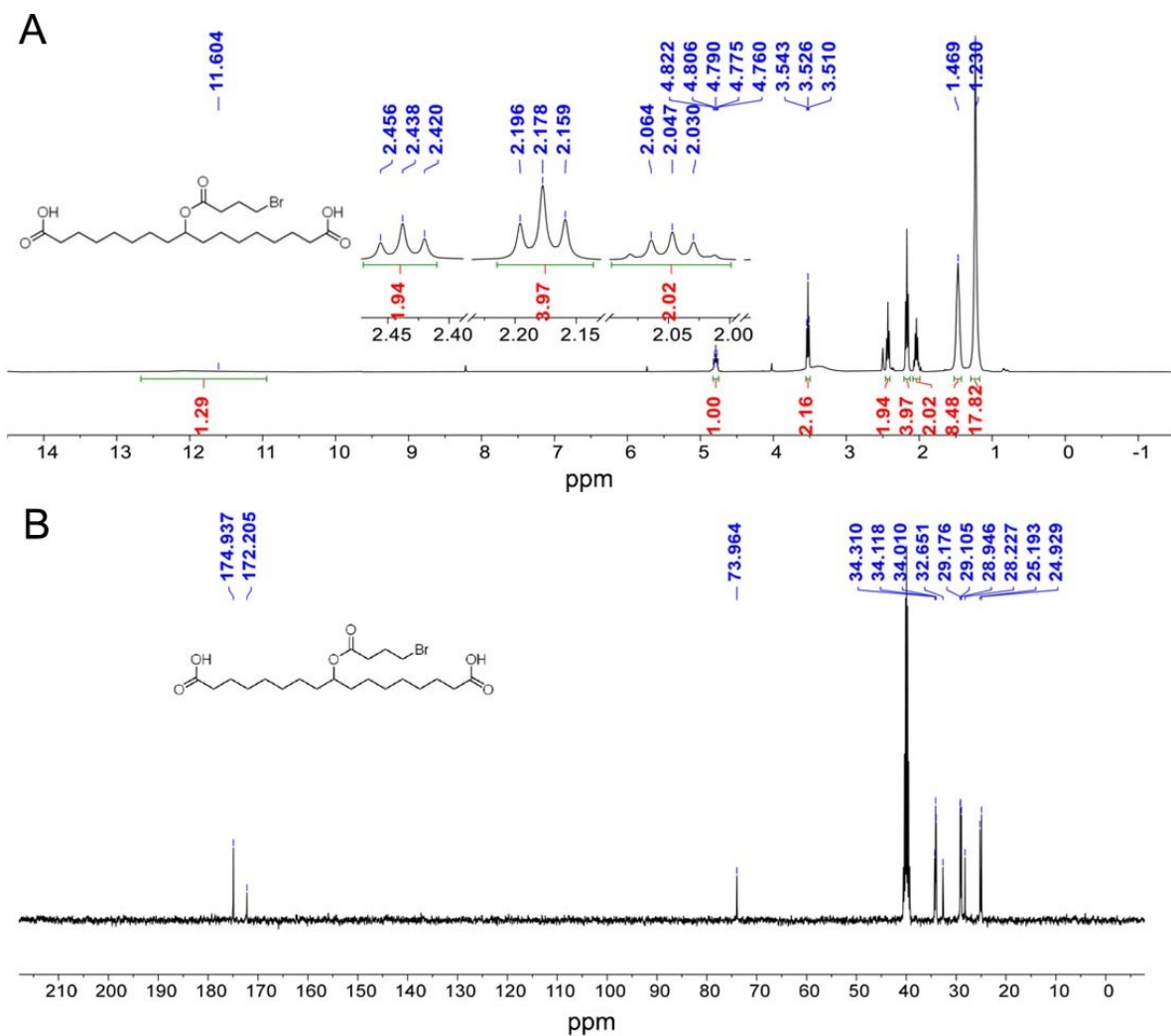


Figure S2 ¹H (A) and ¹³C NMR (B) spectra of nonadeca-1,18-dien-10-yl-8-bromooctanoate.



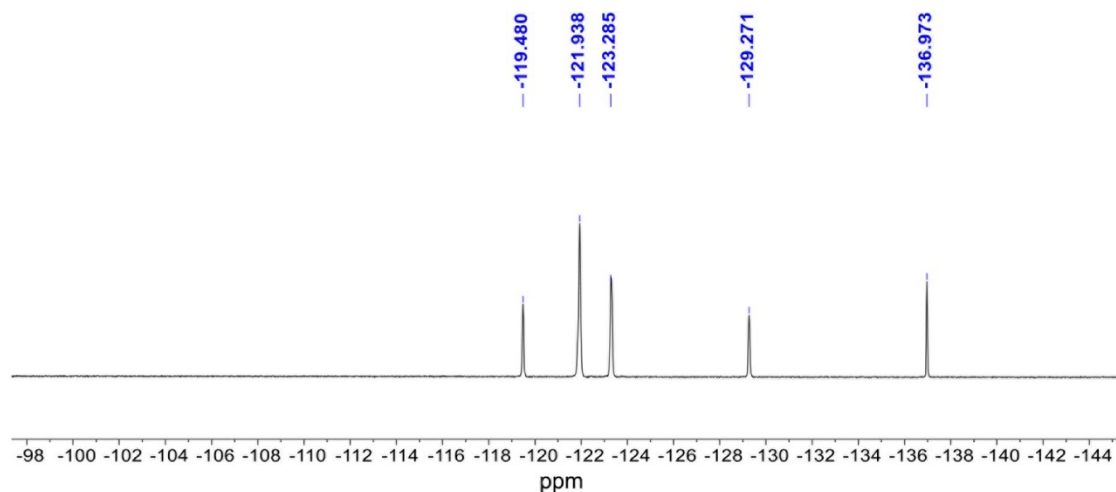


Figure S4. ^{19}F NMR spectrum of F-L319.

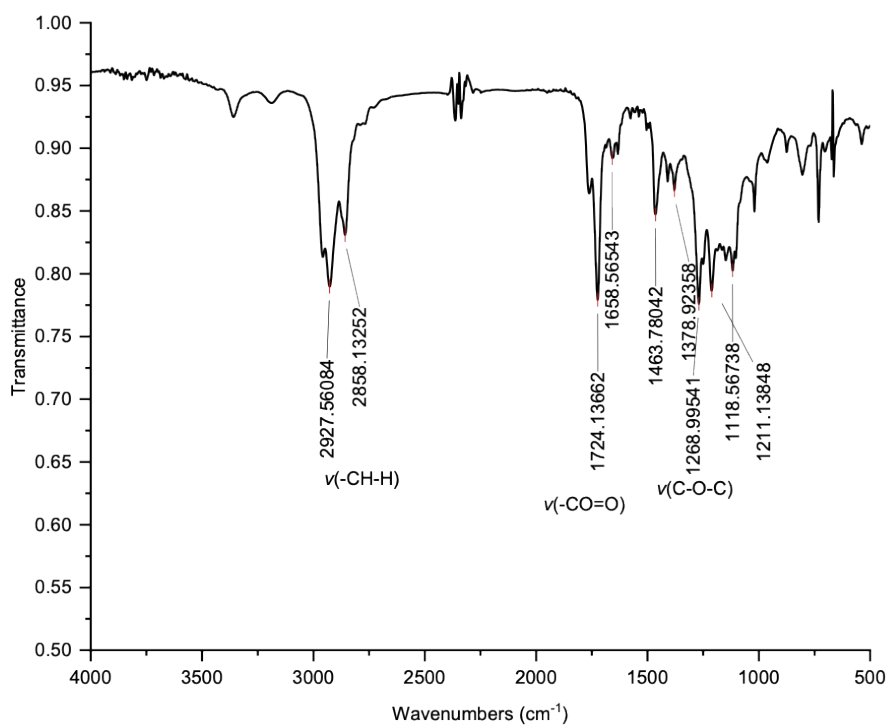


Figure S5. Fourier-transform infrared spectroscopy (FT-IR) spectrum of F-L319.

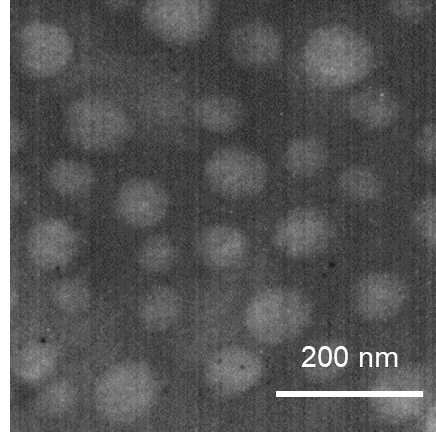


Figure S6. A representative TEM image of hybrid-LNP1.

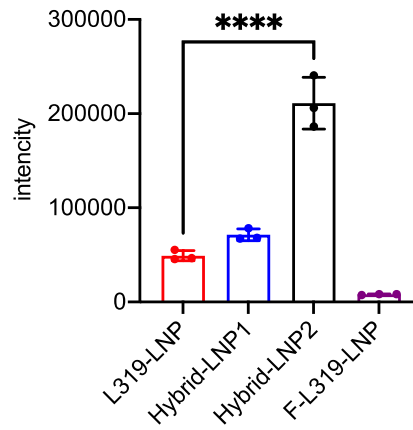


Figure S7. Transfection efficiency of the LNPs in DC2.4 cells after 24 h incubation (n = 3).

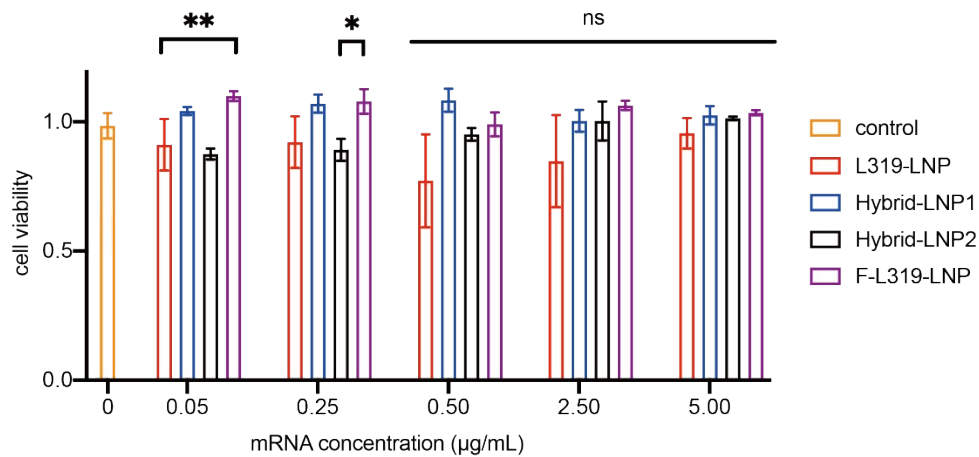


Figure S8. Cell viability after incubation with LNPs at different concentrations of mRNA. Data were normalized to untreated cells. Data are shown as mean \pm SD, n = 3 technical replicates.

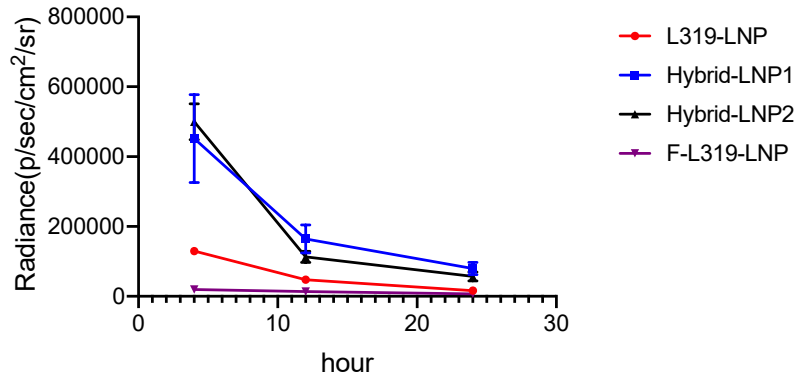


Figure S9. Luciferase expression of LNPs over time in mice (n = 5 biologically independent samples).

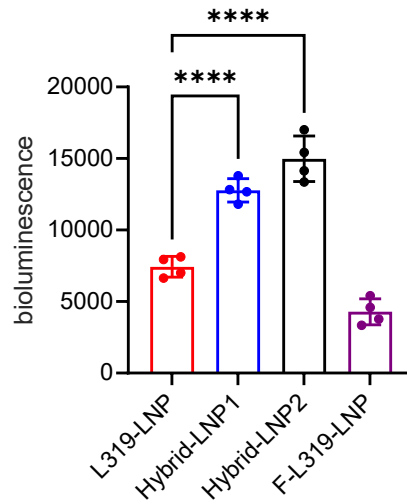


Figure S10. Transfection efficiency of LNPs in RAW264.7 cells after 12 h incubation (n = 4).

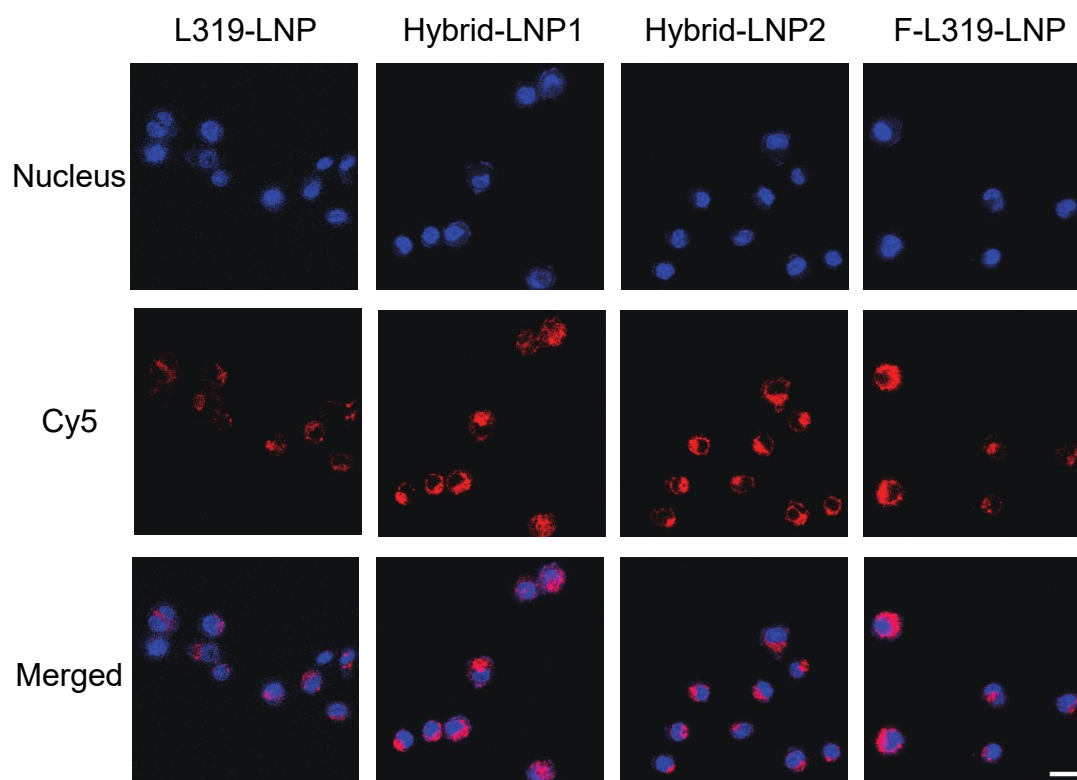


Figure S11. Confocal fluorescence microscopy images of DC2.4 cells treated with LNPs. The scale bar is 20 μm .