

DC65327 | 306-N16B

Instructions for Use

306-N16B is a lipid nanoparticle, and allows systemic codelivery of Cas9 mRNA and sgRNA. 306-N16B can transport mRNA to the pulmonary endothelial cell. 306-N16B can be used for research of genome editing-based therapies. Based on the same lipid libraries with 306-O12B, the researchers also found that N-series ionizable lipids were able to selectively deliver mRNA to the lungs of mice. Compared with the liver-targeted O-series ionizable lipids which contained ester bond in lipid tail found in previous work, such as 306-O12B, the N-series ionizable lipids with the lipid tail containing amide bond prefer to deliver mRNA to the lung. As a N-series ionizable lipid, the chemical structure of the 306-N16B is shown in Figure 4a,b. The difference of organ targeting may be due to their adsorption of different protein coronas during blood circulation caused by their different structures mentioned earlier. It has shown that the second major protein of the protein corona adsorbed by liver-targeting 306-O12B iLNPs was apolipoprotein E (ApoE), while the three dominant proteins in the protein corona adsorbed by lung-targeting 306-N16B iLNPs were serum albumin, fibrinogen beta chain, and fibrinogen gamma chain. However, the 306-N16B iLNPs showed less organ selectivity when systematically codelivered Cas9 mRNA and sgRNA in vivo, which could simultaneously activate tdTomato expression in the liver and lung of Ai14 mice, whereas single mRNA delivery could almost exclusively deliver mRNA to the lungs. This surprising phenomenon requires further investigation. Both the change of iLNPs charge and the change of lipids functional group can influence the distribution of iLNPs in vivo due to the altering of protein corona composition. Therefore, it is possible to control the organ targeting of iLNPs by controlling the composition of the outer protein corona of iLNPs.

Product information

CAS No.	Not available
Chemical Name	306-N16B
Formula	C75H151N7O4S8
M.Wt	1,471.57
Purity	>98%
Storage	Original product: up to 1 year under the storage conditions stated on the vial, kept tightly sealed. Stock solutions: aliquots at -20°C, generally up to one month.
Shipping condition	Ships from Shanghai. Pure lipid is stable during ice-pack transport.

Formulation & study context

Literature values apply to the cited study only. Administration routes describe research, not clinical instructions.

A complete product-specific formulation has not been verified. No standard ratio is substituted.

N/P ratio	Not reported in the verified record
Cargo	Not available in the verified record
Administration route	Not available in the verified record
Animal model	Not available in the verified record
Formulation process	Not available in the verified record

N/P is a nitrogen-to-phosphate molar ratio. Lipid:cargo mass ratio is a different quantity and must not be used as N/P.

Stock-solution preparation table

Calculated using product-page MW: 1471.57 g/mol. Volumes are final solution volumes.

Mass	1 mM	5 mM	10 mM
10 mg	6.795 mL	1.359 mL	0.680 mL
25 mg	16.989 mL	3.398 mL	1.699 mL
50 mg	33.977 mL	6.795 mL	3.398 mL
100 mg	67.955 mL	13.591 mL	6.795 mL
250 mg	169.887 mL	33.977 mL	16.989 mL

Volume (mL) = mass (mg) × 1000 / [MW (g/mol) × concentration (mM)]. Mathematical conversions only; not measured solubility. Confirm solvent compatibility and the exact material before preparation.

Handling & storage

Provided that storage conditions are as stated on the product vial and the vial is kept tightly sealed, the product can be stored for up to 1 year.

Wherever possible, prepare and use solutions on the same day. If stock solutions must be prepared in advance, store them as aliquots in tightly sealed vials at -20°C. Generally, these will be usable for up to one month.

Before use, and prior to opening the vial, allow the product to equilibrate to room temperature for at least 1 hour.

References

M. Qiu, Y. Tang, J. J. Chen, R. Muriph, Z. F. Ye, C. F. Huang, J. Evans, E. P. Henske, Q. B. Xu, Proc. Natl. Acad. Sci. U.S.A. 2022, 119, e2116271119.