

DC60510 | Iso-A11B5C1

Instructions for Use

Iso-A11B5C1 is an asymmetric Ugi-reaction-derived ionizable lipid selected for muscle-focused mRNA delivery. In the cited mouse study, its optimized LNP produced muscle expression comparable to an SM-102 benchmark after intramuscular administration while showing no measurable reporter expression in the examined off-target organs. The same formulation delivered Cre mRNA for localized muscle gene editing and was evaluated with model-antigen and cancer-vaccine mRNAs. All formulation and performance information shown below is literature-derived study evidence, not a product specification or a guarantee of reproducible LNP performance.

Product information

CAS No.	Not available
Chemical Name	Iso-A11B5C1
Formula	C41H79N3O3
M.Wt	662.10
Purity	ELSD-HPLC>95%
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.

Component	mol%	Role
Iso-A11B5C1	60	Ionizable lipid
DOPE	10	Helper phospholipid
Cholesterol	29	Sterol
C14-PEG2000 (14:0 PEG2000 PE)	1	PEG lipid
Reported total	100	Source values retained
N/P ratio	Not reported in the cited article	
Total lipid:cargo weight ratio	10:1 ionizable lipid:mRNA (w/w); this is not an N/P ratio	
Buffer & pH	Aqueous phase pH 4.5 in the optimized DOE formulation; buffer identity is not stated in the main article	
Cargo	Firefly luciferase mRNA (mLuc)	

Administration route	Intramuscular injection
Dose	0.3 mg mRNA/kg, single dose
Animal model	C57BL/6 mice
Formulation process	The optimized composition was selected by a six-factor DOE. In vivo formulations used 3:1 v/v aqueous:ethanol phases and T-junction mixing, followed by 12 h dialysis against 1× PBS at 4 degrees C with a 10 kDa membrane. Total flow and final mRNA concentration are not reported.

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: 662.1 g/mol. Volumes are final solution volumes.

Mass	1 mM	5 mM	10 mM
10 mg	15.103 mL	3.021 mL	1.510 mL
25 mg	37.759 mL	7.552 mL	3.776 mL
50 mg	75.517 mL	15.103 mL	7.552 mL
100 mg	151.035 mL	30.207 mL	15.103 mL
250 mg	377.586 mL	75.517 mL	37.759 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

Cited literature for this formulation and performance dataset Chen J, Xu Y, Zhou M, et al. Combinatorial design of ionizable lipid nanoparticles for muscle-selective mRNA delivery with minimized off-target effects. Proceedings of the National Academy of Sciences of the United States of America. 2023;120(50):e2309472120. DOI: 10.1073/pnas.2309472120 Structure and synthesis: main Figure 1F and Supporting Information pp. 19-20; DOE composition: main Figure 2 and text p. 4 plus Supplementary Table S2; pKa and muscle-selective delivery: main Figures 2-3; vaccine and melanoma studies: main Figures 4-5.