

DC60683 | Lipid-168

Instructions for Use

LIPID168(pKa ~6.5) is an optimized ionizable lipid engineered for in vivo mRNA delivery to hematopoietic stem cells (HSCs) in bone marrow. Developed by Yoltech Therapeutics through high-throughput screening of lipid libraries, it features a diethylamino head group and a tailored hydrophobic tail structure that enables antibody-free targeting. When Lipid 168 was formulated into lipid nanoparticles (LNPs), it achieved 48.5% base editing efficiency in bone marrow cells —surpassing benchmarks like LIPID-028 (19.7%)—and reduced off-target liver editing from 71% to 19% by incorporating miR-122 target sequences. In humanized β -thalassemia models, LNP 168 delivered ABE8e mRNA/sgRNA to patient-derived HSCs, yielding 42.6% editing at the HBG promoter, reactivating fetal hemoglobin (γ -globin) and rescuing erythroid defects. Its bone marrow specificity is driven by a unique protein corona enriched in albumin, fibronectin, and fibrinogen. Safety studies confirmed transient immune responses and no cumulative toxicity. LIPID-168 represents a promising non-viral platform for curative gene therapies in blood disorders.

Product information

CAS No.	Not available
Chemical Name	Lipid-168
Formula	C60H117O6N3
M.Wt	975.89
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.

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

Mass	1 mM	5 mM	10 mM
10 mg	10.247 mL	2.049 mL	1.025 mL
25 mg	25.618 mL	5.124 mL	2.562 mL
50 mg	51.235 mL	10.247 mL	5.124 mL
100 mg	102.471 mL	20.494 mL	10.247 mL
250 mg	256.176 mL	51.235 mL	25.618 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

In vivo genome editing of human haematopoietic stem cells for treatment of blood disorders using mRNA delivery-Saijuan Xu, Dan Liang etl. Nature Biomedical Engineering (2025)