# DC68211 | lipid a12Dab4

## Instructions for Use

a12Dab4 is a novel, high-performance peptide-based ionizable lipid designed specifically as the core functional building block for lipid nanoparticles (LNPs) targeting challenging or quiescent cell types, such as human hematopoietic stem and progenitor cells (HSPCs). Chemically engineered to possess a unique peptide-mimetic backbone, it provides superior membrane fusion and exceptional endosomal escape capabilities compared to older-generation, industry-standard lipids like Dlin-MC3-DMA and ALC-0315. Functionally, its primary role within the LNP formulation is to complex and efficiently encapsulate sensitive nucleic acid payloads, such as mRNA or CRISPR/Cas9 editing machinery, at an optimal nitrogen-to-phosphate (N/P) ratio. When formulated, a12Dab4 enables maximum cellular transfection and robust genome editing while exhibiting minimal cytotoxicity and preserving the long-term proliferative, self-renewing functionality of primitive stem cell compartments. Although it delivers commendable baseline transfection independently, it functions as an exceptional molecular chassis that synergies seamlessly with surface antibody conjugation (such as anti-CD34) to unlock precise, therapeutic-grade in vivo gene engineering.

## Product information

| | |
|---|---|
| CAS No. | Not available |
| Chemical Name | lipid a12Dab4 |
| Formula | Not available |
| M.Wt | Not available |
| 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: not available g/mol. Volumes are final solution volumes.

| Mass | 1 mM | 5 mM | 10 mM |
|---|---|---|---|
| 10 mg | MW unavailable | MW unavailable | MW unavailable |
| 25 mg | MW unavailable | MW unavailable | MW unavailable |
| 50 mg | MW unavailable | MW unavailable | MW unavailable |
| 100 mg | MW unavailable | MW unavailable | MW unavailable |
| 250 mg | MW unavailable | MW unavailable | MW unavailable |

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

Not available