# DC68141 | AMG514

## Instructions for Use

AMG514 is a spirocyclic diamine ionizable lipid developed for spleen-biased mRNA delivery. In the cited mouse experiments, AMG514 LNPs produced approximately four-fold higher splenic reporter expression than a cKK-E12 comparator, transfected splenic dendritic cells and macrophages, and were evaluated for co-delivery of antigen and immune-remodeling mRNAs. The authors associated its approximately 7.5 apparent LNP pKa and serum- or plasma-derived protein-corona profile with the observed biodistribution, but did not establish a single causal targeting mechanism. 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 | AMG514 |
| Formula | C56H108N2O6 |
| M.Wt | 905.49 |
| Purity | ELSD>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 |
|---|---|---|
| AMG514 | 35 | Ionizable lipid |
| DOPE | 16 | Helper phospholipid |
| Cholesterol | 46.5 | Sterol |
| DMG-PEG2k | 2.5 | 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:RNA (w/w); this is not an N/P ratio |
| Buffer & pH | 133 ng/microliter mRNA in 10 mM citrate, pH 3.0; final PBS after buffer exchange, pH 7-7.5 |

| | |
|---|---|
| Cargo | Firefly luciferase mRNA |
| Administration route | Intravenous injection |
| Dose | 1 microgram FLuc mRNA, single dose |
| Animal model | Mouse; strain not stated for the initial reporter-delivery screen |
| Formulation process | Staggered-herringbone microfluidic mixing at 3:1 aqueous:lipid-phase volume ratio and 1.2 mL/min total flow. LNPs were diluted at least four-fold with PBS and concentrated through 100 kDa filters for three exchange cycles. |

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

| Mass | 1 mM | 5 mM | 10 mM |
|---|---|---|---|
| 10 mg | 11.044 mL | 2.209 mL | 1.104 mL |
| 25 mg | 27.609 mL | 5.522 mL | 2.761 mL |
| 50 mg | 55.219 mL | 11.044 mL | 5.522 mL |
| 100 mg | 110.437 mL | 22.087 mL | 11.044 mL |
| 250 mg | 276.094 mL | 55.219 mL | 27.609 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 Gupta A, Das R, Reed K, et al. Immune-remodeling mRNAs expressing IRF8 or NIK generate durable antitumor immunity in multiple cancer models. Nature Biotechnology. Published online 13 May 2026. DOI: 10.1038/s41587-026-03115-2 Structure and analytical identity: Extended Data Figure 4a and Supplementary chemical-characterization section; formulation and preparation: Supplementary Table 1 and Methods; reporter delivery: Extended Data Figure 4; vaccination and tumor-challenge findings: Figure 6; protein corona and apparent pKa: main text and Supplementary Figure 21.