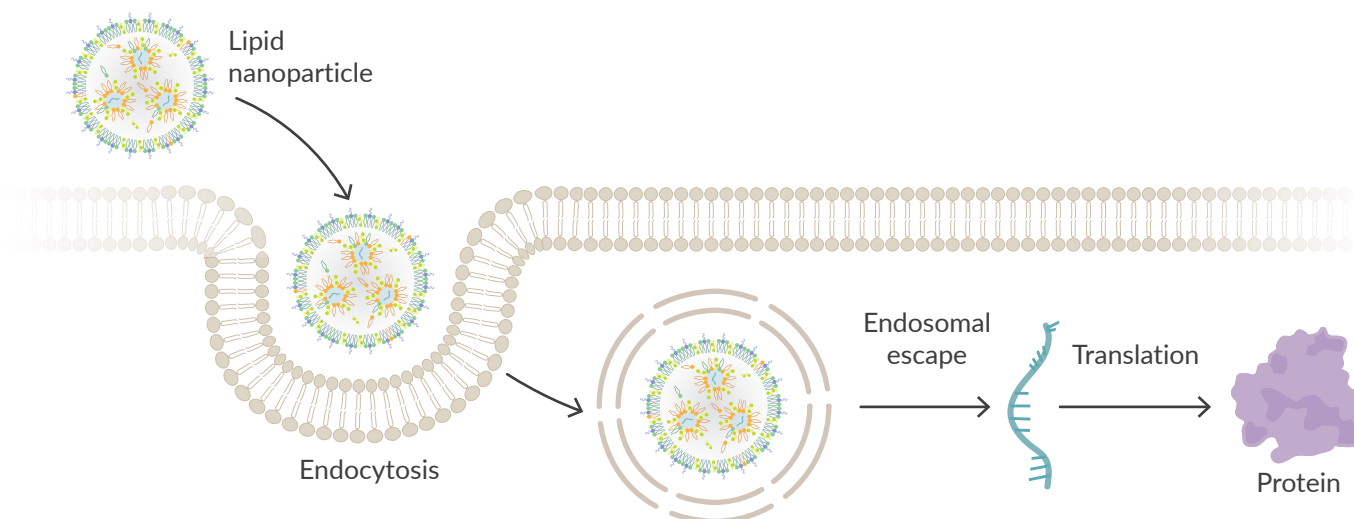


Lipid Nanoparticle Research Tools



Lipid nanoparticles (LNPs) are an ideal lipid-based drug delivery (LBDD) system for oligonucleotide therapeutics. Cayman supports the development of LNPs from formulation to validation. We offer an expansive collection of lipid components for LNP formulation, contract services for custom lipid synthesis, and tools for LNP target assessment, immunogenicity, and toxicity.



LNPs are internalized by target cells via endocytosis. During endosomal escape, cationic lipids become positively charged in the acidic environment of the endosome, disrupting the endosomal membrane and releasing the oligonucleotides into the cytosol, where translation occurs.

Discover Tools for LNPs

Accelerate your therapeutic discovery with Cayman's Lipid Nanoparticle Exploration Kits

LNP-102 Exploration Kit

Item No. 35425

LNP-0315 Exploration Kit

Item No. 35426

LNP-MC3 Exploration Kit

Item No. 36970

FEATURES:

- Prepare SM-102-, ALC-0315-, or DLin-MC3-DMA-containing LNPs
- Includes a complete set of conveniently packaged reagents
- Encapsulate mRNA or siRNA cargo
- Eliminate the need for specialized equipment



A Guide to Lipid Nanoparticle Formulation:
BASIC CONCEPTS & PREPARATION PROCEDURES

Includes simple protocols & tips to start exploring LNPs



DOWNLOAD THE GUIDE
www.caymanchem.com/LNP-Guide

High-Purity LNP Components

Cationic Lipids

Cationic lipids are used in LNPs to encapsulate oligonucleotides and promote endosomal escape. Cayman offers both ionizable and cationic lipids to suit your application.

FEATURED PRODUCTS

SM-102 - Item No. 33474

$pK_a = 6.68$

ALC-0315 - Item No. 34337

$pK_a = 6.09$

DLin-MC3-DMA - Item No. 34364

$pK_a = 6.44$

SM-102, ALC-0315, and DLin-MC3-DMA are ionizable cationic lipids that have been used in FDA-approved oligonucleotide-based therapeutics.

Item No.	Product Name
36698	306O ₁₀
34366	93-O17O
34367	93-O17S
36699	C12-200
36700	cKK-E12
36701	DLin-DMA
34363	DLin-KC2-DMA
25726	1,2-Dioleoyl-3-dimethylammonium-propane (DODAP)
15109	1,2-Dioleoyloxy-3-dimethylamino-propane (DODMA)
15110	1,2-Dioleoyl-3-trimethylammoniumpropane (DOTAP) (chloride)
35051	L-319
37122	Lipid C24
34372	Lipid 5
35337	Lipid 29
37095	NT1-O14B
37045	TCL053
35786	YSK05

See all cationic lipids for LBDD at www.caymanchem.com

Neutral Phospholipids

Neutral phospholipids have a role in membrane fusion and can be used to modify the net surface charge of the LNP.

Phosphocholines (PCs)

Item No.	Product Name
15097	1,2-Dimyristoyl- <i>sn</i> -glycero-3-PC (1,2-DMPC)
15098	1,2-Dioleoyl- <i>sn</i> -glycero-3-PC (1,2-DOPC)
10009473	1,2-Dipalmitoyl- <i>sn</i> -glycero-3-PC (1,2-DPPC)
34800	Phosphatidylcholines (soy)
15102	1-Palmitoyl-2-oleoyl- <i>sn</i> -glycero-3-PC (1,2-POPC)

Phosphoethanolamines (PEs)

Item No.	Product Name
15091	1,2-Dioleoyl- <i>sn</i> -glycero-3-PE (1,2-DOPE)
15092	1,2-Dipalmitoyl- <i>sn</i> -glycero-3-PE (1,2-DPPE)

See all neutral phospholipids for LBDD at www.caymanchem.com

Anionic Lipids

Anionic lipids prevent particle aggregation during storage.

Phosphoserines (PSs)

Item No.	Product Name
29983	1,2-Dioleoyl- <i>sn</i> -glycero-3-PS (1,2-DOPS) (sodium salt)
15088	1,2-Dipalmitoyl- <i>sn</i> -glycero-3-PS (1,2-DPPS) (sodium salt)
25847	Phosphatidylserines (soy) (sodium salt)

Phosphoglycerols (PGs)

Item No.	Product Name
15084	1,2-Dilauroyl- <i>sn</i> -glycero-3-PG (1,2-DLPG) (sodium salt)
15085	1,2-Dimyristoyl- <i>sn</i> -glycero-3-PG (1,2-DMPG) (sodium salt)
20957	1,2-Dioleoyl- <i>sn</i> -glycero-3-PG (1,2-DOPG) (sodium salt)
15086	1,2-Dipalmitoyl- <i>sn</i> -glycero-3-PG (1,2-DPPG) (sodium salt)
25846	Phosphatidylglycerols (egg) (sodium salt)
15105	1-Palmitoyl-2-oleoyl- <i>sn</i> -glycero-3-PG (1,2-POPG) (sodium salt)

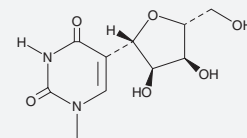
See all anionic lipids for LBDD at www.caymanchem.com

FEATURED PRODUCT

1- Methylpseudouridine

Item No. 35401

A nucleoside analog that increases the thermodynamic and biological stability of RNA. It has been incorporated into mRNA for COVID-19 vaccines.

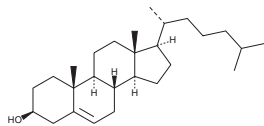


Sterol Lipids & Cholesterol Derivatives

Sterol lipids and cholesterol derivatives provide stability to LNPs and promote membrane fusion. Endosomal delivery of LNP cargo can also be improved by using modified sterol lipids and cholesterol derivatives.

FEATURED PRODUCT

Cholesterol - Item No. 9003100



A major sterol produced in mammalian cells. It is a major component of LNPs, where it has a role in membrane fusion and stability.

Item No.	Product Name
36187	2,3-Oxidosqualene
25944	2H-Cho-Arg (trifluoroacetate salt)
25943	Cho-Arg (trifluoroacetate salt)
25698	Cholesteryl Hemisuccinate
26439	Cholesteryl Myristate
26471	Cholesteryl Nervonate
26472	Cholesteryl Oleate
16943	DC-Chol (hydrochloride)
29176	Dehydrocholic Acid
18231	Deoxycholic Acid (sodium salt hydrate)
26582	DMHAPC-Chol
26583	DMPAC-Chol
26584	HAPC-Chol
20253	Lithocholic Acid
26585	MHAPC-Chol
26586	OH-Chol
26587	OH-C-Chol

See all sterol lipids for LBDD at www.caymanchem.com

Looking for ways to boost endosomal delivery? See how [our phytosterols](#) improved mRNA delivery in:

Deconvoluting Lipid Nanoparticle Structure for Messenger RNA Delivery

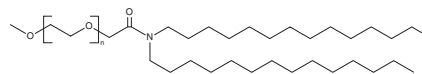
PUBLISHED IN NANO LETTERS

PEGylated Lipids

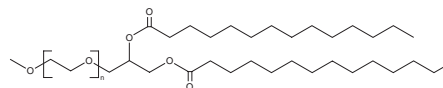
PEGylated lipids prevent opsonization, improving particle stability and increasing its bioavailability.

FEATURED PRODUCTS

ALC-0159 - Item No. 34336



DMG-PEG(2000) - Item No. 33945



ALC-0159 and DMG-PEG(2000) are PEGylated lipids that have been used in mRNA-based COVID-19 vaccines.

Item No.	Product Name
34647	CLS-MPEG(2000)
34649	DMPE-MPEG(2000)
34650	DPPE-MPEG(2000)
26000	DSPE-PEG(2000)-amine (sodium salt)
34272	DSPE-PEG(2000) Maleimide (ammonium salt)
28181	DSPE-MPEG(2000) (sodium salt)
33360	DSPE-MPEG(2000) (ammonium salt)
34652	DSPE-MPEG(5000)

CUSTOM LIPID SYNTHESIS & BULK QUANTITIES AVAILABLE

You work with lipid experts when you partner with Cayman to design and synthesize your custom LNP components. Bulk quantities of the lipid components in our catalog are also available for your R&D needs.

- Neutral Phospholipids
- Anionic Lipids
- Ionizable & Cationic Lipids
- Sterol Lipids & Cholesterol Derivatives
- Sphingolipids
- PEGylated Lipids
- Glycerolipids

Contact us to inquire about custom synthesis

