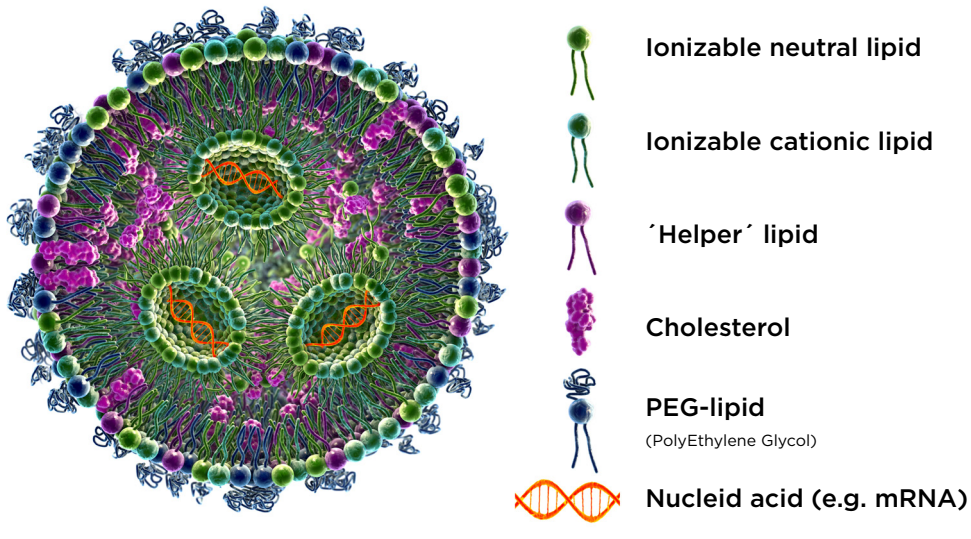
Lipid Nanoparticles (LNPs)

for drug delivery, gene therapy, and vaccine development

What are LNPs?

LNPs are small particles (usually 30 to 500 nm) used in the pharmaceutical and biotechnology industries to help improve drug delivery. They are composed of lipids which encapsulate the nucleic acid or other therapeutic agent, allowing for improved cell targeting and enhanced drug efficiency.

Lipids and cholesterol make up the structural form of the LNPs, while PEG-lipids (PolyEthylene Glycol) are usually added to improve stability in the bloodstream and reduce immune recognition. Ionizable cationic lipids also help with efficient encapsulation of the nucleic acids. In addition to RNA and DNA, they can also be used to deliver small molecule drugs, proteins and peptides, and imaging agents.

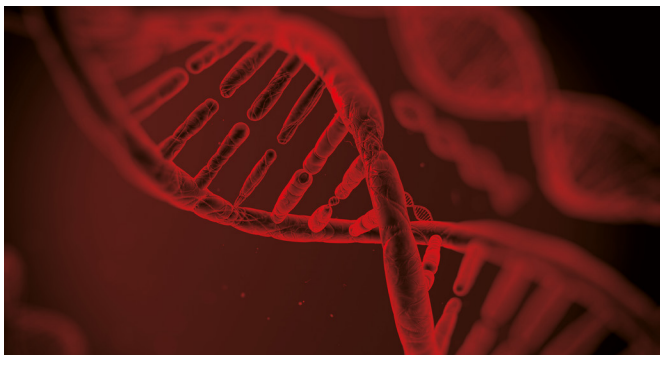


LNPs in Research

LNPs are versatile tools that can offer improved stability, targeted delivery, and enhanced therapeutic efficacy. Their versatility in cargo loading and potential for personalized medicine make them an important technology in the fields of drug delivery and gene therapy.

Drug Delivery and Vaccines

- LNPs package small molecule drugs, proteins, and nucleic acids, protecting them from degradation in the circulatory system
- They can also target specific cells or body tissues, improving targeted delivery and efficacy



Gene Therapy

- With the ability to deliver nucleic acids to specific cells and tissues in the body, LNPs can be used for gene therapy applications as well as personalized medicine applications

Research and Development

- LNPs are also used in laboratory settings to study cellular processes, drug screening, and new therapy development

Fast-tracking LNP research

The specific design and composition of LNPs can be tailored to optimize the encapsulation and delivery of different types of cargo. The choice of cargo depends on the specific therapeutic application and the desired outcome.

Beckman Coulter Life Sciences offers several solutions to produce and purify nucleic acids for LNP loading. These include: techniques for the quantification and characterization of empty and loaded LNPs using the CytoFLEX nano flow cytometer for empty:full ratios and functional assays, and the Optima AUC Ultracentrifuge for quantification of LNP loading states, hydrodynamic radius, and RNA copy number distribution.

Optima AUC Analytical Ultracentrifuge

Optima MAX Series Ultracentrifuge

CytoFLEX nano Flow Cytometer

Get in touch to find out how our products can help you standardize your LNP characterization.

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For Beckman Coulter's worldwide office locations and phone numbers, please visit Contact Us at **beckman.com**

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