

Lipid Nanoparticle Market Size, Share & Trends Analysis Report By LNP (Liposomes, Nanostructured Lipid Carriers), By Molecule (mRNA, siRNA), By Application, By Indication, By End Use, By Region, And Segment Forecasts, 2025 - 2030

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Abstracts

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Lipid Nanoparticle Market Growth & Trends

The global lipid nanoparticle market is anticipated to reach USD 1.54 billion by 2030 and is projected to grow at a CAGR of 13.64% during the forecast period, according to a new report by Grand View Research, Inc. The lipid market has experienced significant growth driven by increasing demand for advanced drug delivery systems, particularly in the fields of gene therapy, oncology, and vaccines. LNPs offer a highly efficient method for encapsulating and delivering a wide range of therapeutic molecules—including mRNA, siRNA, and small molecules—directly to target cells with improved stability and reduced degradation. The surge in R&D activities and growing investment in nanomedicine by both public institutions and private players have played a critical role in supporting the widespread adoption of LNP-based drug formulations across the pharmaceutical and biotechnology sectors.

The development of COVID-19 vaccines that utilized LNP-based delivery systems for mRNA vaccines garnered significant attention and resources during the pandemic. This increased focus on vaccine delivery technologies has indirectly benefited the market by driving innovation and investment in LNP formulation and manufacturing capabilities. Regulatory agencies expedited the review and approval processes for COVID-19 therapeutics and vaccines, including those utilizing LNP technology. While this

facilitated rapid market entry for COVID-19 treatments, it also underscored the need for streamlined regulatory pathways and standards for LNP-based products in other therapeutic areas, potentially shaping future regulatory frameworks and market dynamics.

Moreover, strategic collaborations, technological advancements in lipid formulation, and increased awareness of precision medicine continue to drive market growth. Companies are now investing in next-generation LNP platforms designed for targeted delivery, lower toxicity, and enhanced payload versatility. Innovations such as ionizable lipids, hybrid lipid-polymer systems, and surface modifications are expanding the scope of LNPs in treating complex diseases, including rare genetic disorders. These developments, coupled with a favorable regulatory landscape and rising demand for personalized treatments, are expected to sustain strong momentum in the market over the coming years.

Lipid Nanoparticle Market Report Highlights

Based on LNP, the liposomes segment dominated the overall market with the largest revenue share in 2024. Regulatory approvals of liposome-based drugs and their expanding use in cosmetic and nutraceutical applications continue to support market growth.

In terms of molecule, the mRNA segment dominated the overall market with the largest revenue share in 2024 and is expected to grow at the fastest CAGR during the forecast period. As pharmaceutical companies and biotech firms increasingly invest in mRNA therapeutics, the demand for optimized LNP delivery systems continues to rise, fueling market growth.

Therapeutics dominated the application segment in 2024 owing to the increasing collaborations between research institutions and industry players for drug development and growing government funding,

In 2024, cancer dominated the disease indication segment and is expected to witness a significant CAGR over the forecast period. The rising cancer burden and the potential of LNPs in cancer treatment are driving significant research and development efforts in this area.

Pharmaceutical & biotechnology companies dominated the end use

segment and the academic & research institute segment is expected to register the fastest CAGR during the forecast period.

North America dominated the market in 2024 owing to factors such as the significant burden of infectious diseases, high purchasing power parity, government support for quality healthcare, and availability of reimbursement.

Contents

CHAPTER 1. METHODOLOGY AND SCOPE

- 1.1. Market Segmentation and Scope
- 1.2. Market Definitions
 - 1.2.1. LNP
 - 1.2.2. Molecule
 - 1.2.3. Application
 - 1.2.4. Indication
 - 1.2.5. End Use
- 1.3. Information analysis
- 1.4. Market formulation & data visualization
- 1.5. Data validation & publishing
- 1.6. Information Procurement
 - 1.6.1. Primary Research
- 1.7. Information or Data Analysis
- 1.8. Market Formulation & Validation
- 1.9. Market Model
- 1.10. Objectives

CHAPTER 2. EXECUTIVE SUMMARY

- 2.1. Market Snapshot
- 2.2. Segment Snapshot
- 2.3. Competitive Landscape Snapshot

CHAPTER 3. MARKET VARIABLES, TRENDS, & SCOPE

- 3.1. Market Segmentation and Scope
- 3.2. Market Lineage Outlook
 - 3.2.1. Parent Market Outlook
 - 3.2.2. Related/Ancillary Market Outlook
- 3.3. Market Dynamics
 - 3.3.1. Market Driver Analysis
 - 3.3.1.1. Growing Demand for Drug Delivery Systems
 - 3.3.1.2. Rise in Pharmaceutical Research and Development
 - 3.3.1.3. Increasing Focus on Nanotechnology
 - 3.3.1.4. Government Support and Funding for RNA-based therapies

- 3.3.2. Market Restraint Analysis
 - 3.3.2.1. High Development Costs
 - 3.3.2.2. Stringent Regulations Related to Approval and Commercialization
- 3.4. Industry Analysis Tools
 - 3.4.1. SWOT Analysis; By Factor (Political & Legal, Economic and Technological)
 - 3.4.2. Porter's Five Forces Analysis
 - 3.4.3. COVID-19 Impact Analysis

CHAPTER 4. LIPID NANOPARTICLE MARKET: LNP BUSINESS ANALYSIS

- 4.1. Segment Dashboard
- 4.2. Global Lipid Nanoparticle Movement Analysis
- 4.3. Global Lipid Nanoparticle Market Size & Trend Analysis, by LNP, 2018 to 2030 (USD Million)
- 4.4. Liposomes
 - 4.4.1. Global Liposomes Market, 2018 - 2030 (USD Million)
- 4.5. Solid Lipid Nanoparticles
 - 4.5.1. Global Solid Lipid Nanoparticles Market, 2018 - 2030 (USD Million)
- 4.6. Nanostructured Lipid Carriers
 - 4.6.1. Global Nanostructured Lipid Carriers Market, 2018 - 2030 (USD Million)
- 4.7. Others
 - 4.7.1. Global Others Market, 2018 - 2030 (USD Million)

CHAPTER 5. LIPID NANOPARTICLE MARKET: MOLECULE BUSINESS ANALYSIS

- 5.1. Segment Dashboard
- 5.2. Global Lipid Nanoparticle Movement Analysis
- 5.3. Global Lipid Nanoparticle Market Size & Trend Analysis, by Molecule, 2018 to 2030 (USD Million)
- 5.4. siRNA
 - 5.4.1. Global siRNA Market, 2018 - 2030 (USD Million)
- 5.5. mRNA
 - 5.5.1. Global mRNA Market, 2018 - 2030 (USD Million)
- 5.6. Others
 - 5.6.1. Global Others Market, 2018 - 2030 (USD Million)

CHAPTER 6. LIPID NANOPARTICLE MARKET: APPLICATION BUSINESS ANALYSIS

- 6.1. Segment Dashboard
- 6.2. Global Lipid Nanoparticle Movement Analysis
- 6.3. Global Lipid Nanoparticle Market Size & Trend Analysis, by Application, 2018 to 2030 (USD Million)
- 6.4. Therapeutics
 - 6.4.1. Global Therapeutics Market, 2018 - 2030 (USD Million)
- 6.5. Research
 - 6.5.1. Global Research Market, 2018 - 2030 (USD Million)

CHAPTER 7. LIPID NANOPARTICLE MARKET: INDICATION BUSINESS ANALYSIS

- 7.1. Segment Dashboard
- 7.2. Global Lipid Nanoparticle Movement Analysis
- 7.3. Global Lipid Nanoparticle Market Size & Trend Analysis, by Indication, 2018 to 2030 (USD Million)
- 7.4. Cancer
 - 7.4.1. Global Cancer Market, 2018 - 2030 (USD Million)
- 7.5. Infectious Diseases
 - 7.5.1. Global Infectious Diseases Market, 2018 - 2030 (USD Million)
- 7.6. Blood Diseases
 - 7.6.1. Global Blood Diseases Market, 2018 - 2030 (USD Million)
- 7.7. Others
 - 7.7.1. Global Others Market, 2018 - 2030 (USD Million)

CHAPTER 8. LIPID NANOPARTICLE MARKET: END USE BUSINESS ANALYSIS

- 8.1. Segment Dashboard
- 8.2. Global Lipid Nanoparticle Movement Analysis
- 8.3. Global Lipid Nanoparticle Market Size & Trend Analysis, by End Use, 2018 to 2030 (USD Million)
- 8.4. Pharmaceutical & Biotechnology Companies
 - 8.4.1. Global Pharmaceutical & Biotechnology Companies Market, 2018 - 2030 (USD Million)
- 8.5. Academic & Research Institutes
 - 8.5.1. Global Academic & Research Institutes Market, 2018 - 2030 (USD Million)
- 8.6. Others
 - 8.6.1. Global Others Market, 2018 - 2030 (USD Million)

CHAPTER 9. LIPID NANOPARTICLE MARKET: REGIONAL ESTIMATES & TREND

ANALYSIS BY LNP, MOLECULE, APPLICATION, INDICATION, & END USE

9.1. Regional Dashboard

9.2. Market Size & Forecasts and Trend Analysis, 2018 to 2030

9.3. North America

9.3.1. North America Lipid nanoparticle market Estimates and Forecasts, 2018 - 2030 (USD Million)

9.3.2. U.S.

9.3.2.1. Key Country Dynamics

9.3.2.2. Competitive Scenario

9.3.2.3. Target Disease Prevalence

9.3.2.4. Regulatory Framework

9.3.2.5. U.S. Lipid nanoparticle market Estimates and Forecasts, 2018 - 2030 (USD Million)

9.3.3. Canada

9.3.3.1. Key Country Dynamics

9.3.3.2. Competitive Scenario

9.3.3.3. Target Disease Prevalence

9.3.3.4. Regulatory Framework

9.3.3.5. Canada Lipid nanoparticle market Estimates and Forecasts, 2018 - 2030 (USD Million)

9.3.4. Mexico

9.3.4.1. Key Country Dynamics

9.3.4.2. Competitive Scenario

9.3.4.3. Target Disease Prevalence

9.3.4.4. Regulatory Framework

9.3.4.5. Mexico Lipid nanoparticle market Estimates and Forecasts, 2018 - 2030 (USD Million)

9.4. Europe

9.4.1. Europe Lipid nanoparticle market Estimates and Forecasts, 2018 - 2030 (USD Million)

9.4.2. UK

9.4.2.1. Key Country Dynamics

9.4.2.2. Competitive Scenario

9.4.2.3. Target Disease Prevalence

9.4.2.4. Regulatory Framework

9.4.2.5. UK Lipid nanoparticle market Estimates and Forecasts, 2018 - 2030 (USD Million)

9.4.3. Germany

9.4.3.1. Key Country Dynamics

9.4.3.2. Competitive Scenario

9.4.3.3. Target Disease Prevalence

9.4.3.4. Regulatory Framework

9.4.3.5. Germany Lipid nanoparticle market Estimates and Forecasts, 2018 - 2030

(USD Million)

9.4.4. France

9.4.4.1. Key Country Dynamics

9.4.4.2. Competitive Scenario

9.4.4.3. Target Disease Prevalence

9.4.4.4. Regulatory Framework

9.4.4.5. France Lipid nanoparticle market Estimates and Forecasts, 2018 - 2030

(USD Million)

9.4.5. Italy

9.4.5.1. Key Country Dynamics

9.4.5.2. Competitive Scenario

9.4.5.3. Target Disease Prevalence

9.4.5.4. Regulatory Framework

9.4.5.5. Italy Lipid nanoparticle market Estimates and Forecasts, 2018 - 2030 (USD

Million)

9.4.6. Spain

9.4.6.1. Key Country Dynamics

9.4.6.2. Competitive Scenario

9.4.6.3. Target Disease Prevalence

9.4.6.4. Regulatory Framework

9.4.6.5. Spain Lipid nanoparticle market Estimates and Forecasts, 2018 - 2030 (USD

Million)

9.4.7. Denmark

9.4.7.1. Key Country Dynamics

9.4.7.2. Competitive Scenario

9.4.7.3. Target Disease Prevalence

9.4.7.4. Regulatory Framework

9.4.7.5. Denmark Lipid nanoparticle market Estimates and Forecasts, 2018 - 2030

(USD Million)

9.4.8. Sweden

9.4.8.1. Key Country Dynamics

9.4.8.2. Competitive Scenario

9.4.8.3. Target Disease Prevalence

9.4.8.4. Regulatory Framework

9.4.8.5. Sweden Lipid nanoparticle market Estimates and Forecasts, 2018 - 2030
(USD Million)

9.4.9. Norway

9.4.9.1. Key Country Dynamics

9.4.9.2. Competitive Scenario

9.4.9.3. Target Disease Prevalence

9.4.9.4. Regulatory Framework

9.4.9.5. Norway Lipid nanoparticle market Estimates and Forecasts, 2018 - 2030
(USD Million)

9.5. Asia Pacific

9.5.1. Asia Pacific Lipid nanoparticle market Estimates and Forecasts, 2018 - 2030
(USD Million)

9.5.2. Japan

9.5.2.1. Key Country Dynamics

9.5.2.2. Competitive Scenario

9.5.2.3. Target Disease Prevalence

9.5.2.4. Regulatory Framework

9.5.2.5. Japan Lipid nanoparticle market Estimates and Forecasts, 2018 - 2030 (USD
Million)

9.5.3. China

9.5.3.1. Key Country Dynamics

9.5.3.2. Competitive Scenario

9.5.3.3. Target Disease Prevalence

9.5.3.4. Regulatory Framework

9.5.3.5. China Lipid nanoparticle market Estimates and Forecasts, 2018 - 2030 (USD
Million)

9.5.4. India

9.5.4.1. Key Country Dynamics

9.5.4.2. Competitive Scenario

9.5.4.3. Target Disease Prevalence

9.5.4.4. Regulatory Framework

9.5.4.5. India Lipid nanoparticle market Estimates and Forecasts, 2018 - 2030 (USD
Million)

9.5.5. Australia

9.5.5.1. Key Country Dynamics

9.5.5.2. Competitive Scenario

9.5.5.3. Target Disease Prevalence

9.5.5.4. Regulatory Framework

9.5.5.5. Australia Lipid nanoparticle market Estimates and Forecasts, 2018 - 2030

(USD Million)

9.5.6. Thailand

9.5.6.1. Key Country Dynamics

9.5.6.2. Competitive Scenario

9.5.6.3. Target Disease Prevalence

9.5.6.4. Regulatory Framework

9.5.6.5. Thailand Lipid nanoparticle market Estimates and Forecasts, 2018 - 2030

(USD Million)

9.5.7. South Korea

9.5.7.1. Key Country Dynamics

9.5.7.2. Competitive Scenario

9.5.7.3. Target Disease Prevalence

9.5.7.4. Regulatory Framework

9.5.7.5. South Korea Lipid nanoparticle market Estimates and Forecasts, 2018 - 2030

(USD Million)

9.6. Latin America

9.6.1. Latin America Lipid nanoparticle market Estimates and Forecasts, 2018 - 2030

(USD Million)

9.6.2. Brazil

9.6.2.1. Key Country Dynamics

9.6.2.2. Competitive Scenario

9.6.2.3. Target Disease Prevalence

9.6.2.4. Regulatory Framework

9.6.2.5. Brazil Lipid nanoparticle market Estimates and Forecasts, 2018 - 2030 (USD

Million)

9.6.3. Argentina

9.6.3.1. Key Country Dynamics

9.6.3.2. Competitive Scenario

9.6.3.3. Target Disease Prevalence

9.6.3.4. Regulatory Framework

9.6.3.5. Argentina Lipid nanoparticle market Estimates and Forecasts, 2018 - 2030

(USD Million)

9.7. MEA

9.7.1. MEA Lipid nanoparticle market Estimates and Forecasts, 2018 - 2030 (USD

Million)

9.7.2. South Africa

9.7.2.1. Key Country Dynamics

9.7.2.2. Competitive Scenario

9.7.2.3. Target Disease Prevalence

9.7.2.4. Regulatory Framework

9.7.2.5. South Africa Lipid nanoparticle market Estimates and Forecasts, 2018 - 2030
(USD Million)

9.7.3. Saudi Arabia

9.7.3.1. Key Country Dynamics

9.7.3.2. Competitive Scenario

9.7.3.3. Target Disease Prevalence

9.7.3.4. Regulatory Framework

9.7.3.5. Saudi Arabia Lipid nanoparticle market Estimates and Forecasts, 2018 - 2030 (USD Million)

9.7.4. UAE

9.7.4.1. Key Country Dynamics

9.7.4.2. Competitive Scenario

9.7.4.3. Target Disease Prevalence

9.7.4.4. Regulatory Framework

9.7.4.5. UAE Lipid nanoparticle market Estimates and Forecasts, 2018 - 2030 (USD Million)

9.7.5. Kuwait

9.7.5.1. Key Country Dynamics

9.7.5.2. Competitive Scenario

9.7.5.3. Target Disease Prevalence

9.7.5.4. Regulatory Framework

9.7.5.5. Kuwait Lipid nanoparticle market Estimates and Forecasts, 2018 - 2030 (USD Million)

CHAPTER 10. COMPETITIVE LANDSCAPE

10.1. Company/Competition Categorization

10.2. Strategy Mapping

10.3. Company Position Analysis, 2024

10.4. Company Profiles/Listing

10.4.1. Merck KGaA

10.4.1.1. Overview

10.4.1.2. Financial Performance

10.4.1.3. Product Benchmarking

10.4.1.4. Strategic Initiatives

10.4.2. Evonik Industries AG

10.4.2.1. Overview

10.4.2.2. Financial Performance

- 10.4.2.3. Product Benchmarking
- 10.4.2.4. Strategic Initiatives
- 10.4.3. Gattefosse
 - 10.4.3.1. Overview
 - 10.4.3.2. Financial Performance
 - 10.4.3.3. Product Benchmarking
 - 10.4.3.4. Strategic Initiatives
- 10.4.4. FUJIFILM Pharmaceutical
 - 10.4.4.1. Overview
 - 10.4.4.2. Financial Performance
 - 10.4.4.3. Product Benchmarking
 - 10.4.4.4. Strategic Initiatives
- 10.4.5. Danaher (Precision NanoSystems)
 - 10.4.5.1. Overview
 - 10.4.5.2. Financial Performance
 - 10.4.5.3. Product Benchmarking
 - 10.4.5.4. Strategic Initiatives
- 10.4.6. Creative Biolabs
 - 10.4.6.1. Overview
 - 10.4.6.2. Financial Performance
 - 10.4.6.3. Product Benchmarking
 - 10.4.6.4. Strategic Initiatives
- 10.4.7. IOI Oleo GmbH
 - 10.4.7.1. Overview
 - 10.4.7.2. Financial Performance
 - 10.4.7.3. Product Benchmarking
 - 10.4.7.4. Strategic Initiatives
- 10.4.8. NOF Corporation
 - 10.4.8.1. Overview
 - 10.4.8.2. Financial Performance
 - 10.4.8.3. Product Benchmarking
 - 10.4.8.4. Strategic Initiatives
- 10.4.9. Lipoid GmbH
 - 10.4.9.1. Overview
 - 10.4.9.2. Financial Performance
 - 10.4.9.3. Product Benchmarking
 - 10.4.9.4. Strategic Initiatives
- 10.4.10. Cyman Chemical
 - 10.4.10.1. Overview

10.4.10.2. Financial Performance

10.4.10.3. Product Benchmarking

10.4.10.4. Strategic Initiatives

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