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mRNA Vaccines and Therapeutics Market Forecasts to 2032 – Global Analysis By Product (mRNA Vaccines, mRNA Therapeutics and mRNA-Based Diagnostics), Construct Type, Delivery System, Route of Administration, Application, End User and By Geography

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Abstracts

According to Stratistics MRC, the Global MRNA Vaccines and Therapeutics Market is accounted for $26.64 billion in 2025 and is expected to reach $78.08 billion by 2032 growing at a CAGR of 16.6% during the forecast period. mRNA vaccines and therapeutics are innovative biomedical interventions that use messenger RNA (mRNA) molecules to instruct cells to produce specific proteins, typically antigens, that trigger an immune response. Unlike traditional vaccines, which often rely on inactivated pathogens or protein subunits, mRNA-based approaches harness the body's own cellular machinery to generate the target protein, stimulating immunity safely and efficiently. These platforms offer rapid design, scalable manufacturing, and adaptability against emerging infectious diseases. Beyond vaccines, mRNA therapeutics hold potential for treating genetic disorders, cancers, and other conditions by enabling precise protein expression or gene modulation within the patient's cells.

Market Dynamics:

Driver:

Increasing prevalence of chronic diseases

mRNA platforms enable rapid development of targeted treatments that modulate

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immune response and protein expression. Rising incidence of cancer, diabetes, and respiratory conditions is driving investment in personalized and preventive therapies. Pharmaceutical firms and biotech startups are scaling mRNA pipelines to address unmet clinical needs and reduce treatment latency. Integration with genomic profiling and biomarker discovery enhances therapeutic precision and efficacy. These dynamics are propelling platform expansion across chronic disease management and immunotherapy.

Restraint:

Stability and storage issues

mRNA molecules are inherently unstable and require cold-chain logistics to maintain potency and safety. Ultra-low temperature storage and transport infrastructure increases cost and complexity across distribution networks. Rural and resource-constrained regions face challenges in deploying mRNA vaccines due to infrastructure gaps and temperature sensitivity. Formulation improvements and lyophilization techniques are under development but remain commercially limited. These constraints continue to hinder equitable access and operational efficiency across mRNA supply chains.

Opportunity:

Advancements in mRNA Technology

Self-amplifying mRNA, circular RNA, and thermostable formulations are improving efficacy, durability, and delivery across clinical applications. Platforms support rapid antigen design, scalable manufacturing, and modular customization for emerging pathogens and personalized medicine. Investment in lipid nanoparticle carriers and intramuscular delivery systems enhances bioavailability and immune activation. Regulatory bodies are streamlining approval pathways for mRNA-based candidates across pandemic preparedness and oncology. These trends are fostering growth across next-generation mRNA platforms and therapeutic pipelines.

Threat:

Public perception and vaccine hesitancy

Misinformation, safety concerns, and politicization of vaccine campaigns degrade public

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confidence and compliance. Lack of long-term data and post-market surveillance transparency complicates risk communication and stakeholder engagement. Cultural and regional differences in healthcare literacy and trust further constrain adoption across global markets. Pharmaceutical firms and public health agencies must invest in education, transparency, and community outreach to mitigate resistance. These challenges continue to limit market penetration and public health impact across mRNA programs.

Covid-19 Impact:

The pandemic accelerated mRNA platform validation and commercialization as Pfizer-BioNTech and Moderna vaccines demonstrated high efficacy and rapid scalability. Emergency use authorizations and global deployment showcased the speed and adaptability of mRNA technologies in crisis response. Investment surged across R&D, manufacturing, and cold-chain infrastructure to support mass immunization and variant targeting. Public awareness of mRNA science and its potential applications increased across consumer and clinical segments. Post-pandemic strategies now include mRNA as a core pillar of vaccine innovation, pandemic preparedness, and therapeutic development.

The lipid nanoparticle (LNP) delivery systems segment is expected to be the largest during the forecast period

The lipid nanoparticle (LNP) delivery systems segment is expected to account for the largest market share during the forecast period due to their critical role in stabilizing and transporting mRNA payloads across cellular membranes. LNPs protect mRNA from degradation and facilitate intracellular delivery for antigen expression and immune activation. Platforms use ionizable lipids, PEGylated lipids, and cholesterol-based carriers to optimize pharmacokinetics and tissue targeting. Demand for scalable, biocompatible, and clinically validated delivery systems is rising across vaccine and therapeutic pipelines.

The self-amplifying mRNA segment is expected to have the highest CAGR during the forecast period

Over the forecast period, the self-amplifying mRNA segment is predicted to witness the highest growth rate due to its ability to replicate intracellularly and produce higher protein yields with lower doses. saRNA platforms reduce manufacturing cost and improve immunogenicity across prophylactic and therapeutic applications. Integration

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with thermostable formulations and needle-free delivery systems expands use cases across pandemic response and global immunization. Investment in oncology, respiratory, and tropical disease programs is rising across academic and commercial R&D. These dynamics are accelerating growth across self-amplifying mRNA innovation and clinical translation.

Region with largest share:

During the forecast period, the North America region is expected to hold the largest market share due to its advanced biotech ecosystem, regulatory engagement, and commercial infrastructure. U.S. and Canadian firms dominate mRNA R&D, manufacturing, and clinical trials across vaccines and therapeutics. Investment in cold-chain logistics, genomic medicine, and public-private partnerships supports platform scalability and deployment. Presence of leading pharmaceutical companies, academic institutions, and regulatory bodies drives innovation and standardization.

Region with highest CAGR:

Over the forecast period, the Asia Pacific region is anticipated to exhibit the highest CAGR as healthcare modernization, infectious disease burden, and biotech investment converge across regional economies. Countries like China, India, South Korea, and Singapore scale mRNA platforms across public health programs, oncology trials, and export-oriented manufacturing. Government-backed initiatives support infrastructure development, regulatory reform, and startup incubation across vaccine and therapeutic pipelines. Local firms launch regionally adapted formulations and delivery systems tailored to climate and population needs. These trends are accelerating regional growth across mRNA innovation and clinical deployment.

Key players in the market

Some of the key players in MRNA Vaccines and Therapeutics Market include Moderna, Inc., BioNTech SE, CureVac N.V., Arcturus Therapeutics, Pfizer Inc., Sanofi S.A., GlaxoSmithKline plc (GSK), AstraZeneca plc, Daiichi Sankyo Company, Limited, Gennova Biopharmaceuticals Ltd., Translate Bio, eTheRNA Immunotherapies, Strand Therapeutics, Omega Therapeutics and Chimeron Bio.

Key Developments:

In March 2025, Moderna expanded its partnership with CARsgen Therapeutics to co-

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develop mRNA-based CAR-T therapies targeting solid tumors. The collaboration integrates Moderna's mRNA delivery expertise with CARsgen's tumor-specific antigen platforms, aiming to overcome immunosuppressive microenvironments in cancers like glioblastoma and pancreatic adenocarcinoma.

In January 2025, BioNTech announced the advancement of BNT327/PM8002, a next-generation mRNA-based immuno-oncology backbone. The candidate supports pan-tumor treatment approaches and is being positioned for combination with antibody-drug conjugates (ADCs). The launch includes global clinical trials targeting small cell and non-small cell lung cancer, with registrational potential.

Products Covered:

- mRNA Vaccines
- mRNA Therapeutics
- mRNA-Based Diagnostics

Construct Types Covered:

- Conventional Non-Replicating mRNA
- Self-Amplifying mRNA
- Circular mRNA
- Modified mRNA

Delivery Systems Covered:

- Lipid Nanoparticles (LNPs)
- Polymer-Based Nanocarriers
- Cationic Nano-Emulsions

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- Peptide-Based Carriers
- Viral Vectors

Route of Administrations Covered:

- Intramuscular
- Intravenous
- Subcutaneous
- Intradermal

Applications Covered:

- Infectious Diseases
- Oncology
- Autoimmune Disorders
- Genetic Disorders
- Protein Replacement Therapy
- Other Applications

End Users Covered:

- Hospitals & Clinics
- Research Institutions
- Biopharma Companies

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- CROs & CDMOs
- Government & Public Health Agencies
- Other End Users

Regions Covered:

- North America
  - US
  - Canada
  - Mexico
- Europe
  - Germany
  - UK
  - Italy
  - France
  - Spain
  - Rest of Europe
- Asia Pacific
  - Japan
  - China
  - India

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Australia

New Zealand

South Korea

Rest of Asia Pacific

South America

Argentina

Brazil

Chile

Rest of South America

Middle East & Africa

Saudi Arabia

UAE

Qatar

South Africa

Rest of Middle East & Africa

What our report offers:

- Market share assessments for the regional and country-level segments
- Strategic recommendations for the new entrants
- Covers Market data for the years 2024, 2025, 2026, 2028, and 2032
- Market Trends (Drivers, Constraints, Opportunities, Threats, Challenges, Investment Opportunities, and recommendations)
- Strategic recommendations in key business segments based on the market estimations

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- Competitive landscaping mapping the key common trends
- Company profiling with detailed strategies, financials, and recent developments
- Supply chain trends mapping the latest technological advancements

Free Customization Offerings:

All the customers of this report will be entitled to receive one of the following free customization options:

Company Profiling

Comprehensive profiling of additional market players (up to 3)

SWOT Analysis of key players (up to 3)

Regional Segmentation

Market estimations, Forecasts and CAGR of any prominent country as per the client's interest (Note: Depends on feasibility check)

Competitive Benchmarking

Benchmarking of key players based on product portfolio, geographical presence, and strategic alliances

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Note: Tables for North America, Europe, APAC, South America, and Middle East & Africa Regions are also represented in the same manner as above.

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