

Non-viral Gene Delivery Technologies Market Size, Share & Trends Analysis Report By Mode (Chemical, Physical), By Application (Research, Therapeutics), By End-use, By Region, And Segment Forecasts, 2025 - 2030

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Abstracts

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Non-viral Gene Delivery Technologies Market Growth & Trends

The global non-viral gene delivery technologies market size is anticipated to reach USD 7.11 billion by 2030 and grow at a CAGR of 12.29% from 2025 to 2030 during the forecast period, according to a new report by Grand View Research, Inc. The market's growth is driven by the growing demand for safe, scalable, and cost-effective alternatives to viral vectors in gene therapy and research. Unlike viral methods, non-viral technologies such as lipid nanoparticles (LNPs), polymers, and electroporation offer lower immunogenicity and reduced manufacturing complexities. These attributes make them highly suitable for large-scale applications, including mRNA-based vaccines and CRISPR/Cas9-based gene editing therapies. The success of mRNA COVID-19 vaccines by Moderna and Pfizer-BioNTech further validated the potential of non-viral delivery systems, spurring global investment in this sector.

Advancements in nanotechnology and biomaterials are further accelerating innovation in the field. Nanoparticles, lipoplexes, and hybrid carriers are being optimized for enhanced transfection efficiency and targeted delivery. With the rising prevalence of chronic diseases, including cancer, rare genetic disorders, and cardiovascular conditions, the need for effective and precise therapeutic solutions has surged. Non-viral technologies, with their ability to deliver large genetic payloads and support

repeat administrations, are pivotal in addressing these unmet medical needs. In addition, their versatility in both in vitro research applications and in vivo therapeutic use cases expands their adoption across biotechnology, pharmaceutical companies, and academic institutes.

The rising government funding and private investments in gene therapy research are also key drivers of market growth. Regions like North America and Europe lead in terms of R&D, but emerging economies in Asia-Pacific, such as China and India, are rapidly advancing due to increasing biotech infrastructure and supportive regulatory frameworks. Furthermore, partnerships between biotech companies and academic institutions are fostering innovation and expanding the accessibility of non-viral delivery solutions, ensuring their relevance in the rapidly evolving field of gene therapy.

Non-viral Gene Delivery Technologies Market Report Highlights

The chemical segment accounted for the largest revenue share in 2024 and is projected to witness the fastest growth rate over the forecast period. The chemical mode of non-viral gene delivery technologies is driven by the increasing demand for efficient, safe, and scalable gene delivery systems.

In 2024, research dominated the market with the largest revenue share, driven by the increasing demand for versatile, efficient, and cost-effective tools to investigate gene function, expression, and regulation.

By end use, the research and academic institutes segment captured the largest revenue share of 48.11% in 2024 and is expected to experience the fastest CAGR during the forecast period. This growth is fueled by the rising demand for reliable, efficient, and cost-effective approaches to study gene function, expression, and modification.

The North American region dominated globally with a market share of 41.25% in 2024. The region benefits from advanced healthcare infrastructure, enabling the rapid adoption of innovative gene delivery techniques. Growing interest in precision medicine and increasing clinical trials focused on genetic disorders further boost market growth. In addition, government initiatives and funding for genomic research contribute to the expanding use of non-viral delivery technologies.

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