

Nucleic Acid Based Therapeutics - Market Share Analysis, Industry Trends & Statistics, Growth Forecasts (2025 - 2030)

Market Report | 2025-04-28 | 166 pages | Mordor Intelligence

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Report description:

The Nucleic Acid Based Therapeutics Market size is estimated at USD 6.39 billion in 2025, and is expected to reach USD 12.46 billion by 2030, at a CAGR of 14.29% during the forecast period (2025-2030).

The demand for nucleic acid-based therapeutics increased over the past two years as they were effectively used to develop COVID-19 disease therapeutics. As per the article published by MDPI in February 2022, nucleic acid-based technologies, including small interfering RNAs (siRNAs), antisense oligonucleotides (ASOs), and micro RNAs (miRNAs), were the most promising ones to combat the COVID-19 virus. These therapeutics can suppress viral gene expression during and after transcription, presenting significant growth opportunities. As per an article published in MDPI, in August 2022, over 400 RNA-targeting drug development projects were conducted globally, two-thirds of which are in the pre-investigational new drug (pre-IND) stage, one-third in early clinical trials (Phase I or II), about 3% in Phase III, and some awaiting regulatory approval for COVID-19 treatment. Thus, with the increasing development of RNA therapeutics, the studied market is expected to grow over the forecast period.

Factors such as the surging prevalence of genetic disease, growing investments in the healthcare sector and rapid shift of the pharmaceutical industry toward innovative biologics are expected to boost the market's growth over the forecast period.

The increasing prevalence of genetic diseases such as cancer, cystic fibrosis, sickle cell anemia, Duchenne muscular dystrophy, thalassemia, and others is the key factor driving the demand for nucleic acid-based therapeutics to treat diseases by correcting the abnormal expression of specific genes. For instance, according to the Cystic Fibrosis Foundation data published in July 2022, in the United States, 40,000 children and adults have cystic fibrosis (CF). As per the same source, an estimated 105,000 people were diagnosed with the disease in 94 countries in 2022. Thus, the high burden of cystic fibrosis among the population is expected to positively impact the market.

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The rising number of investments in nucleic acid therapeutics owing to the high prevalence of chronic, genetic, and other diseases is anticipated to augment the market's growth. For instance, in March 2023, Switch Therapeutics raised USD 52 million in a Series A financing round co-led by Insight Partners and UCB Ventures. The company used these funds to select and advance the development of siRNA therapeutic candidates for the treatment of a central nervous system disease, as well as to advance its RNAi technology. Market players are investing in nucleic acid-based therapy R&D to expand the product portfolio in nucleic acid-based therapy. For instance, in January 2023, Agilent Technologies Inc. invested USD 725 million in nucleic acid-based therapeutics. The investment will double the manufacturing capacity to produce active pharmaceutical ingredients (APIs).

Companies' growing focus on collaborations, partnerships, new product launches, and other initiatives increases the availability of novel therapeutic drugs in the market, which may propel the market's growth. For instance, in February 2023, the CMT Research Foundation partnered with Nanite Inc. to enhance the therapeutic efficacy of antisense oligonucleotides in Charcot-Marie-Tooth disease. In October 2022, Neuway Pharma GmbH and Wacker launched a research project to identify and manufacture RNA-based therapeutics for the treatment of central nervous system disorders with the use of EnPC (Engineered Protein Capsules) protein-based drug delivery technology.

Therefore, owing to the high burden of genetic diseases, increasing investments, and new product launches, the market studied is anticipated to grow over the forecast period. However, the high cost of nucleic acid-based therapeutics research is likely to impede the market's growth.

Nucleic Acid-Based Therapeutics Market Trends

Antisense Oligonucleotides (ASOs) Segment is Expected to Witness Significant Growth Over the Forecast Period

Antisense oligonucleotides (ASOs) are short, single-stranded DNA or RNA molecules that can bind to specific messenger RNA (mRNA) sequences, leading to the degradation of the targeted mRNA or inhibition of its translation into protein. This property makes ASOs a promising therapeutic strategy for a variety of diseases, including genetic disorders, infectious diseases, and cancer. These can target specific disease-causing genes, such as those responsible for the production of abnormal proteins or enzymes that contribute to disease progression.

Some examples of approved ASO therapies include Spinraza (nusinersen) for the treatment of spinal muscular atrophy, Exondys51 (eteplirsen) for the treatment of Duchenne muscular dystrophy, Onpattro (patisiran) for the treatment of hereditary transthyretin-mediated amyloidosis, and Tegsedi (inotersen) for the treatment of hereditary transthyretin-mediated amyloidosis.

The ASOs segment is expected to witness significant growth over the forecast period due to the high demand for antisense oligonucleotide drugs, increasing R&D activities by key players, and new product launches.

The increasing focus of the companies to adopt various business strategies such as partnerships, collaborations, acquisitions, and other initiatives to accelerate the R&D of novel therapeutics for rare and genetic disorders is anticipated to fuel the segment's growth. For instance, in September 2022, Vanda Pharmaceuticals Inc. and OliPassCorporation entered an R&D collaboration agreement to jointly develop a set of antisense oligonucleotide (ASO) molecules based on modified peptide nucleic acids. In February 2021, the US FDA approved Sarepta's Amondys 45 (casimersen) injection for the treatment of Duchenne muscular dystrophy (DMD) in patients with a confirmed mutation of the DMD gene.

Therefore, the segment is expected to grow over the forecast period due to the availability of several antisense oligonucleotide products in the market, increasing company activities, and new product launches.

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North America is Expected to Have the Significant Market Share Over the Forecast Period

North America is expected to hold a significant share of the market due to the growing research on various nucleic acid-based therapies, the increasing prevalence of genetic disorders and other chronic disorders, and growing R&D investments in the region.

The rising prevalence of autoimmune diseases among the population increases the demand for nucleic acid-based therapies, which may augment the market's growth. For instance, as per the Autoimmune Association in June 2022, autoimmune diseases comprise approximately 80-150 unique, chronic conditions and affect more than 31 million Americans annually. This shows the high burden of autoimmune disorders among the target population. As per an article published in the Clinical Rheumatology Journal in February 2023, the burden of systemic autoimmune rheumatic diseases (SARDs) is large in Canada, affecting between 2 and 5 cases per 1,000 residents.

The increasing burden of cancer raises the demand for effective and novel drugs that inhibit the progression of cancer cells. This fuels the demand for nucleic acid-based drugs in the region. For instance, according to the Cancer Facts and Figures 2023, about 1.9 million new cancer cases are estimated to be diagnosed in the country in 2023. According to the statistics updated by the Government of Canada in June 2022, nearly 233,900 people in Canada were estimated to be diagnosed with cancer by the end of 2022, and lung, breast, prostate, and colorectal cancers were predicted to be the most diagnosed cancers among the target population in Canada.

The innovative product launches and approvals, partnerships, acquisitions, expansions, and collaborations are anticipated to fuel the market's growth in the region. For instance, in September 2022, Next Generation Manufacturing Canada (NGen) invested USD 10.5 million in a USD 34.8 million project led by OmniaBio Inc. and partners ExCellThera, MorphoCell Technologies, Aspect Biosystems, and Canadian Advanced Therapies Training Institute (CATTI). In December 2021, Novartis AG received approval from the FDA for Leqvio (inclisiran), the first and only small interfering RNA (siRNA) therapy to lower low-density lipoprotein cholesterol (also known as bad cholesterol or LDL-C) with two doses a year, after an initial dose and one at three months.

Nucleic Acid-Based Therapeutics Industry Overview

The nucleic acid-based therapeutics market is moderately fragmented due to the presence of many small and large players globally and regionally. The companies are engaging in the research and development of nucleic acid-based therapeutics for the treatment of various chronic, genetic, and infectious diseases. Some of the key companies in the market are Silence Therapeutics PLC, Ionis Pharmaceuticals Inc., Sarepta Therapeutics, Novartis Pharma AG, Alnylam Pharmaceuticals Inc., and Biogen Inc., among others.

Additional Benefits:

- The market estimate (ME) sheet in Excel format
- 3 months of analyst support

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