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Antisense & RNAi Therapeutics Market Forecasts to 2034 – Global Analysis By Route of Administration (Subcutaneous Route, Intravenous Route, Pulmonary Delivery, Intrathecal Route, Intraperitoneal Injection and Other Routes of Administration), Indication (Autosomal Dominant Disease, Autosomal Recessive Disease, Chromosomal Disease and Other Indications), Technology, Application and By Geography

https://marketpublishers.com/r/A9BBC2FA3FAAEN.html
Date: May 2026
Pages: 200
Price: US$ 4,150.00 (Single User License)
ID: A9BBC2FA3FAAEN

Abstracts

According to Stratistics MRC, the Global Antisense & RNAi Therapeutics Market is accounted for $2.39 billion in 2026 and is expected to reach $3.36 billion by 2034 growing at a CAGR of 13.0% during the forecast period. Antisense therapy is the selective and sequence-specific inhibition of gene expression by single-stranded DNA oligonucleotides. It is used to treat amyotrophic lateral sclerosis and Huntington's and Alzheimer's disease. On the other hand, RNA interference (RNAi) therapy is triggered by double-stranded RNA (dsRNA) and causes sequence-specific ribonucleic acid (mRNA) degradation of single-stranded target RNAs in response to dsRNA. RNAi has applications in treating a wide range of conditions, including viral infections, neurodegenerative diseases, and certain cancers.

According to the article published by the American Association for the Advancement of Science in July 2023, an antisense therapy developed by UMass Chan Medical School and RUSH University Medical Center is found useful in restoring production of the protein FMRP in cell specimens taken from individuals suffering from fragile X syndrome.

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Market Dynamics:

Driver:

Rising incidence of genetic disorders

Genetic disorders result from abnormalities in an individual's DNA, and traditional treatment options for these conditions are often limited. Antisense and RNA interference (RNAi) therapies offer a promising approach by targeting the underlying genetic causes of these disorders at the molecular level. Furthermore, the increasing prevalence of genetic disorders has prompted a surge in clinical trials and research efforts focusing on antisense and RNAi therapies. Successful trials and regulatory approvals further validate the potential of these treatments, driving market growth.

Restraint:

High cost of RNAi based drugs

The complex development process, involving advanced technologies and stringent regulatory requirements, contributes to elevated production costs. These expenses are often reflected in the pricing of RNAi therapeutics, limiting accessibility for patients and healthcare systems. Affordability challenges can impede widespread adoption, hindering the market's growth potential. As a result, it will hamper market growth.

Opportunity:

Rapid adoption of novel drug delivery and launch of RNA therapeutics

The advent of advanced drug delivery technologies has enhanced the efficacy and targeted delivery of antisense and RNA interference (RNAi) therapeutics, fostering their widespread adoption. Furthermore, the regulatory approval and successful market entry of RNA-based treatments have bolstered investor confidence and fuelled research and development initiatives. This convergence of technological advancements and regulatory milestones has created a favourable environment, propelling the Antisense & RNAi Therapeutics Market.

Threat:

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Immune responses

When exogenous RNA molecules, such as those used in antisense and RNA interference (RNAi) therapies, are introduced into the body, they may activate the immune system. This can trigger innate immune responses, including the release of pro-inflammatory cytokines and the activation of immune cells. Also, the body's adaptive immune system may recognize the foreign RNA as a threat, leading to the production of antibodies against the therapeutic molecules.

Covid-19 Impact

The COVID-19 pandemic has had a mixed impact on the antisense and RNAi therapeutics markets. On one hand, the focus on mRNA vaccine development has accelerated RNA-based technology acceptance. However, disruptions in clinical trials, supply chains, and research activities have caused delays in the development and commercialization of anti-sense and RNAi therapies. While increased recognition of RNA technologies is a positive outcome, the industry faces challenges in adapting to the changing landscape, emphasising the importance of resilience and adaptability for continued growth in a post-pandemic era.

The RNA antisense segment is expected to be the largest during the forecast period

The RNA antisense segment is estimated to hold the largest share. This innovative therapeutic approach aims to treat diseases at the genetic level by inhibiting or modifying the production of disease-related proteins. RNA antisense technology holds promise for various applications, including treating genetic disorders, cancers, and viral infections. With its ability to precisely intervene in gene expression, RNA antisense represents a pivotal segment within the broader market, contributing to the development of targeted and personalised therapeutic solutions for a range of medical conditions.

The cancer segment is expected to have the highest CAGR during the forecast period

The cancer segment is anticipated to have lucrative growth during the forecast period. Antisense and RNA interference (RNAi) therapies are designed to selectively target and modulate the expression of genes associated with cancer, inhibiting tumour progression or promoting cancer cell death. This segment encompasses a diverse range of approaches, including personalised RNA treatments tailored to individual genetic profiles. Because of their targeted and precise nature, these treatments have the potential to alter oncology by tackling certain biological pathways and improving

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therapeutic efficacy while minimising side effects.

Region with largest share:

Asia Pacific commanded the largest market share during the extrapolated period owing to increased investment in research and development, the rising prevalence of chronic diseases, and a supportive regulatory environment. Key countries such as China, Japan, and India are at the forefront, with a focus on developing and commercialising novel RNA-based therapies. Furthermore, collaborations between local and global biotech firms, along with a growing awareness of personalised medicine, drive advancements.

Region with highest CAGR:

North America is expected to witness profitable growth over the projection period. The region, lead by the US, has made significant expenditures in pharmaceutical and biotechnology research, which has stimulated the development of novel RNA-based medicines. Favourable regulatory landscapes, strategic collaborations between industry stakeholders and a high prevalence of chronic diseases contribute to market expansion. It also has a well-established healthcare infrastructure, a proactive approach to personalised medicine, and prominent market players. North America is at the forefront of the development of antisense and RNAi treatments, making it a dynamic and significant player in the worldwide market.

Key players in the market

Some of the key players in the Antisense & RNAi Therapeutics Market include Alnylam Pharmaceuticals, Inc., Ionis Pharmaceuticals (Akcea Therapeutics, Inc.), Biogen Inc, Sarepta Therapeutics, Inc, Arbutus Biopharma, Silence Therapeutics, Isarna Therapeutics GmbH, Arrowhead Pharmaceuticals, Inc, Gene Signal International SA, Benitec Biopharma Ltd, Olix Pharmaceuticals, GSK plc, Sanofi, Bio-Path Holdings Inc, Antisense Therapeutics Limited., Quark Pharmaceuticals, Merck, Astellas Pharma Inc, Marina Biosciences and Dicerna Pharmaceuticals.

Key Developments:

In July 2023, Alnylam Pharmaceuticals, Inc. partnered with Roche; to develop and market, zilebesiran, investigational ribonucleic acid interference (RNAi) therapeutic to treat hypertension

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In March 2023, OliX Pharmaceuticals, Inc. dosed the first patient in a Phase 1 clinical trial of an investigational RNAi therapeutic designed to treat age-related macular degeneration (AMD)

Routes of Administration Covered:

- Subcutaneous Route
- Intravenous Route
- Pulmonary Delivery
- Intrathecal Route
- Intraperitoneal Injection
- Other Routes of Administration

Indications Covered:

- Autosomal Dominant Disease
- Autosomal Recessive Disease
- Chromosomal Disease
- Other Indications

Technologies Covered:

- RNA Antisense
- RNA Interference

Applications Covered:

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- Ocular Disorders
- Respiratory Disorders
- Cardio metabolic & Renal Disorders
- Cancer
- Neurodegenerative Disorders
- Infectious Diseases
- Genetic Disorders
- Skin Diseases
- Other Applications

Regions Covered:

- North America
  - US
  - Canada
  - Mexico
- Europe
  - Germany
  - UK
  - Italy
  - France

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- Spain
- Rest of Europe

Asia Pacific

- Japan
- China
- India
- 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

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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 2023, 2024, 2025, 2026, 2027, 2028, 2030, 3032 and 2034
- Market Trends (Drivers, Constraints, Opportunities, Threats, Challenges, Investment Opportunities, and recommendations)
- Strategic recommendations in key business segments based on the market estimations
- 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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