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Global RNAi Technology Market Size study, by Application (Drug Discovery and Development, Therapeutics [Oncology, Ocular Disorders, Respiratory Disorders, Hepatitis B and C, Autoimmune Hepatitis, Neurological Disorders, and Other Therapeutics]) and Regional Forecasts 2022-2032

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Abstracts

The Global RNAi Technology Market is valued approximately at USD 1.36 billion in 2023 and is anticipated to grow with a compound annual growth rate (CAGR) of more than 16.29% over the forecast period 2024-2032. RNA interference (RNAi) has emerged as a groundbreaking mechanism in molecular biology, offering unprecedented control over gene expression. This transformative technology operates by silencing specific messenger RNA (mRNA) molecules, thereby inhibiting the translation of disease-causing genes into proteins. As researchers unlock its therapeutic potential across a spectrum of diseases—from rare genetic disorders to aggressive cancers—RNAi has begun to fundamentally reshape the biomedical innovation landscape. The market is being increasingly driven by the need for precision-targeted, non-invasive therapies that operate at the genetic level, minimizing off-target effects while maximizing clinical efficacy.

Accelerated by genomic insights and propelled by the global urgency for novel therapeutic strategies, the RNAi technology space is witnessing a flurry of collaborative ventures, venture capital infusion, and patent filings. Pharmaceutical and biotech firms are racing to license proprietary RNAi platforms or develop in-house capabilities to explore pipeline candidates. For instance, therapeutics targeting neurological disorders, autoimmune hepatitis, and even respiratory complications have gained momentum,

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supported by improved delivery systems such as lipid nanoparticles and conjugates that can ferry siRNAs precisely to intended tissues. However, commercial scalability remains hindered by issues such as immunogenicity, delivery complexity, and regulatory scrutiny, making consistent GMP-grade manufacturing a key challenge for industry stakeholders.

The clinical appeal of RNAi lies in its modularity and programmability—traits that make it exceptionally versatile for both therapeutic and research applications. In drug discovery, RNAi is instrumental in elucidating gene function, enabling the identification of novel drug targets and the de-risking of clinical trials by predicting toxicology profiles early in the pipeline. On the therapeutics front, RNAi-based treatments have started to demonstrate durable, dose-sparing benefits, particularly in hepatology and oncology. Advances in vector design, chemical modifications, and biomarker-led patient selection are enabling more refined, adaptive therapies. Moreover, with CRISPR and RNAi increasingly being used in tandem for complementary gene modulation, the market is approaching a convergence of precision medicine and scalable platform technology.

Geographically, North America dominates the RNAi technology landscape, attributed to strong clinical research infrastructure, early adoption of innovative gene-silencing therapies, and a dense concentration of RNA-based biopharma startups and key pharmaceutical players. Europe is steadily catching up with numerous public-private partnerships aimed at expanding clinical trials and RNAi manufacturing capabilities. Meanwhile, Asia Pacific is witnessing exponential growth as countries like China, India, and South Korea pour resources into biotech innovation and establish cross-border collaborations to expedite RNAi-based clinical research. As the regional pipelines diversify, the global RNAi market continues to unlock new growth avenues, especially in therapeutic areas with limited or no effective treatment alternatives.

Major market player included in this report are:

Alnylam Pharmaceuticals, Inc.

Ionis Pharmaceuticals, Inc.

Silence Therapeutics

Arrowhead Pharmaceuticals, Inc.

Dicerna Pharmaceuticals, Inc.

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Arbutus Biopharma Corporation

Benitec Biopharma Inc.

RXi Pharmaceuticals Corporation

Sylentis S.A.

Thermo Fisher Scientific Inc.

Horizon Discovery Ltd.

Dharmacon, Inc. (Horizon Discovery)

Merck KGaA

GeneCopoeia, Inc.

Sirnaomics, Inc.

The detailed segments and sub-segment of the market are explained below:

By Application:

Drug Discovery and Development

Therapeutics

– Oncology

– Ocular Disorders

– Respiratory Disorders

– Hepatitis B and C

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– Autoimmune Hepatitis

– Neurological Disorders

– Other Therapeutics

By Region:

North America

U.S.

Canada

Europe

UK

Germany

France

Spain

Italy

ROE

Asia Pacific

China

India

Japan

Australia

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South Korea

RoAPAC

Latin America

Brazil

Mexico

Middle East & Africa

Saudi Arabia

South Africa

RoMEA

Years considered for the study are as follows:

Historical year – 2022

Base year – 2023

Forecast period – 2024 to 2032

Key Takeaways:

Market Estimates & Forecast for 10 years from 2022 to 2032.

Annualized revenues and regional level analysis for each market segment.

Detailed analysis of geographical landscape with Country level analysis of major regions.

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Competitive landscape with information on major players in the market.

Analysis of key business strategies and recommendations on future market approach.

Analysis of competitive structure of the market.

Demand side and supply side analysis of the market.

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