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Oligonucleotide Synthesis Market by Product (Drugs (ASO, siRNA), Synthesized Oligo (Primer), Reagents, Equipment), Type (Custom, Predesigned), Application (Therapeutic (Neurology, Rare), Research (PCR, Sequencing), Diagnostics) - Global Forecast to 2029

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Abstracts

The oligonucleotide synthesis market is projected to reach USD 19.7 billion by 2029 from USD 8.8 billion in 2024, at a CAGR of 17.5% during the forecast period. The synthesized oligonucleotide market is projected to reach USD 4.9 billion in 2029 from USD 2.2 billion in 2024, growing at a CAGR of 17.0% during the forecast period. The growth of this market is driven by several factors such as the increasing use of synthesized oligonucleotides such as primers and probes for various research and diagnostic applications. Technological advancements in the field of oligonucleotide synthesis further contribute to the growth of the market.

“The oligonucleotide synthesis market growth for synthesized oligonucleotides can be attributed to the growing research focused on the development of novel oligonucleotide-based drugs and their wide applications in diagnostic procedures.”

The oligonucleotide synthesis market, based on synthesized oligonucelotides (part of product segmentation), is further segmented into primer, probes, DNA Oligos, RNA Oligos, Other synthesized oigonucelotides. Synthesized oligonucelotides have a wide application in research for novel drug development and are mainly used in PCR and sequencing. Additionlly, diagnostic procedures used for detection of genetic disorders, companion diagnostics are also few of the major application areas for synthesized oligonucelotides.

“The primers segment will grow at the highest rate in the synthesized oligos market, by

product.”

By Product, synthesized oligonucelotide maket is segmented into primers, probes, DNA oligos, RNA oligos, and other synthesized oligos including BNA & LNA oligos. Primers are expected to grow at the highest rate during the forecasted period owing to the extensive use of primers in a wide range of applications such as PCR, sequencing, gene synthesis and cloning. Primers allow aplification of target gene sequences for gene expression studies, molecular diagnostics and genetic analysis.

“By therapeutic application, the neurological disease segment accounted for the largest share of the oligonucleotide synthesis market in 2023.”

The therapeutic application segment is segmented by disease type into neurological, rare and other diseases. In 2023, neurological disease segment accounted for the largest share of this segment as major companies are focusing on the development of oligo-based drugs for the treatment of neurological diseases such as DMD and SMA. Oligo based drugs that are used as therapies for these disorders have most FDA approvals.

“North American region is expected to register a highest CAGR in the oligonucleotide synthesis market.”

The market for oligonucleotide synthesis in North America is estimated to grow at the highest rate during the forecast period. Ongoing investments and funding provided by various government bodies, biotechnology and pharmaceutical companies to develop oligonucelotide based therapies for various rare and neurological disease, presence of strong venture capital ecosystem, growing awareness and early adoption of novel and alternate therapies in this region are few factors that support thr growth of this regional market. North America also has the established pharmceutical manufacturing infrastructure and the presence of the promnient players of the oligonucleotide synthesis market such as Danaher Corporation and Thermo Fisher among other which futher supports the leadership position of this region.

The primary interviews conducted for this report can be categorized as follows:

By Respondent: Supply Side- 70% and Demand Side - 30%

By Designation: Managers- 45%, CXOs, and Director level - 30%, and Executives - 25%

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By Region: North America -35%, Europe - 25%, Asia-Pacific -15%, Latin America -10%, Middle East- 10%, Africa- 5%

List of Companies Profiled in the Report Offering Products For Research and Diagnostic Applications:

Danaher Corporation (US)

Thermo Fisher Scientific Inc. (US)

Merck KGaA (Germany)

Eurofins Scientific (Luxembourg)

LGC Limited (UK)

Agilent Technologies, Inc. (US)

Kaneka Corporation (Japan)

Maravai Lifesciences holdings, Inc. (US)

Azenta, Inc. (US)

Twist Bioscience Corporation (US)

Genscript Biotech Corporation (US)

List of Companies Profiled in the Report Offering Products For Therapeutic Applications:

Biogen Inc. (US)

Alnylam Pharmaceuticals, Inc. (US)

Sarepta Therapeutics, Inc. (US)

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Astrazeneca (UK)

Astellas Pharma Inc. (Japan)

Jazz Pharmaceuticals Plc (Ireland)

Nippon Shinyaku, Co. Ltd. (Japan)

Ionis Pharmaceuticals, Inc. (US)

Novartis AG (Switzerland)

Note: Above list is inexhaustive

Research Coverage:

This report provides a detailed picture of the oligonucleotide synthesis market. It aims to estimate the market's size and future growth potential across different segments such as the product, application, end user, and region. The report also includes an in-depth competitive analysis of the key market players and their company profiles, recent developments, key market strategies, funding activities, brand/product comparative analysis, and vendor valuation and financial metrics of the oligonucleotide synthesis market.

Key Benefits of Buying the Report:

The report will help market leaders/new entrants by providing them with the closest approximations of the revenue numbers for the overall oligonucleotide synthesis market and its subsegments. It will also help stakeholders better understand the competitive landscape and gain more insights to position their business and make suitable go-to-market strategies. This report will enable stakeholders to understand the market's pulse and provide information on the key market drivers, restraints, challenges, trends, and opportunities.

The report provides insights on the following pointers:

Analysis of key drivers (e.g., Increasing use of synthesized oligos in therapeutic

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and diagnostic applications, Technological advancements), restraints (e.g., complexities associated with oligonucleotide-based drugs), opportunities (e.g., increasing pharma R&D investments in emerging economies), and challenges (e.g., lack of standard regulations) are influencing the growth of the oligonucleotide synthesis market.

Product Approvals: Detailed insights on newly approved products of the oligonucleotide synthesis market.

Market Development: Comprehensive information about lucrative markets – the report analyses the oligonucleotide synthesis market across varied regions.

Market Diversification: Exhaustive information about new products, recent developments, and investments in the oligonucleotide synthesis market.

Pipeline Analysis: Comprehensive information about products under clinical trials.

Competitive Assessment: In-depth assessment of market shares, growth strategies, and product offerings of leading players including Danaher Corporation (US), Thermo Fisher Scientific Inc. (US), Merck KGaA (Germany), among others offering products for research & diagnostic applications and Biogen Inc. (US), Alnylam Pharmaceuticals, Inc. (US), Sarepta Therapeutics, Inc. (US) among others offering products for therapeutic applications.

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11 COMPANY PROFILES

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*Details on Business overview, Products/Services/Solutions offered, Recent Developments, MNM view might not be captured in case of unlisted companies.

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About

In the coming five years, growth in the oligonucleotide synthesis market is likely to be centered on China, Malaysia, Singapore, and India. This can be attributed to the growing availability of synthesized oligos along with an increase in the R&D funding and activities in the APAC region. Furthermore, increasing focus of prominent players in the APAC market is another factor driving the growth of this market. For instance, in July 2013, Integrated DNA Technologies, Inc. (IDT) opened an oligonucleotides manufacturing facility in Singapore to cater to the research companies in the APAC region, thereby establishing its footprint in the APAC market. Such developments are likely to spur the growth of the APAC oligonucleotide synthesis market in the coming years.

The key strategies followed by most companies in the oligonucleotide synthesis market are new product launches; agreements, collaborations, and partnerships; mergers and acquisitions; and expansions. Of all the growth strategies adopted by players in this field, agreements, collaborations, and partnerships accounted for the largest share of XX% of the overall growth strategies from 2010 to 2014. Some leading players adopting these strategies are BioAutomation Corporation (U.S.), Eurofins Genomics (Germany), and GE Healthcare (U.K.). Expansions accounted for the second-largest share of XX% of the overall growth strategies adopted by the players in the market.

The prominent players in the oligonucleotide synthesis market are Agilent Technologies, Inc. (U.S.), BioAutomation Corporation (U.S.), BioSearch Technologies, Inc. (U.S.), Eurofins Genomics (Germany), Eurogentec (Belgium), GE Healthcare (U.K.), Glen Research (U.S.), Gene Link, Inc. (U.S.), GenScript USA Inc. (U.S.), GeneDesign, Inc. (Japan), Integrated DNA Technologies, Inc. (IDT) (U.S.), Link Technologies, Ltd. (U.K.), Nitto Denko Avecia, Inc. (U.S.), Sigma-Aldrich Corporation (U.S.), Thermo Fisher Scientific, Inc. (U.S.), and TriLink BioTechnologies, Inc. (U.S.).

North America commands the largest share of the global oligonucleotide synthesis market, followed by Europe. However, the European oligonucleotide synthesis market is expected to grow at a slower pace as compared to North America due to the Eurozone debt crisis. The Asia-Pacific market, on the other hand, is in the growth phase and is the fastest-growing region in the global oligonucleotide synthesis market. The growth in the APAC oligonucleotide synthesis market is likely to be centered at China, Malaysia, Singapore, and India. This can be attributed to the growing availability of synthesized oligos and the increase in R&D funding and activities in the APAC region. Furthermore,

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increasing focus of prominent players on the APAC region is another factor driving the growth of this market.

Oligonucleotide synthesis is a highly commoditized market. With its rising attractiveness, an increasing number of companies are moving into this niche market, resulting in price pressure. Oligos have been branded as relatively more expensive research tools as compared to other life sciences research tools. This is further restricting the industry growth, as there are certain limitations related to increasing the cost of oligos. This factor is making it difficult for market players to survive and/or grow at a faster and desired pace. However, market consolidation in the coming years can bring price enhancement in this industry.

The importance of synthetic oligonucleotides as therapeutic drugs for treating diseases has grown significantly over the last decade. Some of the major driving factors for this growth are characterization of more targets following the identification of the human genome, advancements in antisense oligonucleotides, and the development of double stranded small interfering RNA (siRNA). Therapeutic oligos can either be single stranded such as antisense oligonucleotides or double stranded such as siRNA. Furthermore, therapeutic oligos can be useful in treating diseases ranging from viral infections, respiratory diseases, and cancer to rare diseases such as Duchenne Muscular Dystrophy (DMD), Cystic Fibrosis, and Thrombic Thrombocytopenic Purpura.

Currently, only two oligonucleotide-based drugs, namely, Vitravene and Macugen have received market approval and a large number of oligonucleotide-based drugs are in various stages of clinical development in the U.S., Canada, Europe, and other parts of the world. As of 2011, there were over XX oligonucleotide-based drugs in clinical development in the U.S., Europe, and Canada; some of these include antisense oligonucleotides, immunostimulatory oligonucleotides, DNA duplex decoys, siRNAs, ribozymes, microRNAs, aptamers, and spiegelmers. Although most oligonucleotides in clinical development are chemically similar, the mechanisms of their action vary widely. As a result, the development of a unified set of regulatory guidelines that can effectively address the safety and quality requirements for such a diverse group of molecular entities with various unique mechanisms of action is a challenging task.

There are no formal regulatory guidelines available from any regulatory agency for the development of this class of therapeutics. It has been a general practice for regulatory agencies to apply guidelines proposed for small molecules to oligonucleotide therapeutics, owing to their similar characteristics. These include all quality-related regulatory guidelines issued by the U.S. Food and Drug Administration (FDA),

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European Medicines Agency (EMA), and the International Conference on Harmonisation of Technical Requirements for Registration of Pharmaceuticals for Human Use (ICH). Thus, there is a need to address the basic regulatory issues regarding the chemistry, manufacturing, and control of drugs and products belonging to this unique class of therapeutics.

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