

Gene Synthesis Market worth \$5.42 billion by 2030, growing at a CAGR of 13.27% - Exclusive Report by 360iResearch

The Global Gene Synthesis Market to grow from USD 2.00 billion in 2022 to USD 5.42 billion by 2030, at a CAGR of 13.27%.

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EINPresswire.com/ -- The "Gene Synthesis Market by Product (Services, Software), Method (Chip-Based Synthesis, PCR-Based Enzyme Synthesis, Solid-Phase Synthesis), Gene Type, Application, End-use - Global Forecast 2023-2030" report has been added to 360iResearch.com's offering.



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The gene synthesis market comprises technologies, products, and services related to the artificial creation of DNA sequences through chemical methods in various industries such as research, medicine, agriculture, and biotechnology. Key end-users include academic institutions, pharmaceutical and biotechnology companies, government agencies, and contract research organizations (CROs). The growing prevalence of chronic conditions among the global population and rising demand for personalized medicines, along with advancements in genomics research, are driving this market. Moreover, the Advantage of gene synthesis over traditional methods is fueling market growth. However, strict regulations governing the development and commercialization of GMOs and technical challenges such as limitations in size and complexity of synthetic genes limit the growth of the gene synthesis market. Emerging new technologies in

gene synthesis for efficiency and accuracy and the growing utilization of gene synthesis in energy and agriculture industries are creating significant growth opportunities in the market.

End-use: Increasing focus on innovative drug discovery and therapeutic development across biotechnology and pharmaceutical companies

Academic and government research institutes significantly contribute to gene synthesis market demand because they focus on basic research, therapeutic development, and genetic engineering advancements. These institutes utilize gene synthesis services to generate custom DNA sequences, design biological pathways, and perform targeted gene modifications. Biotechnology and pharmaceutical companies rely heavily on gene synthesis services for drug discovery, therapeutic development, and precision medicine advancements. Custom genes facilitate protein expression studies, identification of novel drug targets, and development of disease-specific animal models. Contract research organizations have emerged as vital end-users of gene synthesis services, supporting biopharmaceutical and academic clients in gene library construction, custom cloning, and protein expression optimization. Biotechnology and pharmaceutical companies command the largest share due to their focus on innovative drug discovery and therapeutic development. Academic government research institutes follow closely, emphasizing fundamental research and genetic engineering advancements. CROs are experiencing rapid growth by offering comprehensive genomics solutions that cater to diverse client demands across industries.

Method: Rising utilization of chip-based synthesis for large-scale projects

Chip-based synthesis uses microarrays or biochips to synthesize thousands of oligonucleotides simultaneously on a small glass slide. This high-throughput method is suitable for large-scale projects requiring multiple genes or when cost-efficiency is crucial. PCR-based enzyme synthesis involves using enzymes such as DNA polymerase to assemble short overlapping oligonucleotides into full-length genes through consecutive rounds of PCR amplification. This method offers quick turnaround times and is ideal for small-scale projects focusing on single genes or gene variants. Solid-phase synthesis involves sequentially adding nucleotides to a growing DNA chain immobilized on a solid support. This method offers high fidelity and can generate long DNA sequences with fewer errors than other methods. Chip-based synthesis is best suited for large-scale projects requiring cost efficiency, PCR-based enzyme synthesis is ideal when rapid turnaround times are essential for small-scale projects focusing on single genes or gene variants, while solid-phase synthesis is preferred when high fidelity and longer DNA sequences are required.

Gene Type: Growing potential for express gene synthesis that provides quick access to shorter genes for time-sensitive projects

Complex gene synthesis focuses on creating synthetic genes that contain challenging sequences, such as high GC content, tandem repeats, and homopolymeric regions. Scientists often require these genes for advanced research in therapeutic applications such as vaccine development, pathway engineering, and enzymatic optimization. Express gene synthesis caters to scientists who require fast turnaround times for small-scale projects or proof-of-concept studies. These

synthesized genes are shorter in length and have a quicker turnaround time compared to other types of gene synthesis. Standard gene synthesis involves the synthesis of high-quality, error-free DNA sequences using a variety of techniques, including oligonucleotide assembly and error correction. This type is most commonly used in routine molecular biology projects involving cloning, expression analysis, and recombinant protein production.

Product: Expanding usage of software that helps design synthetic genes accurately
Gene synthesis services involve the production of synthetic DNA sequences that can be customized to cater to specific research or industrial requirements. These services are essential for various applications such as protein production, antibody engineering, vaccine development, and biofuel research. The growing demand for custom-made genes has led to an increase in service providers offering end-to-end solutions in gene synthesis. Software solutions are designed specifically for designing and simulating synthetic genes. These tools allow researchers and biotechnologists to streamline their workflow by optimizing factors such as codon usage bias, RNA secondary structure prediction, GC content, and restriction enzyme site avoidance. Moreover, gene synthesis software helps reduce the risk of errors during de novo DNA synthesis, thereby improving research efficiency and minimizing costs.

Regional Insights:

The gene synthesis market in the Americas is highly developing owing to the presence of a developed healthcare sector and supportive government programs, which has resulted in considerable product development and the commercialization of various gene synthesis technologies in the United States and Canada. This is attributed to growing improvements in R&D facilities, available disposable income, and rapidly developing economic conditions. Emerging economies such as India, China, Singapore, and Malaysia are potential markets for market expansion due to improved healthcare standards. These economies have a considerable presence of domestic manufacturers of gene synthesis, which contributes to an upsurge in the market penetration of multinational giants. Moreover, federal agencies and authorities have launched several initiatives, programs, and schemes to encourage gene therapy research in the region, creating platform gene synthesis in the Americas. The growing prevalence of chronic diseases, increasing technological advancements, and improved healthcare infrastructure are the primary reasons driving the gene synthesis market in EMEA. Governments across the region have been continuously investing in gene therapies, thereby expanding the utilization of various gene syntheses. In February 2022, the Dutch government invested USD 55.04 million to build a new national pilot factory to advance the development and manufacturing of promising cell and gene therapies. The investment by the Dutch government is expected to provide excellent opportunities for cell and gene therapy companies.

FPNV Positioning Matrix:

The FPNV Positioning Matrix is essential for assessing the Gene Synthesis Market. It provides a comprehensive evaluation of vendors by examining key metrics within Business Strategy and Product Satisfaction, allowing users to make informed decisions based on their specific needs.

This advanced analysis then organizes these vendors into four distinct quadrants, which represent varying levels of success: Forefront (F), Pathfinder (P), Niche (N), or Vital(V).

Market Share Analysis:

The Market Share Analysis offers an insightful look at the current state of vendors in the Gene Synthesis Market. By comparing vendor contributions to overall revenue, customer base, and other key metrics, we can give companies a greater understanding of their performance and what they are up against when competing for market share. The analysis also sheds light on just how competitive any given sector is about accumulation, fragmentation dominance, and amalgamation traits over the base year period studied.

Key Company Profiles:

The report delves into recent significant developments in the Gene Synthesis Market, highlighting leading vendors and their innovative profiles. These include Ansa Biotechnologies, Inc., Applied Biological Materials Inc., Azenta Life Sciences, BGI Genomics Co., Ltd., BioCat GmbH by AddLife AB, Biomatik Corporation, Bioneer Corporation, Biotage AB, Biotech Desk Pvt Ltd., Boster Biological Technology, Camena Bioscience, Charles River Laboratories International, Inc., Creative Biogene, Danaher Corporation, Elabscience Biotechnology Inc., Eurofins Scientific SE, Evonetix Ltd., GenCefe Biotech Limited, Gene Universal Inc., General Biosystems, Inc., GenScript Biotech Corporation, Macrogen, Inc., NZYTech, Lda., OriGene Technologies, Inc., ProMab Biotechnologies, Inc., ProteoGenix SA, Synbio Technologies, Telesis Bio Inc., Thermo Fisher Scientific Inc., and Twist Bioscience Corporation.

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Market Segmentation & Coverage:

This research report categorizes the Gene Synthesis Market in order to forecast the revenues and analyze trends in each of following sub-markets:

Based on Product, market is studied across Services and Software. The Services is further studied across Antibody DNA Synthesis and Viral DNA Synthesis. The Services is projected to witness significant market share during forecast period.

Based on Method, market is studied across Chip-Based Synthesis, PCR-Based Enzyme Synthesis, and Solid-Phase Synthesis. The Solid-Phase Synthesis is projected to witness significant market share during forecast period.

Based on Gene Type, market is studied across Complex Gene, Express Gene, and Standard Gene. The Express Gene is projected to witness significant market share during forecast period.

Based on Application, market is studied across Disease Diagnosis, Gene & Cell Therapy Development, and Vaccine Development. The Disease Diagnosis is projected to witness significant market share during forecast period.

Based on End-use, market is studied across Academic & Government Research Institutes, Biotechnology & Pharmaceutical Companies, and Contract Research Organizations. The Contract Research Organizations is projected to witness significant market share during forecast period.

Based on Region, market is studied across Americas, Asia-Pacific, and Europe, Middle East & Africa. The Americas is further studied across Argentina, Brazil, Canada, Mexico, and United States. The United States is further studied across California, Florida, Illinois, New York, Ohio, Pennsylvania, and Texas. The Asia-Pacific is further studied across Australia, China, India, Indonesia, Japan, Malaysia, Philippines, Singapore, South Korea, Taiwan, Thailand, and Vietnam. The Europe, Middle East & Africa is further studied across Denmark, Egypt, Finland, France, Germany, Israel, Italy, Netherlands, Nigeria, Norway, Poland, Qatar, Russia, Saudi Arabia, South Africa, Spain, Sweden, Switzerland, Turkey, United Arab Emirates, and United Kingdom. The Americas commanded largest market share of 39.46% in 2022, followed by Europe, Middle East & Africa.

Key Topics Covered:

1. Preface
2. Research Methodology
3. Executive Summary
4. Market Overview
5. Market Insights
6. Gene Synthesis Market, by Product
7. Gene Synthesis Market, by Method
8. Gene Synthesis Market, by Gene Type
9. Gene Synthesis Market, by Application
10. Gene Synthesis Market, by End-use
11. Americas Gene Synthesis Market
12. Asia-Pacific Gene Synthesis Market
13. Europe, Middle East & Africa Gene Synthesis Market
14. Competitive Landscape
15. Competitive Portfolio
16. Appendix

The report provides insights on the following pointers:

1. Market Penetration: Provides comprehensive information on the market offered by the key players
2. Market Development: Provides in-depth information about lucrative emerging markets and

analyzes penetration across mature segments of the markets

3. Market Diversification: Provides detailed information about new product launches, untapped geographies, recent developments, and investments

4. Competitive Assessment & Intelligence: Provides an exhaustive assessment of market shares, strategies, products, certification, regulatory approvals, patent landscape, and manufacturing capabilities of the leading players

5. Product Development & Innovation: Provides intelligent insights on future technologies, R&D activities, and breakthrough product developments

The report answers questions such as:

1. What is the market size and forecast of the Gene Synthesis Market?

2. Which are the products/segments/applications/areas to invest in over the forecast period in the Gene Synthesis Market?

3. What is the competitive strategic window for opportunities in the Gene Synthesis Market?

4. What are the technology trends and regulatory frameworks in the Gene Synthesis Market?

5. What is the market share of the leading vendors in the Gene Synthesis Market?

6. What modes and strategic moves are considered suitable for entering the Gene Synthesis Market?

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