

Gene Synthesis Market to Hit USD 6.1 Billion in 2032, Fueled by Therapeutics Demand and Advancements in DNA Technology

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EINPresswire.com/ -- The Global [Gene Synthesis Market](#) size is estimated to be valued at USD 2.8 billion in 2025 and is expected to reach USD 6.1 billion by 2032, exhibiting a compound annual growth rate (CAGR) of 12.5% from 2025 to 2032. Gene synthesis products consist of custom-designed DNA sequences generated through automated oligonucleotide assembly and cloning technologies. These synthetic genes are optimized for expression across various host systems and are widely used in research, biopharmaceutical production, and synthetic biology.

A promotional banner for Coherent Market Insights. The background is dark with a red circular graphic on the right side. Inside the circle, there's a laptop and a document with charts. The text is white and red. The Coherent Market Insights logo is at the top left. The main text reads 'BLACK FRIDAY SALE!' in large red letters. Below it, 'HUGE DISCOUNTS LIMITED TIME OFFERS' in white. A list of services follows: 'MARKET REPORTS', 'DATA ANALYTICS', 'CONSULTING SERVICES', and 'BUSINESS SOLUTIONS', each preceded by a red arrow. At the bottom, it says 'Gene Synthesis Market' in white.

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Gene Synthesis Market

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Gene Synthesis Market Key Takeaways

In 2025, oligonucleotides segment is expected to dominate the market with a share of 45% share in 2025. They will play a major role in boosting gene synthesis market value because they have broad applications in both diagnostics and therapeutics.

Therapeutics application is slated to account for two-fifths of the global gene synthesis market

share in 2025, owing to progress in gene therapies and personalized medicines.

North America, with an estimated share of 37% in 2025, is set to dominate the global market.

Asia Pacific is poised to record a robust CAGR of 14% during the forecast period.

High-Throughput Gene Synthesis Platforms Driving Global Market Growth

The growing deployment of high-throughput platforms is transforming the gene synthesis market by enabling rapid, scalable, and automated DNA construction. These systems offer the capability to process thousands of sequences at once, strengthening efficiency across research labs and biotech firms. Their integration significantly improves cycle times and boosts productivity for custom DNA synthesis workflows.

Rising investments in synthetic biology are pushing institutions to adopt more specialized tools for constructing complex DNA sequences. High-throughput systems reduce manual steps and improve precision, supporting advanced synthetic biology applications across healthcare, agriculture, and biomanufacturing sectors. Their accuracy and cost-effectiveness make them essential for genome editing programs and strain development projects.

Automation and Enzymatic Technologies Advancing Gene Synthesis Efficiency

Gene synthesis workflows keep improving through automation, reducing manual effort and enhancing precision. They reduce the project time, particularly where the application requires a specific DNA construct. The total activity of the gene synthesis market is increasing as biotech and pharma companies embrace the technology more.

The synthesis of genetic sequences of high quality is simplified through modern DNA synthesis platforms. Combined software control enables the laboratories to maximize the throughput without compromising on the reliability. These advantages assist industries that are dependent on tailored DNA fragments and contrived biological systems. Therefore, genetic engineering is the area of innovation through automation.

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Regulatory and Quality Barriers Challenge Gene Synthesis Market Expansion

The gene synthesis market continues to face increasing regulatory scrutiny as demand grows for high-accuracy synthetic genes used across biopharmaceutical and diagnostic applications. Maintaining precision and fidelity in gene synthesis services is essential, especially for clinical workflows. As regulatory requirements tighten, adherence to quality becomes a core driver of gene synthesis market trends.

Quality compliance significantly impacts the gene synthesis market size, especially as companies scale operations for custom gene synthesis and therapeutic-grade manufacturing. Providers are integrating automation, error correction, and validated DNA synthesis workflows to meet regulatory expectations. However, maintaining flawless accuracy while expanding production remains challenging.

Emerging Trends in Gene Synthesis Market

AI-enhanced algorithms enhance accuracy, reduce errors, and improve efficiency in gene synthesis. These technologies accelerate the process of developing synthetic constructs and reduce the total production cost. The more AI is integrated, the more companies are benefiting in terms of faster turnaround and dependable designs.

Long-fragment and clonal gene synthesis breakthroughs enable companies to construct intricate cell therapy and synthetic biology research. Large DNA constructs are now produced with higher fidelity and have a faster turnaround. The trend favors the use of next-generation therapeutic and industrial biotechnology applications.

Automated systems are enabling rapid, on-demand custom gene synthesis with minimal human intervention. This supports “just-in-time” DNA delivery for R&D and early-stage therapeutic workflows. Faster production cycles are helping companies shorten development timelines and improve operational agility.

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Analyst's View

“The gene synthesis market is poised for strong growth as high-throughput and automated synthesis platforms scale, especially for biologics and gene therapies,” said a senior CMI analyst.

Competitor Insights

Key players in the gene synthesis market report include:

Twist Bioscience
GenScript Biotech
Thermo Fisher Scientific
Eurofins Genomics
Integrated DNA Technologies (IDT)
Synbio Technologies

Bioneer Corporation
Biomatik
Genewiz (Azenta Life Sciences)
Sangon Biotech
Agilent Technologies
Synthace

Key Developments for Gene Synthesis Market

In March 2025, Integrated DNA Technologies (IDT) partnered with Elegen to offer long, clonal gene synthesis solutions (5–15 kb) via its ENFINIA™ platform, enabling high-complexity and high-throughput gene synthesis.

In May 2025, IDT opened an innovation hub in the San Francisco Bay Area. It aims to speed up the development of next-generation DNA synthesis technology, including automated gene synthesis as well as new enzymatic platforms.

In May 2025, Twist Bioscience and Ginkgo Bioworks revised their existing collaboration: Ginkgo will continue ordering synthetic DNA with no minimum volume, while Twist acquires IP for long DNA technology, strengthening its high-throughput gene synthesis portfolio.

In May 2025, Elegen launched ENFINIA™ IVT Ready DNA, providing long, high-accuracy linear templates (up to ~5.5 kb) with a poly(A) tail, supporting RNA therapeutic development through error-free gene synthesis technology.

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