

Global Synthetic Biology Market Size Study, by Product (Enzymes, Cloning Technologies Kits), by Technology (PCR, Genome Editing, Others), by Application (Healthcare, Non-Healthcare), by End Use (Biotechnology & Pharmaceutical Companies, Academic and Research Institutes) and Regional Forecasts 2022-2032

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Abstracts

The global synthetic biology market is estimated to be valued at USD 13.83 billion in 2023, poised to expand with a robust CAGR of 17.30% from 2024 to 2032. Synthetic biology, which has evolved into a transformative technology, is making significant strides across healthcare, energy, agriculture, and material industries. The market growth is driven by its emerging applications in multiplexed diagnostics, genome editing, and therapeutic innovations, which are unlocking new opportunities for industry stakeholders.

Synthetic biology's adoption gained unprecedented momentum during the COVID-19 pandemic as researchers utilized it to develop vaccines, test kits, and therapies. This period highlighted the versatility and potential of synthetic biology, particularly in enhancing vaccine development timelines. Moreover, advancements in genome editing tools and biofoundries have paved the way for bio-based economies, further broadening the applications of synthetic biology across industries like bioplastics, biofuels, and sustainable materials. Companies such as Bolt Threads and Modern Meadow exemplify this trend by integrating biotechnology to create eco-friendly materials for various commercial applications.

Synthetic biology's growing importance is further underscored by strategic investments

in research institutions and innovative product launches. For instance, the launch of the Rice Synthetic Biology Institute aims to catalyze breakthroughs that translate into societal benefits. However, the market's long-term success depends on addressing infrastructural and regulatory challenges through public-private partnerships and comprehensive governance frameworks.

Geographically, North America dominated the market in 2024, benefiting from robust public and private investments and a thriving research ecosystem. Asia Pacific is anticipated to register the fastest CAGR during the forecast period, fueled by industrialization and significant investments in healthcare and life sciences infrastructure. Key regions like Europe are leveraging synthetic biology for sustainable solutions in agriculture and energy, further diversifying its applications.

The global synthetic biology market is experiencing a paradigm shift, driven by advancements in genome editing, increased research funding, and a growing focus on sustainability. As industry players innovate and collaborate, the sector is set to witness transformative growth, offering immense opportunities across diverse sectors.

Major market players included in this report are:

Codexis, Inc.

Merck Kgaa (Sigma-Aldrich Co. Llc)

Illumina, Inc.

Novozymes

Bota Biosciences Inc.

Pareto Bio, Inc.

Creative Biogene.

Creative Enzymes.

Thermo Fisher Scientific, Inc.

New England Biolabs

Scarab Genomics, LLC

Enbiotix, Inc.

Synthego

Synthetic Genomics Inc.

Eurofins Scientific

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

By Product

Enzymes

Cloning Technologies Kits

Others

By Technology

PCR

Genome Editing

Others

By Application

Healthcare

Non-Healthcare

By End Use

Biotechnology & Pharmaceutical Companies

Academic and Research Institutes

By Region:

North America

U.S.

Canada

Europe

UK

Germany

France

Italy

Spain

Rest of Europe (ROE)

Asia Pacific

China

India

Japan

Australia

South Korea

Rest of Asia Pacific (RoAPAC)

Latin America

Brazil

Mexico

Middle East & Africa

Saudi Arabia

South Africa

Rest of Middle East & 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.

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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