

South Korea Synthetic Biology Market Size, Share, Trends and Forecast by Product, Technology, Application, and Region, 2026-2034

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Abstracts

The South Korea synthetic biology market size reached USD 410.8 Million in 2025. The market is projected to reach USD 1,737.2 Million by 2034, exhibiting a growth rate (CAGR) of 16.68% during 2026-2034. The industry is witnessing significant growth fueled by technological advancements in genetic engineering, growing investments in biotech research and development, and strengthened demand for eco-friendly solutions in healthcare, agriculture, and industry. Leading players are concentrating on emerging technologies, collaborative research, and broadening applications to enhance competitive strength. Strategic alliances and government initiatives also add to market growth, helping the growing South Korea synthetic biology market share.

SOUTH KOREA SYNTHETIC BIOLOGY MARKET TRENDS:

Strengthened National Policy Support

In April 2025, South Korea took a major step in formalizing its commitment to biotechnology by passing the Synthetic Biology Promotion Act, the first legislation in the world dedicated solely to synthetic biology. This landmark policy lays the groundwork for long-term development by supporting core infrastructure like public bio foundries, national data-sharing standards, and specialized talent pipelines. It reflects a broader strategy to coordinate national research capabilities and scale them into global competitiveness. While the law provides structure, its real strength lies in enabling faster and more effective collaboration across government, academia, and research institutions. The Presidential Bio Committee, launched earlier that year, is also central to this shift aligning regional innovation clusters and guiding the implementation of national priorities. Together, these developments are driving institutional clarity and operational

momentum across the field. With these foundational policies in place, South Korea is better positioned to lead in synthetic biology innovation. This strategic alignment is now shaping the long-term trajectory of South Korea synthetic biology market growth.

Infrastructure Scaling Through Bio Foundries

In January 2025, the South Korean cabinet approved a five-year, KRW?billion initiative to establish a national bio foundry infrastructure aimed at advancing synthetic biology applications. This public investment brings much-needed scale to design–build–test workflows by integrating robotics, AI, and high-throughput automation enabling researchers to iterate genetic constructs more rapidly and reliably. With shared bio foundry platforms now connecting regional biotech hubs, labs across the country benefit from streamlined access to cutting-edge pipelines for strain engineering and biomanufacturing. The effort also supports modular prototyping of synthetic circuits in microbial hosts, accelerating transitions from experimental setups to industrial-grade processes. The result is a maturation in South Korea's ecosystem not just academic research, but a move toward production-ready systems. As the government ensures centralized support and scalable infrastructure, it empowers a cohesive network of actors: from bench scientists to industrial users. This convergence of technical capability and strategic investment signals strong institutional backing, reinforcing foundational efforts behind South Korea synthetic biology market trends

DNA Synthesis Boom Spawns Innovation

In 2024, South Korea saw significant growth in its DNA synthesis industry, spurred by the increasing application of oligonucleotide and gene synthesis technologies in diagnostics and precision biosciences. The expansion is driving quicker prototyping of synthetic pathways and personalized gene constructs, enabling laboratories to speed up their research and development pipeline. Advancements in technology and falling costs have enabled a more efficient and nimbler platform for iteration and optimization of synthetic biology uses. This enables both commercial and academic developers as well as researchers to shorten the gap between conceptualization and testing to a cycle that occurs continuously. The growth of DNA synthesis capability is creating a more dynamic ecosystem for synthetic biology, enabling a broader set of practical applications and greater competitiveness at a global level. These advancements are well aligned with overall South Korea synthetic biology market growth trends, highlighting the nation's growing position in the development of next-generation biotechnology. Ongoing investment and adoption in this sector will be key to sustaining

momentum and propelling future advancements in both research and marketization.

SOUTH KOREA SYNTHETIC BIOLOGY MARKET SEGMENTATION:

IMARC Group provides an analysis of the key trends in each segment of the market, along with forecasts at the country and regional levels for 2026-2034. Our report has categorized the market based on product, technology, and application.

Product Insights:

Oligonucleotide/Oligo Pools and Synthetic DNA

Enzymes

Cloning Technologies Kits

Xeno-nucleic Acids

Chassis Organism

The report has provided a detailed breakup and analysis of the market based on the product. This includes oligonucleotide/oligo pools and synthetic DNA, enzymes, cloning technologies kits, Xeno-nucleic acids, and chassis organism.

Technology Insights:

NGS Technology

PCR Technology

Genome Editing Technology

Bioprocessing Technology

Others

A detailed breakup and analysis of the market based on the technology have also been

provided in the report. This includes NGS technology, PCR technology, genome editing technology, bioprocessing technology, and others.

Application Insights:

- Healthcare

 - Clinical

 - Non-Clinical/Research

- Non-Healthcare

 - Biotech Crops

 - Specialty Chemicals

 - Bio-Fuels

 - Others

The report has provided a detailed breakup and analysis of the market based on the application. This includes healthcare (clinical and non-clinical/research) and non-healthcare (biotech crops, specialty chemicals, bio-fuels, and others).

Regional Insights:

- Seoul Capital Area

- Yeongnam (Southeastern Region)

- Honam (Southwestern Region)

- Hoseo (Central Region)

The report has also provided a comprehensive analysis of all the major regional markets, which include the Seoul Capital Area, Yeongnam (Southeastern Region),

Honam (Southwestern Region), Hoseo (Central Region), and others.

COMPETITIVE LANDSCAPE:

The market research report has also provided a comprehensive analysis of the competitive landscape. Competitive analysis such as market structure, key player positioning, top winning strategies, competitive dashboard, and company evaluation quadrant has been covered in the report. Also, detailed profiles of all major companies have been provided.

KEY QUESTIONS ANSWERED IN THIS REPORT

How has the South Korea synthetic biology market performed so far and how will it perform in the coming years?

What is the breakup of the South Korea synthetic biology market on the basis of product?

What is the breakup of the South Korea synthetic biology market on the basis of technology?

What is the breakup of the South Korea synthetic biology market on the basis of application?

What is the breakup of the South Korea synthetic biology market on the basis of region?

What are the various stages in the value chain of the South Korea synthetic biology market?

What are the key driving factors and challenges in the South Korea synthetic biology market?

What is the structure of the South Korea synthetic biology market and who are the key players?

What is the degree of competition in the South Korea synthetic biology market?

Contents

1 PREFACE

2 SCOPE AND METHODOLOGY

- 2.1 Objectives of the Study
- 2.2 Stakeholders
- 2.3 Data Sources
 - 2.3.1 Primary Sources
 - 2.3.2 Secondary Sources
- 2.4 Market Estimation
 - 2.4.1 Bottom-Up Approach
 - 2.4.2 Top-Down Approach
- 2.5 Forecasting Methodology

3 EXECUTIVE SUMMARY

4 SOUTH KOREA SYNTHETIC BIOLOGY MARKET – INTRODUCTION

- 4.1 Overview
- 4.2 Market Dynamics
- 4.3 Industry Trends
- 4.4 Competitive Intelligence

5 SOUTH KOREA SYNTHETIC BIOLOGY MARKET LANDSCAPE

- 5.1 Historical and Current Market Trends (2020-2025)
- 5.2 Market Forecast (2026-2034)

6 SOUTH KOREA SYNTHETIC BIOLOGY MARKET - BREAKUP BY PRODUCT

- 6.1 Oligonucleotide/Oligo Pools and Synthetic DNA
 - 6.1.1 Overview
 - 6.1.2 Historical and Current Market Trends (2020-2025)
 - 6.1.3 Market Forecast (2026-2034)
- 6.2 Enzymes
 - 6.2.1 Overview
 - 6.2.2 Historical and Current Market Trends (2020-2025)

6.2.3 Market Forecast (2026-2034)

6.3 Cloning Technologies Kits

6.3.1 Overview

6.3.2 Historical and Current Market Trends (2020-2025)

6.3.3 Market Forecast (2026-2034)

6.4 Xeno-nucleic Acids

6.4.1 Overview

6.4.2 Historical and Current Market Trends (2020-2025)

6.4.3 Market Forecast (2026-2034)

6.5 Chassis Organism

6.5.1 Overview

6.5.2 Historical and Current Market Trends (2020-2025)

6.5.3 Market Forecast (2026-2034)

7 SOUTH KOREA SYNTHETIC BIOLOGY MARKET - BREAKUP BY TECHNOLOGY

7.1 NGS Technology

7.1.1 Overview

7.1.2 Historical and Current Market Trends (2020-2025)

7.1.3 Market Forecast (2026-2034)

7.2 PCR Technology

7.2.1 Overview

7.2.2 Historical and Current Market Trends (2020-2025)

7.2.3 Market Forecast (2026-2034)

7.3 Genome Editing Technology

7.3.1 Overview

7.3.2 Historical and Current Market Trends (2020-2025)

7.3.3 Market Forecast (2026-2034)

7.4 Bioprocessing Technology

7.4.1 Overview

7.4.2 Historical and Current Market Trends (2020-2025)

7.4.3 Market Forecast (2026-2034)

7.5 Others

7.5.1 Historical and Current Market Trends (2020-2025)

7.5.2 Market Forecast (2026-2034)

8 SOUTH KOREA SYNTHETIC BIOLOGY MARKET - BREAKUP BY APPLICATION

8.1 Healthcare

- 8.1.1 Overview
- 8.1.2 Historical and Current Market Trends (2020-2025)
- 8.1.3 Market Segmentation
 - 8.1.3.1 Clinical
 - 8.1.3.2 Non-Clinical/Research
- 8.1.4 Market Forecast (2026-2034)
- 8.2 Non-Healthcare
 - 8.2.1 Overview
 - 8.2.2 Historical and Current Market Trends (2020-2025)
 - 8.2.3 Market Segmentation
 - 8.2.3.1 Biotech Crops
 - 8.2.3.2 Specialty Chemicals
 - 8.2.3.3 Bio-Fuels
 - 8.2.3.4 Others
 - 8.2.4 Market Forecast (2026-2034)

9 SOUTH KOREA SYNTHETIC BIOLOGY MARKET – BREAKUP BY REGION

- 9.1 Seoul Capital Area
 - 9.1.1 Overview
 - 9.1.2 Historical and Current Market Trends (2020-2025)
 - 9.1.3 Market Breakup by Product
 - 9.1.4 Market Breakup by Technology
 - 9.1.5 Market Breakup by Application
 - 9.1.6 Key Players
 - 9.1.7 Market Forecast (2026-2034)
- 9.2 Yeongnam (Southeastern Region)
 - 9.2.1 Overview
 - 9.2.2 Historical and Current Market Trends (2020-2025)
 - 9.2.3 Market Breakup by Product
 - 9.2.4 Market Breakup by Technology
 - 9.2.5 Market Breakup by Application
 - 9.2.6 Key Players
 - 9.2.7 Market Forecast (2026-2034)
- 9.3 Honam (Southwestern Region)
 - 9.3.1 Overview
 - 9.3.2 Historical and Current Market Trends (2020-2025)
 - 9.3.3 Market Breakup by Product
 - 9.3.4 Market Breakup by Technology

- 9.3.5 Market Breakup by Application
- 9.3.6 Key Players
- 9.3.7 Market Forecast (2026-2034)
- 9.4 Hoseo (Central Region)
 - 9.4.1 Overview
 - 9.4.2 Historical and Current Market Trends (2020-2025)
 - 9.4.3 Market Breakup by Product
 - 9.4.4 Market Breakup by Technology
 - 9.4.5 Market Breakup by Application
 - 9.4.6 Key Players
 - 9.4.7 Market Forecast (2026-2034)
- 9.5 Others
 - 9.5.1 Historical and Current Market Trends (2020-2025)
 - 9.5.2 Market Forecast (2026-2034)

10 SOUTH KOREA SYNTHETIC BIOLOGY MARKET – COMPETITIVE LANDSCAPE

- 10.1 Overview
- 10.2 Market Structure
- 10.3 Market Player Positioning
- 10.4 Top Winning Strategies
- 10.5 Competitive Dashboard
- 10.6 Company Evaluation Quadrant

11 PROFILES OF KEY PLAYERS

- 11.1 Company A
 - 11.1.1 Business Overview
 - 11.1.2 Products Offered
 - 11.1.3 Business Strategies
 - 11.1.4 SWOT Analysis
 - 11.1.5 Major News and Events
- 11.2 Company B
 - 11.2.1 Business Overview
 - 11.2.2 Products Offered
 - 11.2.3 Business Strategies
 - 11.2.4 SWOT Analysis
 - 11.2.5 Major News and Events
- 11.3 Company C

- 11.3.1 Business Overview
- 11.3.2 Products Offered
- 11.3.3 Business Strategies
- 11.3.4 SWOT Analysis
- 11.3.5 Major News and Events
- 11.4 Company D
 - 11.4.1 Business Overview
 - 11.4.2 Products Offered
 - 11.4.3 Business Strategies
 - 11.4.4 SWOT Analysis
 - 11.4.5 Major News and Events
- 11.5 Company E
 - 11.5.1 Business Overview
 - 11.5.2 Products Offered
 - 11.5.3 Business Strategies
 - 11.5.4 SWOT Analysis
 - 11.5.5 Major News and Events

12 SOUTH KOREA SYNTHETIC BIOLOGY MARKET - INDUSTRY ANALYSIS

- 12.1 Drivers, Restraints, and Opportunities
 - 12.1.1 Overview
 - 12.1.2 Drivers
 - 12.1.3 Restraints
 - 12.1.4 Opportunities
- 12.2 Porters Five Forces Analysis
 - 12.2.1 Overview
 - 12.2.2 Bargaining Power of Buyers
 - 12.2.3 Bargaining Power of Suppliers
 - 12.2.4 Degree of Competition
 - 12.2.5 Threat of New Entrants
 - 12.2.6 Threat of Substitutes
- 12.3 Value Chain Analysis

13 APPENDIX

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