

White Biotechnology Market - A Global and Regional Analysis: Focus on Application, Product, and Country Analysis - Analysis and Forecast, 2025-2034

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Abstracts

Global White Biotechnology Market: Industry Overview

White biotechnology also known as industrial biotechnology leverages living cells, enzymes and fermentation processes to produce bio-based chemicals, materials and energy carriers. Core application areas include biofuels (e.g., advanced biodiesel and bioethanol), biochemicals (organic acids, solvents), industrial enzymes (for detergents, textiles, food processing), biomaterials (biopolymers, bioplastics) and emerging fields such as bioremediation and renewable feedstock valorization. Technological advances in synthetic biology, metabolic engineering and protein engineering are enabling more efficient strain development, higher yields and reduced process costs. Concurrently, digital tools—machine learning for bioprocess optimization, high-throughput screening and scalable continuous-flow fermentation—are accelerating time-to-market for new bioproducts. This convergence of biology and digitalization is driving white biotechnology market's transformation from niche specialty applications toward large-scale industrial adoption.

White Biotechnology Market Lifecycle Stage

The white biotechnology market is firmly in its growth phase, characterized by robust R&D investment, rapid technology commercialization and an expanding base of both established chemical-industry incumbents and agile biotech startups. Market concentration remains moderate, with innovation dispersed across diverse segments—from enzyme producers like Novozymes and DuPont to bio-based materials pioneers—indicating ample room for new entrants. As process efficiencies improve and regulatory frameworks for bio-based products mature, the industry is poised to transition

toward consolidation and maturation over the next decade, with large strategic partnerships and mergers likely to shape the competitive landscape.

White Biotechnology Market Segmentation:

Segmentation 1: by Application

Bioenergy

Food and Feed Additives

Pharmaceutical Ingredients

Personal Care and Household Products

Others

Bioenergy is one of the prominent application segments in the global white biotechnology market.

Segmentation 2: by Product Type

Biochemical

Biofuel

Biomaterial

Bioproduct

The global white biotechnology market is estimated to be led by the biochemical segment in terms of product type.

Segmentation 3: by Region

North America - U.S., Canada, and Mexico

Europe - Germany, France, Italy, Spain, U.K., and Rest-of-Europe

Asia-Pacific - China, Japan, South Korea, India, and Rest-of-Asia-Pacific

Rest-of-the-World - South America and Middle East and Africa

In the white biotechnology market, North America is anticipated to gain traction in terms of production, with increasing demand towards renewable resources and government initiatives.

Demand – Drivers and Limitations

The following are the demand drivers for the global white biotechnology market:

Increasing Demand Towards Renewable Resources

The global white biotechnology market is expected to face some limitations as well due to the following challenges:

High Initial Investment Costs

White Biotechnology Market Key Players and Competition Synopsis

The white biotechnology market sector is characterized by a diverse competitive landscape dominated by established chemical and life-sciences firms alongside a wave of specialized biotech innovators. Leading companies—such as Novozymes A/S, DuPont de Nemours, BASF SE, Evonik Industries AG—leverage extensive R&D capabilities and global production networks to supply industrial enzymes, bio-based polymers and specialty biochemicals at scale. At the same time, agile pure-play biotechnology companies—Amyris Inc., Genomatica Inc., Codexis Inc. and Ginkgo Bioworks—are differentiating themselves through advanced metabolic engineering, proprietary strain-development platforms and digital bioprocess optimization tools that accelerate time-to-market and reduce unit costs. Mid-tier players including Archer Daniels Midland, Cargill Incorporated, Corbion N.V. and Lonza Group Ltd. compete on feedstock integration and circular-economy solutions, while an active M&A environment and strategic partnerships—linking chemical giants with biotech startups—continue to reshape market

share, drive consolidation and foster next-generation technology transfer.

Some prominent names established in the white biotechnology market are:

Medtronic

Novozymes

BASF SE

DuPont

Cargill, Inc.

Royal DSM N.V.

Archer Daniles Midland Company

BioAmber Inc.

Lesaffre

Corbion N.V.

Evonik Industries AG

Genomatica, Inc

Ginkgo Bioworks

Amyris Inc.

TerraVia Holdings, Inc

Companies that are not a part of the previously mentioned pool have been well represented across different sections of the report (wherever applicable).

Contents

Executive Summary
Scope and Definition
Market/Product Definition
Key Questions Answered
Analysis and Forecast Note

1. MARKETS: INDUSTRY OUTLOOK

1.1 Trends: Current and Future Impact Assessment
1.2 Stakeholder Analysis
 1.2.1 Use Case
 1.2.2 End User and Buying Criteria
1.3 Market Dynamics Overview
 1.3.1 Market Drivers
 1.3.2 Market Restraints
 1.3.3 Market Opportunities
1.4 Investment Landscape and R&D Trends
1.5 Future Outlook and Market Roadmap

2. WHITE BIOTECHNOLOGY MARKET (BY APPLICATION)

2.1 Application Segmentation
2.2 Application Summary
2.3 White Biotechnology Market (by Application)
 2.3.1 Bioenergy
 2.3.2 Food and Feed Additives
 2.3.3 Pharmaceutical Ingredients
 2.3.4 Personal Care and Household Products
 2.3.5 Others

3. WHITE BIOTECHNOLOGY MARKET (BY PRODUCT)

3.1 Product Segmentation
3.2 Product Summary
3.3 White Biotechnology Market (by Product Type)
 3.3.1 Biochemical
 3.3.2 Biofuel

3.3.3 Biomaterial

3.3.4 Bioproduct

4. WHITE BIOTECHNOLOGY MARKET (BY REGION)

4.1 White Biotechnology Market (by Region)

4.2 North America

4.2.1 Regional Overview

4.2.2 Driving Factors for Market Growth

4.2.3 Factors Challenging the Market

4.2.4 Key Companies

4.2.5 Application

4.2.6 Product

4.2.7 North America (by Country)

4.2.7.1 U.S.

4.2.7.1.1 Market by Application

4.2.7.1.2 Market by Product

4.2.7.2 Canada

4.2.7.2.1 Market by Application

4.2.7.2.2 Market by Product

4.3 Europe

4.3.1 Regional Overview

4.3.2 Driving Factors for Market Growth

4.3.3 Factors Challenging the Market

4.3.4 Key Companies

4.3.5 Application

4.3.6 Product

4.3.7 Europe (by Country)

4.3.7.1 Germany

4.3.7.1.1 Market by Application

4.3.7.1.2 Market by Product

4.3.7.2 France

4.3.7.2.1 Market by Application

4.3.7.2.2 Market by Product

4.3.7.3 Italy

4.3.7.3.1 Market by Application

4.3.7.3.2 Market by Product

4.3.7.4 Spain

4.3.7.4.1 Market by Application

4.3.7.4.2 Market by Product

4.3.7.5 U.K.

4.3.7.5.1 Market by Application

4.3.7.5.2 Market by Product

4.3.7.6 Rest-of-Europe

4.3.7.6.1 Market by Application

4.3.7.6.2 Market by Product

4.4 Asia-Pacific

4.4.1 Regional Overview

4.4.2 Driving Factors for Market Growth

4.4.3 Factors Challenging the Market

4.4.4 Key Companies

4.4.5 Application

4.4.6 Product

4.4.7 Asia-Pacific (by Country)

4.4.7.1 China

4.4.7.1.1 Market by Application

4.4.7.1.2 Market by Product

4.4.7.2 Japan

4.4.7.2.1 Market by Application

4.4.7.2.2 Market by Product

4.4.7.3 India

4.4.7.3.1 Market by Application

4.4.7.3.2 Market by Product

4.4.7.4 South Korea

4.4.7.4.1 Market by Application

4.4.7.4.2 Market by Product

4.4.7.5 Rest-of-Asia-Pacific

4.4.7.5.1 Market by Application

4.4.7.5.2 Market by Product

4.5 Rest-of-the-World

4.5.1 Regional Overview

4.5.2 Driving Factors for Market Growth

4.5.3 Factors Challenging the Market

4.5.4 Key Companies

4.5.5 Application

4.5.6 Product

4.5.7 Rest-of-the-World (by Region)

4.5.7.1 South America

- 4.5.7.1.1 Market by Application
- 4.5.7.1.2 Market by Product
- 4.5.7.2 Middle East and Africa
 - 4.5.7.2.1 Market by Application
 - 4.5.7.2.2 Market by Product

5. MARKETS - COMPETITIVE BENCHMARKING & COMPANY PROFILES

- 5.1 Next Frontiers
- 5.2 Geographic Assessment
- 5.3 Company Profiles
 - 5.3.1 Medtronic
 - 5.3.1.1 Overview
 - 5.3.1.2 Top Products/Product Portfolio
 - 5.3.1.3 Top Competitors
 - 5.3.1.4 Target Customers
 - 5.3.1.5 Key Personnel
 - 5.3.1.6 Analyst View
 - 5.3.1.7 Market Share
 - 5.3.2 Novozymes
 - 5.3.2.1 Overview
 - 5.3.2.2 Top Products/Product Portfolio
 - 5.3.2.3 Top Competitors
 - 5.3.2.4 Target Customers
 - 5.3.2.5 Key Personnel
 - 5.3.2.6 Analyst View
 - 5.3.2.7 Market Share
 - 5.3.3 BASF SE
 - 5.3.3.1 Overview
 - 5.3.3.2 Top Products/Product Portfolio
 - 5.3.3.3 Top Competitors
 - 5.3.3.4 Target Customers
 - 5.3.3.5 Key Personnel
 - 5.3.3.6 Analyst View
 - 5.3.3.7 Market Share
 - 5.3.4 DuPont
 - 5.3.4.1 Overview
 - 5.3.4.2 Top Products/Product Portfolio
 - 5.3.4.3 Top Competitors

- 5.3.4.4 Target Customers
- 5.3.4.5 Key Personnel
- 5.3.4.6 Analyst View
- 5.3.4.7 Market Share
- 5.3.5 Cargill, Inc.
 - 5.3.5.1 Overview
 - 5.3.5.2 Top Products/Product Portfolio
 - 5.3.5.3 Top Competitors
 - 5.3.5.4 Target Customers
 - 5.3.5.5 Key Personnel
 - 5.3.5.6 Analyst View
 - 5.3.5.7 Market Share
- 5.3.6 Royal DSM N.V.
 - 5.3.6.1 Overview
 - 5.3.6.2 Top Products/Product Portfolio
 - 5.3.6.3 Top Competitors
 - 5.3.6.4 Target Customers
 - 5.3.6.5 Key Personnel
 - 5.3.6.6 Analyst View
 - 5.3.6.7 Market Share
- 5.3.7 Archer Daniles Midland Company
 - 5.3.7.1 Overview
 - 5.3.7.2 Top Products/Product Portfolio
 - 5.3.7.3 Top Competitors
 - 5.3.7.4 Target Customers
 - 5.3.7.5 Key Personnel
 - 5.3.7.6 Analyst View
 - 5.3.7.7 Market Share
- 5.3.8 BioAmber Inc.
 - 5.3.8.1 Overview
 - 5.3.8.2 Top Products/Product Portfolio
 - 5.3.8.3 Top Competitors
 - 5.3.8.4 Target Customers
 - 5.3.8.5 Key Personnel
 - 5.3.8.6 Analyst View
 - 5.3.8.7 Market Share
- 5.3.9 Lesaffre
 - 5.3.9.1 Overview
 - 5.3.9.2 Top Products/Product Portfolio

- 5.3.9.3 Top Competitors
- 5.3.9.4 Target Customers
- 5.3.9.5 Key Personnel
- 5.3.9.6 Analyst View
- 5.3.9.7 Market Share
- 5.3.10 Corbion N.V.
 - 5.3.10.1 Overview
 - 5.3.10.2 Top Products/Product Portfolio
 - 5.3.10.3 Top Competitors
 - 5.3.10.4 Target Customers
 - 5.3.10.5 Key Personnel
 - 5.3.10.6 Analyst View
 - 5.3.10.7 Market Share
- 5.3.11 Evonik Industries AG
 - 5.3.11.1 Overview
 - 5.3.11.2 Top Products/Product Portfolio
 - 5.3.11.3 Top Competitors
 - 5.3.11.4 Target Customers
 - 5.3.11.5 Key Personnel
 - 5.3.11.6 Analyst View
 - 5.3.11.7 Market Share
- 5.3.12 Genomatica, Inc
 - 5.3.12.1 Overview
 - 5.3.12.2 Top Products/Product Portfolio
 - 5.3.12.3 Top Competitors
 - 5.3.12.4 Target Customers
 - 5.3.12.5 Key Personnel
 - 5.3.12.6 Analyst View
 - 5.3.12.7 Market Share
- 5.3.13 Ginkgo Bioworks
 - 5.3.13.1 Overview
 - 5.3.13.2 Top Products/Product Portfolio
 - 5.3.13.3 Top Competitors
 - 5.3.13.4 Target Customers
 - 5.3.13.5 Key Personnel
 - 5.3.13.6 Analyst View
 - 5.3.13.7 Market Share
- 5.3.14 Amyris Inc.
 - 5.3.14.1 Overview

- 5.3.14.2 Top Products/Product Portfolio
- 5.3.14.3 Top Competitors
- 5.3.14.4 Target Customers
- 5.3.14.5 Key Personnel
- 5.3.14.6 Analyst View
- 5.3.14.7 Market Share
- 5.3.15 TerraVia Holdings, Inc
 - 5.3.15.1 Overview
 - 5.3.15.2 Top Products/Product Portfolio
 - 5.3.15.3 Top Competitors
 - 5.3.15.4 Target Customers
 - 5.3.15.5 Key Personnel
 - 5.3.15.6 Analyst View
 - 5.3.15.7 Market Share
- 5.4 Other Key Companies

6. RESEARCH METHODOLOGY

List Of Figures

LIST OF FIGURES

- Figure 1: White Biotechnology Market (by Scenario), \$Billion, 2025, 2028, and 2034
- Figure 2: White Biotechnology Market (by Region), \$Billion, 2024, 2027, and 2034
- Figure 3: White Biotechnology Market (by Application), \$Billion, 2024, 2027, and 2034
- Figure 4: White Biotechnology Market (by Product), \$Billion, 2024, 2027, and 2034
- Figure 5: Competitive Landscape Snapshot
- Figure 6: Supply Chain Analysis
- Figure 7: Value Chain Analysis
- Figure 8: Impact Analysis of Market Navigating Factors, 2024-2034
- Figure 9: U.S. White Biotechnology Market, \$Billion, 2024-2034
- Figure 10: Canada White Biotechnology Market, \$Billion, 2024-2034
- Figure 11: Germany White Biotechnology Market, \$Billion, 2024-2034
- Figure 12: France White Biotechnology Market, \$Billion, 2024-2034
- Figure 13: Italy White Biotechnology Market, \$Billion, 2024-2034
- Figure 14: Spain White Biotechnology Market, \$Billion, 2024-2034
- Figure 15: U.K. White Biotechnology Market, \$Billion, 2024-2034
- Figure 16: Rest-of-Europe White Biotechnology Market, \$Billion, 2024-2034
- Figure 17: China White Biotechnology Market, \$Billion, 2024-2034
- Figure 18: Japan White Biotechnology Market, \$Billion, 2024-2034
- Figure 19: India White Biotechnology Market, \$Billion, 2024-2034
- Figure 20: South Korea White Biotechnology Market, \$Billion, 2024-2034
- Figure 21: Rest-of-Asia-Pacific White Biotechnology Market, \$Billion, 2024-2034
- Figure 22: South America White Biotechnology Market, \$Billion, 2024-2034
- Figure 23: Middle East and Africa White Biotechnology Market, \$Billion, 2024-2034
- Figure 24: Strategic Initiatives (by Company), 2021-2025
- Figure 25: Share of Strategic Initiatives, 2021-2025
- Figure 26: Data Triangulation
- Figure 27: Top-Down and Bottom-Up Approach
- Figure 28: Assumptions and Limitations

List Of Tables

LIST OF TABLES

Table 1: Market Snapshot

Table 2: Opportunities across Region

Table 3: Trends Overview

Table 4: Application Summary (by Application)

Table 5: Product Summary (by Product)

Table 6: White Biotechnology Market (by Region), \$Billion, 2024-2034

Table 7: North America White Biotechnology Market (by Application), \$Billion, 2024-2034

Table 8: North America White Biotechnology Market (by Product), \$Billion, 2024-2034

Table 9: U.S. White Biotechnology Market (by Application), \$Billion, 2024-2034

Table 10: U.S. White Biotechnology Market (by Product), \$Billion, 2024-2034

Table 11: Canada White Biotechnology Market (by Application), \$Billion, 2024-2034

Table 12: Canada White Biotechnology Market (by Product), \$Billion, 2024-2034

Table 13: Europe White Biotechnology Market (by Application), \$Billion, 2024-2034

Table 14: Europe White Biotechnology Market (by Product), \$Billion, 2024-2034

Table 15: Germany White Biotechnology Market (by Application), \$Billion, 2024-2034

Table 16: Germany White Biotechnology Market (by Product), \$Billion, 2024-2034

Table 17: France White Biotechnology Market (by Application), \$Billion, 2024-2034

Table 18: France White Biotechnology Market (by Product), \$Billion, 2024-2034

Table 19: Italy White Biotechnology Market (by Application), \$Billion, 2024-2034

Table 20: Italy White Biotechnology Market (by Product), \$Billion, 2024-2034

Table 21: Spain White Biotechnology Market (by Application), \$Billion, 2024-2034

Table 22: Spain White Biotechnology Market (by Product), \$Billion, 2024-2034

Table 23: U.K. White Biotechnology Market (by Application), \$Billion, 2024-2034

Table 24: U.K. White Biotechnology Market (by Product), \$Billion, 2024-2034

Table 25: Rest-of-Europe White Biotechnology Market (by Application), \$Billion, 2024-2034

Table 26: Rest-of-Europe White Biotechnology Market (by Product), \$Billion, 2024-2034

Table 27: Asia-Pacific White Biotechnology Market (by Application), \$Billion, 2024-2034

Table 28: Asia-Pacific White Biotechnology Market (by Product), \$Billion, 2024-2034

Table 29: China White Biotechnology Market (by Application), \$Billion, 2024-2034

Table 30: China White Biotechnology Market (by Product), \$Billion, 2024-2034

Table 31: Japan White Biotechnology Market (by Application), \$Billion, 2024-2034

Table 32: Japan White Biotechnology Market (by Product), \$Billion, 2024-2034

Table 33: India White Biotechnology Market (by Application), \$Billion, 2024-2034

Table 34: India White Biotechnology Market (by Product), \$Billion, 2024-2034

Table 35: South Korea White Biotechnology Market (by Application), \$Billion, 2024-2034

Table 36: South Korea White Biotechnology Market (by Product), \$Billion, 2024-2034

Table 37: Rest-of-Asia-Pacific White Biotechnology Market (by Application), \$Billion, 2024-2034

Table 38: Rest-of-Asia-Pacific White Biotechnology Market (by Product), \$Billion, 2024-2034

Table 39: Rest-of-the-World White Biotechnology Market (by Application), \$Billion, 2024-2034

Table 40: Rest-of-the-World White Biotechnology Market (by Product), \$Billion, 2024-2034

Table 41: South America White Biotechnology Market (by Application), \$Billion, 2024-2034

Table 42: South America White Biotechnology Market (by Product), \$Billion, 2024-2034

Table 43: Middle East and Africa White Biotechnology Market (by Application), \$Billion, 2024-2034

Table 44: Middle East and Africa White Biotechnology Market (by Product), \$Billion, 2024-2034

Table 45: Market Share

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