

Global Marine Biotechnology Market - 2025 -2032

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Abstracts

Marine Biotechnology Market Overview

Marine Biotechnology Market reached US\$ 6.98 billion in 2024 and is expected to reach US\$ 12.31 billion by 2032, growing with a CAGR of 7.35% during the forecast period 2025-2032.

The global marine biotechnology market is rapidly expanding due to increasing demand for sustainable and innovative products derived from marine resources. It encompasses applications across pharmaceuticals, cosmetics, agriculture and environmental management, leveraging marine organisms' unique bioactive compounds. Advances in technology and growing research investments are driving the discovery of new marine-derived drugs and bio-products. Rising awareness about marine biodiversity's potential and the need for eco-friendly solutions are also fueling market growth.

Marine Biotechnology Market Trend

Sustainable and eco-friendly solutions are a key trend in the marine biotechnology market because they address the urgent global need to reduce environmental impact while harnessing the vast potential of marine resources. Marine biotech companies are developing biodegradable materials like bioplastics derived from seaweed and other marine biomass, which can replace traditional plastics and reduce pollution. Additionally, marine-derived biofuels and natural preservatives offer greener alternatives to fossil fuels and synthetic chemicals, supporting circular economy principles.

Governments worldwide are actively supporting this trend by providing funding, grants and policy incentives to promote research and commercialization of sustainable marine biotechnology products. For instance, in the US, the Department of Energy awarded a US\$ 1.5 million grant to seaweed innovation startups Umarmo and Sway to develop

sustainable bioplastics from seaweed by-products, highlighting governmental support for marine biotechnology initiatives.

Marine Biotechnology Market Dynamics

Rising Demand for Novel Bioactive Compounds

The rising demand for novel bioactive compounds is a significant driver of the marine biotechnology market due to the unique chemical diversity found in marine organisms. These compounds, derived from algae, sponges, corals and microorganisms, possess potent biological activities such as antimicrobial, anticancer, anti-inflammatory and antioxidant properties. Industries like pharmaceuticals, cosmetics and nutraceuticals are increasingly turning to marine sources to develop new, effective products that address unmet medical and health needs. The scarcity of similar compounds in terrestrial sources further boosts interest in marine biodiversity.

Governments are actively driving the rising demand for novel bioactive compounds by supporting research and development initiatives focused on marine resources. For instance, in December 2022, the Central Marine Fisheries Research Institute (CMFRI) signed an MoU with Emineotech for the commercial production and marketing of Cadalmin LivCure extract, a patented nutraceutical derived from seaweeds to combat non-alcoholic fatty liver disease (NAFLD). This product, developed using eco-friendly green technology, is CMFRI's ninth nutraceutical and contains 100% natural bioactive ingredients from select seaweeds. The agreement aims to improve liver health through sustainable marine biotechnology.

High Research and Development Costs

High research and development (R&D) costs significantly restrain the marine biotechnology market by limiting the ability of companies, especially startups and small enterprises, to innovate and bring new products to market. The process of discovering marine bioactive compounds involves expensive field expeditions, complex laboratory analyses and long development timelines.

Additionally, cultivating marine organisms and scaling up extraction methods require substantial investment in specialized equipment and facilities. These high upfront costs increase financial risks and reduce the attractiveness for investors. Consequently, limited funding slows down technological advancements and delays commercialization. This financial barrier ultimately restricts market growth and innovation within the marine

biotechnology sector.

Marine Biotechnology Market Segment Analysis

The global marine biotechnology market is segmented based on source, product type, technology, application and region.

Food & Beverages Hold a Significant Share Due to Growing Demand for Sustainable, Health-Enhancing Marine-Derived Ingredients

The food & beverages sector holds a significant share in the global Marine Biotechnology market due to its growing demand for novel and sustainable ingredients derived from marine sources. Marine biotechnology offers innovative solutions such as bioactive compounds, enzymes and nutraceuticals that enhance food quality, safety and nutritional value. Seaweed, algae and marine microorganisms are increasingly used in functional foods, dietary supplements and natural additives, driven by consumer preference for health-promoting and eco-friendly products. Advances in marine bio-extraction and fermentation technologies further boost product development. The sector's growth is supported by rising awareness of marine-sourced proteins and omega-3 fatty acids beneficial to human health.

Companies are developing specialized marine-derived bioactives like low molecular weight fucoidan that target specific health issues such as sarcopenia (muscle loss), catering to aging populations and wellness trends. For instance, in September 2024, the Taiwanese company launched OliFuco RE, a low molecular weight fucoidan powder derived from brown seaweed, aimed at managing sarcopenia and promoting muscle regeneration in older adults .

Marine Biotechnology Market Geographical Share

Europe Holds a Significant Share Driven by Strong R&D Infrastructure and Government Support for Sustainable Marine Innovations

Europe holds a significant share in the global marine biotechnology market due to its strong emphasis on research and development, supported by substantial government funding and policies promoting sustainable marine resources. The region boasts numerous leading marine biotechnology research institutions and universities that drive innovation and technological advancements. Europe's extensive coastline and rich marine biodiversity provide abundant raw materials for marine bioactive compounds and

bioproducts.

Additionally, the European Union (EU) has established strategic initiatives like the Blue Growth strategy to foster sustainable use of ocean resources for economic growth, which directly supports the marine biotech sector. Regional collaborations further bolster Europe's position. In October 2024, the European Ocean Research and Education Alliance (EOREA) hosted a networking event in Marseille, bringing together 14 leading universities and research centers. This alliance focuses on advancing marine sciences, including aquaculture, biodiversity and ecosystem studies.

Sustainability Analysis

The global marine biotechnology market is increasingly driven by sustainability principles focused on the responsible use of marine resources to protect ocean ecosystems. Sustainable practices in this sector prioritize eco-friendly harvesting methods that minimize environmental impact and promote biodiversity conservation. Companies are developing bioproducts derived from renewable marine biomass, reducing reliance on synthetic chemicals and fossil fuels. Governments and regulatory bodies worldwide are implementing stringent guidelines to ensure marine biotechnology activities support long-term ocean health. The market also emphasizes circular economy models, where waste from marine processes is repurposed into valuable products, reducing overall waste generation.

Marine Biotechnology Market Major Players

The major global players in the market include BASF SE, Aker BioMarine AS, Corbion N.V., FMC Corp, DSM-Firmenich, NutriMarine Life Sciences, CP Kelco, Nutrex Hawaii Inc., oceanBASIS GmbH and New England Biolabs.

Key Developments

In January 2025, the Institute of Marine and Environmental Technology (IMET) secured its largest funding commitment to date, with angel investors contributing US\$ 100,000 each to four innovative marine biotech projects aimed at enhancing sustainability and environmental health in Maryland.

In July 2024, the EU-CONEXUS alliance inaugurated a two-year international Master's program in Marine Biotechnology, graduating its first cohort. The program, developed in collaboration with universities across Europe, focuses on

blue economy and sustainable marine resource utilization.

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Contents

1. METHODOLOGY AND SCOPE

- 1.1. Research Methodology
- 1.2. Research Objective and Scope of the Report

2. DEFINITION AND OVERVIEW

3. EXECUTIVE SUMMARY

- 3.1. Snippet by Source
- 3.2. Snippet by Product Type
- 3.3. Snippet by Technology
- 3.4. Snippet by Application
- 3.5. Snippet by Region

4. DYNAMICS

- 4.1. Impacting Factors
 - 4.1.1. Drivers
 - 4.1.1.1. Rising Demand for Novel Bioactive Compounds
 - 4.1.2. Restraints
 - 4.1.2.1. High Research and Development Costs
 - 4.1.3. Opportunity
 - 4.1.4. Impact Analysis

5. INDUSTRY ANALYSIS

- 5.1. Porter's Five Force Analysis
- 5.2. Supply Chain Analysis
- 5.3. Pricing Analysis
- 5.4. Regulatory and Compliance Analysis
- 5.5. Sustainability Analysis
- 5.6. Technological Analysis
- 5.7. DMI Opinion

6. BY SOURCE

6.1. Introduction

6.1.1. Market Size Analysis and Y-o-Y Growth Analysis (%), By Source

6.1.2. Market Attractiveness Index, By Source

6.2. Corals and Sponges*

6.2.1. Introduction

6.2.2. Market Size Analysis and Y-o-Y Growth Analysis (%)

6.3. Algae

6.3.1. Micro Algae

6.3.2. Macro Algae

6.4. Marine Viruses

6.5. Marine Fungi

6.6. Others

7. BY PRODUCT TYPE

7.1. Introduction

7.1.1. Market Size Analysis and Y-o-Y Growth Analysis (%), By Product Type

7.1.2. Market Attractiveness Index, By Product Type

7.2. Bioactive Substances*

7.2.1. Introduction

7.2.2. Market Size Analysis and Y-o-Y Growth Analysis (%)

7.3. Biomaterials

7.4. Others

8. BY TECHNOLOGY

8.1. Introduction

8.1.1. Market Size Analysis and Y-o-Y Growth Analysis (%), By Technology

8.1.2. Market Attractiveness Index, By Technology

8.2. Isolation and Cultivation of Microorganisms*

8.2.1. Introduction

8.2.2. Market Size Analysis and Y-o-Y Growth Analysis (%)

8.3. Culture-Independent Techniques

8.4. Others

9. BY APPLICATION

9.1. Introduction

9.1.1. Market Size Analysis and Y-o-Y Growth Analysis (%), By Application

- 9.1.2. Market Attractiveness Index, By Application
- 9.2. Food & Beverages*
 - 9.2.1. Introduction
 - 9.2.2. Market Size Analysis and Y-o-Y Growth Analysis (%)
- 9.3. Pharmaceuticals
- 9.4. Cosmetics & Personal Care
- 9.5. Agriculture
- 9.6. Other

10. BY REGION

- 10.1. Introduction
 - 10.1.1. Market Size Analysis and Y-o-Y Growth Analysis (%), By Region
 - 10.1.2. Market Attractiveness Index, By Region
- 10.2. North America
 - 10.2.1. Introduction
 - 10.2.2. Key Region-Specific Dynamics
 - 10.2.3. Market Size Analysis and Y-o-Y Growth Analysis (%), By Source

11. MARKET SIZE ANALYSIS AND Y-O-Y GROWTH ANALYSIS (%), BY PRODUCT TYPE

- 11.1. Market Size Analysis and Y-o-Y Growth Analysis (%), By Technology
 - 11.1.1. Market Size Analysis and Y-o-Y Growth Analysis (%), By Application
 - 11.1.2. Market Size Analysis and Y-o-Y Growth Analysis (%), By Country
 - 11.1.2.1. US
 - 11.1.2.2. Canada
 - 11.1.2.3. Mexico
- 11.2. Europe
 - 11.2.1. Introduction
 - 11.2.2. Key Region-Specific Dynamics
 - 11.2.3. Market Size Analysis and Y-o-Y Growth Analysis (%), By Source
 - 11.2.4. Market Size Analysis and Y-o-Y Growth Analysis (%), By Product Type
 - 11.2.5. Market Size Analysis and Y-o-Y Growth Analysis (%), By Technology
 - 11.2.6. Market Size Analysis and Y-o-Y Growth Analysis (%), By Application
 - 11.2.7. Market Size Analysis and Y-o-Y Growth Analysis (%), By Country
 - 11.2.7.1. Germany
 - 11.2.7.2. UK
 - 11.2.7.3. France

11.2.7.4. Italy

11.2.7.5. Spain

11.2.7.6. Rest of Europe

11.3. South America

11.3.1. Introduction

11.3.2. Key Region-Specific Dynamics

11.3.3. Market Size Analysis and Y-o-Y Growth Analysis (%), By Source

11.3.4. Market Size Analysis and Y-o-Y Growth Analysis (%), By Product Type

11.3.5. Market Size Analysis and Y-o-Y Growth Analysis (%), By Technology

11.3.6. Market Size Analysis and Y-o-Y Growth Analysis (%), By Application

11.3.7. Market Size Analysis and Y-o-Y Growth Analysis (%), By Country

11.3.7.1. Brazil

11.3.7.2. Argentina

11.3.7.3. Rest of South America

11.4. Asia-Pacific

11.4.1. Introduction

11.4.2. Key Region-Specific Dynamics

11.4.3. Market Size Analysis and Y-o-Y Growth Analysis (%), By Source

11.4.4. Market Size Analysis and Y-o-Y Growth Analysis (%), By Product Type

11.4.5. Market Size Analysis and Y-o-Y Growth Analysis (%), By Technology

11.4.6. Market Size Analysis and Y-o-Y Growth Analysis (%), By Application

11.4.7. Market Size Analysis and Y-o-Y Growth Analysis (%), By Country

11.4.7.1. China

11.4.7.2. India

11.4.7.3. Japan

11.4.7.4. Australia

11.4.7.5. Rest of Asia-Pacific

11.5. Middle East and Africa

11.5.1. Introduction

11.5.2. Key Region-Specific Dynamics

11.5.3. Market Size Analysis and Y-o-Y Growth Analysis (%), By Source

11.5.4. Market Size Analysis and Y-o-Y Growth Analysis (%), By Product Type

11.5.5. Market Size Analysis and Y-o-Y Growth Analysis (%), By Technology

11.5.6. Market Size Analysis and Y-o-Y Growth Analysis (%), By Application

12. COMPETITIVE LANDSCAPE

12.1. Competitive Scenario

12.2. Market Positioning/Share Analysis

12.3. Mergers and Acquisitions Analysis

13. COMPANY PROFILES

13.1. BASF SE*

13.1.1. Company Overview

13.1.2. Product Portfolio and Description

13.1.3. Financial Overview

13.1.4. Key Developments

13.2. Aker BioMarine AS

13.3. Corbion N.V.

13.4. FMC Corp

13.5. DSM-Firmenich

13.6. NutriMarine Life Sciences

13.7. CP Kelco

13.8. Nutrex Hawaii Inc.

13.9. oceanBASIS GmbH

13.10. New England Biolabs (*LIST NOT EXHAUSTIVE)

14. APPENDIX

14.1. About Us and Services

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