+357 96 030922
info@marketpublishers.com

Phage Therapy & Synthetic Microbiome Engineering Market Forecasts to 2034 – Global Analysis By Product (Therapeutic Bacteriophage Preparations, Personalized Phage Cocktails, Engineered Synthetic Phages, Microbiome Therapeutic Consortia, Other Products), By Target Pathogen, By Technology, By Application, By End User and By Geography

https://marketpublishers.com/r/PCC823260F02EN.html
Date: March 2026
Pages: 200
Price: US$ 4,150.00 (Single User License)
ID: PCC823260F02EN

Abstracts

According to Stratistics MRC, the Global Phage Therapy & Synthetic Microbiome Engineering Market is accounted for $1.3 billion in 2026 and is expected to reach $1.8 billion by 2034 growing at a CAGR of 4.1% during the forecast period. Phage Therapy & Synthetic Microbiome Engineering involves the use of bacteriophages viruses that specifically target bacteria—and engineered microbial communities to treat infections and restore healthy microbiomes. Phage therapy selectively eliminates harmful bacteria while preserving beneficial microbes, making it a promising alternative to antibiotics. Synthetic microbiome engineering uses designed microbial consortia to modulate gut or environmental microbiomes for therapeutic purposes. These approaches address antibiotic resistance, improve disease treatment, and support personalized medicine by leveraging precision microbiology and advances in biotechnology.

Market Dynamics:

Driver:

Rising antimicrobial resistance globally

Many bacterial infections are becoming increasingly resistant to conventional antibiotics.

+357 96 030922
info@marketpublishers.com

This has created an urgent need for alternative therapeutic approaches. Phage therapy uses bacteriophages that specifically target and destroy harmful bacteria. These therapies provide a promising solution for infections that no longer respond to antibiotics. As antibiotic resistance continues to rise worldwide, interest in phage-based treatments is growing rapidly.

Restraint:

Complex regulatory approval processes

Regulatory frameworks for phage therapies are still evolving in many countries. These treatments often require customized formulations for individual patients. This makes standardization and large-scale clinical validation more challenging. Regulatory authorities require extensive safety and efficacy data before approval. These factors can delay commercialization and limit market growth.

Opportunity:

Personalized phage therapy developments

Personalized treatments use specific bacteriophages tailored to a patient's bacterial infection. Advances in genomics and microbiome research are supporting the development of such targeted therapies. These solutions can provide highly precise treatment with minimal impact on beneficial bacteria. Research institutions and biotech companies are actively investing in personalized phage therapy platforms. As personalized medicine gains popularity, demand for tailored phage therapies is expected to increase.

Threat:

Bacterial resistance to phage therapies

Although bacteriophages can adapt and evolve, bacteria may still develop defense mechanisms against them. Continuous monitoring and development of new phage strains are required to maintain effectiveness. This process can increase research and development costs. Additionally, large-scale production and stability of phage preparations can be technically complex. These challenges may affect long-term adoption of phage therapy solutions.

+357 96 030922
info@marketpublishers.com

Covid-19 Impact:

The COVID-19 pandemic influenced research activities in the phage therapy and microbiome engineering market. During the early stages of the pandemic, many research programs were temporarily delayed. Healthcare systems prioritized COVID-19 treatment and vaccine development. However, the pandemic highlighted the importance of advanced infectious disease therapies. Researchers increased focus on innovative solutions for antimicrobial resistance. As a result, interest in phage therapy research and investment has continued to grow.

The antibiotic-resistant bacteria segment is expected to be the largest during the forecast period

The antibiotic-resistant bacteria segment is expected to account for the largest market share during the forecast period because phage therapy is particularly effective against bacteria that do not respond to antibiotics. Many healthcare systems are facing increasing cases of multidrug-resistant infections. Phage therapies offer a targeted and efficient treatment option for such infections. Hospitals and research institutions are actively studying phage applications for resistant pathogens. These factors support the dominance of the antibiotic-resistant bacteria segment.

The pharmaceutical companies segment is expected to have the highest CAGR during the forecast period

Over the forecast period, the pharmaceutical companies segment is predicted to witness the highest growth rate due to increased investment in phage therapy research and microbiome-based therapeutics. These companies are conducting clinical trials to develop new phage-based drugs. Partnerships between biotech firms and pharmaceutical companies are also increasing. Growing interest in alternative antimicrobial therapies further supports this trend. As drug development activities expand, pharmaceutical companies will play a major role in market growth.

Region with largest share:

During the forecast period, the North America region is expected to hold the largest market share owing to strong biotechnology research infrastructure and advanced healthcare systems. Many leading biotech companies and research institutions are developing phage therapies. Government funding for antimicrobial resistance research also supports innovation. Additionally, the region has a strong presence of

+357 96 030922
info@marketpublishers.com

pharmaceutical companies working on microbiome-based therapeutics. These factors contribute to North America’s leading position in the market.

Region with highest CAGR:

Over the forecast period, the Asia Pacific region is anticipated to exhibit the highest CAGR driven by rising healthcare investments and increasing research activities are driving market growth in this region. Countries such as China, Japan, and South Korea are expanding biotechnology research capabilities. Growing awareness of antimicrobial resistance is also encouraging the adoption of new therapies. Government initiatives supporting advanced healthcare technologies further boost the market.

Key players in the market

Some of the key players in Phage Therapy & Synthetic Microbiome Engineering Market include Adaptive Phage Therapeutics, Pherecydes Pharma, Armata Pharmaceuticals, Inc., Locus Biosciences, Inc., Synthego Corporation, Synlogic, Inc., Seres Therapeutics, Inc., Second Genome, Inc., Enterome SA, Microbiotica Ltd., Pfizer Inc., F. Hoffmann-La Roche Ltd., Novartis AG, Johnson & Johnson and Eligo Bioscience.

Key Developments:

In May 2025, Synthego expanded its CRISPR portfolio with the launch of GMP SpCas9, a nuclease manufactured under current Good Manufacturing Practice (cGMP) standards . This product is designed to be bundled with their GMP guide RNAs to streamline the development of CRISPR-based therapeutics for clinical studies.

In November 2023, Pherecydes Pharma company was acquired by the ERBC Group, a French preclinical Contract Research Organization (CRO). This strategic move transitioned Pherecydes from a standalone biotech into the 'Phage Unit' of ERBC, aiming to leverage its expertise to offer phagogram services to hospital clients seeking personalized anti-bacterial treatments.

Products Covered:

- Therapeutic Bacteriophage Preparations
- Personalized Phage Cocktails

+357 96 030922
info@marketpublishers.com

- Engineered Synthetic Phages
- Microbiome Therapeutic Consortia
- Other Products

Target Pathogens Covered:

- Antibiotic-Resistant Bacteria
- Staphylococcus Infections
- Pseudomonas Infections
- E. coli Infections
- Other Target Pathogens

Technologies Covered:

- CRISPR-Based Phage Engineering
- Synthetic Biology Platforms
- Directed Evolution Techniques
- AI-Based Phage Design
- Other Technologies

Applications Covered:

- Infectious Disease Treatment
- Gastrointestinal Disorders

+357 96 030922
info@marketpublishers.com

- Skin & Wound Care
- Respiratory Infections
- Other Applications

End Users Covered:

- Hospitals
- Biotechnology Companies
- Pharmaceutical Companies
- Academic & Research Institutes
- Veterinary Clinics
- Agricultural Enterprises
- Other End Users

Regions Covered:

- North America
  - United States
  - Canada
  - Mexico
- Europe
  - United Kingdom
  - Germany

+357 96 030922
info@marketpublishers.com

- France
- Italy
- Spain
- Netherlands
- Belgium
- Sweden
- Switzerland
- Poland
- Rest of Europe

Asia Pacific

- China
- Japan
- India
- South Korea
- Australia
- Indonesia
- Thailand
- Malaysia
- Singapore

+357 96 030922
info@marketpublishers.com

- Vietnam
- Rest of Asia Pacific

South America

- Brazil
- Argentina
- Colombia
- Chile
- Peru
- Rest of South America

Rest of the World (RoW)

- Middle East
  - Saudi Arabia
  - United Arab Emirates
  - Qatar
  - Israel
  - Rest of Middle East
- Africa
  - South Africa
  - Egypt
  - Morocco

+357 96 030922
info@marketpublishers.com

Rest of Africa

What our report offers:
- Market share assessments for the regional and country-level segments
- Strategic recommendations for the new entrants
- Covers Market data for the years 2023, 2024, 2025, 2026, 2027, 2028, 2030, 2032 and 2034
- Market Trends (Drivers, Constraints, Opportunities, Threats, Challenges, Investment Opportunities, and recommendations)
- Strategic recommendations in key business segments based on the market estimations
- Competitive landscaping mapping the key common trends
- Company profiling with detailed strategies, financials, and recent developments
- Supply chain trends mapping the latest technological advancements

Free Customization Offerings:

All the customers of this report will be entitled to receive one of the following free customization options:

Company Profiling

Comprehensive profiling of additional market players (up to 3)

SWOT Analysis of key players (up to 3)

Regional Segmentation

Market estimations, Forecasts and CAGR of any prominent country as per the client's interest (Note: Depends on feasibility check)

Competitive Benchmarking

Benchmarking of key players based on product portfolio, geographical presence, and strategic alliances

+357 96 030922
info@marketpublishers.com

Contents

1 EXECUTIVE SUMMARY

1.1 Market Snapshot and Key Highlights
1.2 Growth Drivers, Challenges, and Opportunities
1.3 Competitive Landscape Overview
1.4 Strategic Insights and Recommendations

2 RESEARCH FRAMEWORK

2.1 Study Objectives and Scope
2.2 Stakeholder Analysis
2.3 Research Assumptions and Limitations
2.4 Research Methodology
  2.4.1 Data Collection (Primary and Secondary)
  2.4.2 Data Modeling and Estimation Techniques
  2.4.3 Data Validation and Triangulation
  2.4.4 Analytical and Forecasting Approach

3 MARKET DYNAMICS AND TREND ANALYSIS

3.1 Market Definition and Structure
3.2 Key Market Drivers
3.3 Market Restraints and Challenges
3.4 Growth Opportunities and Investment Hotspots
3.5 Industry Threats and Risk Assessment
3.6 Technology and Innovation Landscape
3.7 Emerging and High-Growth Markets
3.8 Regulatory and Policy Environment
3.9 Impact of COVID-19 and Recovery Outlook

4 COMPETITIVE AND STRATEGIC ASSESSMENT

4.1 Porter's Five Forces Analysis
  4.1.1 Supplier Bargaining Power
  4.1.2 Buyer Bargaining Power
  4.1.3 Threat of Substitutes
  4.1.4 Threat of New Entrants

+357 96 030922
info@marketpublishers.com

4.1.5 Competitive Rivalry
4.2 Market Share Analysis of Key Players
4.3 Product Benchmarking and Performance Comparison

5 GLOBAL PHAGE THERAPY & SYNTHETIC MICROBIOME ENGINEERING MARKET, BY PRODUCT

5.1 Therapeutic Bacteriophage Preparations
5.2 Personalized Phage Cocktails
5.3 Engineered Synthetic Phages
5.4 Microbiome Therapeutic Consortia
5.5 Other Products

6 GLOBAL PHAGE THERAPY & SYNTHETIC MICROBIOME ENGINEERING MARKET, BY TARGET PATHOGEN

6.1 Antibiotic-Resistant Bacteria
6.2 Staphylococcus Infections
6.3 Pseudomonas Infections
6.4 E. coli Infections
6.5 Other Target Pathogens

7 GLOBAL PHAGE THERAPY & SYNTHETIC MICROBIOME ENGINEERING MARKET, BY TECHNOLOGY

7.1 CRISPR-Based Phage Engineering
7.2 Synthetic Biology Platforms
7.3 Directed Evolution Techniques
7.4 AI-Based Phage Design
7.5 Other Technologies

8 GLOBAL PHAGE THERAPY & SYNTHETIC MICROBIOME ENGINEERING MARKET, BY APPLICATION

8.1 Infectious Disease Treatment
8.2 Gastrointestinal Disorders
8.3 Skin & Wound Care
8.4 Respiratory Infections
8.5 Other Applications

+357 96 030922
info@marketpublishers.com

9 GLOBAL PHAGE THERAPY & SYNTHETIC MICROBIOME ENGINEERING MARKET, BY END USER

9.1 Hospitals
9.2 Biotechnology Companies
9.3 Pharmaceutical Companies
9.4 Academic & Research Institutes
9.5 Veterinary Clinics
9.6 Agricultural Enterprises
9.7 Other End Users

10 GLOBAL PHAGE THERAPY & SYNTHETIC MICROBIOME ENGINEERING MARKET, BY GEOGRAPHY

10.1 North America
  10.1.1 United States
  10.1.2 Canada
  10.1.3 Mexico
10.2 Europe
  10.2.1 United Kingdom
  10.2.2 Germany
  10.2.3 France
  10.2.4 Italy
  10.2.5 Spain
  10.2.6 Netherlands
  10.2.7 Belgium
  10.2.8 Sweden
  10.2.9 Switzerland
  10.2.10 Poland
  10.2.11 Rest of Europe
10.3 Asia Pacific
  10.3.1 China
  10.3.2 Japan
  10.3.3 India
  10.3.4 South Korea
  10.3.5 Australia
  10.3.6 Indonesia
  10.3.7 Thailand

+357 96 030922
info@marketpublishers.com

10.3.8 Malaysia
10.3.9 Singapore
10.3.10 Vietnam
10.3.11 Rest of Asia Pacific
10.4 South America
10.4.1 Brazil
10.4.2 Argentina
10.4.3 Colombia
10.4.4 Chile
10.4.5 Peru
10.4.6 Rest of South America
10.5 Rest of the World (RoW)
10.5.1 Middle East
10.5.1.1 Saudi Arabia
10.5.1.2 United Arab Emirates
10.5.1.3 Qatar
10.5.1.4 Israel
10.5.1.5 Rest of Middle East
10.5.2 Africa
10.5.2.1 South Africa
10.5.2.2 Egypt
10.5.2.3 Morocco
10.5.2.4 Rest of Africa

11 STRATEGIC MARKET INTELLIGENCE

11.1 Industry Value Network and Supply Chain Assessment
11.2 White-Space and Opportunity Mapping
11.3 Product Evolution and Market Life Cycle Analysis
11.4 Channel, Distributor, and Go-to-Market Assessment

12 INDUSTRY DEVELOPMENTS AND STRATEGIC INITIATIVES

12.1 Mergers and Acquisitions
12.2 Partnerships, Alliances, and Joint Ventures
12.3 New Product Launches and Certifications
12.4 Capacity Expansion and Investments
12.5 Other Strategic Initiatives

+357 96 030922
info@marketpublishers.com

13 COMPANY PROFILES

13.1 Adaptive Phage Therapeutics
13.2 Pherecydes Pharma
13.3 Armata Pharmaceuticals, Inc.
13.4 Locus Biosciences, Inc.
13.5 Synthego Corporation
13.6 Synlogic, Inc.
13.7 Seres Therapeutics, Inc.
13.8 Second Genome, Inc.
13.9 Enterome SA
13.10 Microbiotica Ltd.
13.11 Pfizer Inc.
13.12 F. Hoffmann-La Roche Ltd.
13.13 Novartis AG
13.14 Johnson & Johnson
13.15 Eligo Bioscience

+357 96 030922
info@marketpublishers.com

List Of Tables

LIST OF TABLES

Table 1 Global Phage Therapy & Synthetic Microbiome Engineering Market Outlook, By Region (2023-2034) ($MN)
Table 2 Global Phage Therapy & Synthetic Microbiome Engineering Market, By Product (2023–2034) ($MN)
Table 3 Global Phage Therapy & Synthetic Microbiome Engineering Market, By Therapeutic Bacteriophage Preparations (2023–2034) ($MN)
Table 4 Global Phage Therapy & Synthetic Microbiome Engineering Market, By Personalized Phage Cocktails (2023–2034) ($MN)
Table 5 Global Phage Therapy & Synthetic Microbiome Engineering Market, By Engineered Synthetic Phages (2023–2034) ($MN)
Table 6 Global Phage Therapy & Synthetic Microbiome Engineering Market, By Microbiome Therapeutic Consortia (2023–2034) ($MN)
Table 7 Global Phage Therapy & Synthetic Microbiome Engineering Market, By Other Products (2023–2034) ($MN)
Table 8 Global Phage Therapy & Synthetic Microbiome Engineering Market, By Target Pathogen (2023–2034) ($MN)
Table 9 Global Phage Therapy & Synthetic Microbiome Engineering Market, By Antibiotic-Resistant Bacteria (2023–2034) ($MN)
Table 10 Global Phage Therapy & Synthetic Microbiome Engineering Market, By Staphylococcus Infections (2023–2034) ($MN)
Table 11 Global Phage Therapy & Synthetic Microbiome Engineering Market, By Pseudomonas Infections (2023–2034) ($MN)
Table 12 Global Phage Therapy & Synthetic Microbiome Engineering Market, By E. coli Infections (2023–2034) ($MN)
Table 13 Global Phage Therapy & Synthetic Microbiome Engineering Market, By Other Target Pathogens (2023–2034) ($MN)
Table 14 Global Phage Therapy & Synthetic Microbiome Engineering Market, By Technology (2023–2034) ($MN)
Table 15 Global Phage Therapy & Synthetic Microbiome Engineering Market, By CRISPR-Based Phage Engineering (2023–2034) ($MN)
Table 16 Global Phage Therapy & Synthetic Microbiome Engineering Market, By Synthetic Biology Platforms (2023–2034) ($MN)
Table 17 Global Phage Therapy & Synthetic Microbiome Engineering Market, By Directed Evolution Techniques (2023–2034) ($MN)
Table 18 Global Phage Therapy & Synthetic Microbiome Engineering Market, By AI-

+357 96 030922
info@marketpublishers.com

Based Phage Design (2023–2034) ($MN)
Table 19 Global Phage Therapy & Synthetic Microbiome Engineering Market, By Other Technologies (2023–2034) ($MN)
Table 20 Global Phage Therapy & Synthetic Microbiome Engineering Market, By Application (2023–2034) ($MN)
Table 21 Global Phage Therapy & Synthetic Microbiome Engineering Market, By Infectious Disease Treatment (2023–2034) ($MN)
Table 22 Global Phage Therapy & Synthetic Microbiome Engineering Market, By Gastrointestinal Disorders (2023–2034) ($MN)
Table 23 Global Phage Therapy & Synthetic Microbiome Engineering Market, By Skin & Wound Care (2023–2034) ($MN)
Table 24 Global Phage Therapy & Synthetic Microbiome Engineering Market, By Respiratory Infections (2023–2034) ($MN)
Table 25 Global Phage Therapy & Synthetic Microbiome Engineering Market, By Other Applications (2023–2034) ($MN)
Table 26 Global Phage Therapy & Synthetic Microbiome Engineering Market, By End User (2023–2034) ($MN)
Table 27 Global Phage Therapy & Synthetic Microbiome Engineering Market, By Hospitals (2023–2034) ($MN)
Table 28 Global Phage Therapy & Synthetic Microbiome Engineering Market, By Biotechnology Companies (2023–2034) ($MN)
Table 29 Global Phage Therapy & Synthetic Microbiome Engineering Market, By Pharmaceutical Companies (2023–2034) ($MN)
Table 30 Global Phage Therapy & Synthetic Microbiome Engineering Market, By Academic & Research Institutes (2023–2034) ($MN)
Table 31 Global Phage Therapy & Synthetic Microbiome Engineering Market, By Veterinary Clinics (2023–2034) ($MN)
Table 32 Global Phage Therapy & Synthetic Microbiome Engineering Market, By Agricultural Enterprises (2023–2034) ($MN)
Table 33 Global Phage Therapy & Synthetic Microbiome Engineering Market, By Other End Users (2023–2034) ($MN)
Note: Tables for North America, Europe, APAC, South America, and Rest of the World (RoW) are also represented in the same manner as above.

+357 96 030922
info@marketpublishers.com

I would like to order

Product name: Phage Therapy & Synthetic Microbiome Engineering Market Forecasts to 2034 – Global Analysis By Product (Therapeutic Bacteriophage Preparations, Personalized Phage Cocktails, Engineered Synthetic Phages, Microbiome Therapeutic Consortia, Other Products), By Target Pathogen, By Technology, By Application, By End User and By Geography

Product link: https://marketpublishers.com/r/PCC823260F02EN.html

Price: US$ 4,150.00 (Single User License / Electronic Delivery)

If you want to order Corporate License or Hard Copy, please, contact our Customer Service:
info@marketpublishers.com

Payment

To pay by Credit Card (Visa, MasterCard, American Express, PayPal), please, click button on product page https://marketpublishers.com/r/PCC823260F02EN.html