

# **Small-scale Bioreactors Market - Global Industry Size, Share, Trends, Opportunity, and Forecast, Segmented By End user (Pharmaceutical & Biopharmaceutical Companies, CROs & CMOs, Academic & Research Institutes), By Product (Reusable Bioreactors( Stainless Steel Bioreactors, Glass Bioreactors), Single-use Bioreactors), By Region and Competition, 2019-2029F**

<https://marketpublishers.com/r/SC4CCF29CB0BEN.html>

Date: May 2024

Pages: 180

Price: US\$ 4,900.00 (Single User License)

ID: SC4CCF29CB0BEN

## **Abstracts**

Global Small-scale Bioreactors Market was valued at USD 1.52 Billion in 2023 and is anticipated to project steady growth in the forecast period with a CAGR of 5.25% through 2029. Bioreactors serve as indispensable equipment in biopharmaceutical manufacturing, facilitating the controlled cultivation of cells or microorganisms. They are vital for producing vaccines, monoclonal antibodies, and other biopharmaceutical products. Over recent years, there has been a notable uptick in demand for small-scale bioreactors owing to their versatility, cost efficiency, and suitability for research and development endeavors.

This surge has propelled significant growth in the global market for small-scale bioreactors, spurred by the rising need for biopharmaceuticals, advancements in bioprocessing technology, and the growing emphasis on personalized medicine. Small-scale bioreactors, ranging from bench-top to pilot scale, are tailored to meet the requirements of academic institutions, research labs, and small biotech firms engaged in process development and limited-scale production. Offering benefits like flexibility, scalability, and user-friendly operation, these bioreactors have become indispensable assets in bioprocessing workflows.

## Key Market Drivers

### Growing Biopharmaceutical Industry is Driving the Global Small-scale Bioreactors Market

The biopharmaceutical industry is witnessing a remarkable surge, driven by advancements in biotechnology, increasing demand for personalized medicine, and the ongoing pursuit of innovative therapeutic solutions. Central to this flourishing industry are small-scale bioreactors, critical tools enabling efficient and cost-effective bioprocessing for research, development, and production. As the demand for biopharmaceuticals continues to escalate, the global small-scale bioreactors market is experiencing unprecedented growth, presenting lucrative opportunities for players across the value chain. The biopharmaceutical industry has emerged as a cornerstone of modern healthcare, offering novel treatments for a spectrum of diseases ranging from cancer to rare genetic disorders.

Biopharmaceuticals, derived from biological sources such as living cells or organisms, offer several advantages over traditional pharmaceuticals, including higher specificity, reduced side effects, and enhanced efficacy. There has been a substantial increase in research and development (R&D) activities focused on biologics, gene therapies, and cell-based therapies, propelling the demand for small-scale bioreactors. Small-scale bioreactors serve as indispensable tools in the biopharmaceutical development process, facilitating the cultivation of cells or microorganisms under controlled conditions. These reactors mimic the environment found in larger-scale bioprocessing facilities, allowing researchers and manufacturers to optimize parameters such as temperature, pH, oxygenation, and nutrient supply. Moreover, small-scale bioreactors enable efficient experimentation, process optimization, and scale-up, accelerating the transition from lab-scale to commercial production.

### Rising Demand for Personalized Medicine is Driving the Global Small-scale Bioreactors Market

One of the primary drivers of the global small-scale bioreactors market is the increasing demand for personalized medicine. Unlike traditional one-size-fits-all approaches to healthcare, personalized medicine takes into account individual genetic variability, lifestyle factors, and environmental influences to develop targeted therapies that are tailored to the specific needs of each patient. This requires the ability to rapidly screen and test a wide range of drug candidates, optimize

production processes, and scale up manufacturing in a cost-effective manner – all of which can be facilitated by small-scale bioreactor systems.

In drug discovery and development, small-scale bioreactors play a critical role in the screening and optimization of biopharmaceuticals, including monoclonal antibodies, recombinant proteins, and cell-based therapies. By allowing researchers to simulate the conditions of larger bioreactors on a smaller scale, these systems enable high-throughput experimentation and process optimization, leading to faster development timelines and reduced R&D costs. Small-scale bioreactors are ideal for the production of niche or orphan drugs, which may have limited market potential but can offer significant clinical benefits to specific patient populations.

In addition to drug discovery and development, small-scale bioreactors are also being increasingly utilized in the manufacturing of personalized cell and gene therapies. These advanced therapies involve the manipulation of a patient's own cells or genetic material to treat or cure diseases, such as cancer, genetic disorders, and autoimmune conditions. Small-scale bioreactors allow researchers and manufacturers to culture patient-derived cells in a controlled environment, monitor their growth and differentiation, and optimize production processes to ensure product quality and consistency.

The growing adoption of small-scale bioreactors in personalized medicine is driving innovation and investment in the global bioprocessing industry. Companies are developing new technologies and solutions to meet the evolving needs of researchers and manufacturers, including integrated automation systems, disposable bioreactor platforms, and advanced analytics tools for process monitoring and control. Collaborations between academia, industry, and regulatory agencies are helping to establish best practices and standards for the development and manufacturing of personalized therapies, further accelerating the growth of the small-scale bioreactors market.

## Key Market Challenges

### Cost Constraints

Cost considerations remain a significant barrier to the widespread adoption of small-scale bioreactors. Despite their advantages in terms of reduced reagent consumption, shorter turnaround times, and lower facility requirements compared to traditional bioreactor systems, the initial investment and operating costs can still be prohibitive for

many research and development organizations, especially smaller enterprises and academic institutions. Addressing cost constraints through technological advancements and strategic pricing models is crucial to expanding market access.

### Complex Regulatory Landscape

Navigating the complex regulatory landscape presents another significant challenge for small-scale bioreactors. Biopharmaceutical development and production are subject to stringent regulations imposed by health authorities worldwide. Ensuring compliance with Good Manufacturing Practice (GMP) standards, documentation requirements, and validation protocols is essential but can be resource-intensive and time-consuming, particularly for smaller companies with limited regulatory expertise and infrastructure. Streamlining regulatory processes and providing comprehensive guidance tailored to small-scale bioreactor users could facilitate compliance and accelerate market adoption.

### Key Market Trends

#### Technological Advancements

In recent years, the field of biotechnology has experienced remarkable growth, fueled by advancements in technology and increasing demand for biopharmaceuticals, personalized medicines, and biofuels. Among the key technologies driving this growth are small-scale bioreactors, which play a crucial role in the development and manufacturing of biopharmaceuticals and other biotechnology products. These compact and versatile systems have witnessed a surge in demand, thanks to their ability to mimic large-scale bioprocessing conditions, thereby accelerating research and development efforts. Technological advancements have led to the miniaturization of bioreactor systems, enabling researchers to conduct experiments on a smaller scale with greater precision and efficiency. Furthermore, automation features incorporated into these systems streamline processes, reduce manual intervention, and enhance reproducibility, thereby driving demand.

Modern small-scale bioreactors are equipped with advanced monitoring and control systems that enable real-time tracking of key parameters such as pH, temperature, dissolved oxygen, and agitation speed. These systems offer greater flexibility and control over the bioprocess, allowing researchers to optimize conditions for cell culture growth and product formation. Single-use bioreactor systems have gained traction in recent years due to their cost-effectiveness, scalability, and reduced risk

of cross-contamination. Manufacturers are increasingly integrating single-use technologies into small-scale bioreactors, making them more accessible to researchers and facilitating seamless scale-up to larger production platforms. Innovations in cell culture techniques, such as perfusion bioreactors and microcarrier-based culture systems, have expanded the capabilities of small-scale bioreactors. These advancements enable the cultivation of a wide range of cell types, including mammalian cells, stem cells, and microbial cultures, for various applications in biopharmaceuticals, regenerative medicine, and tissue engineering.

## Segmental Insights

### Product Insights

Based on the category of product, Reusable Bioreactors emerged as the fastest growing segment in the global market for Small-scale Bioreactors in 2023. One of the key drivers behind the increasing adoption of reusable bioreactors is the growing emphasis on sustainability and environmental responsibility. Traditional single-use bioreactors generate significant amounts of plastic waste with each use, contributing to environmental pollution and resource depletion. In contrast, reusable bioreactors are designed to be sterilized and reused multiple times, significantly reducing waste generation and environmental impact. This sustainability aspect has become a crucial factor for companies striving to align with eco-friendly practices and reduce their carbon footprint.

Reusable bioreactors offer compelling cost advantages over single-use systems, particularly in the long term. While the initial investment for reusable bioreactors may be higher, their ability to be cleaned, sterilized, and reused multiple times results in significant cost savings over their lifecycle. Reusable bioreactors provide greater flexibility and scalability, allowing companies to adapt their manufacturing processes more efficiently to changing production requirements. This scalability is particularly advantageous for small-scale bioreactor applications, where rapid adjustments and cost-effectiveness are essential.

### End User Insights

The Pharmaceutical & Biopharmaceutical Companies segment is projected to experience rapid growth during the forecast period. The pharmaceutical and biopharmaceutical industries have been at the forefront of adopting cutting-edge technologies to enhance drug discovery, development, and manufacturing

processes. Small-scale bioreactors have emerged as indispensable tools in these sectors, enabling researchers and manufacturers to conduct experiments and produce biologics in controlled laboratory environments. These bioreactors offer several advantages, including precise monitoring and control of parameters such as temperature, pH, dissolved oxygen, and agitation speed, which are crucial for optimizing cell growth and product yield.

One of the key drivers behind the dominance of pharmaceutical and biopharmaceutical companies in the small-scale bioreactors market is the growing demand for biologics. Biologics, which include therapeutic proteins, monoclonal antibodies, vaccines, and gene therapies, have witnessed a significant increase in demand due to their effectiveness in treating various diseases, including cancer, autoimmune disorders, and infectious diseases. Small-scale bioreactors play a vital role in the development and production of these complex biologic drugs, allowing for rapid prototyping, process optimization, and scale-up.

### Regional Insights

North America emerged as the dominant region in the global Small-scale Bioreactors market in 2023, holding the largest market share in terms of value. North America boasts a strong culture of innovation, with many leading biotech companies and research institutions driving advancements in bioprocessing technologies. These innovations result in the development of state-of-the-art small-scale bioreactors with enhanced capabilities and efficiency. The region is home to a flourishing biopharmaceutical sector, with numerous companies engaged in the research, development, and production of biologics. Small-scale bioreactors play a crucial role in biopharmaceutical manufacturing, from early-stage research to process optimization and scale-up, driving their widespread adoption in North America.

### Key Market Players

Sartorius AG

ThermoFisher Scientific Inc.

Merck KGaA

Danaher Corp.

Lonza Group Ltd.

Eppendorf SE

Miltenyi Biotec India Pvt Ltd.

Getinge AB

Solaris Biotech USA, Inc.

Infors AG

#### Report Scope:

In this report, the Global Small-scale Bioreactors Market has been segmented into the following categories, in addition to the industry trends which have also been detailed below:

Small-scale Bioreactors Market, By End user:

Pharmaceutical & Biopharmaceutical Companies

CROs & CMOs

Academic & Research Institutes

Small-scale Bioreactors Market, By Product:

Reusable Bioreactors

Single-use Bioreactors

Small-scale Bioreactors Market, By Region:

North America

United States

Canada

Mexico

Europe

France

United Kingdom

Italy

Germany

Spain

Asia-Pacific

China

India

Japan

Australia

South Korea

South America

Brazil

Argentina

Colombia

Middle East & Africa

South Africa



Saudi Arabia

UAE

## Competitive Landscape

**Company Profiles:** Detailed analysis of the major companies presents in the Small-scale Bioreactors Market.

## Available Customizations:

Global Small-scale Bioreactors market report with the given market data, Tech Sci Research offers customizations according to a company's specific needs. The following customization options are available for the report:

## Company Information

Detailed analysis and profiling of additional market players (up to five).

## Contents

### **1. PRODUCT OVERVIEW**

- 1.1. Market Definition
- 1.2. Scope of the Market
  - 1.2.1. Markets Covered
  - 1.2.2. Years Considered for Study
  - 1.2.3. Key Market Segmentations

### **2. RESEARCH METHODOLOGY**

- 2.1. Objective of the Study
- 2.2. Baseline Methodology
- 2.3. Key Industry Partners
- 2.4. Major Association and Secondary Sources
- 2.5. Forecasting Methodology
- 2.6. Data Triangulation & Validation
- 2.7. Assumptions and Limitations

### **3. EXECUTIVE SUMMARY**

- 3.1. Overview of the Market
- 3.2. Overview of Key Market Segmentations
- 3.3. Overview of Key Market Players
- 3.4. Overview of Key Regions/Countries
- 3.5. Overview of Market Drivers, Challenges, and Trends

### **4. VOICE OF CUSTOMER**

### **5. GLOBAL SMALL-SCALE BIOREACTORS MARKET OUTLOOK**

- 5.1. Market Size & Forecast
  - 5.1.1. By Value
- 5.2. Market Share & Forecast
  - 5.2.1. By End user ( Pharmaceutical & Biopharmaceutical Companies, CROs & CMOs, Academic & Research Institutes)
  - 5.2.2. By Product (Reusable Bioreactors( Stainless Steel Bioreactors, Glass

Bioreactors), Single-use Bioreactors)

5.2.3. By Company (2023)

5.2.4. By Region

5.3. Market Map

## **6. NORTH AMERICA SMALL-SCALE BIOREACTORS MARKET OUTLOOK**

6.1. Market Size & Forecast

6.1.1. By Value

6.2. Market Share & Forecast

6.2.1. By End user

6.2.2. By Product

6.2.3. By Country

6.3. North America: Country Analysis

6.3.1. United States Small-scale Bioreactors Market Outlook

6.3.1.1. Market Size & Forecast

6.3.1.1.1. By Value

6.3.1.2. Market Share & Forecast

6.3.1.2.1. By End user

6.3.1.2.2. By Product

6.3.2. Mexico Small-scale Bioreactors Market Outlook

6.3.2.1. Market Size & Forecast

6.3.2.1.1. By Value

6.3.2.2. Market Share & Forecast

6.3.2.2.1. By End user

6.3.2.2.2. By Product

6.3.3. Canada Small-scale Bioreactors Market Outlook

6.3.3.1. Market Size & Forecast

6.3.3.1.1. By Value

6.3.3.2. Market Share & Forecast

6.3.3.2.1. By End user

6.3.3.2.2. By Product

## **7. EUROPE SMALL-SCALE BIOREACTORS MARKET OUTLOOK**

7.1. Market Size & Forecast

7.1.1. By Value

7.2. Market Share & Forecast

7.2.1. By End user

7.2.2. By Product

7.2.3. By Country

### 7.3. Europe: Country Analysis

7.3.1. France Small-scale Bioreactors Market Outlook

7.3.1.1. Market Size & Forecast

7.3.1.1.1. By Value

7.3.1.2. Market Share & Forecast

7.3.1.2.1. By End user

7.3.1.2.2. By Product

7.3.2. Germany Small-scale Bioreactors Market Outlook

7.3.2.1. Market Size & Forecast

7.3.2.1.1. By Value

7.3.2.2. Market Share & Forecast

7.3.2.2.1. By End user

7.3.2.2.2. By Product

7.3.3. United Kingdom Small-scale Bioreactors Market Outlook

7.3.3.1. Market Size & Forecast

7.3.3.1.1. By Value

7.3.3.2. Market Share & Forecast

7.3.3.2.1. By End user

7.3.3.2.2. By Product

7.3.4. Italy Small-scale Bioreactors Market Outlook

7.3.4.1. Market Size & Forecast

7.3.4.1.1. By Value

7.3.4.2. Market Share & Forecast

7.3.4.2.1. By End user

7.3.4.2.2. By Product

7.3.5. Spain Small-scale Bioreactors Market Outlook

7.3.5.1. Market Size & Forecast

7.3.5.1.1. By Value

7.3.5.2. Market Share & Forecast

7.3.5.2.1. By End user

7.3.5.2.2. By Product

## **8. ASIA-PACIFIC SMALL-SCALE BIOREACTORS MARKET OUTLOOK**

8.1. Market Size & Forecast

8.1.1. By Value

8.2. Market Share & Forecast

- 8.2.1. By End user
- 8.2.2. By Product
- 8.2.3. By Country
- 8.3. Asia-Pacific: Country Analysis
  - 8.3.1. China Small-scale Bioreactors Market Outlook
    - 8.3.1.1. Market Size & Forecast
      - 8.3.1.1.1. By Value
    - 8.3.1.2. Market Share & Forecast
      - 8.3.1.2.1. By End user
      - 8.3.1.2.2. By Product
  - 8.3.2. India Small-scale Bioreactors Market Outlook
    - 8.3.2.1. Market Size & Forecast
      - 8.3.2.1.1. By Value
    - 8.3.2.2. Market Share & Forecast
      - 8.3.2.2.1. By End user
      - 8.3.2.2.2. By Product
  - 8.3.3. South Korea Small-scale Bioreactors Market Outlook
    - 8.3.3.1. Market Size & Forecast
      - 8.3.3.1.1. By Value
    - 8.3.3.2. Market Share & Forecast
      - 8.3.3.2.1. By End user
      - 8.3.3.2.2. By Product
  - 8.3.4. Japan Small-scale Bioreactors Market Outlook
    - 8.3.4.1. Market Size & Forecast
      - 8.3.4.1.1. By Value
    - 8.3.4.2. Market Share & Forecast
      - 8.3.4.2.1. By End user
      - 8.3.4.2.2. By Product
  - 8.3.5. Australia Small-scale Bioreactors Market Outlook
    - 8.3.5.1. Market Size & Forecast
      - 8.3.5.1.1. By Value
    - 8.3.5.2. Market Share & Forecast
      - 8.3.5.2.1. By End user
      - 8.3.5.2.2. By Product

## **9. SOUTH AMERICA SMALL-SCALE BIOREACTORS MARKET OUTLOOK**

- 9.1. Market Size & Forecast
  - 9.1.1. By Value

## 9.2. Market Share & Forecast

9.2.1. By End user

9.2.2. By Product

9.2.3. By Country

## 9.3. South America: Country Analysis

9.3.1. Brazil Small-scale Bioreactors Market Outlook

9.3.1.1. Market Size & Forecast

9.3.1.1.1. By Value

9.3.1.2. Market Share & Forecast

9.3.1.2.1. By End user

9.3.1.2.2. By Product

9.3.2. Argentina Small-scale Bioreactors Market Outlook

9.3.2.1. Market Size & Forecast

9.3.2.1.1. By Value

9.3.2.2. Market Share & Forecast

9.3.2.2.1. By End user

9.3.2.2.2. By Product

9.3.3. Colombia Small-scale Bioreactors Market Outlook

9.3.3.1. Market Size & Forecast

9.3.3.1.1. By Value

9.3.3.2. Market Share & Forecast

9.3.3.2.1. By End user

9.3.3.2.2. By Product

## **10. MIDDLE EAST AND AFRICA SMALL-SCALE BIOREACTORS MARKET OUTLOOK**

### 10.1. Market Size & Forecast

10.1.1. By Value

### 10.2. Market Share & Forecast

10.2.1. By End user

10.2.2. By Product

10.2.3. By Country

### 10.3. MEA: Country Analysis

10.3.1. South Africa Small-scale Bioreactors Market Outlook

10.3.1.1. Market Size & Forecast

10.3.1.1.1. By Value

10.3.1.2. Market Share & Forecast

10.3.1.2.1. By End user

- 10.3.1.2.2. By Product
- 10.3.2. Saudi Arabia Small-scale Bioreactors Market Outlook
  - 10.3.2.1. Market Size & Forecast
    - 10.3.2.1.1. By Value
  - 10.3.2.2. Market Share & Forecast
    - 10.3.2.2.1. By End user
    - 10.3.2.2.2. By Product
- 10.3.3. UAE Small-scale Bioreactors Market Outlook
  - 10.3.3.1. Market Size & Forecast
    - 10.3.3.1.1. By Value
  - 10.3.3.2. Market Share & Forecast
    - 10.3.3.2.1. By End user
    - 10.3.3.2.2. By Product

## **11. MARKET DYNAMICS**

- 11.1. Drivers
- 11.2. Challenges

## **12. MARKET TRENDS & DEVELOPMENTS**

- 12.1. Merger & Acquisition (If Any)
- 12.2. Product Launches (If Any)
- 12.3. Recent Developments

## **13. PORTERS FIVE FORCES ANALYSIS**

- 13.1. Competition in the Industry
- 13.2. Potential of New Entrants
- 13.3. Power of Suppliers
- 13.4. Power of Customers
- 13.5. Threat of Substitute Products

## **14. COMPETITIVE LANDSCAPE**

- 14.1. Sartorius AG
  - 14.1.1. Business Overview
  - 14.1.2. Company Snapshot
  - 14.1.3. Products & Services

- 14.1.4. Financials (As Reported)
- 14.1.5. Recent Developments
- 14.1.6. Key Personnel Details
- 14.1.7. SWOT Analysis
- 14.2. Thermo Fisher Scientific Inc.
- 14.3. Merck KGaA
- 14.4. Danaher Corp.
- 14.5. Lonza Group Ltd.
- 14.6. Eppendorf SE
- 14.7. Miltenyi Biotec India Pvt Ltd.
- 14.8. Getinge AB
- 14.9. Solaris Biotech USA, Inc.
- 14.10. Infors AG

## **15. STRATEGIC RECOMMENDATIONS**

## **16. ABOUT US & DISCLAIMER**



## I would like to order

Product name: Small-scale Bioreactors Market - Global Industry Size, Share, Trends, Opportunity, and Forecast, Segmented By End user (Pharmaceutical & Biopharmaceutical Companies, CROs & CMOs, Academic & Research Institutes), By Product (Reusable Bioreactors( Stainless Steel Bioreactors, Glass Bioreactors), Single-use Bioreactors), By Region and Competition, 2019-2029F

Product link: <https://marketpublishers.com/r/SC4CCF29CB0BEN.html>

Price: US\$ 4,900.00 (Single User License / Electronic Delivery)

If you want to order Corporate License or Hard Copy, please, contact our Customer Service:

[info@marketpublishers.com](mailto:info@marketpublishers.com)

## Payment

To pay by Credit Card (Visa, MasterCard, American Express, PayPal), please, click button on product page <https://marketpublishers.com/r/SC4CCF29CB0BEN.html>

To pay by Wire Transfer, please, fill in your contact details in the form below:

First name:  
Last name:  
Email:  
Company:  
Address:  
City:  
Zip code:  
Country:  
Tel:  
Fax:  
Your message:

**\*\*All fields are required**

Customer signature \_\_\_\_\_

Please, note that by ordering from marketpublishers.com you are agreeing to our Terms & Conditions at <https://marketpublishers.com/docs/terms.html>

To place an order via fax simply print this form, fill in the information below  
and fax the completed form to +44 20 7900 3970