

# U.S. Large And Small-scale Bioprocessing Market Size, Share & Trends Analysis Report By Scale, By Workflow, By Product (Bioreactors/Fermenters, Cell Culture Products), By Application, By Use-Type, By Mode, And Segment Forecasts, 2025 - 2033

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## Abstracts

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### U.S. Large And Small-scale Bioprocessing Market Summary

The U.S. large and small-scale bioprocessing market size was estimated at USD 24.86 billion in 2024 and is projected to reach USD 67.34 billion by 2033, growing at a CAGR of 11.24% from 2025 to 2033. This growth is driven by the rising global demand for biologics, including monoclonal antibodies, vaccines, and cell and gene therapies.

Biopharmaceutical companies are increasingly investing in flexible manufacturing solutions, such as single-use technologies and modular bioprocessing systems, to accelerate development timelines and reduce costs.

### Growing Adoption of Single-Use Technologies in U.S. Bioprocessing

The increasing implementation of single-use technology (SUT) is transforming the U.S. large- and small-scale bioprocessing market, enabling greater flexibility, operational efficiency, and cost-effectiveness in biologics manufacturing. Single-use systems, including bioreactors, bags, filters, connectors, and tubing, are increasingly favored over traditional stainless-steel setups, particularly for small-batch and multiproduct facilities. Their ability to reduce cleaning validation, lower the risk of cross-contamination, and minimize turnaround times makes them highly suitable for modern, fast-paced

bioproduction environments. As the demand for personalized medicine and modular manufacturing grows, SUT adoption is accelerating across both clinical and commercial stages.

Biopharmaceutical companies and CDMOs are leveraging single-use technologies to streamline scale-up processes, shorten development timelines, and meet the increasing need for agile production. These systems are particularly valuable in early-stage manufacturing, where flexibility and speed are critical. The growth of cell and gene therapies, which often require small, high-value batches, is further driving the shift toward SUT-based infrastructure. Additionally, the rise of multiproduct facilities demands rapid changeovers, which are more efficiently supported by single-use components than traditional clean-in-place systems.

Manufacturers of bioprocessing equipment are continuously innovating within the SUT space to enhance performance, durability, and compatibility with complex biologics. Developments such as gamma-stable polymers, automation-integrated systems, and scalable single-use platforms are expanding the applicability of SUTs beyond early-stage production to include commercial-scale operations. Key industry players are also investing in hybrid bioprocessing models, combining single-use and stainless-steel systems, to balance cost, scale, and compliance. This trend reflects the evolving needs of manufacturers to customize production environments based on batch size, product type, and regulatory requirements.

Looking ahead, the growth trajectory of SUT in the U.S. bioprocessing market is supported by strong regulatory acceptance, increasing investment in flexible manufacturing facilities, and the expanding pipeline of biologics and advanced therapies. The technology's ability to reduce capital expenditure, operational risk, and production downtime positions it as a core enabler of next-generation biomanufacturing. As the industry continues to prioritize speed, safety, and scalability, single-use systems are expected to play an even more central role in shaping the future of bioprocessing in the U.S.

## U.S. Large And Small-Scale Bioprocessing Market Report Segmentation

This report forecasts revenue growth and provides an analysis of the latest trends in each of the sub-segments from 2021 to 2033. For this report, Grand View Research has segmented the U.S. large and small-scale bioprocessing market based on scale, workflow, product, application, use-type, and mode:

Scale Outlook (Revenue, USD Million, 2021 - 2033)

Industrial Scale (Over 50,000 Liter)

Small Scale (Less Than 50,000 Liter)

Workflow Outlook (Revenue, USD Million, 2021 - 2033)

Downstream Processing

Fermentation

Upstream Processing

Product Outlook (Revenue, USD Million, 2021 - 2033)

Bioreactors/Fermenters

Cell Culture Products

Filtration Assemblies

Bioreactors Accessories

Bags & Containers

Others

Application Outlook (Revenue, USD Million, 2021 - 2033)

Biopharmaceuticals

Speciality Industrial Chemicals

Environmental Aids

Use-Type Outlook (Revenue, USD Million, 2021 - 2033)

Multi-Use

Single-Use

Mode Outlook (Revenue, USD Million, 2021 - 2033)

In-House

Outsourced

## Contents

### **CHAPTER 1. METHODOLOGY AND SCOPE**

- 1.1. Market Segmentation and Scope
- 1.2. Market Definitions
  - 1.2.1. Scale Segment
  - 1.2.2. Workflow Segment
  - 1.2.3. Product Segment
  - 1.2.4. Application Segment
  - 1.2.5. Use-type Segment
  - 1.2.6. Mode Segment
- 1.3. Information analysis
- 1.4. Market formulation & data visualization
- 1.5. Data validation & publishing
- 1.6. Information Procurement
  - 1.6.1. Primary Research
- 1.7. Information or Data Analysis
- 1.8. Market Formulation & Validation
- 1.9. Market Model
- 1.10. Objectives

### **CHAPTER 2. EXECUTIVE SUMMARY**

- 2.1. Market Outlook
- 2.2. Segment Snapshot
- 2.3. Competitive Insights Landscape

### **CHAPTER 3. U.S. LARGE AND SMALL-SCALE BIOPROCESSING MARKET VARIABLES & TRENDS**

- 3.1. Market Lineage Outlook
  - 3.1.1. Parent market outlook
  - 3.1.2. Related/ancillary market outlook.
- 3.2. Market Dynamics
  - 3.2.1. Market driver analysis
    - 3.2.1.1. Increasing implementation of single-use technology for bioproduction
    - 3.2.1.2. Rising demand for biologics
    - 3.2.1.3. Expansion of contract development and manufacturing organizations

- 3.2.2. Market restraint analysis
  - 3.2.2.1. High initial setup and operational costs for large-scale bioprocessing
  - 3.2.2.2. Complexity and regulatory hurdles
- 3.3. U.S. Large and Small-scale Bioprocessing Market Analysis Tools
  - 3.3.1. Industry Analysis - Porter's
  - 3.3.2. PESTEL Analysis

## **CHAPTER 4. U.S. LARGE AND SMALL-SCALE BIOPROCESSING MARKET: SCALE ESTIMATES & TREND ANALYSIS**

- 4.1. Scale Segment Dashboard
- 4.2. U.S. Large and Small-scale Bioprocessing Market Scale Movement Analysis
- 4.3. U.S. Large and Small-scale Bioprocessing Market Size & Trend Analysis, by Scale, 2021 to 2033 (USD Million)
- 4.4. Industrial Scale (Over 50,000 Liter)
  - 4.4.1. Industrial scale (Over 50,000 Liter) market estimates and forecasts 2021 to 2033 (USD Million)
- 4.5. Small Scale (Less Than 50,000 Liter)
  - 4.5.1. Small scale (Less Than 50,000 Liter) market estimates and forecasts 2021 to 2033 (USD Million)

## **CHAPTER 5. U.S. LARGE AND SMALL-SCALE BIOPROCESSING MARKET: WORKFLOW ESTIMATES & TREND ANALYSIS**

- 5.1. Workflow Segment Dashboard
- 5.2. U.S. Large and Small-scale Bioprocessing Market Workflow Movement Analysis
- 5.3. U.S. Large and Small-scale Bioprocessing Market Size & Trend Analysis, by Workflow, 2021 to 2033 (USD Million)
- 5.4. Downstream Processing
  - 5.4.1. Downstream processing market estimates and forecasts 2021 to 2033 (USD Million)
- 5.5. Fermentation
  - 5.5.1. Fermentation market estimates and forecasts 2021 to 2033 (USD Million)
- 5.6. Upstream Processing
  - 5.6.1. Upstream processing market estimates and forecasts 2021 to 2033 (USD Million)

## **CHAPTER 6. U.S. LARGE AND SMALL-SCALE BIOPROCESSING MARKET: PRODUCT ESTIMATES & TREND ANALYSIS**

- 6.1. Product Segment Dashboard
- 6.2. U.S. Large and Small-scale Bioprocessing Market Product Movement Analysis
- 6.3. U.S. Large and Small-scale Bioprocessing Market Size & Trend Analysis, by Product, 2021 to 2033 (USD Million)
- 6.4. Bioreactors/Fermenters
  - 6.4.1. Bioreactors/fermenters market estimates and forecasts 2021 to 2033 (USD Million)
- 6.5. Cell Culture Products
  - 6.5.1. Cell culture products market estimates and forecasts 2021 to 2033 (USD Million)
- 6.6. Filtration Assemblies
  - 6.6.1. Filtration assemblies market estimates and forecasts 2021 to 2033 (USD Million)
- 6.7. Bioreactors Accessories
  - 6.7.1. Bioreactors accessories market estimates and forecasts 2021 to 2033 (USD Million)
- 6.8. Bags & Containers
  - 6.8.1. Bags & containers market estimates and forecasts 2021 to 2033 (USD Million)
- 6.9. Others
  - 6.9.1. Others market estimates and forecasts 2021 to 2033 (USD Million)

## **CHAPTER 7. U.S. LARGE AND SMALL-SCALE BIOPROCESSING MARKET: APPLICATION ESTIMATES & TREND ANALYSIS**

- 7.1. Application Segment Dashboard
- 7.2. U.S. Large and Small-scale Bioprocessing Market Application Movement Analysis
- 7.3. U.S. Large and Small-scale Bioprocessing Market Size & Trend Analysis, by Application, 2021 to 2033 (USD Million)
- 7.4. Biopharmaceuticals
  - 7.4.1. Biopharmaceuticals market estimates and forecasts 2021 to 2033 (USD Million)
- 7.5. Speciality Industrial Chemicals
  - 7.5.1. Speciality industrial chemicals market estimates and forecasts 2021 to 2033 (USD Million)
- 7.6. Environmental Aids
  - 7.6.1. Environmental aids market estimates and forecasts 2021 to 2033 (USD Million)

## **CHAPTER 8. U.S. LARGE AND SMALL-SCALE BIOPROCESSING MARKET: USE-TYPE ESTIMATES & TREND ANALYSIS**

- 8.1. Use-Type Segment Dashboard

- 8.2. U.S. Large and Small-scale Bioprocessing Market Use-Type Movement Analysis
- 8.3. U.S. Large and Small-scale Bioprocessing Market Size & Trend Analysis, by Use-Type, 2021 to 2033 (USD Million)
- 8.4. Multi-use
  - 8.4.1. Multi-use market estimates and forecasts 2021 to 2033 (USD Million)
- 8.5. Single-use
  - 8.5.1. Single-use market estimates and forecasts 2021 to 2033 (USD Million)

## **CHAPTER 9. U.S. LARGE AND SMALL-SCALE BIOPROCESSING MARKET: MODE ESTIMATES & TREND ANALYSIS**

- 9.1. Mode Segment Dashboard
- 9.2. U.S. Large and Small-scale Bioprocessing Market Mode Movement Analysis
- 9.3. U.S. Large and Small-scale Bioprocessing Market Size & Trend Analysis, by Mode, 2021 to 2033 (USD Million)
- 9.4. In-house
  - 9.4.1. In-house market estimates and forecasts 2021 to 2033 (USD Million)
- 9.5. Outsourced
  - 9.5.1. Outsourced market estimates and forecasts 2021 to 2033 (USD Million)

## **CHAPTER 10. COMPETITIVE LANDSCAPE**

- 10.1. Company/Competition Categorization
- 10.2. Strategy Mapping
- 10.3. Company Market Position Analysis, 2024
- 10.4. Company Profiles/Listing
  - 10.4.1. Merck KGaA
    - 10.4.1.1. Company overview
    - 10.4.1.2. Financial performance
    - 10.4.1.3. Product benchmarking
    - 10.4.1.4. Strategic initiatives
  - 10.4.2. Thermo Fisher Scientific, Inc.
    - 10.4.2.1. Company overview
    - 10.4.2.2. Financial performance
    - 10.4.2.3. Product benchmarking
    - 10.4.2.4. Strategic initiatives
  - 10.4.3. Danaher
    - 10.4.3.1. Company overview
    - 10.4.3.2. Financial performance

- 10.4.3.3. Product benchmarking
- 10.4.3.4. Strategic initiatives
- 10.4.4. Corning Inc.
  - 10.4.4.1. Company overview
  - 10.4.4.2. Financial performance
  - 10.4.4.3. Product benchmarking
  - 10.4.4.4. Strategic initiatives
- 10.4.5. Sartorius AG
  - 10.4.5.1. Company overview
  - 10.4.5.2. Financial performance
  - 10.4.5.3. Product benchmarking
  - 10.4.5.4. Strategic initiatives
- 10.4.6. Lonza
  - 10.4.6.1. Company overview
  - 10.4.6.2. Financial performance
  - 10.4.6.3. Product benchmarking
  - 10.4.6.4. Strategic initiatives
- 10.4.7. Eppendorf AG
  - 10.4.7.1. Company overview
  - 10.4.7.2. Financial performance
  - 10.4.7.3. Product benchmarking
  - 10.4.7.4. Strategic initiatives
- 10.4.8. Getinge AB
  - 10.4.8.1. Company overview
  - 10.4.8.2. Financial performance
  - 10.4.8.3. Product benchmarking
  - 10.4.8.4. Strategic initiatives
- 10.4.9. PBS Biotech, Inc.
  - 10.4.9.1. Company overview
  - 10.4.9.2. Financial performance
  - 10.4.9.3. Product benchmarking
  - 10.4.9.4. Strategic initiatives
- 10.4.10. Meissner Filtration Products, Inc.
  - 10.4.10.1. Company overview
  - 10.4.10.2. Financial performance
  - 10.4.10.3. Product benchmarking
  - 10.4.10.4. Strategic initiatives
- 10.4.11. Entegris
  - 10.4.11.1. Company overview

- 10.4.11.2. Financial performance
- 10.4.11.3. Product benchmarking
- 10.4.11.4. Strategic initiatives
- 10.4.12. Saint-Gobain
  - 10.4.12.1. Company overview
  - 10.4.12.2. Financial performance
  - 10.4.12.3. Product benchmarking
  - 10.4.12.4. Strategic initiatives
- 10.4.13. Repligen Corporation
  - 10.4.13.1. Company overview
  - 10.4.13.2. Financial performance
  - 10.4.13.3. Product benchmarking
  - 10.4.13.4. Strategic initiatives
- 10.4.14. Avantor, Inc
  - 10.4.14.1. Company overview
  - 10.4.14.2. Financial performance
  - 10.4.14.3. Product benchmarking
  - 10.4.14.4. Strategic initiatives
- 10.4.15. Distek, Inc.
  - 10.4.15.1. Company overview
  - 10.4.15.2. Financial performance
  - 10.4.15.3. Product benchmarking
  - 10.4.15.4. Strategic initiatives
- 10.4.16. F. Hoffmann-La Roche Ltd
  - 10.4.16.1. Company overview
  - 10.4.16.2. Financial performance
  - 10.4.16.3. Product benchmarking
  - 10.4.16.4. Strategic initiatives
- 10.4.17. Bio-Synthesis, Inc.
  - 10.4.17.1. Company overview
  - 10.4.17.2. Financial performance
  - 10.4.17.3. Product benchmarking
  - 10.4.17.4. Strategic initiatives

## List Of Tables

### LIST OF TABLES

Table 1 List of Secondary Sources

Table 2 U.S. Large and Small-Scale Bioprocessing Market, By Scale, 2021 - 2033 (USD Million)

Table 3 U.S. Large and Small-Scale Bioprocessing Market, By Workflow, 2021 - 2033 (USD Million)

Table 4 U.S. Large and Small-Scale Bioprocessing Market, By Product, 2021 - 2033 (USD Million)

Table 5 U.S. Large and Small-Scale Bioprocessing Market, By Application, 2021 - 2033 (USD Million)

Table 6 U.S. Large and Small-Scale Bioprocessing Market, By Use-Type, 2021 - 2033 (USD Million)

Table 7 U.S. Large and Small-Scale Bioprocessing Market, By Mode, 2021 - 2033 (USD Million)

## List Of Figures

### LIST OF FIGURES

- Fig. 1 U.S. large and small-scale bioprocessing market segmentation
- Fig. 2 Information procurement
- Fig. 3 Data analysis models
- Fig. 4 Market formulation and validation
- Fig. 5 Data validating & publishing
- Fig. 6 Market research process
- Fig. 7 Information procurement
- Fig. 8 Primary research
- Fig. 9 Market snapshot
- Fig. 10 Segment snapshot
- Fig. 11 Competitive landscape snapshot
- Fig. 12 U.S. large and small-scale bioprocessing market: Scale outlook key takeaways
- Fig. 13 U.S. large and small-scale bioprocessing market: Scale movement analysis
- Fig. 14 Industrial scale market, 2021 - 2033 (USD Million)
- Fig. 15 Small scale market, 2021 - 2033 (USD Million)
- Fig. 16 U.S. large and small-scale bioprocessing market: Workflow outlook key takeaways
- Fig. 17 U.S. large and small-scale bioprocessing market: Workflow movement analysis
- Fig. 18 Downstream processing market, 2021 - 2033 (USD Million)
- Fig. 19 Fermentation market, 2021 - 2033 (USD Million)
- Fig. 20 Upstream processing market, 2021 - 2033 (USD Million)
- Fig. 21 U.S. large and small-scale bioprocessing market: Product outlook key takeaways
- Fig. 22 U.S. large and small-scale bioprocessing market: Product movement analysis
- Fig. 23 Bioreactors/fermenters market, 2021 - 2033 (USD Million)
- Fig. 24 Cell culture products market, 2021 - 2033 (USD Million)
- Fig. 25 Filtration assemblies market, 2021 - 2033 (USD Million)
- Fig. 26 Bioreactors accessories market, 2021 - 2033 (USD Million)
- Fig. 27 Bags & containers market, 2021 - 2033 (USD Million)
- Fig. 28 Others market, 2021 - 2033 (USD Million)
- Fig. 29 U.S. large and small-scale bioprocessing market: Application outlook and key takeaways
- Fig. 30 U.S. large and small-scale bioprocessing market: Application movement analysis
- Fig. 31 Biopharmaceuticals market, 2021 - 2033 (USD Million)
- Fig. 32 Speciality industrial chemicals market, 2021 - 2033 (USD Million)

Fig. 33 Environmental aids market, 2021 - 2033 (USD Million)

Fig. 34 U.S. large and small-scale bioprocessing market: Mode outlook key takeaways

Fig. 35 U.S. large and small-scale bioprocessing market: Mode movement analysis

Fig. 36 In-house market, 2021 - 2033 (USD Million)

Fig. 37 Outsourced market, 2021 - 2033 (USD Million)

Fig. 38 U.S. large and small-scale bioprocessing market: Use-type outlook key takeaways

Fig. 39 U.S. large and small-scale bioprocessing market: Use-type movement analysis

Fig. 40 Multi-use market, 2021 - 2033 (USD Million)

Fig. 41 Single-use market, 2021 - 2033 (USD Million)

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