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Biopreservation Market - A Global and Regional Analysis: Product Type, Application, End User, and Regional Analysis - Analysis and Forecast, 2025-2035

https://marketpublishers.com/r/B2C5D553B9FDEN.html
Date: February 2026
Pages: 128
Price: US$ 4,900.00 (Single User License)
ID: B2C5D553B9FDEN

Abstracts

The global biopreservation market, initially valued at $4,316.3 million in 2024, is projected to witness substantial growth, surging to $15,185.4 million by 2035, marking a remarkable compound annual growth rate (CAGR) of 12.61% over the period from 2025 to 2035.

This growth is driven by the expanding adoption of cell and gene therapies, the rapid proliferation of biobanks and gene banks, and the increasing need for long-term preservation of high-value biological materials across research and clinical applications.

The biopreservation market is experiencing significant momentum due to the growing volume of biological samples generated from biomedical research, regenerative medicine, clinical trials, and advanced therapy manufacturing. Cells, tissues, blood, and genetic materials used in these applications require validated preservation solutions to maintain viability, stability, and functional integrity during storage, transportation, and downstream use. As personalized medicine, population genomics, and advanced therapeutics gain traction, reliable biopreservation has become a critical enabling infrastructure supporting these evolving healthcare and life sciences ecosystems.

Technological advancements are reshaping the biopreservation landscape, with innovations in cryopreservation media, controlled-rate freezing systems, automated and robotics-enabled cryogenic storage, and digitally integrated monitoring solutions improving sample quality, scalability, and regulatory compliance. Despite strong growth prospects, the market faces challenges such as high capital investment requirements, energy-intensive storage systems, and operational risks associated with freezer failures and cryogenic supply disruptions. Nevertheless, continued investments in biobanking

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infrastructure, regenerative medicine programs, and global cold-chain logistics are expected to sustain long-term market expansion.

Market Introduction

The global biopreservation market has evolved from conventional cold storage practices into a technologically advanced ecosystem supporting the preservation of cells, tissues, organs, and genetic material across research, clinical, and commercial environments. Market participants are increasingly focusing on developing high-performance biopreservation media, automation-ready cryogenic storage platforms, and digitally enabled monitoring systems to meet the rising quality, traceability, and compliance requirements of modern biobanking and advanced therapy workflows.

Strategic collaborations between biopreservation solution providers, biobanks, pharmaceutical and biotechnology companies, CDMOs, and academic research institutions are accelerating innovation and standardization across preservation workflows. As the scale and complexity of biospecimen collections continue to increase, biopreservation is emerging as a core infrastructure layer enabling precision medicine, cell and gene therapy manufacturing, and large-scale longitudinal research. These structural shifts are positioning biopreservation as a critical growth market within the global life sciences and healthcare ecosystem.

Industrial Impact

The global biopreservation market has witnessed significant industrial impact, driven by the rapid expansion of cell and gene therapies, large-scale biobanking initiatives, and the growing need for long-term storage of high-value biological materials. Key industry participants across biopreservation media, cryogenic storage systems, automation platforms, and cold-chain logistics play a central role in enabling reliable preservation of cells, tissues, blood, and genetic material used in research, clinical trials, and commercial manufacturing. These solutions are critical across applications such as cell and gene therapy development, regenerative medicine, biobanking, and precision medicine, where maintaining post-thaw viability, functionality, and sample integrity directly affects downstream outcomes.

Advances in cryopreservation media, controlled-rate freezing, automated and robotics-enabled cryogenic storage, and digitally integrated monitoring systems are improving operational efficiency, reducing sample loss, and strengthening regulatory compliance. By enabling consistent preservation across global research and manufacturing

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networks, biopreservation technologies support scalable clinical development, decentralized therapy manufacturing, and long-term longitudinal studies. The market's industrial impact is further amplified by its alignment with personalized medicine and advanced therapeutics, positioning biopreservation as a foundational infrastructure that underpins next-generation life sciences innovation and healthcare delivery.

Market Segmentation:

Segmentation 1: By Product

- Media
- Equipment's

Media Segment to Dominate the Biopreservation Market (by Product)

In terms of product, the media segment is expected to dominate the biopreservation market, accounting for a significant share due to its indispensable role in preserving the viability, stability, and functional integrity of biological materials, including cells, tissues, genetic material, and biopharmaceutical products used across cell and gene therapies, biobanking, and regenerative medicine. As the biotechnology and biopharmaceutical sectors continue to expand, alongside the rapid growth of cell-based and regenerative therapies, demand for high-performance biopreservation media is increasing steadily. Advanced therapies such as CAR-T and stem cell treatments rely heavily on cryopreservation to maintain cell quality throughout manufacturing, storage, and transport. Notably, a majority of FDA-approved cell and gene therapies depend on cryopreserved inputs or final products, underscoring the critical importance of optimizing post-thaw viability and functionality.

Segmentation 2: By Application

- Research Applications
- Therapeutic Applications
- Other Applications

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Research Application to Dominate the Biopreservation Market (by Application)

Research applications are expected to dominate the biopreservation market, driven by the growing volume of biomedical and genomic research, the rapid expansion of biobanks, and increasing activity in clinical trials and drug discovery. In research settings, biopreservation media and storage systems are essential to maintain the viability, stability, and molecular integrity of biological materials during long-term storage, transportation, and repeated experimental use. For example, in stem cell research, human pluripotent stem cells (hPSCs) are routinely preserved using specialized biopreservation media to retain pluripotency and differentiation potential after thawing, which is critical for regenerative medicine and developmental biology studies. Similarly, in genomic and population-based research, large-scale biobanks rely on validated biopreservation solutions to store DNA, RNA, tissues, and cells, ensuring sample consistency and suitability for longitudinal studies. As research programs scale globally and emphasize data reproducibility and sample quality, demand for reliable biopreservation solutions in research applications continues to remain strong, reinforcing this segment's leading position in the biopreservation market.

Segmentation 3: By End User

- Biobanks and Genebanks
- Hospitals
- Pharmaceutical & Biotech Companies
- Contract Research Organizations (CROs)
- Others (Private Clinics, Academic Institutions, Government)

Biobanks and Genebanks to Dominate the Biopreservation Market (by End User)

Biobanks and gene banks are expected to dominate the biopreservation market due to their central role in genomic research, drug discovery, clinical trials, and personalized medicine. These institutions are responsible for the long-term storage of high-value biological materials, including cells, tissues, blood, and genetic samples, which form the foundation for disease research, biomarker identification, and therapeutic development. The rapid growth of genomic sequencing, population-scale studies, and biotechnology

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research has significantly increased the need for reliable biopreservation solutions that can maintain sample integrity, viability, and molecular stability over extended periods. In addition, sustained investments from governments, research consortia, and private organizations are driving the expansion of biobanks and gene banks globally, supporting regenerative medicine programs, large-scale epidemiological studies, and multicenter clinical trials. As these repositories continue to scale in size and complexity, demand for high-quality biopreservation media, cryogenic storage systems, and monitoring infrastructure is rising steadily.

Segmentation 4: By Region

- North America
  - U.S.
  - Canada
- Europe
  - U.K.
  - Germany
  - France
  - Italy
  - Spain
  - Rest-of-Europe
- Asia-Pacific
  - Japan
  - China
  - India

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South Korea

Australia

Rest-of-Asia-Pacific

Rest-of-the-World

North America to Dominate the Biopreservation Market (by Region)

The global biopreservation market is experiencing strong growth, driven by expanding cell and gene therapy pipelines, large-scale biobanking initiatives, and increasing demand for long-term storage of high-value biological materials. North America is expected to remain the dominant region, supported by its advanced healthcare and research infrastructure, early adoption of cell and gene therapies, and significant investments in biobanks and regenerative medicine. The region’s market size is projected to reach $6,243.3 million by 2035, underpinned by sustained demand for biopreservation media, cryogenic storage systems, and GMP-compliant cold-chain services. North America’s leadership is further reinforced by the presence of leading biotechnology and pharmaceutical companies, well-established academic and clinical research institutions, and strong regulatory frameworks supporting advanced therapies. In addition, the growing volume of clinical trials, commercialization of CGTs, and expansion of national and private biobanking programs continue to drive long-term demand for reliable and scalable biopreservation solutions, solidifying the region’s market dominance.

Recent Developments in the Biopreservation Market

In November 2025, BioLife Solutions, Inc. opened the Aby J. Mathew Center for Biopreservation Excellence. Located at the company's expanded headquarters in Bothell, the Center is named in honor of Aby J. Mathew, PhD, a founding team member of BioLife Solutions and the company’s Executive Vice President and Chief Scientific Officer.

In October 2025, Cryoport, Inc. opened its new 55,000-square-foot Global Supply Chain Center in Louvres, France, strategically located near Charles de Gaulle Airport to enhance global delivery of advanced therapies. The state-of-the-art facility provides end-to-end, temperature-controlled supply chain

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solutions, offering unparalleled access and reliability for biologics and other temperature-sensitive materials.

In April 2025, BioLife Solutions, Inc. acquired the privately held PanTHERA CryoSolutions, Inc. (“PanTHERA”), a developer of advanced cryopreservation solutions built on proprietary Ice Recrystallization Inhibitor (“IRI”) technology. This acquisition further solidifies BioLife’s leadership in biopreservation, expands its portfolio of consumable solutions, and adds valuable scientific expertise to its management team.

Demand – Drivers, Challenges, and Opportunities

Market Drivers

Expansion of Cell and Gene Therapies and Regenerative Medicine: The rapid expansion of cell and gene therapies (CGTs) and regenerative medicine is a major structural driver of the biopreservation market. According to the 2024 Global Regulatory Report by the International Society for Cell and Gene Therapy (ISCT), more than 3,000 CGT programs are currently in development globally, with increasing late-stage clinical activity and regulatory approvals. These therapies depend heavily on cryopreserved materials across the entire value chain, including leukapheresis collections, engineered cell intermediates, viral vectors, cell banks, and frozen final drug products. Peer-reviewed studies demonstrate that cryopreserved inputs, such as leukapheresis material, can achieve post-thaw viability of 90% or higher while maintaining functional performance comparable to fresh material, validating cryopreservation as a non-inferior and scalable approach. As CGT manufacturing volumes rise and commercialization accelerates, demand is increasing for high-performance cryomedia, controlled-rate freezing, automated cryogenic storage, ultra-low-temperature and liquid nitrogen platforms, and GMP-compliant cold-chain logistics. This shift is transforming biopreservation into a core enabler of CGT development, manufacturing, and global distribution.

Market Challenges

High Capital and Operating Costs of Advanced Biopreservation Infrastructure: High capital and operating costs remain a major restraint on the biopreservation market, particularly for advanced cryogenic infrastructure. Ultra-low-temperature freezers, liquid nitrogen storage systems, controlled-rate freezers, and monitoring infrastructure require

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significant upfront investment and ongoing maintenance. ULT freezers are highly energy intensive, consuming up to 20 kWh per day, which translates into substantial annual electricity and HVAC costs, especially for facilities operating at scale. In addition, high-performance cryogenic freezers are typically priced in the tens of thousands of dollars, creating a clear entry barrier for smaller institutions. Recurring expenses for liquid nitrogen refills, alarm systems, calibration, and service contracts further increase total cost of ownership. These financial pressures are most acute in low- and middle-income regions, where unstable power supply and limited LN? distribution networks restrict adoption of best-practice systems. As a result, many institutions continue to rely on aging, lower-performance equipment, which can compromise sample integrity and limit participation in global research and advanced therapy programs.

Market Opportunities

Utilizing Artificial Intelligence (AI) to Enhance Diagnostic Capabilities: The incorporation of artificial intelligence (AI) into the diagnostic process for hematologic malignancies represents a significant growth opportunity in the global testing market. AI technologies have demonstrated their ability to improve diagnostic accuracy and speed, particularly in complex cases where traditional methods may fall short. For example, AI-powered algorithms have shown exceptional performance in distinguishing between rare blood cancers such as primary myelofibrosis and essential thrombocythemia, providing critical support to clinicians and pathologists. The integration of AI into diagnostic workflows can enhance the precision of diagnoses, improve clinical decision-making, and streamline patient management. Moreover, AI’s ability to analyze large volumes of complex medical data at high speeds allows for faster and more reliable diagnoses, which can facilitate quicker patient enrollment in clinical trials and accelerate the development of new treatments. As healthcare systems continue to evolve and rely on AI technologies to manage the growing complexity of medical data, the demand for AI-driven diagnostic solutions is expected to expand. Diagnostic companies investing in AI technologies and forming strategic collaborations to enhance these capabilities will be well-positioned to lead in the rapidly advancing Biopreservation market, driving both innovation and growth in the sector.

How can this report add value to an organization?

Product/Innovation Strategy: The global biopreservation market has been divided into several key segments, including product type, application, end users, and regional markets. By understanding which segments hold the largest share and which ones show potential for growth, this report offers valuable insights for organizations looking to

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innovate and expand their biopreservation product and technology offerings.

Growth/Marketing Strategy: Strategic partnerships, collaborations, and business expansions are anticipated to be central to the growth of the biopreservation market. Key developments and partnerships among biopreservation solution providers, biobanks, pharmaceutical and biotechnology companies, and research institutions form a significant part of the evolving market dynamics.

Competitive Strategy: The Biopreservation market is highly competitive, with numerous well-established players offering a wide range of biopreservation media, equipment, and services. Key market players are actively developing and adopting advanced cryopreservation technologies, automation, and digital monitoring solutions to differentiate themselves and strengthen their market position.

Methodology

Key Considerations and Assumptions in Market Engineering and Validation

> Years from 2024 to 2035 have been considered for the global market size estimation, 2024 has been considered as the base year, and 2025 to 2035 as the forecast period.
>
> The scope of the report is based on comprehensive inputs from industry experts across various sectors, including biobanks and gene banks, pharmaceutical and biotechnology companies, cell and gene therapy developers, hospitals, academic research institutions, and CROs.
>
> The market contribution of biopreservation products is anticipated to grow substantially in the future, with projections based on historical analysis of available solutions.
>
> Revenues from companies have been sourced from their annual reports for FY2024. For private companies, revenue estimates are derived from primary research inputs, funding history, market collaborations, and operational performance.
>
> The market has been mapped based on the existing commercially available biopreservation media, equipment. Key companies with significant offerings in this field have been identified and profiled in this report.

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Primary Research

The primary sources involve industry experts in Biopreservation, including the market players offering products and services. Resources such as CEOs, vice presidents, marketing directors, and technology and innovation directors have been interviewed to obtain and verify both qualitative and quantitative aspects of this research study.

The key data points taken from the primary sources include:

- validation and triangulation of all the numbers and graphs
- validation of report segmentations and key qualitative findings
- understanding the competitive landscape and business model
- current and proposed production values of a product by market players
- validation of the numbers of different segments of the market in focus
- percentage split of individual markets for regional analysis

Secondary Research

Open Sources

- Certified publications, articles from recognized authors, white papers, directories, and major databases, among others
- Annual reports, SEC filings, and investors' presentations of the leading market players
- Company websites and a detailed study of their product portfolio
- Gold standard magazines, journals, white papers, press releases, and news articles

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Paid databases

The key data points taken from the secondary sources include:

segmentations and percentage shares

data for market value

key industry trends of the top players in the market

qualitative insights into various aspects of the market, key trends, and emerging areas of innovation

quantitative data for mathematical and statistical calculations

Key Market Players and Competition Synopsis

The companies profiled have been selected based on inputs gathered from an analysis of company coverage, product portfolio, and market penetration.

Some prominent names established in this market are:

BioLife Solutions, Inc.

Thermo Fisher Scientific Inc.

Sartorius AG

Azenta, Inc.

Bio-Techne

Cryoport Systems, LLC

Danaher Corporation (Cytiva)

PHC Corporation

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Alpha Teknova, Inc.

Eppendorf SE

ThermoGenesis

OriGen Biomedical, Inc.

X-Therma, Inc.

STEMCELL Technologies

IC Biomedical, LLC

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