

# North America Biopreservation Market By Product (Equipment, Media, LIMS), By Application (Regenerative Medicine, Bio-banking, Drug Discovery), By Country, Competition, Forecast, Opportunities, 2019-2029F

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## Abstracts

North America Biopreservation Market was valued at USD 686.8 Million in 2023 and is anticipated to project impressive growth in the forecast period with a CAGR of 7.03% through 2029. The Biopreservation market has emerged as a critical player in the field of life sciences and healthcare, revolutionizing the storage and maintenance of biological materials. Defined as the process of preserving cells, tissues, or organs outside their natural environment to extend their viability, Biopreservation has become an indispensable tool across various industries, including pharmaceuticals, biotechnology, and healthcare. The Biopreservation market is being propelled by several key factors, including the increasing demand for personalized medicine, growing investments in biobanking infrastructure, and the expanding field of regenerative medicine. With advancements in cell therapy, gene therapy, and organ transplantation, the need for effective preservation solutions has become more pronounced, driving the market forward.

One of the prominent trends shaping the biopreservation landscape is the rise of cryopreservation techniques. Cryopreservation involves storing biological samples at extremely low temperatures, typically below  $-130^{\circ}\text{C}$ , to arrest cellular activity and maintain sample integrity. This method has gained traction in preserving stem cells, embryos, and other valuable biological materials, contributing significantly to the market's growth. The pharmaceutical and biotechnology sectors are major contributors to the biopreservation market. As these industries continue to explore innovative therapies and drug development approaches, the demand for reliable biopreservation

methods has surged. Biopreservation plays a pivotal role in maintaining the stability and efficacy of biological samples used in research and development, clinical trials, and manufacturing processes.

The applications of biopreservation are diverse, covering a spectrum of biological materials. In the healthcare sector, the preservation of organs for transplantation has witnessed significant advancements. Biopreservation ensures the viability of organs during transportation and prior to transplantation, addressing the critical challenge of organ shortages. In addition to organ preservation, biobanking has become a cornerstone of medical research. Biobanks store and manage a wide range of biological specimens, including blood, tissues, and DNA, for research purposes. The North America rise in biobanking initiatives, driven by collaborative research endeavors and precision medicine initiatives, has contributed substantially to the expansion of the biopreservation market. The field of regenerative medicine, characterized by therapies that aim to repair, replace, or regenerate damaged tissues and organs, heavily relies on biopreservation. Stem cells, a key component of regenerative medicine, require precise preservation methods to maintain their therapeutic potential. As regenerative medicine continues to evolve, so does the demand for advanced biopreservation solutions.

While the biopreservation market thrives, it faces challenges related to the high costs associated with advanced preservation technologies and the need for standardization in storage and transport protocols. Addressing these challenges presents opportunities for market players to innovate and collaborate, fostering the development of more cost-effective and universally applicable solutions.

The growing awareness of the importance of preserving biological materials, coupled with the increasing prevalence of chronic diseases, sets the stage for continued expansion of the biopreservation market. Market participants are poised to capitalize on this momentum by investing in research and development, strategic collaborations, and technology advancements. In conclusion, the biopreservation market is a dynamic and evolving sector at the intersection of healthcare, biotechnology, and research. As the North America focus on personalized medicine, regenerative therapies, and advanced drug development intensifies, the role of biopreservation becomes increasingly pivotal. The market's journey over the next few years promises continued innovation, addressing challenges, and unlocking new possibilities for the preservation of biological assets. As the biopreservation market celebrates its one-year milestone, it stands as a testament to the indispensable role it plays in shaping the future of medicine and scientific exploration.

## Key Market Drivers

### Growing Healthcare Expenditure Boosting Development Of Effective Personalized Diagnostic & Cell & Gene Therapies

The escalating healthcare expenditure worldwide is proving to be a catalyst for the robust growth of the biopreservation market, particularly in the realm of personalized diagnostic and cell and gene therapies. As countries grapple with the increasing burden of chronic diseases and an aging population, there is a growing recognition of the need for advanced medical interventions and personalized treatment approaches. This paradigm shift towards personalized medicine is driving the demand for effective biopreservation solutions.

The rise of personalized diagnostic techniques, tailored to individual patient profiles, necessitates the preservation of biological samples with the utmost precision. Biopreservation ensures the integrity and viability of these samples, ranging from genetic material to biomarkers, allowing for accurate and reliable diagnostic results. This critical role in diagnostics is propelling the adoption of biopreservation technologies across healthcare systems North America.

The surge in cell and gene therapies, considered groundbreaking in the treatment of various diseases, has become a prominent driver for the biopreservation market. These therapies involve the manipulation and preservation of cellular material, such as stem cells or genetically modified cells, before being administered to patients. The effectiveness of these therapies relies heavily on the quality and viability of preserved biological samples, making biopreservation an integral part of the development and deployment of advanced medical treatments.

With healthcare expenditure directed towards cutting-edge therapies and personalized approaches, the biopreservation market is witnessing increased investment in research and development. This investment aims to enhance existing preservation technologies, address challenges related to long-term storage, and cater to the specific requirements of emerging therapeutic modalities. Consequently, the market is experiencing a positive feedback loop where growing healthcare expenditure drives technological advancements in biopreservation, further fueling the progress and success of personalized diagnostic and cell and gene therapies.

The upward trajectory of healthcare expenditure North America is intricately linked to the flourishing biopreservation market. The demand for personalized diagnostic tools

and the rapid expansion of cell and gene therapies are key factors steering this growth, underscoring the pivotal role of biopreservation in shaping the landscape of modern healthcare and therapeutic innovations.

### Increasing demand for personalized medicine

The surging demand for personalized medicine is a key driving force propelling the biopreservation market into a new era of significance and growth. Personalized medicine, also known as precision medicine, involves tailoring medical treatments to the individual characteristics of each patient, considering their unique genetic makeup, lifestyle, and environment. This paradigm shift in healthcare has created a pressing need for advanced biopreservation solutions to ensure the integrity and viability of biological samples crucial for personalized diagnostic and therapeutic interventions.

Biopreservation plays a pivotal role in the storage and maintenance of biological materials, ranging from tissues and cells to DNA samples. As personalized medicine relies heavily on precise diagnostics and individualized therapeutic approaches, the quality and stability of these biological samples become paramount. Biopreservation ensures that these samples remain viable over extended periods, allowing for accurate analysis and the development of targeted treatments tailored to a patient's specific genetic and molecular profile.

The rise of genomics and advancements in molecular diagnostics further accentuate the demand for biopreservation. Genetic testing and molecular profiling are integral components of personalized medicine, requiring the preservation of genetic material to enable precise analysis and interpretation. Biopreservation technologies, such as cryopreservation, provide a means to store these delicate samples at ultra-low temperatures, ensuring their molecular integrity and functional viability.

The expansion of personalized medicine beyond oncology to encompass various therapeutic areas, including cardiology, neurology, and rare diseases, amplifies the need for robust biopreservation strategies. As the healthcare industry increasingly recognizes the potential of tailoring treatments to individual patients, the biopreservation market is positioned at the forefront of enabling these transformative advancements.

The escalating demand for personalized medicine is a powerful catalyst driving the biopreservation market. The intricate link between advanced diagnostics, individualized treatments, and the need for reliable sample preservation underscores the indispensable role of biopreservation in shaping the landscape of modern healthcare

and facilitating the realization of personalized medicine's full potential. As this demand continues to grow, the biopreservation market is poised for sustained expansion and innovation.

## Key Market Challenges

High costs of advanced preservation technologies.

The high costs associated with advanced preservation technologies pose a significant challenge for the biopreservation market. While these technologies offer cutting-edge solutions for maintaining the viability of biological samples, their prohibitive expenses limit widespread adoption. Research institutions, biobanks, and healthcare facilities often face budget constraints, hindering their ability to invest in state-of-the-art preservation methods. This financial barrier impedes the accessibility of advanced biopreservation technologies, preventing smaller entities from fully leveraging the benefits. Addressing this challenge requires concerted efforts to develop cost-effective alternatives and promote affordability, ensuring that the advantages of advanced preservation reach a broader spectrum of users in the healthcare and research sectors.

## Standardization issues in storage and transport protocols

Standardization issues in storage and transport protocols present a significant challenge for the biopreservation market. The lack of universally accepted guidelines hampers interoperability and consistency in preserving biological samples. Divergent protocols across laboratories and institutions create uncertainties in sample quality and compromise research reproducibility. This lack of standardization also complicates regulatory compliance and hinders the seamless exchange of samples between entities. Overcoming this challenge requires collaborative efforts to establish comprehensive, standardized protocols, ensuring the reliability and comparability of preserved samples across the biopreservation landscape. Achieving consensus in storage and transport practices is essential for advancing the field and fostering broader research collaboration.

## Lack of universally accepted preservation guidelines

The lack of universally accepted preservation guidelines poses a formidable challenge for the biopreservation market. Inconsistent protocols and standards across the industry hinder seamless collaboration, sample exchange, and data reproducibility. This absence of a standardized framework complicates regulatory compliance and quality

assurance, impacting the reliability of preserved biological samples. Researchers, biobanks, and healthcare institutions face difficulties in ensuring the uniformity and integrity of preserved materials. Addressing this challenge necessitates concerted efforts to establish North America recognized guidelines, fostering a more cohesive and standardized approach to biopreservation. Such guidelines are crucial for advancing research, enhancing sample quality, and promoting broader industry cooperation.

### Limited awareness of biopreservation importance

The limited awareness of the importance of biopreservation presents a notable challenge for the biopreservation market. Despite its critical role in maintaining the viability of biological samples for research, diagnostics, and therapeutics, many stakeholders remain unaware of its significance. This lack of awareness hampers widespread adoption and investment in biopreservation technologies. Research institutions, healthcare facilities, and biobanks may underestimate the impact of suboptimal preservation, leading to compromised sample quality. Overcoming this challenge requires targeted educational initiatives to raise awareness about the pivotal role of biopreservation, emphasizing its implications for advancing medical research, personalized medicine, and the overall quality of healthcare interventions.

### Key Market Trends

#### Cryopreservation advancements

Cryopreservation advancements stand out as a pivotal trend in the biopreservation market, revolutionizing the storage and preservation of biological materials. The development of cutting-edge cryopreservation technologies, capable of preserving cells, tissues, and organs at ultra-low temperatures, enhances the longevity and viability of biological samples. This trend is particularly significant in the context of emerging therapies like cell and gene therapies, where the quality of preserved material is critical for successful treatments. The continuous refinement of cryopreservation techniques not only addresses existing challenges in long-term storage but also positions the biopreservation market at the forefront of innovation in the broader landscape of life sciences and healthcare.

#### Integration of automation

The integration of automation emerges as a transformative trend in the biopreservation

market, streamlining processes and enhancing efficiency in sample handling and storage. Automated systems are increasingly replacing manual interventions, reducing the risk of errors and ensuring standardized procedures. This trend is particularly beneficial for large-scale biobanking initiatives and research facilities dealing with a high volume of biological samples. Automated biopreservation solutions not only improve the precision of storage conditions but also contribute to significant time and cost savings. As the demand for scalability and reproducibility grows, the integration of automation remains a key driver shaping the future of the biopreservation landscape.

### Expansion in regenerative medicine

The expansion in regenerative medicine signifies a prominent trend in the biopreservation market, driving increased demand for advanced storage solutions. Regenerative medicine, with its focus on harnessing the healing potential of cells and tissues, necessitates precise preservation methods to maintain therapeutic efficacy. As the field evolves, biopreservation becomes instrumental in storing and banking vital materials such as stem cells and tissues for regenerative therapies. This trend not only reflects the growing importance of biopreservation in cutting-edge medical treatments but also positions the market as an essential partner in the progress of regenerative medicine, offering innovative solutions to support the development and application of groundbreaking therapies.

### Growth in biobanking initiatives

The burgeoning growth in biobanking initiatives represents a significant trend propelling the biopreservation market forward. Biobanks, repositories of diverse biological samples, play a crucial role in advancing medical research and personalized medicine. This trend intensifies the demand for robust biopreservation solutions to ensure the integrity and viability of stored specimens. As biobanking initiatives expand, the market witnesses a surge in the adoption of advanced preservation technologies. The need for standardized storage protocols and increased awareness of biopreservation's pivotal role in maintaining sample quality underscore the symbiotic relationship between the growth in biobanking initiatives and the continuous evolution of the biopreservation market.

### Segmental Insights

### Product Insights

Based on the Product, in the biopreservation market, the dominance of equipments is evident due to the critical role they play in ensuring the viability and integrity of biological samples. Biopreservation products, including storage media, cryoprotectants, and containers, serve as the backbone of preserving cells, tissues, and organs. These products are indispensable in various applications such as biobanking, regenerative medicine, and personalized diagnostics. As the market witnesses technological advancements and increasing demand, the innovation and efficacy of biopreservation products become central to meeting the diverse needs of researchers and healthcare professionals. The dominance of biopreservation products underscores their fundamental importance in driving the market's growth and evolution.

### Application Insights

Regenerative medicine stands out as a dominant force in the biopreservation market due to its revolutionary approach to treating diseases and injuries. The success of regenerative therapies heavily relies on the preservation of vital biological materials such as stem cells and tissues. Biopreservation becomes paramount in maintaining the potency and viability of these materials, ensuring their therapeutic efficacy. As regenerative medicine continues to advance, the demand for sophisticated biopreservation solutions grows, making it a cornerstone of the market. The dominance of regenerative medicine underscores biopreservation's pivotal role in facilitating breakthrough treatments that harness the body's own healing mechanisms for enhanced patient outcomes.

### Country Insights

The United States holds dominance in the biopreservation market due to its robust healthcare infrastructure, significant investments in research and development, and a thriving biotechnology sector. The country fosters a conducive regulatory environment, encouraging advancements in biopreservation technologies. With a high prevalence of chronic diseases, the demand for personalized medicine and innovative cell therapies is substantial, driving the biopreservation market's growth. Moreover, the U.S. leads in biobanking initiatives and regenerative medicine, solidifying its position as a key player. The presence of major biopharmaceutical companies and academic institutions further contributes to the United States' leadership in the biopreservation industry.

### Key Market Players

Azenta US, Inc



Biomatrix, Inc

BioLife Solutions Inc

MVE Biological Solutions

LabVantage Solutions, Inc

Taylor-Wharton International LLC

Thermo Fisher Scientific, Inc

Panasonic Corporation

X-Therma Inc

Princeton Cryotech Inc

#### Report Scope:

In this report, the North America Biopreservation Market has been segmented into the following categories, in addition to the industry trends which have also been detailed below:

#### North America Biopreservation Market, By Product:

Equipment

Media

LIMS

#### North America Biopreservation Market, By Application:

Regenerative Medicine

Bio-banking

Drug Discovery

North America Biopreservation Market, By Country:

United States

Canada

Mexico

Competitive Landscape

Company Profiles: Detailed analysis of the major companies presents in the Biopreservation Market.

Available Customizations:

North America Biopreservation 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, Trends

### 4. NORTH AMERICA BIOPRESERVATION MARKET OUTLOOK

- 4.1. Market Size & Forecast
  - 4.1.1. By Value
- 4.2. Market Share & Forecast
  - 4.2.1. By Product (Equipment, Media, LIMS)
  - 4.2.2. By Application (Regenerative Medicine, Bio-banking, Drug Discovery)
  - 4.2.3. By Country
  - 4.2.4. By Company (2023)
- 4.3. Market Map
  - 4.3.1. By Product

4.3.2. By Application

4.3.3. By Country

## **5. UNITED STATES BIOPRESERVATION MARKET OUTLOOK**

5.1. Market Size & Forecast

5.1.1. By Value

5.2. Market Share & Forecast

5.2.1. By Product

5.2.2. By Application

## **6. CANADA BIOPRESERVATION MARKET OUTLOOK**

6.1. Market Size & Forecast

6.1.1. By Value

6.2. Market Share & Forecast

6.2.1. By Product

6.2.2. By Application

## **7. MEXICO BIOPRESERVATION MARKET OUTLOOK**

7.1. Market Size & Forecast

7.1.1. By Value

7.2. Market Share & Forecast

7.2.1. By Product

7.2.2. By Application

## **8. MARKET DYNAMICS**

8.1. Drivers

8.2. Challenges

## **9. MARKET TRENDS & DEVELOPMENTS**

9.1. Recent Developments

9.2. Product Launches

9.3. Mergers & Acquisitions

## **10. NORTH AMERICA BIOPRESERVATION MARKET: SWOT ANALYSIS**

*North America Biopreservation Market By Product (Equipment, Media, LIMS), By Application (Regenerative Medicin...*

## **11. PORTER'S FIVE FORCES ANALYSIS**

- 11.1. Competition in the Industry
- 11.2. Potential of New Entrants
- 11.3. Power of Suppliers
- 11.4. Power of Customers
- 11.5. Threat of Substitute Product

## **12. COMPETITIVE LANDSCAPE**

- 12.1. Azenta US, Inc
  - 12.1.1.1. Business Overview
  - 12.1.1.2. Company Snapshot
  - 12.1.1.3. Product & Services
  - 12.1.1.4. Financials (In case of listed)
  - 12.1.1.5. Recent Developments
  - 12.1.1.6. SWOT Analysis
- 12.2. Biomatrix, Inc
- 12.3. BioLife Solutions Inc
- 12.4. MVE Biological Solutions
- 12.5. LabVantage Solutions, Inc
- 12.6. Taylor-Wharton International LLC
- 12.7. Thermo Fisher Scientific, Inc
- 12.8. Panasonic Corporation
- 12.9. X-Therma Inc
- 12.10. Princeton Cryotech Inc

## **13. STRATEGIC RECOMMENDATIONS**

## **14. ABOUT US & DISCLAIMER**

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