

Cryopreservation Equipment Market Assessment, By Equipment [Freezers, Incubators, Sample Preparation Systems, Accessories], By Cryogen [Liquid Nitrogen, Oxygen, Argon, Liquid Helium], By Application [Cord Blood Stem Cells, Sperms, Semen and Testicular Tissues, Embryos and Oocytes, Other Applications], By End-user [Stem Cell Banks, Biotechnology and Pharmaceutical Organizations, Contract Research Organizations, Stem Cell Research Laboratories, Research and Academic Institutes], By Region, Opportunities and Forecast, 2017-2031F

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Abstracts

Global cryopreservation equipment market is projected to witness a CAGR of 12.48% during the forecast period 2024-2031, growing from USD 7.64 billion in 2023 to USD 19.57 billion in 2031. Growth in the global cryopreservation equipment market is driven by various factors, such as the rising prevalence of infertility and increased demand for IVF, technological advancements, rising awareness regarding regenerative therapy like stem cell therapy, increased healthcare expenditure, and government initiatives. Growing pharmaceutical and biotechnological companies, increase in public and private sector investments in cryopreservation, and several leading players and developmental strategies like mergers, acquisitions, collaborations, and consistent new product launches accelerates the global cryopreservation equipment market growth.

The global cryopreservation equipment market is undergoing robust growth due to increasing prevalence of infertility among the population worldwide. Hormonal

imbalance, smoking, alcohol consumption, obesity, and exposure to environmental pollutants are some of the risk factors leading to infertility among men and women. With increasing prevalence of infertility, demand for IVF also increases. IVF process requires cryopreservation equipment to preserve eggs and sperm, thereby creating the need for cryopreservation equipment. Increased awareness regarding regenerative therapy, such as the success of stem cell therapy in treating diseases and injuries that are complex to treat, also plays a crucial role in the development of this market. Other factors, such as improvement in healthcare facilities, growing pharmaceutical and biotechnological industries, and increased investments by public and private firms, further accelerate the growth of global cryopreservation equipment.

Technological advancements in cryopreservation equipment by leading players, such as the development of innovative cryopreservation techniques and highly efficient freezers to maintain the adequate temperature required for cryopreservation, are major factors responsible for the growth of this market. Governments are also initiating awareness campaigns regarding the benefits of cryopreservation and providing funds to support research and development in cryopreservation technologies, further expanding the global cryopreservation equipment market. Moreover, ongoing collaborations and investments among public and private companies, new product launches, increasing research and development of more efficient and effective cryopreservation equipment, and emerging new entrants in the market are expected to create a positive outlook for the cryopreservation equipment market.

For instance, in January 2024, Prince Edward Island Ignition Fund helped five island start-up companies launch their innovative products in the market. One of the 5 companies was NanoFreeze Solutions Inc., which received \$25,000, for developing an innovative cryopreservation technology in the form of a non-toxic and inert Vitamin B5 Gel, which is highly efficient at freezing biological samples without compromising cell viability during the cryopreservation process.

Rising Prevalence of Infertility

There has been a surge in demand for cryopreservation equipment due to the rising prevalence of infertility worldwide. With modern lifestyle and environmental changes, more and more people are facing fertility issues. In-vitro fertilization (IVF) is the most common treatment option, adopted by couples to achieve pregnancy. Cryopreservation plays a vital role in IVF by preserving eggs, sperm, or embryos at extremely low temperatures. As the number of people affected by infertility is increasing, the application and demand for cryopreservation equipment are also growing. According to

WHO, around 17.5% of the world's adult population is affected by infertility. This means that roughly 1 in 6 adults globally is facing infertility issues. In the year 2023, prevalence of infertility in high-income countries was 17.8% and it stood at 16.5% in low- and middle-income countries. Apart from biological factors, lifestyle factors, such as smoking, alcohol consumption and obesity, can lead to infertility in men and women. Due to this, the number of IVF procedures is increasing, which is further responsible for increased demand of cryopreservation equipment, thereby accelerating the growth of the global cryopreservation equipment market.

Technological Advancement in Cryopreservation Techniques

Technological advancements in cryopreservation techniques play a crucial role in the development and growth of the global market. Also, the role of healthcare providers and researchers in gaining in-depth insights into regenerative medicines, personalized medicines, fertility preservation options, and cryoprotectant solutions plays a very important role in the market's growth. Innovative advancements in this market contribute to improving the success rates, efficiency, and safety of cryopreservation techniques in several medical and scientific applications. Due to this, many key market players are investing in developing innovative techniques in cryopreservation to enhance their product portfolio and expand their business, resulting in the development of this market at a global level.

For instance, in July 2023, CryoStasis, which is a global leader in bringing a combination of chemistry, biochemistry, and cooling processes to provide cell preservation, announced that it has received \$8 million fund from Genesys to develop next generation sub-zero unfrozen cryopreservation solutions for organ transplantation and cell/gene therapy products. This latest advancement would enable the healthcare providers, researchers, and healthcare industries to enhance current practices and develop new medical treatments, which can significantly improve patients' clinical outcomes. These technological advancements can bring revolutionary approach in cryopreservation techniques and escalate growth of the global cryopreservation equipment market.

Increased Demand for Freezers

Among the equipment segment, freezers hold the highest market share in the global cryopreservation equipment market. Freezers play a major role in cryopreservation by maintaining extremely low temperatures, which is crucial to preserve biological samples such as cells, tissues, or whole organisms. Extensive research and development

activities and increased investments by key market players in this segment are providing a great boost to the cryopreservation equipment market. As several key market players are launching highly efficient freezers with the latest technology in their product portfolio, the cryopreservation equipment market is expected to grow tremendously in the future. For instance, in June 2023, BioLife Solutions, Inc., which is a leading developer of efficient bioproduction products for the cell and gene therapy, announced that it has launched a new, large-capacity controlled-rate freezer named as “IntelliRate i67C”, to expand its product portfolio in the cryopreservation segment. IntelliRate i67C is a tabletop freezer that has the potential to fulfill crucial needs of its customer for higher volume production of cell therapies. Due to these consistent innovative launches by key market players, the global cryopreservation equipment market is witnessing rapid growth, which is expected to maintain in the future.

Increased Demand for Liquid Nitrogen

Among the cryogen segment, liquid nitrogen holds a significant market share in the overall global cryopreservation equipment market. In cryopreservation, biological samples, such as cells and tissues, are kept at extremely low temperature and among other cryogens, liquid nitrogen provides a much more stable ultra-low temperature environment. Due to this, liquid nitrogen is preferred for long-term storage. Moreover, as the demand for liquid nitrogen is increasing, key market players are expanding their business by establishing new liquid nitrogen plants in emerging regions, which is further accelerating growth of this segment. For instance, in May 2023, a new liquid nitrogen facility was established in the National Dairy Development Centre, Yusipang, Thimphu. The new facility was constructed to strengthen the Bhutan-India development partnership project under the 12th five-year plan of Bhutan. This new plant was developed under the livestock development project to increase production of milk, eggs, chicken, pork, fish, chevon, and honey in Bhutan. Moreover, it will help in meeting the increasing demand of liquid nitrogen for bovine semen cryopreservation and cold chain maintenance of valuable bovine semen. Key market players' frequent inauguration and establishment of liquid nitrogen facilities further propels the global cryopreservation equipment market.

North America Holds Major Share in the Market

North America holds the maximum share in the global cryopreservation equipment market due to its strong and robust healthcare infrastructure, increased healthcare spending, and growing investments by key market players in developing innovative cryopreservation techniques and equipment to improve cryopreservation facilities in the

healthcare sector. Rise in prevalence of infertility in the United States has led to increased demand of IVF solutions that require cryopreservation equipment for preserving the eggs and sperms. Increased awareness regarding potential benefits of cryopreservation and regenerative therapies among the population is further escalating the market growth. Along with this, the frequent launch of innovative products by several key market players are also favoring the growth of the market in the region. For instance, in February 2022, OriGen Biomedical, Inc., which is a global medical device manufacturer of cryopreservation, cell culture, and respiratory products, announced the launch of its new CryoStore FLEX Freezing Bag in the USA and Europe. This product has also been granted CE mark approval for the CryoStore FLEX Freezing Bag product line. Moreover, the presence of leading market players within the region, such as Thermo Fisher Scientific, Inc. and BioLife Solutions Inc., further enhances the growth of the global cryopreservation equipment market in North America.

Future Market Scenario (2024 – 2031F)

The global cryopreservation equipment market is expected to rapidly grow in the future due to an increasing prevalence of infertility worldwide, which increases the demand for cryopreservation equipment in IVF processes. Increased healthcare expenditure and improvement in healthcare infrastructure, growing awareness regarding potential benefits of regenerative and stem cell therapies, government initiatives, increased research and development, new innovative launches by firms, and the emergence of new entrants are further escalating the growth of the global cryopreservation equipment market. Moreover, collaborative ventures involving manufacturers of analytical instruments from different industries have spurred innovation and growth in the global cryopreservation equipment market.

Key Players Landscape and Outlook

In the cryopreservation equipment market, public and private organizations and research institutes consistently establish initiatives, strategic partnerships, collaborations, and distribution agreements, which are crucial in propelling the global cryopreservation equipment market's expansion. These partnerships empower firms to gain from each other's strengths, benefit from access to new markets and technologies, and pool resources for research and development endeavors. Distribution agreements between the companies help them to broaden their market presence at an international level. These collaborative initiatives promote innovation and expedite product development and improved disease treatment, which, in turn, contribute to the enduring and robust growth of the overall healthcare industry.

For instance, in March 2023, Cryoport, Inc., a global leader in providing supply chain solutions for the reproductive medicine market and innovative temperature-controlled supply chain solutions for the life sciences industry, announced a 3-year partnership agreement with Inception Fertility, which is North America's largest comprehensive fertility services provider. This partnership aims to enhance and expand the company's existing cryopreservation product portfolio, grow its business in the fertility segment, expand the company's footprint in the North American region, and further elevate the global cryopreservation equipment market.

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*Companies mentioned above DO NOT hold any order as per market share and can be changed as per information available during research work.

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