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Cell Isolation Market - Global Industry Size, Share, Trends, Opportunity, and Forecast, 2018-2028 Segmented By Product (Consumables and Instruments), By Cell Type (Human Cells and Animal Cells), By Source (Bone Marrow, Cord Blood/Embryonic Stem Cells, Adipose Tissue), By Technique (Centrifugation-Based Cell Isolation, Surface Marker-Based Cell Isolation, Filtration-Based Cell Isolation), By Application (Biomolecule Isolation, Cancer Research, Stem Cell Research, In Vitro Diagnostics, Others), By End User (Biotechnology and Biopharmaceutical Companies, Research Laboratories and Institutes, Hospitals and Diagnostic Laboratories, Cell Banks), By Region and Competition

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Abstracts

The Global Cell Isolation Market reached a value of USD 4.03 Billion in 2022 and is poised for remarkable growth, with an expected Compound Annual Growth Rate (CAGR) of 13.04% through 2028. Cell isolation, also known as cell sorting, is the process of identifying and separating specific cells from a heterogeneous mixture of cell populations. These targeted cells are isolated and separated based on their cell type. Common methods for cell isolation include magnet-activated cell isolation, filtration, centrifugation, and flow cytometry.

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Cell isolation plays a pivotal role in diagnosing diseases, conducting cellular research, and developing therapies by analyzing ribonucleic acid (RNA) expressions. It simplifies the experimental analysis of cells and reduces interference from other cell types within the sample. Consequently, it finds extensive applications in fields such as cancer research, stem cell biology, immunology, and neurology. An example of an innovative technique that utilizes isolated cells is patch-clamp electrophysiology, which examines the movement of charged particles across the cell membrane. Isolated cells are also instrumental in cell culture, where a single cell multiplies to form a colony of cells.

Moreover, cell isolation has various therapeutic applications. For instance, pancreatic islet cells can be isolated, cultured, and transplanted to treat patients with Type 1 Diabetes.

Key Market Drivers

Increasing Prevalence of Chronic Diseases

The growing incidence of chronic diseases, such as diabetes and cancer, has led to an increased demand for cell-based therapies. Additionally, cell isolation plays a crucial role in various diagnostic experiments and research on chronic diseases. In drug discovery, cell isolation is essential for studying cellular behavior, disease response, and drug impact. Cell isolation tools are increasingly utilized in drug discovery techniques to develop recombinant protein therapeutics for treating a wide range of diseases, including cancer, autoimmune disorders, and genetic conditions. The global prevalence of chronic diseases has further amplified the applications of isolated human cells in research, drug development, and clinical trials. Therefore, the rising demand for cell-based therapies, driven by the growing incidence of chronic diseases, has resulted in an increased need for cell isolation tools.

The growth of chronic diseases, such as diabetes, obesity, arthritis, heart disorders, and cancer, is influenced by factors like increased sedentary lifestyle, global population aging, and higher rates of cigarette smoking and alcohol consumption. According to Imperial College London, chronic illnesses were projected to account for over 70% of global fatalities in 2020, with more than 41 million deaths annually. Approximately 17 million of these deaths are considered premature, occurring at a younger age than expected.

Consequently, the demand for cellular therapies to address chronic diseases is

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escalating alongside the burden of these conditions. This has led to increased focus and funding in research to develop effective remedies. As a result, the global market for cell isolation technologies is being driven by the growing activities in cellular research.

Rapid Increase in The Research Activities In The Pharmaceutical And Biotechnological Industries

The robust growth of the Cell Isolation/Cell isolation Market can be attributed to the significant increase in research activities within the pharmaceutical and biotechnological industries. This surge is in response to the rapid rise in the number of diseases, as well as the presence of well-developed infrastructures and advancements in technology. These factors contribute to the need for effective cell isolation and separation techniques, which further drives the market growth.

Moreover, the growing demand for laboratory automation has also played a pivotal role in enhancing the growth of the Cell Isolation/Cell isolation Market. As laboratories seek to streamline their processes and improve efficiency, the adoption of automated solutions for cell isolation and separation becomes increasingly important. This, in turn, fuels the expansion of the market, as more companies and research institutions recognize the benefits and advantages of laboratory automation in their scientific endeavors. Numerous biotechnology companies, including those from underdeveloped nations, are venturing into the market. Pharmaceutical corporations are likely to utilize cell isolation techniques to develop new medications and foster innovation. These companies have acquired significant independent units to support the expanding stem cell research field. The biotechnology and pharmaceutical firms' sector is expected to be propelled by the advancements in medications and treatments, such as CAR-T, facilitated by cell isolation technologies. Currently, there are 449 public biotech companies operating in the U.S., which is anticipated to drive the market for biotechnology and pharmaceutical companies.

Government’s Policies to Enhance Biomedical Research Activities

In recent years, there has been a remarkable surge in initiatives and policies implemented by governments worldwide to support and promote biomedical research activities. This is primarily driven by the increasing awareness among customers about the significance of such research, as well as the growing number of aging population and the rising prevalence of chronic diseases. Consequently, the Cell Isolation Market has experienced a rapid growth trajectory.

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Substantial investments in the biotechnology sector and continuous improvements in the healthcare infrastructure are expected to further stimulate the expansion of the Cell Isolation Market. These investments and advancements not only contribute to the overall growth of the market but also foster innovation and technological advancements in the field of cell isolation and separation.

Demand For Clinical Trials and Research Is Increasing As The Geriatric Population Grows

The senior population, comprising individuals aged 65 and over, is more prone to chronic illnesses such as cancer and neurological disorders when compared to the younger population. Notably, the geriatric population is experiencing rapid growth, which further magnifies the significance of addressing these health concerns. With the increasing number of individuals aged 65 and over, the prevalence of conditions like Alzheimer's, dementia, cancer, and immunological illnesses is expected to rise significantly.

Consequently, there will be an escalating demand for corrective treatments to cater to these conditions. This surge in demand is also projected to extend to the field of cell isolation products, which play a crucial role in various research endeavors, including clinical trials. As a result, the global market for cell isolation technologies is anticipated to witness substantial growth, driven by these factors.

Key Market Challenges

Lack of Technically Skilled Individuals

The shortage of technically competent workers in the field, coupled with the increasing concerns about the existence of tight rules and compliances for cell separation procedures, are projected to restrain the overall market expansion. Moreover, the high cost associated with cell separation technology implant treatments can potentially pose a significant threat to the growth of the market in the coming years. These factors highlight the need for strategic measures and innovative solutions to overcome these challenges and foster sustainable market growth.

Shift From Lab-Based Diagnosis to Home-Based Testing

The shift from lab-based diagnosis to home-based testing, driven by increased customer awareness, has led to a decrease in the chances of complications and

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significant advancements in technology. As a result, the growth of the Cell Isolation/Cell Separation Market is anticipated to be reduced. Additionally, the market growth may be hampered by the high costs associated with service contracts and raw materials. These factors collectively contribute to the challenges faced by the Cell Isolation Market, emphasizing the need for strategic solutions to address these concerns and ensure sustained growth in the industry.

Key Market Trends

Technological Advancement

It is anticipated that the cell separation technology market will experience significant growth opportunities in the coming years. This can be attributed to the rapid technological advancements in cell-based technology, such as higher purity yield and reduced cell isolation time. Additionally, the rise in government initiatives to improve cell-based technology and the cost-effectiveness of cell separation techniques are expected to contribute to market growth. Furthermore, the well-developed healthcare infrastructure in developing countries provides a favorable environment for the adoption and implementation of cell separation technologies. All these factors combined make the cell separation technology market poised for substantial expansion in the foreseeable future.

Product Innovations

The growth of the global cell isolation market is being fueled by advancements in the product offerings. Product innovations in this market are primarily driven by the increasing demand for automated tools in cell-based research for various chronic and infectious diseases. Key players in the market, such as BD and QIAGEN, are dedicated to continuous product improvement. For instance, in March 2019, BD introduced the BD FACSDuet automated flow cytometry system, a fully automated sample preparation instrument that enhances the efficiency of clinical laboratories by minimizing errors and reducing the need for manual user interactions when running assays on the BD FACSLyric clinical flow cytometer. Other vendors, like Bio-Rad, are focused on the development of reagents for flow cytometry. In November 2020, Bio-Rad Laboratories, Inc. launched StarBright Blue 700, StarBright Violet 440, and StarBright Violet 610 dyes, which provide maximum brightness and improved resolution for flow cytometry. Hence, the continuous product advancements by established market players drive market growth and contribute to increased sales of these products.

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Segmental Insights

Cell Type Insights

Based on the cell type, the market is segmented into human cells and animal cells. In 2022, the human cell category emerged as the leader in terms of revenue share. This can be attributed to the growing emphasis on cancer and human research, as well as the wide range of applications of isolated human cells in biopharmaceutical development, clinical trials, and research. Moreover, the attractive payment policies for personalized medicine in industrialized countries further contribute to the demand for human cell isolation. It is projected that the animal cells segment will also witness profitable growth during the forecast period. The development of novel drugs has garnered significant attention from government bodies, the commercial sector, and healthcare organizations, thereby driving the growth of this segment. Animal cells play a crucial role in the discovery and development of new drugs, enabling the assessment of toxicity, pharmacokinetics, and effectiveness.

Technique Insights

Based on the technique segment, the market is segmented into centrifugation-based cell isolation, surface marker-based cell isolation, and filtration-based cell isolation. The centrifugation-based cell isolation segment, accounted for the largest revenue share in 2022, has been a dominant force in the cell separation market. This technique is widely utilized by academic institutions, research centers, and biotechnology/biopharmaceutical companies. Centrifugation plays a crucial role in cell isolation, with both differential centrifugation and density gradient centrifugation commonly employed. Density gradient centrifugation leverages molecular weights for particle separation, while differential centrifugation employs lysates to disrupt cell membranes.

Looking ahead, significant growth is expected in both the surface marking and filtration segments. This market expansion is primarily driven by product development and increased corporate investments in manufacturing infrastructure. Manufacturers utilize innovative surface markers and filtration systems in their production and research processes to enhance the quality of the final product.

Regional Insights

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The North American market is poised to lead the global cell isolation industry in the coming years, driven by the increasing prevalence of chronic diseases, growing demand for personalized medicine, and government funding for cell-based research and development. With its advanced healthcare system, robust research and development sector, and increasing investment in biotechnology research, North America is expected to witness the most significant revenue growth.

Asia Pacific is anticipated to experience rapid expansion in the cell isolation market due to factors such as escalating healthcare costs, a large patient base, and growing interest in cutting-edge cell separation methods. The region boasts several emerging nations, including China and India, where the incidence of chronic diseases is on the rise. Additionally, the accessibility to skilled personnel and affordable production costs is expected to attract numerous major players in the cell isolation industry to the region.

The European market is projected to exhibit moderate growth, driven by factors such as increased government spending on life sciences research and development and the prevalence of chronic disorders. Key players in the cell isolation market, such as Thermo Fisher Scientific, STEMCELL Technologies, and Merck KGaA, are among the notable companies based in the region.

Key Market Players

Becton, Dickinson & Company

Merck KGaA (Millipore Sigma)

Thermo Fisher Scientific Inc.

Bio-Rad Laboratories Inc.

Terumo Corporation

PluriSelect Life Science UG & Co. KG

Danaher Corporation (Cytiva)

STEMCELL Technologies Inc.

Corning Inc.

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Akadeum Life Sciences Inc.

Report Scope:

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

Cell Isolation Market, By Product:

Consumables

Instruments

Cell Isolation Market, By Cell Type:

Human Cells

Animal Cells

Cell Isolation Market, By Source:

Bone Marrow

Cord Blood/Embryonic Stem Cells

Adipose Tissue

Cell Isolation Market, By Technique:

Centrifugation-Based Cell Isolation

Surface Marker-Based Cell Isolation

Filtration-Based Cell

Cell Isolation Market, By Application:

Biomolecule Isolation

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Cancer Research

Stem Cell Research

In Vitro Diagnostic

Others

Cell Isolation Market, By End User:

Biotechnology and Biopharmaceutical Companies

Research Laboratories and Institutes

Hospitals and Diagnostic Laboratories

Cell Banks

Cell Isolation Market, By Region:

North America

United States

Canada

Mexico

Europe

France

United Kingdom

Italy

Germany

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Spain

Asia-Pacific

China

India

Japan

Australia

South Korea

South America

Brazil

Argentina

Colombia

Middle East & Africa

South Africa

Saudi Arabia

UAE

Kuwait

Turkey

Egypt

Competitive Landscape

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Company Profiles: Detailed analysis of the major companies present in the Global Cell Isolation Market.

Available Customizations:

Global Cell Isolation 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).

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