Stem Cell Assays Market Assessment, By Assay Type [Viability/Cytotoxicity Assays, Isolation and Purification Assays, Cell Identification Assays, Proliferation Assays, Differentiation Assays, Function Assays, Apoptosis Assays], By Cell Type [Adult Stem Cells, Human Embryonic Stem Cells], By Product Type [Instruments, Reagents and Kits], By Application Type [Regenerative Medicine and Therapy Development, Drug Discovery and Development, Clinical Research], By End-user [Biopharmaceutical and Biotechnology Companies, Academic Institutes and Research Facilities, Others], By Region, Opportunities and Forecast, 2017-2031F

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Report description:

Global stem cell assays market is projected to witness a CAGR of 15.27% during the forecast period 2024-2031, growing from USD 1.54 billion in 2023 to USD 4.8 billion in 2031. The market has experienced significant growth in recent years and is expected to maintain a strong pace of expansion in the coming years. A stem cell assay is a laboratory method used to evaluate the characteristics and actions of stem cells. It involves testing stem cells under controlled conditions to assess their capacity for self-renewal, differentiation into various cell types, and proliferation. Stem cell assays are important in biomedical research and regenerative medicine, offering applications ranging from drug discovery and development to toxicological screening and disease modeling. Moreover, stem cell assays play a crucial role in drug development by examining the effects of potential therapeutic drugs on stem cell differentiation and functionality. Additionally, these assays are employed to study developmental processes,

screen for pharmacological toxicities, and investigate the underlying causes of diseases such as cancer and neurological disorders.

Constant progress in stem cell research, coupled with the emergence of innovative techniques for stem cell isolation, cultivation, and differentiation, serve as primary drivers. These technological advancements enhance the efficiency and efficacy of stem cell assays, rendering them increasingly attractive for various applications, including drug development, regenerative medicine, and fundamental research. Innovations such as 3D cell culture methodologies, high-throughput screening approaches, and advancements in imaging and analytical instruments collectively contribute to market expansion.

The burgeoning interest in regenerative medicine, alongside the potential of stem cells to address various ailments such as cardiovascular disease, neurological disorders, and diabetes, fuels the demand for stem cell assays. Moreover, the rising global prevalence of chronic diseases and genetic disorders necessitates the development of novel therapeutics and treatments. Stem cells offer a promising avenue for generating such therapies, consequently driving the demand for stem cell assays in disease modeling, drug development, and personalized medicine. As academia and pharmaceutical companies intensify efforts to deepen their understanding of disease etiology and evaluate new treatments, the necessity for stem cell assays continues to grow. Governments, corporations, and academic institutions are increasingly investing in stem cell research to explore therapeutic applications, thereby generating demand for assays to assess stem cell-based therapies' efficacy and safety. For instance, Fujifilm cellular dynamics collaborated with Promega Corporation in March 2022 to develop novel assays to understand how cellular biology works in a system to understand cell biology in humans ultimately.

Rising Prevalence of Diseases

The increasing prevalence of chronic diseases and lifestyle-related disorders, including cancer, cardiovascular conditions, diabetes, and neurological ailments, serves as a significant catalyst for the expansion of the stem cell assay market. The upsurge in infectious diseases, such as swine flu and Ebola, has also fueled growth in the therapeutics and drug development sector. For instance, between December 27, 2021, and January 9, 2022, WHO Global Influenza Surveillance and Response System (GISRS) laboratories analyzed over 317,198 specimens from labs across 99 countries. Among these tests, 16,862 individuals tested positive for influenza viruses, with 63.7% identified as influenza A and 36.3% as influenza B. The prevalence of diseases and their recurring nature underscore the importance of stem cell assays in understanding and combating these conditions. Moreover, the expanding geriatric and pediatric populations drive the increased incidence of diseases, further boosting the demand for stem cell assays. As of July 2022, United Nations Projections indicated a global pediatric population (0-17 years) of 2.3 billion, projected to reach 2.5 billion by 2040. The ongoing rise in the pediatric population signifies a growing need for innovative solutions, positioning the stem cell assays market for sustained growth in the coming years.

Growing Emphasis On Clinical Research & Development

The expansion of the global stem cell assays market is being propelled by factors such as clinical research and development. There is a strong emphasis on comprehending cancer biology and identifying innovative therapeutic targets for a wide range of acute and chronic diseases, significantly contributing to the growth of the stem cell assays market. Moreover, substantial investments in research and development endeavors by pharmaceutical companies and academic institutions are fostering market expansion. The escalating prevalence of chronic diseases such as cancer, osteoarthritis, cardiovascular diseases, and diabetes drives the demand for cell-based assays in the quest for novel drug discoveries, thereby serving as a pivotal growth factor for this market segment. According to an article titled "2022 Funding forecast: strong R&D growth with clouds on the horizon," published in April 2022, the United States federal government is projected to allocate USD 181.4 billion for research and development in 2022, further bolstering growth prospects for this segment.

Clinical trials play a pivotal role in assessing the safety and efficacy of new drugs, ultimately leading to regulatory approvals and market penetration. These trials validate the therapeutic potential of drugs and augment the empirical evidence supporting their clinical utility. Additionally, collaboration among commercial entities, academic institutions, and regulatory bodies expedites the clinical development process of various stem cell assays and accelerates the introduction of novel drugs to the market. In April 2023, Omisirge (omidubicel-onlv), a significantly modified allogeneic (donor) cord blood-based cell therapy was granted approval by US FDA.

Dominance of Reagent and Kits

During the projected period, the reagents and kits segment are expected to lead the stem cell assays market. These consumables

play a vital role in various stem cell tests, encompassing cell proliferation, differentiation, viability, and toxicity assessments. Their pervasive use in routine laboratory operations and recurring necessity contribute to their high demand. This demand is fueled by ongoing research and development endeavors in both academic and commercial sectors, where stem cell assays are pivotal for drug discovery, therapeutic advancement, and fundamental research. Reagents and kits are formulated to address a broad spectrum of requirements, ranging from fundamental research to specialized therapeutic domains. This adaptability is reinforced by the capacity to customize kits for specific stem cell types or assays. Such tailored solutions and application versatility ensure sustained high demand for reagents and kits across diverse research domains and pharmaceutical development initiatives, consolidating their market dominance. Moreover, in contrast to instruments, which entail significant upfront capital investment and maintenance costs, reagents and kits are more cost-effective and accessible to a broader customer base, including small research laboratories and entrepreneurs. In March 2022, Illumina launched the TruSight Oncology (TSO) comprehensive in-vitro genomic profiling kit in Europe. The kit evaluates multiple genes and biomarkers to elucidate the precise molecular profile of cancer patients, empowering clinicians to administer tailored therapies based on individual molecular profiles.

North America Dominates Global Stem Cell Assays Market Share

North America dominates the global stem cell assays market, primarily due to its well-established healthcare sector and widespread adoption of cell-based assays. In the United States, the rising incidence of chronic diseases like cancer, osteoarthritis, and diabetes drives demand for cell-based assays, thus serving as a significant growth driver for this market.

For instance, according to data from the American Cancer Society's Cancer Facts & Figures 2022 report, an estimated 1.9 million new cancer cases will be diagnosed in the United States, along with 609,360 cancer-related deaths. Similarly, American Heart Association reported in January 2022 that a myocardial infarction occurs approximately every 40 seconds in the United States. Such high prevalence of chronic diseases in the population of the United States is expected to propel stem cell assays market growth during the forecast period.

Future Market Scenario (2024 □ 2031F)

Occurrence and re-occurrence in number of acute and non-acute diseases call for a solution and it presents the biggest opportunity for the stem cell assays market to rise. Adoption of much advanced and effective approaches are being devised that should ensure faster recovery and better results for a better quality of life. R&D and heavy investments made by healthcare giants are promoting developments in the stem cell assays market, which is optimistic for the market to flourish in the coming years. New brands in this development area are introducing themselves with cutting edge technologies.

For instance, in February 2024, Thermo Fisher unveiled a novel serum-free stem cell culture medium designed to enhance stem cell proliferation and differentiation. The breakthrough holds significant promise for companies engaged in developing stem cell-based therapies. Successful attempts to improve diagnostics push the industry as a whole to engage further with higher-quality R&D, which paves the way for the market to rise. In August 2022, Life Net Health LifeSciences launched Cell-Based Assay Services, including cytotoxicity screening, biocompatibility assays, and others.

Key Players Landscape and Outlook

Several companies in global stem cell assays market are focusing on new product release, market expansion, and product development. Stem cell assays market players are poised to encounter promising growth prospects in the global market, driven by the increasing demand for diagnostic solutions. The primary focus of these leading players is directed towards the rapidly expanding market segment, aiming to thrive and excel in an intensely competitive market environment. Additionally, these market players emphasize collaboration and license agreements as strategic initiatives are anticipated to propel the market growth.

In July 2022, CORESTEM, based in South Korea, continued to enroll participants for the Phase 3 clinical trial of NeuroNata-R. The treatment has obtained conditional approval for the treatment of amyotrophic lateral sclerosis (ALS) patients in South Korea.

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