3D Cell Culture Market By Product (Scaffold Based Platforms, Scaffold Free Platforms, Gels, Bioreactors, Microchips, Services), By Application (Cancer Research, Stem Cell Research, Drug Discovery, Regenerative medicine), By End User (Biotechnology and Pharmaceutical Companies, Contract Research Laboratories, Academic Institutes): Global Opportunity Analysis and Industry Forecast, 2021-2031

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Report description:

A 3D cell culture is an in-vitro technique wherein the cells can grow in an artificially created environment. These environments closely resemble the architecture and functioning of the native tissue. 3D cell culture technique helps stimulate cell differentiation, proliferation, and migration by interacting with their three-dimensional surroundings as they would in the in-vivo environment. As 3D cell cultures can mimic the structure, activity, and microenvironment of the in-vivo tissues, this technique has varied applications in the fields of drug screening, regenerative medicine, stem cell therapies, cancer research and cell biology. The extracellular matrix in 3D cell cultures enables cell-cell communication by direct contact as in in-vivo environment by secreting cytokines and trophic factors. These factors are changed in a 2D environment that can significantly affect the cell-cell communication, which in turn can alter the cell morphology and proliferation. As 2D cultures cannot recapitulate the architecture and complex cellular matrices as in 3D cultures, this technique is gaining popularity in healthcare research sector. In addition, 3D cell cultures can provide results with improved efficiency and reduce the cost of overall R&D process.

Based on product, the 3D cell culture market can be categorized into scaffold-based platforms, scaffold-free platforms, gels, bioreactors, microchips, and services. Scaffold-based platforms are used to alter the cell culture procedure by providing a surface on which the cells can easily impart 3D growth. Scaffolds are used in drug discovery and cell expansion, owing to the availability of a variety of materials and structural choices. In addition, there are other advantages related to the use of scaffold-based platforms such as ease of imaging and simple assay protocol. Moreover, the mechanical and biochemical properties of the scaffold can easily be modified as per the need of the application. Thus, this segment is expected to dominate the product segment

throughout the forecast period as there is a high demand for scaffold-based platforms for creating 3D cell cultures. Nevertheless, scaffold-based platforms can adsorb test compounds, limit downstream endpoints for analysis, and introduce different biological substances, thereby obstructing the segment growth.

Based on application, the 3D cell culture market is segmented into cancer research, stem cell research, drug discovery, and regenerative medicine. Cancer research segment is anticipated to be the largest growing segment over the analysis period. This is majorly attributed to the advantages offered by 3D cell culture in cancer research, these include ease of altering cell proliferation and morphology, revealing realistic drug response, capturing phenotypic heterogeneity, allowing experimental manipulation in gene expression & cell behavior and representing the tumor microenvironment. Preclinical studies that utilize the benefits of 3D cell culture early on can critically improvise the understanding of cancer biology. These include elimination of poor drug candidates and identification of physiologically relevant targets that were previously inaccessible in 2D cultures. This can largely contribute toward the segment growth.

Based on end user, the global 3D cell culture market is segmented into biotechnology & pharmaceutical companies, contract research laboratories, and academic institutes. The academic institutes segment held a dominant position in the end user segment throughout the analysis period. This growth is due to rise in collaborations between several companies with research institutes and clinical laboratories owing to the rise in demand of 3D cell cultures for various healthcare applications. For instance, Procter & Gamble (P&G) and Durham University based in the UK have collaborated for engineering 3D skin substitutes with the help of tissue-mimetic 2D platforms for studying the process of ageing in-vitro. In addition, many academic institutes have focused their R&D activities toward 3D culture models for developing novel approaches for treating different medical conditions. This surge in research activities across academic institutes and universities is predicted to propel the growth of the segment over the analysis period.

North America is expected to maintain its dominance during the forecast period due to the presence of several pharmaceutical and biotechnology companies that use 3D culture technology in collaboration with research institutes and clinical laboratories for developing regenerative medicines and drug discovery & development. Furthermore, rise in demand for organ transplantation and upsurge in R&D activities focused on technologically advanced solutions is predicted to fuel the adoption of 3D cell culture practices in the region. In addition, surge in incidences of cancer has led the government to increase the funding and grants for R&D in the field of cancer, which may have a positive impact on the 3D cell culture market growth. Moreover, the strategic expansion of biotechnological and pharmaceutical companies has led to launch of advanced products, which are expected to augment the market growth in coming years.

Key Benefits For Stakeholders

This report provides a quantitative analysis of the market segments, current trends, estimations, and dynamics of the 3d cell culture market analysis from 2021 to 2031 to identify the prevailing 3d cell culture market opportunities.

The market research is offered along with information related to key drivers, restraints, and opportunities.

Porter's five forces analysis highlights the potency of buyers and suppliers to enable stakeholders make profit-oriented business decisions and strengthen their supplier-buyer network.

In-depth analysis of the 3d cell culture market segmentation assists to determine the prevailing market opportunities.

Major countries in each region are mapped according to their revenue contribution to the global market.

Market player positioning facilitates benchmarking and provides a clear understanding of the present position of the market players.

The report includes the analysis of the regional as well as global 3d cell culture market trends, key players, market segments, application areas, and market growth strategies.

Key Market Segments

By Product

- Scaffold Free Platforms
- Gels
- Bioreactors
- Microchips
- Services

- Scaffold Based Platforms
- Macro-scale
- Micro-scale
- Nano-scale
- Solid Scaffolds

By Application
- Cancer Research
- Stem Cell Research
- Drug Discovery
- Regenerative medicine

By End User
- Biotechnology and Pharmaceutical Companies
- Contract Research Laboratories
- Academic Institutes

By Region
- North America
- U.S.
- Canada
- Mexico
- Europe
- Germany
- France
- UK
- Rest of Europe
- Asia-Pacific
- Australia
- Rest of Asia-Pacific
- Japan
- China
- India
- LAMEA
- Brazil
- Saudi Arabia
- South Africa
- Rest of LAMEA
- Key Market Players
- 3d Biotek LLC
- Advanced Biomatrix, Inc.
- Avantor, Inc.
- Becton, Dickinson And Company
- Corning Incorporated
- Insphero AG
- Lonza Group LTD.
- Merck & Co., Inc.
- Synthecon, Incorporated
- Thermo Fisher Scientific Inc.

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