

Cell Culture Hydrogel Market By Type of Hydrogel (Natural Hydrogels, Synthetic Hydrogels, Hybrid Hydrogels), By Application (Cancer and Stem Cell Research, Tissue Engineering and Regenerative Medicine, Drug Discovery and Toxicology Testing, Others), By End User (Pharmaceutical and Biotechnology Companies, CROs, Research Institutions, Others): Global Opportunity Analysis and Industry Forecast, 2024-2035

<https://marketpublishers.com/r/C6DD88CF30FAEN.html>

Date: December 2024

Pages: 321

Price: US\$ 2,655.00 (Single User License)

ID: C6DD88CF30FAEN

Abstracts

The cell culture hydrogel market was valued at \$400.0 million in 2023 and is estimated to reach \$2,136.7 million by 2035, exhibiting a CAGR of 15.0% from 2024 to 2035.

Cell culture hydrogel is a three-dimensional, water-rich polymeric materials designed to mimic the extracellular matrix (ECM) environment for culturing cells in vitro. These hydrogels provide structural support, biochemical cues, and mechanical properties essential for maintaining cellular function, proliferation, and differentiation. They are commonly used in biomedical research, including tissue engineering, regenerative medicine, and drug discovery.

Increase in focus on stem cell therapies and research is a key factors that has fueled the demand for hydrogels, which support stem cell growth and differentiation by mimicking natural cellular environments. In addition, the transition from 2D to 3D cell cultures for drug screening, organoid development, and regenerative medicine has significantly increased the demand for hydrogels. Studies have shown that organoid cultures supported by synthetic hydrogels with tunable mechanical properties enhance

reproducibility and mimic organ-like structures more accurately compared to traditional Matrigel scaffolds. Moreover, rising applications in drug discovery and development fuel the growth of the market. This is attributed to the fact that hydrogels enable the development of 3D models for high-throughput drug screening, enhancing their adoption by pharmaceutical and biotechnology industries. Furthermore, rise in need for advanced in vitro models to study chronic diseases like cancer, cardiovascular conditions, and diabetes is fueling the demand for hydrogels in biomedical research. A 2023 study published by the World Health Organization revealed that approximately 41 million individuals die each year due to chronic diseases. Rise in adoption of organ-on-a-chip technologies, which often incorporate hydrogels to simulate tissue microenvironments, further propels the market. However, requirement for tailoring hydrogel properties, such as stiffness, porosity, and degradation rate, to suit specific applications demands technical expertise and time, which acts as a barrier for the market growth. Moreover, availability of alternative 3D culture methods such as microcarrier-based cell cultures or scaffold-free methods like spheroids, can pose challenges to the market growth. On the contrary, innovations in hydrogel formulations, such as smart hydrogels with tunable properties and stimuli-responsive behavior, are expanding their functionality and applications. Rise in research and clinical efforts in tissue engineering and regenerative medicine are boosting the demand for hydrogels, which serve as key biomaterials for creating functional tissue constructs. Such developments are expected to offer lucrative opportunities for the expansion of the global market during the forecast period.

The cell culture hydrogel market is segmented into type of hydrogel, application, end user, and region. By type of hydrogel, the market is segmented into natural hydrogels, synthetic hydrogels, hybrid hydrogels. By application, the market is segmented into cancer and stem cell research, tissue engineering and regenerative medicine, drug discovery and toxicology testing, and others. By end user, the market is segregated into pharmaceutical and biotechnology companies, CROs, research institution, and others. Region wise, the market is analyzed across North America (U.S., Canada, and Mexico), Europe (Germany, France, UK, Italy, Spain, and rest of Europe), Asia-Pacific (Japan, China, India, Australia, South Korea, and rest of Asia-Pacific), and LAMEA (Brazil, South Africa, Saudi Arabia, and Rest of LAMEA).

Key Findings

Depending on type of hydrogel, the synthetic hydrogels segment dominated the share, in terms of share, in 2023, and is expected to register the highest CAGR from 2024 to 2035.

On the basis of application, the tissue engineering & regenerative medicine segment garnered the largest share in 2023; however, the cancer & stem cell research segment is expected to grow at the highest CAGR during the forecast period.

By end user, the pharmaceutical and biotechnology companies segment was the major shareholder in 2023; however, the CROs segment is anticipated to exhibit the highest CAGR during the forecast period.

Region wise, North America was the largest shareholder in the global cell culture hydrogel market in 2023; however, Asia-Pacific is anticipated to register the highest CAGR during the forecast period.

Competitive Analysis

The key players that operate in the global cell culture hydrogel market are Corning Incorporated, Merck KGaA, Humabiologics, Inc, Cell Guidance Systems, TheWell Bioscience Inc., CD Bioparticles, BICO, PELOBIOTECH GmbH, UPM, and Cellendes GmbH. These players have adopted expansion, agreement, partnership, and collaboration as their key strategies to strengthen their foothold in the global market

Key Benefits for Stakeholders

This report provides a quantitative analysis of the market segments, current trends, estimations, and dynamics of the cell culture hydrogel market analysis from 2023 to 2035 to identify the prevailing cell culture hydrogel 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 cell culture hydrogel 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 cell culture hydrogel market trends, key players, market segments, application areas, and market growth strategies.

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Market share analysis of players by products/segments

New Product Development/ Product Matrix of Key Players

Additional company profiles with specific to client's interest

Expanded list for Company Profiles

Historic market data

Key Market Segments

By Type of Hydrogel

Synthetic Hydrogels

Hybrid Hydrogels

Natural Hydrogels

By Application

Cancer and Stem Cell Research

Tissue Engineering and Regenerative Medicine

Drug Discovery and Toxicology Testing

Others

By End User

Research Institutions

Others

Pharmaceutical and Biotechnology Companies

CROs

By Region

North America

U.S.

Canada

Mexico

Europe

Germany

France

UK

Italy

Spain

Rest of Europe

Asia-Pacific

Japan

China

Australia

India

South Korea

Rest of Asia-Pacific

LAMEA

Brazil

Saudi Arabia

South Africa

Rest of LAMEA

Key Market Players

Corning Incorporated

Merck KGaA

Humabiologics, Inc

UPM

PELOBIOTECH GmbH

CD Bioparticles

Cell Guidance Systems

BICO

TheWell Bioscience Inc.

Cellendes GmbH

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