Live Cell Encapsulation Market - Growth, Trends, Covid-19 Impact, and Forecasts (2023 - 2028)

Market Report | 2023-01-23 | 135 pages | Mordor Intelligence

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Report description:

The live-cell encapsulation market is expected to increase with a CAGR of nearly 3.2% during the forecast period, 2022-2027.

The Live-cell encapsulation market was significantly impacted by COVID-19. However, various COVID- 19 vaccines are RNA encapsulated. For instance, according to the study titled "COVID-19 Vaccine: A comprehensive status report" published in the Journal of Virus Research in October 2021, 1273 mRNA (Moderna TX, Inc) It's a vaccine made up of synthetic mRNA encapsulated in lipid nanoparticles (LNPs) that codes for SARS-full-length, CoV-2's pre-fusion stabilized spike protein. Additionally, Moderna and the Vaccine Research Centre are working on an mRNA-based vaccine candidate in which the mRNA is encapsulated in lipid nanoparticles, while Codagenix is working on a live attenuated viral vaccine in collaboration with the Serum Institute of India. Moreover, the Live cell Encapsules market is impacted by COVID-19.

The key factor accrediting to the growth of the live-cell encapsulation market is growing public-private investments to fund product development. For Instance, in July 2021, Austrianova, a global company with operations in Singapore and Thailand, is developing a novel and proprietary technology for the encapsulation of living mammalian (Cell-in-a-Box) and bacterial (Bac-in-a-Box) cells using cellulose sulfate-based materials. Real Tech invested in a fund as a strategic partner for Austrianova's entry into the Japanese market as a result of this investment. such initiatives help to bolster the market growth over the forecast period.

Furthermore, the increasing research programs to establish the clinical efficacy of the cell encapsulation process are boosting the market growth. There are an increasing number of awareness programs related to the role of live cell encapsulation in the treatment of major chronic diseases like cancers, autoimmune diseases, etc. Another disorder microencapsulation can tackle is type 1 diabetes. In this condition, the beta islet cells of the pancreas are destroyed by the immune system. So the

insulin-producing cells are encapsulated so that the immune system doesn't destroy them and, at the same time, let encapsulated cells respond to glucose levels by producing insulin. For instance, according to the study titled "Porous microcapsules encapsulating ? cells generated by microfluidic electrospray technology for diabetes treatment" published in the NGP Asia Material in May 2022, with live cell porous microcapsules encasing cells, blood glucose levels and body weights improved as well. These characteristics suggest that porous microcapsules encasing cells are effective in the treatment of diabetes, and researchers believe that because of its superior capabilities, this method will be widely used in the clinic. As a result, the efficacy of live cell encapsulation therapy in the treatment of diabetes is a promising approach that is expected to boost market growth.

Moreover, the rising diabetes population across the world supports the market growth over the forecast period. For instance, as per the September 2021 report by the International Diabetes Federation, Diabetes affects approximately 537 million adults (20-79 years) in 2021. By 2030, the total number of diabetics is expected to reach 643 million, and by 2045, it will reach 783 million. Thus, rising in the number of cases creates a huge opportunity for the market player to bring the novel live cell encapsulated drug for the treatment of diabetics expected to boost the market growth.

However, the high cost of the good quality raw material and the adoption of alternative therapies as they are major factors restraining the growth of the market.

Live Cell Encapsulation Market Trends

Drug Delivery Segment is Expected to be the Major Contributor to the Live Cell Encapsulation market

For effective drug delivery, cell encapsulation is used in the production of tablets, capsules, and parenteral dosage forms. The increasing use of cell encapsulation for drug delivery is driving this segment's growth, owing to its procedural advantages (such as improved efficacy, reduced toxicity, and improved patient compliance & convenience). Cell encapsulation is used for the manufacturing of effective drug delivery.

The advantages of this type of drug delivery are its effectiveness, tolerability, and patient compliance. For instance, according to the study titled "Encapsulation methods of active molecules for drug delivery" published in October 2021, Live cell encapsulation improves drug solubility and permeability, improves bioavailability, reduces side effects, and improves therapeutic efficiency while providing preferential accumulation of active molecules at specific tissue sites or cells. Thus, the advantages of live-cell encapsulation in drug delivery are anticipated to boost the segment growth.

Additionally, in December 2020, Procyon Technologies LLC entered into an exclusive research collaboration and license agreement with Novo Nordisk A/S to develop an implantable cell encapsulation device to be used in Novo Nordisk's development of a novel therapy for Type 1 diabetes. Such initiatives are expected to bolster the segment growth over the forecast period.

Microencapsulation has various substantial advantages as a drug delivery system. They are encapsulated live cells against degradation or destruction by the immune system. It precisely controls the release rate of a fused drug over periods (hours to months), an easy administration, and pre-programmed drug-release profiles, which tally the therapeutic requirements of the patient.

Thus, all aforementioned factors are anticipated to boost the segment growth over the forecast period.

North America is One of the Major Income-Generating Regions in the Live Cell Encapsulation Market

North America is expected to dominate the overall live-cell encapsulation market throughout the forecast period. The market growth is due to factors such as the presence of key players, increasing per capita healthcare expenditure, increasing funding and

investment for research and development programs in the United States and Canada, and established healthcare infrastructure are the key factors accountable for its large share in the market.

According to a report published in September 2021 by the Pharmaceutical Research and Manufacturers of America (PhRMA), in the last decade, biopharmaceutical companies invested more than a trillion dollars in research and development, including a record-breaking year in 2020 where PhRMA member companies invested about USD 91 billion in the research and development. Thus, increasing research and development spending creates a huge opportunity for the market players to bring the technologically advanced product into the market, which is anticipated to drive market growth in the region.

Furthermore, favorable government initiatives and the widespread adoption of new technology in the region are expected to boost market growth. For instance, in November 2021, PharmaCyte Biotech, Inc., a biotechnology company focused on developing cellular therapies for cancer and diabetes using its signature live-cell encapsulation technology, Cell-in-a-Box, recently confirmed that the empty capsule material used in its CypCapsTM pancreatic cancer product does not irritate the skin. Thus, such initiatives by the key market players are anticipated to drive the growth of the market over the forecast period.

Thus, all aforementioned factors are anticipated to boost the market over the forecast period.

Live Cell Encapsulation Market Competitor Analysis

As per the scope of the report, the live-cell encapsulation market is relatively competitive and consists of several major players. Some of the companies which are currently dominating the market are Viacyte, Inc, Living Cell Technologies Limited., Diatranz Otsuka Ltd, PharmaCyte Biotech Inc., Sernova Corporation, Sigilon Therapeutics, Inc., BUCHI Labortechnik AG, Blacktrace Holdings Ltd.

Additional Benefits:

The market estimate (ME) sheet in Excel format
3 months of analyst support

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