Cell Surface Markers Detection Market - Growth, Trends, Covid-19 Impact, and Forecasts (2023 - 2028)

Market Report | 2023-01-23 | 114 pages | Mordor Intelligence

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Report description:

The cell surface markers detection market is estimated to register a CAGR of 8.2% during the forecast period, 2022-2027.

The COVID-19 pandemic is expected to have a significant impact on the market. Cell surface markers refer to carbohydrates and proteins that are attached to the cell membrane, allowing cell surface markers to play a crucial role in intercellular signaling. Many research projects are being carried out that involve the interaction of COVID-19 antibodies with cell surface markers. For example, in February 2021, a research article titled 'COVID-19 Impairs Immune Response to Candida Albicans', published in Frontiers in Immunology, studied and compared the cell surface marker expression on the monocytes of COVID-19 patients with healthy controls. The study found an increased rate of fungal co-infections in COVID-19 patients. The rate of secondary fungal infections increases in many COVID-19 patients due to their decreased immunity. Thus, the use of cell surface markers to study fungal infection is expected to boost the market's growth. Such initiatives help drive a better understanding of the disease, leading to innovative ways to find a cure. More such research projects are being conducted worldwide, where cell surface markers are used to study the effect of COVID-19. Thus, such developments are expected to boost the market's growth.

The major factors driving the market's growth include the increasing demand for precision medicine, increased use of diagnostics, and technological advances related to increased throughput and automation. For example, over 200 cell-surface markers have been identified as being overexpressed in lung cancers, including cytokeratin fragment 21-1 and EGFR gene mutation. Diagnostic procedures are used to detect the presence of tumor cells in the blood through these markers. An increase in the number of cancer cases worldwide is expected to positively impact the demand for biomarkers, thus boosting the growth of the cell surface markers detection market. For instance, according to the Globocan 2020 report, the total number of breast cancer cases in 2020 was 2,261,419, followed by lung cancer cases (2,206,771) and prostate cancer cases (1,414,259). Thus, growing prevalence of the lung across across globe supports the market growth over the forecast period.

Precision medicine also known as personalized medicine, is the tailored medication given according to the individual patient's characteristics. These medicines guides healthcare decisions towards a most effective treatment for an individual patient. Since cell surface markers serve as monograms to help identify and classify cells, the proteins expressed on the surface of cancerous cells serve as markers of specific tumor types. This molecule identification helps in disease diagnoses, finding direct treatment for the disease, and drug discovery, thus boosting the market's growth. Many companies are involved in market preparation, which is likely to boost the market's growth. For instance, Becton, Dickinson and Company manufactures the BD Lyoplate Human Cell Surface Marker Screening Panel for research laboratories. It can be used for screening primary cells or tissues and cell lines. It is compatible with flow cytometry and bioimaging technology platforms. Such innovative products with a wide variety of applications are expected to boost the market's growth.

Cell Surface Markers Detection Market Trends

Flow Cytometry Segment is Expected to Grow at the Fastest Rate

The technique of flow cytometry is used to identify different cell types in a population. Single cells are subjected to an intensely focused laser during the procedure. In a sample, interest-related cell surface markers-specific antibodies are added and given time to interact with the cells. Fluorochromes, which have the property of emitting light at various wavelengths, are coupled with these antibodies. The fluorochromes are then excited and the light emitted is captured as the cell population is then passed through a laser. The cells can then be divided into subpopulations based on the markers by using a gating strategy, which consists of a series of histograms and dot plots. Cell surface markers expressed on the cell surface can define cell subtypes and function when they are labeled with fluorescent-labeled antibodies and analyzed by flow cytometry.

According to the study titled "Flow cytometry detection of surface and intracellular antigens in pancreas from a single mouse embryo" published in the Star Protocol in September 2021, Flow cytometry was used to perform a quantitative cell surface protein analysis on a single embryonic pancreas. Detection of reporter, cell surface, and intracellular proteins all at the same time. Allows for the discovery of biological variation while also reducing the number of animals required. Thus, due to above mentned benefits of the flow cytometry in detection of cell, surgace markets anticipated to boost the segment growth.

The role of flow cytometry has broadened to include the study of immune system disorders, including primary immunodeficiency disorders, by using cell surface markers. For instance, cell-surface staining using flow cytometry is often used to investigate lymphocyte clonality. T-cell clonality studies are particularly useful to evaluate primary immunodeficiency disorders associated with a restricted T-cell. According to a study titled 'Flow cytometry: Surface markers and beyond' published in JACI Online in 2019, the application of flow cytometry as a clinical laboratory method evolved from the identification of cell-surface markers to characterizing intracellular proteins and providing multiple different approaches to assess immune function and characterizing and diagnosing immunologic disorders. Flow cytometry is used extensively in diagnosing cancer. Countries with a high Human Development Index (HDI) invest more in healthcare. Thus, more cancer diagnostic tests are conducted, and more cancer cases are detected in these countries (International Agency for Research on Cancer, 2020), which will likely boost the market's growth.

However, increasing product launches by the key market players anticipated to boost the segment. For Instance, In June 2020, Sysmex America Inc. announced the launch of its XF-1600 flow cytometer that provides laboratories with improved flexibility and efficiency for a wide range of applications.

Thus, all above mentioned factors expected to drive the segment growth over the forecast period.

North America Dominates the Market and is Expected to Retain its Market Share During the Forecast Period

The North American region is the largest market for cell surface markers. Rapidly growing applications in disease diagnostics, the presence of well-established research institutions, and the biotech industry are the primary factors behind the large market size. The United States currently dominates the cell surface marker detection market in North America, and it is expected to continue its stronghold for a few more years. High healthcare expenditure, a high technological adaptation rate, and an increasing focus on precise and timely diagnostics are driving the market growth in the United States.

The United States has many companies operating in this sector, owing to which demand from the country is expected to be robust during the forecast period. Some US-based companies in the market include Nexcelom Bioscience LLC, Cofactor Genomics Inc., Abbott Laboratories, and Beckman Coulter Inc. The increased product launches by these players are expected to boost the market growth. For example, in November 2020, Bio-Rad Laboratories Inc., a US-based research and clinical diagnostic company, launched three StarBright Dyes specifically developed for flow cytometry. The dyes include StarBright Blue 700, StarBright Violet 440, and StarBright Violet 610, and they are fluorescent nanoparticles conjugated to Bio-Rad's flow antibodies, providing maximal brightness and improved resolution. They can be used for detecting surface proteins in market detection. Additionally, in October 2020, Becton, Dickinson and Company announced that it received 510(k) clearance from the US FDA for BD FACSLyric Flow Cytometer with the integrated BD FACSDuet Sample Preparation System.Such initiatives by major players are likely to boost the market's growth.

Thus, all aforementioned factors expected to boost the market growth over the forecast period.

Cell Surface Markers Detection Market Competitor Analysis

The cell surface markers detection market consists of many global players, especially on the instrument front, including Becton, Dickinson and Company, Nihon Kohden Corporation, Luminex Corporation, Sysmex Corporation, and Thermo Fisher Scientific Inc. However, several biotech start-ups are active in the reagent, consumables, and other niche fields. There is an ongoing trend of further consolidation, with players mainly focusing on acquiring new technology. Some key market participants are also focusing on acquiring product lines and brands.

Additional Benefits:

  The market estimate (ME) sheet in Excel format
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