Protein Characterization And Quantification - Market Share Analysis, Industry Trends & Statistics, Growth Forecasts 2021 - 2029

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Report description:

The Protein Characterization and Quantification Market is expected to register a CAGR of 9.5% over the forecast period.

The market was initially slightly impacted due to the COVID-19 pandemic, with elevated research on the protein involved in the SARS-CoV-2 infection process and progression of COVID-19, which increased the market growth. For instance, a study published in the Journal of Virological Methods in May 2022 highlighted using targeted mass spectrometry of a virus-based vaccine to quantify the SARS-CoV-2 spike antigen. The study demonstrated that the mass spectrometric (MS) spike protein quantification method can quantify antigens within a sample such as a vaccine or therapeutic sample. Thus, the demand for protein quantification and characterization increases in such instances, significantly impacting the studied market. However, from late 2021, the number of COVID-19 cases decreased due to the mass vaccinations and wide availability of the vaccine and diagnosis. It enabled the market to grow normally, with the resumption of research studies and diagnosis of other chronic diseases and infections. Thus, the COVID-19 outbreak positively impacted the market's growth in its preliminary phase. Moreover, the market is expected to grow at a stable pace with increasing research, characterization, and protein quantification in various chronic diseases.

Further, the protein characterization and quantification market is expected to grow further with biologics' increasing adoption, increasing R&D expenditure and government funding for proteomics, and technological advancements to contribute to market growth. For instance, according to the article published in Advanced Drug Delivery Reviews in March 2021, current therapies do not adequately address the multiple dysregulated systems following Myocardial Infarction. Hence, recent studies developed novel biologics delivery systems to address these diseases. The demand for biologics is also on the rise, driving the key developments of the market players in developing and offering more biologics. For instance, in September 2021, Biocon Biologics Limited (BBL), a subsidiary of Biocon Ltd., signed an agreement with Serum Institute Life Sciences Private Limited (SILS), a subsidiary of Serum Institute of India Pvt. Ltd. Under the agreement, BBL offered its 15% stake to SILS, which would elevate the production of

COVID-19 vaccines at SILS's facility in Pune, India.

Further, in March, Eisai Co., Ltd. received acceptance from the United States Food and Drug Administration (FDA) for Eisai's supplemental Biologics License Application (sBLA) for LEQEMBI (lecanemab-irmb) injection. The therapeutic biologic is a humanized immunoglobulin gamma 1 (IgG1) monoclonal antibody to treat Alzheimer's Disease. Also, in May 2022, Prellis Biologics, Inc. signed a collaboration and license option agreement with Sanofi SA. Under the agreement, both companies would focus on generating human antibodies for targeted diseases. The research to develop drug delivery systems for biologics is expected to increase over the forecast period, positively impacting the market's growth.

Furthermore, governments and private bodies are promoting research in proteomics and protein studies by raising funds. As a result, the protein detection and quantification market is expected to grow significantly in the coming years. For instance, Novo Holdings invested over USD 40 million in a proteomics technology company, Evosep. The investment would expand the global geographical presence and proteomics portfolio. Further, in August 2021, the Minister of Innovation, Science and Industry of Canada invested over CAD 144.47 thousand (USD 107.02 thousand) to support the project 'Predict to Prevent: Advanced Proteomics Profiling for Precision Medicine' at the Universite Laval, Canada. Thus, rising research and development investments are likely to boost the research activity for protein characterization and quantification, thereby boosting the market studied.

Therefore, owing to the above factors, including the rising research investments and the increasing adoption of biologics, the studied market is anticipated to grow over the analysis period. However, the high cost associated with instrumentation will likely impede market growth.

Protein Characterization And Quantification Market Trends

Mass Spectrometry Instruments Segment is Expected to Witness Significant Growth Over the Forecast Period

The mass spectrometer is an instrument that produces ions and separates them according to the mass-to-charge (m/z) ratio. The components of a mass spectrometer include an ion source, a mass analyzer, a detector, and a vacuum system.

Mass spectrometry instruments are a key technology for characterizing the protein from biological samples. Research studies highlighted the advancing studies of mass spectroscopy for protein quantitation, which is expected to boost segment growth. For instance, a study published in the Journal of Chromatography B in August 2021 highlighted the efficacy of mass spectrometry in targeted proteomics for quantifying clinically relevant drug-metabolizing enzymes in human samples. The study stated that LC-MS/MS-based quantification quantified over 24 relevant metabolizing enzymes in the human specimen, including carboxylesterases, cytochrome P450 enzymes, and UDP-glucuronosyltransferases. It can be used for physiologically based pharmacokinetic studies.

Further, a study published in PLOS Biology in April 2021 underlined the use of mass spectrometry for the quantitative proteome study of cardiac protein. The study further stated that mass spectrometry enables the quantitative evaluation of protein abundances across cardiac chambers and the cardiac protein profile comparison in humans and model organisms. Such research highlights the vast potential of mass spectrometry in protein quantitation, which can benefit disease research.

Additionally, in the past few years, several pharmaceutical and biotechnology companies formed long-term partnerships, collaborations, and agreements worldwide to fulfill the demand for mass spectrometry. For instance, in January 2021, Avacta Group (United Kingdom) partnered with Bruker Corporation (United States) to test the SARS-CoV-2 bead-assisted mass spectrometry (BAMS) assay that the company developed with Adeptrix.

Furthermore, increasing product launches by the key market players increase demand for mass spectrometry instruments,

thereby boosting segment growth. For instance, in June 2021, Thermo Fisher Scientific introduced the Orbitrap IQ-X Tribrid mass spectrometer. Therefore, the mass spectrometry segment is expected to witness significant growth over the forecast period due to the abovementioned factors, including its advancing research and key developments by the players.

North America is Expected to Witness Significant Growth Over the Forecast Period

North America is expected to witness significant growth over the forecast period, owing to the high prevalence of chronic diseases, significant research and development expenditure, and key developments by the market players.

The region includes a high burden of chronic diseases such as cancer, which is expected to increase the demand for the diagnosis and research of the proteins involved in the disease. For instance, according to the data published by the American Cancer Society in 2023, over 18 million Americans were reported to suffer from cancer in 2022, and over 1.9 million new cancer cases are expected to be diagnosed in the United States in 2023. The increasing demand and acceptance of gene and monoclonal antibody-based therapies in treating diseases such as cancer, rare diseases, and other disorders are also driving the growth of the region's protein characterization and quantification market. Further, according to the data published by the Canadian Cancer Society in November 2022, over 233,900 people were estimated to be diagnosed with cancer in Canada in 2022.

Furthermore, rising research and development spending is anticipated to boost the market. According to a report published in July 2022 by the Pharmaceutical Research and Manufacturers of America (PhRMA), in the last decade, PhRMA member companies invested USD 102.3 billion in 2021 into research and development of human health and biopharmaceuticals. Further, in March 2021, the Government of Canada provided over CAD 54.2 million (USD 40.14 million) to KABS Laboratories Inc. to establish KABS Laboratories' new facility in Val-des-Sources, Canada. It is to support the facility for new bioprocessing and testing equipment and elevated manufacturing capacity for new antibodies.

Additionally, the key developments by the market players are expected to drive the region's growth. For instance, in December 2022, Roche received USFDA 510(k) clearance for in vitro electrochemiluminescence immunoassays, Elecsys beta-Amyloid (1-42) CSF II (Abeta42) and Elecsys Phospho-Tau (181P) CSF (pTau181) assays. The assays are intended for the diagnosis of Alzheimer's disease. Further, in September 2021, Thermo Fisher Scientific launched its automated analyzers, Thermo Scientific Gallery Enzyme Master and Thermo Scientific Gallery Plus Enzyme Master analyzers, specifically dedicated to enzyme assay applications.

Therefore, owing to the factors above, including the high research investments, the high burden of chronic diseases, and the key developments by the market players, the growth of the studied market is anticipated in the North American region.

Protein Characterization And Quantification Industry Overview

The protein characterization and quantification market is fragmented due to a few companies operating globally and regionally. The leading players in the market include Thermo Fisher Scientific Inc., Agilent Technologies, Promega Corporation, Waters, and Merck KGaA.

Additional Benefits:

  The market estimate (ME) sheet in Excel format
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