

Structural Biology and Molecular Modeling Techniques Market - Growth, Trends, Covid-19 Impact, and Forecasts (2023 - 2028)

Market Report | 2023-01-23 | 110 pages | Mordor Intelligence

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Report description:

The structural biology and molecular modeling techniques market is anticipated to register a CAGR of nearly 10.4% during the forecast period (2022-2027).

COVID-19 had a significant impact on the growth of the market. This was mainly due to the rising demand for the development of appropriate vaccination by studying the molecular biology of the virus. For instance, in January 2022 the article titled "Structural biology of SARS-CoV-2: open the door for novel therapies" mentioned that structural biology can be used to study the pathogenic mechanism of viruses, but also provides theoretical information for drug development and optimization. Such advantages provided by structural biology and molecular techniques are expected to drive the growth of the market during the forecast period. Thus, COVID-19 had a profound impact on the growth of the market during the pandemic period.

Certain factors that are driving the market growth include technological innovations and advancements and the rising prevalence of chronic diseases. 3D modeling software is a powerful tool that helps many professionals create complex 3D graphics and visualize their work. The article titled "ENSnano: A 3D modeling software for DNA nanostructures" published in June 2021 mentioned that the software design ENSnani is used for viewing the graphical interface of 3D DNA and for creating precise editing of DNA nanostructures. Such usage of 3D modeling software to study molecular biology is expected to drive the growth of the market.

In the field of structural biology and biochemistry, there is various software for molecular modeling and visualization. Some chemistry software is better in terms of drawing chemical reactions, and some others find better applications in the simulation of protein structures. The increasing initiatives by the market players are expected to drive the growth of the market. For instance, in July 2021, the London-based company Deep Mind released an open version source of its deep-learning neural network AlphaFold2

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and described its approach. It is software that accurately determines the 3D shape of proteins and is set to become widely available to scientists. Similarly, in January 2021, ComputaBio launched molecular dynamics simulation services for industrial and academic clients to better their capability for drug design and expedite drug development programs. Such launches of innovative software for drug development and the availability of molecular data are expected to drive the growth of the market.

Thus the above-mentioned factors are expected to boost the growth of the market during the forecast period, However, the lack of skilled professionals is expected to limit the growth of the market during the forecast period.

Structural Biology & Molecular Modeling Techniques Market Trends

Drug Development is Expected to Hold Significant Market Share Over the Forecast Period

The propelling factors for the growth of the drug discovery market include the rising prevalence of a wide range of diseases (such as cardiovascular and CNS-related disorders), rising healthcare expenditure, and the upcoming patent expiration of blockbuster drugs. According to the article titled "Heart failure in Canada: Complex, incurable and on the rise" published in February 2022, in Canada, 750,000 people are living with heart failure and 100,000 people are diagnosed with this incurable condition each year. The report also mentioned that heart failure affects one in three Canadians, either because they have it themselves or because it affects a family member. Such a high frequency of cardiovascular diseases among the population is also expected to drive the growth of the market. Also, innovative product launches for drug discovery are expected to drive the growth of the studied segment. For instance, in July 2022, CD Biosciences launched a series of structural characterization services for kinase/phosphate research and drug development.

Additionally, the rising research and development activities by pharma and biopharmaceutical companies are one of the key trends in escalating market growth. According to the National Bureau of Statistics, in 2021, China's total R&D expenditure was YUAN 2.79 trillion, which is an increase of YUAN 246.57 billion over that in the previous year. Thus, the growth in government funding related to research and drug discovery is triggering the overall market growth.

The diverse range of diseases, primarily cardiovascular disease, infectious diseases, diabetes, and kidney-related complications, has a high prevalence, globally. Thus, the increasing prevalence of a diverse range of diseases among all age groups and its burden, globally, drives the demand for drug discovery and its market. There has been an upsurge in the usage of advanced technologies, such as high throughput, bioinformatics, and combinatorial chemistry for better drug candidate identification.

Thus the above-mentioned factors are expected to drive the growth of the studied segment in the forecast period.

North America Dominates the Market and Expected to do Same Over the Forecast Period

North America dominates the market and incurs the highest expenditure for global R&D. The United States accounted for the largest share. The North American segment is on a rise, due to various ongoing research in biological sciences, considerable investments by various biotechnology companies, and the consistently increasing utilization of structural biology and molecular modeling techniques in the market. Around 154,909 clinical trials were registered during the start of the year 2022, and around 9,650 studies were registered at the end of 2022 in the United States as per clinicaltrials.gov. Additionally, in 2021, approximately 50 novel drugs were approved as per the data provided by the Center for Drug Evaluation and Research (CDER), United States Food and Drug Administration (FDA). In addition, among the total 53 drugs approved worldwide in the year 2020, most of them were approved in the United States before any other country in the world as per FDA.

This increasing number of drug developments in the country is anticipated to drive the studied market growth in the country. The insights on the rising prevalence of chronic diseases in the United States are one of the major factors driving the growth of the

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market studied over the forecast period. For instance, in January 2022, the Cancer Facts & Figures data published by the American Cancer Society there will be an estimated 1.9 million new cancer cases diagnosed and 609,360 cancer deaths in the United States (US) 2022. Hence, the prevalence of chronic diseases coupled with the increasing geriatric population in the country is anticipated to create more opportunities for the development of new molecular modeling techniques for the drug discovery and development process.

Additionally, the launch of advanced structural biology and Molecular Modeling Technologies in United States is expected to drive the growth of the studied market. In April 2021, the Accelra company released a new version of ACEMD, Accela's molecular dynamics simulation software. This is useful as a tool for ligand and system preparation and small molecule parameterization.

Thus, due to the prevalence of chronic diseases giving rise to the demand for advanced advanced drug discovery techniques, the studied market is expected to grow during the forecast period in this region.

Structural Biology & Molecular Modeling Techniques Market Competitor Analysis

The structural biology and molecular modeling techniques market is competitive and consists of a number of major players. Companies, like Acellera Ltd, Agile Molecule, Agilent Technologies Inc., Biomax Informatics AG, Bruker Daltonics Inc., Chemical Computing Group, Dassault Systemes, Illumina, and ThermoFisher Scientific, hold a substantial market share in the market.

Additional Benefits:

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

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