

Small Molecule Drug Discovery Market - Growth, Trends, Covid-19 Impact, and Forecasts (2023 - 2028)

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Report description:

The small molecule drug discovery market is expected to register a CAGR of 8.05% over the forecast period.

During the COVID-19 pandemic, many countries invested heavily in research and development to combat the virus. Research groups worldwide tried to identify small-molecule drugs for the treatment of COVID-19 by screening both novel and existing drugs for their ability to alleviate symptoms and stem viral replication. For instance, in the article published by the National Library of Medicine, in January 2021, by exploiting computational tools, researchers attempted to predict and design small-molecule and peptide-based antiviral agents against various targets of SARS-CoV-2 viral disease. It also reported that during the pandemic, research was done on repurposing small molecules to develop a therapy for treating COVID-19. According to an article published by the Journal of Biomedical Science in September 2022, a large-scale compound repurposing study (screening of a library of 12,000 small molecules) was started, and it found several compounds that were able to prevent the SARS-CoV-2 virus from replicating, with 21 medicines exhibiting dose-response associations. Other than in vitro cells, the chemicals were also tested for their effectiveness against SARS-CoV-2 replication-supporting human cell lines. There is no denying that vaccines were the most effective method for preventing SARS-CoV-2 infections; however, the most urgent need at that moment was the addition of small molecules to the anti-COVID19 arsenal, to increase the variety of therapeutic options, particularly for patients with compromised immune systems. Thus, the use of small molecule drug discovery for COVID-19 therapeutic options was expected to have significant impact on the market.

Factors such as the rise in demand for small-molecule drugs, an increasing number of contract organizations for research and development and increasing usage of small molecules in the treatment of chronic diseases are expected to drive the growth of the market. The increasing number of chronic diseases propels the market's growth. According to the British Heart Foundation's August 2022 statistics, there were around 7.6 million people in the United Kingdom living with some form of heart or

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cardiovascular disease in 2021. As per the GLOBOCAN 2020 statistics, globally, there were 19.3 million new cases of cancer in 2020 and this number is expected to reach 30.2 million by 2040. Such an increase in chronic diseases is expected to increase the demand for treatments, and ultimately the demand for small molecules.

Additionally, the launch of technologically advanced products and partnership by the market players is expected to propel the growth of the market. For instance, in July 2022, Dotmatics, one of the leaders in the research and development of scientific software connecting science, data, and decision-making, released a small-molecule drug discovery solution. It is an integrated scientific research and development platform with pre-configured workflows and expanded data management capabilities. In April 2022, Iktos and Teijin Pharma Limited signed a strategic collaboration agreement in artificial intelligence for new drug design. As per the agreement, Iktos generative modeling technology will be implemented and applied to several of Teijin Pharma's small molecule drug discovery projects to expedite the identification of potential pre-clinical candidates. Such launches and partnerships are expected to contribute to the growth of the market.

Factors such as rise in demand for small-molecule drugs, and increasing usage of small molecules in the treatment of chronic diseases are driving the market growth of the small molecule drug discovery market. However, high drug development costs and strict regulations are the factors expected to restrain the market growth.

Small Molecule Drug Discovery Market Trends

Target ID/Validation Segment is Expected to Witness High Growth Over the Forecast Period

Target identification is made to identify a small molecule's direct molecular target, such as protein or nucleic acid. In the case of clinical pharmacology, target identification is aimed at finding out the efficacy of the target of the drug molecule. The main objective of target validation is to identify and assess the chances of a molecular target in achieving the development of pharmaceuticals for therapeutic application. Three key distinct and complementary approaches are used for target identification and validation: genetic interaction, direct biochemical, and computational interference. In many cases, combinations of multiple approaches may be required to characterize the target entirely.

Technology is crucial in every small molecule drug discovery aspect, from target identification and validation to lead optimization. Hence, technological advancements have been acting as a driving factor for the market segment. For instance, in August 2021, Insilico Medicine, one of the industry leaders in end-to-end artificial intelligence for target discovery, small molecule chemistry, and clinical development, and Usynova signed a strategic cooperation to advance the development of small molecule innovative therapies.

The market segment growth is also propelled by the increasing burden of diseases such as cancer, Alzheimer, and others, as with the increasing burden of diseases, there is an increasing need for research and development for better and more effective therapeutics.

Therefore, technological advancements are expected to drive segmental growth in the market during the forecast period.

North America Expected to Dominate the Market Over the Forecast Period

North America currently dominates the overall market for small molecule drug discovery market owing to the rising cases of various chronic diseases, such as cardiovascular disease, cancer, etc., and increasing approval of new small molecules in the region. According to the American Cancer Society's 2022 statistics, it is estimated that in 2022, there will be 1,918,030 new cases of cancer in the United States, of which 983,160 will be among males and 934,870 will be among females. Furthermore, according to the Canadian Cancer Society 2022, there are 233,900 new cancer cases in Canada in 2022. Such a high burden of cancer is

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expected to drive the market's growth as small molecules are primarily employed in the treatment of cancer.

Strategic initiatives such as partnerships and collaborations undertaken by the market players are expected to drive the growth of the segment in the region. For instance, in January 2022, Amgen and Arrakis Therapeutics signed a research collaboration focused on the discovery and development of RNA degrader therapeutics against a range of difficult-to-drug targets in multiple therapeutic areas. This new class of targeted RNA degraders consists of small-molecule drugs that selectively destroy RNAs encoding disease-causing proteins by inducing their proximity to nucleases. Such research collaborations are expected to boost the growth of the market in the region.

Thus, owing to the factors such as the rising cases of various chronic diseases, and increasing approval of new small molecules, the studied market in the North American region is expected to project growth over the forecast period.

Small Molecule Drug Discovery Market Competitor Analysis

The small molecule drug discovery market is moderate in nature due to the presence of a few companies operating globally as well as regionally. The competitive landscape includes an analysis of a few international as well as local companies which hold market shares and are well known including Pfizer Inc., Bristol-Myers Squibb Company, Merck KGaA, Boehringer Ingelheim GmbH, and GlaxoSmithKline, among others.

Additional Benefits:

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

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