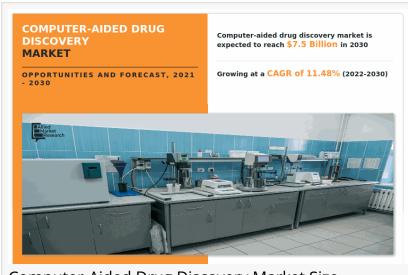# Expanding Role of Computer-Aided Drug Discovery in Accelerating Drug Development: Trends Opportunities in CADD Market

PORTLAND, OREGON, UNITED STATES, March 8, 2023 /EINPresswire.com/ -- Computer-Aided Drug Discovery (CADD) is the use of computational tools and methods to help scientists discover new drugs or optimize existing ones.

CADD involves a range of techniques such as molecular docking, molecular dynamics simulations, and machine learning algorithms, to identify molecules that can interact with disease-causing proteins or enzymes in the body.

Computer-Aided Drug Discovery Market Size

Using CADD, scientists can save time and money by narrowing down the number of molecules they need to test in the lab, reducing the cost and time of the drug discovery process. Additionally, CADD can help identify potential side effects or toxicity of a drug before it is tested in animals or humans.

Overall, CADD plays a critical role in accelerating the drug discovery process and improving the efficiency of drug development.

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According to the report published by Allied Market Research, the global computer-aided drug discovery market was estimated at $2.9 billion in 2021 and is expected to hit $7.5 billion by 2030, registering a CAGR of 11.48% from 2022 to 2030.

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https://www.alliedmarketresearch.com/request-sample/17201

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Despite the fact that the Covid-19 pandemic had a devastating effect on several industries, the computer-aided drug discovery market was driven positively throughout the global health crisis.

Increased R&D activities among scientists, researchers, biotechnological and biopharmaceutical companies to limit the spread disease impacted the market positively.

Rise in cases of chronic and unknown diseases and rapid drug development drive the growth of the global computer-aided drug discovery market. On the other hand, shortage of skilled labor to operate computer-aided drug discovery solutions impedes the growth to some extent. However, several growth prospects in the developed and developing economies have been beneficial for the market growth.

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According to a new report published by Allied Market Research, titled, "Global Computer-aided Drug Discovery Market by Type, Therapeutic Area, End User, and Region: Global Opportunity Analysis and Industry Forecast, 2022-2030," the global computer-aided drug discovery market size was valued at $2,940.9 million in 2021, and global computer-aided drug discovery market forecast is projected to reach $7,504.7 million by 2030, growing with an expected CAGR of 11.48% from 2022 to 2030.

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Availability of High-Performance Computing: The availability of high-performance computing (HPC) systems has significantly impacted CADD. HPC systems can perform complex simulations and calculations required for drug discovery more efficiently, allowing scientists to process vast amounts of data in a shorter time.

Advances in Artificial Intelligence and Machine Learning: AI and machine learning have revolutionized CADD by enabling the development of predictive models and algorithms that can help identify promising drug candidates, optimize drug design, and predict potential side effects.

Availability of Large-Scale Databases: The availability of large-scale databases, such as the Protein Data Bank and DrugBank, has provided researchers with access to a vast amount of information on molecular structures, biological pathways, and drug targets, which they can use to develop new drugs.

Development of New Computational Methods: The development of new computational methods

and algorithms, such as molecular docking, molecular dynamics simulations, and QSAR, has helped scientists to better understand the behavior of molecules and predict their interactions with biological targets.

Collaborative Research and Open-Source Tools: The collaborative nature of CADD research and the availability of open-source tools have facilitated knowledge-sharing and collaboration between scientists worldwide, leading to more efficient drug discovery processes and better drug design.

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The market across North America dominated in 2021, garnering more than one-third of the global computer-aided drug discovery market. The Asia-Pacific region, simultaneously, is anticipated to cite the fastest CAGR of 12.84% throughout the forecast period. Increasing number of biotechnology companies and R&D expenditure is the major factor are the major factors driving the market growth.

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Schrödinger, Inc.
Bayer AG
Aragen Life Sciences Pvt. Ltd.
Aris Pharmaceuticals, Inc.
AstraZeneca
Albany Molecular Research Inc. (AMRI)
Bioduro-Sundia
Charles River Laboratories

North America (U.S., Canada, Mexico)
Europe (Germany, France, UK, Italy, Spain, Rest Of Europe)
Asia-Pacific (Japan, China, Australia, India, South Korea, Rest Of Asia-Pacific)
LAMEA (Brazil, Saudi Arabia, South Africa, Rest Of LAMEA)

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