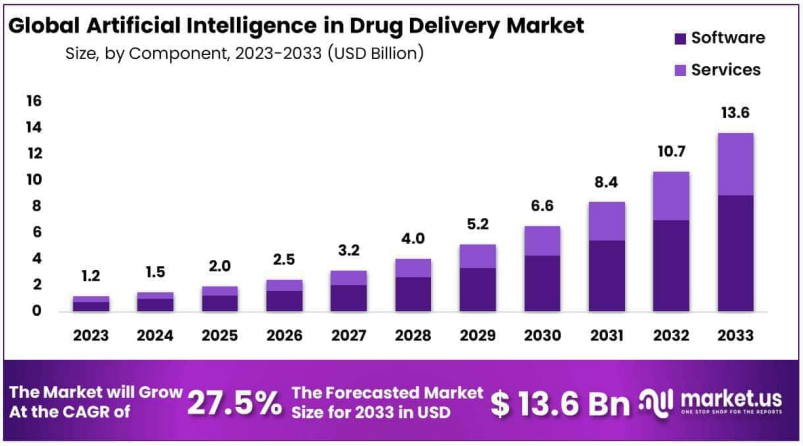
Artificial Intelligence in Drug Discovery Market Set to Skyrocket to US$ 13.6 Billion by 2033

Artificial Intelligence in Drug Discovery Market was valued at USD 1.2 Billion in 2023 and is expected to reach USD 13.6 Billion by 2033 at 27.5% Cagr.



Artificial Intelligence in Drug Discovery Market Size.png

NEW YORK, NY, UNITED STATES, January 29, 2025 /EINPresswire.com/ -- In 2023, the Global Artificial Intelligence In Drug Discovery Market was valued at USD 1.2 billion. It is projected to expand at an impressive CAGR of 27.5% from 2024 to 2033, reaching USD 13.6 billion by the end of the forecast period. This growth is primarily driven by the integration of AI and machine learning in pharmaceutical research, which enhances drug-target interaction predictions and accelerates discovery processes. AI's capability to efficiently analyze vast datasets enables more precise targeting of biological mechanisms, crucial in disease treatment.

> North America dominated the global artificial intelligence in the drug discovery market by accounting for a major revenue share of 60.1%. ”
>
> *Tajammul Pangarkar*

The adoption of AI is revolutionizing traditional drug discovery methods, facilitating the rapid development of novel therapeutics and vaccines. This technology extends its utility to the creation of biomaterials and influences economic growth, necessitating adjustments in regulatory and biosecurity frameworks to manage AI's dual-use risks in biotechnology. Such advancements underscore AI's role as a general-purpose technology that induces significant economic and organizational changes, particularly in healthcare.

AI's profound impact is evident in the reduced costs and timelines of drug discovery, marking a new era of medical innovation. The surge in investments into AI technologies highlights the growing capabilities and applications of these systems in the sector. The ongoing development of AI-powered tools and platforms not only promises to enhance the efficiency and effectiveness

of drug discovery but also stresses the need for coordinated efforts to manage these technologies' broad impacts.

This convergence of AI with drug discovery and life sciences heralds a transformative era in healthcare, offering faster and more effective solutions to complex medical challenges. The continuous evolution of AI ensures that its influence in the pharmaceutical industry will only deepen, potentially reshaping how medical solutions are developed and implemented in the future.

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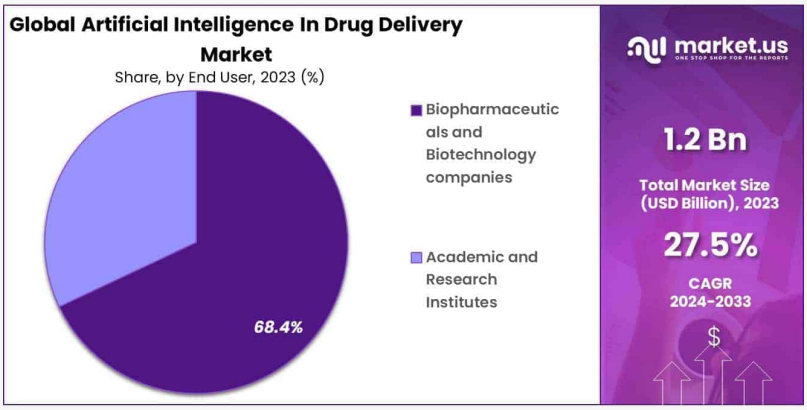
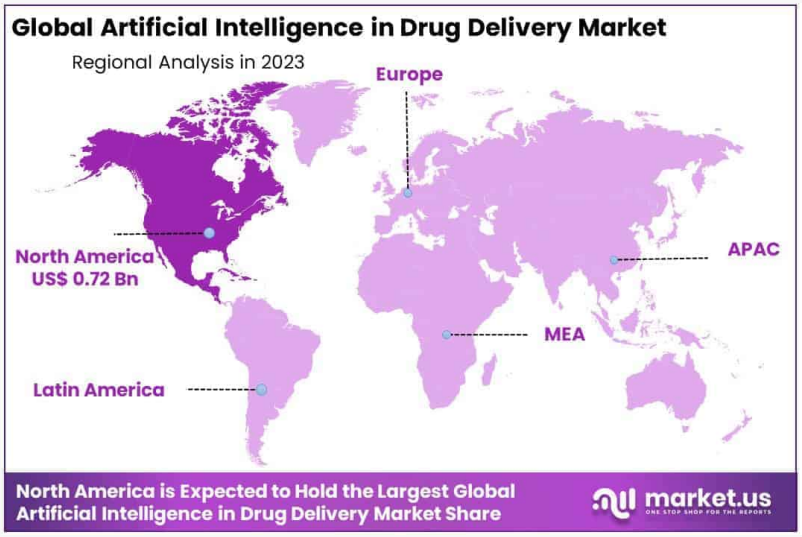


Artificial Intelligence in Drug Discovery Market Share.png



Artificial Intelligence in Drug Discovery Market Regions.png

Key Takeaway
• In 2024, the Global AI in Drug Discovery Market was valued at USD 1.2 billion and is projected to grow at a 27.5% CAGR until 2033.
• By 2033, the market is expected to surge to USD 13.6 billion due to rapid advancements in technology.
• Software holds a substantial lead, accounting for 65.4% of the AI in drug discovery market share.
• Machine learning technology commands a significant 52.7% market share, appreciated for its efficiency and benefits.
• Neurodegenerative diseases represented 43.8% of the market in 2023, highlighting their prevalence.
• Pharmaceutical and biotech companies are major users, holding 68.4% market share in the AI-driven drug discovery sector.
• North America leads the global market with a 60.1% revenue share, driven by robust technological adoption.
• AI significantly boosts the pharmaceutical industry by improving processes like target validation and lead compound identification.
• Key AI applications in drug discovery include polypharmacology, chemical synthesis, drug repurposing, and drug screening.

Component Analysis: Dominance of Software Segment

In the artificial intelligence (AI) drug discovery market, components are segmented into software and services. The software segment significantly leads with a 65.4% market share, driven by its widespread adoption globally. This dominance is attributed to the software's capabilities in enhancing speed, reducing costs, and improving efficiency in drug discovery processes. These advantages are pivotal in increasing the preference for software solutions in AI-driven drug discovery efforts.

Technology Analysis: Leading Role of Machine Learning

Machine learning holds a commanding 52.7% share in the technology segment of the AI drug discovery market. Its prominence stems from its ability to refine decision-making processes and provide valuable insights from high-quality data. Machine learning not only accelerates the pace of drug discovery but also lowers the incidence of failures within the process. Although machine learning leads, deep learning technology is anticipated to experience the fastest growth rate in the coming years.

Application Analysis: Focus on Neurodegenerative Diseases

AI's application in drug discovery is extensive, particularly in developing treatments for neurodegenerative diseases, where it occupies 43.8% of the market. AI excels in analyzing complex biological structures, making it indispensable in the neurodegenerative drug development arena. This specialized application underscores AI’s pivotal role in advancing treatments for diseases that involve complex pathophysiological mechanisms.

End-User Analysis: Predominance of Pharmaceutical and Biotechnological Companies

Pharmaceutical and biotechnological companies are the primary end-users of AI in drug discovery, holding a substantial 68.4% market share. The adoption of AI by these companies facilitates the large-scale processing of compounds, significantly enhancing drug discovery outcomes. This high utilization rate underscores the critical role AI plays in supporting these companies’ expansive drug development programs, driving growth in this segment.

Component
• Software
• Service

Technology
• Machine Learning
• Deep Learning
• Other Technologies

Application
• Neurodegenerative Diseases
• Cardiovascular Diseases
• Metabolic Diseases
• Immuno-Oncology
• Other Applications

End-User
• Pharmaceutical and Biotechnological Companies
• Academic and Research Institutes
• Other End-Users

Regional Analysis
North America holds a leading position in the global artificial intelligence in drug discovery market, with a substantial revenue share of 60.1%. This region's dominance is mainly due to its advanced infrastructure, which supports the integration of artificial intelligence into the drug discovery process. The presence of a robust technological framework facilitates the development and adoption of AI-driven solutions.

In North America, countries such as the United States and Canada are pivotal to the market's growth. These nations host a wide array of companies that specialize in artificial intelligence technologies, contributing significantly to the regional market dynamics. This concentration of expertise and resources helps propel the application of AI in drug discovery.

On the other hand, the Asia Pacific region is emerging as the fastest-growing market for artificial intelligence in drug discovery. This growth is largely driven by the increasing adoption of AI technologies in the healthcare and pharmaceutical sectors of developing countries. Nations like Australia, China, Japan, and India are at the forefront of this trend.

The adoption of AI across various industries in the Asia Pacific region, particularly to optimize workload, is expected to significantly boost market growth during the forecast period. As these countries continue to embrace technological advancements, the regional market is poised for rapid expansion, making it a key area to watch in the coming years.

Market Players Analysis
The artificial intelligence in the drug discovery market is highly competitive and features a myriad of companies employing strategic collaborations to enhance their market presence. Major players like NVIDIA CORPORATION, Microsoft Corporation, and TOMWISE INC. are pivotal in driving technological advancements in this sector. These companies are not only investing in innovative AI solutions but also engaging in partnerships and mergers to expand their reach and

capabilities across global markets.

Key players such as Cloud Pharmaceuticals, Schrödinger, and EXSCIENTIA.AI are also significant contributors to the market. Their focus on leveraging AI for more efficient drug development processes exemplifies the industry's shift towards integrating cutting-edge technologies. These firms are known for their robust AI platforms that streamline the drug discovery pipeline, from initial screening to final testing stages.

Emerging companies like BioSymetrics, Benevolent AI, and Cyclica Inc. are also making notable strides. They are developing unique AI-driven models that predict drug efficacy and safety profiles more accurately, thereby reducing the time and cost associated with traditional drug development methods. This innovation is crucial for smaller enterprises aiming to carve out a niche in the competitive pharmaceutical landscape.

Recent developments in the sector include Chief.AI's initiative launched in July 2021, which significantly reduces the cost of AI applications in drug discovery, making these advanced technologies more accessible to small and medium-sized enterprises (SMEs). Additionally, in October 2020, Beginning Therapeutics formed a partnership with Genentech. This collaboration aims to enhance multi-target drug development utilizing their Genesis chart AI, showcasing the potential for AI to transform traditional drug discovery approaches.

The Primary Entities Identified In This Report Are:

- NVIDIA CORPORATION
- Microsoft Corporation
- Cloud Pharmaceuticals
- TOMWISE INC.
- AI
- Schrödinger
- BioSymetrics
- Cyclica Inc.
- IBM Watson
- Benevolent AI
- Other Key Players

*We offer customized market research reports tailored to meet your specific business needs and requirements.

Conclusion: The integration of artificial intelligence in drug discovery is set to transform the pharmaceutical sector by streamlining and enhancing the efficiency of the development process. This technology's capability to analyze complex data sets is reducing both the cost and time required to bring new drugs to market. As AI continues to evolve, its applications in neurodegenerative diseases and other complex medical conditions are proving indispensable.

With North America leading in adoption and investment, and the Asia Pacific region showing rapid growth, the global market is poised for significant expansion. The proactive adaptation of regulatory frameworks will further facilitate the safe and effective integration of AI, ensuring it plays a central role in future healthcare innovations.

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