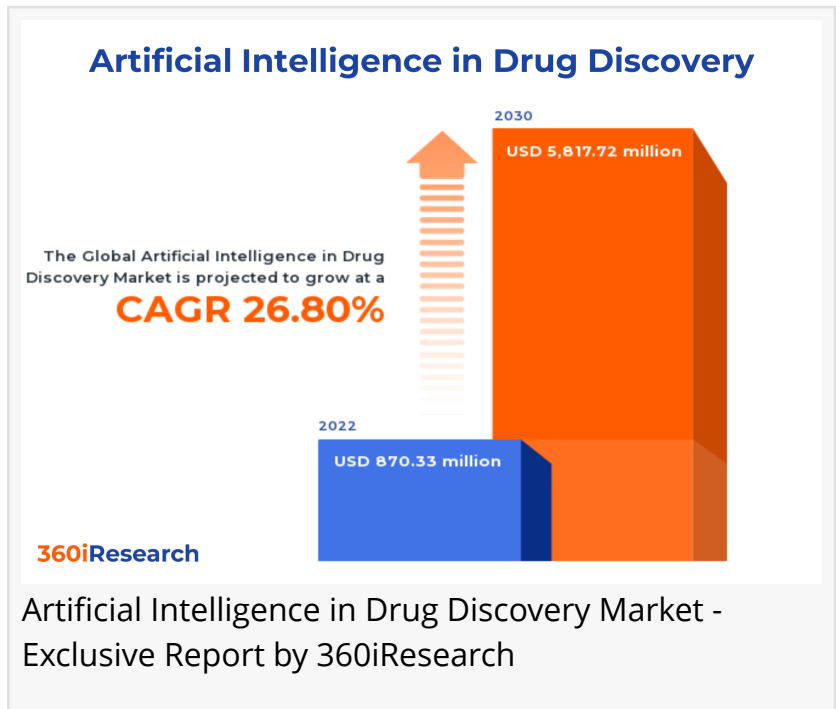# Artificial Intelligence in Drug Discovery Market worth $5,817.72 million by 2030- Exclusive Report by 360iResearch

The Global Artificial Intelligence in Drug Discovery Market to grow from USD 870.33 million in 2022 to USD 5,817.72 million by 2030, at a CAGR of 26.80%.

PUNE, MAHARASHTRA, INDIA , December 8, 2023 /EINPresswire.com/ -- The "Artificial Intelligence in Drug Discovery Market by Offering (Services, Software), Technology (Context-Aware Processing, Machine Learning, Natural Language Processing), Process, Application, Therapeutic Area, End User - Global Forecast 2023-2030" report has been added to 360iResearch.com's offering.

Artificial Intelligence in Drug Discovery Market - Exclusive Report by 360iResearch

The Global Artificial Intelligence in Drug Discovery Market to grow from USD 870.33 million in 2022 to USD 5,817.72 million by 2030, at a CAGR of 26.80%.

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Artificial Intelligence in drug discovery refers to the application of machine learning algorithms and AI systems in the process of discovering, designing, and optimizing new drug compounds. These AI models play a pivotal role in streamlining the traditionally complex and time-consuming drug discovery process, thus facilitating advancements in the field of medicine. The market growth is propelled by the growing burden of chronic diseases worldwide and the rising adoption of AI across biopharmaceutical companies for heightened precision, speed, and effectiveness in drug discovery. Moreover, the increasing need to manage the large data generated during preclinical studies drives market growth. The need for more skilled AI professionals in healthcare and the high costs associated with implementing AI is influencing

growth limitation. The limited availability of data sets is a pivotal challenge curtailing the growth of AI in drug discovery. The opportunities are poised in fields related to novel drug discovery mechanisms and personalized medicine. Technological advancement in the burgeoning areas of AI research for drug development creates a potentiality for enhanced drug discovery, disease understanding, and patient-specific treatments.

Process: Significant augmentation in the drug discovery process with computational prowess and predictive capabilities
In the Artificial Intelligence (AI) world in drug discovery, candidate selection and validation is a crucial step in robustly assessing the potential success of prospective drug candidates. AI algorithms analyze molecular structures, predict their effect, and determine their viability. The next step involves hit identification and prioritization, prepping a list of promising drug candidates derived from AI screening. These hits are prioritized based on potency, selectivity, and safety. Following hit identification, the hit-to-lead identification or lead generation stage focuses on transforming the 'hits' into 'leads,' i.e., potential drug candidates that can be further optimized. Here, AI helps to evaluate and optimize leads with medicinal chemists testing and optimizing compounds. The next segment represents lead optimization, where potential drug candidates are enhanced for improved activity, specificity, and safety. This stage necessitates advanced AI technology to predict potential side effects and methodology to enhance drug efficacy. The drug discovery process also encompasses target identification and selection, which involves the choice of disease-modifying targets for the drug. The final stage is target validation, which verifies the selected target's role in the progression of the disease and its potential to be modulated by a drug. Artificial Intelligence continues revolutionizing drug discovery by augmenting each step with computational power and predictive capabilities. It significantly enhances drug discovery's efficiency and potential to deliver life-saving drugs to the market faster.

Technology: Growing adoption of context-aware processing in personalized therapeutic
Context-aware processing is personalized, with AI algorithms cross-referencing genetic data, biomarkers, and disease indicators to suggest potential drug targets or bespoke treatments. Machine learning, another AI subfield, facilitates intelligent, unprogrammed decisions, predicting compound traits, patient reactions, and enhancing drug design. Natural language processing, meanwhile, harnesses the power of human language for data mining, assimilating information from academic sources to fortify data inclusivity. Context-aware processing offers personalized therapeutic recommendations, whereas machine learning drives the optimization of drug design. Conversely, natural language processing leverages large datasets to identify novel drug-disease associations. Rather than working in isolation, these technologies have convergent potentials, promising precise, expedited drug discovery.

Application: Growing usage of AI-designed small molecule drugs for human clinical trials.
Biologics molecular-targeted drugs leverage AI for speedier and more accurate optimization, with AlphaFold demonstrating considerable protein prediction capabilities, expediting drug discovery. AI algorithms enhance disease identification and assessment by decoding patterns

more accurately, allowing earlier interventions. Safety, toxicity, and compliance checks during drug development leverage AI to foresee toxicities, augmenting safety and decreasing costs/ Small molecule drug discovery, usually time-consuming, is being revolutionized by AI. Amidst COVID-19, efficient vaccine design and optimization are critical and facilitated by AI-enabled identification of viral pathogenic regions. Thus, AI is pivotal for pharmaceutical innovations, aiding in identifying diseases, designing therapeutics, and ensuring safety compliance.

End User: Increasing use of AI in the drug discovery by pharmaceutical and biotechnology companies to accelerate their drug discovery process
Contract research organizations(CROs) leverage AI to significantly augment their drug discovery services, offering high-quality and efficient outcomes. CROs dealing with AI-powered drug discovery generally prefer solutions designed to streamline their workflow, accelerate the speed of discovery, and minimize human errors. Pharmaceutical and biotechnology companies, leading drug discovery drivers, show considerable affinity towards AI. AI facilitates these industries in expediting the drug discovery process, predicting drug response, and reducing costs associated with drug failure. Research centers and academic & government institutes are increasingly capitalizing on AI's potential in drug discovery. The preference here lies in AI's power to predict potential drug candidates, minimize trial and error instances, and absorb vast data for precise research. Although the degree of AI utilization varies among end users, its positive impact is unmistakable. AI's potential to revolutionize drug discovery through its precision, speed, and cost-effectiveness is increasingly recognized across the field.

Offering: AI Software propose a revolutionary approach to drug discovery
Within the field of drug discovery, Artificial Intelligence (AI) offers a robust range of services that expedite the process, enhance accuracy, and ultimately improve outcomes. These services majorly include structural analysis, drug repositioning, and pharmacodynamics modeling. AI software has catalyzed a digital revolution in drug discovery. Distinct software solutions have surfaced as a product of integrating AI into drug discovery. These software include predictive analytics, molecular docking, precision medicine, and modeling and analysis software to speed up matching a patient to the most effective.

Therapeutic Area: Rising adoption of AI in the drug discovery for personalized cancer treatment.
Artificial intelligence(AI) has been emerging as a transformative tool in cardiovascular disease management, ranging from early detection to personalized medication production. AI applications are seeing increased use in immuno-oncology, where they help classify and predict treatment responses. Companies and researchers are using AI to revolutionize the understanding and treatment of metabolic diseases, from diabetes to obesity. AI's potential to aid in diagnosing and developing treatments for neurodegenerative diseases has been recognized across the sector.

Regional Insights:
The U.S. stands at the forefront of integrating AI into drug discoveries, fuelled by an active start-

up environment and robust governmental funding. Canada echoes this dedication with considerable investment in AI-driven discovery platforms. European countries, such as the UK, France, and Germany, are leveraging AI and data science to revolutionize drug discovery procedures, attributed to strategic collaboration between academic institutions and the pharmaceutical industry. With China, Japan, and India at the helm, Asia-Pacific offers compelling dynamics. China's massive AI investment, paired with Japan's excellence in pharmaceutical research, is fostering the adoption of AI in drug discovery. In India, governmental support and an expanding IT sector are moving towards AI in drug discoveries. The U.S., China, and EU lead in patent claims for AI drug discoveries, representing consistent innovation in their pharmaceutical industries.

FPNV Positioning Matrix:

The FPNV Positioning Matrix is essential for assessing the Artificial Intelligence in Drug Discovery Market. It provides a comprehensive evaluation of vendors by examining key metrics within Business Strategy and Product Satisfaction, allowing users to make informed decisions based on their specific needs. This advanced analysis then organizes these vendors into four distinct quadrants, which represent varying levels of success: Forefront (F), Pathfinder (P), Niche (N), or Vital(V).

Market Share Analysis:

The Market Share Analysis offers an insightful look at the current state of vendors in the Artificial Intelligence in Drug Discovery Market. By comparing vendor contributions to overall revenue, customer base, and other key metrics, we can give companies a greater understanding of their performance and what they are up against when competing for market share. The analysis also sheds light on just how competitive any given sector is about accumulation, fragmentation dominance, and amalgamation traits over the base year period studied.

Key Company Profiles:

The report delves into recent significant developments in the Artificial Intelligence in Drug Discovery Market, highlighting leading vendors and their innovative profiles. These include Aria Pharmaceuticals, Inc., Atomwise, Inc., BenevolentAI Limited, BenevolentAI SA, BioSymetrics Inc., BPGbio Inc., Butterfly Network, Inc., Cloud Pharmaceuticals, Inc., Cyclica Inc., Deargen Inc., Deep Genomics Incorporated, Envisagenics, Inc., Euretos Services BV, Exscientia PLC, Insilico Medicine, Insitro, Inc., International Business Machines Corporation, InveniAI LLC, Microsoft Corporation, Novartis AG, NVIDIA Corporation, Oracle Corporation, Owkin, Inc., Verge Genomics Inc., and XtalPi Inc..

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Market Segmentation & Coverage:

This research report categorizes the Artificial Intelligence in Drug Discovery Market in order to forecast the revenues and analyze trends in each of following sub-markets:

Based on Offering, market is studied across Services and Software. The Services commanded largest market share of 55.21% in 2022, followed by Software.

Based on Technology, market is studied across Context-Aware Processing, Machine Learning, and Natural Language Processing. The Natural Language Processing is projected to witness significant market share during forecast period.

Based on Process, market is studied across Candidate Selection & Validation, Hit Identification & Prioritization, Hit-to-lead Identification/ Lead generation, Lead Optimization, Target Identification & Selection, and Target Validation. The Lead Optimization is projected to witness significant market share during forecast period.

Based on Application, market is studied across Biologics Design & Optimization, Disease Identification & Assessment, Safety, Toxicity, & Compliance Assessment, Small Molecule Design & Optimization, and Vaccine Design & Optimization. The Safety, Toxicity, & Compliance Assessment is projected to witness significant market share during forecast period.

Based on Therapeutic Area, market is studied across Cardiovascular Disease, Immuno-Oncology, Metabolic Diseases, and Neurodegenerative Diseases. The Immuno-Oncology commanded largest market share of 28.63% in 2022, followed by Cardiovascular Disease.

Based on End User, market is studied across Contract Research Organizations, Pharmaceutical & Biotechnology Companies, and Research Centers and Academic & Government Institutes. The Pharmaceutical & Biotechnology Companies commanded largest market share of 58.18% in 2022, followed by Contract Research Organizations.

Based on Region, market is studied across Americas, Asia-Pacific, and Europe, Middle East & Africa. The Americas is further studied across Argentina, Brazil, Canada, Mexico, and United States. The United States is further studied across California, Florida, Illinois, New York, Ohio, Pennsylvania, and Texas. The Asia-Pacific is further studied across Australia, China, India, Indonesia, Japan, Malaysia, Philippines, Singapore, South Korea, Taiwan, Thailand, and Vietnam. The Europe, Middle East & Africa is further studied across Denmark, Egypt, Finland, France, Germany, Israel, Italy, Netherlands, Nigeria, Norway, Poland, Qatar, Russia, Saudi Arabia, South Africa, Spain, Sweden, Switzerland, Turkey, United Arab Emirates, and United Kingdom. The Americas commanded largest market share of 40.44% in 2022, followed by Europe, Middle East & Africa.

Key Topics Covered:

The report provides insights on the following pointers:
1. Market Penetration: Provides comprehensive information on the market offered by the key players
2. Market Development: Provides in-depth information about lucrative emerging markets and analyzes penetration across mature segments of the markets
3. Market Diversification: Provides detailed information about new product launches, untapped geographies, recent developments, and investments
4. Competitive Assessment & Intelligence: Provides an exhaustive assessment of market shares, strategies, products, certification, regulatory approvals, patent landscape, and manufacturing capabilities of the leading players
5. Product Development & Innovation: Provides intelligent insights on future technologies, R&D activities, and breakthrough product developments

The report answers questions such as:
1. What is the market size and forecast of the Artificial Intelligence in Drug Discovery Market?
2. Which are the products/segments/applications/areas to invest in over the forecast period in the Artificial Intelligence in Drug Discovery Market?
3. What is the competitive strategic window for opportunities in the Artificial Intelligence in Drug Discovery Market?
4. What are the technology trends and regulatory frameworks in the Artificial Intelligence in Drug Discovery Market?
5. What is the market share of the leading vendors in the Artificial Intelligence in Drug Discovery Market?
6. What modes and strategic moves are considered suitable for entering the Artificial Intelligence

in Drug Discovery Market?

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