

Artificial Intelligence / AI in Drug Discovery Market by Offering, Process (Target selection, Validation, Lead generation, optimization), Drug Design (Small molecule, Vaccine, Antibody, PK/PD), Dry Lab, Wet Lab (Single Cell analysis) & Region - Global Forecast to 2028

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Abstracts

The artificial intelligence (AI) in drug discovery market is projected to reach USD 4.9 billion by 2028 from USD 0.9 billion in 2023, at a CAGR of 40.2% during the forecast period. AI expedites the identification and validation of potential drug targets by analyzing intricate biological data. This accelerates the selection of biologically relevant targets for therapeutic interventions. AI techniques such as machine learning enable rapid analysis and decision-making, reducing the time and resources required for drug discovery processes. This efficiency gains a competitive edge in the fast-paced pharmaceutical landscape. Therefore, aforementioned factors will drive the growth of this market. On the other hand, the inadequate availability of skilled labor is key factor restraining the market growth to a certain extent over the forecast period.

“Services segment is estimated to hold the major share in 2022 and also expected to grow at the highest over the forecast period.”

Based on offering, the AI in drug discovery market is bifurcated into software and services. The 2022 and segment expected to account for the largest market share of the global AI in drug discovery services market in 2022 and expected to grow fastest CAGR during the forecast period. Access to AI technology and expertise through services reduces the barriers for pharmaceutical companies to adopt AI in drug discovery. This is particularly beneficial for smaller companies without extensive in-house AI capabilities,

enabling them to harness the power of AI without significant upfront investments.

“Machine learning technology segment accounted for the largest share of the global AI in drug discovery market.”

Based on technology, the AI in drug discovery market is segmented into machine learning, natural language processing (NLP), context aware processing, and other technologies. The machine learning segment accounted for the largest share of the global market in 2022 and expected to grow at the highest CAGR during the forecast period. Machine learning enables the creation of predictive models that anticipate the behavior of potential drug candidates within the human body. This aids in identifying compounds with the highest likelihood of success, reducing the costs and time associated with unsuccessful candidates. Machine learning contributes to the development of personalized treatment strategies by analyzing patient data to predict individual responses to drugs. This facilitates tailoring treatments based on genetic, molecular, and clinical information, leading to more effective outcomes, which helps accelerate the drug discovery process are some of the factors supporting the market growth of this segment.

“Small Molecule Design and Optimization segment expected to hold the largest share of use case segment of the market in 2022.”

Based on use cases, the AI in drug discovery market is divided into small molecule design and optimization, understanding disease, safety and toxicity, vaccine design and optimization, antibody and other biologics design and optimization. In 2022, the small molecule design and optimization segment accounted for the largest share of the AI in drug discovery market. AI is employed in small molecule design and optimization for two main purposes. Firstly, it aids in identifying hit-like or lead-like compounds by screening existing chemical libraries or through generative de novo design. Secondly, AI optimizes the identified hits, ensuring favorable properties like binding affinity, toxicity, and synthesis, ultimately leading to the development of more effective and safer drug candidates. These factors contribute to the development and refinement of AI algorithms tailored for drug discovery use cases.

“North America to dominate the AI in drug discovery market in 2022”

The global AI in the drug discovery market is segmented into four major regions, namely, North America, Europe, APAC, and the Rest of the World. In 2022, North

America accounted for the largest and the fastest-growing regional market for AI in drug discovery. North America hosts numerous pharmaceutical giants and biotechnology innovators that are actively exploring AI's capabilities in drug discovery. These industry leaders are investing significantly in AI-driven research and development, driving market growth. North America's well-established regulatory framework for pharmaceuticals and healthcare facilitates the integration of AI technologies while ensuring compliance with industry standards and guidelines. The above-mentioned factors will drive the market of AI in drug discovery in North America.

Breakdown of supply-side, demand side, primary interviews, by company type, designation, and region:

By Company Type:

By Supply Side: Tier 1 (31%), Tier 2 (28%), and Tier 3 (41%)

By Demand Side: Purchase Managers (45%), Head of Artificial Intelligence, Machine Learning, Drug Discovery, and Computational Molecular Design (30%) and Research Scientists (25%).

By Designation: C-level (31%), Director-level (25%), and Others (44%)

By Region: North America (45%), Europe (20%), Asia Pacific (28%), South America (4%) and Middle East & Africa (3%).

The prominent players in this market are NVIDIA Corporation (US), Exscientia (UK), BenevolentAI (UK), Recursion (US), Insilico Medicine (US), Schrödinger, Inc. (US), Microsoft Corporation (US), Google (US), Atomwise Inc. (US), Illumina, Inc. (US), NuMedii, Inc. (US), XtalPi Inc. (US), Iktos (France), Tempus Labs (US), Deep Genomics, Inc. (Canada), Verge Genomics (US), BenchSci (Canada), Insitro (US), Valo Health (US), BPGbio, Inc. (US), IQVIA Inc (US), Labcorp (US), Tencent Holdings Limited (China), Predictive Oncology, Inc. (US), Celsius Therapeutics (US), CytoReason (Israel), Owkin, Inc. (US), Cloud Pharmaceuticals (US), Evaxion Biotech (Denmark), Standigm (South Korea), BIOAGE (US), Envisagenics (US), and Aria Pharmaceuticals, Inc. (US). Players adopted organic as well as inorganic growth strategies such as product launches and enhancements, and investments, partnerships, collaborations, joint ventures, funding, acquisition, expansions, agreements, sales contracts, and alliances to increase their offerings, cater to the unmet needs of

customers, increase their profitability, and expand their presence in the global market.

Research Coverage

The report studies the AI in drug discovery market based on offering, technology, therapeutic area, use case, process, end user, and region.

The report analyzes factors (such as drivers, restraints, opportunities, and challenges) affecting the market growth.

The report evaluates the opportunities and challenges in the market for stakeholders and provides details of the competitive landscape for market leaders.

The report studies micro-markets with respect to their growth trends, prospects, and contributions to the total AI in drug discovery market.

The report forecasts the revenue of market segments with respect to five major regions.

Reasons to Buy the Report

The report can help established firms as well as new entrants/smaller firms to gauge the pulse of the market, which, in turn, would help them garner a greater share. Firms purchasing the report could use one or a combination of the below-mentioned five strategies.

This report provides insights into the following pointers:

Analysis of key drivers (growing number of cross-industry collaborations and partnerships, growing need to control drug discovery & development costs and reduce time involved in drug development, patent expiry of several drugs), restraints (shortage of AI workforce and ambiguous regulatory guidelines for medical software), opportunities (growing biotechnology industry, emerging markets, focus on developing human-aware AI systems, growth in the drugs and biologics market despite the COVID-19 pandemic), and challenges (limited availability of data sets) influencing the growth of AI in drug discovery market.

Product Development/Innovation: Detailed insights on upcoming technologies, research and development activities, and product launches in the AI in drug discovery market.

Market Development: Comprehensive information about lucrative emerging markets. The report analyzes the markets for various types of AI in drug discovery solutions across regions.

Market Diversification: Exhaustive information about products, untapped regions, recent developments, and investments in the AI in drug discovery market.

Competitive Assessment: In-depth assessment of market shares, strategies, products, distribution networks, and manufacturing capabilities of the leading players in the AI in drug discovery market.

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TABLE 270 VALO HEALTH: OTHER DEVELOPMENTS

15.1.20 BPGPIO, INC.

TABLE 271 BPGPIO, INC.: COMPANY OVERVIEW

TABLE 272 BPGPIO, INC.: PRODUCTS/SOLUTIONS/SERVICES OFFERED

TABLE 273 BPGPIO, INC.: DEALS

15.2 OTHER EMERGING PLAYERS

15.2.1 PREDICTIVE ONCOLOGY, INC.

15.2.2 LABCORP

- 15.2.3 IQVIA INC.
- 15.2.4 TENCENT HOLDINGS LIMITED
- 15.2.5 CELSIUS THERAPEUTICS
- 15.2.6 CYTOREASON
- 15.2.7 OWKIN, INC.
- 15.2.8 CLOUD PHARMACEUTICALS
- 15.2.9 EVAXION BIOTECH
- 15.2.10 STANDIGM
- 15.2.11 BIOAGE LABS
- 15.2.12 ENVISAGENICS
- 15.2.13 ARIA PHARMACEUTICALS, INC.

*Details on Business Overview, Products Offered, Recent Developments, and MnM View (Key strengths/Right to Win, Strategic Choices Made, and Weaknesses and Competitive Threats) might not be captured in case of unlisted companies.

16 APPENDIX

- 16.1 DISCUSSION GUIDE
- 16.2 KNOWLEDGESTORE: MARKETSandMARKETS' SUBSCRIPTION PORTAL
- 16.3 CUSTOMIZATION OPTIONS
- 16.4 RELATED REPORTS
- 16.5 AUTHOR DETAILS

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