

High-throughput Screening Market Report by Technology (Ultra-High-Throughput Screening, Cell-Based Assays, Lab-on-a-Chip, Label-Free Technology), Products and Services (Instruments, Reagents and Kits, Services), Applications (Target Identification and Validation, Primary and Secondary Screening, Toxicology Assessment, and Others), End User (Pharmaceutical and Biotechnology Firms, Academic and Government Institutes, Contract Research Organizations, and Others), and Region 2024-2032

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Abstracts

The global high-throughput screening market size reached US\$ 25.2 Billion in 2023. Looking forward, IMARC Group expects the market to reach US\$ 49.0 Billion by 2032, exhibiting a growth rate (CAGR) of 7.5% during 2024-2032. The increased adoption of 3D cell culture models, growing demand for personalized medicine screening assays, and rising application of CRISPR-based screening techniques are some of the key factors driving high-throughput screening market growth.

High-Throughput Screening Market Analysis:

Major Market Drivers: The increasing utilization of HTS for minimizing the time required for manufacturing a drug is primarily driving the growth of the market. Furthermore, the development of new medicines for treating various life-threatening diseases is also catalyzing the demand for HTS techniques.

Key Market Trends: Integration of advanced technologies, such as artificial intelligence

(AI) and machine learning (ML) with high-throughput screening to facilitate automation and fast data processing is one of the significant trends, augmenting the growth of the market.

Geographical Landscape: The high-throughput screening market forecast report has provided a detailed breakup and analysis of the market based on the region. This includes North America, Asia Pacific, Europe, Latin America, and Middle East and Africa. North America is expected to hold a significant market share in the high-throughput screening market owing to factors such as the increasing adoption of high-throughput screening, rising research and development expenditure, and the growing advances in combinatorial chemistry and the field of genomics.

Competitive Landscape: Some of the leading high-throughput screening market companies include Agilent Technologies Inc., Aurora Biomed Inc., Axxam S.p.A, Beckman Coulter Inc. (Danaher Corporation), Bio-RAD Laboratories Inc., Charles River Laboratories International Inc. Corning Incorporated, Luminex Corporation (DiaSorin), Perkinelmer Inc., Sygnature Discovery, Tecan Group Ltd., and Thermo Fisher Scientific, among many others.

Challenges and Opportunities: Challenges in the high-throughput screening market include data management complexities and the need for more physiologically relevant assay models, while opportunities lie in advancing technologies like automation, artificial intelligence, and organ-on-a-chip systems for more efficient and predictive screening processes.

High-Throughput Screening Market Trends:

Increasing Number of HTS Facilities

The development of new medicines for treating various life-threatening diseases is primarily driving the growth of the market. Furthermore, the rise in the utilization of HTS for minimizing the time required for manufacturing a drug is also contributing to the market growth. In addition to this, the escalating number of high-throughput screening (HTS) facilities is also catalyzing the high-throughput screening market's recent prices. One of the significant advantages of these centers is knowledge sharing among investigators, scientists, researchers, etc. For instance, the Columbia Genome Center offers high-quality molecular screening services for investigators throughout the Columbia University research community. Also, the European counterpart of the National Institutes of Health (NIH) program, known as EU-open-screen, provides open access to all European companies engaged in chemical biology. The association of high-throughput screening (HTS) centers is intended to provide useful information about the drug or target or the entire process. Thus, open access provides a better platform for knowledge sharing and can help accelerate the drug development process, which may

drive the high-throughput screening market share in the coming years.

Rising Development of Novel Molecules

The rising prevalence of various infectious diseases is prompting the development of novel molecules and vaccines, which in turn is creating a positive outlook for the high-throughput screening market. Moreover, the escalating need for precise and quick screening of various drugs and molecules during the manufacturing of a drug is resulting in an increased adoption of automated high-throughput screening techniques. Furthermore, various pharmaceutical and biologic firms are increasingly adopting high-throughput screening methods on account of their various advantages, such as high sensitivity, automation, minimization of the sample, and the ability to detect low background signals, which is bolstering the high-throughput screening market demand. According to the data published by the Congressional Budget Office, in 2021, it was observed that pharmaceutical industries spent nearly US\$ 200 Billion on research and development in 2020 globally, compared to US\$ 83 Million in 2019. Similarly, Danaher Corporation invested US\$ 1,742 Million in its research and development in 2021, as compared to US\$ 1,348 Million in 2020. In addition, Bio-Rad Laboratories Inc. invested US\$ 879.6 Million in 2021 as compared to US\$ 800.3 Million in 2020. Thus, the increasing investment in research and development by the companies further increases their capabilities to adopt innovative technologies in high throughput screening assays, thereby increasing the market growth.

Technological Advancements

High-throughput screening (HTS) techniques have seen significant advancements in recent years, driven by the continuous innovations in robotics, automation, data analysis, and miniaturization. Moreover, advances in automation and robotics are extensively increasing the speed and efficiency of HTS workflows. Automated liquid handling systems, plate readers, and robotic platforms can now perform repetitive tasks with high precision and throughput, reducing the need for manual intervention. Additionally, various leading biotech companies are also investing in research and development activities to introduce improved HTS methods which are anticipated to propel the high-throughput screening market revenue. For instance, in February 2024, SCIEX, a global leader in life science analytical technologies, launched the Echo MS+ system at SLAS 2024. The system couples proprietary Acoustic Ejection Mass Spectrometry technology and Open Port Interface (OPI) sampling with the capabilities of either the SCIEX ZenoTOF 7600 or Triple Quad 6500+ system to deliver precise qualitative and quantitative results through an expanded panel of robust high-throughput

screening workflows.

Global High-Throughput Screening Market Segmentation:

IMARC Group provides an analysis of the key trends in each sub-segment of the global high-throughput screening market report, along with forecasts at the global, regional, and country levels from 2024-2032. Our report has categorized the market based on technology, products and services, applications, and end user.

Breakup by Technology:

Ultra-High-Throughput Screening

Cell-Based Assays

Lab-on-a-Chip

Label-Free Technology

The report has provided a detailed breakup and analysis of the market based on the technology. This includes ultra-high throughput screening, cell-based assays, lab-on-a-chip, and label-free technology.

The high-throughput screening market overview indicates that cell-based assays are increasingly being used by various pharmaceutical and biotech companies. Cell-based assays in high-throughput screening utilize live cells as the biological readout for compound testing, enabling the evaluation of drug candidates' effects on cellular function, viability, and phenotype in a high-throughput manner, often employed in drug discovery and toxicity screening. Fluorometric imaging plate reader assays have become the most used cell-based assays owing to visible results and their ability to test with the smallest of volumes. Besides this, ultra-high-throughput screening is the latest technology and is used for increased output in less time. A majority of companies are in a transition phase from 2D-cell cultures to 3D-cell cultures as 3D cells show more lifelike properties while testing in the natural environment and other cell-related manipulations, aided for drug design and discovery.

Breakup by Products and Services:

Instruments

Reagents and Kits

Services

The high-throughput screening market report has provided a detailed breakup and

analysis of the market based on the products and services. This includes instruments, reagents and kits, and services.

High-throughput screening relies on specialized instruments, such as automated liquid handlers, plate readers, and robotic platforms. These instruments enable the rapid handling, dispensing, and analysis of samples in microplate formats, thereby increasing the efficiency and throughput of screening experiments. Whereas reagents and kits that are used in high-throughput screening include compound libraries, biochemical assays, and detection reagents such as fluorescent probes or enzyme substrates. These are optimized for compatibility with automated systems and miniaturized assay formats, allowing for the screening of large compound libraries against specific biological targets or pathways.

Breakup by Applications:

- Target Identification and Validation
- Primary and Secondary Screening
- Toxicology Assessment
- Others

The report has provided a detailed breakup and analysis of the market based on the application. This includes target identification and validation, primary and secondary screening, toxicology assessment and others.

Target identification and validation involves identifying and validating molecular targets (such as proteins, genes, or cellular pathways) that are implicated in a disease or biological process. Through various methods, including genomics, proteomics, and bioinformatics, potential targets are identified and then validated to ensure their relevance and druggability for further investigation. Whereas in primary and secondary screening large libraries of compounds are tested against a specific target or biological assay to identify initial hits that show activity or modulation. This method involves a more detailed characterization of hit compounds to confirm their activity, selectivity, and potency. Primary and secondary screening typically includes dose-response studies, counter-screens, and secondary assays to validate hits and prioritize them for lead optimization and preclinical development.

Breakup by End User:

Pharmaceutical and Biotechnology Firms

Academic and Government Institutes
Contract Research Organizations
Others

The report has provided a detailed breakup and analysis of the market based on the end user. This includes pharmaceutical and biotechnology firms, academic and government institutes, contract research organizations, and others.

According to high-throughput screening market statistics by IMARC, the spending on research and development (R&D) by both pharmaceutical companies and government organizations has been increasing recently, which is anticipated to drive market growth over the forecast period. For instance, Danaher Corporation, a leading global life sciences and diagnostics innovator, invested US\$ 1,742 Million in its research and development in 2021, as compared to US\$ 1,348 Million in 2020. In addition, Bio-Rad Laboratories Inc. invested US\$ 879.6 Million in 2021 as compared to US\$ 800.3 Million in 2020. Thus, the huge investment by pharmaceuticals, biotech firms, and government institutions will continue to drive the market growth.

Breakup by Region:

North America
United States
Canada
Asia-Pacific
China
Japan
India
South Korea
Australia
Indonesia
Others
Europe
Germany
France
United Kingdom
Italy
Spain
Russia
Others

Latin America

Brazil

Mexico

Others

Middle East and Africa

The market research report has also provided a comprehensive analysis of all the major regional markets, which include North America (the United States and Canada); Europe (Germany, France, the United Kingdom, Italy, Spain, Russia, and others); Asia Pacific (China, Japan, India, South Korea, Australia, Indonesia, and others); Latin America (Brazil, Mexico, and others); and the Middle East and Africa.

North America is expected to hold a significant market share in the high-throughput screening market owing to various factors such as the increasing adoption of high-throughput screening, rising research and development expenditure, and the growing advances in combinatorial chemistry and the field of genomics. In addition to this, the presence of prominent market players in the region is also positively impacting the high-throughput screening market outlook. For instance, in August 2021, Becton, Dickinson, and Company launched a new, fully automated high-throughput diagnostic system using robotics and sample management software algorithms to set a new standard in automation for infectious disease molecular testing in core laboratories and other centralized laboratories in the United States. This launch made BD Onclarity HPV Assay with extended genotyping for the BD COR System available to the high-throughput labs for processing most cervical cancer screening specimens in the United States with persistent infection with human papillomavirus (HPV).

Competitive Landscape:

The market research report has provided a comprehensive analysis of the competitive landscape. Detailed profiles of all major companies have also been provided. Some of the key players in the market include:

Agilent Technologies Inc.

Aurora Biomed Inc.

Axxam S.p.A

Beckman Coulter Inc. (Danaher Corporation)

Bio-RAD Laboratories Inc.

Charles River Laboratories International Inc.

Corning Incorporated

Luminex Corporation (DiaSorin)

Perkinelmer Inc.
Sygnature Discovery
Tecan Group Ltd
Thermo Fisher Scientific

(Please note that this is only a partial list of the key players, and the complete list is provided in the report.)

High-Throughput Screening Market Recent Developments:

April 2024: Gordian Biotechnology introduced a high-throughput in vivo screening platform to discover therapies and better predict human outcomes for age-related diseases.

April 2024: Metrion Biosciences Limited and Enamine Ltd., announced that Metrion has enhanced its High Throughput Screening (HTS) services with the addition of access to Enamine's compound libraries.

February 2024: SCIEX, a global leader in life science analytical technologies, launched the Echo MS+ system at SLAS 2024. The system couples proprietary Acoustic Ejection Mass Spectrometry technology and Open Port Interface (OPI) sampling with the capabilities of either the SCIEX ZenoTOF 7600 or Triple Quad 6500+ system to deliver precise qualitative and quantitative results, through an expanded panel of robust high-throughput screening workflows.

Key Questions Answered in This Report:

How has the global high-throughput screening market performed so far and how will it perform in the coming years?

What has been the impact of COVID-19 on the global high-throughput screening market?

What are the key regional markets?

What is the breakup of the market based on the technology?

What is the breakup of the market based on the products and services?

What is the breakup of the market based on the applications?

What is the breakup of the market based on the end user?

What are the various stages in the value chain of the industry?

What are the key driving factors and challenges in the industry?

What is the structure of the global high-throughput screening market and who are the key players?

What is the degree of competition in the industry?

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