

Microbiome Sequencing Services Market Report by Technology (Sequencing by Synthesis (SBS), Sequencing by Ligation (SBL), Pyrosequencing, Sanger Sequencing, and Others), Research Type (Outsourced Research, Internal Research), Laboratory Type (Dry Labs, Wet Labs), Application (Shotgun Sequencing, Targeted Gene Sequencing, RNA Sequencing, Whole Genome Sequencing, and Others), End User (Pharmaceutical and Biotechnology Companies, Research and Academic Institutes, and Others), and Region 2023-2028

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Report description:

The global microbiome sequencing services market size reached US\$ 1,846.3 Million in 2022. Looking forward, IMARC Group expects the market to reach US\$ 5,568.4 Million by 2028, exhibiting a growth rate (CAGR) of 20.20% during 2022-2028. The increasing incidences of infectious diseases among the masses, rising inclination towards microbiome-based therapeutics, including FMT, and the growing adoption of microbiome sequencing in veterinary medicine are some of the major factors propelling the market.

Microbiome sequencing services involve the analysis of microbial communities that inhabit various environments, including the human body. They are specialized procedures designed to identify and analyze the diverse microorganisms living in a particular ecosystem, such as the human gut, soil, or water. They use advanced deoxyribonucleic acid (DNA) sequencing technologies to decode the genetic material of microorganisms, which allows researchers and healthcare professionals to understand the composition, diversity, and function of these microbial communities.

Increasing incidences of infectious diseases among the masses are catalyzing the demand for microbiome sequencing services for studying host-pathogen relationships, which lead to rising demand for its services around the world. Moreover, the rising inclination towards microbiome-based therapeutics, including fecal microbiota transplantation (FMT), that necessitates accurate microbiome profiling to ensure treatment efficacy and safety is favoring the growth of the market. Apart from this, the growing adoption of microbiome sequencing in veterinary medicine for understanding animal health, disease prevention, and improving livestock production is influencing the market positively. In addition, the expansion of the pharmaceutical industry is driving the use of microbiome data to develop novel drugs, particularly those targeting gastrointestinal diseases, which is contributing to the market growth. Furthermore, the increasing adoption of precision agriculture practices, which rely on data-driven decision-making, is bolstering the market growth.

Microbiome Sequencing Services Market Trends/Drivers: Increase in personalized medicine and therapies

With the rising use of personalized medicine, there is a rise in the demand for microbiome sequencing services to offer tailoring treatments and interventions to individual patients. One of the driving forces behind the demand for microbiome sequencing services is the recognition that each microbiome of a person is unique and can significantly impact their response to treatments. Whether it is optimizing probiotic regimens, guiding dietary recommendations, or predicting drug efficacy, microbiome data is indispensable. Patients and healthcare providers increasingly seek these insights to achieve better treatment outcomes, minimize adverse effects, and enhance overall wellness. Consequently, the demand for microbiome sequencing services is rising as personalized medicine is becoming a central tenet of modern healthcare.

Rise in consumer awareness and wellness

Consumer awareness about the role of microbiomes in health and wellness has been steadily increasing. People are becoming more proactive about their health, seeking ways to optimize their microbiomes for improved well-being. This trend is driven by the availability of direct-to-consumer microbiome testing kits that provide individuals with insights into their gut microbiota. As consumers gain a better understanding of the connections between their microbiome and various health aspects, they are turning to microbiome sequencing services for in-depth analysis and personalized recommendations. This surge in interest from the public is propelling the demand for microbiome sequencing services, as individuals seek to make informed lifestyle choices and dietary adjustments to promote a healthier microbiome.

Growing regulatory requirements and quality assurance

Regulatory bodies in healthcare, agriculture, and food safety are increasingly recognizing the importance of microbiome data in ensuring safety and quality standards. For instance, in the food industry, microbiome sequencing is used to monitor and improve food safety by identifying potential pathogens or spoilage organisms. Similarly, regulatory agencies in agriculture may require microbiome assessments to ensure sustainable farming practices. Compliance with these regulations necessitates the utilization of microbiome sequencing services to maintain high-quality standards, leading to a consistent demand from businesses and organizations striving to meet regulatory requirements and ensure the safety of their products.

Microbiome Sequencing Services Industry Segmentation:

IMARC Group provides an analysis of the key trends in each segment of the market report, along with forecasts at the global, regional, and country levels from 2023-2028. Our report has categorized the market based on technology, research type, laboratory type, application, and end user.

Breakup by Technology:

Sequencing by Synthesis (SBS) Sequencing by Ligation (SBL) Pyrosequencing Sanger Sequencing Others

Sequencing by synthesis (SBS) dominates the market

The report has provided a detailed breakup and analysis of the market based on the technology. This includes sequencing by synthesis (SBS), sequencing by ligation (SBL), pyrosequencing, sanger sequencing, and others. According to the report, sequencing by synthesis (SBS) represented the largest segment. SBS is the fundamental technology behind microbiome sequencing services. It is employed to unravel the genetic makeup of microorganisms in a given sample. During SBS, DNA strands from the microbial community are broken down into their individual components and then precisely reconstructed. This process relies on the incorporation of fluorescently labeled nucleotides into the growing DNA strands, which emit distinct signals as they are added. These signals are detected and translated into the genetic sequence, which enables scientists to identify the types and quantities of microorganisms present in the sample. SBS is highly accurate and efficient, which makes it a cornerstone of microbiome analysis, with applications ranging from human health research to environmental monitoring.

Breakup by Research Type:

Outsourced Research Internal Research

Outsourced research holds the largest share in the market

A detailed breakup and analysis of the market based on the research type has also been provided in the report. This includes outsourced research and internal research. According to the report, outsourced research accounted for the largest market share. In the realm of microbiome sequencing services, research frequently encompasses an outsourced approach. This entails collaborating with external research partners or specialized service providers who possess advanced capabilities in microbiome analysis. These outsourced research endeavors are driven by the complexity and technical demands of microbiome studies. By leveraging the expertise and resources of established entities in this field, researchers can access cutting-edge sequencing technologies, bioinformatics tools, and domain-specific knowledge. This collaborative model fosters more comprehensive and insightful microbiome investigations, whether in the context of human health, environmental science, or agriculture, ultimately contributing to the advancement of knowledge in this burgeoning field.

Breakup by Laboratory Type:

Dry Labs Wet Labs

Wet labs hold the largest share in the market

The report has provided a detailed breakup and analysis of the market based on the laboratory type. This includes dry labs and wet labs. According to the report, wet labs accounted for the largest market share. Wet labs are the physical spaces wherein the initial stages of microbiome sequencing occur. These labs handle the actual samples, perform DNA extraction, and prepare them for sequencing. Wet labs are equipped with state-of-the-art molecular biology instruments and techniques to ensure the integrity

and quality of the genetic material from microbial communities. Scientists in wet labs use specialized protocols to isolate DNA, amplify specific regions of interest, and prepare sequencing libraries. These meticulously controlled procedures are essential to ensure accurate and reliable microbiome sequencing data. Once the sample preparation is complete, the processed samples are sent to sequencing facilities or dry labs for further analysis. Wet labs are the hands-on, experimental arm of microbiome research, where the journey from sample to data begins.

Breakup by Application:

Shotgun Sequencing Targeted Gene Sequencing RNA Sequencing Whole Genome Sequencing Others

Shotgun sequencing holds the largest share in the market

A detailed breakup and analysis of the market based on the application has also been provided in the report. This includes shotgun sequencing, targeted gene sequencing, RNA sequencing, whole genome sequencing, and others. According to the report, shotgun sequencing accounted for the largest market share. It is a powerful and comprehensive application of microbiome sequencing services. In this approach, the entire genetic material, or DNA, of a microbial community is sequenced without specifically targeting any genes or regions. This method provides a holistic view of the microbial diversity within a sample, which allows researchers to identify all the microorganisms present and gain insights into their functional potential. Shotgun sequencing is particularly useful for exploring unknown or complex microbiomes, as it does not require prior knowledge of the specific genes of interest. It is widely applied in environmental studies, such as soil and water microbiology, and has significant relevance in understanding the human gut microbiome's complexity and its implications for health. By elucidating the complete genetic makeup of microbial communities, shotgun sequencing contributes to a deeper understanding of their roles in various ecosystems and their potential applications.

Breakup by End User:

Pharmaceutical and Biotechnology Companies Research and Academic Institutes Others

Pharmaceutical and biotechnology companies dominate the market

The report has provided a detailed breakup and analysis of the market based on the end user. This includes pharmaceutical and biotechnology companies, research and academic institutes, and others. According to the report, pharmaceutical and biotechnology companies represented the largest segment. These companies represent key end users of microbiome sequencing services. These companies leverage microbiome data to drive innovation in drug discovery, development, and therapeutic interventions. By partnering with specialized service providers, they gain access to cutting-edge sequencing technologies and expertise in microbiome analysis. This collaboration enables pharmaceutical and biotechnology companies to explore the intricate relationship between the human microbiome and health with the goal of identifying novel drug targets, biomarkers, and therapeutic candidates. Additionally, microbiome sequencing aids in the development of probiotics and microbiome-based therapies, which offer potential solutions for a range of medical conditions. As such, pharmaceutical and biotechnology firms play a pivotal role in translating microbiome research into tangible healthcare advancements, ultimately benefiting patients and advancing the field of life sciences.

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

North America exhibits a clear dominance, accounting for the largest microbiome sequencing services market share

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); Asia Pacific (China, Japan, India, South Korea, Australia, Indonesia, and others); Europe (Germany, France, the United Kingdom, Italy, Spain, Russia, and others); Latin America (Brazil, Mexico, and others); and the Middle East and Africa. According to the report, North America accounted for the largest market share.

The increasing knowledge about the advantages of early diagnosis and disease detection represents one of the primary factors driving the demand for microbiome sequencing services in the North American region. Moreover, the surging prevalence of colorectal cancer (CRC) is favoring the growth of the market in the region. Besides this, the growing geriatric population, that are more prone to develop severe medical conditions, is influencing the market positively in the region.

Asia Pacific is estimated to witness stable growth, owing to increasing investment in developing novel drugs, extensive research and development (R&D) activities, integration of advanced technologies, etc.

Competitive Landscape:

The leading companies are adopting the use of high throughput sequencing in microbiome sequencing services to enable the simultaneous analysis of numerous microbial samples, which facilitates large-scale studies and delivers high-resolution data on microbial community composition. They are also using metagenomics that allows researchers to sequence the DNA of an entire

microbial community in a sample without isolating individual species and enables a holistic view of the microbiome. Moreover, key players are integrating artificial intelligence (AI) and machine learning (ML) into microbiome data analysis that help identify patterns, predict microbial interactions, and discover biomarkers associated with health or disease, which enhances the interpretability of complex microbiome datasets.

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:

BaseClear B.V. Clinical-Microbiomics A/S Diversigen Inc (OraSure Technologies Inc.) Merieux NutriSciences Metabiomics Corporation (BioSpherex LLC) Microbiome Insights Inc. Microbiome Therapeutics LLC Molecular Research LP Molzym GmbH & Co. KG Resphera Biosciences LLC Shanghai Realbio Technology (RBT) Co. Ltd. Zymo Research Corporation

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

Recent Developments:

In 2022, Diversigen Inc (OraSure Technologies Inc.) launched metatranscriptomic sequencing and analysis services for gut microbiome samples.

Key Questions Answered in This Report

- 1. What was the size of the global microbiome sequencing services market in 2022?
- 2. What is the expected growth rate of the global microbiome sequencing services market during 2023-2028?
- 3. What are the key factors driving the global microbiome sequencing services market?
- 4. What has been the impact of COVID-19 on the global microbiome sequencing services market?
- 5. What is the breakup of the global microbiome sequencing services market based on the technology?
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- 9. What is the breakup of the global microbiome sequencing services market based on the end user?
- 10. What are the key regions in the global microbiome sequencing services market?
- 11. Who are the key players/companies in the global microbiome sequencing services market?

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