Whole Exome Sequencing - Market Share Analysis, Industry Trends & Statistics, Growth Forecasts 2021 - 2029

Market Report | 2024-02-17 | 160 pages | Mordor Intelligence

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Report description:

The Whole Exome Sequencing Market size is estimated at USD 1.99 billion in 2024, and is expected to reach USD 4.53 billion by 2029, growing at a CAGR of 17.89% during the forecast period (2024-2029).

The outbreak of the COVID-19 pandemic pushed the pharmaceutical industry into action, with a race to develop therapeutic and preventive interventions. The onset of the SARS-CoV-2 pandemic set many pharmaceutical companies to quickly add clinical sequencing to expand safety testing that helped fight against the COVID-19 pandemic. COVID-19 had a significant impact on the whole exome sequencing market. For instance, as per the study published in PLOS ONE in January 2022, it was concluded that COVID-19 syndrome caused significant alterations in the blood transcriptome, which were assessed using RNAseq and verified using digital droplet PCR (ddPCR) on specific targets. Such studies augment the use of whole exome sequencing in analyzing the progression of COVID-19, thereby boosting the market's growth over the coming years. Hence, owing to the increasing RNA and DNA sequencing-based research & development activities in developing diagnostic tools or effective therapeutics for COVID-19, the market is likely to continue its significant growth rate during the forecast period.

The key factors driving the global whole exome sequencing market are increasing applications in clinical diagnosis and the growing demand for diagnosing rare diseases, increasing R&D in genomics and next-generation sequencing, and rising demand for personalized medicine. For instance, an article published in the British Medical Journal in March 2022 reported that whole exome sequencing is available for highly selected patients for the routine diagnosis of rare childhood genetic diseases. The article also said that next-generation sequencing allows hundreds or thousands of genes to be sequenced quickly at a much lower cost. Due to the benefits of exome sequencing, the studied market is expected to grow over the forecast period.

Also, whole exome sequencing is used in testing for the genomes of viruses that cause various diseases, such as HIV, cancer, and

COVID-19. With the rising prevalence of these diseases, the demand for whole exome sequencing is also rapidly increasing. For instance, in July 2022, the World Health Organization (WHO) reported that 37.7 million cases of HIV were recorded globally in 2021. These genomic sequencing methods provide information on genetic variants that can lead to disease due to the increased prevalence of such conditions, thereby growing demand for RNA sequencing.

The increasing R&D in the genomics and next-generation sequencing field is also driving the market. For instance, in May 2022, NanoString Technologies, Inc. launched a cloud-based workflow that improves the spatial data analysis experience of customers using Illumina NextSeq 1000 and NextSeq 2000 sequencing systems and the GeoMx Digital Spatial Profiler. This spatial analysis of whole transcriptomes combined with proteome analytes can now be simplified using this integrated, push-button run planning tool. Thus, such developments are expected to drive the market.

Thus, all the above factors are expected to show significant growth over the forecast period. However, the high complexity of the technique, the need for more skilled personnel, and the legal and ethical issues associated with whole exome sequencing may slow down the market's growth.

Whole Exome Sequencing Market Trends

Personalized Medicine Segment is Expected to Witness a Significant Growth Over the Forecast Period.

Personalized medicine aims to provide tailor-made therapies to individual patients, depending on the molecular basis of the disease. It has become popular over the past few years. Precision medicine is a new specialty known as "individualized medicine," a healthcare approach based on each patient's unique genetic makeup as opposed to traditional medicine. Developments and a deeper understanding of genetics and human genetic makeup and how they drive health, development, and drug response enable medical professionals to develop safer and more effective treatment methods and drugs for various health conditions. Precision is benefiting health and healthcare in different ways.

The rise in the prevalence of various types of cancer, the affordability of personalized medicine therapy in cancer drugs and various other disease indications, fewer side-effects of customized medicine therapy, high adoption in developed markets, and the development of innovative drugs are factors driving this personalized medicine segment. For instance, in August 2022, the Medical Device Innovation Consortium launched its somatic reference samples (SRS) initiative with a pilot project to improve the validation and regulatory review process for cancer diagnostics based on next-generation sequencing (NGS). Next-generation sequencing (NGS) is a powerful technology enabling diagnostics and therapeutic breakthroughs. These diagnostic tests need to be validated for proper clinical use, and reference samples are essential to the validation process.

Moreover, strategic activities by market players, such as partnerships, mergers and acquisitions, and product launches, are expected to propel the segment's growth. For instance, in January 2021, Illumina Inc. announced a portfolio of new and expanded oncology partnerships with Bristol Myers Squibb, Kura Oncology, Myriad Genetics, and Merck to advance comprehensive genomic profiling for precision oncology. In June 2021, Labcorp and OmniSeq, a CAP-accredited molecular diagnostic innovation of Roswell Park Comprehensive Cancer Center, announced the launch of OmniSeq INSIGHTsm, a comprehensive genomic and immune profiling, tissue-based test that integrates next-generation sequencing (NGS) technology.

Thus, the segment is expected to witness significant growth over the forecast period due to the reasons mentioned above, such as increased adoption of precision medicine and product launches.

North America is Expected to Witness a Significant Growth Over the Forecast Period.

North America has a large regional market in terms of revenue. The increasing prevalence of genetic and chronic disorders, such

as cancer, the aging population, the growing demand for targeted and personalized medicine, and favorable government initiatives are the primary factors behind the growth of the whole-exome sequencing market. According to the HIV.gov updates in October 2022, HIV affects around 1.2 million persons in the United States. Thus, the growing burden of infectious diseases is expected to increase in demand for its diagnosis, thereby boosting the market's growth over the forecast period.

The mergers, acquisitions, launches, and partnerships among the key players in the market are also driving the market in the region. For instance, in January 2021, Helix OpCo, LLC, received de novo authorization from the United States Food and Drug Administration (USFDA) for the Helix Laboratory Platform, a whole exome sequencing platform with coverage of approximately 20,000 genes. This marks the first time such a broad, sequencing-based device has been authorized by the United States Food and Drug Administration (USFDA). Helix also received 510(k) clearance for the Helix Genetic Health Risk App for late-onset Alzheimer's Disease for over-the-counter use on the Helix Laboratory Platform.

Similarly, in May 2021, BG introduced Rapid Trio Whole Exome Sequencing, which reduced turnaround time from seven to five days. In June 2021, Centogene N.V., a commercial-stage company that generates data-driven insights to diagnose, understand, and cure rare diseases, launched NEW CentoXome, an improved next-generation sequencing-based assay.

Thus, due to the factors mentioned above, such as the growing prevalence of infectious diseases and product launches, the market is expected to show significant growth over the forecast period in the region.

Whole Exome Sequencing Industry Overview

The whole exome sequencing market is moderately consolidated in nature due to the presence of a few companies operating globally as well as regionally. The competitive landscape includes an analysis of some international as well as domestic companies that hold market shares and are well known, including Bio-Rad Laboratories Inc., Eurofins Scientific Group, F. Hoffmann-La Roche AG, illumine Inc., and Thermo Fisher Scientific Inc. KONICA MINOLTA, INC. (Ambry Genetics), Beijing Genomics Institute, Azenta, Inc., Psomagen, Inc (Macrogen Inc.), PerkinElmer Inc., GENEYX GENOMEX, and CD Genomics, QIAGEN Inc., among others.

Additional Benefits:

  The market estimate (ME) sheet in Excel format
 3 months of analyst support

Table of Contents:

1 INTRODUCTION
1.1 Study Assumptions and Market Definition
1.2 Scope of the Study

2 RESEARCH METHODOLOGY

3 EXECUTIVE SUMMARY

4 MARKET DYNAMICS
4.1 Market Overview
4.2 Market Drivers
4.2.1 Increasing Applications in the Clinical Diagnosis and Growing Demand for the Diagnosis of Rare Diseases
4.2.2 Increasing R&D in the Field of Genomics and Next-generation Sequencing

4.2.3 Increasing Demand for Personalized Medicine
4.3 Market Restraints
4.3.1 High Complexity of Technique and Lack of Skilled Personnel
4.3.2 Legal and Ethical Issues Associated with Whole Exome Sequencing
4.4 Porter's Five Forces Analysis
4.4.1 Threat of New Entrants
4.4.2 Bargaining Power of Buyers/Consumers
4.4.3 Bargaining Power of Suppliers
4.4.4 Threat of Substitute Products
4.4.5 Intensity of Competitive Rivalry

5 MARKET SEGMENTATION (Market Size by Value in USD Million)
5.1 By Product Type
5.1.1 System
5.1.2 Kits
5.1.3 Services
5.2 By End-User
5.2.1 Second-Generation Sequencing
5.2.1.1 Sequencing, by Synthesis (SBS)
5.2.1.2 Sequencing, by Hybridization and Ligation (SBL)
5.2.2 Third-Generation Sequencing
5.3 By Application
5.3.1 Diagnostics
5.3.2 Drug Discovery and Development
5.3.3 Personalized Medicine
5.3.4 Other Applications (Agriculture, Animal Research, etc.)
5.4 Geography
5.4.1 North America
5.4.1.1 United States
5.4.1.2 Canada
5.4.1.3 Mexico
5.4.2 Europe
5.4.2.1 Germany
5.4.2.2 United Kingdom
5.4.2.3 France
5.4.2.4 Italy
5.4.2.5 Spain
5.4.2.6 Rest of Europe
5.4.3 Asia-Pacific
5.4.3.1 China
5.4.3.2 Japan
5.4.3.3 India
5.4.3.4 Australia
5.4.3.5 South Korea
5.4.3.6 Rest of Asia-Pacific
5.4.4 Middle East and Africa
5.4.4.1 GCC

5.4.4.2 South Africa
5.4.4.3 Rest of Middle East and Africa
5.4.5 South America
5.4.5.1 Brazil
5.4.5.2 Argentina
5.4.5.3 Rest of South America

6 COMPETITIVE LANDSCAPE
6.1 Company Profiles
6.1.1 KONICA MINOLTA, INC. (Ambry Genetics)
6.1.2 Beijing Genomics Institute
6.1.3 Bio-Rad Laboratories Inc.
6.1.4 Eurofins Scientific Group
6.1.5 F. Hoffmann-La Roche AG
6.1.6 Azenta, Inc.
6.1.7 Illumina Inc.
6.1.8 Psomagen, Inc (Macrogen Inc.)
6.1.9 PerkinElmer Inc.
6.1.10 Thermo Fisher Scientific Inc.
6.1.11 GENEYX GENOMEX
6.1.12 CD Genomics
6.1.13 QIAGEN Inc.

7 MARKET OPPORTUNITIES AND FUTURE TRENDS

Whole Exome Sequencing - Market Share Analysis, Industry Trends & Statistics, Growth Forecasts 2021 - 2029

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