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Functional Genomics Market - A Global and Regional Analysis: Focus on Product, Technology, Application, End User and Country Analysis - Analysis and Forecast, 2023-2033

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Abstracts

Global Functional Genomics Market Industry Overview

In 2022, the global functional genomics market was valued at $10.57 billion, and it is expected to reach $46.24 billion by 2033, growing at a CAGR of 14.04% during the forecast period 2023-2033. The growth in the global functional genomics market is expected to be driven by its increased applications especially in targeted therapy and precision medicine.

Market Lifecycle Stage

Functional genomics is the study of genes and their interactions in different biological processes. The field aims to narrow down the candidate genes or regions from the entire genome that can be analyzed in detail to understand the working of various biological processes. The workings of individual components of a biological system including various interactions at the DNA, RNA, and proteins level is analyzed at the genotypic as well as the phenotypic level. The field is focused on the dynamics of gene products which can be at a specific developmental stage during a disease. Functional genomics is used to link phenotypes to genotypes using the study findings.

According to BIS Research functional genomics products are used in DNA level (epigenomics), RNA level (transcriptomics), protein level (proteomics) or metabolite level (metabolomics). This includes all the products used in these fields' workflow before bioinformatics and data analysis. Together all these fields describe the transcripts, metabolites, and proteins of any biological system. The integration of all these pieces makes up the entire biological system that is being studied which makes up the field of functional genomics.

Impact

For instance, in May 2022, Thermo Fisher Scientific, Inc. partnered with Qatar Foundation to develop a pan-Arab genotyping array. The intent behind this product launch was to be a cost-effective alternative to whole-genome sequencing and to provide greater diversity in genome-wide research studies under Qatar Genome Program.

In September 2022, Illumina Inc. introduced the NovaSeqX Series (NovaSeq X and NovaSeq X Plus), which are next-generation sequencers designed for large-scale production. With the capability to sequence over 20,000 genomes per year, this new technology offers unparalleled accuracy and scalability.

Impact of COVID-19

In March 2019, the world was hit by a storm with the Sars-CoV-2 virus, which led to the entire world being shut down and everybody getting tested for the virus. As the amount of testing increased, it became important to increase the pace of testing as well. To do this, next-generation sequencers were set up at many clinical and diagnostic centers to sequence the genomes and transcriptomes of the virus as well as the infected patients to understand and procure treatments.

Recently, NGS technologies are increasingly being used for clinical diagnosis. The overall popularity of NGS sequencing for genome and transcriptome sequencing was increased during COVID-19 because of its use in the detection of coronavirus by the methods such as SARS-CoV-2 surveillance, detection, and the detection of new viruses.

In response to the COVID-19 pandemic and the impact on medical research at the National Institutes of Health (NIH) and the National Cancer Institute (NCI) both extended grant application deadlines, laid back reporting requirements, and offered flexibility on how the grant money is spent. The national government supported research work and offered medical researchers the flexibility to implement their skill set and knowledge in studying SARS-CoV-2. Due to this, the use of NGS during COVID-19 ended up increasing due to its use in COVID-19 testing.

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In fact, even now, after the pandemic has subsided the effect lingers and the use of sequencing instruments is not expected to go down but to keep increasing over the next decade enhancing the fields for epigenomics, transcriptomics, proteomics and metabolomics as well.

Market Segmentation:

Segmentation 1: by Product

- Kits and Assays
- Instruments

As of 2022, the global functional genomics market (by product) was dominated by the kits and assays segment, holding a 58.12% market share.

Segmentation 2: by Technology

- Next-Generation Sequencing (NGS)
- Polymerase Chain Reaction (PCR)
- Microarray
- Other

The global functional genomics market (by technology) is expected to be dominated by the next-generation sequencing (NGS) segment during the forecast period 2023-2033. This is because it is the most efficient and accurate technology currently available when it comes to gene analysis.

Segmentation 3: by Application

- Transcriptomics
- Epigenomics

Proteomics

Metabolomics

The global functional genomics market (by application) is expected to be dominated by the transcriptomics segment in the market during the forecast period 2023-2033. This is because this is one the oldest fields of functional genomics with much research and efficient tools already done, additionally it is easier to analyse RNAs as compared to proteins, thus the high revenue of this segment.

Segmentation 4: by End User

Academic & Research Institutions

Biotechnology and Biopharmaceutical Companies

Other End Users

As of 2022, the global functional genomics market (by end user) was dominated by the academic and research institutions segment, holding a 60.32% market share.

Segmentation 5: by Region

North America

Europe

Asia-Pacific

Latin America

Rest-of-the-World

North America is expected to dominate the global functional genomics market with a revenue of $4.21 billion in 2022. However, the Asia-Pacific (APAC) region, constituting several emerging economies, is expected to register the highest CAGR of 15.27% during the forecast period 2023-2033.

Recent Developments in Global Functional Genomics Market

In September 2022, Thermo Fisher Scientific partnerered with the joint effort of Acdemia Sinica and multiple hospitals across the country, i.e., Taiwan Precision Medicine Initiative (TPMI) to advance the next phase of the large-scale predictive genomics study. The intent behind this partnership was to support its goal of genotyping 1 million people in Taiwan. TPMI reached the milestone of enrolling more than 500,000 participants in July, making it the largest study of its kind outside of the United States and Europe.

In March 2022, Thermo Fisher Scientific collaborated with Symphogen and Servier to provide biopharmaceutical discovery and development laboratories with advanced tools and simplified processes for effective analysis of intricate therapeutic proteins, thereby supporting their research efforts.

In July 2021, Pacific Biosciences of California, Inc. has sighned a agreement to acquire Omniome. This acquitision is likley to expand the portfolio in epigenetics segments

In October 2022, Oxford Nanopore Technologies introduced the new PromethION 2 ('P2') Solo sequencer in the market. It is a high-yield sequencer that provides real-time whole genome sequencing, enabling more than just basic DNA analysis. With the capacity for comprehensive analysis of genetic variants, transcriptomic and epigenetic data on a single platform, this technology is aimed at driving scientific discovery to improve lives.

In September 2022, Illumina Inc. introduced the NovaSeqX Series (NovaSeq X and NovaSeq X Plus), which are next-generation sequencers designed for large-scale production. With the capability to sequence over 20,000 genomes per year, this new technology offers unparalleled accuracy and scalability.

Demand – Drivers and Limitations

Following are the demand drivers for the global functional genomics market:

Integration of Multi-omics Approaches for Patient Stratification

Increasing Popularity of Epigenetics Leading to Vast Usage

Increased Technological Advancements and Government Initiatives in the Functional Genomics Ecosystem

The market is expected to face some limitations too due to the following challenges:

Limitation in Implementation of Data in Proteomics and Metabolomics

Regulatory Compliance issues related to Functional Genomics Technology

How can this report add value to an organization?

Product/Innovation Strategy: The report considers functional genomics kits and assays-based companies. The industry is seeing constant development and product launches with new and innovative upgrades. Additionally, new discoveries of more efficient instruments and tools of functional genomics is increasing researchers' trust in functional genomics.

Growth/Marketing Strategy: The key components in functional genomics are the kits and assays along with the instruments for sample analysis. The advancements in the overall fucntioncal genomics ecosystem are influencing the growth of this market.

Competitive Strategy: The key players in the global functional genomics market have been analyzed and profiled in the study, consisting of most product-based companies. Moreover, a detailed competitive benchmarking of the players operating in the global functional genomics market has been done to help the reader understand how players stack against each other, presenting a clear market landscape. Additionally, comprehensive competitive strategies such as partnerships, agreements, and collaborations will aid the reader in understanding the untapped revenue pockets in the market.

Key Market Players and Competition Synopsis

The companies that are profiled have been selected based on inputs gathered from primary experts, analyzing company coverage, product portfolio, and market penetration.

Key Companies Profiled

- Agilent Technologies, Inc.
- Becton, Dickinson and Company (BD)
- Bio-Rad Laboratories, Inc.
- Danaher. (Integrated DNA Technologies, Inc.)
- Exact Sciences Corporation
- F. Hoffmann-La Roche Ltd
- Illumina, Inc.
- Merck KGaA
- MRM Proteomics
- Pacific Biosciences of California, Inc.
- Promega Corporation
- QIAGEN
- Thermo Fisher Scientific Inc.

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