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DNA Sequencing - Market Insights, Competitive Landscape and Market Forecast–2027

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Abstracts

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DNA Sequencing Market By Products & Services (Instruments, Consumbales, And Services), By Technology (Sanger Sequencing, Next-Generation Sequencing, And Long-Read Sequencing), By Application (Disease Diagnosis, Precision Medicine, And Research), By End User (Hospitals & Clinics, Diagnostic Laboratories, Pharmaceutical Companies, And Academic Institutes), and by geography is estimated to grow at an appreciable CAGR forecast till 2027 owing to rising prevalence of genetic disorders and growing popularity of precision medicine

Global DNA sequencing market was valued at USD 10.70 billion in 2021, growing at a CAGR of 18.02% during the forecast period from 2022 to 2027, in order to reach USD 28.85 billion by 2027. Factors such as rising prevalence of various diseases with genetic causes such as cancers and chromosomal disorders, growing popularity of personalized medicine due to rising demand for targeted therapies, as well as rising technological advancements leading to the development of newer technologies such as third-generation sequencing are estimated to take the DNA sequencing market forward. Additionally, the growing focus on research in both industry and academia on genetic as well as infectious diseases and drug development is further expected to boost the market for DNA sequencing during the forecast period (2022-2027).

DNA Sequencing Market Dynamics:

One of the most prominent factors driving the demand for DNA sequencing market is the increasing prevalence of genetic disorders. As per the Department of Health & Social Care, United Kingdom (2022), rare diseases though quite uncommon

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individually, are collectively quite common. For instance, as per the source stated above, 1 in 17 people are affected by a rare condition across the globe. The source further stated that in the UK alone, rare diseases affect over 3.5 million people. Furthermore, the data from the World Economic Forum (February 2020) mentioned that nearly 10% of the global population (475 million) people were affected by a rare condition. The Ministry of Health and Family Welfare, India (2022) also states that there are as many as 7,000 rare diseases across the globe out of which 72% are of genetic origins. Rare diseases are often difficult to identify and either remain undiagnosed or result in misdiagnosis. DNA sequencing such as whole genome sequencing offer advantages such as detection of multiple variant types in a single assay thereby providing improved diagnostic field and operation efficiency. Considering such benefits of DNA sequencing, some countries are extensively focusing on genome programs in order to provide better healthcare facilities to patients. The NHS Long Term Plan by the UK government plans to build on the 100,000 genomes program and sequence 500,000 whole genomes by 2023/24 – helping those with a rare disease receive a diagnosis that otherwise would not have been possible. Thus, the market for DNA sequencing is expected to witness remarkable market growth during the forecast period (2022-2027) due to increasing prevalence of rare genetic disorders collectively and the increasing emphasis on identifying the genetic mutations.

Furthermore, another key contributor in the growing popularity of DNA sequencing is the increasing prominence of precision medicine in cancer care. The concept of “precision medicine” or individualizing the treatment plan according to the biological behavior of the tumor is considered a new approach in cancer management. The clinical applications of precision medicine are diverse encompassing screening, diagnosis, prognosis, prediction of treatment response and resistance, early detection of recurrence/metastasis, and biologic cancer stratification. Precision medicine in cancer care is aimed at bringing about therapeutic effects in subset of patients displaying specific molecular/predictive biomarkers. The customization of treatment specific to the patient’s genetic makeup has gained widespread acceptance and attention from physicians. DNA sequencing has been a key component in driving the concept of precision medicine. Advanced sequencing techniques such as next generation sequencing help map the oncogenes and also in tumor analysis and helping develop specific therapeutic agents. Moreover, advantages associated with the technologies such as the simultaneous analysis of a broad spectrum of genetic alterations, including copy number variations, mutations, fusions in multiple genes, and translocations. This resulted in more personalized drugs being approved by regulatory bodies across the globe. For instance, as per the US Food and Drug Administration, out of the total drugs approved in the country in 2020, 39% were categorized as personalized medicine.

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Therefore, the growing prominence of precision medicine and its advantages in disease management are expected to contribute to the growth of DNA sequencing market during the forecast period.

However, technology-related challenges such as sequence alignment, problems with mapping multiple reads and high cost of technology may prove to be restraining factors to the DNA sequencing market growth.

Unlike majority of the markets, the DNA sequencing market witnessed a positive trend during the COVID-19 pandemic. There was an exponential increase in the demand for DNA sequencing products and services across the globe due to the exigent need for sequencing the SARS COV-2 virus genome. Even though other domains where DNA sequencing is employed were affected the lockdown restrictions, the dire need for sequencing the genome of the novel strain of the SARS-CoV-2 virus and the subsequent development of vaccines kept the momentum of the DNA sequencing market. With the return of normalcy across the globe, the future outlook for the DNA sequencing market looks positive during the forecast period.

DNA Sequencing Market Segment Analysis:

DNA Sequencing Market by Products & Services (Instruments, Consumables, and Services), by Technology (Sanger Sequencing, Next-Generation Sequencing, and Long-Read Sequencing), by Application (Disease Diagnosis, Precision Medicine, and Research), By End User (Hospitals & Clinics, Diagnostic Laboratories, Pharmaceutical Companies, and Academic Institutes), and by Geography (North America, Europe, Asia-Pacific, and Rest of the World)

In the technology segment of the DNA sequencing market, the long-read sequencing category is expected to show tremendous potential in revenue growth during the forecast years. This can be ascribed to the advantages associated with long-read sequencing over other DNA sequencing technologies. Long-read sequencing is the emerging technology in DNA sequencing and offers various advantages over NGS and Sanger sequencing. Short-read sequencing though being cost-effective and accurate, also becomes challenging in terms of reconstructing and counting the fragments. Such limitations are overcome by long-read sequencing as the technology allows for reading longer stretches of DNA, subsequently helping de novo assembly, mapping certainty, transcript isoform identification, and detection of structural variants. Two most prominent long-read sequencing technologies are SMRT® sequencing technology by Pacific Biosystems and Oxford Nanopore Technologies. Thus, considering the advantages

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associated with long-read sequencing technology, this category is estimated to perform well in coming years.

North America is expected to dominate the DNA Sequencing Market:

Among all the regions, North America is estimated to amass the largest revenue share in the global DNA sequencing market. This can be ascribed to the high prevalence of cancers, and a supportive regulatory environment among other factors in the region. Furthermore, high disposable income, sophisticated healthcare infrastructure, and increased awareness regarding new sequencing methods and programs also expected to aid in the DNA sequencing market growth in this region.

One of the key supporting factors for the growth of the North America DNA sequencing market is the increasing prevalence of cancers in the United States. As per the figures mentioned by the American Cancer Society, in 2021, it was estimated that 1.9 million new cancer cases would have been diagnosed in the United States. The data provided by the Centers for Disease Control and Prevention (2021), in 2018, 1,708,921 new cases of cancers were reported. For instance, the American Cancer Society estimates that in 2022, approximately 287,850 new cases of invasive breast cancer are expected to be diagnosed in women in the United States. Therefore, the increasing incidence of cancers such as breast cancer in the country is expected to further drive the demand for DNA sequencing such as next-generation sequencing for tumor analysis and identification of prognostic biomarkers thereby contributing in the growth of the United States DNA sequencing market as well the overall growth of the North America DNA sequencing market.

Furthermore, the growing emphasis on genome sequencing such as human genome project and also establishing DNA sequences of other infectious microorganisms. For instance, in April 2021, Biden administration announced USD 1.7 billion investments in managing the spread of COVID-19 variants in the country. The funds were aimed at helping the CDC to improve their sequencing abilities to identify variants of the SARS-CoV-2 virus. There is also a key focus on developing a National Bioinformatics Infrastructure in the country and this investment is thought to support bioinformatics throughout the U.S. public health system, creating a unified system for sharing and analyzing sequence data in a way that protects privacy but allows more informed decision-making.

Thus, all the factors stated above are estimated to contribute in the growth of the United States DNA sequencing market leading to the overall growth of the North America DNA

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sequencing market.

DNA Sequencing Market Key Players:

Some of the key market players operating in the DNA sequencing market includes Agilent Technologies Inc., Biorad Laboratories Ltd, Danaher Corporation, F. Hoffmann-La Roche Ltd, Illumina Inc, PerkinElmer Inc, Merck & Co., Inc, QIAGEN, Thermo Fisher Scientific, PacBio, Macrogen Inc, Oxford Nanopore Technologies plc, CD Genomics, Takara Bio Inc, Promega Corporation, BGI, 10x Genomics, Eurofins Genomics, GENEWIZ (Azenta Life Sciences), and others.

Recent Developmental Activities in DNA Sequencing Market:

In May 2020, F. Hoffman La Roche Ltd. acquired Stratos Genomics, an early-stage sequencing technology company to advance the development of Roche's nanopore sequencer.

In January 2020, Agilent Technologies introduced a new product designed to address key challenges that laboratories encounter when preparing DNA sequencing libraries for their research. The new Agilent SureSelect XT HS2 DNA Kit represents the state-of-the-art in library preparation and target enrichment, offering researchers a complete solution that allows them to choose workflow options that best suit their needs.

Key Takeaways from the DNA Sequencing Market Report Study:

Market size analysis for current DNA sequencing market size (2021), and market forecast for 5 years (2022-2027)

The effect of the COVID-19 pandemic on this market is significant. To capture and analyze suitable indicators, our experts are closely watching the DNA sequencing market.

Top key product/services/technology developments, merger, acquisition, partnership, joint venture happened for last 3 years

Key companies dominating the global DNA sequencing market.

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Various opportunities available for the other competitors in the DNA sequencing market space.

What are the top performing segments in 2021? How these segments will perform in 2027.

Which is the top-performing regions and countries in the current DNA sequencing market scenario?

Which are the regions and countries where companies should have concentrated on opportunities for DNA sequencing market growth in the coming future?

Target Audience who can be benefited from this DNA Sequencing Market Report Study:

DNA sequencing products providers

Research organizations and consulting companies

DNA sequencing-related organizations, associations, forums, and other alliances

Government and corporate offices

Start-up companies, venture capitalists, and private equity firms

Distributors and traders dealing in DNA sequencing services

Various end users who want to know more about the DNA sequencing market and latest technological developments in the DNA sequencing market.

Frequently Asked Questions for DNA Sequencing Market:

1. What is DNA Sequencing?

DNA sequencing is essentially a technique to identify the sequence of the nucleotide base pairs (adenine, guanine, cytosine, and thymine) which form the basis of key

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genetic information. The knowledge of this sequence helps in disease diagnosis, therapy selection, establishing ancestry among other things.

2. What is the global market for DNA Sequencing?

Global DNA sequencing market was valued at USD 10.70 billion in 2021, growing at a CAGR of 18.02% during the forecast period from 2022 to 2027, in order to reach USD 28.85 billion by 2027.

3. What are the drivers for Global DNA Sequencing Market?

Factors such as rising prevalence of various diseases with genetic causes such as cancers and chromosomal disorders, growing popularity of personalized medicine, as well as rising technological advancements leading to the development of newer technologies such as third-generation sequencing are estimated to take the DNA sequencing market forward. Additionally, the growing focus on research in both industry and academia on genetic as well as infectious diseases and drug development is further expected to boost the market for DNA sequencing during the forecast period (2022-2027).

4. Who are the key players operating in Global DNA Sequencing Market?

Some of the key market players operating in the DNA sequencing market includes Agilent Technologies Inc., Biorad Laboratories Ltd, Danaher Corporation, F. Hoffmann-La Roche Ltd, Illumina Inc, PerkinElmer Inc, Merck & Co., Inc, QIAGEN, Thermo Fisher Scientific, PacBio, Macrogen Inc, Oxford Nanopore Technologies plc, CD Genomics, Takara Bio Inc, Promega Corporation, BGI, 10x Genomics, Eurofins Genomics, GENEWIZ (Azenta Life Sciences), and others.

5. Which region would acquire significant market share in the DNA Sequencing Market?

Among all the regions, North America is estimated to amass the largest revenue share in the global DNA sequencing market. This can be ascribed to the high prevalence of cancers, and a supportive regulatory environment among other factors in the region. Furthermore, high disposable income, sophisticated healthcare infrastructure, and increased awareness regarding new sequencing methods and programs also expected to aid in the DNA sequencing market growth in this region.

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