Bioinformatics Market Assessment, By Product [Knowledge Management Tools, Bioinformatics Services, Bioinformatics Platforms], By Application [DNA Sequences, Genome Analysis, Evolutionary Biology, Immunoinformatics, Precision Medicine, Gene Expression, Proteomics, Others], By Sector [Medical Biotechnology, Animal Biotechnology, Plant Biotechnology, Environmental Biotechnology, Forensic Biotechnology, Others], By Region, Opportunities and Forecast, 2017-2031F

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Report description:

The global bioinformatics market is projected to witness a CAGR of 11.55% during the forecast period 2024-2031F, growing from USD 12.65 billion in 2023 to USD 30.33 billion in 2031F. Various factors are shaping the global bioinformatics market, such as growing investments, technological advancements, high demand for bioinformatics platforms, extensive genome analysis use, and increased industry partnerships. The global bioinformatics market is undergoing major growth because of the rise in research investments, which is expected to persist in the forecast period. As a result of these investments made by private and public institutions, there will be a rise in the use of bioinformatics and the development of innovative solutions in the industry. Advanced technologies like artificial intelligence, cloud computing, and machine learning are expanding the global bioinformatics market. Technologies have made it possible to analyze data quickly and accurately through the development of new bioinformatics tools and platforms.

There is expected to be a persistent demand for bioinformatics platforms, which will propel the expansion of the global bioinformatics market because of their ability to analyze large volumes of genetic data. Bioinformatics algorithms and tools are preferred for genome analysis as they enable researchers to easily find patterns and relationships within data. These tools can easily process a large amount of data obtained from genome analysis and increase reliability by decreasing the chances of error.

The North American region is currently dominating the global bioinformatics market due to abundant resources, significant investments in research and development of innovative solutions, and well-established infrastructure. Major players in the biotechnology industry are situated in the United States and Canada, making them hubs for the bioinformatics sector.
For example, to deliver cutting-edge solutions that will propel the use of precision medicine globally, SOPHiA GENETICS, a cloud-native software company in the healthcare space and a leader in data-driven medicine, announced a strategic partnership with Strand Life Sciences, a pioneer in bioinformatics and diagnostics, in April 2024. OPHiA GENETICS will support Strand through the decentralized SOPHiA DDM Platform through its curated variant databases and expertise in bioinformatics solutions. The companies will work together on strategic test co-development and other initiatives to enhance health outcomes in India and worldwide.

Growing Investments in Bioinformatics to Bolster the Global Bioinformatics Market

Major players in biotechnology are directing the funds into the bioinformatics sector as it would benefit the companies in numerous ways. Through these investments, the business can offer new technologies and improved insights while branching into new markets and geographical areas. Large-scale expenditures can show their dedication to driving innovation and expanding the global bioinformatics sector. Investing in bioinformatics will further solidify the position of biotech companies and expand their customer base among those looking to extract valuable insights from complex genomic data. For example, FOXO Technologies Inc., a leading company in the commercialization of epigenetic biomarker technology, announced the launch of its Bioinformatics Services in July 2023. The company hopes this platform will accelerate biological, biotechnological, and healthcare breakthroughs and revolutionize the expanding epigenetic research field. By providing a cutting-edge set of bioinformatic tools, FOXO aims to help its clients process, analyze, and interpret data sets more quickly and accurately, make discoveries more quickly, and better understand complicated diseases.

Technological Advancements to Drive the Global Bioinformatics Market

Technological advancements such as artificial intelligence, machine learning, and cloud computing drive the global bioinformatics market. The companies are adding more artificial intelligence (AI) and natural language processing (NLP) based technologies to analyze the insights and make informed decisions. Companies are also developing a new secondary analysis solution that is compliant with regulations for quick next-generation sequencing (NGS) analysis in clinical labs. As AI and human curation progress, companies like Qiagen Digital Insights provide dependable, superior molecular intelligence to support and expedite decision-making. Scalability, quick response times, and automated workflows are all provided by Qiagen Digital Insights. It also provides solutions that can be customized to match any database, API, service, or workflow application.
For example, Cyrus Biotechnology spun out Levitate Bio and Rosetta service provider on June 11, 2024, to provide automated, tailored AI solutions for biopharmaceutical drug discovery. The RosettaCommons Foundation will have a for-profit subsidiary called Levitate. For biopharma companies, Levitate offers advanced active pharmaceutical ingredients (API) tools, custom IT solutions, and graphical user interface (GUI) software that was built at Cyrus, where the platform produced dozens of biologics that were ready for the investigational new drug application (IND).

High Demand for Bioinformatics Platforms to Drive Market Growth

To offer their clients premium, personalized bioinformatics services, healthcare organizations are adopting bioinformatics platforms. Companies are creating software that allows scientists and medical professionals to evaluate and comprehend vast volumes of genetic data. By mapping a patient's complete genome rather than just one DNA panel, the bioinformatics platform analyses enormous quantities of patient data that may be used for more precise diagnosis and focused, efficient therapy. The platforms facilitate the implementation of genome sequencing for physicians and patients, offering fast access to information that can provide timely therapy modifications and an increased likelihood of a favorable outcome. For instance, launching its latest innovation at Biomarkers UK in February 2024, Metabolon, Inc. is a global leader in providing metabolomics solutions that advance a wide range of life science research, diagnostic, therapeutic development, and precision medicine applications.

Extensive Use in Genome Analysis to Propel the Bioinformatics Market

Bioinformatics is extensively used for genome analysis, propelling the growth of the global bioinformatics market. Bioinformatics is used throughout the whole process of creating genome-based cancer therapeutics. For instance, bioinformatics is used to evaluate the sequence and any associated molecular data to identify the precise genetic changes within the sample genome during the initial stages of gene variation detection. The statistical analysis of Single Nucleotide Polymorphism (SNP) data and the

identification of hallmark SNPs for a particular haplotype block are actively influenced by bioinformatics. Dynamic programming is a bioinformatic method used to find the optical alignment of genetic sequences.

For instance, SOPHiA GENETICS, a global leader in data-driven medicine and a cloud-native healthcare technology company, announced in May 2024 that it is working with Microsoft Corporation and NVIDIA Corporation to combine their technological and genomics expertise to provide healthcare institutions with a streamlined and scalable whole genome sequencing (WGS) analytical solution.

North America Dominating the Bioinformatics Market

North America accounts for a significant share of the bioinformatics market due to the region's strong research and development, numerous advanced bioinformatics tools, and various technology-based companies, such as Oracle and Microsoft, and many others. The National Institutes of Health (NIH) and the National Science Foundation (NSF), two of North America's best scientific institutions and organizations, are major funders of bioinformatics research and development. There is increased demand for bioinformatics in North America because of the increasing number of chronic patients. In the United States, there were 609,820 cancer-related fatalities and 1,958,310 new cases of cancer in 2023. According to the Canadian Cancer Statistics, 45% of men and 43% of women in Canada will have cancer at some point in their lives. The aging and growing Canadian population is contributing to a steady increase in the number of new cancer cases.

For example, Next Gen Diagnostics announced on June 11th, 2024, that it will open its first laboratory in Cambridge, Massachusetts, offering partners and clients in the United States fully integrated, affordable bacterial sequencing and bioinformatics services. Next Gen Diagnostics provides sequencing along with comprehensive bioinformatics data at the lowest cost in the United States by utilizing the benefits of its automated pathogen bioinformatics systems and high throughput microfluidic sequencing sample preparation technology, NGD100.

Future Market Scenario (2024-2031F)

- Bioinformatics is increasingly being used in the forensic industry, which will drive the growth of the global bioinformatics market in the coming years.
- The increasing use of bioinformatics for synthetic biology will aid in creating new biological pathways, driving the growth of the global bioinformatics market.
- Analysis of large amounts of data is becoming easier with bioinformatics.
- Bioinformatics is extensively used to develop personalized treatment approaches for patients, which will increase demand in the global bioinformatics market.

Key Players Landscape and Outlook

Companies in the global bioinformatics market are forming collaborations to leverage collective expertise to assist partner organizations worldwide in implementing next-generation precision medicine to enhance patient care. Collaboration between two businesses enables them to leverage their bioinformatics knowledge to increase the capacity for precise analysis of important healthcare data and to promote the application of data-driven decision-making worldwide. The partnership uses both businesses' strong positions in the industry to give people access to cutting-edge bioinformatics services, advanced genomics technologies, and creative diagnostic solutions.

For example, through its wholly owned subsidiary MGRC Therapeutics Sdn Bhd ("MGRCT"), Malaysian Genomics Resource Centre Berhad (MGRC) and Twistcode Technologies Sdn Bhd (Twistcode) signed a memorandum of understanding (MoU) in May 2024 to concentrate on the Bioinformatics Enhanced-Accelerated Services Terminal (B.E.A.S.T.), a state-of-the-art platform that aims to transform bioinformatics services throughout Malaysia and the Middle East.

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