Spatial Genomics and Transcriptomics Market Assessment, By Technique [Spatial Genomic Analysis, Spatial Transcriptomics], By Product [Instruments, Consumables, Software], By Application [Translational Research, Drug Discovery and Development], By End-user [Pharmaceutical and Biotechnology Companies, Contract Research Organizations, Academic and Research Institutes], By Region, Opportunities and Forecast, 2017-2031F

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Report description:

Global spatial genomics and transcriptomics market is projected to witness a CAGR of 14.02% during the forecast period 2024-2031F, growing from USD 373.21 million in 2023 to USD 1066.11 million in 2031F. The market has experienced significant growth in recent years and is expected to maintain a strong pace of expansion in the coming years.
The global market for spatial genomics and transcriptomics is expanding because of factors such as the rise in biomarker identification using spatial omics, the increased focus of pharmaceutical, biopharmaceuticals and biotech companies on novel drug discovery and development programs, and the rise in adoption of these technologies by small and startup businesses. To evaluate homeostasis, cellular function, and changes in gene expression, information gathered from the genetic components of the cells, such as the chromatin network, ribonucleic acid (RNA), and deoxyribonucleic acid (DNA), is essential. This information is also connected with the progression and stages of the disease. On the other hand, nothing is known about the transcriptome and genomic level of localization, differentiation, and spatial organization of the tissue and cells. Such data cannot be efficiently obtained using traditional instruments, and as a result, crucial information about cellular machinery is usually lost in translation. Spatial genomics and transcriptomics are fields of study that are fast evolving to cover this knowledge gap. Consequently, there is a great need for transcriptomics and spatial genomics, which is driving the global market's expansion. Additionally, the market is

expanding due to the rising need for spatial genomics and transcriptomics in clinical development and research in fields like immunology, neurology, cardiovascular disease, and infectious disease. Additionally, the introduction of multiplexed, high-throughput systems and fluorescence in-situ hybridization (FISH) technology will create significant prospects for the expansion of the global market for spatial genomics and transcriptomics. For instance, AtlasXomics Inc. and EpiCypher, Inc. joined forces in an agreement that they signed in January 2024 to develop CUT&Tag kits and test services for applications involving spatial epigenomics.

Advancements in Sequencing and Microarray Technologies Leading to Market Growth

Two major reasons propelling the growth of the global market for spatial genomics and transcriptomics are sequencing and microarray technologies. Both these technologies are essential for allowing scientists to investigate the arrangement and functionality of genes in particular tissues and sequences. Next-generation sequencing (NGS) and other sequencing technologies allow the sequencing of individual DNAs or RNAs of different cells or tissues, giving a high-resolution picture of the transcriptome or genome. DNAnexus, Inc. and Curio Bioscience partnered in February 2024 to expedite data analysis for large-scale spatial transcriptomics projects. As a result, users of the Curio Seeker Spatial Mapping Kit can now process unbiased datasets from various tissue types and species using DNAnexus Inc.'s Precision Health Data Cloud. This makes it possible to identify the genes and patterns of gene expression linked to particular cell types, tissues, or illnesses. In spatial genomics and transcriptomics, sequencing technologies are being increasingly used to identify cell types and interactions in complex tissues, such as the brain, immune cells, and tumor microenvironments. On the other hand, several genes can have their patterns of gene expression simultaneously identified due to microarray technologies.

Microarrays can be used in large-scale experiments to find biomarkers or gene signatures linked to certain diseases, or they can be used to analyze gene expressions in individual cells or tissues. The Nanostring nCounter system is one example of a spatially resolved microarray technology that enables simultaneous detection of gene expression in individual cells or tiny tissue areas. For instance, the Visium HD Spatial Gene Expression Assay was commercially introduced by 10x Genomics, Inc. in March 2024, enabling researchers to do single-cell resolution transcriptome analysis of Formalin-Fixed Paraffin-Embedded (FFPE) samples. Single-cell sequencing and spatially resolved transcriptomics are two examples of the new products and applications being developed due to the adoption of sequencing and microarray technologies in spatial genomics and transcriptomics. The market is expanding because more organizations and researchers can use these technologies because of their availability.

Growth in Market due to Increasing Adoption of Bioinformatics

One major element propelling the global market for spatial genomics and transcriptomics is bioinformatics. Large amounts of data are generated by spatial genomics and transcriptomics, and this type of data requires sophisticated computational tools and algorithms for analysis and interpretation. Bioinformatics provides the methods and instruments required to analyze and interpret spatial genomics and transcriptomics data. Using bioinformatics tools, scientists can recognize trends in the genomic organization and gene expression of particular tissues, as well as the functional connections between genes and proteins. Furthermore, a more thorough understanding of gene activity and regulation is made possible by these technologies and their ability to integrate transcriptomics and spatial genomics data with other forms of genomic and proteomic data. Spatial genomics and transcriptomics are seeing increasing product and application development driven by the availability of bioinformatics tools.

Major market players are developing analysis tools and software platforms that allow researchers to combine spatial genomics and transcriptomics and data with other kinds of genomic and proteomic data, as well as analyze and visualize the data. Additionally, Curio Bioscience announced the release of Curio Seeker in February 2023. Curio Seeker is a whole-transcriptome spatial mapping kit that uses a high-resolution imaging method. The industry is expanding due to the availability of bioinformatics tools, which make the technology more accessible to researchers and businesses, along with the development of open-source bioinformatics databases and tools like the Allen Brain Atlas, which let scientists access and examine spatial genomics and transcriptomics data from a range of sources.

For instance, Thermo Fisher Scientific Inc. and Akoya Biosciences, Inc. announced in January 2024 a licensing and distribution agreement that would enable Akoya to market its spatial biology solutions in conjunction with Thermo Fisher ViewRNA In-Situ Hybridization Assays for detecting protein and RNA biomarkers in tissue samples.

Increasing Dominance of Consumables Segment to Drive Market Growth

Due to the growing number of cancer cases, consumables related to spatial genomics and transcriptomics are anticipated to have

a substantial market share over the projected period. These consumables are essential for the advanced diagnosis of cancer. According to a datasheet released by the World Health Organization in February 2024, the United States expected 1.9 million new cases of cancer diagnoses in the year 2021. The survey also stated that the most frequent type of cancer in 23 nations was cervical cancer and that 400,000 children worldwide were diagnosed with cancer every year. Breast, lung, colon, rectum, and prostate cancers are the most prevalent types of cancer. Therefore, it is anticipated that the rising incidence of cancer patients will increase the demand for consumables and spur this segment's expansion. Additionally, it is anticipated that the growing number of market player initiatives, including partnerships, collaborations, and product launches, would support the expansion of the segment under study. For example, Oxford Nanopore Technologies plc. and 10x Genomics Inc. partnered in October 2022 to provide consumables for single-cell and spatial full-length isoform transcript sequencing that are affordable for any laboratory. These collaborations that bring out cutting-edge consumables are anticipated to support the segment's expansion as well. Therefore, it is anticipated that the growing number of cancer cases and the evolving market players' strategies will support the expansion of the segment under study.

North America to Dominate the Spatial Genomics and Transcriptomics Market

Due to the growing focus on genomics-based R&D and the growing acceptance of spatial profiling solutions in cancer research, North America is anticipated to hold a significant market share. The region is seeing an increase in both public and private sector investment, which supports the market expansion. Most of the share is attributable to significant funding for cancer research, which was necessary to meet the increasing demand for cutting-edge diagnosis and treatment options in the United States.

For example, according to the National Cancer Institute, it is projected that in 2024, there will be 2,001,140 new instances of cancer identified in the United States, and 611,720 deaths from the illness. The most common cancers are breast cancer, prostate cancer, bronchus cancer, colon and rectum cancer, skin melanoma, bladder cancer, kidney and renal pelvis cancer, non-hodgkin lymphoma, endometrial cancer, pancreatic cancer, leukemia, thyroid cancer, and liver cancer. The list is arranged in descending order based on estimated new cases in 2024.

According to the same source, in 2024, colorectal, lung, and prostate cancers will be responsible for 48% of all cancer diagnoses in men. Breast, lung, and colorectal cancers are the three most frequent cancers in women; by 2024, they will be responsible for 51% of all new cancer diagnoses in this population. Given the high incidence of cancer in North American nations, demand for sophisticated diagnostics like transcriptomics and spatial genomics is predicted to soar, propelling the market's expansion. Additionally, the introduction of genomics-based preventative medicine by several general hospitals and other such relevant facilities will support the expansion of the market, as will newer advances and product launches. For example, the Comet spatial instrument by Lunaphore Technologies S.A., which is a Swiss subsidiary of Bio-Techne Corporation, was installed at Nikon Corporation's Bioimaging Lab in Boston in March 2024 as part of a partnership between the two companies to increase access to contract services for spatial biology in U.S. This suggests that market players in North America are heavily invested in genomics, which will support the market's expansion during the projected timeframe.

Future Market Scenario (2024-2031F)

The main factors contributing to the anticipated growth of the spatial genomics and transcriptomics market are the increasing prevalence of chronic disorders like cancer, increasing demand for personalized medicine, and increasing demand for bioinformatics services. Not only that but rising awareness in people about preventive care and the need for microarray are also factors that will always propel the market growth in the future. Given that technology is advancing, cutting-edge technology in the area can also be expected. Players in this market are expanding at an unparalleled rate, introducing cost-effective and efficient technologies. For instance, Bio-Techne Corporation and Lunaphore Technologies S.A. announced in April 2023 that they will collaborate to design and create the first automated spatial omics multi-workflow in history. The system will be built to offer total panel design flexibility.

Key Players Landscape and Outlook

Several companies such as NanoString Technologies, Inc., Bio-Techne Corporation, 10x Genomics Inc., Akoya Biosciences, Inc., Curio Bioscience, Bio-Rad Laboratories, Inc., Danaher Corporation, PerkinElmer, Inc., Illumina, Inc., Lunaphore Technologies S.A., etc., are expanding business by planning and adopting new strategies. They are complying with new strategic initiatives regarding the launches of newly developed technologies and mechanisms to help researchers and bring up their market presence. New product launches, agreements based on contracts, acquisitions and mergers, investments, and partnerships are a few ways

through which they are trying to achieve the same.
Acrobat Genomics, NanoString Technologies, Inc., and Illumina, Inc. partnered with Stanford Medicine in June 2023 to use GeoMx Digital Spatial Profiling (DSP) technology to find novel pharmacological targets for gene editing-based treatments. Furthermore, the partnership seeks to enhance the therapeutic alternatives available to individuals with interstitial lung disorders, including idiopathic pulmonary fibrosis. Such R&D programs are likely to bring new products to the market.

Table of Contents:

5.1.1.2.By Volume
5.1.2.By Technique
5.1.2.1.Spatial Genomic Analysis
5.1.2.1.1.Fluorescence In-situ Hybridization
5.1.2.1.2.Sequencing
5.1.2.1.3.Others
5.1.2.2.Spatial Transcriptomics
5.1.2.2.1.Immunohistochemistry
5.1.2.2.2.In-situ Hybridization
5.1.2.2.3.Sequencing
5.1.2.2.4.Microscopy-Based RNA Imaging
5.1.2.2.5.Others
5.1.3.By Product
5.1.3.1.Instruments
5.1.3.2.Consumables
5.1.3.3.Software
5.1.4.By Application
5.1.4.1.Translational Research
5.1.4.2.Drug Discovery and Development
5.1.5.By End-user
5.1.5.1.Pharmaceutical and Biotechnology Companies
5.1.5.2.Contract Research Organizations
5.1.5.3.Academic and Research Institutes
5.1.6.United States*
5.1.6.1.Market Size & Forecast
5.1.6.1.1.By Value
5.1.6.1.2.By Volume
5.1.6.2.By Technique
5.1.6.2.1.Spatial Genomic Analysis
5.1.6.2.1.1.Fluorescence In-situ Hybridization
5.1.6.2.1.2.Sequencing
5.1.6.2.1.3.Others
5.1.6.2.2.Spatial Transcriptomics
5.1.6.2.2.1.Immunohistochemistry
5.1.6.2.2.2.In-situ Hybridization
5.1.6.2.2.3.Sequencing
5.1.6.2.2.4.Microscopy-Based RNA Imaging
5.1.6.2.2.5.Others
5.1.6.3.By Product
5.1.6.3.1.Instruments
5.1.6.3.2.Consumables
5.1.6.3.3.Software
5.1.6.4.By Application
5.1.6.4.1.Translational Research
5.1.6.4.2.Drug Discovery and Development
5.1.6.5.By End-user
5.1.6.5.1.Pharmaceutical and Biotechnology Companies

5.1.6.5.2.Contract Research Organizations
5.1.6.5.3.Academic and Research Institutes
5.1.7.Canada
5.1.8.Mexico
*All segments will be provided for all regions and countries covered
5.2.Europe
5.2.1.Germany
5.2.2.France
5.2.3.Italy
5.2.4.United Kingdom
5.2.5.Russia
5.2.6.Netherlands
5.2.7.Spain
5.2.8.Turkey
5.2.9.Poland
5.3.Asia-Pacific
5.3.1.India
5.3.2.China
5.3.3.Japan
5.3.4.Australia
5.3.5.Vietnam
5.3.6.South Korea
5.3.7.Indonesia
5.3.8.Philippines
5.4.South America
5.4.1.Brazil
5.4.2.Argentina
5.5.Middle East and Africa
5.5.1.Saudi Arabia
5.5.2.UAE
5.5.3.South Africa
6.Market Mapping, 2023
6.1.By Technique
6.2.By Product
6.3.By Application
6.4.By End-user
6.5.By Region
7.Macro Environment and Industry Structure
7.1.Demand Supply Analysis
7.2.Import Export Analysis
7.3.Value Chain Analysis
7.4.PESTEL Analysis
7.4.1.Political Factors
7.4.2.Economic System
7.4.3.Social Implications
7.4.4.Technological Advancements
7.4.5.Environmental Impacts

*Companies mentioned above DO NOT hold any order as per market share and can be changed as per information available during research work.

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