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Spatial Genomics and Transcriptomics Market Forecasts to 2030 – Global Analysis By Product (Consumables, Instruments, Software & Analytics, Services and Other Products), Technology, Application, End User and By Geography

https://marketpublishers.com/r/S89DA1D31F19EN.html
Date: February 2025
Pages: 150
Price: US$ 4,150.00 (Single User License)
ID: S89DA1D31F19EN

Abstracts

According to Stratistics MRC, the Global Spatial Genomics & Transcriptomics Market is accounted for $303.2 million in 2024 and is expected to reach $672.5 million by 2030 growing at a CAGR of 14.2% during the forecast period. Spatial genomics and transcriptomics are advanced technologies that combine spatial information with molecular data to study the organization, function, and dynamics of cells and tissues at high resolution. They provide insights into gene expression and regulation in their native spatial context, allowing researchers to map the spatial distribution of DNA and RNA within a biological sample. Spatial genomics focuses on understanding the three-dimensional structure and organization of the genome within the nucleus, while transcriptomics captures the spatial distribution of RNA transcripts across tissues, providing a comprehensive view of gene expression patterns in situ.

According to the Centers for Disease Control (CDC) In 2020, In American Hospitals alone, hospital-acquired infections alone accounted for an estimated 1.7 million infections. However, the report states that patients who acquire infections from surgery spend, on average, an additional 6.5 days in the hospital and are five times more likely to be readmitted after discharge.

Market Dynamics:

Driver:

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Increasing emphasis on personalized therapies

Personalized medicine aims to tailor healthcare to individual patients based on their genetic, molecular, and cellular profiles. To be effective, spatial genomics and transcriptomics are used to study gene activity in specific tissue regions, revealing heterogeneity within tissues. Spatial tools can map complex interactions between cells in different tissue regions, helping to pinpoint disease mechanisms and treatment targets in diseases like cancer, neurological disorders, and autoimmune diseases.

Restraint:

Complexity of data analysis

Spatial genomics and transcriptomics generate large, complex datasets that require specialized tools and expertise. Challenges include specialized knowledge requirements, lack of accessible tools, time-intensive learning curve, and resource constraints. Non-specialists, such as clinical practitioners or molecular biologists, struggle to integrate these technologies into their workflows. Accessible tools, often proprietary or open-source, require advanced coding skills, limiting usability for non-technical users. Additionally, smaller research labs may lack the budget or personnel to employ bioinformaticians or invest in training.

Opportunity:

Continuous innovation in imaging, sequencing, and computational tools

Modern imaging technologies like super-resolution microscopy and light-sheet microscopy enable detailed visualization of gene expression and molecular interactions in tissues. Live-cell imaging provides dynamic insights into real-time cellular and molecular processes, enhancing translational research applications. Improved imaging tools attract new researchers and drive demand for spatial genomics technologies in areas like developmental biology, oncology, and neuroscience propelling the market growth.

Threat:

Lack of standardized protocols and benchmarking

Spatial genomics and transcriptomics involve complex workflows like tissue preparation,

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imaging, sequencing, and data analysis. The absence of universal protocols can lead to inconsistencies in results. Sample preparation variability, such as tissue fixation methods, sectioning techniques, storage conditions, imaging and sequencing differences, and data analysis challenges, can result in varying gene expression profiles, spatial resolution, and data quality. Additionally, computational pipelines for data processing and interpretation can introduce biases, affecting the reliability of gene expression data.

Covid-19 Impact

The COVID-19 pandemic significantly impacted the Spatial Genomics & Transcriptomics Market, accelerating the adoption of advanced molecular technologies for understanding viral mechanisms and host responses. Researchers utilized spatial genomics to explore SARS-CoV-2 interactions with human tissues, fueling demand for cutting-edge tools. However, the pandemic also led to disruptions in supply chains. Despite these challenges, the urgency to study COVID-19 and other diseases has spurred innovations and investments, positively influencing the market's long-term growth prospects.

The carbon fiber segment is expected to be the largest during the forecast period

Over the forecasted timeframe, the autoclave processing segment is anticipated to be the largest market share owing to high-performance optical components like microscope stages, lenses, and supports, improving precision and stability in imaging systems, especially in spatial transcriptomics. Carbon fiber-integrated equipment offers better functionality and durability, making spatial genomics tools more efficient and attractive to researchers, potentially increasing adoption rates in labs, hospitals, and research institutions.

The autoclave processing segment is expected to have the highest CAGR during the forecast period

The autoclave processing segment is expected to have the highest CAGR growth during the estimation period autoclaving is crucial for sterilizing tissue samples and instruments that come into contact with genomic material, preventing contamination during spatial transcriptomics experiments. It also helps in tissue fixation by denaturing proteins and stabilizing tissues, preserving the spatial integrity of tissue sections, essential for accurate spatial gene expression studies. Both sterilization and tissue fixation are essential for efficient gene expression studies.

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Region with largest share:

During the projected timeframe, the North America region is expected to hold the largest market share during the forecast period due to the advanced healthcare systems that enable the integration of spatial genomics into clinical practices, enabling precision medicine in oncology, neurology, and immunology. With the ability to adopt complex technologies and financial resources, North American hospitals and diagnostic centers are able to make personalized medicine a reality. Spatial genomics aids in biomarker discovery, drug development, and targeted therapies, particularly for complex diseases like cancer and neurological disorders.

Region with highest CAGR:

The Asia Pacific region is predicted to witness the highest CAGR growth rate throughout the forecast period owing to china, India, Japan, and South Korea investing heavily in genomic research, particularly for personalized medicine, cancer research, and infectious disease genomics. These nations are focusing on genomic sequencing, precision medicine, and spatial transcriptomics to understand disease biology at a tissue-specific level. Leading research centers in the APAC region, such as the beijing genomics institute, the institute of bioinformatics, and riken institute.

Key players in the market

Some of the key players in Spatial Genomics & Transcriptomics market include 10X Genomics, Inc., Akoya Biosciences, Inc., BioSpyder Technologies Inc., Bio-Techne Corporation, Dovetail Genomics, LLC, Fluidigm Corporation, Genomic Vision SA, Illumina, Inc., Lunaphore Technologies SA, Nanostring Technologies, Inc., Natera Inc., PerkinElmer Inc., Rarecyte, Inc., Resolve Biosciences, S2 Genomic, Seven Bridges Genomics, Singular Genomics System, Inc. and Veranome Biosystems LLC.

Key Developments:

In November 2024, Illumina, Inc. announced that it will release TruSight™ Oncology 500 v2 (TSO 500 v2), a new version of its flagship cancer research assay to enable comprehensive genomic profiling (CGP). The assay is currently under development, with global release planned for mid-2025.

In October 2024, Illumina, Inc. unveiled its MiSeq™ i100 Series of sequencing systems,

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delivering unparalleled benchtop speed and simplicity to advance next-generation sequencing (NGS) for labs.

In January 2024, PerkinElmer announced that it has acquired Covaris, a leading developer of solutions to empower life science innovations. The merger will accelerate Covaris' growth potential and expand PerkinElmer's existing life sciences portfolio into the high-growth diagnostics end market.

Products Covered:

- Consumables
- Instruments
- Software & Analytics
- Services
- Other Products

Technologies Covered:

- Spatial Transcriptomics
- Spatial Genomics
- Other Technologies

Applications Covered:

- Tumor Heterogeneity
- Drug Resistance
- Immunotherapy
- Brain Development

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- Neurodegenerative Diseases
- Neural Circuits
- Immune Response to Infection
- Tissue Development
- Organogenesis & Stem Cell Biology
- Pathogen-Host Interactions
- Antimicrobial Resistant
- Other Applications

End Users Covered:

- Pharmaceutical & Biotechnology Companies
- Academic Research Institutions
- Hospitals & Clinics
- Oncology & Neurology
- Immunology & Developmental Biology
- Other End Users

Regions Covered:

- North America
  - US

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- Canada
- Mexico

Europe

- Germany
- UK
- Italy
- France
- Spain
- Rest of Europe

Asia Pacific

- Japan
- China
- India
- Australia
- New Zealand
- South Korea
- Rest of Asia Pacific

South America

- Argentina
- Brazil

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Chile

Rest of South America

Middle East & Africa

Saudi Arabia

UAE

Qatar

South Africa

Rest of Middle East & Africa

What our report offers:
- Market share assessments for the regional and country-level segments
- Strategic recommendations for the new entrants
- Covers Market data for the years 2022, 2023, 2024, 2026, and 2030
- Market Trends (Drivers, Constraints, Opportunities, Threats, Challenges, Investment Opportunities, and recommendations)
- Strategic recommendations in key business segments based on the market estimations
- Competitive landscaping mapping the key common trends
- Company profiling with detailed strategies, financials, and recent developments
- Supply chain trends mapping the latest technological advancements

Free Customization Offerings:

All the customers of this report will be entitled to receive one of the following free customization options:

Company Profiling

Comprehensive profiling of additional market players (up to 3)

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SWOT Analysis of key players (up to 3)

Regional Segmentation

Market estimations, Forecasts and CAGR of any prominent country as per the client's interest (Note: Depends on feasibility check)

Competitive Benchmarking

Benchmarking of key players based on product portfolio, geographical presence, and strategic alliances

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Note: Tables for North America, Europe, APAC, South America, and Middle East & Africa Regions are also represented in the same manner as above.

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