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Single-Cell Analysis Transcriptomics Market Forecasts to 2030 – Global Analysis By Product (Instruments and Consumables), Analysis Type (Gene Expression Profiling, Epigenomics, Metabolomics, Proteomics and Other Analysis Types), Sample Type, Workflow Stage, Technology, Application, End User and By Geography

https://marketpublishers.com/r/S453225542B4EN.html
Date: February 2025
Pages: 150
Price: US$ 4,150.00 (Single User License)
ID: S453225542B4EN

Abstracts

According to Stratistics MRC, the Global Single-Cell Analysis Transcriptomics Market is accounted for $5.22 billion in 2024 and is expected to reach $16.01 billion by 2030 growing at a CAGR of 20.5% during the forecast period. Single-cell analysis transcriptomics is a cutting-edge approach to studying gene expression at the individual cell level. It enables the discovery of rare cell types, cell states, and dynamic processes such as differentiation. By using various technologies, researchers can uncover critical insights into development, disease mechanisms, and therapeutic targets, offering unprecedented precision in understanding complex biological systems at a single-cell resolution.

According to the American Cancer Society report, in 2022, there were an estimated 1.9 million new cancer cases diagnosed and 609,360 cancer deaths in the U.S.

Market Dynamics:

Driver:

Rising demand for precision medicine

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As precision medicine focuses on tailoring treatments based on individual genetic and molecular profiles, single-cell transcriptomics provides critical insights into cellular heterogeneity, enabling researchers to understand how diseases manifest at the cellular level. By analyzing gene expression at single-cell resolution, this technology helps identify rare cell populations, disease biomarkers, and therapeutic targets, advancing personalized treatment strategies. Its application in oncology, immunology, and rare diseases further fuels the market's expansion, ensuring more accurate diagnostics and treatment options, which boosts demand in the healthcare sector.

Restraint:

Complexity of data analysis

The complexity of data analysis in single-cell analysis transcriptomics arises from the large volume of data generated, which requires sophisticated computational methods to interpret. Variability between cells, dropout events, and noise further complicate the process. Researchers must handle data integration, clustering, and interpretation across diverse samples, demanding advanced bioinformatics expertise. The need for specialized tools and high-performance computing infrastructure adds to the challenge. This complexity thereby slowdowns widespread adoption of single-cell technologies

Opportunity:

Growing investments in genomics research

Increased funding from governments, private organizations, and venture capital firms supports the development of more affordable, precise, and scalable single-cell technologies. This investment enables better understanding of complex biological processes, such as gene expression, differentiation, and disease mechanisms. As a result, it accelerates the adoption of single-cell transcriptomics in diverse fields, including cancer research, immunology, and regenerative medicine. Moreover, it fosters collaborations between research institutions, biotechnology companies, and contract research organizations, further advancing the market's growth and application.

Threat:

Ethical concerns

Ethical concerns in single-cell analysis transcriptomics arise mainly from the use of

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human tissues, especially for research involving sensitive conditions like genetic diseases, cancer, and reproductive health. Issues like consent, privacy, and the potential for misuse of genetic data create regulatory challenges. The ethical complexity of handling personal and identifiable data also raises concerns about data security. These factors can slow market growth by increasing the costs and time required to obtain ethical approvals, limit the scope of research, and deter collaboration between institutions and industry players.

Covid-19 Impact

The covid-19 pandemic accelerated the adoption of single-cell analysis transcriptomics, driving demand for advanced tools to study viral-host interactions and immune responses at cellular resolution. However, the market faced challenges such as disrupted supply chains, delayed research projects, and reduced funding for non-covid studies. Despite these setbacks, the pandemic underscored the critical role of single-cell technologies in addressing global health challenges, fostering long-term market growth.

The cancer genomics segment is expected to be the largest during the forecast period

The cancer genomics segment is predicted to secure the largest market share throughout the forecast period. Single-cell analysis transcriptomics is revolutionizing cancer genomics by providing unparalleled insights into tumor heterogeneity, clonal evolution, and the tumor microenvironment. This approach identifies rare cancer cell subpopulations, tracks disease progression, and uncovers mechanisms of therapy resistance. This precision enhances understanding of cancer biology, paving the way for personalized and targeted therapeutic interventions.

The contract research organizations (CROs) segment is expected to have the highest CAGR during the forecast period

The contract research organizations (CROs) segment is anticipated to witness the highest CAGR during the forecast period. CROs are increasingly leveraging single-cell analysis transcriptomics to support drug discovery and development. This technology aids in identifying molecular targets, understanding disease mechanisms, and evaluating drug efficacy at a cellular resolution. By offering expertise in bioinformatics and advanced platforms, CROs ensure high-quality results, facilitating the development of precision medicines.

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Region with largest share:

Asia Pacific is expected to register the largest market share during the forecast period fuelled by increasing investments in genomics research, government initiatives to advance healthcare, and the rising adoption of precision medicine. Countries like China, Japan, and India are leading the region with growing research infrastructure and collaborations between academia and industry. Additionally, the high prevalence of chronic diseases and cancer drives the demand for advanced transcriptomic tools. The region presents immense potential for technological advancements and market expansion.

Region with highest CAGR:

North America is expected to witness the highest CAGR over the forecast period driven by robust research infrastructure, high adoption of advanced genomic technologies, and strong government funding for precision medicine and genomics. The U.S. leads the region with extensive research activities in cancer, immunology, and neurobiology, supported by key players and academic institutions. Canada is also emerging as a significant contributor with growing investments in biotechnology. The presence of advanced bioinformatics tools and skilled professionals further accelerates market growth.

Key players in the market

Some of the key players profiled in the Single-Cell Analysis Transcriptomics Market include Thermo Fisher Scientific, Bio-Rad Laboratories, Becton, Dickinson and Company, QIAGEN N.V., Illumina Inc., PerkinElmer Inc., Agilent Technologies, Pacific Biosciences, Sartorius AG, Promega Corporation, Luminex Corporation, Merck KGaA, Zephyrus Biosciences, Miltenyi Biotec, Oxford Nanopore Technologies, Novogene Corporation, Fluidigm Corporation, Cell Signaling Technology Inc., 10x Genomics and NanoString Technologies.

Key Developments:

In October 2024, Cell Signaling Technology (CST) has announced the launch of InTraSeq™ Single Cell Analysis Reagents, a reliable, efficient and convenient way to simultaneously detect and study intracellular proteins and the transcriptome in a single-cell experiment, while guaranteeing a robust RNA signal.

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In June 2024, Bio-Rad Laboratories, Inc. launched the ddSEQTM Single-Cell 3' RNA-Seq Kit and complementary Omnition v1.1 analysis software for single-cell transcriptome and gene expression research. Designed to be run on Bio-Rad’s droplet-based single-cell isolation system, the ddSEQ Cell Isolator, the ddSEQ Single-Cell 3' RNA-Seq Kit delivers high-quality single-cell 3' RNA-Seq libraries in a fast, efficient, and affordable workflow, allowing researchers to easily conduct single-cell gene expression and regulation analyses.

Products Covered:

- Instruments
- Consumables

Analysis Types Covered:

- Gene Expression Profiling
- Epigenomics
- Metabolomics
- Proteomics
- Other Analysis Types

Sample Types Covered:

- Human Cells
- Animal Cells
- Microbial Cells
- Plant Cells
- Other Sample Types

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Workflow Stages Covered:

- Sample Preparation
- Sample Isolation
- Data Analysis
- Data Interpretation
- Other Workflow Stages

Technologies Covered:

- Next-Generation Sequencing (NGS)
- Polymerase Chain Reaction (PCR)
- Microarrays
- Single-Cell RNA Sequencing (scRNA-Seq)
- In Situ Hybridization (ISH)
- Other Technologies

Applications Covered:

- Cancer Genomics
- Neurology
- Immunology
- Stem Cell Research

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- Disease Diagnosis
- Personalized Medicine
- Biomarker Discovery
- Other Applications

End Users Covered:

- Academic & Research Institutions
- Pharmaceutical & Biotechnology Companies
- Hospitals & Diagnostic Laboratories
- Contract Research Organizations (CROs)
- Other End Users

Regions Covered:

- North America
  - US
  - Canada
  - Mexico
- Europe
  - Germany
  - UK

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- Italy
- France
- Spain
- Rest of Europe

Asia Pacific

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

South America

- Argentina
- Brazil
- Chile
- Rest of South America

Middle East & Africa

- Saudi Arabia
- UAE

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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)

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

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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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