Nucleic Acid Isolation and Purification Market Report by Product (Kits and Reagents, Instruments), Type (Plasmid DNA Isolation and Purification, Total RNA Isolation and Purification, Circulating Nucleic Acid Isolation and Purification, Genomic DNA Isolation and Purification, Messenger RNA Isolation and Purification, MicroRNA Isolation and Purification, PCR Cleanup, and Others), Method (Column-Based Isolation and Purification, Magnetic Bead-Based Isolation and Purification, Reagent-Based Isolation and Purification, and Others), End User (Hospitals and Diagnostic Centers, Academic and Government Research Institutes, Pharmaceutical and Biotechnology Companies, Contract Research Organizations, and Others), and Region 2024-2032

Market Report | 2024-08-10 | 140 pages | IMARC Group

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Report description:

The global nucleic acid isolation and purification market size reached US$ 5.3 Billion in 2023. Looking forward, IMARC Group expects the market to reach US$ 10.2 Billion by 2032, exhibiting a growth rate (CAGR) of 7.4% during 2024-2032. The increasing demand in molecular diagnostics and research, automation and high-throughput technology advancements, the impact of the COVID-19 pandemic, and expanding applications beyond healthcare are some of the major factors propelling the market.

Nucleic acid isolation and purification refers to the processes employed in separating and refining deoxyribonucleic acid (DNA) or ribonucleic acid (RNA) molecules from various biological samples. This essential step is crucial in molecular biology and diagnostics. The sample is typically lysed in the isolation phase to release nucleic acids. Subsequently, purification involves removing contaminants, proteins, and other cellular components to yield pure nucleic acids suitable for downstream applications, including polymerase chain reaction (PCR), sequencing, or analysis. Techniques such as phenol-chloroform extraction, column chromatography, or magnetic bead-based methods are commonly used.

The global nucleic acid isolation and purification market is experiencing robust growth driven by the increasing demand for molecular diagnostics and genetic research across various fields, including healthcare, biotechnology, and pharmaceuticals. In line with this, as the importance of personalized medicine and genomics research continues to rise, there is a surging need for efficient nucleic acid isolation and purification techniques, creating a positive outlook for market expansion. Moreover, significant advancements in automation and high-throughput technologies have streamlined these processes, reducing manual labor and improving efficiency, thereby fostering market growth. In addition to this, the COVID-19 pandemic has impelled the demand for nucleic acid isolation and purification products due to the extensive use of PCR-based testing, thereby aiding in market expansion. Furthermore, rising investments in research and development (R&D) by market players to enhance product performance and expand application areas are contributing to the market's growth.

Nucleic Acid Isolation and Purification Market Trends/Drivers:

Increasing demand for molecular diagnostics and genetic research

One of the primary factors driving the nucleic acid isolation and purification market is the growing demand for molecular diagnostics and genetic research. In the healthcare sector, there is a rising emphasis on personalized medicine, where genetic information is used to tailor treatments to individual patients. This trend has spurred the need for efficient and accurate nucleic acid isolation and purification methods. Concurrent with this, researchers and clinicians require high-quality DNA and RNA samples to perform various molecular tests, including PCR, sequencing, and gene expression analysis. Similarly, the biotechnology and pharmaceutical industries heavily rely on nucleic acid isolation and purification to develop and test new drugs, vaccines, and therapies. This sustained demand across multiple sectors is a key driving force behind the market's growth.

Advancements in automation and high-throughput technologies

Another significant factor fueling market growth is the continuous advancement of automation and high-throughput technologies in nucleic acid isolation and purification processes. Automation systems and robotic platforms have been developed to streamline and standardize these procedures, reducing the dependence on manual labor and minimizing the risk of contamination. In line with this, High-throughput instruments and methods enable researchers to process a larger number of samples simultaneously, improving efficiency and scalability. These technological innovations save time and enhance the reproducibility and consistency of nucleic acid isolation and purification, making them increasingly attractive to laboratories and research facilities seeking higher throughput and improved precision.

Impact of the COVID-19 pandemic

The ongoing COVID-19 pandemic has exerted a significant influence on the nucleic acid isolation and purification industry. PCR-based testing, a crucial tool for diagnosing COVID-19, relies heavily on the isolation and purification of viral RNA. The surge in demand for COVID-19 testing, along with the need for research and surveillance, has led to an unprecedented uptick in the utilization of nucleic acid isolation and purification products. Market players quickly adapted to meet this demand by scaling up production and developing specialized kits and reagents for SARS-CoV-2 detection. Although the pandemic's dynamics may change over time, the heightened awareness of the importance of robust nucleic acid isolation and purification processes in infectious disease control and research is expected to have a lasting impact on the market's growth.

Nucleic Acid Isolation and Purification Industry Segmentation:

IMARC Group provides an analysis of the key trends in each segment of the global nucleic acid isolation and purification market report, along with forecasts at the global, regional, and country levels for 2024-2032. Our report has categorized the market based on product, type, method, and end user.

Breakup by Product:

-Kits and Reagents
-Instruments

Kits and reagents dominate the market
The report has provided a detailed breakup and analysis of the market based on the product. This includes kits and reagents, and instruments. According to the report, kits and reagents represented the largest segment.
The demand for nucleic acid isolation and purification products, specifically kits and reagents, is propelled by the expanding application of nucleic acid-based techniques in the fields of forensic science and environmental monitoring. These areas increasingly rely on nucleic acid isolation and purification for DNA profiling, crime scene analysis, and identifying microbial contaminants. Additionally, the growing interest in agriculture and food safety drives the need for genetic testing and traceability, spurring demand for nucleic acid products. Apart from this, the emergence of innovative and specialized kits and reagents tailored to specific applications, such as RNA sequencing or viral RNA extraction, is attracting researchers and diagnostic labs, strengthening the market growth. Furthermore, the continuous development of user-friendly, cost-effective, and high-performance products accelerate the utilization of nucleic acid isolation and purification kits and reagents across various industries, providing impetus to the market growth.
Breakup by Type:
-Plasmid DNA Isolation and Purification
-Total RNA Isolation and Purification
-Circulating Nucleic Acid Isolation and Purification
-Genomic DNA Isolation and Purification
-Messenger RNA Isolation and Purification
-microRNA Isolation and Purification
-PCR Cleanup
-Others

Plasmid DNA isolation and purification holds the largest share in the market
A detailed breakup and analysis of the market based on the type has also been provided in the report. This includes plasmid DNA isolation and purification, total RNA isolation and purification, circulating nucleic acid isolation and purification, genomic DNA isolation and purification, messenger RNA isolation and purification, microRNA isolation and purification, PCR cleanup, and others. According to the report, plasmid DNA isolation and purification accounted for the largest market share.
The increasing importance of plasmid DNA in biotechnology and gene therapy applications is driving the demand for plasmid DNA isolation and purification. Plasmids are vital tools for genetic engineering, gene expression, and recombinant protein production, making them indispensable in the biopharmaceutical industry. Moreover, the rise of gene and cell therapies has created a surge in the demand for high-quality plasmid DNA for vector construction and therapeutic gene delivery, aiding in market expansion. Concurrent with this, the expanding field of synthetic biology, where custom-designed plasmids are employed to create novel biological systems, fuels the need for efficient plasmid DNA isolation and purification methods. The development of advanced purification techniques, such as chromatography and membrane-based systems, further enhances the purity and yield of plasmid DNA, making them essential components in the biotechnology and medical sectors and driving market demand.
Breakup by Method:
-Column-Based Isolation and Purification
-Magnetic Bead-Based Isolation and Purification
-Reagent-Based Isolation and Purification
-Others

Column-based isolation and purification dominates the market
The report has provided a detailed breakup and analysis of the market based on the method. This includes column-based isolation and purification, magnetic bead-based isolation and purification, reagent-based isolation and purification, and others. According to

the report, column-based isolation and purification represented the largest segment.
The demand for nucleic acid isolation and purification, specifically through column-based methods, is fueled by the preference for column-based techniques in research and clinical laboratories due to their efficiency, simplicity, and scalability. These methods offer researchers a reliable and convenient means of isolating and purifying nucleic acids with high purity and yield. Additionally, the versatility of column-based systems enables their use across a wide range of applications, from fundamental research to diagnostics, impelling the market growth. Moreover, advancements in column technology, such as improved matrix materials and design, have led to enhanced performance and faster processing times, making them increasingly attractive to users seeking rapid and consistent results. Furthermore, the stringent quality control requirements in genomics, molecular diagnostics, and pharmaceuticals have led to the continued adoption of column-based nucleic acid isolation and purification methods, driving sustained demand in the market.
Breakup by End User:
-Hospitals and Diagnostic Centers
-Academic and Government Research Institutes
-Pharmaceutical and Biotechnology Companies
-Contract Research Organizations
-Others

Hospitals and diagnostic centers hold the largest share in the market
A detailed breakup and analysis of the market based on the end user has also been provided in the report. This includes hospitals and diagnostic centers, academic and government research institutes, pharmaceutical and biotechnology companies, contract research organizations, and others. According to the report, hospitals and diagnostic centers accounted for the largest market share.
The demand for nucleic acid isolation and purification products, particularly among hospital and diagnostic end-users, is primarily driven by the growing significance of molecular diagnostics in healthcare. Hospitals and diagnostic laboratories increasingly rely on nucleic acid-based tests to accurately diagnose various diseases, including infectious diseases, cancer, and genetic disorders. This has resulted in a consistent demand for high-quality DNA and RNA samples, thus fueling the need for efficient nucleic acid isolation and purification methods. Additionally, the rapid adoption of point-of-care testing and the emergence of novel diagnostic assays have amplified the demand for streamlined nucleic acid extraction processes that can be integrated into diagnostic workflows, thereby bolstering the market growth. As precision medicine gains prominence in patient care, hospitals are also utilizing nucleic acid purification techniques for personalized treatment strategies, propelling the market forward.
Breakup by Region:
-North America
oUnited States
oCanada
-Asia-Pacific
oChina
oJapan
oIndia
oSouth Korea
oAustralia
oIndonesia
oOthers
-Europe
oGermany
oFrance
oUnited Kingdom
oItaly

o Spain
o Russia
o Others
- Latin America
o Brazil
o Mexico
o Others
- Middle East and Africa

North America exhibits a clear dominance, accounting for the largest nucleic acid isolation and purification market share
The market research report has also provided a comprehensive analysis of all the major regional markets, which include North America (the United States and Canada); Asia Pacific (China, Japan, India, South Korea, Australia, Indonesia, and others); Europe (Germany, France, the United Kingdom, Italy, Spain, Russia, and others); Latin America (Brazil, Mexico, and others); and the Middle East and Africa. According to the report, North America accounted for the largest market share.
North America's well-established and advanced healthcare infrastructure, along with a robust presence of pharmaceutical and biotechnology companies, has created a significant demand for nucleic acid isolation and purification products. As precision medicine and genetic research gain momentum, the need for high-quality DNA and RNA samples in North America continues to rise, driving the market's growth. In addition to this, the increasing prevalence of chronic conditions such as cancer, infectious diseases, and genetic disorders in the region has led to an elevated demand for molecular diagnostics, further boosting the requirement for efficient nucleic acid isolation and purification methods. Furthermore, North America has been at the forefront of research and development in genomics, gene therapy, and biopharmaceuticals, contributing to the adoption of advanced purification techniques and specialized kits and reagents, thus playing a pivotal role in driving market expansion in the region.
Competitive Landscape:
The competitive landscape of the global nucleic acid isolation and purification market is characterized by intense rivalry among key players and a dynamic ecosystem of companies providing an array of products and services. Prominent companies dominate the market with their extensive product portfolios, global reach, and continuous investments in research and development. Additionally, a multitude of smaller and niche players cater to specialized segments and applications within the market, providing innovative solutions and fostering competition. Collaborations and partnerships between market players and research institutions are commonplace, further intensifying competition and driving innovation. As the market continues to expand, new entrants are attracted to its potential, contributing to a dynamic competitive landscape.
The report has provided a comprehensive analysis of the competitive landscape in the market. Detailed profiles of all major companies have also been provided. Some of the key players in the market include:
- Abcam plc
- Agilent Technologies Inc.
- Bio-Rad Laboratories Inc.
- Illumina Inc.
- Macherey-Nagel Gmbh & Co. Kg
- New England Biolabs
- Norgen Biotek Corp.
- Omega Bio-Tek Inc.
- Promega Corporation
- Qiagen
- Roche Molecular Systems Inc. (F. Hoffmann-La Roche AG)
- Takara Bio Inc. (Takara Holdings Inc.)
- Thermo Fisher Scientific Inc.
Recent Developments:
- In August 2023, Abcam plc announced that it has entered into a definitive agreement pursuant to which Danaher Corporation will

acquire all of the outstanding shares of Abcam for $24.00 per share in cash.
-In July 2023, Illumina Inc. announced the launch of the latest version of DRAGEN? software for analysis of next-generation sequencing data. DRAGEN 4.2 expands accuracy, flexibility, and scalability to enable efficient workflows and extract meaningful insights from genomic data.
-In January 2023, Agilent Technologies Inc. announced a $725 million investment to expand the manufacturing capacity of therapeutic nucleic acids in response to the strong demand for the company?s high-quality active pharmaceutical ingredients (API).

Key Questions Answered in This Report
1. How big is the global nucleic acid isolation and purification market?
2. What is the expected growth rate of the global nucleic acid isolation and purification market during 2024-2032?
3. What are the key factors driving the global nucleic acid isolation and purification market?
4. What has been the impact of COVID-19 on the global nucleic acid isolation and purification market?
5. What is the breakup of the global nucleic acid isolation and purification market based on the product?
6. What is the breakup of the global nucleic acid isolation and purification market based on the type?
7. What is the breakup of the global nucleic acid isolation and purification market based on the method?
8. What is the breakup of the global nucleic acid isolation and purification market based on the end user?
9. What are the key regions in the global nucleic acid isolation and purification market?
10. Who are the key players/companies in the global nucleic acid isolation and purification market?

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