

India Molecular Diagnostics Market By Application (Infectious Disease, Blood Screening, Genetic Testing, Oncology Testing), By Technology (PCR, In-situ Hybridization, Chips and Microarrays, Mass Spectrometry, Sequencing, Others), By End User (Hospitals, Academic & Reference Laboratories), By Region, Competition, Forecast & Opportunities, 2019-2019F

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Abstracts

India Molecular Diagnostics Market has valued at USD 920.05 Million in 2023 and is anticipated to project impressive growth in the forecast period with a CAGR of 8.15% through 2029. Molecular Diagnostics encompasses a diverse range of techniques utilized to analyze and study biological markers in the genome and proteome. Through these advanced methods, scientists can detect and quantify the presence of genetic material associated with specific diseases, enabling accurate disease detection and comprehensive characterization. This invaluable information not only guides potential treatment strategies but also allows for ongoing monitoring of disease progression. With its profound impact, Molecular Diagnostics has emerged as an indispensable component of modern clinical practice, playing a pivotal role in disease detection, staging, and therapy monitoring, thus revolutionizing the field of healthcare.

The Molecular Diagnostics Market refers to the sector of the healthcare industry that focuses on the use of molecular biology technologies for medical testing. This field employs techniques such as polymerase chain reaction (PCR), in situ hybridization, DNA sequencing, and others to analyze biological markers in the genome and proteome. These techniques are used to diagnose and monitor disease, detect risk, and

decide which therapies will work best for individual patients. The market encompasses various infectious diseases, oncology, genetics, and blood screening tests and is continually growing, driven by technological advancements and the increasing prevalence of infectious diseases and various types of cancer.

Key Market Drivers

Large Outbreaks of Bacterial and Viral Epidemics

Large outbreaks of bacterial and viral epidemics are significantly increasing the demand for molecular diagnostics in India. These diagnostic techniques, which include polymerase chain reaction (PCR) tests, nucleic acid amplification tests (NAATs), and next-generation sequencing, play a pivotal role in the rapid and accurate identification of infectious pathogens, such as bacteria and viruses. Several factors contribute to the growing need for molecular diagnostics during epidemic outbreaks in India. The ability to quickly and accurately diagnose the causative agents of epidemics is essential for effective outbreak management and containment. Molecular diagnostics can provide precise information about the infectious agent's genetic material, facilitating targeted treatment, contact tracing, and quarantine measures to mitigate the spread of the disease. This is especially critical during outbreaks of highly contagious diseases, such as COVID-19.

Molecular diagnostics offer a higher degree of sensitivity and specificity compared to traditional diagnostic methods, allowing for the detection of pathogens at very low concentrations. This is particularly relevant in the early stages of an epidemic when the infection may be less widespread, and traditional tests might yield false-negative results. Furthermore, the versatility of molecular diagnostics allows for the detection of various pathogens from a single sample, enabling healthcare professionals to simultaneously screen for multiple infectious agents. This capability is invaluable during outbreaks where the identification of co-infections or emerging variants is crucial for appropriate patient management and public health decision-making.

The COVID-19 pandemic has underscored the importance of molecular diagnostics in India and has led to significant investments in testing infrastructure and technology. As the country continues to face challenges from both known and emerging infectious diseases, the demand for molecular diagnostics is expected to remain high. Ensuring accessibility, affordability, and the rapid deployment of these advanced diagnostic techniques is vital for effective epidemic control and public health preparedness in India.

Increasing Demand for Point-of-Care Diagnostics

The increasing demand for point-of-care (POC) diagnostics is driving a concurrent rise in the demand for molecular diagnostics in India. POC diagnostics provide rapid and convenient testing at or near the patient's location, and molecular diagnostics play a vital role in meeting this demand for quick and accurate results. One of the key drivers of this trend is the need for timely diagnosis, especially in remote or underserved areas where access to centralized laboratory facilities can be limited. Molecular diagnostics, such as nucleic acid amplification tests (NAATs), enable healthcare providers to detect and identify infectious pathogens with a high degree of accuracy, even in resource-constrained settings. This capability is critical during outbreaks or pandemics, as it allows for early detection and containment.

Furthermore, the growing awareness of infectious diseases and the importance of rapid testing, particularly in the context of the COVID-19 pandemic, have led to increased demand for POC molecular diagnostics. Patients and healthcare providers alike seek the convenience and quick turnaround times offered by these technologies. Molecular POC tests also find applications in monitoring chronic diseases, such as HIV and hepatitis, where regular testing and immediate results are essential for disease management. These tests empower patients to take a more active role in their healthcare, and they reduce the burden on healthcare systems by decreasing the need for multiple clinic visits.

The Indian government has recognized the significance of POC diagnostics and has initiated various programs to enhance their availability and accessibility across the country. This includes efforts to promote indigenous manufacturing of POC devices and to integrate them into the healthcare infrastructure. As the demand for POC diagnostics continues to grow in India, molecular diagnostics will remain an integral component of this trend. Their ability to provide rapid, accurate, and on-the-spot results will be essential in addressing the evolving healthcare needs of the Indian population, especially in remote and resource-limited regions.

Rapidly Evolving Technologies

The rapidly evolving technologies in the field of molecular diagnostics are significantly increasing the demand for these advanced diagnostic methods in India. Molecular diagnostics, which encompass techniques like polymerase chain reaction (PCR), nucleic acid amplification tests (NAATs), and next-generation sequencing (NGS), have become indispensable tools in healthcare due to their precision, speed, and versatility.

As technology continues to advance, the turnaround times for molecular tests have significantly reduced, allowing for quicker diagnosis and treatment decisions. This speed is crucial in the management of infectious diseases, such as COVID-19, as it enables swift contact tracing and isolation measures to curb the spread of the disease.

Additionally, the versatility of molecular diagnostics plays a pivotal role in their growing demand. These technologies can be applied to a wide range of medical purposes, including infectious disease diagnosis, cancer screening, genetic testing, and monitoring of chronic conditions. As healthcare providers and patients recognize the utility of molecular diagnostics across various medical disciplines, the demand for these tests continues to rise.

Furthermore, advancements in automation and miniaturization have made molecular diagnostic devices more accessible and user-friendly. This has facilitated their adoption not only in large hospitals but also in smaller healthcare facilities, clinics, and even at the point of care. As a result, a broader spectrum of patients in India can benefit from the precision and reliability offered by molecular diagnostics. The Indian government, recognizing the importance of molecular diagnostics, has also initiated efforts to enhance their accessibility and affordability. The integration of molecular testing into public health programs and the support for indigenous manufacturing of diagnostic devices contribute to the growing demand for these technologies.

Recent Advancements in Pharmacogenomics

Recent advancements in pharmacogenomics are playing a pivotal role in increasing the demand for molecular diagnostics in India. Pharmacogenomics is the study of how an individual's genetic makeup influences their response to drugs, and it holds significant promise in personalizing medicine for patients. Several factors are contributing to the growing demand for molecular diagnostics driven by pharmacogenomics in India. Genetic variations can significantly impact an individual's response to medications, influencing their efficacy and safety. As more people recognize that pharmacogenomic testing can help tailor drug treatments to their specific genetic profiles, the demand for these tests is on the rise.

Additionally, the availability of affordable and accessible genetic testing technologies has expanded in India. Advances in next-generation sequencing (NGS) and other molecular techniques have made it more feasible to conduct comprehensive genetic testing, including pharmacogenomic assessments, with greater ease and affordability. This has paved the way for pharmacogenomic testing to become a routine part of

clinical practice. Pharmacogenomics is especially valuable in optimizing drug therapies for conditions like cardiovascular disease, cancer, and psychiatric disorders, which have a significant prevalence in India. Tailoring drug regimens based on an individual's genetic makeup can enhance treatment outcomes, reduce adverse reactions, and improve patient adherence.

The pharmaceutical industry in India is also recognizing the potential of pharmacogenomics in drug development. Incorporating genetic insights into drug discovery and clinical trials can lead to more efficacious and safer medications, further fueling the demand for molecular diagnostics. Recent advancements in pharmacogenomics are driving a growing demand for molecular diagnostics in India. As personalized medicine becomes an increasingly integral part of healthcare, genetic testing and molecular diagnostics will play a central role in optimizing drug treatments, improving patient outcomes, and reducing healthcare costs in the country.

Key Market Challenges

Limited Budgets for R&D and Economic Slowdown

Limited budgets for research and development (R&D) combined with economic slowdown are indeed impacting the demand for molecular diagnostics in India. While molecular diagnostics have proven to be invaluable in healthcare, the economic challenges in the country can hinder their widespread adoption. One of the primary factors contributing to the decreased demand for molecular diagnostics is the constrained budgets allocated for R&D in the healthcare sector. Research and development are essential for the innovation and advancement of diagnostic technologies. Limited funding for R&D can hinder the development of new diagnostic tests, improvements in existing tests, and the validation of novel applications. This can result in a slower pace of technological innovation and limit the introduction of cost-effective and accessible molecular diagnostics. The economic slowdown in India, particularly in recent years, has put financial pressure on both healthcare institutions and individuals. Healthcare budgets have been strained, leading to reduced investments in advanced diagnostic technologies. Additionally, individuals may be less inclined to seek out expensive molecular diagnostic tests due to financial constraints, especially when alternative, less costly diagnostic options are available.

Moreover, the high initial capital expenditure required for setting up molecular diagnostic laboratories and the ongoing operational costs can be challenging for healthcare facilities, particularly in resource-constrained areas. This further contributes to the

limited accessibility of molecular diagnostics. To address these challenges and stimulate demand for molecular diagnostics in India, there is a need for strategic investments in R&D, healthcare infrastructure, and affordable diagnostic solutions. Government initiatives, public-private partnerships, and innovative financing models can help overcome economic hurdles and facilitate broader access to molecular diagnostics. By mitigating these financial barriers, India can harness the full potential of molecular diagnostics in improving patient care and disease management.

Need for High-complexity Testing Centers

The need for high-complexity testing centers is one of the factors decreasing the demand for molecular diagnostics in India. Molecular diagnostics, including techniques like polymerase chain reaction (PCR) and next-generation sequencing (NGS), often require specialized laboratories equipped with advanced instrumentation and highly trained personnel to conduct complex genetic and molecular analyses. However, in many parts of India, there is a shortage of such high-complexity testing centers. Building and operating high-complexity testing centers require significant investments in terms of equipment, facilities, and ongoing maintenance. Many healthcare facilities, especially those in rural and underserved areas, may not have the financial means to establish and sustain such facilities, limiting access to molecular diagnostics for a large portion of the population. Furthermore, the shortage of skilled personnel with expertise in molecular diagnostics poses a significant challenge. Running these complex tests effectively and interpreting the results correctly demand a high level of technical proficiency. India faces a shortage of trained molecular biologists, geneticists, and laboratory technicians who can conduct these tests accurately, leading to a bottleneck in expanding molecular diagnostics services.

The need for centralization of high-complexity testing also contributes to reduced demand. Patients and healthcare providers often have to send samples to centralized testing centers located in major cities, causing delays in diagnosis and treatment decisions, especially for those in remote areas. This logistical challenge can discourage patients from pursuing molecular diagnostics, and it can limit the efficiency of healthcare systems. To address these issues and increase the demand for molecular diagnostics in India, there is a need for strategic investments in infrastructure, training programs, and decentralization of testing services. By expanding access to high-complexity testing centers and building a skilled workforce, India can better harness the potential of molecular diagnostics in improving healthcare outcomes across the country.

Key Market Trends

Rapid Technological Advancements

Rapid technological advancements, characterized by their ability to deliver accurate results, portability, and cost-effectiveness, are expected to have a significant impact on India's molecular diagnostics market. As companies strive to stay ahead in this competitive landscape, they are continuously upgrading their products by implementing new techniques that enable them to achieve specific and precise results.

Notably, industry leaders like Sigma Aldrich Corporation and QIAGEN are at the forefront of developing a new range of molecular diagnostic techniques. These include innovative methods such as Transcription-Mediated Amplification (TMA) and Loop-Mediated Isothermal Amplification (LAMP), which are proving instrumental in the diagnosis of various tumors. Furthermore, the growing utilization of multiplex PCR technologies and real-time PCR equipment, such as the EpiTect Methyl II PCR by QIAGEN for the detection of DNA methylation, is expected to further propel the market during the forecast period.

With such advancements and continuous innovation, the molecular diagnostics market in India is poised for significant growth, offering improved diagnostic capabilities and contributing to the overall advancement of healthcare in the country.

Rising Geriatric Population

The geriatric population in India is not only rapidly increasing, but it is also expected to rise by 41% over the next decade, according to the Government of India National Statistical Office. This projection indicates that India's geriatric population, aged 60 and above, will reach a staggering 194 million in 2031, compared to 138 million in 2021. Among the states, Kerala stands out with the highest elderly population, accounting for approximately 16.5% of the geriatric population, followed by Tamil Nadu, Himachal Pradesh, Bihar, Uttar Pradesh, and Assam.

Aging has become a significant risk factor for various diseases, such as obesity and diabetes, which, in turn, substantially increase the vulnerability to infectious diseases. For instance, the geriatric population is more susceptible to infectious diseases like COVID-19 due to factors such as decreased immune function, multimorbidity, and physiological changes associated with aging. Alarming statistics from the World Health Organization (WHO) indicate that, until April 2020, approximately 95% of COVID-19-related deaths were reported among patients aged 60 years or above.

Moreover, more than 50% of deaths occurred in patients aged 80 years or older. These figures underscore the urgent need to address the challenges posed by the growing aging population, which is driving the demand for diagnostics and significantly influencing the market's growth.

Segmental Insights

Technology Insights

Based on the technology, in 2022, the PCR technology segment emerged as the leader in terms of revenue share. The technology markets for In Situ Hybridization (ISH) and genetic sequencing are expected to witness a surge in demand during the forecast period, fueled by various factors. The market share for ISH is projected to grow at a compound annual growth rate (CAGR) of over 31% during the forecast period, driven by the rising number of individuals affected by cancer and the increasing need for early diagnosis.

During the COVID-19 pandemic, PCR diagnostics experienced significant demand, primarily due to the collaborative efforts of public-private partnerships like InDx. This initiative aimed to tap into the untapped potential of the market by lowering the cost of RT-PCR testing, making it more accessible for widespread population testing. By supporting the rapid indigenous production of RT-PCR diagnostic test kits, this initiative enabled the manufacturing of over 1 million test kits per day. As a result of this remarkable undertaking, the cost of RT-PCR tests witnessed a substantial reduction from USD 10 to USD 7 within a span of just one year. These developments highlight the significant advancements and efforts made in the field of molecular diagnostics, particularly in the context of PCR technology and its applications in critical situations like the COVID-19 pandemic. The continuous progress and innovation in this domain are expected to shape the future of diagnostic testing and have a profound impact on healthcare outcomes worldwide.

Application Insights

Based on application, the infectious disease segment has emerged as the dominant force in the market, accounting for a staggering revenue share of over 96% in 2022. Molecular diagnostics, serving as the cornerstone of medical diagnosis for viral, bacterial, and parasitic infections, play a crucial role in this arena. Notably, the demand for respiratory infection molecular diagnostics has witnessed an exponential surge following the widespread transmission of the SARS-CoV-2 infection.

Moreover, the market is being propelled by the increasing number of product launches within the infectious disease segment. A case in point is the announcement made by BD in April 2020, regarding the launch of the SARS-CoV-2 test on its BD MAX System. With heightened automation capabilities and the ability to process a larger volume of samples, the demand for molecular diagnostic reagents and consumables is poised to soar, thereby bolstering the overall market growth. Meanwhile, oncology holds a significant share in the applications segment, driven by the escalating incidence of cancer. Furthermore, the field of oncology research and cancer drug discovery has witnessed remarkable advancements in performing molecular diagnosis using specific biomarkers associated with major cancer-causing genes and their manifestations. The early identification of predictive biomarkers in molecular diagnosis not only opens avenues for early detection of cancer-affected patients but also facilitates the development of personalized medications tailored to their specific needs.

Regional Insights

The western region of India, particularly Maharashtra and Gujarat, is rapidly emerging as a major force in the Molecular Diagnostics Market. This dominance can be attributed to several factors that contribute to its success. The region boasts a robust and state-of-the-art healthcare infrastructure, equipped with advanced diagnostic facilities, which facilitates the widespread adoption of molecular diagnostics. This infrastructure ensures that individuals have access to accurate and timely diagnostic services, further enhancing patient care.

There is a high level of awareness among healthcare professionals and the general population in the region about the benefits and applications of molecular diagnostics. Through extensive education and training programs, healthcare providers are well-informed about the potential of molecular diagnostics in disease diagnosis, prognosis, and personalized treatment. Additionally, the general population is increasingly recognizing the value of molecular diagnostics in detecting diseases at an early stage, leading to improved health outcomes.

The western region of India is home to a significant number of key market players in the field of molecular diagnostics. This concentration of expertise and resources fosters collaborations and partnerships, facilitating the development and advancement of diagnostic technologies. The continuous exchange of knowledge and ideas among these market players propels the field forward, leading to innovative solutions and improved patient care. Overall, the western region of India continues to shape and

reshape the landscape of molecular diagnostics. With its robust healthcare infrastructure, high level of awareness, and concentration of market players, the region remains at the forefront of advancements in diagnostic technologies. By leveraging these strengths, the western region of India is paving the way for the future of molecular diagnostics and contributing to the improvement of patient care.

Key Market Players

Roche Diagnostics India Pvt Ltd

Abbott India Ltd

Qiagen India Pvt Ltd

BioMérieux India Pvt Ltd

Becton Dickinson Pvt Ltd

Bio-Techne India Pvt Ltd

Danaher India (DHR Holding India Pvt. Ltd.)

Bio-Rad laboratories India Pvt.Ltd

Report Scope:

In this report, the India Molecular Diagnostics Market has been segmented into the following categories, in addition to the industry trends which have also been detailed below:

India Molecular Diagnostics Market, By Application:

Infectious Disease

Blood Screening

Genetic Testing

Oncology Testing

India Molecular Diagnostics Market, By Technology:

PCR

In-situ Hybridization

Chips and Microarrays

Mass Spectrometry

Sequencing

Others

India Molecular Diagnostics Market, By End User:

Hospitals

Academic & Reference Laboratories

India Molecular Diagnostics Market, By Region:

North

South

West

East

Competitive Landscape

Company Profiles: Detailed analysis of the major companies present in the India Molecular Diagnostics Market.

Available Customizations:

India Molecular Diagnostics Market report with the given market data, Tech Sci Research offers customizations according to a company's specific needs. The following customization options are available for the report:

Company Information

Detailed analysis and profiling of additional market players (up to five).

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