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Biotech trends driving innovation in diagnostics and disease management in India

12 June 2026 | Views | By Aditi Jaiswal, Content Writer, Consegic Business Intelligence

Adoption of cutting-edge biotechnology solutions might not be uniform across various geographies



With chronic diseases, infectious diseases and the ageing population posing an increasing threat to India, it is becoming ever more important to diagnose correctly and manage diseases efficiently. Biotechnology developments are playing a very important part in this and developing how healthcare will be.

The Growing Importance of Biotechnology in Healthcare

The discipline of biotechnology uses biological science combined with modern technology to solve the world's needs for health care, agriculture, and industry. Biotechnology has played a critical role in the development of solutions to health care concerns including disease diagnostics and treatments and customized medical care.

Supported by government policy, rising private funding and the emergence of a robust ecosystem of research organisations and startups, India is at the fore of advancements in the field of biotechnology research.

Now it is expected that the tools and treatment methods in diagnostics can extend to a wide variety of healthcare institutions instead of being restricted to specialised institutions. Biotechnology is driving innovation in the medical sector of India as the health systems mature.

Molecular Diagnostics Is Transforming Disease Detection

One of the most significant biotechnology trends in India is the rapid adoption of molecular diagnostics. Traditional diagnostic methods often rely on symptoms and laboratory testing that can take time to deliver results. Molecular diagnostics allows healthcare professionals to detect diseases at the genetic and molecular level with greater accuracy.

By employing techniques like Polymerase chain reaction (PCR), nucleic acid testing and other modern methods for advanced biomarkers diagnosis infectious diseases, genetic diseases and many different types of cancers are being diagnosed more rapidly and appropriately. The earlier and more accurate diagnosis allow healthcare workers to start treatment earlier and provides a better result for the patients.

In 2025, Bengaluru-based Biopark launched its first longevity clinic combining molecular diagnostics, advanced imaging, and AI-driven health assessments, while also securing \$3.5 million in seed funding to expand its diagnostic platform and clinic network. This reflects growing investor confidence in next-generation diagnostic technologies.

Genomics and Personalised Medicine Are Gaining Momentum

Genomics is an emerging field in managing diseases in India. Information on the genome of an individual enables a healthcare provider to acquire more understanding on an individual's susceptibility to a certain disease, response to treatments, and likelihood of the treatment outcome. The growing adoption of genomics and advanced diagnostic technologies is also reflected in market trends.

As per Consegic Business Intelligence, the global biomarkers market is projected to grow at a CAGR of 10.9% through 2031, driven by increasing demand for early disease detection, personalized medicine, and advanced diagnostic solutions.

Personalised medicine takes this genetic information and develops an individual specific therapy based on an individual's unique characteristics, thus moving away from a one-size fits all approach in medicine. It uses an individual's genetic profile to select the therapy more likely to work on them.

This new trend of using genomics in disease management is more prevalent than in other areas, such as oncology, where precise drug therapies have been developed to more accurately target cancer. It is predicted that the role of personalised medicine will continue to grow as genomic testing decreases in cost and increases in availability.

Artificial Intelligence (AI) Is Enhancing Diagnostic Accuracy

AI is also used in the diagnostic field in integration with biotechnology. It is able to analyse lab results, patient's records and medical images faster than any manual system. In the diagnostic lab, an AI algorithm can recognise trends and anomalies that might hint a disease. This technology assists healthcare workers by providing quicker and more precise findings and lessening the chance for human mistakes. In the prediction and risk assessment field, AI can help healthcare providers recognize any developing health problem earlier and then establish some preventative care programs that will help long-term results.

AI-driven diagnostics continue to attract significant investment and commercialization. In 2025, Indian health-tech company Dectrocel raised Rs 4 crore to expand its AI-powered diagnostic solutions for respiratory and hepato-pancreatico-biliary diseases. The company also commercialised DecXpert, one of the few CDSCO-approved AI diagnostic tools currently available for clinical use in India.

Advancements in Point-of-Care Diagnostics

The accessibility of healthcare is an issue in several parts of India, especially in rural and isolated areas. Point of care diagnostics is reducing the gaps by bringing the testing close to the patient.

Point of care diagnostic devices deliver results instantly without specialized lab equipment. These methods are especially useful for screening and detecting infections, monitoring patients for chronic disease, and assisting in emergency situations. Biotechnology companies are creating innovative test platforms that are cheap, user-friendly and can be adapted to many health care settings. This helps the patients to be able to receive immediate medical diagnoses and recommendations regardless of where they live.

Point-of-care diagnostics have received increased industry support through strategic investments. In 2024, Cipla announced an additional investment of up to Rs 26 crore in Achira Labs, a Bengaluru-based company developing microfluidics-based point-of-care diagnostic kits. The investment is expected to accelerate the commercialization of rapid testing solutions designed for decentralized healthcare settings.

Biotechnology Is Strengthening Disease Management

Disease management extends beyond diagnosis. Effective healthcare requires continuous monitoring, treatment optimisation, and patient engagement. Biotechnology is supporting these goals through innovative monitoring technologies and advanced therapeutic solutions.

Through wearable health devices, connected monitoring systems, and biomarker tests, healthcare providers are better able to monitor the health of their patients. These devices are producing new data which can aid treatment and disease management.

For chronic illnesses such as diabetes, cardiovascular diseases and respiratory conditions ongoing monitoring enables healthcare team to recognise and address changes in a timely fashion.

Growth of Biopharmaceutical Research

Besides all the developments that the biotech sector is doing, India's growing biotechnological sector is enhancing human health by developing advanced biopharmaceutical products. With a variety of new biologics, biosimilars, and targeted therapies being produced, patients suffering with complex conditions will be offered more treatment options. These biopharmaceutical products are crucial in curing diseases such as cancer, autoimmune diseases, and rare disease, more so than old fashioned medicines. Compared with previous treatments, these new biologic medicines are more specific, will help to optimize the response rates and patient prognosis, but also reduce adverse effects.

In 2025, Biocon launched Liraglutide in the UK market, marking its entry into the fast-growing GLP-1 therapy segment. The company also launched Yesintek in the United States and continued expanding its biosimilar portfolio globally. These developments highlight India's growing capabilities in advanced biologics and biosimilar innovation.

Digital Health Integration Is Accelerating Innovation

This convergence of biotechnology and digital health has opened up new frontiers in healthcare delivery. Tools such as electronic health records, telemedicine technologies and data analysis systems have enabled clinicians to make better informed decisions in all aspects of health. Diagnosis data is being used in conjunction with medical histories and other clinical information, providing a complete picture of an individual's health and leading to improved diagnoses and treatment plans. It also facilitates greater interaction between patients and physicians, and an increased efficiency in the management of the disease.

Digital health and biotechnology are increasingly converging through AI-enabled healthcare platforms. In 2025, AI-driven clinical research company Pi Health expanded its presence in India by deploying AI technologies to streamline clinical trial management and accelerate drug development processes. Such innovations demonstrate how digital platforms are improving healthcare efficiency while supporting biotechnology research and disease management.

Challenges and Opportunities Ahead

Although there are considerable advancements, there are still challenges faced. Adoption of cutting-edge biotechnology solutions might not be uniform across various geographies, and it will be imperative that the healthcare professionals address the cost issues so that technology is within reach of a larger population.

Infrastructure, human capital, and the regulatory regime will be critical to the long-term growth sustainability within the biotechnology sector and further development will still depend on sustained R&D for its momentum and future progress. However, India's sizable patient pool, increasing healthcare needs and burgeoning biotechnology domain do provide considerable scope for growth.

Conclusion

Overall, biotechnology is revolutionising the diagnosis and treatment of various diseases in India. Through advances in molecular diagnostics, genomics, artificial intelligence, point of care tests and development of bio-pharmaceutical drugs, healthcare is becoming increasingly effective, affordable and accessible.

The applications of biotechnology in healthcare will continue to grow with emerging technologies, helping to solve current healthcare issues and facilitating the move towards a more personalised and data-driven model of healthcare delivery. Due to investment in the technology, infrastructure and research it is highly likely that in years to come India will become a global force in biotechnology-based solutions.

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