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Complete potential of genomics yet to be understood & applied

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Adequate awareness is required to understand the useful information the genetic tests provide



The Human genome project has been a turning point in our deep understanding of human biology. Genomics, the study of genes, has been driving precision medicine to predict, diagnose and treat diseases precisely and personally. Personalised treatments have been benefiting patients to help in timely diagnosis and in choosing the right treatment while reducing the financial burden for those who cannot afford the long trial and error treatment methods.

Genomics as a market – opportunities and challenges

Globally and in India, genomic data can significantly improve healthcare strategies across dimensions (*e.g.*– *disease prevention, enhanced diagnosis, or optimized treatment*). India's history of migrations, invasions, inbreeding gives an unique genetic constitution to its gene pool. Genomic technologies have evolved faster than the computing technologies in the past few years (Moore' law). The genomics market is forecasted to reach $47 billion from $19.5 billion by 2026. The pandemic has also positively impacted the sector as sequencing has helped researchers understand the genetic severity and susceptibility of SARS-CoV-2 infection. Genomic testing in other areas such as cancer, rare diseases, reproductive health has also been advancing rapidly with abundant scope to expand to other disease areas. Genomics is changing the face of healthcare in diverse ways as it brings research and its clinical applications closer.

The complete potential of Genomics is yet to be understood and applied and hence the market still remains under-penetrated. Although we have conducted several population wide studies and successfully collected South Asian genomic data, it needs to be efficiently translated into clinical decision-making. More population-wide sequencing efforts for Indian genomes will help unearth a wider range of health conditions. Adequate awareness is required to understand the useful information the genetic tests provide.

Certain challenges in terms of funding, resources to scale up, awareness needs quick attention and action. Additionally, there is need for fair guidelines that will help the industry thrive in the ecosystem. Most importantly, what this sector really needs is a skillful set of teams (Molecular biologists, Clinical Geneticists, data scientists, bioinformaticians, statisticians); with the right subject knowledge and training via academia that will drive this industry to greater heights.

How can India do this?

There are many players in the market now, with an increasing number of tests being conducted at half the price of what it was five years ago and in reduced time. India needs more collaborative initiatives to conduct genomic research, regulatory norms and data privacy policies.

There has certainly been progress underway, the market forecasts growth in the future. We have many players in the space. In the last few years, more and more people have become aware of genomics. There have been ground-breaking work utilizing genomics to illuminate Indian history, and hospitals are using genetic data to assist patients.

Further, the pandemic has been a game-changer that gave the diagnostic industry much-needed recognition. Genome sequencing's ability to track emerging viruses and their variations in real time has been universally regarded to play a critical role in the fight against the pandemic. Moving forward, the winners will be who invest in scale up processes, automation, analytical accuracy, quality programs, innovation.

The Direct-to-consumer market is also gaining prominence. Growing public awareness of early diagnosis, combined with rising spending on preventive measures, has fueled demand for genetic testing in the market, particularly in the areas of customized healthcare and predisposition screening for various diseases.

Way-forward

India is in a great position to lead the field of genomics. With our demographic diversity, more public-private partnerships, regulatory policies in place, and increased awareness, we can help diagnose, treat, and prevent rare diseases using genomics. Healthcare is moving towards prevention, and genomics is becoming a crucial enabler to change the healthcare outcomes for individuals, allowing them to have a longer and better quality of life.

VL Ramprasad, PhD, Chief Executive Officer, MedGenome Labs