# Crystal ball Gazing 2015: MedGenome

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Image not found or type unknown crystal-bsi-jan-web Genomics has seen rapid advances in the technology of decoding the DNA, triggering a revolution in our ability to understand the genetic and molecular basis of health and disease. We expect these innovations to continue further reducing the cost of genome sequencing. In light of recent advances, genetic testing will be increasingly used in a clinical setting for diagnosis, prevention, treatment and management of a wide variety of diseases with an underlying genetic cause. Genomic biomarkers as companion diagnostics are helping the pharma majors to provide more targeted therapies. The relevance of genomics in exploratory research and drug discovery is rightly understood and would be something to watch out for in the near future.

Predictive medicine is expected to grow in the coming years. It uses advances in accurate technologies in medicine, genomics, Proteomics, cell biology, imaging etc. and allows us to predict how, when, and in whom a disease will develop. This could be a new revolution in human health care where genetic information contained in an individual's genome is interpreted to predict future predisposition to diseases. The ability to predict whether a child in utero will be born with certain disease traits is a powerful application of predictive genomics in pre-natal settings. Further, familial diseases can be tracked by analyzing disease genes for functional alterations and this knowledge can be used to counsel families - to make them more aware of the disease and take preventive steps before the symptoms become apparent.

As an example, finding that an individual has loss of function alterations in genes such as BRCA1 and BRCA2 can be used to predict that the individual has a much higher chance of getting breast and ovarian cancer than an individual whose BRCA1 and 2 genes are functional. This knowledge can help families to cope with the disease burden, take steps so that disease can be detected early and educate others in the community of the value of predictive genomics. The hope underlying such testing is that early identification of individuals at risk of a specific condition will lead to reduced morbidity and mortality through targeted screening, surveillance, and prevention.

2014 was a busy year for MedGenome. We expanded our presence to Pan-India offering end-to-end integrated solutions for

clinical diagnostics. We opened up our new office in Gurgaon and expanded our lab operations in Bangalore. We have started our proteomics facility with our collaborators in Narayana health city in Bangalore, complementing our Next Generation Sequencing (NGS) lab facility at the same premises.

We have built our hospital collaborations further in 2014 wherein we engage with the institution to provide solutions that cater to the patients visiting the hospitals. We have also expanded our gene panel offerings to cover major disease areas such as Oncology, cardiology, ophthalmology, neurology and nephrology.
MedGenome's proprietary cancer analytics platform, OncoMD, has been expanded with newer features and applications for both diagnostics and research. We have been in discussions with multiple clients globally to offer this platform both as standalone installation and as a software-as-a-service license. MedGenome's capabilities and services are also finding attention among genome researchers who want to partner for exploratory research and drug development. The goal is to continue to offer services and solutions to the healthcare market in a customized manner. We will continue to strengthen our presence in clinical diagnostics in India. We want to continue to collaborate with major hospitals and academic institutions in India.

We are growing our software and bioinformatics team. Deriving meaningful insights from genomic data is a challenge. We have developed proprietary tools and analytics to convert this data into useful insights and want to continue to scale it up. This is considering the fact that our sample volumes are increasing with our Bangalore lab facility expanding. Our recruiting team will be very busy in the coming year! We are seeing lots of traction for our bioinformatics solutions from global players as well, which is something we will plan for.

Another area for genomics application is Prenatal Testing (NIPT) where the impact can be very high. It is estimated that genetic/chromosomal abnormalities occur in about 1 of 200 live births and account for at least half of all miscarriages that occur during the 1st trimester. Genomics can provided a much needed option for parents who are in need. In the coming year, MedGenome would develop capabilities to introduce safe, comprehensive and highly accurate non-invasive prenatal testing to Indian population. Unlike the traditional genetic testing like amniocentesis, non-invasive tests causes no risk to the fetus, which makes us very excited about such technology.

The future of the industry is promising. The evolution of Next Generation Sequencing (NGS) has significantly reduced the time and cost for genome analysis. However it brings with it a necessity for better data management and conversion to clinical application. Doctors and hospitals in India are also taking a big step in educating their patients. Advances in bioinformatics have improved the quality of insights generated from the analysis of genomic data; but the flood of genomic information continues to challenge our existing analytical capabilities.

Certain factors like regulatory body approval, and reimbursement from insurance companies may prove to be crucial in determining the growth of this industry. In the western world, insurers have started accepting genomic tests in their formulary as it is expected to reduce the cost of down-the-line treatment. In India, these tests are yet to be offered at affordable prices. There is also a great need for clinicians who have a good understanding of genomics and its clinical significance. The patient journey must be well managed so that if a particular condition is identified, the experts are brought in to handle the situation and help the individual. There is a dearth of genetic counsellors who can explain genomics findings to the affected individuals and their families. In addition to this, factors like lack of resources for effective data analysis, cost of technology, lack of baseline genomics data of Indian origin and unclear policies on intellectual property rights also pose hindrances to the industry.

Overall, genomics offers a plethora of opportunities that are yet to be seized. The greatest benefit that can come from the application of genomics to human health care is to provide prescribers and individuals with useful insights into their genotype which will enable them to take preventive/curative steps for their disease management.

Lifesciences sector will have challenges. Patent expiries will affect the performance of the firms leading them to optimize their investments. Targeted medicines will be a strategy that the sector will adopt where genomics will play a major role. We can expect to see significant advances in personalized medicine in the coming year. Technology is expected to enable better solutions in life science space.

Mergers and acquisitions will be sought after, considering the need to uphold shareholder value, utilize synergies and increase effectiveness. Investment climate is also improving within the biotech space. Innovation is the key even in these tough times. Gone are the days of blockbuster drugs. It is more about assets, providing efficacy which are niche but adding up to a sizeable business.