

Genomics – Set to Revolutionize Healthcare

Genomics is a discipline that applies insights from biology, mathematics, and informatics to analyze the structure and function of genomes. Recent advances in the technology of decoding the DNA have triggered a revolution in human ability to understand the genetic and molecular basis of health and disease. Genetic testing is increasingly used in a clinical setting for diagnosis, prevention, treatment, and management of a wide variety of diseases with an underlying genetic reason.

Genetic analysis and testing have given rise to the field of predictive genomics – the new revolution in human healthcare where genetic information contained in an individual's genome is interpreted to predict future predisposition to diseases. Predictive genomics uses the power of understanding of why diseases develop in an otherwise healthy individual. Early identification of individuals at the risk of a specific condition will lead to reduced morbidity and mortality through targeted screening, surveillance, and prevention.

The future of the industry is promising. The evolution of Next Generation Sequencing has significantly reduced the time and cost for genome analysis. Advancements in bioinformatics have improved the conversion of genomic data into useful insights, but the flood of genomic information continues to challenge our existing analytical capabilities.

Regulatory bodies in many developed countries have increased their focus on the genetics industry providing much needed momentum for growth and investment.

There is a dearth of genetic counsellors who can explain genomics findings to 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 challenges to the industry.

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



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