# GENOMICS TO MOLECULAR DIAGNOSTICS TO PERSONALIZED MEDICINE

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Genomics is the study of genomes, the blue print of life, within the field of molecular biology, and this includes genes, regulatory sequences, and other information contained within the noncoding regions of an organism's DNA. The genomics is one of the fastest growing areas of Molecular Biology with constant introduction of new-advanced robust technical platforms for genome sequencing that facilitates generation of the alphabet of life, in a rapid and economical manner to assist investigation of the formula of the life forms. Given the importance of genomics in molecular biology and its central role in determining the fundamental operation of cellular processes, expansion of knowledge in this area undoubtedly facilitates medical advances in different areas of clinical interest that may not have been possible otherwise. Molecular diagnostics, essentially the analysis of DNA and RNA at the molecular level, is a fast-growing business, made possible by the growing understanding of the human genome, which has driven growth in the diagnostics industry. Molecular biology has held out the promise of transforming medicine from a matter of serendipity to a rational pursuit grounded in a fundamental understanding of the human genome and the mechanisms of life. Molecular biology has begun to infiltrate the practice of medicine and genomics is hastening these advances. Within next few decades, comprehensive genomics-based health care should be the norm. Scientists will understand the molecular foundation of diseases, be able to prevent them in many cases and design accurate, individualized therapies for illnesses. Molecular diagnostics involves multiple technologies to identify genetic variations in individual patients. These technologies include PCR, FISH, hybrid capture, sequencing, microarrays etc., and has applications in testing for infectious diseases and genetic disorders, early diagnosis of leukaemia and cancers, screening of blood and for blood disorders, DNA fingerprinting (e.g., paternity testing, forensic testing), and also in microbiology, tissue typing, and food pathogen detection testing. Further, it has applications in prognostic maker detections related to diseases and personalized therapy identification that leads to the selection of the most appropriate and effective drugs according to the individuals' genetic makeup. Finally, Genomics, Molecular Diagnostics and Personalized Medicine can be considered as one of the greatest intellectual enterprises of humankind that provides the impetus to fulfil the potential of understanding life processes and utilizing them to the advantage of humanity. Although, these are the fastest growing knowledge-based sectors even amongst our neighbouring countries such as China, Japan, India, Korea, Singapore, Malaysia, Taiwan, Thailand etc., Sri Lanka has yet to harness the full potential of these areas of Molecular life science.