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The science of Omics: Historical perspective and possible significance to human health

Advances in genetics led to the development of the sciences of omics and system biology. It provides the tool for a better understanding of human diseases and development of new drugs and ultimately the possibility of personalized medicine. It is now possible to determine the entire DNA sequence of a genome as well as the protein sequence of proteome in an organism because of the coming of Throughput technologies and Bioinformatics. Understanding of DNA and Proteins is very important in understanding and in maintaining the human health. Understanding DNA can identify the genes responsible for diseases and for interactions of drugs. Proteins are equally important as defective proteins can be the cause of several diseases. Proteins are also used as drugs to treat several diseases. In addition several drugs interact with proteins determining the effectiveness of the drugs and their side effect. In view of these facts, development of the science of omics such as Genomics / Metagenomics, Epigenomics, Proteomics and Metabolomics has become very crucial for understanding the human health and cause, treatment and maintenance of human health. Among all these different branches of omics, Proteomics occupies a very central role as it controls the phenotype i.e. the structure, function and behavior of the cells and the organisms that are made of these cells. Some of these aspects of Proteomics including historical perspectives and future possibilities will be discussed.

Biography

Nawin C Mishra is a Distinguished Professor of Genetics in the Department of Biological Sciences at the University of South Carolina. He initiated the gene transfer experiments in fungi while he was a member of the laboratory of Dr. E.L. Tatum at the Rockefeller University (1967-1973). He has worked on various aspects of gene transfer and the characterization of nuclease and DNA polymerase mutants with altered exonuclease activity in eukaryotes. He received his PhD in Genetics from McMaster University in 1967 and his Post-doctoral training with the late Nobel Laureate Professor E.L. Tatum at the Rockefeller University, supported by a Post-doctoral fellowship from the Jane Coffin Childs Memorial Fund for Medical Research of the Yale University. In 1973 he joined the Molecular Biology faculty of the University of South Carolina. He has been invited to present his work in Australia, Europe, Russia, China, Japan, Thailand and India. He has served as a scientific consultant to the FAO of the United Nations. He also served as the Chairman of the Program Committee of the Genetics Society of America (1977-1979) and a a member of the review panel of the Human Genome Project of the United States Department of Energy. He has written two books and is invited to write another book: Proteomics: Beyond one gene – one enzyme concept.

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