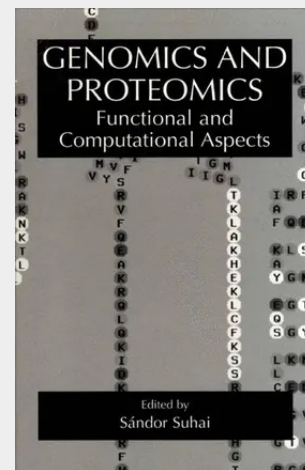


Genomics and Proteomics

Functional and Computational Aspects

Genome research will certainly be one of the most important and exciting scientific disciplines of the 21st century. Deciphering the structure of the human genome, as well as that of several model organisms, is the key to our understanding how genes function in health and disease. With the combined development of innovative tools, resources, scientific know-how, and an overall functional genomic strategy, the origins of human and other organisms' genetic diseases can be traced. Scientific research groups and developmental departments of several major pharmaceutical and biotechnological companies are using new, innovative strategies to unravel how genes function, elucidating the gene product, understanding how genes interact with others-both in health and in the disease state. Presently, the impact of the applications of genome research on our society in medicine, agriculture and nutrition will be comparable only to that of communication technologies. In fact, computational methods, including networking, have been playing a substantial role even in genomics and proteomics from the beginning. We can observe, however, a fundamental change of the paradigm in life sciences these days: research focused until now mostly on the study of single processes related to a few genes or gene products, but due to technical developments of the last years we can now potentially identify and analyze all genes and gene products of an organism and clarify their role in the network of life processes.

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