

Preface

The study of the genomes and complete human cell DNA sets is known as genomics. As a part of molecular biology, genomics includes analysis and sequencing of genomes. The different phenomena studied under this field are epistasis, pleiotropy, heterosis, etc. The various areas where genomics is applied are conservation genomics, genomic medicine, synthetic biology and bioengineering. This book elucidates new techniques of genomics and their applications in a multidisciplinary approach. The topics covered in this extensive text deal with the core aspects of the subject. Those in search of information to further their knowledge will be greatly assisted by this textbook.

To facilitate a deeper understanding of the contents of this book a short introduction of every chapter is written below:

Chapter 1- Genomics is a branch of molecular biology which studies the sequencing, structure and function of genomes of an organism. The subject can be applied in various fields like biotechnology, anthropology and medicine. This is an introductory chapter which will introduce briefly all the significant aspects of genomics.

Chapter 2- DNA molecules have a sequence. The process of determining the exact structure and order of a DNA is known as DNA sequencing. In order to completely understand DNA sequences, it is necessary to understand the processes related to it. The following section elucidates the varied processes and mechanisms associated with this area of study.

Chapter 3- DNA cloning is the combination of the techniques that are used in cloning DNA. It mainly uses sequences from two different organisms. The other topics discussed in this chapter are transgene, genetically modified organism, cloning vector and DNA extraction. This section discusses the methods of DNA cloning in a critical manner providing key analysis to the subject matter.

Chapter 4- DNA technology is applied in DNA fingerprinting, DNA nanotechnology, etc. DNA nanotechnology is the branch of nanotechnology that is mainly concerned with the design and structure of the DNA. It designs artificial biopolymers or biomolecules for scientific uses. The chapter serves as a source to understand the applications of DNA technologies.

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Editor