

Preface

We are living in the age of microbiology and molecular biology. The enormous knowledge that has accumulated in the field of biology, biochemistry, genetics and molecular biology during the last century has totally revolutionized the approach for the study of life and living beings. Almost daily reports of new discoveries are appearing on the exciting branch of science. Life is now regarded as the expression and interaction of biomolecules and all the biological processes are the result of biochemical reactions occurring at the cellular level. The field of molecular microbiology concerns particularly with those biomolecules that are related to gene and the gene products. It is also associated with understanding and explaining the mechanisms responsible for the storage, transmission and expression of biological information at molecular level.

This book is an attempt to provide the basic, concise but indepth information and is prepared by extracting fundamentals, concepts and meaning from this enormous and ever growing field. The language of book is very simple and diagrams are kept to the simple and line drawing that might be produced under examination conditions. Thus, this book will be helpful to the undergraduate and postgraduate students from a variety of biological disciplines and can be used as a basic subject material for the students, teachers in academic and technical Institutes.

The subject matter of this book is divided into 26 chapters. Chapter 1, 2, 3 and 4 provide a detailed account on nucleic acid's structure, DNA replication, nucleotide metabolism and DNA damage and repair systems. Chapter 5 presents the brief information on genetic code. Chapter 6 explains various steps of protein synthesis in prokaryotes and eukaryotes. Chapter 7 and 8 cover the area of mechanism of gene expression and global regulatory systems. Chapter 9 deals with enzymes, their mechanism, inhibition and their role. Chapter 10 and 11 cover the various types of mutation, isolation of mutants and genes.

Chapter 12, 13, 14, 15 and 16 cover a brief account on vectors, transposable gene in prokaryotes and eukaryotes, polymerase chain reaction, recombinant DNA technology, which have evolved as an offshoot of molecular biology. Chapter 17 gives information on organization of prokaryotic and eukaryotic cell. Chapter 18 is aimed to introduce various techniques used at molecular level and has become most fruitful and totally indispensable for human existence. Chapter 19 deals with water and their role in life with various types of reactions. Chapter 20, 21, 22 and 23 are associated with the structure and role of biomolecules such as carbohydrates, lipids, amino acids and protein. Chapter 24 and 25 deal with the mechanism of biochemical reactions occurring at cellular level. Chapter 26 deals with the definition, classification, fat and water soluble vitamins, avitaminosis : international units and summary and functions of vitamins.

We preferred to give the various types of questions at the end of each chapter, that will be helpful to deal within the core material. There is always ample scope of improvement in the concerned subject material. We invite constructive comment and valued suggestions from the students and teachers to further improve the book in subsequent editions.