

Preface

This book outlines the processes and applications of genetics in detail. It elaborates on the various techniques and studies related to the subject. Genetics, as a sub-field of biology, refers to the study of genes, heredity and genetic variation in living beings like plants, bacteria, humans and animals, etc. The topics included in the text on genetics are of utmost significance and are bound to provide incredible insights to readers. Included in this textbook are the fundamental application of genetics and the technological advances that have made this possible. It will serve as a valuable source of reference for those interested in this field.

Given below is the chapter wise description of the book:

Chapter 1- Genetics is the study of genes, heredity and genetic variation in living organisms. This chapter introduces the reader to the science of genetics and provides a brief overview of the topic. The chapter offers an insightful focus, keeping in mind the complex subject matter.

Chapter 2- To understand the complex science of genetics, it is of utmost importance that one grasps its key building blocks. The major components of genetics like gene, heredity, DNA, RNA, chromosome, DNA sequencing, and nucleotide have been discussed in the chapter. This enables the reader to form a comprehensive perception of genetics.

Chapter 3- The concepts of genetic variation, genetic drift, deletion, mutation and natural selection explain the physical and cognitive differences that exist in the human population at any given time. They also explain the reason that certain characteristics survive and others go extinct. This chapter discusses these key concepts in depth providing the reader with an awareness of the reasons behind why genetic research is one of the most rapidly growing fields of pure science.

Chapter 4- With the breakthroughs in genetics that have been a direct result of technological advancement, it comes as no surprise that the euchromatic areas of the human genome have been completely mapped by The Human Genome Project (HGP). This has enabled scientists around the globe to better understand genetic disorders and to also pursue improved gene therapy. This chapter focuses on the leaps and bounds achieved by human genetics and equips the reader with detailed information about the cutting-edge developments in human genetics.

Chapter 5- This chapter chronicles the history of genetics from the days of Mendelian or classical genetics to the current genetic research in cancer therapy. The reader is provided with in-depth information about the history of genetics from its humble beginnings at a monastery. The timeline of genetics illustrates the immense and rapid advancement the field has experienced and discusses its future.