

Book Review

“INSTANT NOTES IN GENETICS.”

By P.C. Winter, G. I. Hickey, and H. L. Fletcher
BIOS Scientific Publishers Limited, Oxford, U.K.,
1998, 384 pp.

Like the *Cliffs Notes* series produced to help students gain quick familiarity with a piece of literature, the *Instant Notes* series published by Bios Scientific Publishers Limited provide students in science relatively quick access to key concepts in science. The authors of this particular book in the series, *Instant Notes in Genetics*, do an outstanding job, given this abbreviated format of providing new-to-genetics readers with a relatively comprehensive, well-written overview of several basic concepts in prokaryotic and eukaryotic genetics. Discussions covering a variety of topics are included and range from basic explanations of transcription and translation to applications of molecular genetics in forensics and biotechnology. In clear, easy-to-read language it introduces the reader to general terminology, basic principles, and classic methodology in genetics that should give budding geneticists and students in other fields who require familiarity with genetics, essential exposure to the field of genetics to facilitate their growing comprehension of the subject and their ability to do additional reading or study of the topics.

The book contains 53 short chapters (on average approximately 6 pages each) divided into 5 major sections where each one focuses on a specific topic including Molecular Genetics, Genomes, Mechanisms of Inheritance, Population Genetics and Evolution, Recombinant DNA Technology, and Applications of Genetics. Each chapter begins with 1 or 2 pages of key words or phrases printed on a facsimile of a computer button icon, which are defined or described in a few clearly written sentences. These ‘buttons’ serve to highlight the major concepts and terms that are specifically addressed in the chapter and serve as a concise overview of each chapter’s content. More than half of the pages in most chapters either contain simple black and white line drawing illustrations or tables to accompany the text. While not particularly eye-catching, the basic illustrations are generally easy to understand, clearly labeled, and have appropriate legends. Although there are no references at the end of each chapter, there is a general, relatively short reference list for each section at the end of the book, which generally refers readers to more detailed textbooks or review articles. Impressively, this book was published in 1998 and it contains references for some 1998 publications.

The book is comprehensive in the number of topics introduced, but by necessity, each topic is briefly and rather simply addressed. The authors have done a stellar job teasing out and presenting key points. As in any book of this type, several points are by necessity overlooked. In the chapter on DNA Cloning (Chapter E2),

an excellent, well-illustrated overview of cloning using plasmids, bacteriophage, and yeast artificial chromosomes is presented. However, there is no discussion on other large genomic clones such as BACs and PACs, which are clones that will likely be more frequently encountered in both the laboratory and in the genomic literature by students of today. The chapter on genetic diseases (Chapter F1) gives a brief overview of Mendelian inheritance patterns, monogenic diseases, and DNA testing. Unfortunately the part devoted to DNA testing is largely limited to a discussion of linkage analysis using restriction fragment length polymorphisms (RFLPs). While RFLP testing still has a place in molecular diagnostic testing, the bulk of DNA testing for inherited disease, or predisposition to inherited disease, relies on detection of specific previously identified mutations (e.g., cystic fibrosis, fragile X syndrome, Huntington disease, hemochromatosis, etc.) or screening known genes for unknown mutations (e.g., breast cancer genes *BRCA1*, *BRCA2*, etc.). From a molecular diagnostic standpoint, this section reads like one that might have been written a decade ago, which in this fast moving field, is truly a different era. Hopefully, in the next incarnation of this book, updates will be included to make it more current. Perhaps at that time the focus in diagnostics will be rooted largely in microarray technology of multiple diseases in one assay. There is also no significant discussion of nontraditional mechanisms of genetic disease such as imprinting. From the perspective of one who teaches genetics for both medical and graduate students, it seems that imprinting is one of the more difficult concepts for the students to comprehend. A few paragraphs and simple illustrations in a book like this would undoubtedly be beneficial to many of its readers. An addition to the book that I think would be worth a few extra pages would be a chapter focusing on the myriad of internet resources and databases and their uses in genetics. Although some of these internet sites may change, a descriptive listing of the major sites that are used would be useful for readers of the book. Alternatively, links to related sites in each chapter would be beneficial.

The division of subject matter between chapters is sometimes difficult to understand. For instance, there is an early chapter on chromosomes (Section B: Genomes, Chapter B1) where morphology, molecular structure, chromatin, and alteration in chromosome number are discussed. There is no discussion of chromosome rearrangements in this section. Somewhat surprisingly, the discussion of structural chromosome rearrangements is not found until later in the book in the section, Population Genetics and Evolution, in a chapter called Chromosome Changes in Evolution (Chapter D6). In this chapter, the concept of a karyotype is once again discussed along with mechanisms of chromosome rearrangements, deletions, duplications, inversions, and translocations among others. Yet an-

other chapter (Chapter D8) discusses polyploidy in some detail. Understandably, many subjects in genetics could easily be categorized under a myriad of different broad categories depending on the emphasis of the book and preference of the authors. For the most part, the content for the chapters and sections in this text is quite good and easy to follow. For those subjects that are not categorized the way in which I, given my own biases, might think about them, there is appropriate attention to cross referencing within the chapters. In fact, included in each chapter is a list of chapters with related topics at the end of the key points for each chapter. There also is a relatively comprehensive index at the back of the book. Interestingly, while the chapter on chromosomes (Chapter B1) does list chapters on cell division (Chapter B2), the human genome (Chapter B4), meiosis and gametogenesis (Chapter C3), and polyploidy (Chapter D8), it fails to list the chapter dealing with chromosome rearrangements (Chapter D6).

This most likely represents a minor oversight in the first publication of this text.

Instant Notes in Genetics is not, nor is it designed to be, a primary text in genetics. Rather, this text provides a concise overview of an impressively comprehensive array of important topics in prokaryotic and eukaryotic genetics. Similar to *Cliffs Notes* publications, such overview publications generally lack detailed information that helps make the subject more interesting to serious students and that is essential for mastering the subject. However, it is a clearly written, simply illustrated, affordable text that should serve both as an excellent initial reference textbook and as a solid, comprehensive review text for students of genetics.

Elizabeth M. Petty
University of Michigan
Medical Genetics
Ann Arbor, Michigan