

PREFACE

We are aware of the quiet revolution in the way that genetics is taught to beginning students. Many instructors are finding that a strictly chronological, or historical, approach no longer fits their method of teaching genetics, nor does it meet their students' needs. More and more, molecular genetics is being introduced earlier in the course and integrated with phenotypic and genotypic analysis.

Modern Genetic Analysis is written for instructors and students who need a textbook that supports the "DNA first" approach. This departure from the traditional historical unfolding of genetics has had some significant side effects—chief among them, a more streamlined presentation in which genetic principles stand in bolder relief.

Regardless of whether the presentation is traditional or modern, it is essential that students learn to think like geneticists. Integrated critical thinking allow for a mastery of key genetic concepts.

The principle objective of this book is to help undergraduate students in the analysis of genetic problems. Many students have a great deal of difficulty doing genetic analysis, and the book will be useful regardless of which genetics text is being used. Most texts provide some kinds of problems and answers: few, if any, however, show the students how to actually solve the problem. Often the student has no idea how the answer was derived. This work emphasizes solutions, not just answers. The strategy is to provide the student with the essential steps and the reasoning involved in conducting the analysis. Throughout the book, an attempt is made to present a balanced account of genetics. Topics, therefore, center about Mendelian, cytogenetic, molecular, quantitative, and population genetics, with a few more specialized areas. Whenever possible the student is provided with the appropriate basic statistics necessary to make some the analyses. The book also builds on itself; that is, analytical methods learned in early parts of the book are subsequently revisited and used for later analyses. A deliberate attempt is made to make complex concepts simple, and sometimes to point out that apparently simple concepts are sometimes less so on further investigation. Any student taking a genetics course will find this book an invaluable aid to achieving a good understanding of genetic principles and practice.

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