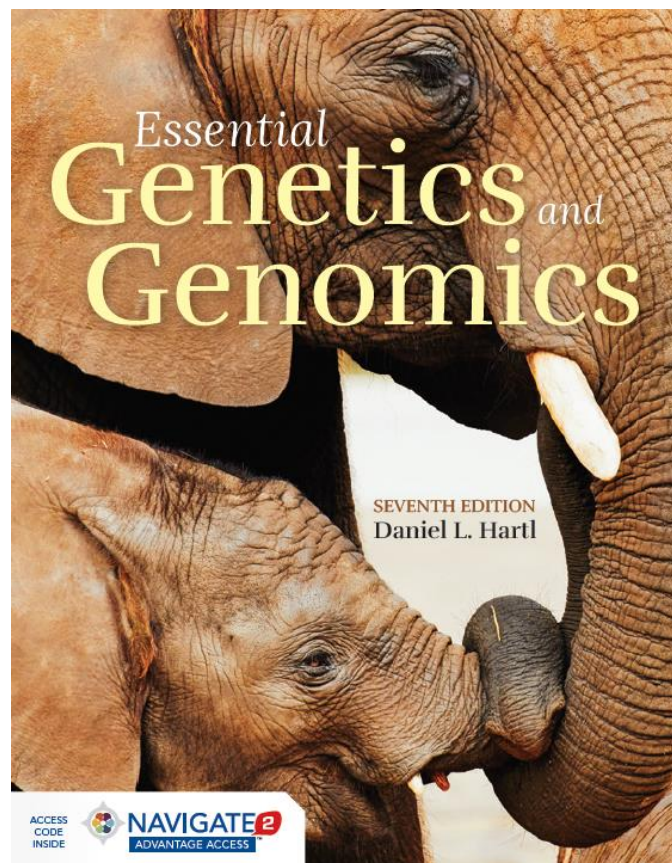




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Essential Genetics and Genomics, Seventh Edition
Includes Navigate 2 Advantage Access



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KEY FEATURES FOR THE SEVENTH EDITION

- ✓ **NEW online *READINESS ASSESSMENT* and in-text *READINESS REVIEW*** ensure students have the foundational knowledge for learning and applying introductory genetics
 - Students simply answer the online questions to obtain a personalized score with tailored areas to focus their review. Students are then directed to the color-coded *Readiness Review* section in the back of the text to practice the areas where study is needed. Sections include *Math in Genetics*, *Science Prerequisites*, and *Thinking Like a Scientist*. **Never has learning genetics been so straightforward!**
- ✓ **CLARIFIED, CONDENSED, and UPDATED** content throughout
- ✓ **NEW** stunning **interior design** with over 100 NEW or REVISED illustrations, photos, and tables that unlock complex topics
- ✓ **LEARNING OBJECTIVES** added to the beginning of each chapter
- ✓ **STREAMLINED *Human Connection*** boxes discussing landmark research
- ✓ **NEW *Stop & Think*** problems inserted at strategic points in the text to enhance the reading experience and encourage higher-order, analytical thinking
- ✓ End-of-book Glossary and a compilation of frequently used *Word Roots* help students understand key genetic terms and make them part of their vocabulary

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The Publisher will provide a variety of Teaching Tools to assist instructors with preparing for and teaching their courses. These resources are available via digital download and multiple other formats.

- Lecture Slides in PowerPoint format
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IMPORTANT CHAPTER UPDATES

In addition to the key updates made to all chapters, the author has provided more detailed notes on significant changes for each chapter. This is not a comprehensive list of all revisions, just some of the major ones to help you update your course.

Chapter 1: The Genetic Code of Genes and Genomes

- ✓ New introductory section
- ✓ New content emphasizing that most common traits are actually complex traits
- ✓ Added coverage of Syn3.0

Chapter 2: Transmission Genetics: Heritage from Mendel

- ✓ New introductory section
- ✓ New sub-section emphasizing that genes affect traits at multiple levels

Chapter 3: The Chromosomal basis of Heredity

- ✓ Added discussion of the epigenetic specification of the kinetochore

Chapter 4: Gene Linkage and Genetic Mapping

- ✓ Shortened and sharpened discussion of the principal types of genetic variation

- ✓ Added emphasis on single nucleotide polymorphisms (SNPs), copy number variations (CNVs), and simple tandem repeats (STRs)
- ✓ New summary of the results of genome-wide association studies (GWAS) to detect genetic risk factors for common disorders and genetic factors affecting complex traits

Chapter 5: Human Chromosomes and Chromosome Behavior

- ✓ Overall shortened and streamlined
- ✓ Removed sub-section on “Polyploids can include genomes from different species”

Chapter 6: DNA Structure, Replication, and Manipulation

- ✓ Completely reorganized and simplified discussion of DNA replication updated

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to include the trombone model of replication

- ✓ Section on massively parallel sequencing has been expanded and moved to Chapter 10

Chapter 7: The Genetics of Bacteria and Their Viruses

- ✓ Clarified description of how bacterial cells are brought together in conjugation
- ✓ eliminated unnecessary detail on genetic fine structure of the *rII* gene in bacteriophage T4

Chapter 8: The Molecular Genetics of Gene Expression

- ✓ Highlighted new *Stop & Think* Features to reinforce fundamental concepts and processes of transcription and translation

Chapter 9: Molecular Mechanisms of Gene Regulation

- ✓ Major new section on how chromatin is organized into higher-order structures
- ✓ Updated section on RNA interference and long noncoding RNAs
- ✓ Removed material on programmed DNA rearrangements

Chapter 10: Genomics, Proteomics, and Genetic Engineering

- ✓ Completely revised and reorganized
- ✓ Added summary of the latest high-throughput DNA sequencing technology
- ✓ Added expanded section on massively parallel sequencing previously in Chapter 6
- ✓ New section on personalized medicine (precision medicine) as well as direct-to-consumer genetic services and over-the-counter genetic testing kits
- ✓ New section on CRISPR-Cas9 technology for genetic engineering

Chapter 11: The Genetic Control of Development

- ✓ Slightly expanded section on the use of epistasis in the analysis of switch-regulation pathways
- ✓ Removed unnecessary details such as minutiae of genetic control of yeast mating type

Chapter 12: Molecular Mechanisms of Mutation and Gene Repair

- ✓ Major new section on estimates of the rate of base-substitution mutation in humans as determined by genome sequencing of parental and offspring genomes
- ✓ Removed section on the "CIB method" for detecting mutations in *Drosophila*

Chapter 13: Molecular Genetics of the Cell Cycle and Cancer

- ✓ Added emphasis on the connection between genetic control of the cell cycle and cancer
- ✓ Numerous updated illustrations

Chapter 14: Molecular Evolution and Population Genetics

- ✓ Shortened and streamlined section on molecular phylogenetics

Chapter 15: The Genetic Basis of Complex Traits

- ✓ Major new section on genome-wide association studies (GWAS) focusing on the usually large number of genes affecting complex traits and their typically small individual effects
- ✓ Added discussion of physiological epistasis and statistical epistasis
- ✓ Removed information on a classic method for estimating the number of genes affecting quantitative traits