



# Essential Genetics

*By Daniel L. Hartl*

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## Essential Genetics By Daniel L. Hartl

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Updated throughout to reflect the latest discoveries in this fast-paced field, *Essential Genetics: A Genomics Perspective, Sixth Edition*, provides an accessible, student-friendly introduction to modern genetics. Designed for the shorter, less comprehensive course, the Sixth Edition presents carefully chosen topics that provide a solid foundation to the basic understanding of gene mutation, expression, and regulation. It goes on to discuss the development and progression of genetics as a field of study within a societal and historical context. The Sixth Edition includes new learning objectives within each chapter which helps students identify what they should know as a result of their studying and highlights the skills they should acquire through various practice problems.

What's new in the Sixth Edition?

Chapter 1 includes a new section on the origin of life

Chapter 2 includes a revised discussion of the complementation test and how it is used to determine whether two mutations have defects in the same gene

Chapter 3 incorporates new data showing that the folding of interphase chromatin into chromosome territories has the form of a fractal globule. It also includes a new section on progenitor cells and embryonic stem cells

Chapter 4 includes a new section discussing how copy-number variation in human amylase evolved in response to increased dietary starch as well as the latest on hotspots of recombination

Chapter 5 is updated with the latest information on hazards of polycarbonate food containers. It also includes a new section on the genetics of schizophrenia and autism spectrum disorder

Chapter 6 includes a revised section on restriction mapping and also discusses the newest massively parallel DNA sequencing technologies that can yield the equivalent of 200 human genomes' worth of DNA sequence in a single sequencing run

Chapter 7 has been updated with a shortened and streamlined discussion of recombination in bacteriophage

Chapter 8 includes new discoveries concerning the mechanisms of intrinsic transcriptional termination as well as rho-dependent termination

Chapter 9 is updated with a new section on stochastic effects on gene expression

and an expanded discussion of the lactose operon. There is also a revised discussion of galactose gene regulation in yeast, as well as new sections on long noncoding RNAs

Chapter 10 includes new sections on ancient DNA sequences of the Neandertal and Denisovan genomes

Chapter 11 examines master control genes in development

Chapter 12 includes a new section on the repair of double-stranded breaks in DNA by nonhomologous end joining or template-directed gap repair

Chapter 13 has been extensively revised with the latest data on cancer.

Chapter 14 includes a new section on the detection of natural selection, as well as a new section on conservation genetics

Key Features of Essential Genetics, Sixth Edition:

New Learning Objectives within each

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### **Essential Genetics By Daniel L. Hartl Bibliography**

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