

# Chapter 11: Introduction to Genetics

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## State Standards:

**Central Concept:** Genes allow for the storage and transmission of genetic information. They are a set of instructions provided in the nucleotide sequence of each organism. Genes code for the specific sequences of amino acids that comprise the proteins characteristic to that organism.

- 1.1 Describe the basic structure (double helix, sugar-phosphate backbone, linked by complementary nucleotide pairs) of DNA, and describe its function in genetic inheritance.
- 1.2 Explain how mutations in the DNA sequence of a gene may or may not result in phenotypic change in an organism. Explain how mutations in genes may result in phenotypic changes in offspring.
- 1.4 Distinguish among observed inheritance patterns caused by several types of genetic traits (dominant, recessive, co-dominant, sex-linked, polygenic, incomplete dominance, multiple alleles).
- 1.5 Describe how Mendel's laws of segregation and independent assortment can be observed through patterns of inheritance (e.g., dihybrid crosses).
- 1.6 Use a Punnett Square to determine the probabilities for genotype and phenotype combinations in monohybrid crosses.

## Key Terms

Genetics

Trait

Heredity

Gene

Locus

Allele

Pure-bred

Hybrid

Self-Fertilize

Dominant

Recessive

Diploid

Haploid

Miosis

Homozygous

Heterozygous

Mendel's Law of Dominance

Dominant Allele

Recessive Allele

Homozygous Dominant

Homozygous Recessive

Gene Expression

Genotype

Phenotype

P, F<sub>1</sub>, F<sub>2</sub>

Monohybrid Cross

Test Cross

Homologous Chromosomes

Probability

Punnett-Square Method

Law of Segregation

D<sub>1</sub>-hybrid Crosses

Independent Assortment

## You should be able to:

1. Describe why Mendel chose to study garden peas
2. Summarize Mendel's experimental design, including what traits he was observing
3. Summarize the results of Mendel's experiments
4. Analyze genotypic and phenotypic data obtained by Mendel
5. Summarize Mendel's Theory of Heredity
6. Explain the Laws of Heredity: Law of Dominance, Law of Segregation and Law of Independent Assortment (and how they relate to meiosis/sexual reproduction)
7. Solve Monohybrid and Dihybrid word problems using Punnett squares
8. Describe the role of probability in genetics

# Introduction To Genetics Study Guide

**RS Peters**



## **Introduction To Genetics Study Guide:**

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[Introductory Genetics](#) David Peebles,2014-07-03     [Study Guide for Introductory Genetics](#) David Peebles,2003-07-25

**Study Guide and Workbook for Genetics** Irwin Herman Herskowitz,1960     [Study Guide and Solutions Manual](#)

Bruce A. Chase,Peter J. Russell,2005-06 This student resource contains chapter outlines of text material solutions to all end of chapter problems key terms suggestions for analytical approaches problem solving strategies and a variety of additional questions for student practice Also featured are questions that relate to chapter specific animations and iActivities

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