

Module 09: Tissues — Keys to Success

Key Learning Objectives

1. Mendelian Genetics Foundations

- Define gene, allele, genotype, and phenotype
- Distinguish between dominant and recessive alleles
- Explain homozygous and heterozygous conditions
- Describe Mendel's experiments and his two laws

2. Law of Segregation

- Explain the law of segregation
- Use Punnett squares to predict offspring genotypes and phenotypes
- Calculate genotypic and phenotypic ratios for monohybrid crosses

3. Law of Independent Assortment

- Explain the law of independent assortment
- Perform dihybrid crosses using Punnett squares
- Understand when independent assortment applies and its limitations

4. Extensions to Mendelian Genetics

- Describe incomplete dominance and codominance
- Explain multiple alleles using ABO blood types as an example
- Understand polygenic inheritance and continuous variation
- Explain pleiotropy (one gene affecting multiple traits)

5. Sex Linkage and Chromosomal Inheritance

- Describe sex determination in humans
- Explain sex-linked inheritance patterns

- Predict outcomes of crosses involving X-linked traits
- Understand why sex-linked disorders are more common in males

6. Pedigree Analysis

- Interpret pedigree charts
 - Determine modes of inheritance from pedigrees
 - Identify carriers and affected individuals
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Study Tips

1. Practice Punnett squares extensively
2. Learn genetics vocabulary thoroughly
3. Analyze pedigree examples from different inheritance patterns
4. Calculate ratios for various cross types
5. Connect concepts to real genetic conditions