LEARNING OBJECTIVES FOR GENETICS

Exam IV

Chapter 13: Mutation and DNA Repair
- Understand the origin and nature of mutations.
- Learn to classify various mutations.
- Appreciate the importance of mutation for evolution.
- Examine the rate of spontaneous mutations.
- Learn how various mutations are repaired.

Chapter 14: Techniques of Molecular Genetics
- Examine the function of restriction enzymes and their importance for studying genetics.
- Review how gel electrophoresis is used to size-fractionate DNA.
- Understand the techniques of Southern blotting and PCR, and how they are used to assess genetic variability.

Chapter 16: Applications of Molecular Genetics
- Appreciate how recombinant DNA technology is used to diagnose human diseases.
- Understand DNA fingerprinting and its applications.

Chapter 23: Population Genetics
- Understand the significance of the Hardy-Weinberg law.
- Recognize when a population is in H-W equilibrium.
- Examine the quantitative effects of mutation, migration, drift, and selection on allele frequencies in a population.
- Learn how deleterious alleles are maintained in populations over time.
- Appreciate the mechanisms and significance of speciation.
- Examine adaptive genetic variation.

Chapter 24: Evolutionary Genetics
- Understand how rates of evolution are estimated from molecular data.
- Review the techniques used to study molecular variation.
- Learn how evolutionary history is reconstructed using phylogenetic analysis.

Reading and Problem Assignments for
Principles of Genetics, 5th edition, Snustad & Simmons

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Be sure to review and understand the “Basic Exercises” and “Testing Your Knowledge” sections at the end of each chapter.

(See the STUDENT COMPANION SITE at www.wiley.com/college/snustad for additional useful resources and information)