**Biology 3201**

**Unit 3 - Chapter 17**

**Molecular Genetics Objectives**

1. Distinguish among the different types of chromosome mutation. Discuss (p.550)

A. deletion

B. duplication

C. inversion

D. translocation

E. nondisjunction (monosomy, trisomy)

1. Identify several examples of human genetic diseases caused by chromosomal mutations: (550-553)

A. Down syndrome

B. Turner syndrome

C. Klinefelter syndrome (XXY syndrome)

D. Jacobs syndrome (XYY syndrome)

E Triple X syndrome

Chapter 17

1. Which discoveries lead to the concept of the gene?
2. Describe the contributions of the following:

A. Mendel

B. Sutton and Boveri

C. Levene

D. Griffith

E. MacLeod, McCarty & Avery

F. Chargaff

G. Franklin & Wilkins

H. Hershey and Chase

I. Watson and Crick

J. McClintock

1. Describe the Watson and Crick double helix model of DNA.
2. Compare and contrast the structure of DNA and RNA (nucleic acids)
3. Explain the current model of DNA replication. Include

A. initiation

B. elongation

C. termination

D. proofreading and correction

1. Lab #6A: DNA structure and replication
2. explain the role of DNA and RNA (mRNA, tRNA, rRNA) in protein synthesis.

Include

A. transcription

B. translation

1. Discuss the influence of hormonal and environmental factors on gene expression.
2. Explain the meaning of the term mutation and what causes it
3. Explain what is meant by a gene mutation and predict the general effects it has on protein synthesis.
4. Distinguish between somatic and germ mutation and compare the inheritability of each.
5. Distinguish among the different types of point mutations (gene mutations). Refer to

A. substitution

- silent

- mis-sense

- nonsense

B. frame shift

- insertion

- deletion

1. Discuss how McClintocks jumping genes (transposons) contribute to genetic variation.
2. Lab #7B: Simulating Protein Synthesis