**Chapter 12 Test Study Guide**

1. Know the experiments, parts of the experiment, and conclusions of the following scientists:
   1. Griffith
   2. Avery
   3. Hershey and Chase
   4. Franklin and Wilkins
   5. Watson and Crick
2. Where is DNA located in eukaryotic cells?
3. What does it mean to be complementary?
4. Know the 3 parts to a nucleotide
5. 4 nitrogen bases of DNA
6. Purines vs. pyrimidines
   1. Definition and which nitrogen base is which
7. Chargaff’s conclusions
8. What is a gene? It has instructions for making what?
9. Base pairing rules
10. What holds nitrogen bases together? Is this a strong or weak connection?
11. Be able to identify parts of the structure of DNA
    1. Backbone and Interior
12. DNA replication
    1. Definition
    2. Steps (be able to put the steps in the correct order)
    3. When it happens
    4. Role of enzyme DNA polymerase
    5. Results of process
13. DNA controls the production of what?
14. What are proteins made up of? These are held together by what bond?
15. Definition of a codon
    1. How many combinations are possible?
    2. What is the start codon?
    3. How many stop codons are there?
16. Be able to read the genetic code chart and determine the amino acids for the given mRNA sequence starting with DNA
17. Transcription
    1. What happens?
    2. Where does it happen?
    3. What enzyme is needed for it to happen and what does it do?
    4. Steps of the process
    5. What nitrogen base is only found in RNA? In DNA?
18. DNA vs. RNA
    1. Sugar
    2. Nitrogen bases
    3. Structure
    4. Location in a cell
    5. Base pairing
19. 3 types of RNA and their roles
    1. What happens if one does not work?
20. Introns vs. exons
    1. Definition and role
21. Translation
    1. What happens? Where does it happen?
    2. Steps of process (be able to put the steps in the correct order)
    3. When does it end?
22. Definition of anticodon. Where is it found?
23. Mutations
    1. Definition
    2. Reasons it happens (4 errors)
    3. Reproductive cells vs. body cells mutations and results
    4. Which type of mutation can be passed on to offspring?
    5. Types: point, frameshift, chromosomal
       1. Definition
       2. Results
    6. Examples of chromosomal mutations (ex: translocation, deletion, inversion) and what happens
    7. Causes of mutations
       1. Definition of mutagen with examples
    8. What can mutations help create?
    9. Albinism definition
       1. Why is it dangerous in plants?
24. Definition of promoter. What is it a binding site for?
25. Gene regulation in a prokaryote
    1. What is an operon? Do we find these in eukaryotic cells?
    2. What is the lac operon?
    3. What do repressors do? What do they turn off?
    4. What turns the lac genes back on? What does this do?
26. Gene regulation in a eukaryote
    1. Simple or complex?
    2. What is the TATA box? What is its job?
    3. What are hox genes? What do they help do?