

Name: \_\_\_\_\_ Period: \_\_\_\_\_ Date: \_\_\_\_\_

## BIOLOGY TARGETS

### Unit 5 – Molecular Genetics

#### Remember...

- ✓ I can connect two or more targets together into one cohesive idea or explanation.
  - ✓ I can recall lab/activity concepts, skills, and results from this unit as specific examples of the targets.
  - ✓ I can use the BioThemes to connect the content and labs/activities in a detailed and reflective manner.
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TARGET	
5.1	I can explain how all of the genetic material (6 feet of DNA in every cell) fits into the nucleus of a cell ( <b>chromosome, chromatin, nucleosome, histones, DNA</b> ).
5.2	I can describe the structure of <b>DNA (deoxyribonucleic acid)</b> , including the subunits that comprise <b>nucleotides</b> , how <b>complementary base pairs</b> bond, and the <b>double helix</b> shape.
5.3	I can identify who is credited with discovering the structure of DNA, and in what year.
5.4	I can explain the process <b>DNA replication</b> (a <b>semi-conservative</b> process), including how DNA is copied, where it occurs in the cell, and why DNA replication occurs.
5.5	I can describe how the structure of DNA facilitates the acts of DNA replication and transcription ( <b>hydrogen bonding</b> ).
5.6	I can explain how the genetic information in DNA molecules provides instructions for assembling protein molecules and that this is virtually the same mechanism for all life forms.
5.7	I can explain that <b>genes</b> are regions of DNA that code for <b>proteins</b> , which determine <b>traits</b> .

5.8	I can compare and contrast the structures and functions of DNA and <b>RNA (ribonucleic acid)</b> .
5.9	I can explain the process and purpose of <b>transcription</b> in the nucleus.
5.10	I can compare and contrast the steps, timing (during cell cycle), and location within the cell of DNA replication and transcription.
5.11	I can explain the process and purpose of <b>translation</b> by ribosomes in the cytoplasm.
5.12	I can describe the role of <b>mRNA, tRNA, rRNA, codons, anticodons, and amino acids</b> in protein synthesis
5.13	I can use the DNA code to determine the amino acid sequence that makes up a protein.
5.14	I can describe how inserting, deleting, or substituting DNA segments ( <b>mutations</b> ) can alter a gene.
5.15	I can identify a <b>point mutation (missense, nonsense, and silent)</b> and a <b>frameshift mutation (insertion and deletion)</b> in a DNA sequence, and explain how each mutation can change the resulting protein.
5.16	I can recognize that an altered gene will be passed on to every cell that develops from it and that the resulting features may help, harm, or have little or no effect on the offspring's success in its environment.

5.17 I can explain how **mutagens** increase mutations and thus the chance of cancer (uncontrolled cell division).

5.18 I can explain how mutations in the DNA sequence of a gene may be silent or result in phenotypic change in an organism and in its offspring.