

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

**Vocabulary Review: Heredity I KEY**

**Cell Cycle & Stem Cells**

1. **Cytokinesis** Process by which a cell's cytoplasm divides.
2. **Mitosis** Process by which a cell's nucleus divides.
3. **Synthesis** Phase of the cell cycle where DNA is copied.
4. **Metaphase** Phase of mitosis where the chromosomes are lined up along the equator of the cell.
5. **Chromatid** One-half of a duplicated chromosome.
6. **Anaphase** Phase of mitosis where sister chromatids separate and are pulled to opposite poles of the cell.
7. **Malignant** Type of tumor that cells break away and spread to other parts of the body.
8. **Metastasize** The act of spreading out from one area to another.
9. **Carcinogen** A substance that promotes the development of cancer.
10. **Cancer** Uncontrolled cell growth.
11. **Asexual reproduction** Process where offspring are produced from one parent.
12. **Sexual reproduction** Process where offspring are produced by more than one parent.
13. **Interphase** Phase of the cell cycle between cell divisions; most of a cell's life is spent in this phase.
14. **Prophase** Phase of mitosis where chromosomes condense and nuclear envelope breaks down.
15. **Centromere** Region of the condensed chromosome where spindle fibers attach; place where sister chromatids are attached.
16. **Histone** Protein that DNA wraps around and organizes into chromosomes.
17. **Chromosome** Long continuous threads of DNA that consist of numerous genes and regulatory information (condensed during prophase).
18. **Stem cells** Undifferentiated cells; types include embryonic and adult.
19. **Chromatin** DNA and histones in interphase (not condensed).
20. **Gap 1** Normal growth and functions of a cell's life cycle.
21. **Diploid number** 2 copies of the chromosomes; found in somatic cells.
22. **Haploid number** 1 copy of the chromosomes; found in gamete cells.

**DNA, RNA, & Protein Synthesis**

23. **Nucleotides** Monomer of nucleic acids.
24. **DNA nucleotides** Composed of deoxyribose, phosphate group, and a nitrogen-containing base.
25. **RNA nucleotides** Composed of ribose, phosphate group, and a nitrogen-containing base.
26. **Base pairing rules** Adenine binds with thymine and cytosine binds with guanine.
27. **Replication** Process by which DNA is copied.
28. **Helicase** Enzyme that unwinds DNA in replication.
29. **DNA polymerase** Enzyme that forms bonds between nucleotides and proofreads during replication.
30. **Double helix** Structure of DNA.
31. **Transcription** Process a gene of DNA is used as a template to form a complementary RNA strand.
32. **RNA polymerase** Enzyme that catalyzes transcription.
33. **Nucleus** Location of replication and transcription.
34. **Ribosome** Location of translation.

35. Translation Process by which an mRNA sequence is used to code for a polypeptide.
36. mRNA Form of RNA that has codons that code for an amino acid sequence.
37. rRNA Form of RNA found in a ribosome.
38. tRNA Form of RNA that brings amino acids to a ribosome for protein synthesis.
39. Codon A 3-nucleotide sequence on mRNA.
40. Stop codon Signals the end of translation (on mRNA); UGA is an example.
41. Start codon Signals the beginning of translation (on mRNA); AUG.
42. Mutation Change in the sequence of DNA.
43. Anticodon A 3-nucleotide sequence on tRNA.
44. Uracil Base found in RNA but not in DNA.
45. Frameshift mutation Caused by the insertion or deletion of nucleotides in DNA.
46. mutagen Examples include radiation and UV light.
47. Point mutation A change in a single nucleotide of DNA (substitution of one base for another base).
48. Central dogma Describes the flow of information from DNA to RNA to proteins.

**IDENTIFYING MUTATIONS:**

Circle the whether the mutation is a point or frameshift mutation. In the line that follows, identify whether the mutation is a substitution, insertion, or deletion.

49. AGCGCGAUU to ACCGCGAUU    **point** or frameshift    substitution
50. AGCGCGAUU to AGGCGCGAUU    point or **frameshift**    insertion
51. AGCGCGAUU to ACGCGAUU    point or **frameshift**    deletion

SHORT ANSWER:

52. **For humans:** the diploid number is 46.
53. **For humans:** the haploid number is 23.

**Replication**

DNA Sequence:                                  ATCTACGACTTCCCACTCGC                                  55. Location: nucleus

54. Complementary DNA:                                  TAG ATG CTG AAA GGG TGA GCG

56. Where in the cell cycle does replication occur? Synthesis (S)

DNA Sequence:                                  ATCTACGACTTCCCACTCGC                                  60. Location: nucleus

59. Complementary mRNA:                                  UAG AUG CUG AAA GGG UGA GCG

61. What process is this? TRANSCRIPTION  
(DNA gene used to generate an RNA)

*Find the start codon & translate the mRNA codons into the appropriate amino acid sequence (polypeptide) using the genetic code table in your textbook on p. 244. Don't forget to stop at the stop codon!*

62. Polypeptide:                                  meth – leu – lys – gly - STOP                                  63. Location: cytoplasm on ribosomes

64. What process is this? TRANSLATION  
(mRNA codons used to generate a protein?)