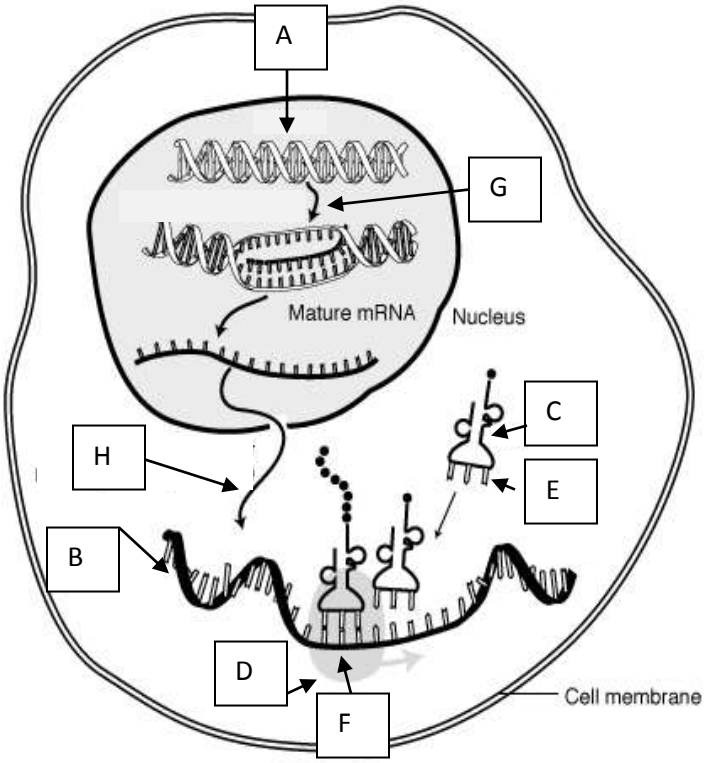
Team Trivia for Heredity Test #1 (Cell Cycle, Cell Regulation, Protein Synthesis)

1. What does DNA look like? Twisted rope ladder, double helix
2. What does DNA stand for? Deoxyribonucleic acid
3. Name the 3 parts to a nucleotide. Sugar, phosphate, and a nitrogen base
4. Explain Chargaff's Rules. A occurs in equal amounts as T & G occurs in equal amounts as C
5. Find the complementary sequence to the following DNA strand: ATTGCCATA TAACGGTAT
6. Find the complementary sequence of RNA to the following DNA strand: ATTGCCATA UAACGGUAU
7. What tRNA anticodon would complement the mRNA codon – AUG? UAC
8. What scientists were given credit for the discovery of the structure of DNA? Watson and Crick
9. What is the main function of DNA? To store and transmit genetic information
10. What are genes? Segments of DNA that code for a protein or a function
11. What are the 4 nitrogenous bases in DNA? Adenine, Guanine, Cytosine, Thymine
12. What is the sugar in DNA? Deoxyribose
13. What is the sugar in RNA? Ribose
14. What is the name of the enzyme that builds a complementary strand of DNA during S-phase? DNA polymerase
15. What is the name of the enzyme that builds an mRNA strand from a DNA template during transcription? RNA polymerase
16. Name the phases of Mitosis in order. Prophase, metaphase, anaphase, telophase
17. What enzyme is responsible for uncoiling DNA in DNA Replication? Helicase
18. Name the phase of the cell cycle in which the nuclear membrane reappears. Telophase
19. You have 46 chromosomes in each of your cells. What is your diploid number? 46
20. Name the phases of the cell cycle in which the cell grows in size (be specific) G1 and G2
21. Name the phase of mitosis in which the chromatids line up along the equator of the cell. Metaphase
22. What is a chromatid? One-half of a duplicated chromosome
23. What is a centromere? Area where two sister chromatids connect & spindle fiber will attach
24. What is chromatin and where is it located in the cell cycle? DNA and proteins that are not condensed (occurs in interphase of the cell cycle)
25. Name the phase of mitosis in which the nuclear membrane begins to disappear. Prophase
26. How many strands makeup RNA? One
27. Name the 3 main types of RNA. mRNA, tRNA, rRNA
28. Describe transcription. mRNA is made from a gene on the original strand of DNA
29. What are the 4 nitrogen bases in RNA? Adenine, guanine, cytosine, and uracil
30. Where are genes located? On chromosomes
31. At the end of mitosis, are daughter cells genetically identical or unique? Identical
32. When the RNA message is changed into a protein, what is this process called and where does it take place in a cell? Translation in the cytoplasm on a ribosome
33. The conversion of the DNA message into mRNA is called transcription
34. What is the name of the molecule that brings the amino acids to the ribosome? tRNA
35. What are the instructions for making a protein written as a 3-letter sequence called? Codons
36. What do codons code for? Amino acids
37. What are the building blocks of proteins and what is the name for the bond holding them together? Amino acids & peptide bonds
38. How is cytokinesis different in a plant cell versus an animal cell? Plant cell forms a cell plate
39. What is the difference between a malignant tumor and a benign tumor? Malignant can break away (metastasize) and form tumors elsewhere in the body, benign are stationary

40. What are cells called that have not differentiated into their mature type? Stem cells
41. What is the START codon? AUG
42. What are the 2 origins of stem cells? Embryonic and adult
43. What are changes in DNA called? Mutations
44. Identify structure A in the Figure 1-1. DNA
45. Identify structure B in Figure 1-1. mRNA
46. Identify structure C in Figure 1-1. tRNA
47. Identify structure D in Figure 1-1. Ribosome
48. Identify structure E in Figure 1-1. Anticodon
49. Identify structure F in Figure 1-1 (3 nucleotides on mRNA). codon
50. What process (G) is occurring in the nucleus Figure 1-1? transcription
51. What process (H) is occurring in the cytoplasm in Figure 1-1? Translation
52. Use the genetic code table provided to translate this mRNA sequence – AUGAAACCUUGA. met-lys-pro-STOP
53. A deletion of one nucleotide would result in a ____ mutation (reading frame changes). Frameshift
54. A mutation that substitutes one base for another is called a _____. Substitution
55. A mutation where an additional base is in the DNA. Insertion
56. A mutation where one base is missing in the DNA? Deletion
57. Identify the mutation type (both general & specific): TTTAACGCG to TTAAACGCG point mutation, substitution
58. Identify the mutation type (both general & specific): TTTAACGCG to TTTAAACGCG frameshift mutation, insertion
59. Identify the mutation type (both general & specific): TTTAACGCG to TTTAAGCG frameshift mutation, deletion



Genetic Code Table

	U	C	A	G	
U	Phe	Ser	Tyr	Cys	U
	Phe	Ser	Tyr	Cys	C
	Leu	Ser	STOP	STOP	A
	Leu	Ser	STOP	Trp	G
C	Leu	Pro	His	Arg	U
	Leu	Pro	His	Arg	C
	Leu	Pro	Gln	Arg	A
	Leu	Pro	Gln	Arg	G
A	Ile	Thr	Asn	Ser	U
	Ile	Thr	Asn	Ser	C
	Ile	Thr	Lys	Arg	A
	Met	Thr	Lys	Arg	G
G	Val	Ala	Asp	Gly	U
	Val	Ala	Asp	Gly	C
	Val	Ala	Glu	Gly	A
	Val	Ala	Glu	Gly	G