**Cell Test Review🡪 The Cell, Plasma Membrane, DNA, Protein Synthesis**

**Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Learning Goals:**

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| --- | --- | --- | --- | --- | --- |
| **Learning Goals** | ***No Evidence***  ***0*** | ***Beginning***  ***1*** | ***Developing***  ***2*** | ***Proficient***  ***3*** | ***Sophisticated***  ***4*** |
| I can explain the role of enzymes in the body |  |  |  |  |  |
| I can explain the structures and functions of the various parts of the cell and membrane |  |  |  |  |  |
| I can explain the process of DNA Replication |  |  |  |  |  |
| I can explain the process of protein synthesis and how it leads to mutations |  |  |  |  |  |

**Learning Goal #1: I can explain the role of enzymes in the body**

1. What is an enzyme? Draw and label the active site, substrate, and enzyme.
2. What does an enzyme do and how does it work?
3. What are the 6 factors that impact enzyme functioning and how does it impact it?
4. What happens if an enzyme denatures? What does this mean?

**Learning Goal #2: I will be able to label on a diagram and describe the function of the following organelles and part of the cell (including membrane)**

1. Draw an animal cell and label the following organelles. State the function of each:
   1. cell membrane
   2. cytoplasm
   3. golgi body
   4. lysosome
   5. mitochondria
   6. nucleus
   7. nuclear pore
   8. nucleolus
   9. chromatin
   10. nuclear envelope
   11. chromosomes
   12. ribosomes
   13. smooth and rough ER
   14. vesicles
   15. vacuole
2. Explain what the role of a cell membrane is. Outline the changes that might occur when a cell is placed in an isotonic, hypertonic, or hypertonic solution.
3. What are the different ways that materials will move into and out of a cell?
4. Compare and contrast osmosis and diffusion.
5. Draw a phospholipid bilayer of the cell membrane, including protein carriers and glycoproteins
6. Explain the difference between active and passive transport.
7. Explain the different between pinocytosis and phagocystosis.

**Learning Goal #3: I will be able to draw and outline the steps and enzymes involved in DNA replication**

1. Draw and label the process of DNA replication. Be sure to label:
   1. Leading strand
   2. Lagging strand
   3. Okazaki fragments
   4. Helicase
   5. DNA polymerase
   6. Single stranded binding proteins
   7. Ligase
   8. Nitrogen base pairs
   9. 3’ and 5’ ends

**Learning Goal #4: I will be able to draw and explain the steps in protein production (transcription and translation)**

* + - 1. Where does transcription occur?
      2. What are two modifications made to the mRNA transcript before it leaves the nucleus?
      3. Where does translation occur?
      4. What enzyme is used to place nucleotides into the mRNA transcript?
      5. How does the mRNA strand indicate that the amino acid chain is finished?
      6. What enzyme unwinds the original DNA strand to prepare it for transcription?
      7. Which is removed as waste material, the exons or the introns?

1. Give the resulting amino acid chain from this piece of DNA:

5’ TCCTACGCCCTTAGCTTGAACACTGGCC 3’

1. What is a mutation? How does a mutation occur?
2. What are the 2 main types of mutations? Explain the various point mutations.
3. What does a change in protein structure do to the functioning of the protein?