

Name _____

Period _____



Cell Shape & Function: Cells have many different shapes and functions

Objective: Students will learn that, even though we draw cells with a generic picture with all of the organelles, cells actually have a very exact structure that helps it perform many exact functions. Students will also learn that cells can become sick and infected and that they can also help to fight these infections and sicknesses.

Lab Station 1) Muscle cells

1- Sketch and LABEL a picture of the muscle cells.

2- Make a Claim!! Based on the STRUCTURE and FUNCTION of the muscle cell, argue any group of organelles this cell type might have in high supply.

3- Make an INFERENCE! Explain how your body would respond if you started to do a lot more exercise and you needed more and more energy in your muscle cells every time you exercise more.

Lab Station 2) Simple Columnar Epithelial Cells

4- Sketch and label a picture of the Simple Columnar Epithelial cell below (draw a couple of cells one after another like the first picture)

5- Explain how the cilia of the lung cells work to remove crap from your lungs.

6- Epithelial cells are found lining the entire digestive and respiratory tracts. Why would it be important that these cells produce proteins that they use to form connections with each other that “glue” them together to form “tight Junctions”.

Lab station 3) Viruses on a Body Cell

7- Sketch and label a picture a cell being infected with viruses

8- Knowing what a virus is made of, List and explain the main organelles the Virus would overtake to make copies of itself.

9- Since viruses infect body cells, how must your body rid your body of viruses?

Lab station 4) Cell becoming DINNER for another Cell

10- Sketch and Label the cell eating the paramecium.

11- After the Cell "eats" the paramecium it must DIGEST the cell for food. Explain what ORGANELLE the cell will have a bunch of to help it DIGEST the Paramecium. (make sure you explain the process of how it will happen)

12- What did I mean when I said that both of these cells were EUKARYOTES??

13- Explain the process your body uses that is similar to the cell eating the Paramecium.

Lab Station 5) NERVE CELLS ARE FUNKY

14- Sketch and Label the artist drawing of a nerve cell

15- Explain what is located in the cell body of a nerve cell.

16- Explain why the structure of the nerve cell, the fact that they can be really long, helps it perform its function.

Lab Station 6) The EUGLENA has it ALL

17- Sketch and label all organelles of the euglena

18- Pretend your lab partner found a Euglena under a microscope and then classified it as a plant. Give a claim as to why your lab partner might be correct.

19- Scientists actually do not classify the Euglena as a plant so now give a counterclaim as to why it is not classified as a plant.

19- Explain the function of the whip like organelle on the Euglena.

Lab Station 7) BLOOD CELLS LOOK LIKE HARD CANDY

Sketch and label a few Red Blood Cells

20- Explain how the RBC's can perform their function without the use of a NUCLEUS.

21- Explain why people need to have iron in their diet.

22- Many cells can fix themselves if something goes a little wrong, for example if a cell has a bad mitochondrion, it can digest it down and just make a new one. Scenario: something happens to a Red Blood Cell and it ruins all of its hemoglobin proteins! Make a claim that convinces me WHY the RBC can no longer perform its function.

Lab station 8) Bacteria Help More than You Think

22- Draw a cartoon picture of the Lactobacillus bacteria helping you break down food in your intestine

23- Explain what is meant by the term Symbiosis.

24- Explain what type of Symbiosis the Lactobacillus bacteria are sharing with you. (who is benefiting)

25- Explain the following: Liver cells are constantly DIGESTING (breaking down with ENZYMES) waste and toxins in the liver. Name and explain 3 organelles that the Liver cells would have a very high concentration of.

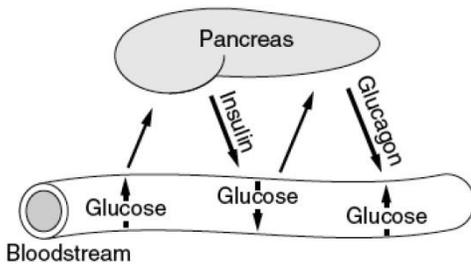
26- Explain the following: Some plant cells make a lot of sugar. They then ship the sugar to other parts of the Plant. When the sugars are shipped elsewhere they enter other cells to be STORED. What organelle would the STORAGE cells have a lot of.

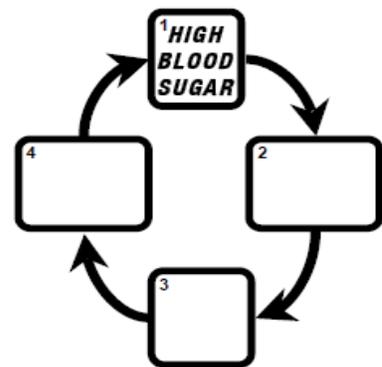
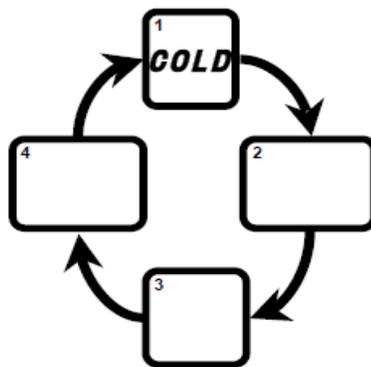
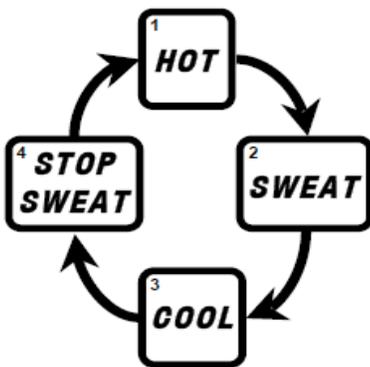
25- Explain what you learned about STRUCTURE and FUNCTION of different types of cells

How it all fits together: (Depending on what period you have Biology, we may be going over these questions together. If we haven't talked about homeostasis yet, then hold on cowboy!)

26. Explain what Homeostasis means:

27. Use the diagram below to explain how feedback mechanisms maintain homeostasis.





EXAMPLE:
I'm Too Hot!
 Feedback mechanism
 maintaining body temperature.

COMPLETE THIS EXAMPLE:
I'm Too Cold!
 Feedback mechanism
 maintaining body temperature.

COMPLETE THIS EXAMPLE:
Blood Sugar Too High!
 Feedback mechanism
 maintaining blood glucose levels

Failure to maintain homeostasis means that a body cannot function properly. This will lead to disease or death. For example, if blood sugar levels are not maintained properly then this can cause diabetes. Left untreated diabetes can lead to death.