**Part 1: Interactive Cell Notes**

Directions: Using the interactive animal cell model on the website,

<http://learn.genetics.utah.edu/content/cells/insideacell/> read the information to take notes in the boxes for the following organelles.

**#1 CELL MEMBRANE**

|  |
| --- |
| **LIPID BILAYER** Because they have unique chemical properties, lipid molecules naturally arrange themselves into a spherical dual-layered \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.**GETTING IN AND OUT** The cell membrane allows very \_\_\_\_\_\_\_\_\_\_\_\_ molecules to pass freely, while the movement of \_\_\_\_\_\_\_\_\_\_\_\_\_\_ molecules is regulated by transport proteins.  |

What does the cell membrane remind you of? Why? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**#2 NUCLEUS**

|  |
| --- |
| **GENE EXPRESSION** Proteins work together to copy segments of \_\_\_\_\_\_into RNA in a process called \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.**DNA PROTECTION** The nucleus safely stores the cell’s DNA blueprint. The nucleus \_\_\_\_\_\_\_\_\_\_\_\_\_\_ the DNA from the activity of the cytoplasm, keeping it \_\_\_\_\_\_\_\_ from interference.  |

What does the nucleus remind you of? Why?

 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**#3 CYTOSKELETON**

|  |
| --- |
| **THE CELL’S HIGHWAY** The cytoskeleton functions as a system of \_\_\_\_\_\_\_\_\_\_\_ for the transport of cargo by motor proteins. **BUDDING VESICLES** Small balls of membrane \_\_\_\_\_\_\_\_\_\_\_\_\_\_ off to carry cargo into the cell. **THE CELL’S STRUCTURE** The cytoskeleton functions as a springy skeleton that gives the cell its \_\_\_\_\_\_\_\_\_\_\_\_\_. It also helps organize the events of cell division. |

What does the cytoskeleton remind you of? Why?

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**#4 GOLGI APPARATUS**

|  |
| --- |
| **PROTEIN TAGGING** Vesicles filled with \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and other macromolecules fuse with the Golgi apparatus. Here these molecules are \_\_\_\_\_\_\_\_\_\_\_\_with specific labels that transport proteins will use to \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_them to the proper place in the cell. |

What does the Golgi Apparatus remind you of?

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**#5 MITOCHONDRIA**

|  |
| --- |
| **ENERGY PRODUCTION** Mitochondria are responsible for generating the cells \_\_\_\_\_\_\_\_\_\_\_\_. Using sugar and \_\_\_\_\_\_\_\_\_\_\_\_, protein complexes in the inner membrane manufacture energy molecules that are used throughout the cell. **MITOCHONDRIAL PROTEINS** Mitochondria have their \_\_\_\_\_\_\_\_\_\_\_set of unique proteins embedded in their membrane folds enabling them to participate in a variety of cellular \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.**MITOCHONDRIAL DNA** Although most of a cell’s \_\_\_\_\_\_\_\_\_\_\_\_ is contained in the cell nucleus, the mitochondrion has its \_\_\_\_\_\_\_\_ independent genome.  |

What does the mitochondria remind you of?

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**#6 ENDOPLASMIC RETICULUM (AKA ER)**

|  |
| --- |
| **SURFACE AREA** The ER makes up roughly \_\_\_\_\_\_\_\_\_\_\_\_\_\_the membrane in a cell. So there’s a lot of surface area to perform \_\_\_\_\_\_\_\_\_\_\_\_\_\_ reactions and store important enzymes in the smooth ER. **PACKING PROTEINS** Freshly made proteins and fats are packed into \_\_\_\_\_\_\_\_\_\_\_ and sent from the ER to the Golgi apparatus. **RIBOSOMES BUILD PROTEINS** Ribsomes carrying \_\_\_\_\_\_\_\_\_\_ from the nucleus attach to the rough ER. Here they read the RNA molecules and \_\_\_\_\_\_\_\_\_\_ them into proteins that will carry out jobs in a cell membrane or \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of the cell. |

What does the Endoplasmic Reticulum remind you of? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**#7 LYSOSOMES AND OTHER SPECIALIZED VESICLES**

|  |
| --- |
| **PROTEIN BREAKDOWN** When proteins have reached the end of their \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, they are transported to the lysosome to be \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. **WALKING VESICLES** Specialized motor proteins carry tethered vesicles along microtubules to their \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.**ROCKETING VESICLES** Springy actin proteins are organized on \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ end of some very specialized vesicles. When the mechanical build-up of energy is released, the vesicles are \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ through the cell.  |

What does the Lysosomes and other specialized vesicles remind you of? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Part 2: Guiding Questions**

**Directions:** Using the website <http://learn.genetics.utah.edu/content/cells/insideacell/> answer the following questions about the organelles of an animal cell. When writing your answer, you must use and cite specific evidence from the online text.

|  |  |  |
| --- | --- | --- |
| **Cell Organelle & Picture** | **Question** | **Answer** |
| Cell Membrane | Why is the transport protein needed in the cell membrane? |  |
| Nucleus  | Why is the nucleus important for transcription? |  |
| Cytoskeleton | How might a cells function and structure change without a cytoskeleton? |  |
| Golgi Apparatus | What do you think would happen if the vesicles were not tagged with specific labels? |  |
| Mitochondria | Explain why sugar is important in the mitochondria. |  |
| Endoplasmic Reticulum (ER) | What would happen if ER can't read the RNA molecules carried by the ribosomes? |  |
| Lysosomes  | What causes vesicle propulsion in the lysosomes? |  |