**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**

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| **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**

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| **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?

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**#3 CYTOSKELETON**

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| **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?

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**#4 GOLGI APPARATUS**

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| **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?

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**#5 MITOCHONDRIA**

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| **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?

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

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| **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**

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| **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.

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| **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? |  |