**Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Block \_\_\_\_\_\_**

***The Virtual Cell* Worksheet**

[**http://www.ibiblio.org/virtualcell/index.htm**](http://www.ibiblio.org/virtualcell/index.htm)

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| 1. **Centrioles** are only found in \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ cells. They function in cell \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. They have \_\_\_\_\_ groups of \_\_\_\_\_ arrangement of the protein fibers. Draw a picture of a centriole in the box.

  | **Centriole** |
| 1. **Lysosomes** are called \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ sacks. They are produced by the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ body. They consist of a single membrane surrounding powerful \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ enzymes. Those lumpy brown structures are digestive \_\_\_\_\_\_\_\_\_\_\_\_\_. They help protect you by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ the bacteria that your white blood cells engulf. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ act as a clean up crew for the cell. Zoom in and draw what you see. What is autolysis?
 | **Lysosomes** |
| 1. **Chloroplasts** are the site of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. They consists of a \_\_\_\_\_\_\_\_\_\_ membrane. The stacks of disk like structures are called the \_\_\_\_\_\_\_\_\_\_\_\_\_\_. The membranes connecting them are the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ membranes. Zoom in and draw a picture.

  | **Chloroplasts** |
| 1. **Mitochondrion** is the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of the cell. It is the site of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. It has a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ membrane. The inner membrane is where most \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ respiration occurs. The inner membrane is \_\_\_\_\_\_\_\_\_\_ with a very large surface area. These ruffles are called \_\_\_\_\_\_\_\_\_\_\_. Mitochondria have their own \_\_\_\_\_\_\_\_ and manufacture some of their own \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. Draw a picture of the mitochondrion with its membrane cut. Where might have mitochondria originated from? Why?

  | **Mitochondrion** |
| 1. **Endoplasmic Reticulum (ER)** is a series of double membranes that \_\_\_\_\_\_\_\_ back and forth between the cell membrane and the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. These membranes fill the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ but you cannot see them because they are very \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. The rough E.R. has \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ attached to it. This gives it its texture. These ribosomes manufacture \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ for the cell. The ribosomes are the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ which manufacture proteins. Draw the rough ER with a ribosome.

  | **Endoplasmic Reticulum (ER)** |
| 1. **Smooth E.R**. \_\_\_\_\_\_\_\_\_\_\_\_ ribosomes. It acts as a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ throughout the cytoplasm. It runs from the cell membrane to the nuclear \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and throughout the rest of the cell. It also produces \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ for the cell. Draw a picture of the smooth ER.
 | **Smooth ER** |
| 1. **Cell Membrane** performs a number of critical functions for the \_\_\_\_\_\_\_\_. It regulates all that \_\_\_\_\_\_\_\_\_\_\_\_\_ and leaves the cell; in multicellular organisms it allows \_\_\_\_\_\_\_\_\_ recognition. Draw and shade the cell membrane.

  | **Cell Membrane** |
| 1. **Nucleus** is called the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of the cell. It is a large \_\_\_\_\_\_\_\_\_\_ spot in eukaryotic cells. It \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ all cell activity. The nuclear membrane has many \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. The thick ropy strands are the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. The large solid spot is the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. The nucleolus is a spot of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ chromatin. It manufactures \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. The chromatin is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ in its active form. It is a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of DNA and histone proteins. It stores the information needed for the manufacture of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. Draw a picture of the nucleus and its nucleolus.

  | **Nucleus/Nucleolus** |
| 1. **Golgi Body** is responsible for packaging \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ for the cell. Once the proteins are produced by the \_\_\_\_\_\_\_\_\_\_\_\_\_\_ E.R., they pass into the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ like cisternae that are the main part of the Golgi body. These proteins are then squeezed off into the little \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ which drift off into the cytoplasm. Draw a picture of the Golgi Body as it is squeezing off the proteins.
 | **Golgi Body** |