

Virtual Cell Worksheet- ANSWER KEY

1. **Centrioles** are only found in **animal** cells. They function in cell **division**. They have **9** groups of **3** arrangement of the protein fibers. Draw a picture of a centriole in the box.
2. **Lysosomes** are called **suicide** sacks. They are produced by the **golgi** body. They consist of a single membrane surrounding powerful **digestive** enzymes. Those lumpy brown structures are digestive **enzymes**. They help protect you by **destroying** the bacteria that your white blood cells engulf. **Lysosomes** act as a clean up crew for the cell. Zoom in and draw what you see.
3. **Chloroplasts** are the site of **photosynthesis**. They consist of a **double** membrane. The stacks of disk like structures are called the **grana**. The membranes connecting them are the **thylakoid** membranes. Zoom in and draw a picture.
4. **Mitochondrion** is the **powerhouse** of the cell. It is the site of **respiration**. It has a **double** membrane. The inner membrane is where most **aerobic** respiration occurs. The inner membrane is **ruffled** with a very large surface area. These ruffles are called **cristae**. Mitochondria have their own **DNA** and manufacture some of their own **proteins**. Draw a picture of the mitochondrion with its membrane cut.
5. **Endoplasmic Reticulum (ER)** is a series of double membranes that **loop** back and forth between the cell membrane and the **nucleus**. These membranes fill the **cytoplasm** but you cannot see them because they are very **transparent**. The rough E.R. has **ribosomes** attached to it. This gives it its texture. These ribosomes manufacture **proteins** for the cell. The ribosomes are the **organelles** which manufacture proteins. Draw the rough ER with a ribosome.
6. **Smooth E.R.** **Lack** ribosomes. It acts as a **pathway** throughout the cytoplasm. It runs from the cell membrane to the nuclear **membrane** and throughout the rest of the cell. It also produces **lipids** for the cell. Draw a picture of the smooth ER.
7. **Cell Membrane** performs a number of critical functions for the **cell**. It regulates all that **enters** and leaves the cell; in multicellular organisms it allows for **self** recognition. Draw and shade the cell membrane.
8. **Nucleus** is called the **headquarters** of the cell. It is a large **dark** spot in eukaryotic cells. It **controls** all cell activity. The nuclear membrane has many **pores**. The thick ropy strands are the **chromatin**. The large solid spot is the **nucleolus**. The nucleolus is a spot of **condensed** chromatin. It manufactures **ribosomes**. The chromatin is **DNA** in its active form. It is a **combination** of DNA and histone proteins. It stores the information needed for the manufacture of **proteins**. Draw a picture of the nucleus and its nucleolus.
9. **Golgi Body** is responsible for packaging **proteins** for the cell. Once the proteins are produced by the **rough** E.R., they pass into the **sac** like cisternae that are the main part of the Golgi body. These proteins are then squeezed off into the little **blebs** which drift off into the cytoplasm. Draw a picture of the Golgi Body as it is squeezing off the proteins.

Centriole
Lysosomes
Chloroplasts
Mitochondrion
Endoplasmic Reticulum (ER)
Smooth ER
Cell Membrane
Nucleolus
Golgi Body