

## Mitosis and Meiosis Lab

### Introduction:

Mitosis and meiosis are both forms of cell division and share similar details and terminology. This laboratory combines the study of the two processes in order to better understand the similarities and differences between the two.

### Mitosis:

All multicellular organisms began life as a single fertilized egg cell (**zygote**). In order to grow and develop, that zygote has to divide and subsequent cell divisions ultimately arrive at an organism comprised of countless cells, many specialized for specific functions but all identical genetically to the original zygote. While the overall division of a cell membrane and cytoplasm in half is termed **cytokinesis**, the more complicated replication and division necessary for identical daughter cells is **mitosis**, the division of the nucleus which involves the separation of the chromosomes. While most attention is usually given to the mitotic phase, it is only a part of the cell cycle.

\_\_\_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 membranes are \_\_\_FOLDED\_\_\_ 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 \_\_\_PROTEIN\_\_\_ for the cell. The ribosomes are the \_\_\_ORGANELLE\_\_\_ which manufacture proteins. Draw the rough ER with a ribosome.

6. **Smooth E.R.** \_\_\_LACKS\_\_\_ 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.

**Mitochondrion**

**Endoplasmic Reticulum (ER)**

**Smooth ER**