# Review Sheet The Cell
# Lester BIOL 150

**General things to do to prepare for the exam:**

- **study the PowerPoints**
- **write out the answers to the learning objectives found with each PowerPoint**
- **listen to my lecture recordings**

## Chapter 6

Describe the 3 major points of the cell theory. Why is it a theory?

What do we use to see tiny things?

Define: magnification, resolution, and contrast.

What is the maximum magnification for an ordinary brightfield microscope?

Compare transmission electron microscopes with scanning electron microscopes.

Label and describe the typical parts of both plant and animal cells. Describe the functions of all of the different organelles.

Compare and contrast prokaryotic and eukaryotic cells.

Explain the possible origin of mitochondria and chloroplasts.

How does surface to volume ratio affect cell size?

Define: chromatin, chromosome, and nucleolus.

Describe the components of the endomembrane system.

Describe the cytoskeleton and the function of microtubules, microfilaments, and intermediate filaments.

What is the function of cilia and flagella? How do cilia and flagella in different organisms support the theory of evolution?

Define cytoplasmic streaming.

**Sample Exam Questions Chapter 6**

Which of the following is the smallest structure that would most likely be visible with a standard (not super-resolution) research-grade light microscope?
A) mitochondrion B) microtubule C) ribosome D) virus

Which of the following would be most appropriate method to observe and measure the size of ribosomes in a eukaryotic cell?
A) a hand lens (magnifying glass) B) standard light microscopy
C) scanning electron microscopy D) transmission electron microscopy

Which of the following frequently imposes a limit on cell size?
A) the absence of a nucleus B) the number of mitochondria in the cytoplasm
C) ratios of surface area to volume D) the volume of the endomembrane system

You have a cube of modeling clay in your hands. Which of the following changes to the shape of this cube of clay will decrease its surface area relative to its volume?

A) Pinch the edges of the cube into small folds.
B) Flatten the cube into a pancake shape.
C) Round the clay up into a sphere.
D) Stretch the cube into a long, shoebox shape.

Which structure is common to plant *and* animal cells?

A) chloroplast B) central vacuole C) mitochondrion D) centriole

Which of the following macromolecules enter the nucleus of a eukaryotic cell through pores in the nuclear membrane?

A) ribosomal proteins B) mRNA C) rRNA D) phospholipids

A cell with a predominance of rough endoplasmic reticulum is most likely _____.

A) producing large quantities of proteins for secretion
B) producing large quantities of proteins in the cytosol
C) producing large quantities of carbohydrates to assemble an extensive cell wall matrix
D) producing large quantities of carbohydrates for storage in the vacuole

Which structure below is independent of the endomembrane system?

A) nuclear envelope B) chloroplast C) Golgi apparatus D) plasma membrane

Which organelle is the primary site of ATP synthesis in eukaryotic cells?

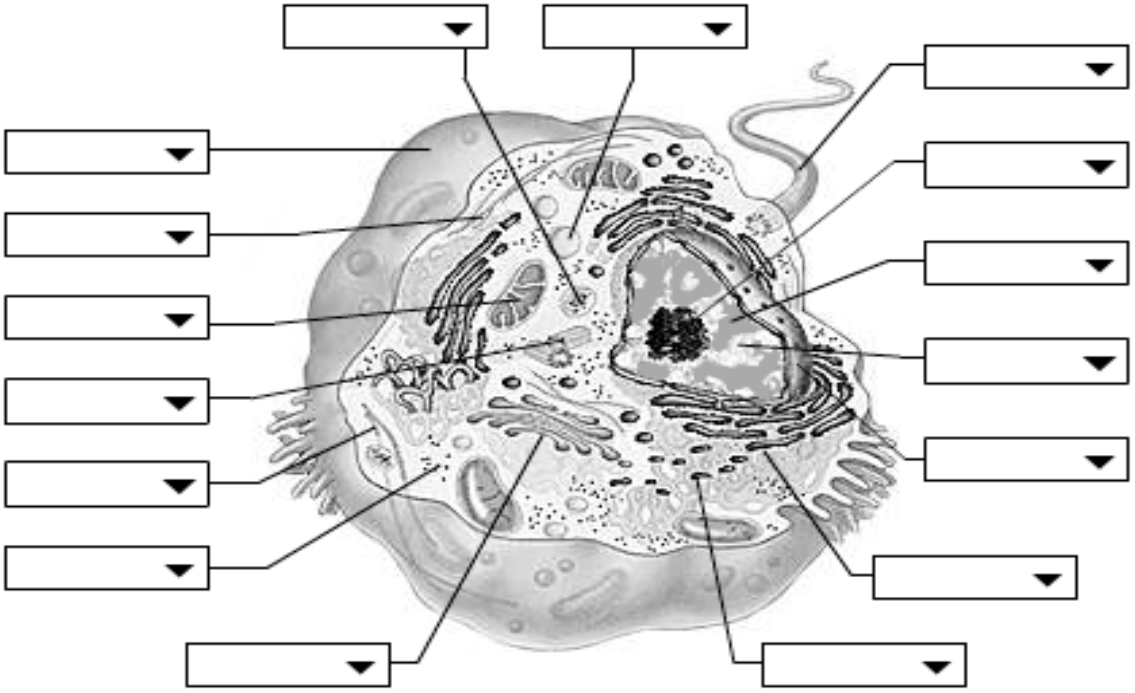
A) lysosome B) mitochondrion C) Golgi apparatus D) peroxisome

Motor proteins provide for molecular motion in cells by interacting with what types of cellular structures?

A) membrane proteins of the inner nuclear envelope
B) free ribosomes and ribosomes attached to the ER
C) components of the cytoskeleton
D) cellulose fibers in the cell wall

Label the following diagrams on the next page.

## Review: Animal Cell Structure and Function



## Review: Plant Cell Structure and Function