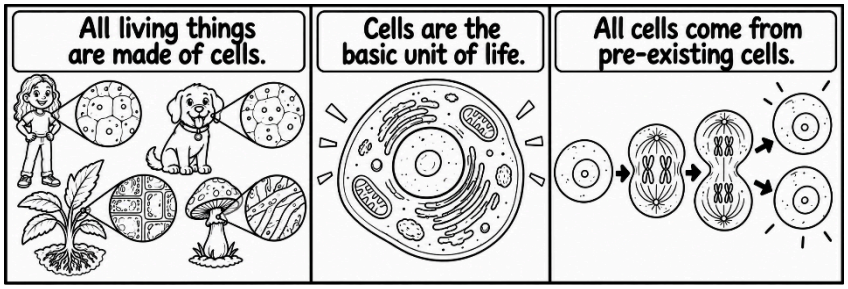
Cellular Structure, Function, and Transport Review Guide

Test Date: _____

Cell Theory developed over almost 2 centuries. Many scientists contributed to the development of this scientific theory as they _____ their findings, debated disagreements, and replicated / repeated _____ to eventually develop the cell theory as we know it today.

1. All living things are _____.
2. _____ are the _____ unit of life.
3. All cells come from _____.



Microscopes:

	Compound Light	**Transmission Electron (TEM)**	**Scanning Electron (SEM)**
Pros	Organism can be alive Cost, Ease of use	Highly magnified images of internal structures of cells	Highly Magnified 3D images of the surface
Cons	Lower magnification ability	Cannot directly view living organisms Cost	Cannot directly view living organisms Cost

Prokaryotic vs Eukaryotic:

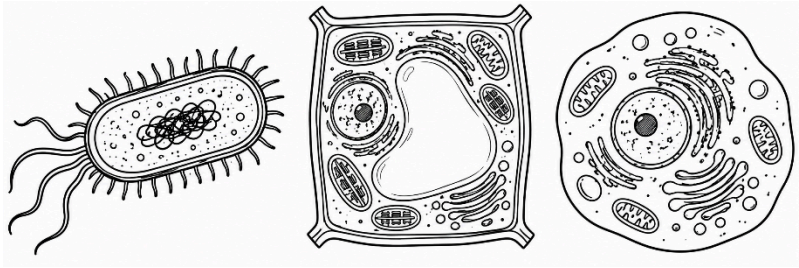
What are the 4 structures ALL cells have?

_____, _____, _____, _____

Pro rhymes with NO as in no _____ and no _____

Eu rhymes with DO as in eukaryotes DO have those structures.

Label each image below, either Prokaryotic or Eukaryotic. Also label the Eukaryotes as either plant or animal.



Organelle	Basic function	Plant / Animal / Both (Check one)
Nucleolus	Makes ribosome components; located inside the nucleus.	☐ Plant ☐ Animal ☐ Both
	Contains DNA and helps direct the cell's activities.	☐ Plant ☐ Animal ☐ Both
Ribosomes		☐ Plant ☐ Animal ☐ Both
	Has ribosomes attached; has multiple folds to provide surface area for protein synthesis.	☐ Plant ☐ Animal ☐ Both
Smooth endoplasmic reticulum (smooth ER)	Makes _____	☐ Plant ☐ Animal ☐ Both
	Modifies, sorts, and packages proteins and lipids for transport.	☐ Plant ☐ Animal ☐ Both
	Breaks down lipids, carbs, and proteins to be used by the cell; also breaks down waste.	☐ Plant ☐ Animal ☐ Both
	Stores water, nutrients, and wastes; plant cells usually have a large central one of these.	☐ Plant ☐ Animal ☐ Both
Cell membrane		☐ Plant ☐ Animal ☐ Both
	Rigid outer layer that supports and protects plant cells and many bacteria cells.	☐ Plant ☐ Animal ☐ Both
Chloroplast		☐ Plant ☐ Animal ☐ Both
	Breaks down glucose to create energy for the cell in the form of ATP.	☐ Plant ☐ Animal ☐ Both
	Jelly-like material that fills the cell; many cell reactions occur here.	☐ Plant ☐ Animal ☐ Both
Cilia and flagella	Involved with cell movement	☐ Plant ☐ Animal ☐ Bacteria ☐ Both

Complete the table below.

What do PLANT CELLS have that ANIMALS CELLS do not have?

_____ and _____

Why do plant cells have larger vacuoles than animal cells?

_____

Protein synthesis path:

Proteins are made in the _____ before they are folded by the _____. Then they go to the _____ _____ where they are modified, packaged and transported.

Transport:

The _____ is selectively permeable, which means it controls what goes _____.

"Along the concentration gradient" means that a particle moves from _____ concentration to _____ concentration. This is _____ transport. Draw a picture of this:

"Goes against the concentration gradient" means that a particle moves from _____ concentration to _____ concentration. This requires energy, called _____. This is _____ transport.

Draw a picture of this:

Osmosis occurs when _____ moves across the cell membrane. Water can move through _____ _____, which means the water moves slowly through the membrane. Osmosis can also occur when water moves through an _____, a channel protein that allows the water to go through easily. This is a type of _____ diffusion.

An animal cell that is surrounded by fresh water will burst because osmosis will cause the water to move into the cell.

A plant cell has a _____ _____ to help provide support for the extra pressure on the cell when a plant cell comes in contact with fresh water.

Diffusion:

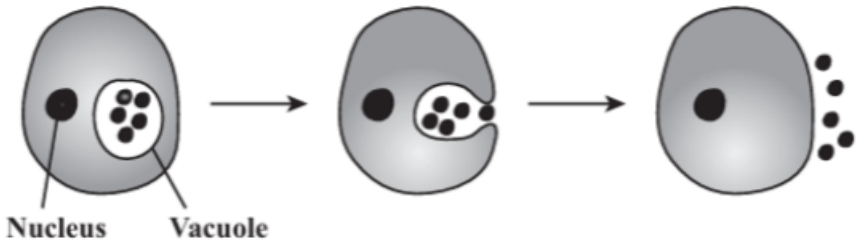
Term	**Explain what it means**	**Effect on the cell**	**Illustration**
isotonic			

hypertonic			
hypotonic			

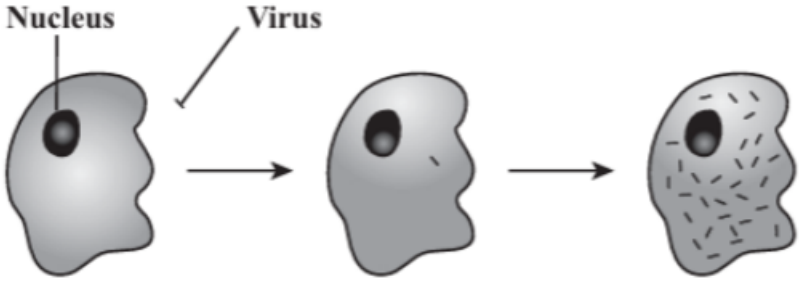
Endocytosis occurs when _____

Exocytosis occurs when _____

Name the biological process shown in this illustration: _____



Name the biological process shown in this illustration: _____



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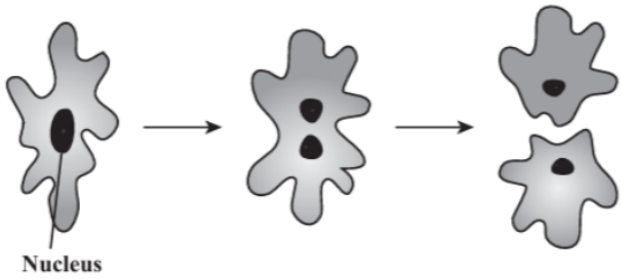

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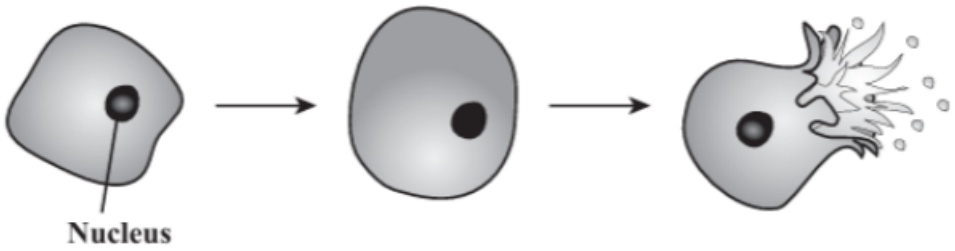
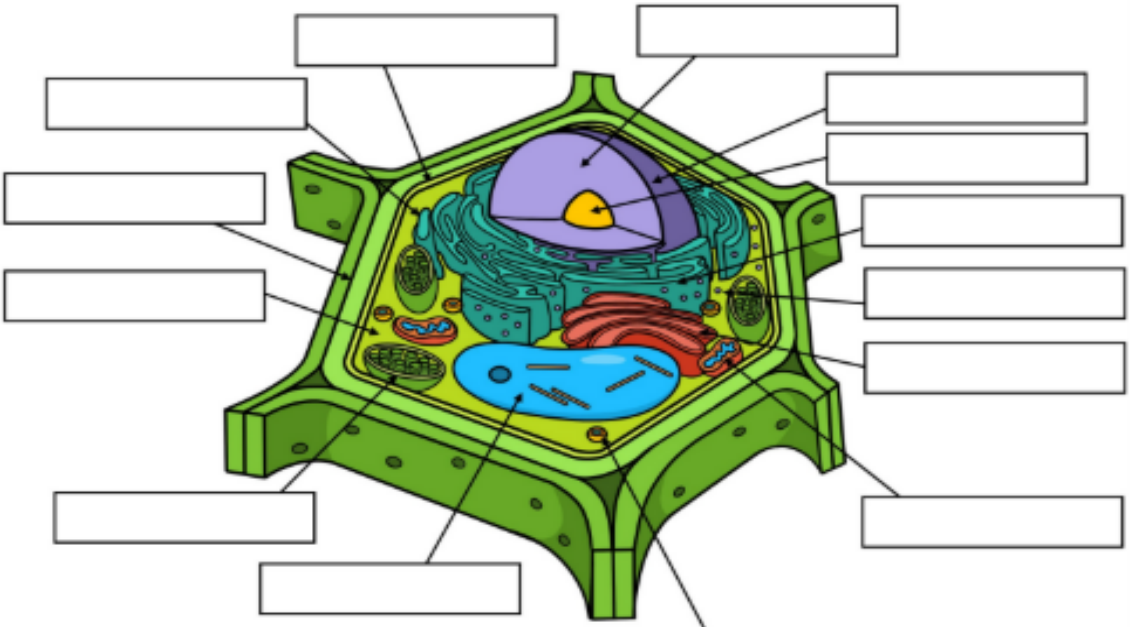


DIAGRAM OF A PLANT CELL



Word Bank: cell membrane, cell wall, chloroplast, cytoplasm, Golgi apparatus, lysosome, mitochondrion, nuclear membrane, nucleolus, nucleus, ribosome, rough ER, smooth ER, vacuole

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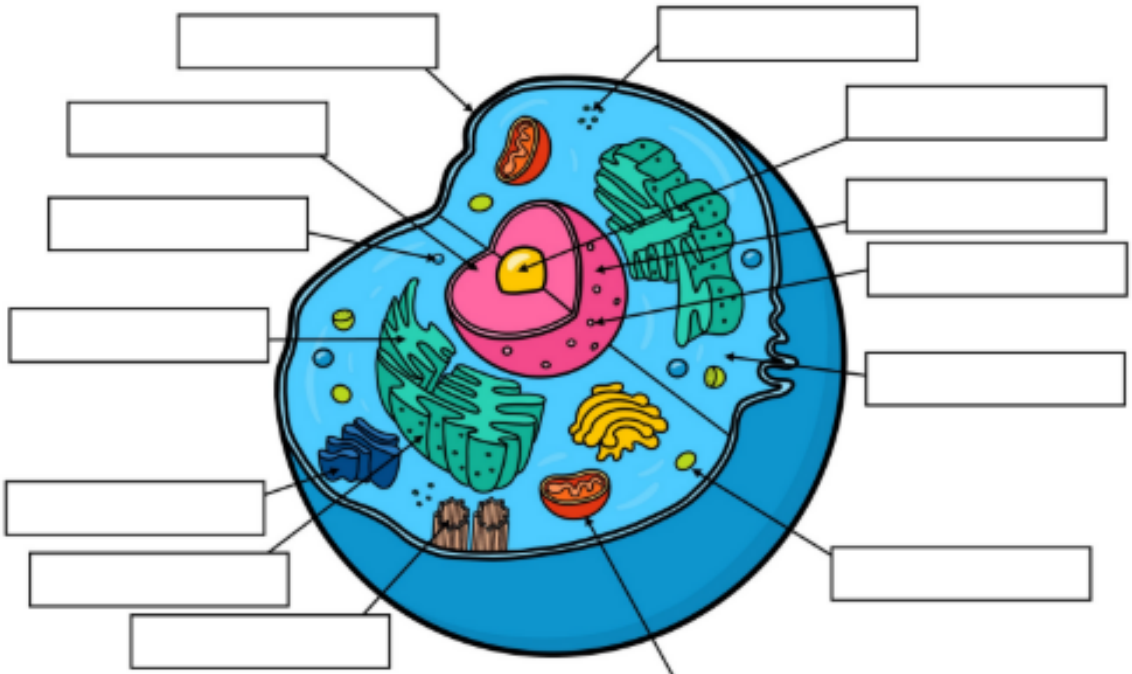
DIAGRAM OF AN ANIMAL CELL



Word Bank: cell membrane, centrioles, cytoplasm, Golgi apparatus, lysosome, mitochondrion, nuclear membrane, nuclear pore, nucleolus, nucleus, ribosomes, rough ER, smooth ER, vacuole

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