

AP BIOLOGY
CELL UNIT
ACTIVITY #2

NAME_____

DATE_____HOUR_____

CELL PARTS

TYPICAL ANIMAL CELL

ENDOMEMBRANE SYSTEM

TYPICAL PLANT CELL

QUESTIONS:

1. Write the name of the cell part in the box next to its description/function.

Cell membrane

Centrioles

Chloroplast

Chromatin

Cytoplasm

Endoplasmic reticulum, rough

Endoplasmic reticulum, smooth

Golgi apparatus

Lysosome

Mitochondria

Nuclear envelope

Nucleolus

Nucleus

Peroxisome

Ribosomes, bound

Ribosomes, free

Vacuole

Vesicle, secretory

Vesicle, transport

Cell Part	Description/Function
	Forms the boundary of the cell; acts as a selective barrier allowing certain materials to pass but not others
	The entire region between the nucleus and the cell membrane; consists of the cytosol
	Contains most of the genes that control the eukaryotic cell; generally the most conspicuous organelle in a eukaryotic cell; contains the nucleolus and chromatin
	Where the components of the ribosomes are synthesized and assembled; found in the nucleus
	Consists of DNA and protein; condenses to form chromosomes
	Double membrane that forms the boundary between the nuclear contents and the cytoplasm; perforated with pores
	Site of protein synthesis; suspended in the cytosol; produces proteins for use within the cell
	Site of protein synthesis; attached to the outside surface of the endoplasmic reticulum; produces proteins for use outside the cell or for use in the cell membrane.
	Synthesizes lipids including phospholipids and steroids; metabolizes carbohydrates; detoxifies drugs and poisons; stores calcium ions; lacks attached ribosomes

Cell Part	Description/Function
	Consists of flattened membranous sacs; receives transport vesicles from the ER; modifies ER products; produces certain molecules; produces lysosomes and secretory vesicles
	Channels proteins to transport vesicles; attaches carbohydrate to some proteins; involved in membrane production through the production of vesicles; has attached ribosomes
	Carries ER products to the Golgi
	Carries Golgi modified products to the cell membrane; fuses with the cell membrane releasing the contents to outside the cell
	Membrane bound sac of hydrolytic enzymes; enzymes are used to digest food, other molecules, and old, worn out cell parts
	Membrane bound sacs; larger than vesicles; stores materials
	Site of cellular respiration; produces ATP from sugars, fats, and other fuels
	Site of photosynthesis; produce food using light energy, CO ₂ and H ₂ O
	Contains enzymes that transfer H from substrates to oxygen producing H ₂ O ₂ ; detoxifies alcohol; contains enzymes (e.g. catalase) that converts H ₂ O ₂ to H ₂ O and O ₂
	Paired structures found in animal cells; consist of microtubules in a 9+0 arrangement; involved in cell division

2. Indicate if each of the following is true of chromosomes or chromatin. Use the key below to indicate your answers.

A. Chromosomes

B. Chromatin

_____ Consist of DNA and proteins

_____ Condensed

_____ Tightly coiled

_____ Visible when stained

_____ Dispersed

_____ Decondensed

_____ Uncoiled

3. Determine if each of the following is true of **Free** or **Bound** ribosomes.

_____ Produce proteins for
use within the cell
_____ Produce proteins for
export
_____ Attached to rough ER

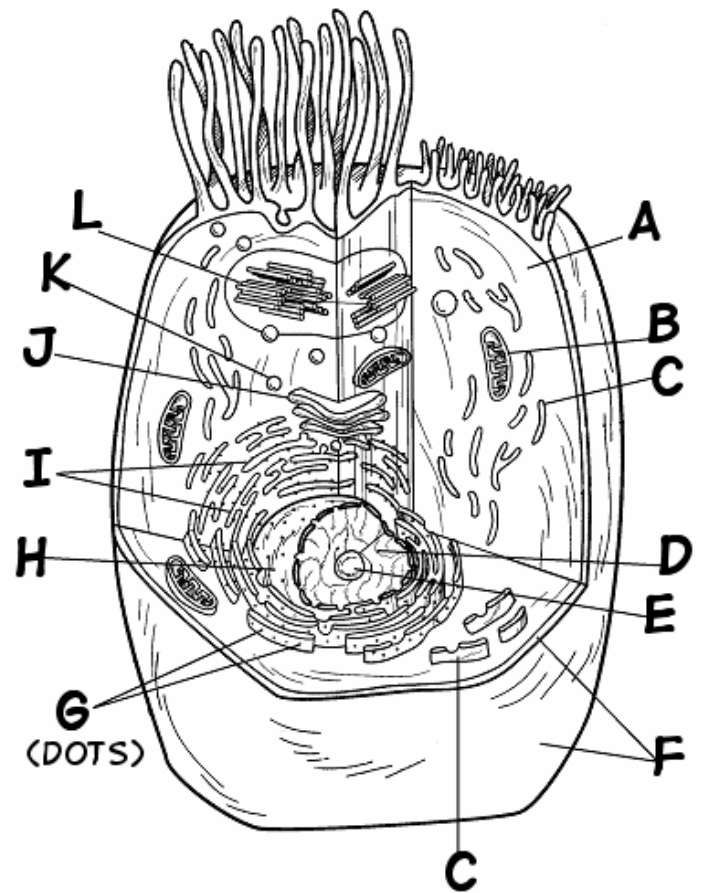
_____ Suspended in the cytosol
_____ Consist of 2 subunits
_____ Composed of rRNA and
proteins

4. How does the function of the central vacuole in plant cells differ from the function of vacuoles in animal cells?

How are the functions similar?

6. Match the cell part with the correct letter from the diagram below.

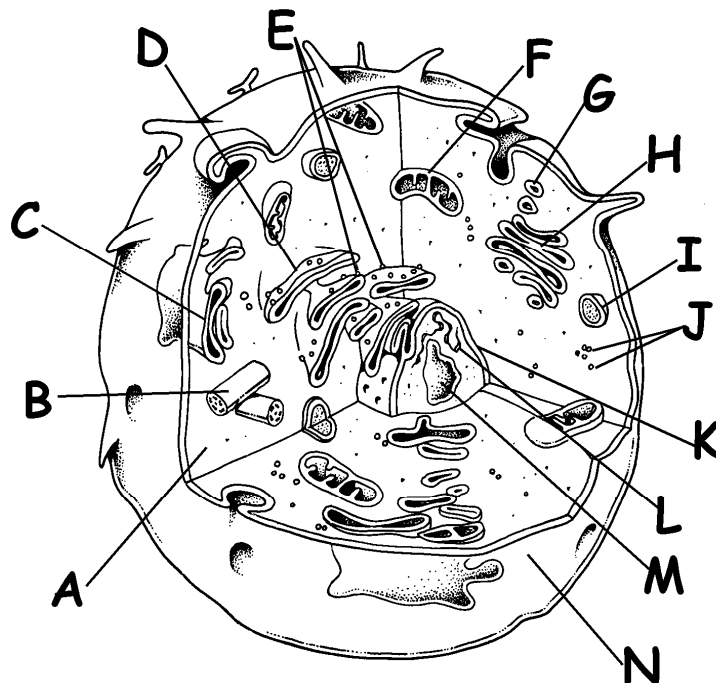
_____ Cell membrane
 _____ Centrioles
 _____ Chromatin
 _____ Cytoplasm
 _____ Golgi
 _____ Lysosome
 _____ Mitochondria
 _____ Nuclear envelope
 _____ Nucleolus
 _____ Ribosomes
 _____ Rough ER
 _____ Smooth ER



7. Is the cell pictured in number 6 above an animal or plant cell? _____

How do you know? _____

8. Match the function with the correct cell part from the diagram below.



Letter	Description/Function
	Carries Golgi modified products to the cell membrane; fuses with the cell membrane releasing the contents to outside the cell
	Consists of DNA and protein; condenses to form chromosomes
	Site of protein synthesis; suspended in the cytosol; produces proteins for use within the cell
	Membrane bound sac of hydrolytic enzymes; enzymes are used to digest food, other molecules, and old, worn out cell parts
	Contains most of the genes that control the eukaryotic cell; generally the most conspicuous organelle in a eukaryotic cell; contains the nucleolus and chromatin
	Site of cellular respiration; produces ATP from sugars, fats, and other fuels
	Where the components of the ribosomes are synthesized and assembled; found in the nucleus
	Paired structures found in animal cells; consist of microtubules in a 9+0 arrangement; involved in cell division

Letter	Description/Function
	Site of protein synthesis; attached to the outside surface of the endoplasmic reticulum; produces proteins for use outside the cell or for use in the cell membrane.
	Synthesizes lipids including phospholipids and steroids; metabolizes carbohydrates; detoxifies drugs and poisons; stores calcium ions; lacks attached ribosomes
	The entire region between the nucleus and the cell membrane; consists of the cytosol
	Channels proteins to transport vesicles; attaches carbohydrate to some proteins; involved in membrane production through the production of vesicles; has attached ribosomes
	Forms the boundary of the cell; acts as a selective barrier allowing certain materials to pass but not others
	Consists of flattened membranous sacs; receives transport vesicles from the ER; modifies ER products; produces certain molecules; produces lysosomes and secretory vesicles

9. Match the structure with the correct letter from the diagram below.

_____ Bound ribosomes

_____ Cell membrane

_____ Cell wall

_____ Central vacuole

_____ Chloroplast

_____ Cytoplasm

_____ Golgi

_____ Mitochondria

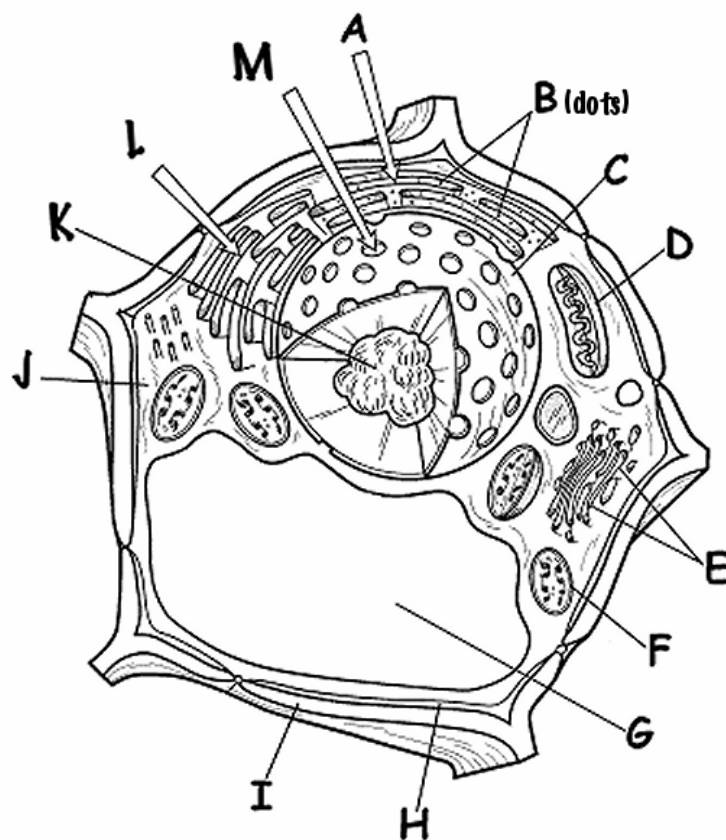
_____ Nuclear envelope

_____ Nuclear Pore

_____ Nucleolus

_____ Rough ER

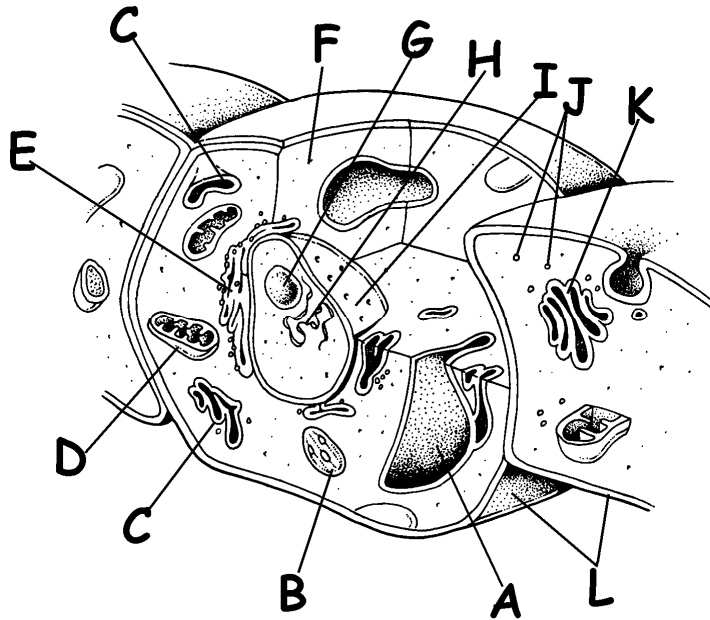
_____ Smooth ER



10. Is the cell pictured in number 9 above an animal or plant cell? _____

How do you know? _____

11. Match the function with the correct letter from the diagram below.

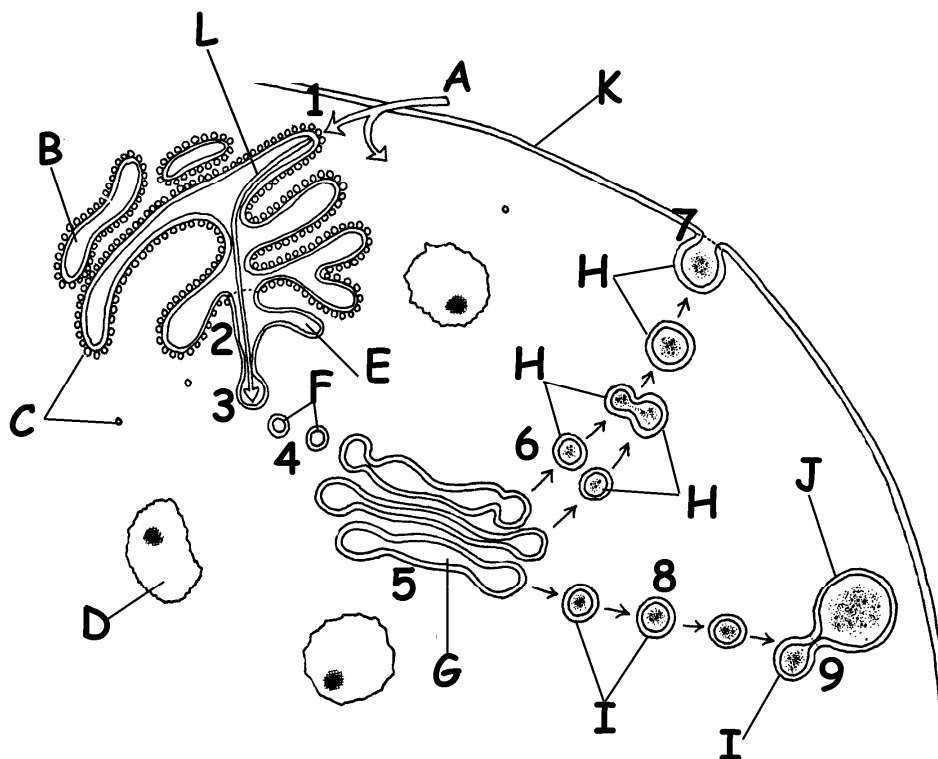


Letter	Description/Function
	Consists of DNA and protein; condenses to form chromosomes
	Site of protein synthesis; suspended in the cytosol; produces proteins for use within the cell
	Contains most of the genes that control the eukaryotic cell; generally the most conspicuous organelle in a eukaryotic cell; contains the nucleolus and chromatin
	Site of cellular respiration; produces ATP from sugars, fats, and other fuels
	Where the components of the ribosomes are synthesized and assembled; found in the nucleus
	Synthesizes lipids including phospholipids and steroids; metabolizes carbohydrates; detoxifies drugs and poisons; stores calcium ions; lacks attached ribosomes

Letter	Description/Function
	Protective layer external to the cell membrane; consists of cellulose
	Site of photosynthesis; produce food using light energy, CO ₂ and H ₂ O
	The entire region between the nucleus and the cell membrane; consists of the cytosol
	Channels proteins to transport vesicles; attaches carbohydrate to some proteins; involved in membrane production through the production of vesicles; has attached ribosomes
	Contains hydrolytic enzymes; sequesters dangerous by-products; contains soluble pigments; stores water; involved in cell growth
	Consists of flattened membranous sacs; receives transport vesicles from the ER; modifies ER products; produces certain molecules; produces lysosomes and secretory vesicles

12. Color the following parts on the diagram below:

- | | |
|--|--|
| <input type="checkbox"/> Amino Acid (arrow)(A) | <input type="checkbox"/> Golgi (G) |
| <input type="checkbox"/> Rough ER (B) | <input type="checkbox"/> Secretory vesicle (H) |
| <input type="checkbox"/> Ribosomes (C) | <input type="checkbox"/> Lysosome (I) |
| <input type="checkbox"/> Peroxisomes (D) | <input type="checkbox"/> Food vacuole (J) |
| <input type="checkbox"/> Smooth ER (E) | <input type="checkbox"/> Cell membrane (K) |
| <input type="checkbox"/> Transport vesicle (F) | <input type="checkbox"/> Protein product (L) |



13. The diagram in #12 shows the relationship among the majority of the components on the endomembrane system. Use the diagram and your notes to complete the following chart.

	Transition Vesicle	Secretory Vesicle	Lysosome
Origin			
Contents			
Destination			

14. Match each of the events listed below with the correct **number** from the diagram in #12.

- _____ Proteins routed by ER; proteins may be modified
- _____ Formation of transition vesicle
- _____ Lysosome fuses with vacuole
- _____ Transition vesicle carries contents to the Golgi
- _____ Secretory vesicle produced
- _____ Golgi modifies proteins
- _____ Amino acids imported into the cell; bound ribosomes use the amino acids to produce proteins
- _____ Lysosome produced; lysosome contains hydrolytic enzymes
- _____ Secretory vesicle contents released to the outside

15. Determine if each of the characteristics listed below are true of **C**ilia or **F**lagella.

_____	Involved in movement	_____	Many per cell
_____	Shorter	_____	One or two per cell
_____	Longer		

16. What is the extracellular matrix?
