Name: KEY Date:

CYTOLOGY
Review Sheet

A.) The Cell Theory:

1. Define **cell**:

- Building block of living things
- smallest unit of life

2. What invention led to the discovery of cells?

Compound microscope

3. List the three statements of the **Cell Theory**:

1) structural units of life
2) functional units of life
3) all cells come from other cells

4. List the three exception of the **Cell Theory**:

1) Viruses - Have DNA, no organelles
2) Mitochondria / Chloroplasts have DNA & can replicate
3) Where did the first cell come from

5. Define **organelle**:

Specialized subunit within a cell that has a specific function

6. Explain the difference between **eukaryotic** and **prokaryotic** cells:

Pro Karyotic	Eukaryotic
- no nucleus	- has a nucleus
- no membrane bound organelles	- has organelles
- came first	- evolved later, more advanced
- smaller	- larger

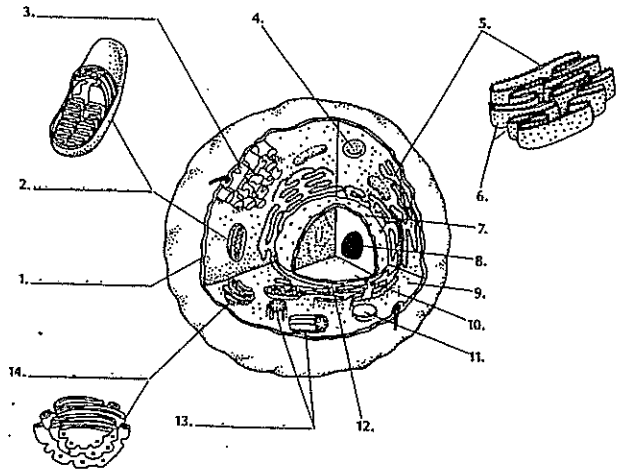
7. Give an example of a ~~prokaryotic~~ eukaryotic organism. Amoeba, human, tree

8. Give an example of a ~~eukaryotic~~ prokaryotic organism. Bacteria; ecoli

9. Explain why eukaryotic cells are larger than prokaryotic cells.
Eukaryotic cells have organelles and most likely evolved from multiple prokaryotic cells combining.

B.) Cell Structure and Function:

10. Is the diagram below a plant cell or an animal cell? Animal
Label the following diagram:



11. Briefly describe the function of each organelle:

1- cell membrane selectively permeable

cytoplasm holds organelles - chemical reactions

DNA nucleus directs cellular activity, responsible for cell division

RNA nucleolus makes proteins

nuclear envelope membrane around nucleus

5- endoplasmic reticulum storage, transport, synthesis

6- ribosome makes proteins

2- mitochondrion converts food into ATP (energy)

14- golgi bodies package & sends out materials

4- lysosome breaks down / recycles materials

vacuole storage / water, food waste

centrioles Animal cells — cell division

contractile vacuole uses to push water out of cell

12. Define **selectively permeable**:

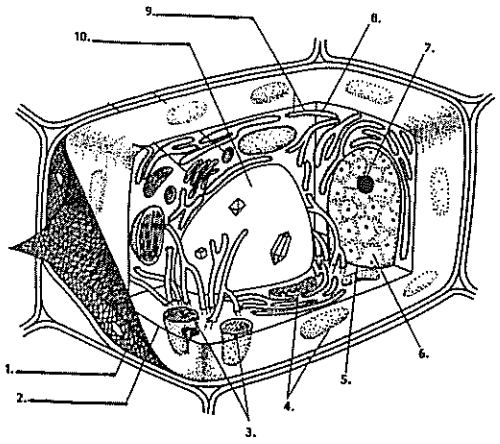
Only allows certain materials through based on size, shape & chemistry

13. Explain the function of the **nuclear pores**:

To allow chemical signals in and out of the nucleus

14. The rough endoplasmic reticulum has ribosomes attached to it while the smooth endoplasmic reticulum does not.

15. Is the diagram below a plant cell or an animal cell? Plant
Label the diagram.



16. List four differences between plant cells and animal cells:

1) Plant cells have a cell wall, animal cells do not
2) Plant cells have chloroplasts, animal cells do not
3) Plant cells have a large central vacuole, animals have small vacuoles
4) Animal cells have lysosomes, plants do not

17. The cell wall, which is made up of cellulose, provides protection and shape in a plant cell.

18. Explain the function of **chloroplasts**:

To produce food (sugar) through the process of photosynthesis

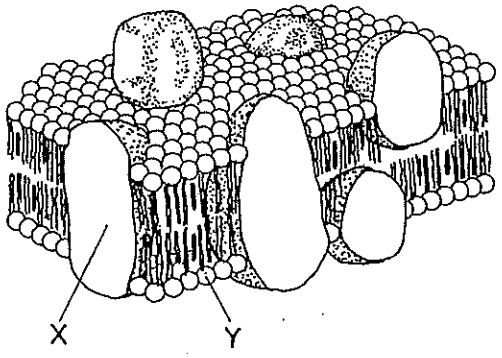
19. The green pigment inside of a chloroplast is known as chlorophyll

C.) Cellular Transport:

20. What is the "**Fluid Mosaic Model**"

Membranes are fluid/moving with proteins embedded within

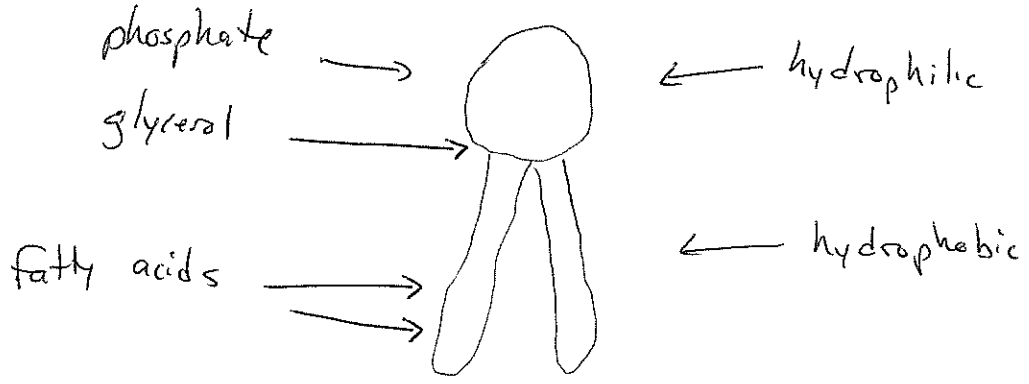
21. Label the following diagram of the Fluid Mosaic Model:



22. Name the two major components that make up the cell membrane:

phospholipids and proteins

23. Draw a diagram of a phospholipid in the space below. Label the hydrophilic and hydrophobic ends of the molecule.



24. The two basic types of cellular transport are Passive transport and Active transport.

25. Active requires energy, but Passive transport does not.

26. List three types of passive transport:

1) Diffusion
2) facilitated diffusion
3) Osmosis

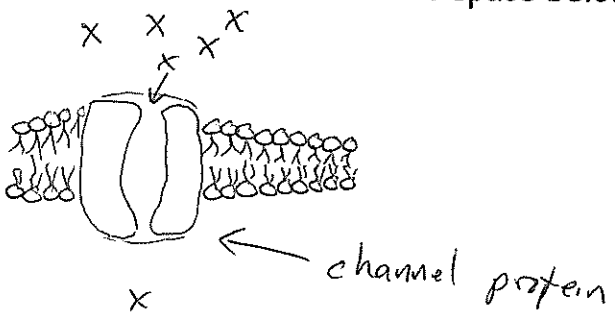
27. Define **diffusion**:

Movement of particles from high to low concentration

28. Define **concentration gradient**:

scale of concentration

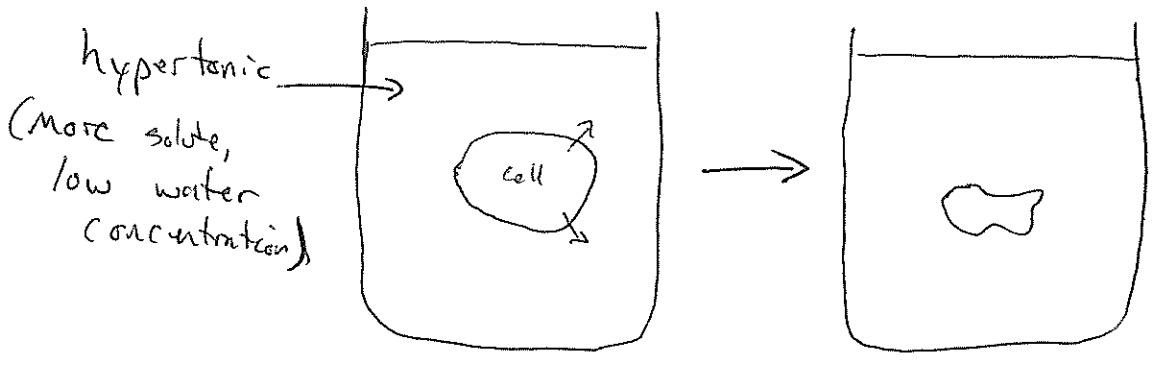
29. Draw a diagram of **facilitated diffusion** in the space below.



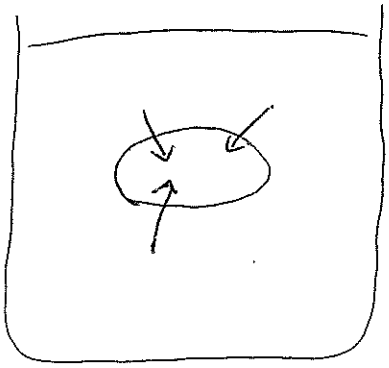
30. Define **osmosis**:

Movement of water though a membrane

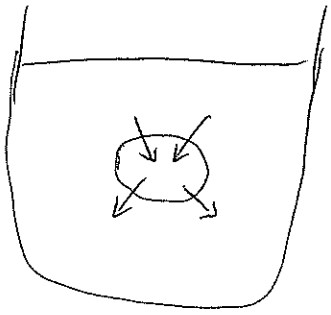
31. What would happen to a cell placed in a **hypertonic** environment? shrink
Draw a diagram to explain your answer.



32. What would happen to a cell placed in a **hypotonic** environment? swell
Draw a diagram to explain your answer.



32. What would happen to a cell placed in a **isotonic** environment? (same)
Draw a diagram to explain your answer.



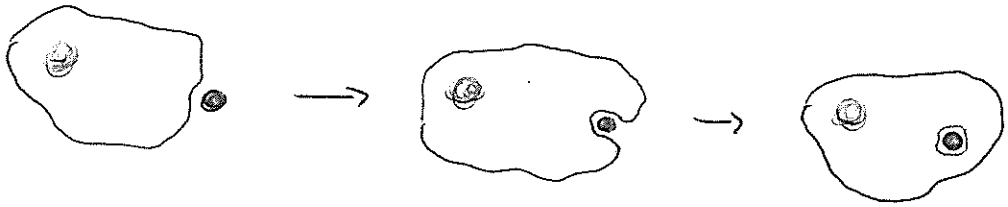
33. Explain what is meant by the term "**dynamic equilibrium**"

Things are constantly moving / changing but the overall system stays the same

34. When a cell moves materials against the concentration gradient or maintains a concentration gradient, energy or ATP is required. This is known as Active transport.

35. The two basic types of **endocytosis** are phagocytosis which is when a cell engulfs large undissolved molecules, and pinocytosis which is when a cell takes in small dissolved molecules.

36. Draw a three step diagram of **phagocytosis**:



37. The flowing motion of the cytoplasm that transports materials within the cell is called Cyclosis.

D.) Cell Organization:

38. Specialized cells that perform the same function make up a tissue

39. A group of tissues that work together make up an organ

40. A group of organs that function together make up a organ system

41. A group of organ systems that work together make up an organism

organelle → cell → tissue → organs → organ systems → organism

- hypertonic solution - shrink
- hypo-tonic solution — swell

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