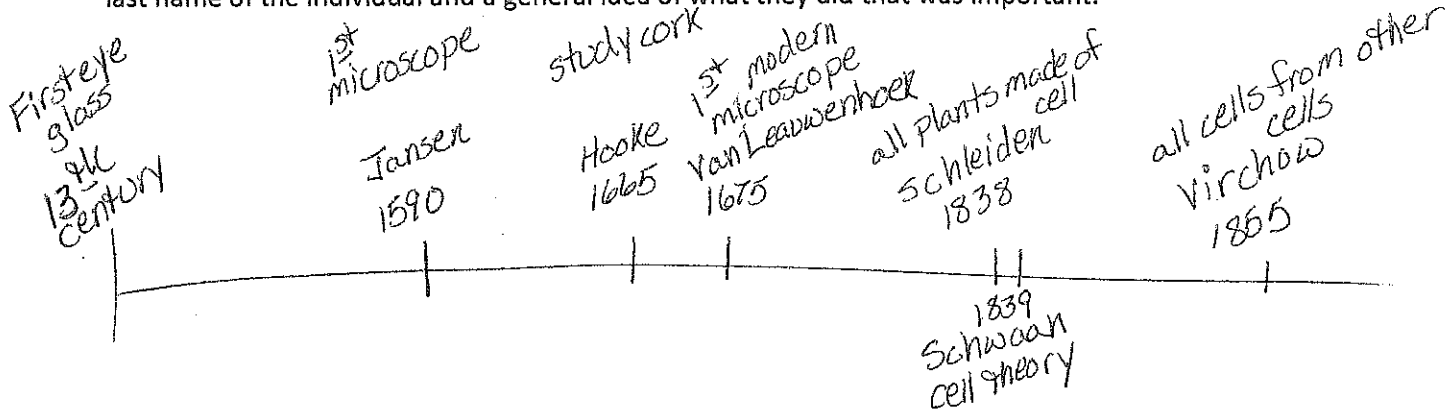


Name:

Key

The Cell and Body Systems Study Guide

- 1) An organism that is made of just one cell is known as unicellular organism complex organisms made of multiple cells are known as multicellular organism
- 2) Create a time line for the history of the microscope (similar to the time line we created as a bell ringer) Include the last name of the individual and a general idea of what they did that was important.



- 3) Cell Theory has 3 main components:

- 1) All living things are made of one or more cells
- 2) cells are the basic unit of structure + function in organisms
- 3) cells come from existing cells

- 4) Cells can't be too large. Cells want to maximize their volume to surface area ration. Why is it important that they don't become so large?

diffusion will take too long for molecules, such as O_2 or CO_2 can not get in quick enough to be distributed to a large volume

- 5) Prokaryote cells do not have either membrane bound organelles or a nucleus, while Eukaryote cells have both membrane bound organelles and a nucleus.

- 6) Eukaryote organisms are plants, animals, fungi,

Prokaryotic organisms are bacteria

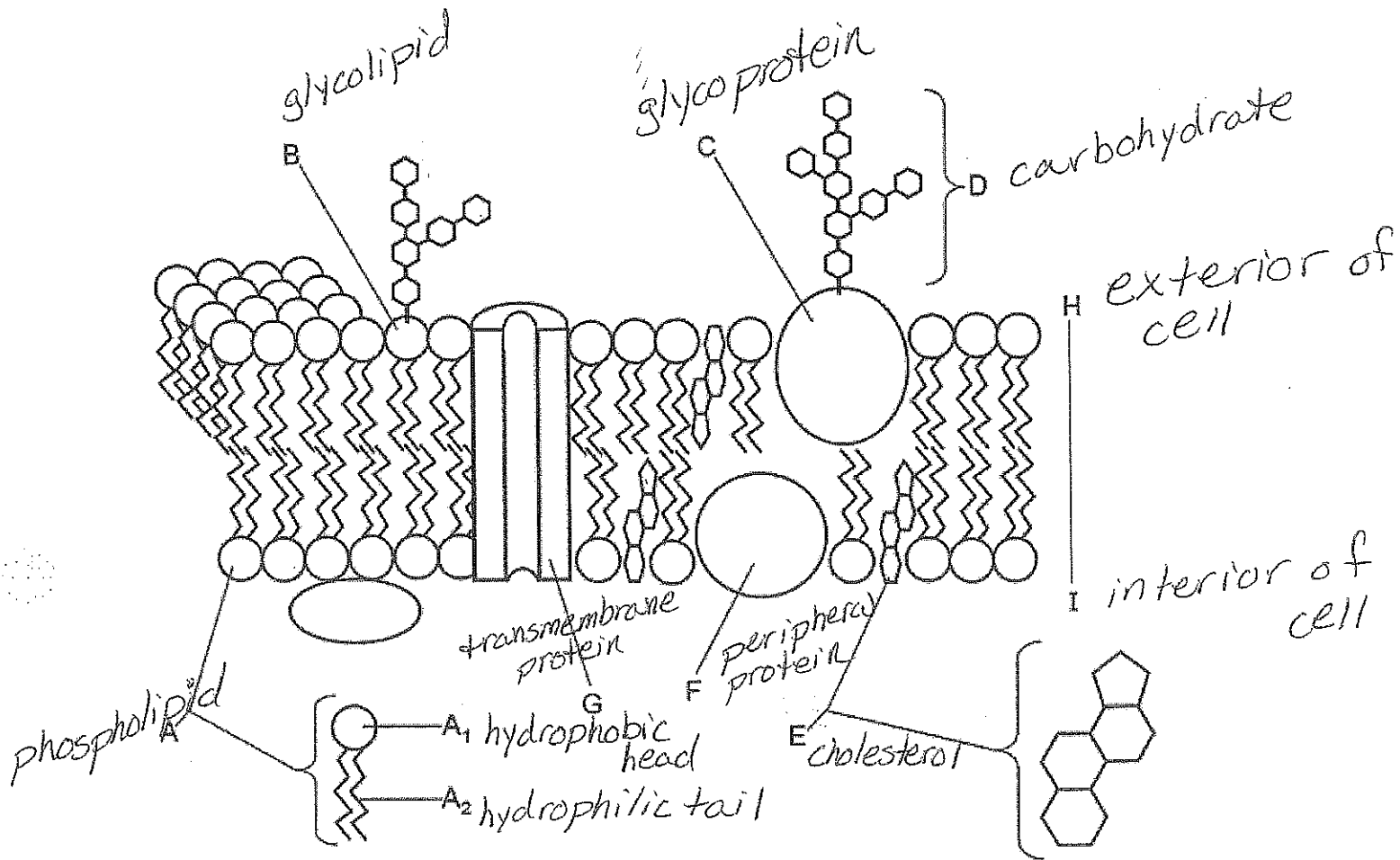
- 7) Give the purpose/job of each organelle:

- a) Mitochondria Cellular Respiration - using sugar + O_2 to make ATP energy
- b) Nucleus Control what happens w/in cell + store genetic information (DNA, RNA)
- c) Ribosome Protein production; may be attached to membrane (nuclear or endoplasmic reticulum) or free floating in cytoplasm
- d) Golgi apparatus packaging - secretion + intracellular transport
- e) Cytoplasm most reactions in cell happen here. allows transport w/in cell
- f) Chloroplasts Photosynthesis - light energy + $CO_2 \rightarrow$ sugar + oxygen
↳ Plants only
- g) Vacuole Storage may have food, water or wastes
↳ H_2O in plants
- h) Lysosome Digestive vacuole
- i) Endoplasmic Reticulum makes lipids + proteins
(may have ribosomes attached)
- j) Cell Wall structure for plants or some bacteria, keeps them from bursting
- 8) The Cell membrane is a very complex part of the cell. What are the three main functions of the cell membrane?
- A) Separate the inside of the cell from the outside
- B) Controlling the transport of materials (like waste) into and out of the cell

c) Recognizing + Responding to chemical signals

9) Label the image below: You may use the word bank given:

exterior of cell, phospholipid, Cholesterol, Glycolipid, Carbohydrate, transmembrane (integral) protein, glycoprotein, Peripheral Protein, Interior of cell, hydrophobic head, hydrophilic tail



10) A gated Channel opens and closes for certain molecules while a carrier molecule aids in the movement of materials through the cell membrane. aquaporins are used to move water in and out of the cell with speed.

11) The cell membrane is always in motion. Particles are constantly moving and bumping into each other. In general there are only two ways to move across the cell membrane. You can either use energy in the form of ATP, which is called active transport. Or no energy needs to be used and molecules can flow

through the membrane by diffusion ^{passive} transport. Active Transport is defined as the movement of molecules from an area of low concentration to an area of high concentration which requires energy.

12) Describe what happens in the sodium potassium pump:

3 Na^+ move out
2 K^+ move in
ATP \rightarrow ADP

13) The sodium-potassium pump is important because it creates an electrochemical gradient across the cell membrane. This is important for nerve impulses and resulting movement.

14) Passive transport is divided up into two separate categories. facilitated diffusion is when a carrier molecule can allow a specific molecule to pass through the membrane. This protein may open and close for this specific molecule. Diffusion on the other hand is the movement of molecules from area of high concentration to low concentration until they become evenly distributed. Neither form of movement requires energy to occur.

15) The movement of water across the membrane is given a special name. It is called osmosis.

16) Endocytosis is when the cell membrane slowly wraps around a molecule and

pulls it inside. White blood cells do this to bacteria/pathogens

Endocytosis can occur to solids and when that happens it is called phagocytosis. When liquids undergo

endocytosis this is called pinocytosis. Exocytosis is the movement of molecules from the

golgi body to the exterior of the cell
(outside)

17) If molecules are too big to enter the cell they will be broken down through the process digestion. Once inside the cell, these molecules can be reconstructed through the process synthesis.

18) Some proteins in the cell can receive chemical messages from other cells, these molecules that receive signals are known as Receptor molecules. Chemicals that travel through the body produced by the endocrine glands are known as hormones. Both chemical and electrical impulses are extremely important because they help to support homeostasis, which is an internal balance within the body.

19) Be able to list the differences and similarities between plant and animal cells. ! Table in notes.

20) Create a flow chart that shows the increase in complexity starting with the cell and ending with organisms.

Cells \rightarrow Tissues \rightarrow Organs \rightarrow Organ system \rightarrow Organism

less
complex

complex

21) Give a brief overview of the purpose of the body systems below:

a) Digestive System break down food for nutrients

b) Respiratory System absorb O_2 + release CO_2 for/from cellular respiration

c) Circulatory System Transport blood w/ nutrients + waste around the body

d) Excretory System remove wastes from body

f) Movement interactions of muscle + bone to allow movement in cell

g) Coordination Nervous + endocrine systems that work to maintain homeostasis

h) Immunity Resist diseases

i) Reproductive System Carry on species

22) Complete the following chart:

Function	Single Cell	Multicellular Organism
Gas Exchange	Cell membrane	Respiratory system
Transport of Substances	Cytoplasm	Circulatory system
Nutrition	specialized vacuoles	Digestive system
Excretion	cell membrane	Excretory system