

Cell Transport Review

NAME: Key

- E 1. The major functions of the plasma membrane do Not include
- separation of the fluid environments inside and outside the cell.
 - regulation of molecules and ions that pass into and out of the cell.
 - recognition and communication between different cells and tissues.
 - maintaining connections between adjacent cells
 - production of proteins used in construction of the cell wall.

- B 2. When plant cells are exposed to a hypertonic solution they ____ and exhibit the phenomenon called ____.
- expand, plasmolysis
 - shrink, plasmolysis
 - expand, turgor pressure
 - shrink, turgor pressure
 - remain the same, crenation

- B 3. The current theory of the structure of the plasma membrane is best described by the ____ model.
- sandwich
 - fluid-mosaic
 - unit membrane
 - electrochemical
 - unipermeable

- E 4. In a phospholipid bilayer, the
- phosphate groups are hydrophobic.
 - fatty acids tails are ionized.
 - fatty acid tails are hydrophilic
 - proteins are located only between the two layers.
 - phosphate heads are oriented toward the exterior of the cell or toward the cytoplasm.

- D 5. Which statement is True about the plasma membrane?
- The proteins make up the matrix of the membrane.
 - The model can be likened to a sandwich where phospholipids are like the bread and proteins are like the filling.
 - The fluid nature of the membrane is regulated by flip-flopping of the phospholipids from one side of the membrane to the other.
 - Movement of proteins and phospholipids can occur sideways within the plane of the membrane.

- E 6. Which statement is Not true about the proteins in the plasma membrane?
- Proteins may be attached to the inner surface of the plasma membrane.
 - The hydrophobic portion of a protein is embedded within the membrane.
 - Some plasma proteins are connected to cytoskeletal filaments.
 - Plasma proteins are responsible for membrane functions.
 - Glycoproteins contain carbohydrate chains that are oriented toward the inner surface of the membrane.

1	Correct drawing	30
1	labeled	15
1	functions	15
1	color	15

B 7. Which phrase does Not describe one of the functions of proteins of the plasma membrane?

- a) forming a channel through the membrane
- b) initiating the replication of the genetic material
- c) binding to a substance to carry it through the membrane
- d) acting as a receptor for substances external to the cell
- e) increasing the rate of a chemical reaction

C 8. Red blood cells come in many "blood types" including type A, type B, type AB, Type O, Rh positive and

Rh negative and many others. If blood is transfused, the recipient detects any new or "foreign" proteins. These blood type proteins are

- a) in the plasma where they have been secreted by the red blood cells.
- b) inside the red blood cell cytoplasm.
- c) on the outer surface of the red blood cell membrane.
- d) evenly distributed throughout the cell contents and plasma.
- e) in the red blood cell nucleus.

E 9. Whether a molecule can cross the plasma membrane depends upon

- a) the size of the molecule
- b) the shape of the molecule
- c) the chemical properties of the molecule
- d) the charge of the molecule
- e) All of the above.

A 10. Which is the Best definition of diffusion?

- a) movement of molecules from an area of their higher concentration to an area of their lower concentration
- b) movement of water across a semipermeable membrane from an area of high water concentration to an area of lower water concentration.
- c) movement of molecules from an area of their lower concentration to an area of their higher concentration.
- d) movement of water across a semipermeable membrane from an area of low water concentration to an area of higher water concentration.
- e) movement of a substance against its concentration through the release of energy from ATP.

B 11. Which is the Best definition of osmosis?

- a) movement of molecules from an area of their higher concentration to an area of their lower concentration
- b) movement of water across a semipermeable membrane from an area of high water concentration to an area of lower water concentration.
- c) movement of molecules from an area of their lower concentration to an area of their higher concentration.
- d) movement of water across a semipermeable membrane from an area of low water concentration to an area of higher water concentration.
- e) movement of a substance against its concentration through the release of energy from ATP.

- B 12. Plants show turgor pressure when
- cells are losing water from their water vacuoles.
 - cells contain water vacuoles that are full of water.
 - water is being used up in photosynthesis.
 - water is being evaporated from the leaves.

- B 13. If a cell is placed in a hypotonic solution, which will occur?
- Salts will move into the cell from the surrounding solution.
 - Water will move into the cell from the surrounding solution.
 - Salts will move out of the cell into the surrounding solution.
 - Water will move out of the cell into the surrounding solution.
 - None of the above will occur.

- D 14. If a cell is placed in a hypertonic solution, which will occur?
- Salts will move into the cell from the surrounding solution.
 - Water will move into the cell from the surrounding solution.
 - Salts will move out of the cell into the surrounding solution.
 - Water will move out of the cell into the surrounding solution.
 - None of the above will occur.

- E 15. If a cell is placed in an isotonic solution, which will occur?
- Salts will move into the cell from the surrounding solution.
 - Water will move into the cell from the surrounding solution.
 - Salts will move out of the cell into the surrounding solution.
 - Water will move out of the cell into the surrounding solution.
 - None of the above will occur.

- E 16. Freshwater protozoans react to a/an _____ environment by removing water through _____.
- hypertonic, turgor pressure
 - hypotonic, turgor pressure
 - isotonic, a contractile vacuole
 - hypertonic, a contractile vacuole
 - hypotonic, a contractile vacuole

- A 17. _____ is a shrinking of the cytoplasm due to osmosis.
- Plasmolysis
 - Endocytosis
 - Crenation
 - Diffusion
 - Turgor

- E 18. Which is the Best definition of active transport?
- movement of molecules from an area of their higher concentration to an area of their lower concentration
 - movement of water across a semipermeable membrane from an area of high water concentration to an area of lower water concentration.
 - movement of molecules from an area of their lower concentration to an area of their higher concentration.
 - movement of water across a semipermeable membrane from an area of low water concentration to an area of higher water concentration.
 - movement of a substance against its concentration through the release of energy from ATP.

B 19. The sodium-potassium pump moves sodium and potassium ions across the plasma membrane by
a) facilitated transport b) active transport c) cotransport d) endocytosis e) exocytosis

A 20. Sugar and amino acids are carried into the cell by membrane proteins by means of
a) facilitated transport b) active transport c) cotransport d) endocytosis e) exocytosis

D 21. The process by which cholesterol is transported into the cell by binding of LDL, to its receptor and the internalization of the receptor-LDL complex is
a) facilitated transport b) active transport c) cotransport d) endocytosis e) exocytosis

E 22. Which term is derived from the Greek root word meaning "out of cell"?
a) osmosis b) endocytosis c) tonicity d) diffusion e) exocytosis

E 23. Cell products are secreted from the cell through
a) facilitated transport b) active transport c) cotransport d) endocytosis e) exocytosis

D 24. Pinocytosis is an example of
a) facilitated transport b) passive transport c) cotransport d) endocytosis e) exocytosis

C 25. Which is Not true about plant cell walls?
a) All plant cells have a primary cell wall.
b) Primary cell walls contain cellulose and hemicellulose.
c) Secondary cell walls are located just outside the primary cell wall.
d) Secondary cell walls occur only in woody plants.
e) Cell walls are penetrated by extensions of cytoplasm that connect adjacent cells' cytoplasm.

E 26. Eukaryotic cells are substantially larger than bacteria cells and average over 20 times more volume per surface area than bacteria cells. How can the eukaryotic cell membrane provide this higher rate of exchange of materials?
a) Plasma membrane folds increase the surface area.
b) Carrier proteins speed the rate at which a solute crosses the plasma membrane in the direction of decreasing concentration.
c) Mitochondria are concentrated near membranes to provide energy for active transport of molecules or ions.
d) Large molecules are engulfed by vesicle formation.
e) All of the above are true.

B 27. A phospholipid molecule has a head and two tails. The tails are found
a) at the surface of the membrane
b) in the interior of the membrane
c) spanning the membrane
d) where the environment is hydrophilic
e) Both a and b are correct.

B 28. During diffusion
a) solvents move from the area of higher to lower concentration but not the solutes.
b) there is a net movement of molecules from an area of higher to lower concentration.
c) a cell must be present for any movement of molecules to occur.
d) molecules move against their concentration gradient if they are small or charged.
e) All of these are correct.

E 29. Active transport

- a) requires a carrier protein.
- b) moves a molecule against its concentration gradient.
- c) requires a supply of chemical energy.
- d) does not occur during facilitated transport.
- e) All of these are correct.

E 30. The sodium potassium pump

- a) helps establish an electrochemical gradient across the membrane.
- b) concentrates sodium on the outside of the membrane.
- c) utilizes a carrier protein and chemical energy.
- d) is present in the plasma membrane
- e) All of these are correct.

E 31. Which of the following forms of cell transport requires the input of energy?

- a) diffusion
- b) osmosis
- c) facilitated diffusion
- d) movement of a solute down its concentrated gradient
- e) active transport

A 32. Among the following choices, which one would most readily move through a selectively permeable membrane?

- a) small uncharged polar molecules
- b) protein hormone
- c) large uncharged polar molecules
- d) glucose
- e) sodium ion

D 33. Which of the following requires the input of energy?

- a) osmosis
- b) facilitated diffusion
- c) diffusion
- d) sodium potassium pump
- e) movement of water down its concentration gradient

E 34. A cell is placed into a hypertonic environment and its cytoplasm shrivels up.

This demonstrates the principle of

- a) photolysis
- b) diffusion
- c) active transport
- d) facilitated diffusion
- e) plasmolysis

E 35. Which structures are important to the permeability of a cell membrane?

- a) microfilaments
- b) cell walls
- c) ribosomes
- d) monosaccharides
- e) integral proteins

A 36. Which of the following substances is most likely to pass through a selectively permeable plasma membrane?

- a) O_2
- b) K^+
- c) glucose
- d) NH_3
- e) starch

B 37. All of the following processes transport mechanisms into a cell Except

- a) phagocytosis
- b) contractile vacuoles
- c) porin channels
- d) receptor mediated endocytosis
- e) pinocytosis

A 38. Sodium and potassium pass through the neural membrane by
a) movement through channels b) endocytosis c) diffusion d) passive transport e) phagocytosis

B 39. ATP is required for all of the following processes Except
a) active transport by transport proteins
b) facilitated diffusion
c) microtubule movement within flagella
d) Na^+/K^+ pump activity
e) protein synthesis

A 40. All of the following can be found in plasma membranes of eukaryotes Except
a) cellulose b) phospholipids c) oligosaccharides d) proteins e) cholesterol molecules

B 41. All of the following are typical components of the plasma membrane of a eukaryotic cell Except
a) glycoproteins b) cytochromes c) cholesterol d) phospholipids e) integral proteins

E 42. Facilitated diffusion
a) is a type of passive transport
b) moves molecules down the concentration gradient
c) is made possible by specific molecules within the membrane
d) requires no expenditure of energy
e) All of the above apply.

B 43. Which of the following molecules or ions move across membranes by active transport?
a) glucose b) Na^+ (sodium) c) water d) ATP e) starch

E 44. The theoretical model of membrane structure proposed by Singer and Nicholson in 1972 is called the _____ model.
a) carpal tunnel b) rigid tile c) flexible sheet d) expandable bubble e) fluid mosaic

C 45. When plant cells are exposed to a hypotonic solution they _____ and exhibit the phenomenon called _____.
a) expand, plasmolysis
b) shrink, plasmolysis
c) expand, turgor pressure
d) shrink, turgor pressure
e) remain the same, crenation