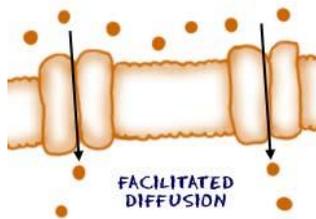


HOMEOSTASIS AND CELL TRANSPORT

- Passive Transport -

One type of passive transport is called facilitated diffusion. This process is used for molecules that cannot readily diffuse through cell membranes, even when there is a concentration gradient* across the membrane. Such molecules may not be soluble in lipids, or they may be too large to pass through the pores in the membrane.



In facilitated diffusion, the movement of these kinds of molecules across the cell membrane is assisted by specific proteins in the membrane. These proteins are known as carrier proteins. In facilitated diffusion, a carrier protein binds to a specific molecule it transports. As soon as the molecule binds* to the carrier protein, the carrier protein changes shape. This altered* shape may shield* the molecule from the hydrophobic interior of the lipid bilayer. Once shielded, the molecule can be transported across the cell membrane. On the other side of the membrane, the molecule is released from the carrier protein, which then returns to its original shape.

1

SKILL: Sequencing Information

1. *Order the statements to show the steps of facilitated diffusion. Write "1" on the line in front of the statement that describes what happens first. Write "2" on the line in front of the statement that describes what happens next, and so on.*

- | | |
|--|--------------------------|
| a. The molecule is released from the carrier protein. | <input type="checkbox"/> |
| b. The carrier protein changes shape. | <input type="checkbox"/> |
| c. The molecule is transported across the cell membrane. | <input type="checkbox"/> |
| d. The molecule binds to a carrier protein. | <input type="checkbox"/> |
| e. The carrier protein returns to its original shape. | <input type="checkbox"/> |
| f. The molecule is shielded from the hydrophobic interior of the lipid bi-layer. | <input type="checkbox"/> |

2. *In order of occurrence, briefly describe what happens in each of the three main parts of facilitated diffusion.*

- a. _____
- b. _____
- c. _____

3. Circle the letter of the phrase that best answers the question.

What types of molecules diffuse through the cell membrane by facilitated diffusion?

- a. molecules that are not soluble in lipids
- b. molecules that are too large to pass through pores in the membrane
- c. molecules that can survive the hydrophobic interior of the lipid bilayer
- d. both (a) and (b)

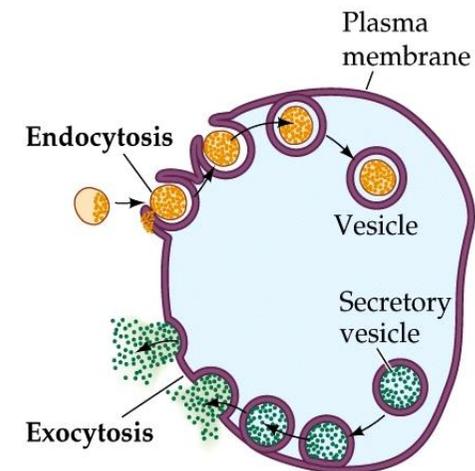
SKILL: SYNONYM MATCH

1. Gradient	a. Tie or fasten (something) tightly together	1. +...
2. Binds	b. Protect	2. +....
3. Altered	c. An increase or decrease in the magnitude of a property observed in passing from one point or moment to another.	3. +....
4. Shield	d. Make structural changes to something	4. +....

- Active Transport -

Endocytosis is the process by which cells ingest external fluid, macromolecules, and large particles, including other cells. These external materials are enclosed by a portion of the cell's membrane, which folds* into itself and forms a pouch*. The pouch then pinches* off from the cell membrane and becomes a membrane-bound organelle called a vesicle. Some of the vesicles fuse with lysosomes, and their contents are digested by lysosomal enzymes. Other vesicles that form during endocytosis fuse* with other membrane-bound organelles.

Exocytosis is essentially the reverse of endocytosis. During exocytosis, vesicles in the cytoplasm fuse with the cell membrane, releasing their contents into the cell's external environment. Cells can use exocytosis to release large molecules such as proteins, waste products, or toxins that would damage the cell if they were released within the cytosol. Proteins are made on ribosomes and packaged* into vesicles by the Golgi apparatus. The vesicles then move to the cell membrane and fuse with it, delivering the proteins outside the cell.



1. Fill in the blank to complete each sentence.

- a. Endocytosis is the process by which cells ingest large particles, external fluid, and _____.
- b. During exocytosis, substances are released from the cell through a _____.
- c. Through exocytosis, a cell releases large molecules such as _____.

2. Circle the letter of the phrase that best completes the statement.

Endocytosis and exocytosis are similar in that both processes involve the

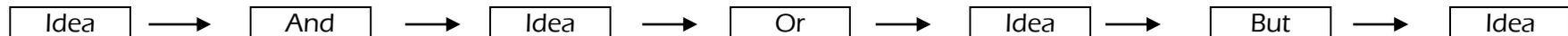
- a. Ingestion of substances.
- b. Release of substances from a cell.
- c. Movement of large particles across a cell membrane.
- d. Both (a) and (b)

SKILL: SYNONYM MATCH

1. Fold	a. Join or coalesce.	1. +...
2. Pouch	b. Bend over on itself so that one part of it covers another.	2. +...
3. Pinch	c. Wrap up.	3. +...
4. Fuse	d. A small flexible baglike container.	4. +...
5. Package	e. Grip tightly and sharply.	5. +...

GRAMMAR

Most pieces of formal writing are organized in a similar way: introduction; development of main ideas or arguments; conclusion. Linking words and phrases join clauses, sentences and paragraphs together. A piece of writing or text may include the following: one idea is linked to another an alternative is presented an objection is made



7. Some people in New Jersey built their houses very close to the shoreline. **Consequently**, they have had to spend a lot of money trying to protect their property from the sea.
- a. addition b. contrast c. illustration/example d. cause and effect
8. Running can make people more aware of their physical surroundings, **such as** the scent of honeysuckle or the changing moods of the trees.
- a. addition b. contrast c. illustration/example d. cause and effect
9. Residents complain bitterly about potholes in the streets and sloppy trash pick-up, **yet** these same people resist paying higher taxes for the improvement of these services.
- a. time b. contrast c. comparison d. illustration/example
10. Telephone interviewing allows for a large number of responses in a short time and at relatively low cost. **Moreover**, the method permits interviewers to reach respondents at specific times of the day; this is an important consideration in the study of radio and TV listening habits.
- a. addition b. time c. contrast d. comparison

Read each sentence below and choose the correct transition word.

1. _____ I met my former boyfriend, I never really understood the meaning of the word unreliable.

<i>Transition words:</i>	<i>Where</i>	<i>before</i>	<i>First of all</i>
The transition indicates:	time	addition	contrast

2. One reason people have dogs is for companionship; _____ is for protection

<i>Transition words:</i>	<i>once</i>	<i>frequently</i>	<i>another</i>
The transition indicates:	illustration	addition	conclusion

3. _____ Candy crush is a new game; it has quickly become very popular.

<i>Transition words:</i>	<i>Although</i>	<i>When</i>	<i>In the same way</i>
The transition indicates:	contrast	cause and effect	time

4. There's no room in your mouth for your wisdom teeth, _____ they will have to be removed.

<i>Transition words:</i>	<i>for example</i>	<i>so</i>	<i>but</i>
The transition indicates:	contrast	cause and effect	illustration

5. Turtles stay in their shells when they are frightened. _____ dogs put their tails between their legs in frightening situations.

<i>Transition words:</i>	<i>After</i>	<i>similarly</i>	<i>therefore</i>
The transition indicates:	cause and effect	comparison	time

6. _____ the invention of television, people probably spent more of their leisure time reading.

<i>Transition words:</i>	<i>Nevertheless</i>	<i>Because</i>	<i>Before</i>
The transition indicates:	addition	cause and effect	time

7. If you're having company for dinner, try to get as much done in advance as possible. _____, set the table the day before.

<i>Transition words:</i>	<i>For instance</i>	<i>In contrast</i>	<i>Similarly</i>
The transition indicates:	illustration/example	comparison	contrast

8. _____ I'm very allergic to flowers, my boyfriend bought a bouquet of roses.

<i>Transition words:</i>	<i>Until</i>	<i>Because</i>	<i>Even though</i>
The transition indicates:	time	contrast	addition

9. My grandfather loves to say, "You're as nervous _____ a long-tailed cat in a roomful of rocking chairs."

<i>Transition words:</i>	<i>after</i>	<i>as</i>	<i>as a result</i>
The transition indicates:	cause and effect	time	comparison

10. _____ Manny's car stereo was on full blast, I could see his lips moving, but I had no idea what he was saying.

<i>Transition words:</i>	<i>Moreover</i>	<i>Because</i>	<i>Just as</i>
The transition indicates:	comparison	addition	cause and effect

Answer the following questions and underline the transition words that helped you make your decision.

1. If you can't get rid of a cold, the flu, or a nagging sore throat, the reason may be your toothbrush. 2. Studies at the University of Oklahoma Dental School have shown that your old toothbrush may carry the germs that are causing your illness. 3. The studies have found that people who change their toothbrushes about every two weeks recover from common winter ills faster than people who use their toothbrushes for a month or more. 4. Old toothbrushes can culture the germs that can cause colds, influenza, pneumonia, strep throat, diarrhea, and sinus disease. 5. Another study found that disease germs can live in an unused toothbrush for as long as a week. 6. They can start to thrive again every time you brush your teeth.

1. The relationship between the two parts of sentence 1 is one of

- a. time.
- b. addition.
- c. cause and effect.
- d. contrast.

2. The relationship of sentence 5 to the previous sentence is one of

- a. addition.
- b. comparison.
- c. time.
- d. contrast.

1. Vietnamese and American cultures are sharply different. 2. In Vietnam, two men or two women often show affection in public, but open affection between the sexes is not considered acceptable. 3. Also, Vietnamese are often surprised by American family relations. 4. Americans may live far from their parents and grandparents. 5. Even if they're in the same city, they rarely live in the same house. 6. However, three or four generations generally live together in one Vietnamese household, with elderly people cared for by their children and grandchildren.

1. The relationship between the two parts of sentence 3 is one of

- a. time.
- b. addition.
- c. contrast.
- d. cause and effect.

2. The relationship of sentence 6 to sentence 5 is one of

- a. contrast.
- b. addition
- c. cause and effect
- d. comparison

Here is a word bank with transition words. Use the words in the bank to connect the clauses below. You should only use a transition word or phrase once.

Word Bank

*in addition
otherwise
although
therefore
in fact
furthermore
similarly
consequently
actually
so
however
nevertheless
yet
instead
moreover
particularly*

1. The girls wanted an ice cream cone, _____ they left the park early.
2. Mother didn't have time to go to the store; _____, there was no milk in the refrigerator.
3. There is no homework tonight; _____, there has been no homework this week.
4. James and his team didn't finish the project; _____, they did work hard.
5. You can come with us if you are ready; _____, you will have to ride the bus.
6. It is important to complete your homework; _____, it should be turned in on time.
7. Mrs. Simpson can be grumpy some times; _____, we should help her whenever we can.
8. Students should be quiet during the play; _____ applause at the end is allowed.
9. The Johnson children get an allowance every week; _____, they earn money for completing chores.
10. The rhino in Africa is threatened with extinction; _____, many species of gorilla are also endangered.

Transition words have been left out of the following paragraph. Select appropriate words from the list below, and write them in the proper places. There can be more than one word that fits in some places

when as a result of first once upon a time while through next and beside then

(1) _____ there lived a family of bears in a lovely wooded area. Their home was (2) _____ some trees (3) _____ a small stream. One day (4) _____ the bears were not at home, a little girl came to the house. (5) _____, she knocked on the door. (6) _____, even though no one answered her knock, she entered the house. She ate some of the bears' food, (7) _____ she napped on one of their beds. (8) _____, the bears returned home. They were surprised to see their door open. Their roars woke up the girl, and she fearfully ran from the house, (9) _____ the woods, and back to her own home. (10) _____ her experiences, she never again went into the woods alone.