DATE: NAME: CLASS:

CHAPTER 2
SCIENCE INQUIRY

BLM 2-1

Designing a Cell Membrane

Goal • Use this page to design cells with membranes that are **permeable**, **impermeable**, and **selectively** permeable.

What to Do

1. Read page 40 of *SCIENCEPOWER™ 8*.
2. For Part A, write answers to the questions in the spaces provided.
3. For Part B, read the instructions to draw three different cells with different types of membranes, then answer the question that follows.

Part A

1. What does the term "permeable membrane" mean?

_____

2. What does the term "selectively permeable" mean?

_____

3. Why do you think it is important for a cell to be selective?

_____

Part B

You are a cell architect and you have been asked to draw three types of cells. Most architects must follow "specification" or detailed instructions in their design process. For your diagrams, use different shapes, like a square or triangle, to represent different types of molecules that can or cannot move freely in and out of cells. Here are your cell specifications:

Cell 1: Must be impermeable to the type of molecules you have chosen to draw.

Cell 2: Must be permeable to the type of molecules you have chosen to draw.

Cell 3: Must be selectively permeable to the type of molecules you have chosen to draw.

Cell 1

Cell 2

Cell 3

Analyze

4. What do you think is the best type of membrane for a cell to have?

_____

_____

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CHAPTER 2
REINFORCEMENT

BLM 2-2

Relating Diffusion to the Particle Theory

Goal • Use this page to review your knowledge of diffusion.

What to Do

- Answer the questions as instructed in Parts A and B.

Part A

Use the word list to fill in the blanks in the sentences below. You may need to use words more than once.

Word List

particles	high	moving	slowly
vibrate	faster	low	

1. All matter is made up of _____.
2. Particles that make up matter are never still. They are always _____.
3. In a solid substance, particles may _____ but remain in a fixed position.
4. Particles in a liquid move _____ than the particles in a solid.
5. When a liquid is cooled, its particles move more _____.
6. Diffusion is the movement of particles from a region of _____ concentration to a region of _____concentration.

Part B

In the boxes below, draw what you think particles would look like in a liquid and in a gas. Write a brief description to explain your diagrams in the space below the boxes.

particles in a liquid	particles in a gas

_____

_____

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CHAPTER 2 ASSESSMENT

BLM 2-8

Mid-Chapter Quiz

Goal • This page tests your knowledge of the material covered to the end of section 2.2.

What to Do

- Beside each statement on the left-hand side, place the letter representing the term on the right-hand side that best matches the statement. Some terms may be used more than once.

Statement	Term
___ 1. a barrier in the cell that is embedded with channels	(a) osmosis
___ 2. a type of transport that requires energy	(b) diffusion
___ 3. an organelle that has the nickname "powerhouse" of the cell	(c) glucose
___ 4. the movement of water from an area of high concentration to low concentration	(d) permeable
___ 5. a type of barrier that lets in all things	(e) impermeable
___ 6. a barrier that only lets in some things	(f) active
___ 7. when sugar moves from an area of high concentration to low concentration	(g) selective
___ 8. a process that occurs in the mitochondria	(h) carrier
___ 9. protein that controls substances entering or leaving cells, like gates in a wall	(i) mitochondria
___10. to produce energy for a cell, mitochondria break down fats, oxygen, and this substance	(j) cell membrane
___11. a barrier that lets nothing past	(k) cellular respiration
___12. process that allows medication to move from a Band-Aid™-like patch adhered to the skin, through the skin, and into the bloodstream	

Total: /12

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CHAPTER 2 REINFORCEMENT

BLM 2-10

How Cells Get Energy

Goal • Use this page to review your knowledge of cellular energy.

What to Do

- Answer the questions below in full sentences. Use pages 48-49 of *SCIENCEPOWER™ 8* for assistance.

1. What is energy?

_____

_____

2. What organelle makes energy in a cell? _____
3. How is turning on a computer like eating a sandwich?

_____

_____

4. How does a plant get food?

_____

5. What is photosynthesis?

_____

_____

6. What is the name given to the process that releases food energy? _____
7. Write the word equation for the chemical reaction of cellular respiration.

_____

8. Why would you expect to have many mitochondria in a muscle cell?

_____

_____

9. Besides "powerhouse," can you think of other words that describe mitochondria?

_____

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CHAPTER 2
REINFORCEMENT

How Cells Get Energy (continued)

BLM 2-10

10. Name some of the processes for which cells require energy.

_____

_____

11. What is lactic acid?

_____

_____

12. Three specialized cells are listed below. How do each of these cells use energy?

Muscle cells: _____

Nerve cells: _____

Sperm cells: _____

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CHAPTER 2 VOCABULARY CHECK

BLM 2-12

An Inventory of New Terms

Goal • Use this page to review terms studied to the end of section 2.2.

What to Do

1. In the table below, write the definitions of the terms.

Term	Definition
diffusion	
osmosis	
active transport	
cell membrane	
carrier protein	
cellular respiration	

2. Write the word equation for the chemical reaction that occurs in cellular respiration.

_____ + _____ → _____ + _____ + _____

3. The products of cellular respiration are: _____

4. The reactants of cellular respiration are: _____

5. Cellular respiration occurs in the: _____

6. The reaction that produces cellular energy in plants is called: _____

7. Write the word equation for photosynthesis.

_____ + _____ + _____ → _____ + _____