

Biology Learning Targets — Homeostasis and Transport

What is homeostasis?

How do cells maintain constant conditions?

How do things get in and out of cells?

How does the human body maintain relatively constant internal conditions (ex. temperature, acidity, blood sugar)?

Background Skills:

- Describe the structure and functions of the cell membrane
- Use the terms solute and solvent to describe a solution.
- Describe how molecules form a solution
- Explain how ATP stores and transfers energy

Learning Targets:

I. Types of Transport - Overview

A. Homeostasis and Transport

1. define each
2. explain how transport helps maintain homeostasis
3. What is the main difference between active and passive transport?

II. Passive Transport

A. Define diffusion

1. Explain how a concentration gradient causes diffusion
2. Explain how equilibrium is reached as a result of diffusion

B. Define osmosis

1. Explain what is meant by hypertonic, hypotonic, and isotonic solutions
 - a. Compare and contrast these solutions

C. Distinguish between diffusion and osmosis

D. Facilitated Diffusion

1. Explain how facilitated diffusion works

E. Ion Channel Diffusion

1. How is ion channel diffusion different from facilitated transport?

III. Active Transport

A. Cell membrane pumps

1. Describe the energy exchange that occurs in cell membrane pumps, including
 - a. Na⁺-K⁺ pump

B. Distinguish between endocytosis and exocytosis, and explain how the cell uses each

1. Differentiate between pinocytosis and phagocytosis

Know, for each type of transport:

1. Is it active or passive?
2. What type of particles are transported ?
3. What, if any, energy transfer takes place during the process ?
4. Describe the function of the contractile vacuole.