

Description of Active Transport

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INTRODUCTION

Active transport is the movement of molecules across a cell membrane across a concentration gradient from a region of lower concentration to a region of higher concentration. To achieve this movement, active transport necessitates the use of cellular energy. The technique of transporting molecules across a cellular membrane using cellular energy is known as active transport. Active transport transports molecules from a lower concentration to a higher concentration, whereas passive transport can only move molecules from a higher concentration to a lower concentration. Active transport necessitates the use of cellular energy to accomplish this movement. A protein pump uses energy in the form of ATP to move molecules from a low-concentration location to a high-concentration location during active transport. The sodium-potassium pump, which transports sodium ions to the outside of the cell and potassium ions to the inside, is an example of active transport. A sodium pump, glucose selection in the intestines, and mineral ion uptake by plant roots are all examples of active transport. Passive transport occurs when oxygen and carbon dioxide are exchanged in the kidneys and liver, as well as in the alveoli of the lungs. Ask children how they can speed up the movement of the popcorn aroma to illustrate active transportation. Discuss the responses of the students. Active transport is a type of cellular transport in which molecules move in opposition to a concentration gradient. This indicates that the flow is from a lower to a higher concentration area. As a result, this activity will necessitate energy expenditure and the involvement of membrane proteins such as carrier proteins.

Turn on a fan and place it near the bag of popcorn. Inquire of your students how this might alter the flow of air molecules. Active transport necessitates the use of a specific carrier molecule, a protein, as well as the expenditure of cellular energy; as a result, transfer across membranes can take place against a concentration gradient. Substances migrate against the concentration gradient during active transport, from a low-concentration location to a high-concentration one. This is a "active" process because it necessitates the application of energy (usually in the form of ATP). Passive transportation is the polar opposite of active transportation. Active transport is a method of transport that makes use of the energy produced by respiration. Diffusion and osmosis are passive processes that do not require the cell to expend any energy. A cell must employ energy to transfer substances against a concentration or electrochemical gradient. Active transport systems accomplish just that, using energy (typically in the form of ATP) to keep ions and molecules in live cells at the proper concentrations. It is the flow of chemicals into or out of the cell across the cell membrane. Things can sometimes just pass through the phospholipid bilayer. Other times, a protein, such as a channel protein or another transmembrane protein, is required to help molecules traverse the cell membrane. Substances (such as ions, glucose, and amino acids) travel across a membrane from a lower concentration zone to a higher concentration region by active transport. As a result, they move in the opposite direction of the gradient of their concentration.

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