

GCSE Biology – Active Transport - Transcript

This lavender plant is using active transport to move low concentrations of nutrients from the sandy soil into its roots to help it grow. But what is active transport?

It's the process cells use to move substances against a concentration gradient. From a low, dilute concentration to a higher, more concentrated one.

It requires energy, released from respiration. Protein pumps in the cell membrane use this energy to push molecules into or out of the cell.

In plants, this process is vital. Cells in the roots use active transport in the root hairs to absorb mineral ions like nitrates from the soil, even when the ions are found in a very low concentration.

Without active transport, plants couldn't get the nutrients they need to remain healthy.

In humans, active transport happens in the small intestine. After a meal, glucose will initially move by diffusion from its high concentration in the intestine through the villi and into the blood.

But, to ensure you get all the nutrients out your food, when the concentration of glucose in the blood becomes higher than in the intestine the body then switches to

active transport and actively pumps glucose into the blood. This way, your body can absorb as much energy as possible from your food.

How does active transport compare with other processes?

In diffusion, particles move from high to low concentration, no energy is needed.

During osmosis, water moves across a partially permeable membrane from high to low concentration. Again, no energy is required.

With active transport, particles move from low to high concentration, and energy is required.

So that's how active transport helps lavender to grow even when the soil is low in nutrients.