Facilitated diffusion vs. active transport

Business

Facilitated diffusion and active transport are two ways of moving materials across the cell membrane.

These two types of transport have many similarities as well as differences. One similarity is in what is transported. In facilitated diffusion, ions, sugars, and salts are transported across the membrane. In active transport, ions, sugars, and salts are also transported. The second similarity is that both facilitated diffusion and active transport use proteins as their means of transporting their materials to and from the cell.

The integral proteins of the cell change shape to transport the particular substance in or out of the cell. The last similarity is the basic goal of both facilitated diffusion and active transport. The main goal is to move substance across the cell membrane. There is one main difference between facilitated diffusion and active transport. This differences leads to other aspects of these two types of transport to be different as well.

This difference is that active transport needs energy, while facilitated diffusion does not need energy. The energy that active transport uses is ATP (adenosine triphosphate). When the protein changes shape in facilitated diffusion, it is because the substances bond onto the protein and the protein, because of this bond, changes it shape. This happens because the substances are going with the concentration gradient. Facilitated diffusion is needed because the substances it transports are too big to pass through the cell membrane. They want to go with the concentration gradient, but just can’t without integral proteins.

With active transport, the protein changes shape by using ATP. Energy is needed in this form of transport because the substances are going against the concentration gradient. A great is example is the sodium-potassium pump (Na/K pump). This allows sodium and potassium to move against the concentration gradient. Sodium and potassium can easily diffuse through the cell membrane, but that is only when they are going with the concentration gradient.

With the Na/K pump, the cell takes in however many potassium molecules it needs and throws out however many sodium molecules it doesn’t need, even if there is not an equal amount of either substance in and out of the cell. The last difference is that facilitated diffusion allows substances to follow the concentration gradient either way, while active transport only has substances go one way, against their concentration gradient. Facilitated diffusion and active transport are two ways of doing the same thing. Although they have different ways of carrying out their task, they are both efficient ways of moving materials across the cell membrane.