

# Types of Transport Activity Sheet

At the conclusion of this activity, students should be able to:

*Explain* the relationship between passive diffusion and the concentration of a molecule.

*Distinguish* between active transport and passive diffusion.

**Passive diffusion** (diffusion across the cell membrane without an input of energy) involves different types of molecules. **Diffusion** is the result of a difference in concentrations on either side on the membrane (concentration gradient). In order to establish or remain at equilibrium, substances move from an area of high concentration to an area of low concentration. Diffusion of water molecules into and out of the cell is by osmosis. Diffusion of small particles through the membrane can occur because of the molecule's small size and its ability to squeeze into small openings produced by the fluid movement of the membrane. Diffusion of ions must be accomplished through ion channels. Channel proteins provide a path for the ions to gain entrance into and out of the cell. Facilitated diffusion occurs when a molecule such as glucose or amino acids are too large to enter the cell. These larger molecules must utilize the services of a carrier protein that is specific for each molecule to "usher" their passage into and out of the cell.

**Active transport** occurs when a molecule is moving against its concentration gradient. Energy must be used in order for this transport to take place. One illustration of this type of transport is the Na<sup>+</sup>/K<sup>+</sup> pump. Energy in the form of ATP must be used to move the Na<sup>+</sup> out of the cell and the K<sup>+</sup> ions into the cell.

Your teacher will announce the type of transport that will be illustrated in each part of the activity. As you begin your movement, always be aware of the concentration gradient.

## Passive Transport

- osmosis
- channel-mediated diffusion
- facilitated diffusion

## Active Transport

- sodium/potassium pump