

Lysosomes are globular shaped organelles which are found in almost all animal cells. Lysosomes are bounded by only one membrane which contains enzymes that are in the form of crystalline. Lysosomes are involved in digestion and help to remove waste; this is because lysosomes contain digestive enzymes. These digestive enzymes engulf viruses, bacteria or any waste. (Study 2003 Online)

All cells are surrounded by a cell/plasma membrane. The plasma membrane is the barrier between the cell and the outer environment of the cell. The plasma membrane controls all substances which enter or leave the cell. It is made up of a phospholipid bilayer. This phospholipid bilayer is comprised of proteins/lipids. The proteins help transfer molecules outside the membrane, whilst lipids allow the membrane to be more flexible. The phospholipid bilayer is made of two layers of phospholipids which are back to back to each other. Phospholipids are lipids with a phosphate group attached to them. All phospholipids have one head and two tails. The head of a phospholipid is hydrophilic (water loving), on the other hand the tails are known as hydrophobic and hate water. To form the plasma membrane the phospholipids line up in two layers with the tails facing towards each other. Throughout the plasma membrane they are a number of cholesterol molecules which stabilize and provide structure to the phospholipids. The plasma membrane is embedded with a number of different types of proteins, e.g peripheral and integral proteins. Peripheral proteins go halfway through the membrane whereas integral proteins are embedded all the way through the membrane and act as protein channels which control substances that leave or enter the cell. (Pearson, 2016 Online)

The plasma membrane is known as selectively permeable as it chooses which substances transfer. Transporting substances over the plasma membrane is either done with energy or without energy. Active transport is when substances are transported over the membrane with the use of energy, whereas passive transport is where substances are transported without the use of energy. (Pearson, 2016 Online)

Diffusion is a type of passive transport. Substances are transported over the cell membrane via diffusion, when lipid soluble molecules pass between the phospholipids to leave or enter the cell moving from area of high concentration to an area of low concentration over a gradient scale. An example of where diffusion may occur is when carbon dioxide and oxygen enter or leave the cell through diffusion. Osmosis is another type of passive transport. Osmosis transport *only* water molecules across the plasma membrane by diffusing the water molecules through the selectively permeable plasma membrane. The water molecules then move from an area of high water potential to areas of low water potential. Osmosis occurs within liquid solvents separated by a semi-permeable membranes or materials. Another type of passive transport is facilitated diffusion. Facilitated diffusion is when substances enter or leave the cell down their gradient scale through the protein channels in the plasma membrane. The only difference between diffusion and facilitated diffusion is that facilitated diffusion uses the aid of proteins to transport molecules over the cell membrane. Facilitated diffusion can occur in gated channels or pores. (Yvcc. 2016 Online)

Active transport is when substances are moved against their concentration gradient across the plasma membrane. This is from an area of low concentration to an area of concentration. Because the transportation goes against the concentration gradient as it uses energy. The type of energy that is used for transportation is ATP. There are two types of active transport, endocytosis and exocytosis. Endocytosis transports large molecules from outside the cell membrane by engulfing the substance into the cell. They are two types of endocytosis processes. If the substance brought into the cell is a solid then the process is known as phagocytosis however if the substance brought into cell is a liquid (fluid droplets) then the