

## **Vocabulary – Chapter 5**

### **First law of thermodynamics**

- This is a law that states that energy is neither created nor destroyed. It is only transferred or converted.

### **Second law of thermodynamics**

- This law states that energy conversions reduce the order of the universe.

### **Entropy**

- The disorder or randomness

### **Endergonic**

- Chemical reactions in which an input of energy is required. In these reactions, the energy of the products is greater than the energy of the reactants.

### **Exergonic**

- Chemical reactions in which energy is released. In these reactions, the energy of the products is less than the energy of the reactants.

### **ATP**

- Adenosine triphosphate; A molecule that stores energy. It is released from exergonic reactions and powers endergonic reactions.

### **ADP**

- Adenosine diphosphate; A molecule that stores energy but it has less energy than ATP.

### **Hydrolysis**

- A type of reaction in which a larger molecule is broken down into smaller molecules. Water is needed for this type of reaction to occur.

### **Dehydration synthesis**

- A type of reaction in which smaller molecules are combined to make larger molecules. Water is released in the process

### **Enzymes**

- Proteins that help biochemical reactions to work. They lower the energy required to start a reaction (the energy of activation of a reaction).

**Reactants**

- Another name for substrate. It is the starting material in a chemical reaction.

**Substrate**

- Another name for reactant. It is the starting material in a chemical reaction.

**Products**

- It is what is formed in a reaction.

**Energy of activation**

- The energy required to start the reaction.

**Active site**

- The place on the enzyme where the substrate binds.

**Competitive inhibitor**

- Binds to the enzyme at the active site and thus prevents the substrate from binding the enzyme at the active site.

**Noncompetitive inhibitors**

- Binds to the enzyme somewhere other than the active site. It changes the shape of the active site so that the substrate cannot bind to the enzyme at the active site.

**Reversible inhibitors**

- The effect of the inhibitor can be reversed.

**Irreversible inhibitors**

- The effect of the inhibitor cannot be reversed.

**Selectively permeable**

- This is a term used to describe the cell membrane. Only certain molecules are allowed to pass through the membrane. Other molecules will be excluded.

**Polar**

- A molecule containing polar covalent bonds. In terms of a cell membrane, the polar part of the membrane is also called hydrophilic. It likes water.

**Nonpolar**

- The nonpolar part of the cell membrane contains fatty acid tails. It is also called hydrophobic since it does not like water.

**Hydrophilic**

- It likes to interact with water. The outer part of a cell membrane is hydrophilic.

**Hydrophobic**

- It does not like to interact with water. The inner part of a cell membrane is hydrophobic.

**Phospholipid bilayer**

- The backbone of the cell membrane that consists of polar head groups and fatty acid tails.

**Glycolipid**

- A term used to describe a sugar and a lipid.

**Glycoproteins**

- A term used to describe a sugar and a protein.

**Passive transport**

- A type of transport that does not require energy.

**Diffusion**

- The movement of molecules from an area of high concentration to an area of low concentration.

**Equilibrium**

- The point at which there is no net change in the movement of molecules on either side of a membrane.

**Facilitated diffusion**

- The movement of molecules from an area of high concentration to an area of low concentration with the help of a carrier molecule.

**Osmosis**

- The movement of water from an area of high concentration to an area of low concentration.

**Hypertonic**

- A solution that has a higher concentration of salts or sugar than the cell. If a cell is placed in a hypertonic solution, the cell will shrink.

**Hypotonic**

- A solution that has a lower concentration of salts or sugar than the cell. If a cell is placed in a hypotonic solution, the cell will swell and lyse.

**Isotonic**

- A solution that has the same salt or sugar concentration as the cell.

**Solute**

- The molecule that is dissolved.

**Solvent**

- The molecule that does the dissolving such as water.

**Active transport**

- The movement of molecules from an area of low concentration to an area of high concentration. This process requires energy.

**Exocytosis**

- The process of moving molecules from the inside of the cell to the outside of the cell.

**Endocytosis**

- This process is the reverse of exocytosis. **It is** the process of moving molecules from the outside of the cell to the inside of the cell.

**Phagocytosis**

- A type of endocytosis in which molecules are taken in by pseudopods.

**Pseudopods**

- Extensions of Amoeba that are used to take in food.

**Pinocytosis**

- A nonspecific mechanism of taking in molecules dissolved in water.

**Receptors**

- Proteins embedded in the cell membrane that are involved in the process of taking in other molecules.

**Receptor-mediated endocytosis**

- A specific process in which molecules bind to receptor at the cell surface and are then taken into the cell by endocytosis.

**LDL-mediated endocytosis**

- A type of receptor-mediated endocytosis that is used to take cholesterol into cells.