

4. Water

CHEMISTRY OF WATER

1. A molecule of water, H₂O, has two atoms of hydrogen and one atom of oxygen.
2. Water forms a 'bent' configuration with an internal angle of 104.5°
3. The unequal sharing of electrons, combined with its shape, makes water a polar molecule.

WATER'S LIFE SUPPORTING PROPERTIES

1. Cohesion between water molecules allows for surface tension and transpiration.
2. Water has a high specific heat of 4.186 Joules / gram – allowing it to resist severe temperature changes
3. Water floats as a solid because it is the most dense as a liquid at 4° C and is least dense as a solid at 0° C
4. Water is the universal solvent.

5. Macromolecules

1. Carbohydrates

- Monomers: monosaccharides
- Function: Main source of short-term energy needs

2. Lipids

- Monomers: fatty acids
- Function: Forms the cell membrane and provides long-term energy storage

3. Proteins

- Monomers: amino acids
- Function: Transport material in/out of cell, regulate speed of cellular reactions

4. Nucleic Acids

- Monomers: nucleotides
- Function: Store and transmit hereditary information

6. Cellular activity

1. All living cells have a cell membrane, cytoplasm, and hereditary information
 - The cell membrane regulates what enters and leaves the cell as well as providing support and protection
 - Cytoplasm is the liquid gel that fills each cell and is composed of water and dissolved salts / nutrients
 - Hereditary information (DNA) is stored in chromosomes and is passed down to future generations
2. Diffusion is the movement of particles from an area where they are more concentrated to an area where they are less concentrated
3. Osmosis is the diffusion of water from areas of high water concentration to areas of low water concentration
4. Diffusion and osmosis stop when equilibrium is reached