**Chapter 3: Cell Processes and Energy**

**Section 1: Chemical Compounds in Cells**

**Main Ideas**

|  |  |
| --- | --- |
| **What are elements and compounds?** | **An element is any substance that cannot be broken down into simpler substances.** |
|  | **A compound exists when two or more elements combine chemically to form a compound.** |
| **How is water important to the function of cells?**    **cells?** | **Most chemical reactions within the cells could not take place without water.**  **Water also helps cells keep their size and shape.** |
| **The four main kinds of organic compounds in living things are:** | **Carbohydrates**  **Lipids**  **Proteins**  **Nucleic acids** |
| **Carbohydrates** | **Energy-rich organic compounds made of the elements carbon, hydrogen and oxygen.**  **Most compounds that contain carbon are known as organic compounds.**  **Carbohydrates are important components of some cell parts like the cell membrane.** |
| **Lipids** | **Lipids: Energy-rich organic compounds made of carbon, hydrogen, and oxygen.**  **Cells store energy in the form of lipids for later use.**  **They contain even more energy than carbohydrates.** |
| **Proteins**      **Amino Acids**    **Enzymes** | **Large organic molecules made of carbon, hydrogen, oxygen, nitrogen, and in some cases, sulfur.**  **In this picture transport proteins are moving material across the cell membrane.**  **Proteins:- form parts of the cell membrane**  **- make up many of the organelles**  **Protein molecules are made up of these smaller molecules. The arrangement of these amino acids can result in many proteins.**  **A type of protein that speeds up chemical reactions in a living thing.**  **Enzymes in saliva speed up digestion by breaking down foods in your mouth.** |
| **Nucleic Acids**      **DNA**  **(Deoxyribonucleic acid)** | **Nucleic acids are very long chain molecules made of carbon, oxygen, hydrogen, nitrogen, and phosphorous.**  **They contain the instructions that cells need to carry out all the functions of life.**  **The genetic material that carries information about an organism and is passed from parent to offspring.**  **It also directs all the cell’s functions.** |
| **Chromatin**    **RNA**  **(Ribonucleic Acid)** | **Most of the DNA in a cell is found in the chromatin in the nucleus.**  **Plays an important role in the production of proteins. It is found in both the nucleus and the cytoplasm.** |