**Chapter 3: Cell Processes and Energy**

**Section 1: Chemical Compounds in Cells**

**Main Ideas**

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| **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.** |