ADVANCED BIOLOGY: CARBON AND THE MOLECULAR DIVERSITY OF LIFE

(USE CHAPTER 4 AND 5 AS A RESOURCE)

Organic Compounds

Macromolecules

IMPORTANT FUNCTIONAL GROUPS IN CARBON COMPOUNDS





ATP: An Important Source of Energy for Cellular Processes



MACROMOLECULES ARE POLYMERS, BUILT FROM MONOMERS

Polymer

Monomer

1. The Synthesis and Breakdown of Polymers
2. Enzymes
3. Dehydration reaction (synthesis)
4. Hydrolysis (breakdown)



1. The Diversity of Polymers

CARBOHYDRATES SERVE AS FUEL AND BUILDING MATERIAL

Carbohydrates

1. Sugars
2. Monosaccharides



1. Disaccharides

 

1. Polysaccharides
2. Storage polysaccharides
3. Starch
4. Glycogen
5. Structural polysaccharides
6. Cellulose
7. Chitin

LIPIDS ARE A DIVERSE GROUP OF HYDROPHOBIC MOLECULES

Lipids

1. Fats





1. Phospholipids



1. Steroids



PROTEINS INCLUDE A DIVERSITY OF STRUCTURES, RESULTING IN A WIDE RANGE OF FUNCTIONS

Catalysts

Polypeptides

Protein

1. Amino Acids
2. Basic structure of amino acids
3. R group determines identity of amino acid (See figure 5.17)
4. Nonpolar
5. Polar
6. Electrically charged
7. Polypeptides



1. Protein Structure and Function
2. Primary Structure



1. Secondary Structure



1. Tertiary Structure



1. Quaternary Structure



1. Sickle Cell Disease: A change in Primary Structure



1. What determine Protein Structure
2. Protein Folding in the Cell

NUCLEIC ACIDS STORE, TRANSMIT, AND HELP EXPRESS HEREDITARY INFORMATION

Nucleic Acids

The Roles of Nucleic Acids

1. Deoxyribonucleic Acid
2. Ribonucleic Acid

The Components of Nucleic Acids

1. Polynucleotides and nucleotides



1. Nitrogenous bases



1. Sugars



Nucleotide Polymers

