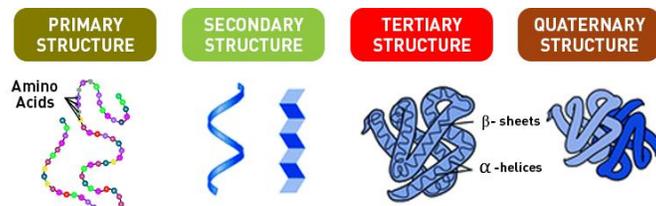


- ESSENTIAL QUESTIONS: ➤ What are the four major families of biological macromolecules?
 ➤ What are the functions of each group of biological macromolecules?

Third Group of Macromolecules: Proteins

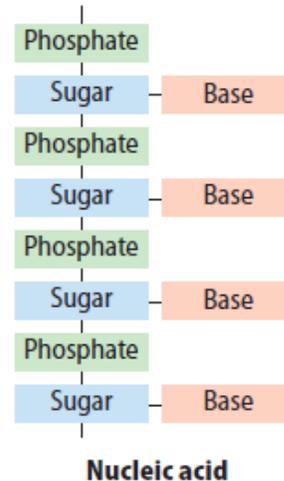
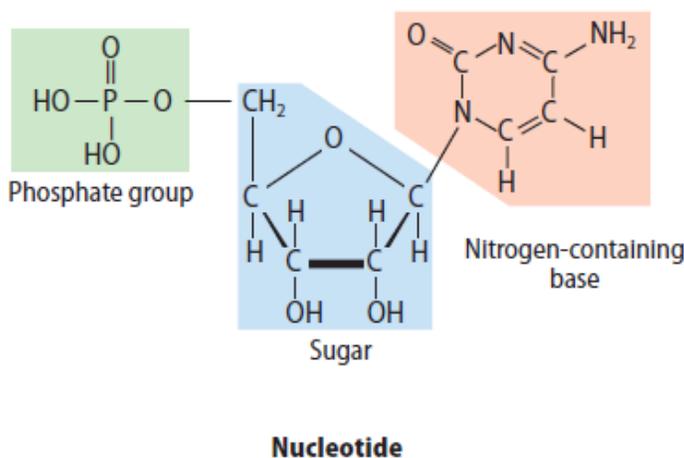
- Monomer = _____
- Polymer = chain of amino acids called a _____ or “polypeptide”
 - All amino acids have a central carbon atom that bonds with one _____, one _____ group (-NH₂), one carboxyl group (-COOH), and one _____ group (-R) that differs between each amino acid.
- There are _____ different amino acids. Proteins are composed of various combinations.
- Based on the variable groups, proteins can have up to _____ levels of structure:
 - The number of the amino acids and their _____ in a chain = *primary*
 - _____ of the chain into a unique three dimensional shape (like a helix or pleat) = *secondary*
 - Globular – a combo of many helices, pleats, or folds in _____ protein = *tertiary*
 - Combination of _____ than one protein = *quaternary*



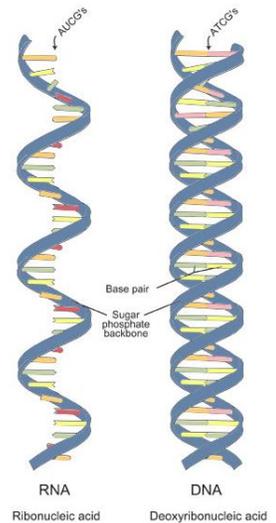
- Functions:
 - Important part of _____ structure
 - Example: Collagen
 - _____ (which help our body to defend against infections)
 - _____ (assist with chemical reactions)
 - Transporting substances within and between cells
 - Example: _____
 - Controlling cell _____
 - Example: Cyclin
 - _____ within and between cells

Fourth Group of Macromolecules: Nucleic Acids

- Made of **nucleotides** – small repeating subunits of _____, _____, O, P, and H
 - o There are _____ major nucleotides, all of which have a _____ group, a nitrogen-containing (“nitrogenous”) base, and a _____ sugar.



- Functions: heredity and _____ production
- Two Types:
 - o _____ (deoxyribonucleic acid)
 - Double stranded and responsible for heredity
 - o _____ (ribonucleic acid)
 - Single stranded and responsible for making proteins



-
- _____ (Adenosine triphosphate) is an _____- storing molecule with _____ phosphate bonds that are easily broken to release energy that drives reactions in our bodies.

- o ATP is _____ in structure to nucleic acids (but it is NOT a nucleic acid). ATP has a single _____ with extra phosphate groups.
- o It releases _____ each time a phosphate group is broken off. _____ is the main energy source in cells.

