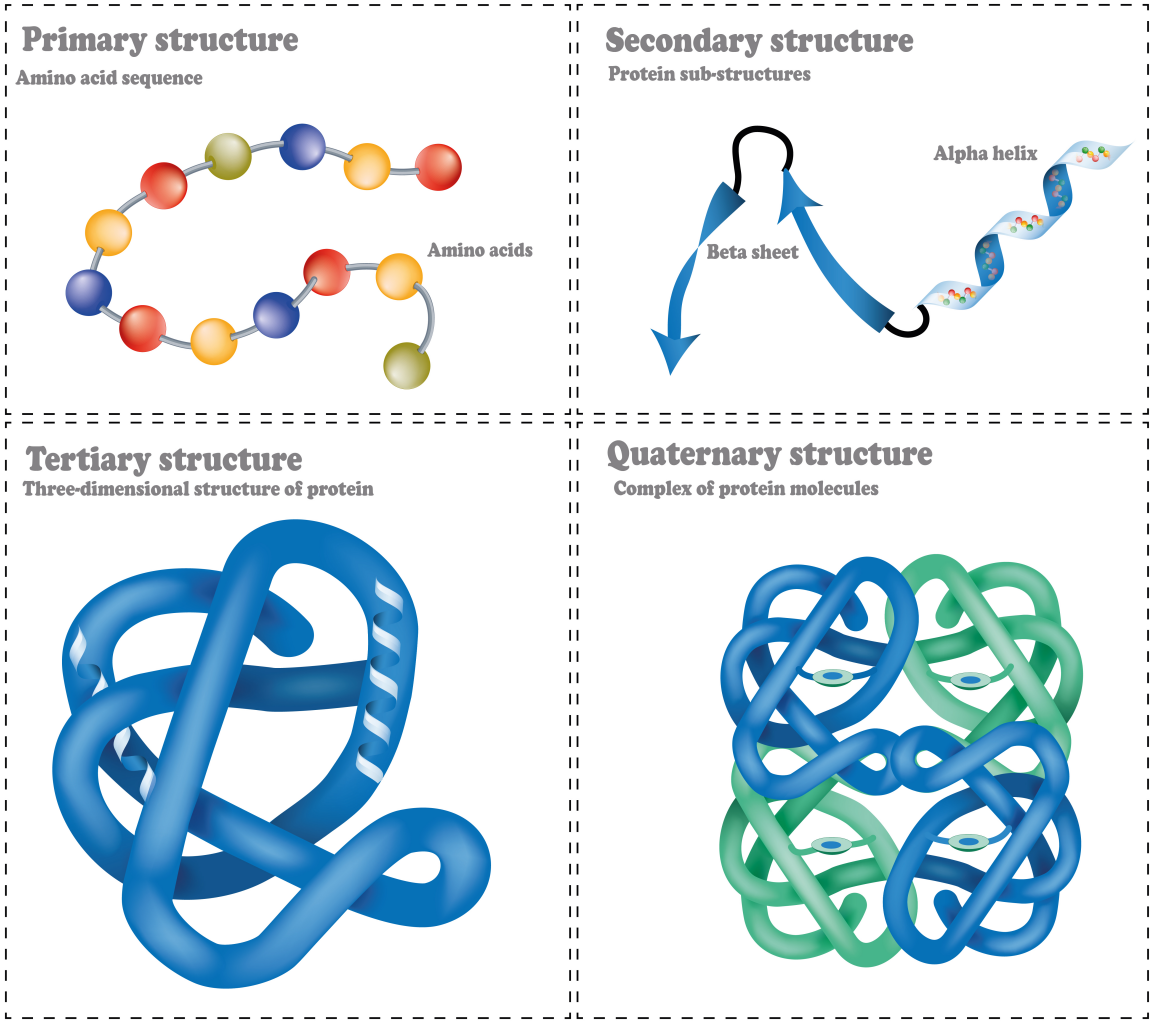
CONCEPT: PROTEINS

- **Proteins** are composed of amino acid monomers, organized into **polypeptide chains**
  - □ There are four _____ levels of proteins
    - **Primary structure** is the amino acid sequence in a polypeptide chain
    - **Secondary structure** is the local structure found in a polypeptide chain
      - Includes **alpha helices** and **beta sheets**
    - **Tertiary structure** is the 3D structure of the entire polypeptide chain
    - **Quaternary structure** is the 3D structure of multiple polypeptide chains in a protein
  - □ Each protein has an **amino end (NH_2)** and a **carboxyl end (COOH)**

EXAMPLE:



□ Amino acid **R groups** provide proteins with certain properties

- R groups can be: nonpolar, polar, positively charged, negatively charged

□ Proteins are _____ into two types

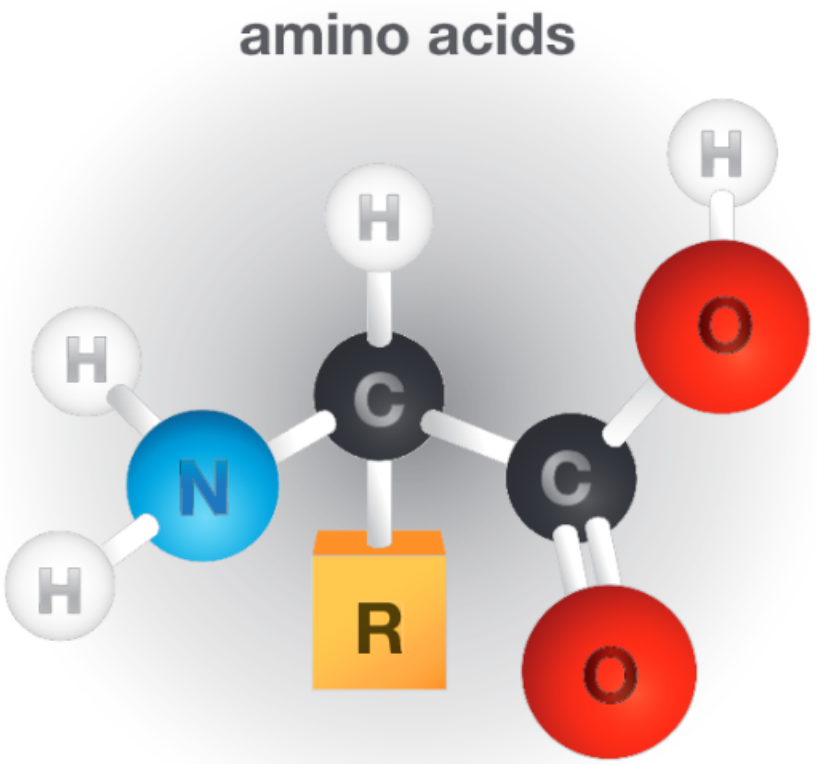
- **Globular proteins** are compact proteins

- **Fibrous proteins** are linear proteins

□ Proteins have **domains** which are structural regions that have specific functions

□ **Chaperone proteins** are responsible for helping proteins fold correctly

EXAMPLE:



PRACTICE:

1. Which of the following protein structures describes a 3D structure of one polypeptide chain?
    a. Primary structure
    b. Secondary structure
    c. Tertiary structure
    d. Quaternary structure

2. Which of the following describes the amino acid sequence of a polypeptide chain?
    a. Primary structure
    b. Secondary structure
    c. Tertiary structure
    d. Quaternary structure

3. Which of the following describes the 3D structure of multiple polypeptide chains in a single protein?
    a. Primary structure
    b. Secondary structure
    c. Tertiary structure
    d. Quaternary structure

4. Which of the following describes the local structures formed in a single polypeptide chain?
    a. Primary structure
    b. Secondary structure
    c. Tertiary structure
    d. Quaternary structure