

# PROTEINS

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# PROTEINS

- The Molecules which yields amino acids upon hydrolysis are called proteins.
- Proteins are natural polymer of amino acids.
- The number of amino acids in a protein molecule may range from two to several thousands.
- Protein molecules contain Nitrogen, Carbon, Hydrogen and Oxygen.

# PROTEINS

- Proteins are the basis for the major structural components of animal and human tissue.
- They act as biological catalysts (Enzymes), form structural parts of organisms, participate in different cell reactions, act as molecules of immunity and also provide fuel.

# STRUCTURE OF PROTEINS

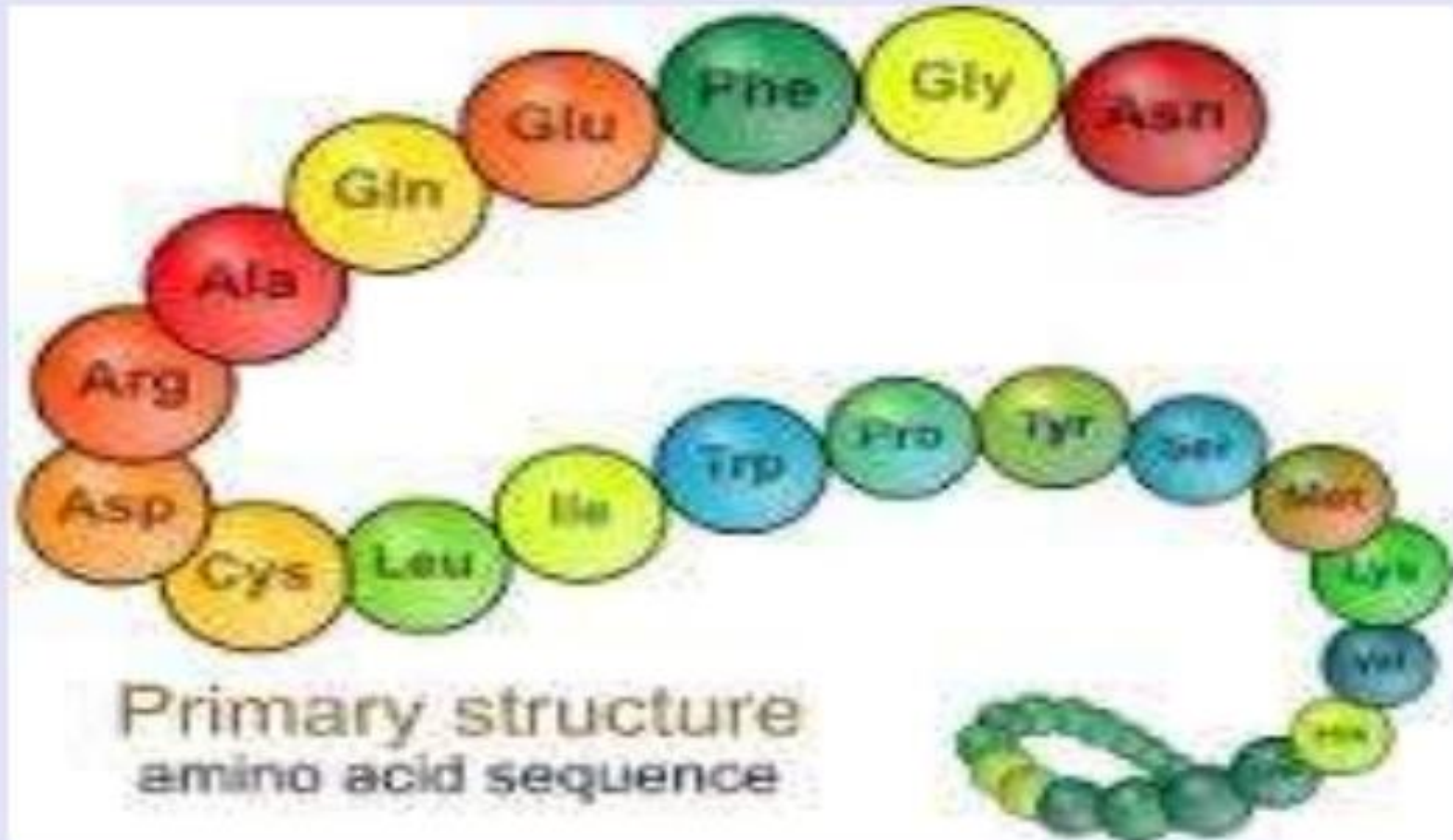
- Depends upon the spatial arrangement of polypeptide chains.
- Three arrangements are possible.
- Four structures:
  - i. Primary structure
  - ii. Secondary structure
  - iii. Tertiary Structure
  - iv. Quaternary Structure

# The Primary Structure Of Proteins

- The sequence of amino acids in a polypeptide chain is called a primary structure.
- Amino Acids are linked with one another through peptide bonds.



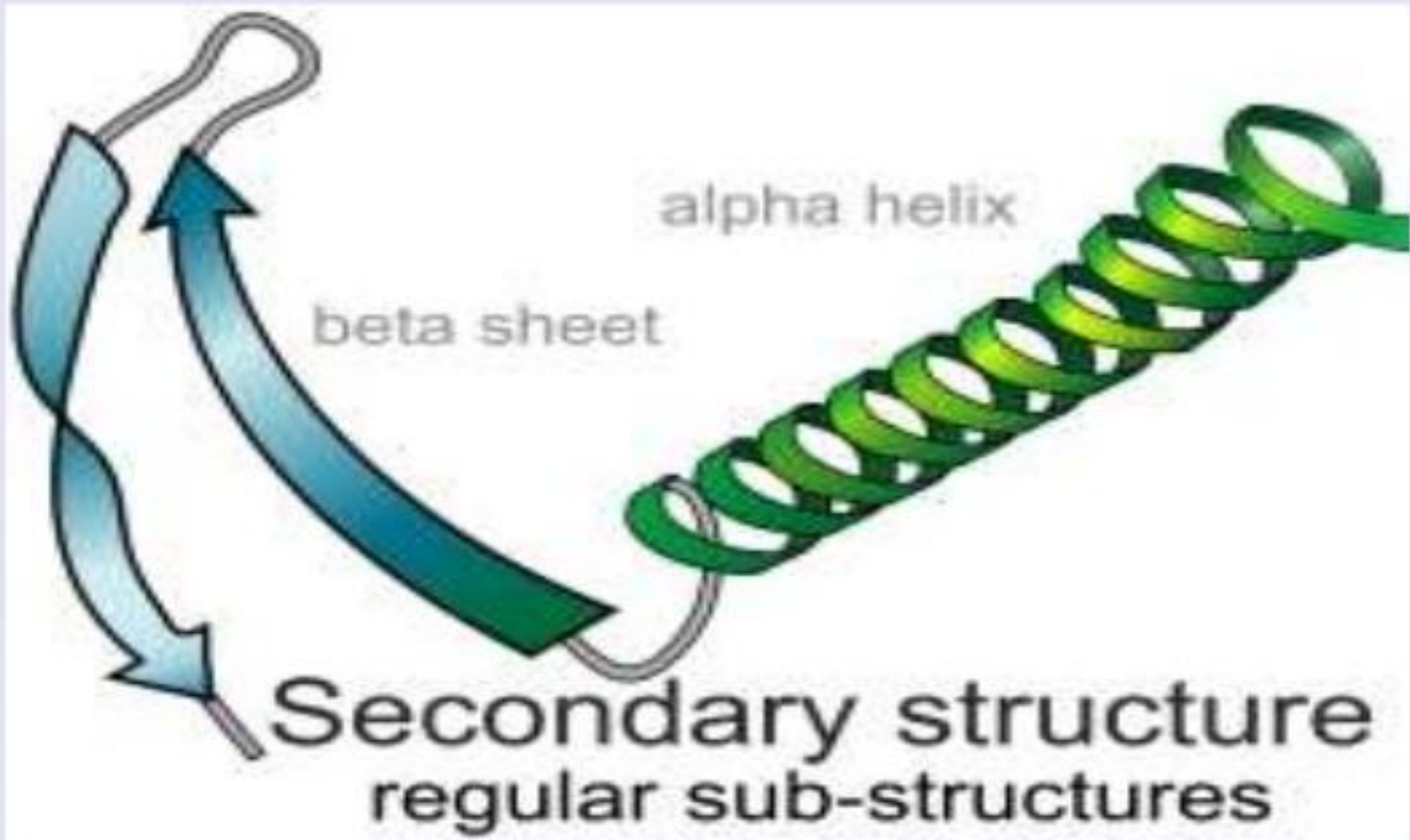
# The Primary Structure Of Proteins



# The Secondary Structure Of Proteins

- Peptide chains may acquire spiral shape or may be present in a zig zig manner.
- This coiling of peptide chains is called the secondary structure of proteins.
- It is due to Hydrogen bonding.

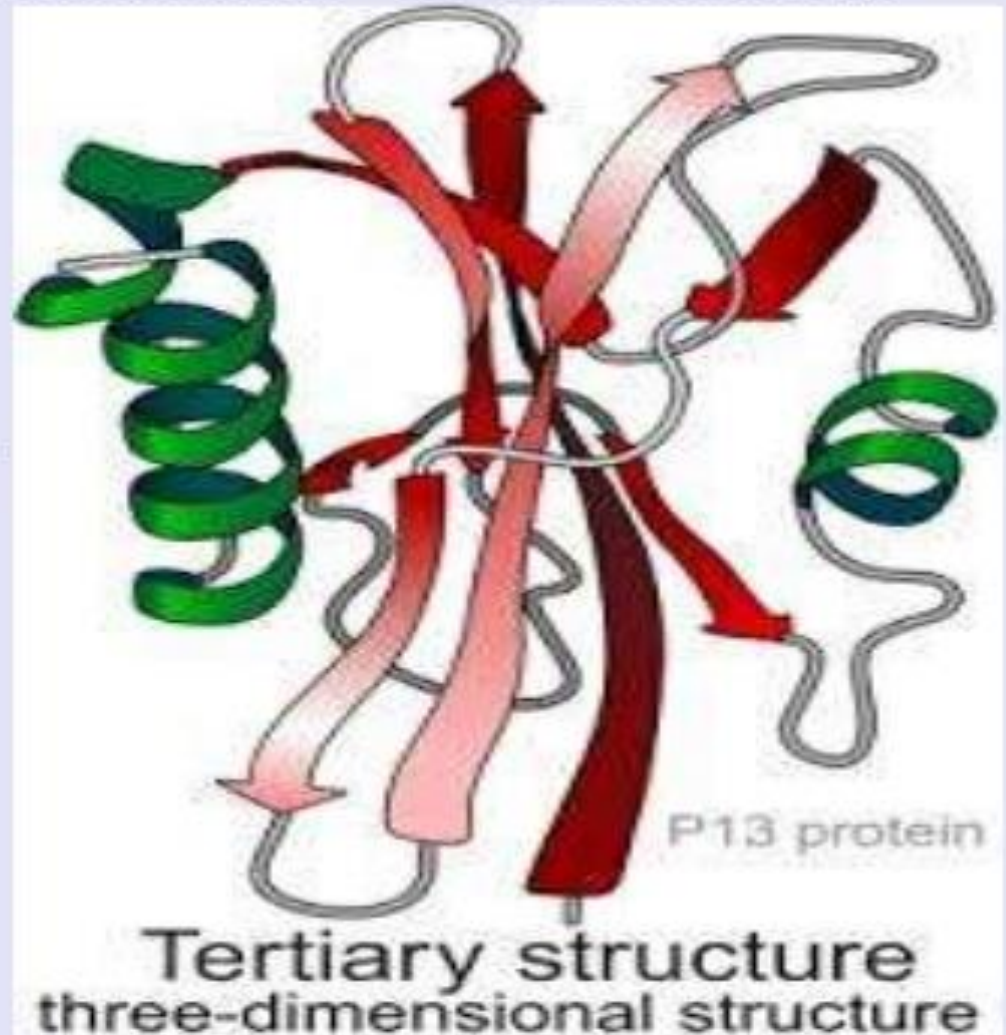
# The Secondary Structure Of Proteins





# The Tertiary Structure Of Proteins

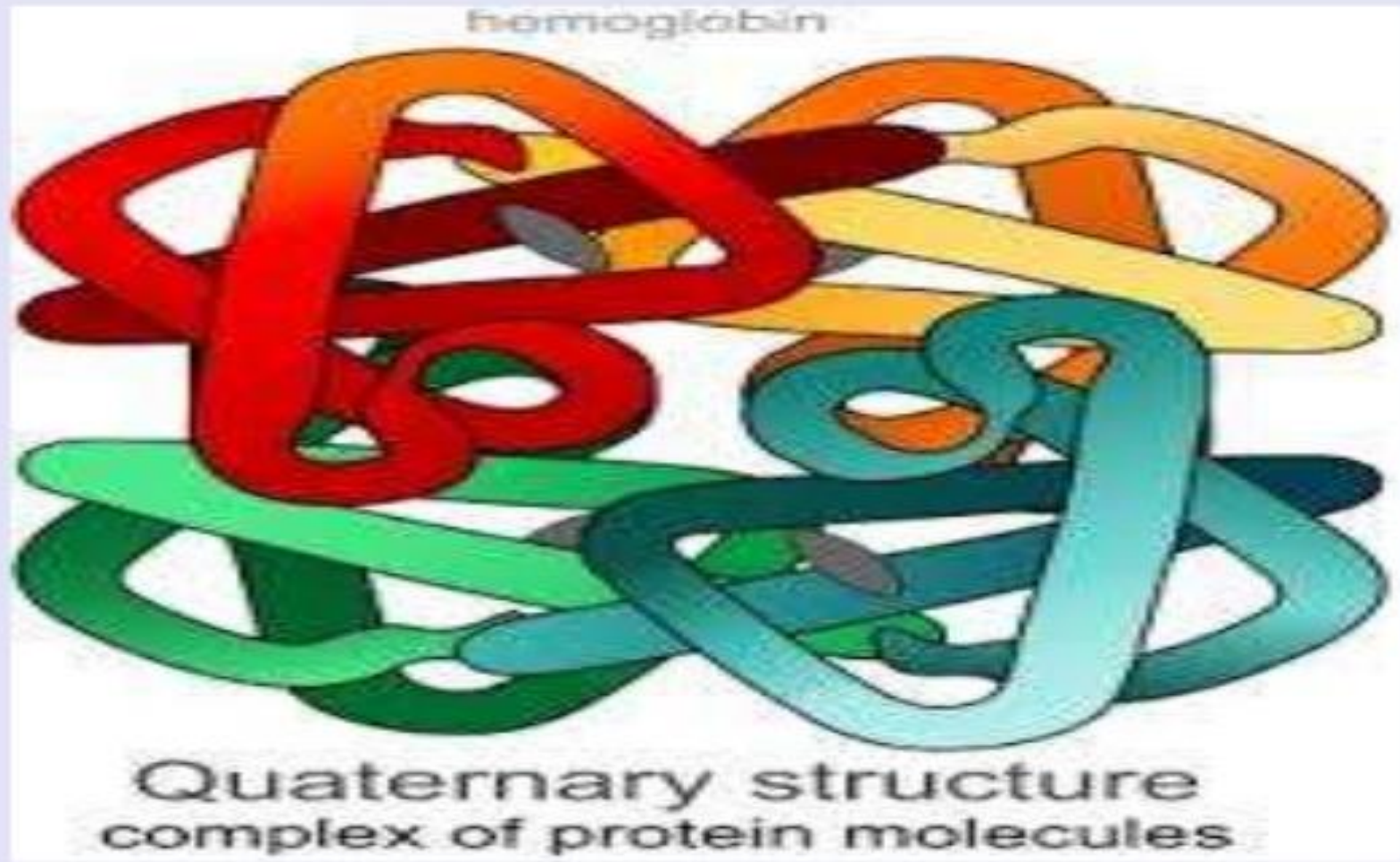
- Twisting or folding of polypeptide chains represents tertiary structure of proteins.



# The Quaternary Structure Of Proteins

- Quaternary means four.
- It is the arrangement of multiple folded protein or coiling protein molecules in a multi-subunit complex.
- A variety of bonding interactions including Hydrogen bonding, salt bridges and disulfide bonds holds the various chains into a particular geometry.

# The Quaternary Structure Of Proteins



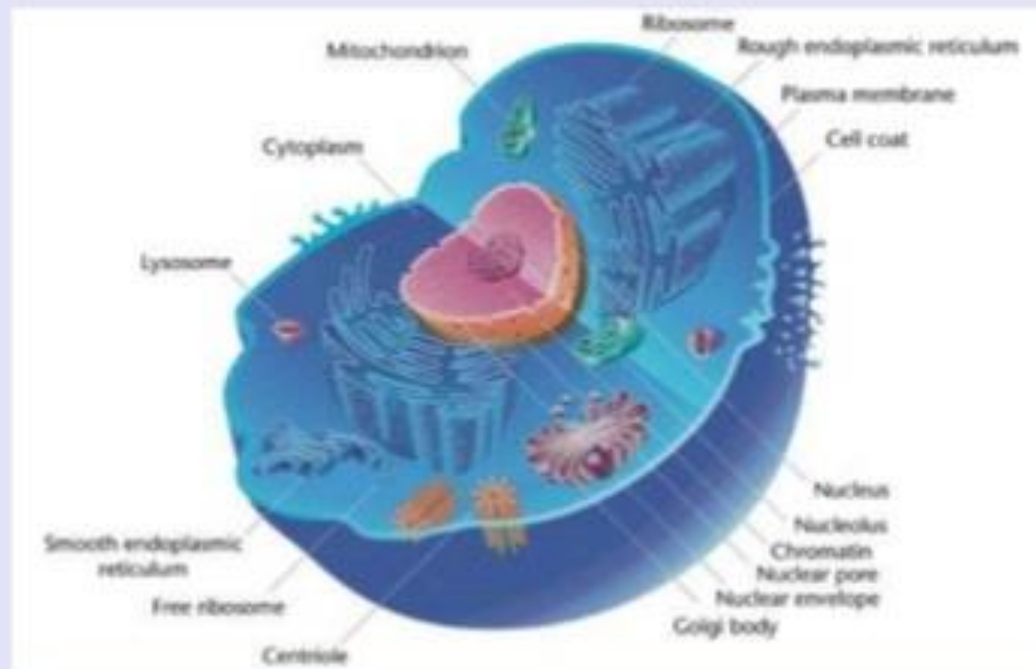


# Properties Of Proteins

- Found in all living organisms.
- Involved in processes such as digestion of food, cell structure, catalysis, movement, energy manipulation etc.
- Complex molecules.
- Polymers of amino acids.
- Long chains of amino acids are called Polypeptides.

# Importance of Proteins

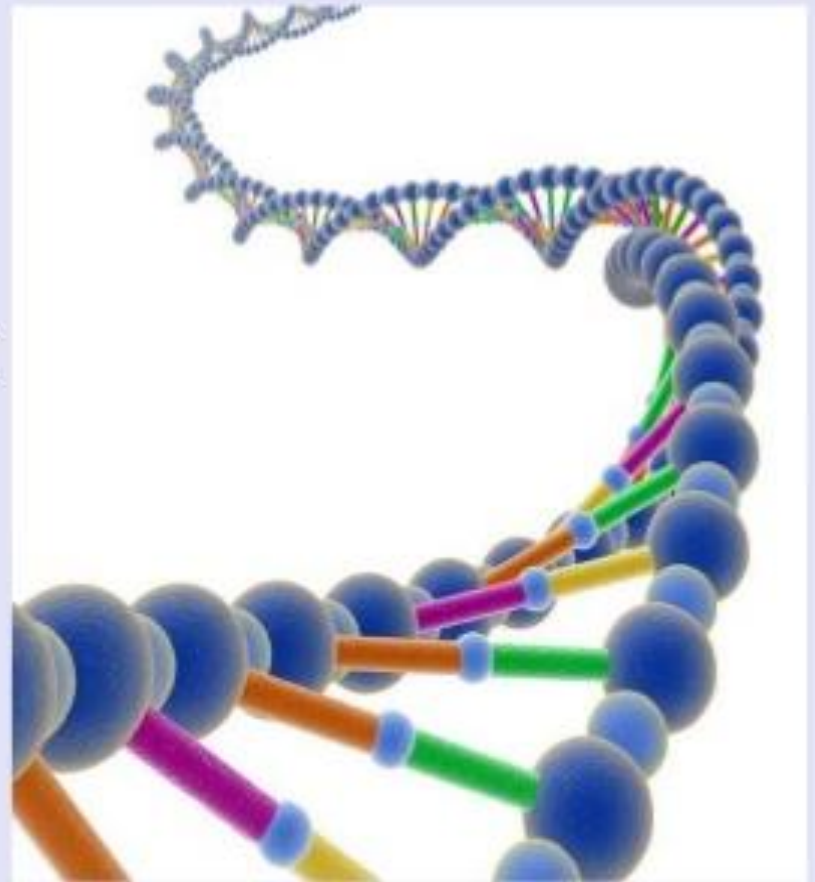
- Proteins play an important role in formation of protoplasm.





# Importance of Proteins

- Nucleoproteins are complex proteins and act as the carrier of heredity materials from one generation to another.



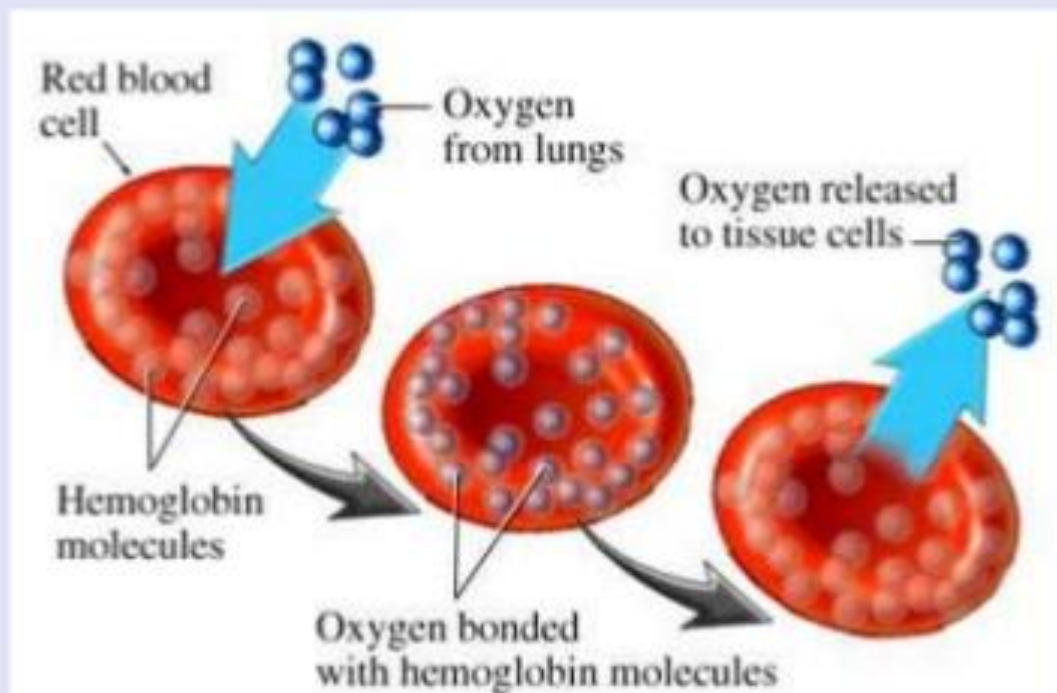
# Importance of Proteins

- Enzymes are the biological catalyst and they are also proteins



# Importance of Proteins

- Hemoglobin is a protein. It act as oxygen carrier.



# Importance of Proteins

- Tanning of hides is actually precipitation of proteins by tannic acid.





# Importance of Proteins

- Gelatin is obtained by heating bones, skins and tendons in water. It is used in bakery goods.





# Importance of Proteins

- Casein is another protein used in manufacture of buttons and buckles.
- Proteins obtained from soya bean are used for manufacture of plastics.

**THE END**

*Stay Home & Stay Safe*