# Classification of Protein

Classification of proteins is based on the

- Based on the shape
- Based on Constitution
- Based on the Nature of molecules

**Based on shape**

- ✓ Fibrous protein
- ✓ Globular proteins

**Based on the constitution**

- ✓ Simple proteins
- ✓ Conjugated proteins

**Based on nature of molecules**

- ✓ **Acidic proteins:** They exist as anion and contain acidic amino acids. Example of acidic protein is **Alpha-synuclein**.
- ✓ **Basic proteins:** They exist as cations and are rich in basic amino acids. Example of acidic protein are lysine, arginine etc.

**The Basic Unit of Protein - Amino Acids:**

Amino acids are the basic structural unit of protein. Amino acids consist of the carbon atom, a carboxyl group (COOH), and a hydrogen atom.

Amino acids are classified as follows:

- ✓ **Aromatic**: Tyrosine, Tryptophan, Phenylalanine.
- ✓ **Positively charged**: Lysine, Arginine, Histidine.
- ✓ **Negatively charged:** Aspartate, Glutamate.
- ✓ **Nonpolar**, aliphatic: Leucine, Methionine, Isoleucine.

## Function of Protein

### Enzymatic protein

The function of enzymatic protein:

- ✓ It accelerates the metabolic process in our cells.
- ✓ It also accelerates the metabolic process in stomach digestion, liver functions, and blood clotting.

### Hormonal protein

The function of hormonal protein

- ✓ Hormonal proteins are protein-based chemicals secreted by endocrine glands.
- ✓ By using hormonal protein each hormone affects particular cells in the body.

### Structural protein

The function of structural protein

- ✓ Structural proteins are very important for the body because they are fibrous proteins.
- ✓ It helps in developing muscles, bones, skin, and cartilage.

### Defensive protein

The function of defensive protein

- ✓ These defensive proteins help in developing antibodies for attacking.
- ✓ These antibodies are developed in white blood cells to attack bacteria.

### Storage protein

The function of storage protein

- ✓ Storage protein stores minerals like potassium.
- ✓ Storage protein contains ovalbumin and casein found in milk, and egg whites.

### Transport protein

The function of transport protein

- ✓ Transport protein called calbindin which is useful for absorption of calcium from intestinal walls.
- ✓ Transport proteins carry important materials to the cells of the body.

### Receptor protein

The function of **receptor protein**

- It controls the substances which enter and leave the cells.

**Contractile protein**

The function of contractile protein

- ✓ It helps in regulating the strength, speed of the heart, and muscle contractions.
- ✓ Contractile proteins cause heart complications if the heart produces severe contractions.

**Conclusion - Proteins**

Proteins are complex biomolecules which are the building blocks of living organisms. The protein consist of amino acids. The proteins are classified on: basis of shape, constitution, and nature of molecule. The protein structure has hierarchy of four levels i.e. primary structure, secondary structure, tertiary and quaternary structure.