Protein → 50% of dry weight of living matter

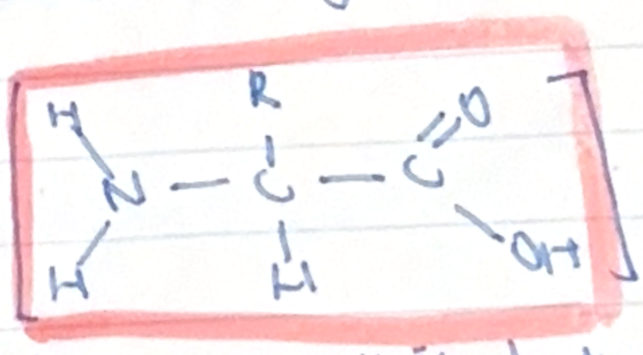
- one or more polypeptides twisted & folded into a particular 3D shape that performs specific functions

polypeptides → polymer of amino acids (a few to more than a thousand) join by peptide bonds to form a long chain with a unique linear sequence of amino acids

- Enzymatic proteins - selectively accelerating chemical reactions (e.g. digestive enzymes - hydrolyze polymers in food)
- Storage protein - storage of amino acids (e.g. ovalbumin (egg white), casein (milk), storage proteins in seeds)
- Structural proteins - support (e.g. silk fibres, collagen, elastin)
- Transport proteins - transport of other substances (e.g. hemoglobin)
- Hormonal protein - coordination of an organism's activities (e.g. insulin)
- receptor protein - response of cell to chemical stimuli (e.g. nerve cell receptors)
- contractile / motor protein - movement (actin/myosin in muscles)
- defensive protein - protection against disease (anti bodies)

amino acid (monomers of polypeptides) composed of a H + R group + carboxyl + amino

- 20 types
- non-polar / polar / charged
  - ↓ hydrophobic
  - ↓ hydrophilic
  - ↓ hydrophilic

amino  carboxyl

- joined by peptide linkage (made by dehydration synthesis between carboxyl and amino group)

- Sequence of amino acids ⇒ 3D conformation of protein ⇒ function (dependent on its ability to recognize / bind to other molecules)
  - (e.g. hormone → cell receptor
    antibody → antigen
    enzyme → substrates)