- the sequence of AA and thus the specific structure of the protein is determined by genetic information
- STRUCTURE OF PROTEINS
- each AA contains an amino group (NH2) on one end of the molecule and a carboxyl group • (COOH) on another end. The differences b/w the AA are due to differences in their functional groups (R). AA are joined together by dehydration synthesis : the hydrogen from the amino end of one AA combines with hydroxyl group in the carboxyl end of another AA & water is produced
- The bond = peptide bond ; compound formed= peptide (numerous AA joined = polypeptide) •
- 4 levels of structure : (1) sequence of AA = primary structure (2) weak H bonds may form b/w hydrogen atom of an amino group and an oxygen atom from a different AA nearby - secondary structure : alpha helix or beta pleated sheet (2) polypeptide chains bend and fold upon themselves to produce complex 3D shaped called tertiary structure (chemical rxns b/w particular AA in different regions of chain - different weak bonds b/w functional groups). Since most of the tertiary structure is stabilized by weak bonds, this structure can easily be denatured by changes of pH or by high temps. Some tertiary structures are made more stable by strong covalent bonds b/w S atoms (4) a number of polypeptide chains covalently bonded together in

- 3.1 Plasma Membrane and Associated Structures Otesale.co.uk Many of the function e performed by a fulla bcellular structures known as organelles I
 - A lenshare certain char all surrounded by a plasma membrane, and most posses structures in fig 3.1
 - a cell can be divided into 3 principal parts: Plasma membrane = selectively permeable, gives cell form, separates internal structures from the extracellular environment, intercellular communication Cytoplasm and organelles = cytoplasm is the aqueous content of a cell inside the plasma membrane but outside the nucleus. organelles are subcellular structures within cytoplasm. Cytosol describes the fluid portion of the cytoplasm Nucleus= largest of organelles, DNA - directs cell's activities, contains one or more nucleoli(centers for the production of ribosomes)
 - Plasma Membrane : •
 - since the extracellular and intracellular environments are both aqueous, a barrier must be • present to prevent the loss of water soluble molecules. This barrier itself cannot be water soluble = composed of lipids
 - plasma membrane and all membranes surrounding organelles are composed of phospholipids and proteins - hydrophobic parts of the molecules huddle together in the center of the membrane leaving polar parts exposed to water on both surfaces -- double layer of phospholipids in the cell membrane

- consists of protein fibers collagen and elastin(provide structural strength to the connective tissues) as well as a gel-like ground substance(where interstitial fluid is - has glycoproteins and proteoglycans)
- one type of collagen = collagen IV which contributes to basal lamina (basement membrane) of epithelial membranes - by forming chemical bonds b/w carbs on the outside of p.m of the epithelial cells and the glycoproteins&proteoglycans of the matrix, the basal lamina helps wed the epithelium to its underlying connective tissue
- On Plasma membrane = integrins(class of glycoproteins that extend from cytoskeleton within a cell, thru p.m, and into the extracell. matrix --> adhesion molecule b/w cells and matrix; serve to relay signals b/w

CATEGORIES OF TRANSPORT ACROSS PLASMA MEMBRANE

- selectively permeable
- generally not permeable to proteins, nucleic acids, and other molecules needed for the structure&function of the cell.
- Carrier Mediated Transport: a) Facilitated diffusion b) Active Transport
- bions through membrane channel proteins, of Non-carrier mediated Transport a) Simple Diffusion - lipid soluble molecules water through aquaporing chairing
- Passive Transport than conc gradient & mes not require metabolic energy) non carrier flusion plus carries need tood diffusion vs Active Transport (against gradient&requires expertative of TP that powers carrier proteins called pumps)

6.2 Diffusion and Osmosis

- nonpolar molecules, small polar but uncharged molecules can easily pass thru p.m. ٠
- larger polar molecules cannot pass carrier proteins
- p.m impermeable to charged inorganic ions such as Na+ and K+ --> ion channels
- Some ion channels are always open but most are gated: a particular physiological stimulo(binding of the channel to a specific chemical regulator) can open an otherwise closed channel. In the production of nerve and muscle impulses, specific channels for Na and K open and close in response to changes in membrane voltage
- hypotonic solution (water moves in cell), hypertonic solution (water moves out), isotonic(no movement)

6.3 Carrier Mediated Transport

- cells must take up glucose, amino acids, and other organic molecules from extracellular matrix too large and polar to pass through membrane by simple diffusion - carrier proteins
- (1) specificity (2) competition (3) saturation