**182 Lecture 2 Proteins**

*Make up over 50% of all dry mass* *ORGANIC*

**MONOMERS** – (amino acids) are joined together in a linear chain

**POLYMERS** – (polypeptide)

**AMINO ACID STRUCTURE** –
- R-group – 20 different R groups determine: folding, charge, grouping (polarity of side changes)

*Non-polar Amino Acids*– hydrophobic (elements are shared evenly)

*Polar Amino Acids*– hydrophilic (elements are not shared equally)

**ACIDIC SIDE GROUPS** – negatively charged

**BASIC SIDE GROUPS** – positively charged

Determined the structure of the protein via the connection of different R- groups

**POLYPEPTIDES** – begin with amino acid at the N-terminus end and ends with carboxyl at C-terminus end

- Connected via peptide bonds created by condensation reactions
- *Sulphhydryl group*: SH group on the R group (SH group on 2x cysteins (each) form disulphide bridge)
- *Cyclic structure* – cause turn in the protein chain

**PRIMARY STRUCTURE** – sequence AA

**SECONDARY STRUCTURE** – Folding of alpha helix and beta pleated sheets

**TERTIARY STRUCTURE** – overall 3D shape of the protein

**QUATERNARY STRUCTURE** – several polypeptides come together (If protein is open will continue to Quaternary stage, if closed will stop at tertiary)

**ENZYME** – substrate comes and binds to the active site where it’s bonds get broken making absorption of molecule easier.

**PROTEIN STRUCTURE** – affected by sequence, chemical condition and binding (co-factor (vitamins) and Co-enzymes (carbon))

**FUNCTION:**
- Structure
- Storage
- Movement
- Transport
- Toxin
- Enzyme
- Communication