

Biological Molecules

(IGCSE Biology Syllabus 2016-2018)

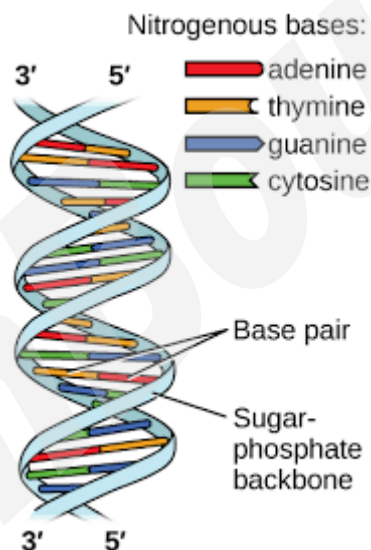
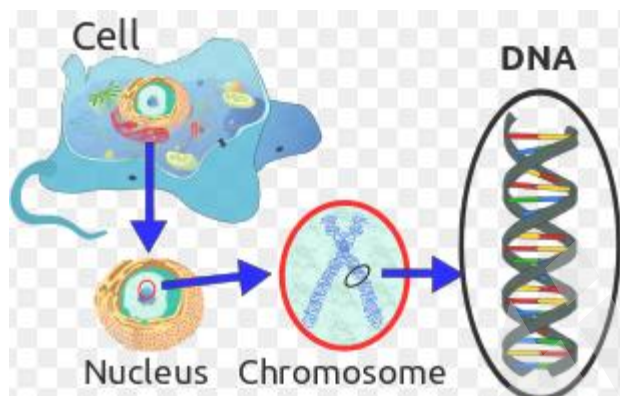
- Carbohydrates: carbon, hydrogen and oxygen
- Fats and oils: carbon, hydrogen and oxygen
- Proteins: carbon, hydrogen, oxygen, nitrogen and sometimes sulfur

| Basic units (monomers) | Larger molecules (macromolecules) |
|--------------------------|-----------------------------------|
| Simple sugars | Starch and glycogen |
| Fatty acids and glycerol | Fats and oils |
| Amino acids | Proteins |

Chemical Tests

| Biological Molecule | Chemical Test |
|---------------------|---|
| Starch | Add few drops of iodine , positive result = blue-black colour |
| Reducing sugars | Add Benedict's reagent , then mixture is heated in water bath for 2 to 3 min, positive result = brick-red precipitate, negative result = remains blue |
| Proteins | Add few drops of Biuret reagent , positive result = purple colour |
| Fats | Emulsion test; ethanol is added to mixture, and this is poured into a test tube with an equal amount of distilled water , positive result = milky-white emulsion |
| Vitamin C | Decolourisation of DCPIP shows that a vitamin C is probably present |

Structure of DNA



- Chromosomes are made of a molecule called DNA
- Each chromosome is a very long molecule of tightly coiled DNA
- Two strands coiled together to form a double helix
- Each strand contains chemicals called bases
- Cross-links between strands are formed by pairs of bases
- The bases always pair up in the same way:
 - A and T
 - C and G