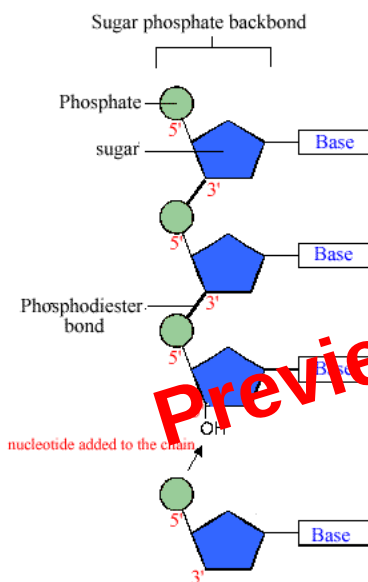
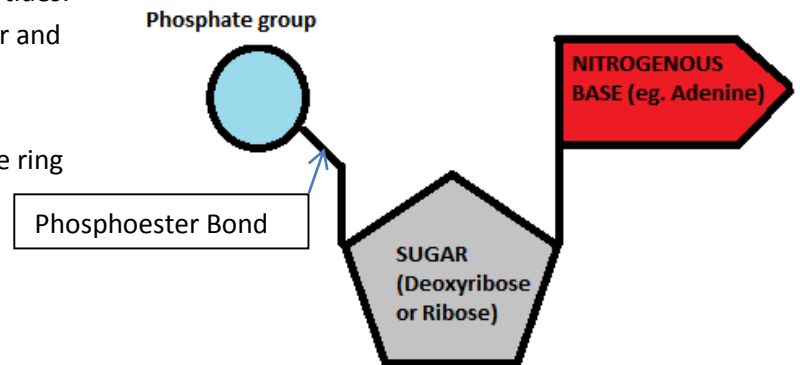


Nucleic Acids

Structure of DNA and RNA:

- Deoxyribonucleic acid and ribonucleic acid are important information-carrying molecules. DNA holds genetic information and RNA transfers genetic information from DNA to ribosomes.
- DNA and RNA are both polymers of nucleotides:
- Phosphoric acid joins the nucleoside (sugar and base) forming a Phosphoester bond in a condensation reaction.
- Purine bases: adenine and guanine (double ring structures).
- Pyrimidine bases: thymine/uracil, cytosine (single ring structure).
- A & T/U join by 2 hydrogen bonds.
- C & G join by 3 hydrogen bonds.



- The strands need a '3 ring gap' to keep parallel.
- A condensation reaction between 2 nucleotides forms a phosphodiester bond, join between sugar of one and phosphate of another.
- Many nucleotides form a chain = sugar-phosphate backbone.
- Double helix = antiparallel chains twisted.
- RNA is a much shorter polynucleotide chain than DNA.
- The simplicity of DNA structure = doubt that it carries the genetic code.
- Function of DNA:
 - Has to be stable to pass genetic information on to the next generation.
 - Hydrogen bonds are easily broken = easy replication.
 - There is a lot of information in a very small space.
 - Sugar-phosphate backbone acts as protection to the bases.

DNA Replication:

- The semi-conservative replication of DNA ensures genetic continuity between generations of cells.
- Meselson-Stahl experiment is evidence (E.coli and N14 and N15 mediums).
- The 2 strands of DNA unwind, leaving what will be 2 template strands.
- The hydrogen bonds are then broken by DNA helicase.
- Complementary nucleotides join by DNA polymerase.
- Daughter strand is half of the original DNA and half newly synthesised nucleotide.

