

### Important Points

- ❖ Restriction endonuclease cleaves DNA into fragments at or near specific recognition sites within the molecule known as restriction sites. Restriction exonucleases cleave off nucleotides one at a time from the 3' or 5' ends of DNA and RNA chains. DNA ligase facilitates the joining of DNA strands together by catalysing the formation of a phosphodiester bond. Taq polymerase is a thermostable DNA polymerase I named after the thermophilic bacterium, *Thermus aquaticus*, from which it was originally isolated. It attaches nucleotides to a DNA template, thereby copying the DNA.
- ❖ A restriction enzyme or restriction endonuclease is an enzyme that cleaves DNA into fragments at or near specific recognition sites within molecules known as restriction sites. Restriction enzymes are one class of the broader endonuclease group of enzymes. Each restriction endonuclease functions by inspecting the length of a DNA sequence. Once it finds its specific recognition sequence, it will bind to the DNA and cut each of the two strands of the double helix at specific points in their sugar phosphate backbone. These enzymes predictably cut both strands because the sequences they recognize are palindromic. That is the recognition sequences of identical bases on both DNA strands.
- ❖ Retrovirus is a type of RNA virus that inserts a copy of its genome into the DNA of a host cell that it invades, thus changing the genome of that cell. Retrovirus is commonly used as vector for introducing a DNA fragment in human lymphocyte.
- ❖ PCR is based on three simple steps required for any DNA synthesis reaction:
  - (i) denaturation of the template into single strands
  - (ii) annealing of primers to each original strand for new strand synthesis; and
  - (iii) extension of the new DNA strands from the primers

Selectable marker is a gene introduced into a cell, especially a bacterium or to cells in culture that confers a trait suitable for artificial selection. Selectable markers help in identification and elimination of non-transformants whilst permitting selective growth of transformants.