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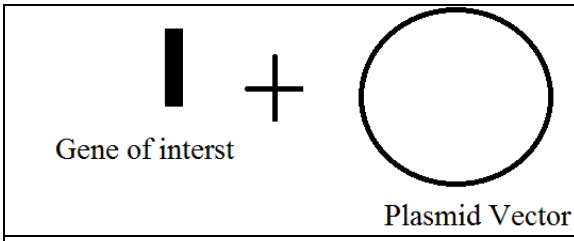
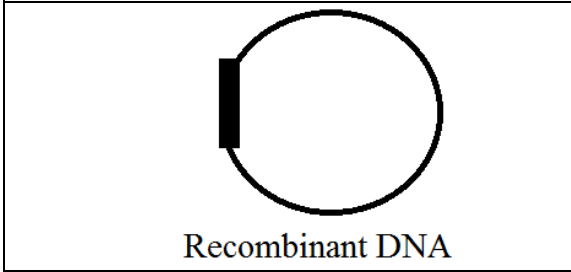
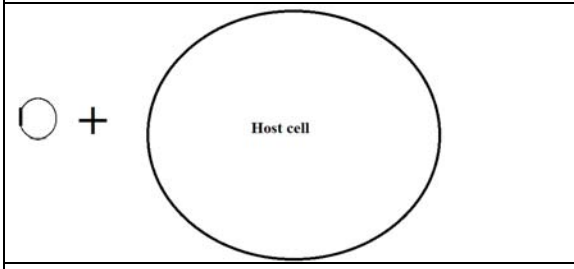
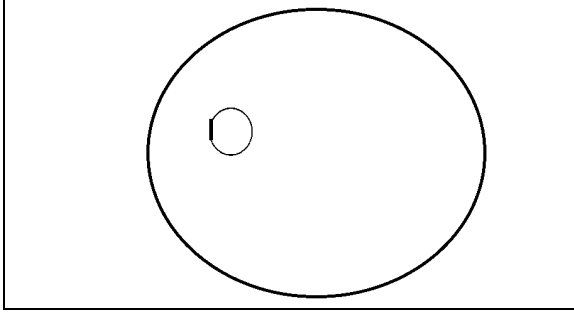
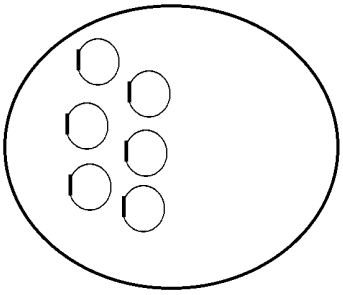
Recombinant DNA technology

It is the technology through which a DNA from one species of an organism is inserted into the cell of different species (Also called *gene cloning*).

The gene cloning involves the following steps:

1. A fragment of DNA containing the gene of interest is inserted into a circular DNA molecule called vector to produce a recombinant DNA molecule by using enzyme ligase and restriction endonucleases (Type II).
2. The vector containing the gene is transported into a host cell that is usually a bacterium, yeast or any other eukaryotic cell.
3. Within the host cell, the recombinant DNA containing the gene of interest multiplies into numerous identical copies.
4. When the host cell divides the copies of the recombinant DNA molecules are passed to the progeny and further vector replication takes place.
5. If the vector used in this case is an expression vector, the inserted gene will be expressed in the host cell.

	The ligation of DNA (Gene of interst) into plasmid vector
	The recombinant DNA (also called chimeric DNA) is generated.
	The recombinant DNA is transformed or transfected into the host cell (prokaryotic or eukaryotic cell)
	Transformed or transfected cell.

	The recombinant DNA containing the gene of interest multiplies into numerous identical copies