MIND MAP : LEARNING MADE SIMPLE

CHAPTER - 11

Biotechnology : Principles and Processes

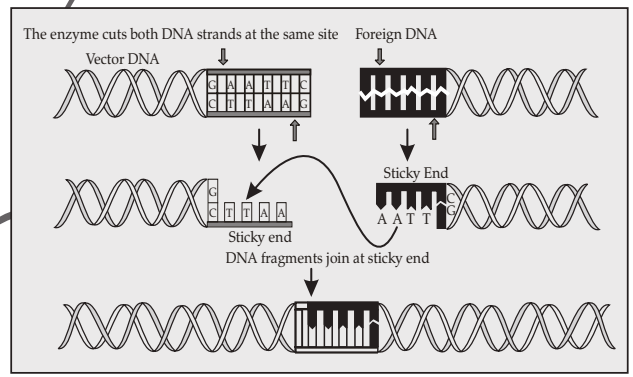
It is the integration of natural science and organisms, cells, parts thereof, and molecular analogues for product and services.

Principles of Genetic engineering

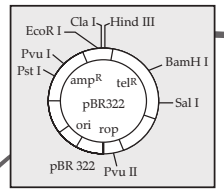
- rDNA
- Gene cloning
- Gene transfer

Tools of rDNA Technology

Restriction Enzymes



Cloning vector



Features of vector

- Has Ori
- Has Selectable Markers
- Has fewer cloning sites

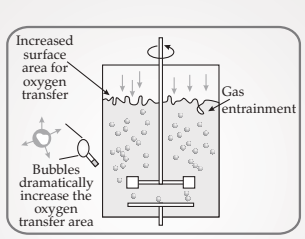
Competent host

Host is made competent by:

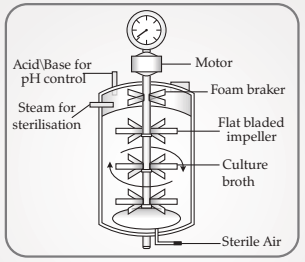
- Biolistics: Cell are bombarded with high velocity micro particles of gold or tungsten coated with DNA
- Micro injection: rDNA is directly injected into the nucleus of an animal cell
- pathogen vector: Disarmed Vectors like *Agrobacterium* when infects the cell transfer the recombinant DNA into the host

Processes of rDNA Technology

- Obtaining foreign gene product by bioreactors.
- Transfer of rDNA into the Host cell
- Cutting of DNA at specific locations by restriction enzymes.

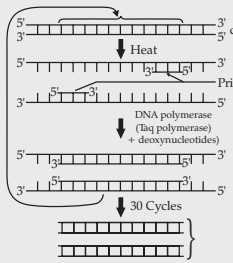
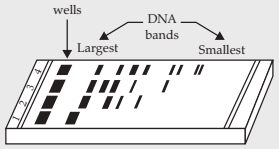


Obtaining foreign gene products by bioreactors



Simple stirred -tank bioreactor and Sparged stirred-tank bioreactor

Amplification of gene by PCR



Cut DNA fragments are separated by Gel electrophoresis.