Subject Code : CCN2X5

CORE COURSE V – BIOLOGY OF CLONING VECTORS

Unit I

DNA transactions : Mechanism of replication, repair, recombination and restriction, modification.

Unit II

Plasmid biology : Plasmids of gram negative bacteria, COLEL, RL, PT181, psc101, SLI and SCP plasmids of streptomyces. Plasmid vectors of various types vectors for cloning in Bacillus subtilis. Plasmid incompatibility.

Unit III

Biology of bacteriophage lambda. Lambda phage as natural in vivo vectors. Cosmid vectors and their use.

Unit IV

M13 vectors and their use, sterptomyces phage vectors. Choosing of right type of vector. Specialized vectors – expression vectors, ORF vectors, gene fusion vectors.

Unit V

Animal viruses – Baculovirus, SV 40 etc and gene cloning. Agrobacterial plasmid biology, Binary vectors; expression vectors Mechanism of crown gall formation Tiruchirappalli - 620 024 plasmid use in plant genetic engineering. Vectors for cloning in yeast (YAC, YEP etc), Antisense RNA vector. Application of Ti-Plasmid in Plant Genetic Engineering.

Reference Books :

1. Principles of Gene manipulation by R.N. Old and S.B. Primrose (1991) Blackwell Scientific Publications.
2. Recombinant DNA by Watson et al., (1992) Scientific American Books.
3. Lambda II by Hendrix et al., (1983) Cold spring Harbor Laboratory
4. The Bacterop / jages Vol.II by R.Calender (1988) Plenum Press
5. Escherichia Coli and Salmonella by Neidhardt et al. ASM Press 1996.
6. Genetic Engineering Vol.1-4 by Willisamson (Ed.)
7. Genetic Engineering Vol-1-7 by Setlow and Hollandor (Ed.).