

LSC 491 - LIFE SCIENCES PRACTICALS - II

(Selected topics)

1. Building of a model of DNA
2. Cloning, Restriction enzyme digestion of DNA, ligation
3. Preparation of competent *E. coli* cells
4. Transformation of competent *E. coli* cells with plasmid DNA
5. Isolation of plasmid DNA and agarose gel electrophoresis of DNA
6. Polymerase Chain Reaction (PCR), RT-PCR, Site-directed mutagenesis
7. Extraction of genomic DNA from plants by CTAB method
8. Analysis of molecular polymorphism in parental lines and derived mapping population using different types of molecular markers
9. RNA extraction and preparation of cDNA.
10. Southern, Northern, Western blotting
11. Expression of foreign protein in *E. coli*
12. Lytic growth of bacteriophage lambda
13. Plant tissue culture, Preparation of competent cells and *Agrobacterium* transformation by electroporation, *Agrobacterium tumefaciens*-mediated transformation
14. Visualization of GFP or YFP in transgenic
15. Basic techniques in animal tissue culture
16. Immunology experiment
17. Microbe symbiosis experiment
18. Infectious organisms: demonstrations (Microscopic) *Candida*, *Leishmania*, *Plasmodium*, *Entamoeba*
19. Plant physiology, Isolation of chloroplasts and determination of number of chlorophyll molecules per chloroplast, comparing the effect of some physical and chemical factors on the efficiency of photosynthetic electron transport
20. Multiple sequence alignment and ontology based database searches on selected plant/animal cytoskeletal genes to deciphering the molecular phylogeny of cytoskeleton genes
21. Tools, BLAST, ORF finder, Primer designing, protein motif and structure prediction tools, Vector NTI