

Core Course

LS 456—LIFE SCIENCES PRACTICALSII [4 credits]

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Module	Topic/experiments	Faculty
Molecular Biology	<ol style="list-style-type: none"> 1. Preparation of LB medium, LB+ agar(1.5%)+ ampicillin(100µg/ml) and LB+ agar (1.5%)+ nalidixic acid(15µg/ml) plates and other reagents. 2. Streaking of E. coli DH5α strain on LB+agar+ nalidixicacid plate. 3. Preparation of competent E. coli DH5α cells. 4. Transformation of E. coli DH5α cells with pBluescriptplasmid DNA and recombinant DNA clones. 5. Isolation of plasmid DNA from overnight culture of thetransformed colony/ clone. 6. Agarose gel electrophoresis of the plasmid DNA. 7. Restriction enzyme digestion of the plasmid DNA andclone verification. 8. Restriction enzyme digestion of the bacteriophageλDNA/ genome by Hind III and Hind III+EcoR I andpreparation of the restriction map for the double digest. 9. Preparation of a ball and stick model of B-DNA. Drawthe chemical structures of A,T and G,C base pairs, showdifferent groups/ bonds in the DNA and study thestructural features. 10. Blue/ white screening of the recombinant DNA clone inE.coli 	PCR
Molecular Biology	<p>Day 1: Lecture on PCR; preparation of reagents and media; inoculate for genomic DNA isolation</p> <p>Day 2: Genomic DNA isolation and quantitation on gel</p> <p>Day 3: Primer designing; Set up PCR using serial dilutions of genomic/plasmid DNA template</p> <p>Run gel, analyze of gel results and discussion.</p>	KN
Animal Tissue Culture	<ol style="list-style-type: none"> 1. To study the cell cycle/ different phase of cell cycle. 2. Analysis by ModFitprogramme. 	NM
Immunology	<ol style="list-style-type: none"> 1. Cell Counting of immune cells. 2. Immunophenotyping experiment/labeling/ 	NP

	<p>runningsample on Flowcytometry followed by analysis.</p> <p>3. Detection of cytokines/chemokines in activated immunecell through ELISA.</p>	
Infectious Organism	<p>1. Staining and counting parasitemia of the malariaparasite, Plasmodium falciparum.</p> <p>2. Detection of Leishmania parasite infection by fluorescence microscopy.</p> <p>3. Immunofluorescence assay (IFA) for testing proteinlocalization in malaria parasite.</p>	AB
Plant Physiology	<p>1. Estimation of photosynthetic efficiency</p> <p>2. Separation of chlorophyll pigments using thin layerchromatography</p> <p>3. Virus induced plant gene silencing and phenotyping</p>	SC
	<p>1. Plant Embryo development</p> <p>2. Leaf epidermal patterning</p>	AN
Electro Physiology	<p>1. Demonstration and application of rodent's stereotaxic instruments.</p> <p>2. Demonstration of recorded brain waves. Identification ofvigilant states in the recorded brain waves.</p> <p>3. Identification of alpha, beta, delta, theta and gamma brainwaves in recorded the EEG</p>	SKJ
	<p>1. Measurement of arterial blood pressure.</p> <p>2. Determination of blood group.</p> <ul style="list-style-type: none"> • Study of haemin crystal. • Preparation & staining of human blood film. <p>3. TC & DC of RBC & WBC.</p>	ACM
Microbe system	<p>1. Determination of Minimum Inhibitory Concentration.</p> <p>2. Biofilm Demonstration and Quantification.</p> <p>3. Bacterial Adherence and Invasion to Human Cell Line.</p> <p>4. Demonstration of Antimicrobial activity from Medicinal Plant(s).</p>	ASK