SCHOOL OF LIFE SCIENCES
JAWAHARLAL NEHRU UNIVERSITY

M.Sc – IInd Semester Practical Teaching Programme, (2019-20)

Course Name	Course In-charge/Faculty	Experiments
Molecular Biology	Prof. P.C. Rath Prof. K. Natarajan (27 classes)	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+ nalidixic acid plate. 3- Preparation of competent E. coli DH5α cells. 4- Transformation of *E. coli* DH5α cells with pBluescript plasmid DNA and recombinant DNA clones. 5- Isolation of plasmid DNA from overnight culture of the transformed colony/ clone. 6- Agarose gel electrophoresis of the plasmid DNA. 7- Restriction enzyme digestion of the plasmid DNA and clone verification. 8- Restriction enzyme digestion of the becteriophage λ DNA/ genome by Hind III and Hind III+EcoR I and preparation of the restriction map for the double digest. 9- Preparation of a ball and stick model of B-DNA. Draw the chemical structures of A,T and G,C base pairs, show different groups/ bonds in the DNA and study the structural features. 10- Blue/ white screening of the recombinant DNA clone in *E.coli.* 11- Lecture on PCR; preparation of reagents and media; inoculate for genomic DNA isolation from yeast 12- Genomic DNA isolation and quantitation on gel 13- Primer designing; Set up PCR using serial dilutions of genomic/plasmid DNA template Run gel, analyze of gel results and discussion. 14- Expression of recombinant protein in E. coli.
Cell Biology	Dr. Neelima Mondal (5classes)	1- Cell plating and harvesting. 2- Fixing of the cells. 3- Propidium Iodide staining of the cells. 4- To study the cell cycle/ different phase of cell cycle. 5- Analysis by ModFitprogramme.
Immunology	Dr. NitiPuri (5classes)	1- Cell Counting of immune cells. 2- Immunophenotyping experiment/labeling/ running sample on Flowcytometry followed by analysis. 3- To Study antigen induced activation of immune cells. 4- Detection of cytokines/chemokines in activated immune cell through ELISA.
Cellular Parasitology	Dr. A. Bansal (5 days)	1- Staining and counting parasitemia of the malaria parasite, *Plasmodium falciparum*. 2- SYBER Green I based fluorescence assay for testing anti-malarial compounds. 3- Detection of *Leishmania* parasite infection by fluorescence microscopy. 4- Immunofluorescence assay (IFA) for testing protein localization in malaria parasite.

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Plant Physiology	Prof. A. Pareek, (5 days) Prof. S. Chakraborty (5 days) and Prof. A. Nandi (4 days)	1- Study of phototropism in presence and absence of NPA in monocot and dicot plants. 2- Isolation of chlorophyll from monocot and dicot plants under different concentration, condition (dark-light) of IAA and BAP. 3- Study of root and shoot length of monocot and dicot seedlings under different concentration of IAA and BAP under conditions (light-dark). 4- To study protein profiling from monocot and dicot plants. 5- Viral infection assays through agrobacterium tumefaciens inoculation and effect on host physiology. 6- Virus induced gene silencing of phytoene desaturase in *N. benthamiana*. 7- Estimation of chlorophyll fluorescence through Pulse Amplititude Modulator (PAM). 8- Separation of chlorophyll a and b by TLC. 9- To study expression pattern of Auxin by using DR5-GUS transgenic lines in Arabidopsis. 10- Effect of Absicis acid and Jasmonic acid on seed germination. 11- To study triple response in Arabidopsis. 12- Observation of different stage of embryo development. 13- Observe plant stomata.
Animal Physiology	Dr. S. K. Jha (2 days) and Dr. A. Mondal (3 days)	1- Demonstration and application of rodent's stereotaxic instruments. 2- Demonstration of recorded brain waves. Identification of vigilant states in the recorded brain waves. 3- Identification of alpha, beta, delta, theta and gamma brain waves in recorded the EEG. 4- Study of squamous epithelial cells. 5- Measurement of arterial blood pressure. 6- Measurement of physical fitness Index (PFI) by Harvard step test. 7- Effect of exercise on blood pressure & heart rate. 8- Determination of blood group. • Study of haemin crystal. • Preparation & staining of human blood film. 9- TC & DC of RBC & WBC.
Microbial growth and management study	Prof. Arun S. Kharat (9 days)	1- Determination of Minimum Inhibitory Concentration. 2- Biofilm Demonstration and Quantification. 3- Bacterial Adherence and Invasion to Human Cell Line. 4- Demonstration of Antimicrobial activity from Medicinal Plant(s).

Coordinator

Dean, SLS