

ELECTIVE COURSE – II – PLANT TISSUE CULTURE

UNIT I:

Introduction to cell biology, structure and functions of prokaryotes and Eukaryotic cell. Morphology and history of different types of cells.

UNIT II:

Membrane structure and function, the prokaryotic and eucaaryotic cell walls, plasma membrane, lipid bilayer, membrane protein.

UNIT III:

Isolation and characterisation of nuclei and nucleoli, isolation and functional analysis of mitochondria, chloroplast. Preparation and analysis of genetic material cell autoradiography, aspetic technique and media preparation of primary cultures, maintenance of secondary culture cell line propogation of cell in suspension.

UNIT IV:

Analysis of biosynthesis of cellular components by radioactive labelling cultured cells. Plant cell structure and organisation of cell groups in tissue system. Mass culture of plant cell suspension, somaclones, mericloneing, micropropagation.

UNIT V:

Regeneration of plants through clonal propogation. Enzymes involved in cell wall digestion, macrozymes, pectinase, cellular source – catalytic properties. Methods of isolation of protoplast directly from plant organs, cultured cells, selection of somatic hybrids – Gene expressions, regeneration of protoplast into whole plants.

REFERENCE:

1. Tissue culture, methods and applications, Hurse P.I. and patterson., M.K.
2. Hardbook of cell and organ culture (2nd ed) Marcent et.al.
3. Animal cell culture course manual – cold spring warbor laboratory, Newyork.
4. Laboratory manuel of cell biology – Shanmugam, Macmillan.
5. Plant cell culture – A practical approach L.A. Dixon, RL Press.