Subject Code : N2O6

VII – CELL AND MOLECULAR BIOLOGY

UNIT – I

Prokaryotic and Eukaryotic cells, cell differentiation in plants and animals – Structure and function of cell membranes and organelles membrane models, Lipid assembly and membrane receptors. Membrane transport – active and passive transport Microtubles and micrifilaments . Other cell organelles.

UNIT – II

Cell junctions: Gap junctions, cell recognition and aggregation – Nuclear and cytoplasmic interaction.

UNIT – III

Structure and functions of DNA – Organization of eukaryotic chromatin, properties sequences of DNA palindrome sequences, denaturation, renaturation, hybridization, Northern, Southern, Analysis of DNA.

UNIT – IV

DNA replication – conservative, semiconservative, rolling circle – Cairn's model, experimental evidence – semiconservative mechanism of replication, Okazaki fragments, enzymes involved in replication – toppoisomerase, specific examples of replication – single stranded, phage, double stranded, SV 40, X174, mitochondrial and chloroplast replication – inhibitors involved in replication and transcription.

Repair mechanism – mutation. Recombination – types of transposons and transposable elements.

UNIT – V

Transcription and Protein biosynthesis, initiation open promoter complex, closed promoter complex, elongation and termination, antitermination, posttranscriptional modifications – RNA processing and splicing. Operon models. Genetic code, ribosomes and protein synthesis – initiation – elongation and termination. Post translational modifications – inhibitors and regulation of translation. Regulation of gene expression.

Cancer – charcterisation of cancer cells, cell culture, chemical carcinogens and radiation. Oncogenesis mechanism, protooncogenes and antioncogenes.

References:

1. Cell Biology :De Robertis and De Robertis.
2. Molecular Cell Biology : Lodish, Darnell and Baltimore
3. Genes VI : Benjamin Lewin
4. Molecular Biology of the Gene :Watson
5. Molecular Biology : Friefelder.