



SYLLABUS

THEORY

Definitions, basic concepts and scope of animal biotechnology. Recombinant DNA, technology, Genecloning, vectors and expression vectors. Transformation and transfection. Polymerised chain reaction (PCR), construction of genomic library and cDNA library. DNA sequencing. Principles of transfer of nucleic acids and proteins (Southern, Northern and Western blotting), Nucleic acid hybridization, DNA probes and DNA fingerprinting.

Biotechnological application in animal improvements: Embryo biotechniques, in vivo and in vitro embryo production and preservation, sexing, micromanipulation and cloning, transgenic animal and biopharming. Mapping of genome and genome sequencing. Marker assisted selection. Gene banking. Nutritional biotechnology including bioconversion of lignocellulose, genetic manipulation of microbes to improve feed utilization and health. Animal tissue culture, transformation and cell lines, tumor markers and acute phase proteins.

Molecular diagnosis including PCR and DNA probes. Hybridoma and monoclonal antibodies. New generation vaccines: subunit, recombinant and recombinant vectored vaccines. Fermentation process and technologies for milk, meat and leather. Ethics and regulatory issues in Biotechnology. IPR Bioinformatics.

PRACTICAL

DNA and plasmid isolation. Gel electrophoresis. PCR. Screening of gametes and embryo. Use of Multimedia and audio – visual aids for molecular biology aspects.