Subject Code : CCN3X10

CORE COURSE X – GENE MANIPULATION IN ANIMALS

Unit I

Genetic Engineering in animals. Transformation of animals Cells. Large scale culture of animal cells; Products through animal cells. Genetic engineering as applied to specific areas – regulatory proteins, blood products, vaccines and hormones. Production of useful proteins in transgenic animals GFP, Antifreeze Protein.

Unit II

Chromosomal manipulation of fish. Cryopreservation of gametes and embryos in fish and higher mammals. Transgenic animals – in vitro fertilization and embryo transfer.

Unit III

Pest management using juvenile hormone analogues, pheromones and genetic manipulation. Biotechnology of silk worms, baculoviruses in biocontrol and foreign gene expression.

Unit IV

Use of nucleic acid probes and antibodies in clinical diagnosis and tissue typing. Mapping of human genome Drosophila Coeno harbi ditis elegans RFLP and applications Genetic engineering approaches for the correction of genetic disorders. Ethical issues in animal biotechnology. Management aspects of biotechnology and genetic engineering. PCR applications, DNA chip technology.

Unit V

Gene therapy.

Reference Books :

1. Animal Biotechnology (1989): Comprehensive Biotechnology Frist Supplement: (Ed) L.A. Babink and J.P.Phillips. Pregamon press, Oxford, p.260.
2. Ward, K.a. (1992): Future Developments in the Genetic Improvements of Animals. Ed. J.S.F. Barrer, K.Hammond and A.E.McClintock, Academic Press, NY.
3. Rossant, J. and R.A.Pederson (1986): Experimental approaches to Mammalian Embryonic Development. Cambridge University Press, Cambridge.
4. Watson, J.D., M.Gilman, J.Wikowski, and M.Zoller, (1992): Recombinant DNA. Scientific American Books. W.H. Freeman & Co., NY, p.626.