MIC 408: Gene regulation and Recombinant DNA technology

COURSE CODE: MIC 408
NO. OF CREDITS: 04

COURSE OUTCOMES (COs)

- **CO1** Genetic manipulation in microbes is conveyed with their use under ethical wisdom.
- **CO2** various components and techniques used for genetic manipulation inmicrobes are taught.
- **CO3** Tools such as identifying and analyzing Molecular markers are explained tostudents.

Unit 1: Gene expression and regulation

- Transcriptional and translational control
- Lac, arabinose, and tryptophan operon circuits
- Regulation of lytic and lysogenic cycle of λ phage

Unit 2: Enzymes in r-DNA Technology and DNA Sequencing

- Extraction, purification, analysis, and size fractionation of nucleic acid
- Enzymes involved in genetic engineering
- cDNA formation and cDNA library and genomic library
- Cohesive and blunt end ligation
- CRISPER-Cas9

Unit 3: Vectors and Probes

- Cloning and expression vectors
- Methods of the introduction of r-DNA into the host cell
- Expression and characterization of cloned genes
- Oligonucleotide probes and labelling of probes

Unit 4: Molecular markers and techniques

- Blotting and hybridization techniques
- DNA sequencing
- DNA fingerprinting
- Molecular markers- RFLP and RAPD
- Microarray technique

REFERENCE

No.	Name	Author
1.	Genetic engineering	Rastogi & Pathak, Oxford
2.	Biotechnology and genomics	P. K. Gupta, Rastogi Publication
3.	Biotechnology	U. Satyanarayana
4.	Molecular biology and genetic engineering	P. K. Gupta
5.	Molecular biology of gene	J.D.Watson
6.	Genetics as a tool in Microbiology	Gloover & Hopwood
7.	Genetics of Bacteria	Scaife et.al
8.	Molecular Genetics of Bacteria	Snyder & champnes
9.	Molecular Biotechnology	Primrose
10.	Gene cloning and manipulation	Christopher Howe
11.	Molecular Biology and Biotechnology	Robert A., Meyers Eds.
12.	Principle of Gene Manipulation, An Introduction to Genetic Engineering	R. W. Old & S.B. Primrose
13.	Essential of Molecular Biology	George M. Malacinski
14.	Recombinant DNA Principles and Methodology	James J Greene & Venigalla B. Rao
15.	Molecular Bio methods Handbook	Rapley & Walker
16.	Cell and Molecular Microbiology	Garald Karp
17.	Biotechnology An Introduction	Susan R. Barnum
18.	Recombinant DNA Methodology II	Ray Wu
19.	Molecular biology and genetic engineering	P. K. Gupta

WEBLINKS

e-PGPathshala:

https://epgp.inflibnet.ac.in/Home/ViewSubject?catid=MNhNzp1RQlU+6LM40KjY1Q==

- Paper-15 Module-07 Bacterial transcription
- Paper-15 Module-12 Post-transcriptional modification
- Paper-15 Module-15 Prokaryotic translation
- Paper-15 Module-08 Operons
- Paper-15 Module-18 Vectors and Restriction Enzymes
- Paper-15 Module-20 DNA Cloning
- Paper-15 Module-24 Macromolecule Blotting and Probing
- Paper-15 Module-25 DNA sequencing
- Paper-15 Module-26 Microarray technique

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- Paper-04 Module-02 DNA modifying enzyme
- Paper-04 Module-18, 19 & 20 Vectors

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- Paper-13 Module-15 & 17 DNA markers
- Paper-13 Module-19 & 20 Blotting

Goyal