

ADVANCED MOLECULAR BIOLOGY TECHNIQUES (30 DAYS)

- ❖ Introduction of molecular biology lab, Tools & equipments.
- ❖ Aseptic techniques & sterilization techniques
- ❖ Basic calculations and Standard solution preparation
- ❖ Basic principle & operational procedure of following Instruments:
 - Analytical balance ➤ Electrophoresis ➤ Micro centrifuge
 - Autoclave ➤ Gel Documentation ➤ pH meter
 - Blotting apparatus ➤ Incubator ➤ PCR
 - Colorimeter ➤ Laminar air flow ➤ Shaking incubator
 - Dry bath ➤ Micropipette ➤ UV-VIS Spectrophotometer

❖ DNA TECHNIQUES & RECOMBINANT DNA TECHNOLOGY:

- ❖ Basic calculation and solution preparation
- ❖ Introduction of molecular biology lab, Tools & equipments:
- ❖ Isolation of DNA from Plant & Bacteria
- ❖ Quantitative estimation of DNA by Spectrophotometer
- ❖ Quantitative estimation of DNA by Diphenylamine method
- ❖ Determination Melting Temperature
- ❖ DNA gel electrophoresis
- ❖ DNA digestion, Mapping & DNA ligation
- ❖ Southern blotting
- ❖ Isolation of Plasmid/vector
- ❖ Preparation of competent cells
- ❖ Transformation of bacteria
- ❖ Blue/White selection
- ❖ Isolation of proteins
- ❖ SDS-PAGE of Transformed colonies
- ❖ Gel documentation
- ❖ Auxotrophic mutant selection-Replica plate techniques
- ❖ Petite mutants with yeast



❖ **RNA TECHNIQUES**

- Extraction from Plant & Bacteria
- Quantification (UV Spectrophotometer & Orcinol method)
- Agarose Gel Electrophoresis & Northern Blotting

❖ **PCR TECHNIQUES**

- Introduction of PCR & Programming
- Preparation of reaction mixture & Amplification
- Electrophoresis of PCR products & Documentation
- RFLP, Nested PCR, Colony PCR, Site Directed Mutagenesis

