

ADVANCED MACROMOLECULES TECHNIQUES (45 DAYS)

- ❖ General and safety instructions of lab.
- ❖ Good laboratory practices.
- ❖ Principle and handling of equipments
- ❖ Basics of calculations, weighing and measurements.
- ❖ Preparation of reagents & standard solutions.

CARBOHYDRATES

- ❖ Extraction of crude carbohydrate
- ❖ Qualitative analysis of carbohydrate
- ❖ Estimation of total carbohydrate by Anthrone method
- ❖ Estimation of total carbohydrate by Phenol sulphuric acid method

LIPIDS

- ❖ Extraction of Total lipid
- ❖ Estimation of total lipid

AMINOACIDS

- ❖ Extraction of Amino acid
- ❖ Estimation of Amino acid
- ❖ Thin Layer Chromatography
- ❖ Paper chromatography

NUCLEIC ACIDS

DNA TECHNIQUES:

- Extraction from Plant & Bacteria
- DNA Denaturation (T_m)
- Quantification (UV Spectrophotometer & DPA method)
- Agarose Gel Electrophoresis
- Southern Blotting
- Restriction digestion, Mapping & Ligation

RNA TECHNIQUES

- Extraction from Plant & Bacteria
- RNA denaturation (T_m)
- 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

BACTERIAL TRANSFORMATION

- Competent cell preparation & Transformation
 - Expression & Screening
 - SDS-PAGE of Transformed colonies
 - Auxotrophic mutant selection-Replica plate techniques
 - Petite mutants with yeast
- ❖ Gel documentation and MW determination (DNA, RNA & Protein).

PROTEIN

- Isolation of crude protein
- Protein precipitation
- Qualitative analysis of protein
- Estimation of total protein by Lowry's method
- Estimation of total protein by Bradford method
- SDS-PAGE GEL electrophoresis
- Western Blotting

ENZYME TECHNIQUES

- Introduction to Enzymology.
- Extraction of crude enzyme.
- Partial purification of enzyme.
- Precipitation of enzyme (salt & solvent).
- Characterization of purified enzyme.
- Total protein estimation by Lowry's method.
- Enzyme assay
- Enzyme kinetics.
- Effect of pH on enzyme activity.
- Effect of temperature on enzyme activity.
- Effect of substrate concentration on enzyme activity.
- Effect of activator on enzyme activity.
- Effect of inhibitor on enzyme activity.





CHROMATOGRAPHY

- Thin layer chromatography
- Paper chromatography
- Column chromatography
- Ion exchange chromatography
- Affinity chromatography
- High Performance Liquid Chromatography (HPLC)

