

Training Curriculum

1. Hands on training on techniques in Molecular Biology

Isolation of nucleic acids and protein. Restriction digestion, Spectrophotometry, Agarose and polyacrylamide gel electrophoresis, blotting techniques. Recombinant DNA technology – cloning- ligation, transformation and recombinant selection. Polymerase chain reaction. Molecular markers and genome mapping. Sequence analysis using bioinformatics tools.

2. Plant tissue culture and applications

Plant tissue culture – principles and concepts – techniques in plant tissue culture – Asepsis essential requirements – different media – culture conditions – different routes of micropropagation – organogenesis, embryogenesis – direct and indirect methods. Different stages – establishment, multiplication, proliferation, rooting and hardening. Applications 1. Commercial micro propagation – clonal fidelity testing, virus indexing 2. Crop improvement, *in vitro* conservation, secondary metabolite production, transgenics. Trouble shooting – concerns and issues, cost benefit analysis.

3. Techniques in Molecular Biology and Plant tissue culture

DNA isolation from plants and microbes, Restriction digestion, Spectrophotometry, Agarose gel electrophoresis. Recombinant DNA technology – cloning- ligation, transformation and recombinant selection. Polymerase chain reaction. Molecular markers and genome mapping. Analysis of data using softwares.

Techniques in PTC – Asepsis - essential requirements – different media – culture conditions – different routes of micropropagation – direct and indirect methods. Different stages – establishment, multiplication, proliferation, rooting and hardening. Trouble shooting – concerns and issues.

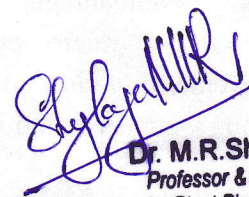
4. Summer training on techniques in Molecular Biology and Plant tissue culture for students undergoing M.Sc. (Biotech)/B.Tech (Biotech)

Macro molecules – properties and function – DNA isolation from plants and microbes, Restriction digestion, Spectrophotometry, Agarose gel electrophoresis . Recombinant DNA technology – cloning vectors and cloning- ligation, transformation and recombinant selection. Polymerase chain reaction. Molecular markers and genome mapping. Analysis of data using softwares. Sequence analysis using bioinformatic tools

Plant tissue culture – principles and concepts – techniques in PTC – Asepsis - essential requirements – different media – culture conditions – different routes of micropropagation – organogenesis, embryogenesis – direct and indirect methods. Different stages – establishment, multiplication, proliferation, rooting and hardening. Applications
1. Commercial micro propagation – clonal fidelity testing, virus indexing 2. Crop improvement.

5. Micropropagation of banana and ornamentals for entrepreneurship development

Plant tissue culture – Principles and practices – techniques in plant tissue culture - Scope of tissue culture of banana and ornamentals - Asepsis - essential requirements – different media – culture conditions – different routes of micropropagation – direct and indirect methods. Different stages – establishment, multiplication, proliferation, rooting and hardening. Quality assurance of TC banana – clonal fidelity testing and virus indexing – quality assurance of TC ornamentals - designing a lab - cost benefit analysis – project plan for microenterprise based on tissue culture of banana and ornamentals.



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