"Bridging Theory and Practice: Hands-on Training in Molecular Biology, Bioinformatics and Tissue Culture"

Greetings from ICAR- Indian Institute of Spices Research!

We are excited to introduce a 3-days hands on training designed to equip you with essential laboratory skills in molecular biology, bioinformatics and tissue culture.

About The Training

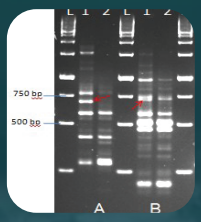
This training offers you an unique opportunity to gain practical experience in crucial techniques such as DNA and RNA extraction, PCR amplification, bacterial transformation, plant tissue culture, and bioinformatics. With guidance from experienced instructors, you'll develop a deeper understanding of these fundamental methods while enhancing your confidence in handling molecular biology experiments.

Who can apply?

Undergraduate and Postgraduate students, faculty members, Scientists, and technical staff from educational and research institutions are eligible to apply, either independently or through their respective institutions.

PCR

Real-time PCR



Gel electrophoresis

Tissue culture

Hands-on session

Contact Us

For more information on the application process, fee details, visit our website http://www.spices.res.in/

contact: hrdiisr@gmail.com / HRD.spices@icar.gov.in, Ph:0495 2731410.

Co-ordinator
Dr. Sivaranjani R

Contact :
Ms. Rabisha V. P. (9072065388)

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Syllabus

Session	Day 1: Isolation of DNA, RNA and gel electrophoresis
Morning	***Hands-on session on isolation of plant DNA and estimation*** Isolation of DNA from plant tissue; measurement of DNA concentration and purity through agarose gel electrophoresis and spectrophotometer; visualization of bands under UV light; troubleshooting for common issues faced during DNA extraction.
Afternoon	***Hands-on session on Total RNA isolation from plant tissues*** Isolation and purification of total RNA from plant tissue; quantification of RNA by spectrophotometer and assessment of RNA integrity through agarose gel electrophoresis. ***Hands-on session on cDNA synthesis*** Sample preparation by removal of genomic DNA from the total RNA; RT-PCR for cDNA synthesis; checking cDNA by PCR amplification using gene specific primers.
	Day 2: PCR techniques & recombinant DNA technology
Morning	***Hands-on session on PCR and gene amplification*** PCR setup and optimisation of cycling conditions, gradient PCR; gel electrophoresis and band visualisation in a Gel Documentation system; image capturing and interpretation of results, discussion on trouble shooting common PCR issues (e.g., primer dimers, non-specific bands *etc.*) ***Hands-on session on Real-time PCR*** Real time PCR set up using cDNA; analysis of Ct values and calculation of the quantum of expression of the respective gene or genes.
Afternoon	***Hands-on session on bacterial transformation*** Recombinant plasmid construct preparation; competent cell preparation; introducing recombinant DNA into the bacteria; selection of transformants and determining efficiency of transformation.
	Day 3: Plant tissue culture & basic Bioinformatics
Morning	***Hands-on session on plant tissue culture*** Preparation of stock solutions and plant tissue culture media and sterilisation; aseptic techniques and sterilization of explants; inoculation of explants for callus initiation/plantlet regeneration and *in vitro* rooting in a controlled environment; primary and secondary hardening.
Afternoon	***Hands-on session on Bioinformatics tools and databases*** Introduction to Biological databases- NCBI, EMBL-EBI, DDBJ, UniProt, PDB, KEGG, Pfam; Introduction to sequence alignment- CLUSTAL; Database search- BLAST; Phylogenetic analysis- MEGA; Protein structure visualization- Rasmol, Pymol; Primer designing- Primer3.