



# HANDS ON TRAINING ON APPLICATIONS OF MOLECULAR BIOLOGY AND BIOTECHNOLOGY

## CSIR-Central Institute of Medicinal and Aromatic Plants

### BROCHURE

CSIR-Central Institute of Medicinal and Aromatic Plants (CIMAP) is a premier laboratory in the biological sciences cluster doing excellent research in aromatic and medicinal plants of economic importance. The scientists of CSIR-CIMAP holds great expertise in the areas from agricultural, chemical and high-end biotechnological sciences who are working for improving the life styles of billions of people of India especially farmers. Write from developing elite breeder's varieties of medicinal & aromatic plants for the farmers to the health-related products for the common man of Indian society has been the aim of CSIR-CIMAP. A great state of the art infrastructure with high end instrumentation facilities facilitates CSIR-CIMAP's research for developing products of great value and pursuing world class science of the modern era. With this view, a training program is designed to train and provide hands-on-training to the young students for pursuing science in academics. The objective is to generate a passion among young students to pursue science as a career and do excellence. The training would involve multidisciplinary research areas where technologies from different fields interact to provide knowledge on how information is represented and transmitted in biological systems. Students/trainees would be made familiar and trained in the tools and technologies of modern biology which may further help them in developing scientific temperament.

<b>Title of the Course:</b>	Hands on Training on Applications of Molecular Biology and Biotechnology
<b>Duration:</b>	3 weeks (21 days)
<b>No. of participants (seats):</b>	20
<b>Educational qualification:</b>	B. Sc. / B. Tech.
<b>Age group:</b>	20-25 years
<b>Date of commencement:</b>	1 <sup>st</sup> December 2017
<b>Venue of the course:</b>	CSIR-CIMAP
<b>Course fee:</b>	25,000 (per person; boarding/lodging will be charged separately)
<b>Residential/Non-residential:</b>	Residential program
<b>Contact Person:</b>	Dr Vikrant Gupta (0522-2718552)

**Trainee Beneficiary:** Students perusing academics and completed their graduation (B.Sc. / B.Tech.) in biological sciences stream. The drive to conduct this training is to provide young science undergraduate students a training cum exposure to the modern science like molecular biology, biotechnology, genomics, plant tissue culture and bioinformatics. While Molecular Biology helps to decode the chemical constituents of life (the nucleic acids), Bioinformatics helps in comparing this composition with other life systems and gain better understanding. The training has a high importance and the trainees will get benefited from the programme and will also be able to learn useful nuggets and laboratory tips that they can further apply in their own academic career.

**Faculty and management:** The immense experience and great scientific diversity of the scientific staff of CSIR-CIMAP would be teaching and training the researcher/students who will be participating in the training program.

**Selection Procedure:** Based on the on-line applications received/applied for the training after web advertisement.

**Mode of instructions/training:** For the entire duration of the training program, regular theory and practical aspects with a defined curriculum would be covered to provide the participants a fruitful learning.

### **SALIENT FEATURES OF THE COURSE OF TRAINING:**

#### **Course Content (Lectures):**

- Orientation on Laboratory Safety and Research Ethics
- DNA Fingerprinting for Molecular Diversity Analysis
- Recombinant DNA Technology
- Science of OMICS
- Ayurveda in OMICS Era: Concept of Indian Traditional Medicine
- Microscopic Techniques and Their Applications
- Concepts of Plant Tissue Culture
- Agrobacterium rhizogenes as a Natural Genetic Engineer for Hairy Root-mediated Secondary Metabolite Production
- Genetically Modified Organisms: The Environmental and Societal Issues
- Enzymology: Applications in Biology
- Bioinformatics: Techniques and Tools
- Basics of Intellectual Property Rights (IPRs)

#### **Practicals:**

Purification of bacterial culture, Plasmid DNA isolation, Genomic DNA isolation from plant tissues, Isolation of total RNA from plant tissue, Quantification of DNA/RNA, Agarose gel electrophoresis DNA & RNA, Polymerase Chain Reaction (PCR), Randomly Amplified Polymorphic DNA (RAPD), Restriction digestion, Bacterial transformation, Sequencing of DNA fragment, Advanced Microscopy, Establishment of aseptic cultures from different explants, Micro-propagation of elite clones, Protoplast isolation and transfection, Hairy root cultures, Recombinant protein expression in E. coli, Learning basics of herbal formulations, Hands-on-training on Bioinformatics tools.

#### **Evaluation of trainees:**

- Continuous assessment and tutorials
- Guided and unguided experiments (practical)



*For further information please contact :*

**Director,**

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