Hands on training program on Molecular Biology Techniques to Understand Gene Expression

BioNcube, a BIRAC-Bio incubator of International Crops Research Institute for the Semi-Arid Tropics (ICRISAT) call applications for a hands-on training program on "Molecular Biology Techniques to understand gene expression". ICRISAT is an International non-profit agricultural research institute with state-of-the-art facilities for Agri-biotechnology research and product translation. BioNcube features state-of-the-art plant transformation facilities comprising the transformation facility, Molecular biology laboratory, Biosafety Level 2 greenhouses, and regular greenhouses. The training course is being organized from 05-09 December 2022 at BioNcube, ICRISAT, Patancheru, Hyderabad, India-502 324.

Course description

Molecular biology pertains to studying the synthesis, regulation, and interaction of biomolecules like DNA, RNA, and protein. Techniques in molecular biology require the integration of genetics and biochemistry. Knowledge of molecular biology techniques is crucial to understand cell biology, functional genomics, and plant biotechnology. Advancement in omics tools and the development of newer technologies such as gene editing has increased the demand for technically skilled human resources in biological sciences. This training course aims to provide basic theoretical and practical skills required for working in a molecular biology laboratory.

This course will take the participants through the basic steps and principles of primer design, gene cloning, RNA isolation, cDNA synthesis, gene expression (qPCR), in silico characterization of putative promoter regions, protein expression by Western blot, and ELISA. In addition, participants will also have the opportunity to use and familiarize themselves with essential laboratory equipment used in this field.
BioNcube is a BIRAC- Bio incubator supporting Ag-biotech innovation, development, and applications of broad range of biotechnological solutions spreading across various domains from basic research to product translation. Agribiotech start-ups incubated in BioNcube, have access to the scientific knowledge of ICRISAT, biotechnology laboratories with state-of-the-art equipment, and infrastructure such as plant genotyping, phenotyping and transgenic facilities, glasshouses, plug-and-play modular labs, molecular biology lab, analytical lab, transformation facility, contained fields etc. The value proposition of the BIRAC- Bio incubator is to link business incubation to translation and support ag-biotech start-ups from proof-of-concept stage through to technology translation and commercialization that will further benefit farming communities.

Objectives

- Understand basic principle and provide hands on training on basic tools used in understanding gene expression
- Interpret results generated using molecular biology tools and available datasets in functional genomics
Resource persons/trainers

Resource persons for this course would be from National and International Research organizations.

Course language

All course notes and lectures will be in English. Therefore, participants should have a good knowledge of English and of the appropriate technical terms of molecular biology.

Venue

The venue for the training program is Platform for Translational Research on Transgenic Crops (PTTC) building, ICRISAT Campus, Patancheru, Hyderabad.

Accommodations

The participants will be accommodated in the Guest House/Hotel during the course of the training. The cost of any additional stay (beyond the dates of training) would be at trainees own expense. Information on extended stay needs to be given in advance.

More information

Additional information on the course will be provided to participants selected for the course.

Course fees

- Students/Postdoc
  - INR 14,000 (without accommodation)/INR 25,000 (with accommodation)
- Scientist/Faculty
  - INR 17,000 (without accommodation)/INR 28,000 (with accommodation)
- Industry
  - INR 28,000 (without accommodation)/INR 40,000 (with accommodation)

Applications

Applications are invited from researchers who want to learn molecular biology applications in agricultural biotechnology using the most recent and advanced systems. The application can be accessed from the following link.

https://forms.gle/JEAdvVFqbU4J82UJ6

Duly filled application should be submitted through the link or sent to bioincube@cgiar.org with copy to wricha.tyagi@cgiar.org; P.Sudhakarreddy@cgiar.org; and k.yogendra@cgiar.org.

The due date for application is 30th November 2022.

Lectures

- Integration of omics tools in molecular biology
- Gene discovery
- Isolation and characterization of promoter regions
- Gene cloning methods and applications
- Expression analysis using different methods

Practical sessions

- Primer designing, *Cis* elements identification, and characterization
- Domain(s)/motif(s) identification
- RNA isolation, cDNA synthesis, and gene cloning
- Expression analysis by qPCR, Western/ELISA
- Protein isolation and SDS gel electrophoresis
Hands-on training program on
Hands on training program on
Molecular Biology Techniques to Understand
Gene Expression
05-09 December 2022

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How did you find about the training (Restrict to 100 words)

Describe your responsibilities and job description: (Restrict to 300 words)

How will this training help you? (Restrict to 300 words)

Full Name of Applicant.................................................................................................................. Date.................................................................................. Signature..............................................

Remarks and Recommendations of the Host Organization (Please state clearly the strong and weak points about applicant and how this training will be useful for your organization/country)

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Date........................................................................................................ Signature.......................................................... Place..............................................................

Name of Forwarding Authority........................................................................................................ Seal..............................................................................................

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