BioNcube, a BIRAC-Bio incubator of the International Crops Research Institute for the Semi-Arid Tropics (ICRISAT), is inviting applications for a hands-on training program on "CRISPR/Cas9-based Gene Editing Technologies in Plants". From 12th – 16th June 2023 at ICRISAT, Patancheru, Hyderabad, India-502 324. Apply here - https://forms.gle/3ASkZzCVJ6hBvLfL6

The final date for application is 30 May 2023

Course description

The cutting-edge tools and technologies currently available to breeders are collectively known as Novel Breeding Technologies (NBT) of which Gene Editing (GE) is the foundation. GE permits rapid and precise trait creation and selection without negative consequences on the suite of native phenotypes. These methods could accelerate genetic discovery, development and product delivery, enabling "reductions" in farmers' input costs and "exponential improvements" in the agronomic and nutritional value of food and output. For researchers wishing for a well-rounded theoretical and practical introduction to gene editing, this hands-on training program on "CRISPR/Cas9-based Gene Editing Technologies in Plants" is ideal. The training program comprises is aimed at providing a better understanding of various elements and stages of gene editing.
This course will familiarize the participants with gene editing workflows, from the design and synthesis of target-specific guide RNAs (gRNAs), demonstration of delivery of gRNAs in plant cells, and detection and analysis of mutations.

This is an excellent opportunity to interact and benefit from the expertise of our scientists and collaborators as they will hand-hold the trainees to design their first gene editing experiment and gene editing workflows.

We are confident that the training program will enable the participants to develop their experimental workflows.

**Objective**

- the concepts of gene editing
- designing of guide-RNAs and CRISPR/Cas9 constructs
- usage of high-throughput techniques for gene editing applications
- methodology for molecular and functional validation of edited lines
- ethics and biosafety of gene editing technologies

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**BioNcube @ ICRISAT**

**BioNcube is a BIRAC-Bio incubator** supporting Ag-biotech innovation, development, and applications of a broad range of biotechnological solutions spreading across various domains from basic research to product translation. Agri-biotech 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, transgenic facilities and gene editing, greenhouses, molecular biology 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 the proof-of-concept stage through to technology translation and commercialization, to further benefit farming communities.
### Lectures

- Genome Editing technologies - applications and future perspectives
- Editing of crop genomes for trait development: new directions and challenges
- Development of biotic and abiotic stress tolerance through CRISPR/Cas9-based genome editing system and functional genomics approach
- Crop improvement using a genome-editing approach.
- New breeding tools for accelerated breeding in dryland cereals

### Practical sessions

- Bioinformatics tools for gRNA(s) design
- Strategy and cloning of the gRNA(s) and Cas9 in the plant expression vectors
- *Agrobacterium* transformation for the CRISPR/Cas9 recombinant plasmids by electroporation
- Demonstration of delivery of CRISPR cassettes into plant cells
- Identification of mutations
- Molecular analysis of the gene-edited plants
Resource persons/trainers
Resource persons for this course will be from National and International Research Organizations.

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 30,000 (without accommodation)
  - INR 45,000 (with accommodation)

Course language
All course notes and lectures will be in English. Therefore, participants should have a good knowledge of English and be familiar with the appropriate technical terms of CRISPR/Cas9 gene editing technology.

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

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

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

Applications are invited from researchers who are familiar with basic molecular and cell biology techniques and want to learn gene editing applications in agriculture using the most advanced CRISPR systems. While previous experience in gene editing is not required, the participants are expected to have fundamental knowledge and working experience in molecular biology and transformation techniques. The application can be accessed from the following link or format provided in the brochure.

https://forms.gle/3ASkZzCVJ6hBvLfL6

The completed application should be submitted through the link or sent to bioncube@cgiar.org with copy to wricha.tyagi@icrisat.org, Sudhakarreddy.Palakolanu@icrisat.org and yogendra.kalenahalli@icrisat.org.

The due date for application is 30 May 2023
Hands-on training program on CRISPR/Cas9-based Gene Editing Technologies in Plants  
12-16th June 2023

Application Form

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Educational Qualifications (Ph.D./Postdoc/Young Scientist/any other)

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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..................................................................................