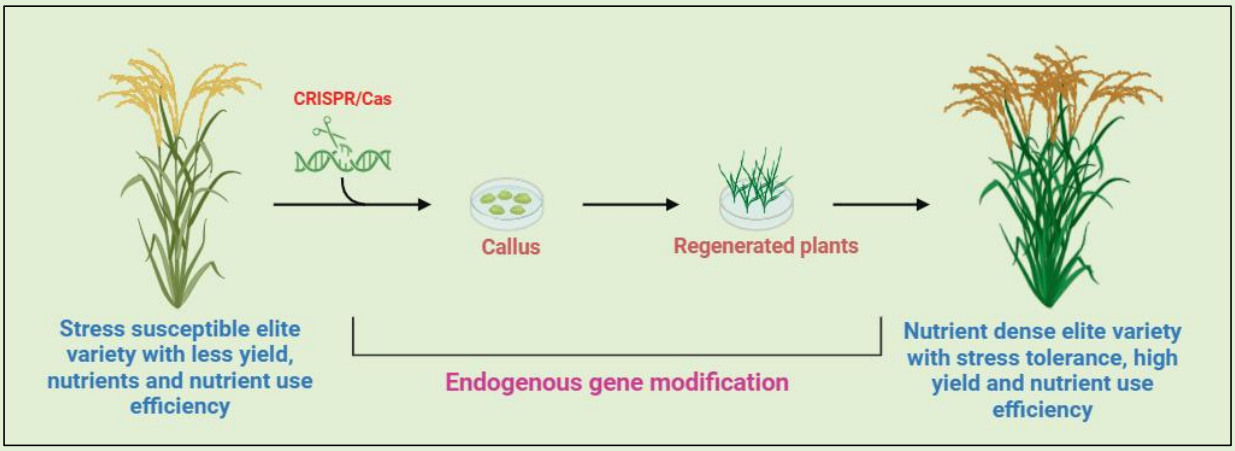
Hands-on Training on

Genome Editing Technologies in Crops

14th - 23rd October 2024



Course Directors

Dr. R. M. Sundaram, Director, ICAR-IIRR

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Course Coordinators

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Organized by

ICAR- Indian Institute of Rice Research (IIRR)

Rajendranagar, Hyderabad, India

About the course and Institute

ICAR-Indian Institute of Rice Research (IIRR) invite applications for Hands-on Training on Genome Editing Technologies in Crops from 14th - 23rd October 2024 at ICAR-IIRR, Rajendranagar, Hyderabad, Telangana.

Considering the potential applications of genome editing, a precise new breeding tool, in addressing the long-standing issues of agriculture, it is extremely important to train the researchers for its effective deployment in their research programs. The academicians also require exposure to genome editing tools for teaching students and young research scholars. This 10-days training program covers the basics and details of genome editing, hands-on experience in designing, and synthesis of gRNAs, CRISPR/Cas construct development, delivery of gRNA into a plant cell, detection of edited lines using various approaches, and the biosafety regulatory aspects of genome editing. With the guidelines for the safety assessment of genome-edited plants by the Government of India, genome editing research in India is expected to accelerate at a higher pace in years to come.

The ICAR-IIRR has >20 years of rich experience in transgenic development, molecular breeding and genomics. The biotechnology unit of ICAR-IIRR has developed genome-edited rice lines, which have drawn national attention. The institute has well-trained human resources, state of art facilities and laboratory infrastructure to carry out genome editing research and training.

Objective

- Acquaint the participants with basic and advanced knowledge of genome editing techniques, bioinformatics tools, designing gRNA, cloning and CRISPR/Cas construct development.
- Impart hands-on skills to develop genome-edited plants by genetic transformation, tissue culture and their molecular characterization.
- Understand the biosafety regulations of genome editing technologies.

Modules

Module - I	Module - II
Bioinformatics, designing gRNA's, developing vectors, plant transformation and regeneration	Evaluation of genome edited plants, & biosafety regulations, and application preparation for exemption of genome edited events

Resource persons

Resource persons from ICAR-IIRR, ICAR, CSIR, DBT, SAU's., subject matter specialists across India and abroad.

Topics at glance

Lectures	Hands-on sessions
✧ Basics of genome editing ✧ Prime editing and base editing ✧ Different versions of cas proteins and their utility ✧ Genome editing for bacterial resistance in rice ✧ Genome editing and abiotic stress tolerance ✧ Genome editing for virus resistance Genome editing for nutrient use efficiency ✧ Case studies of genome editing in rice, banana, mustard, pulses etc. ✧ Genome editing for facilitating hybrid rice research ✧ Wild genomic resources for new genes discovery ✧ Genome editing crops commercialization: industry perspective ✧ Social impacts of genome editing ✧ Biosafety regulations of genome-edited crops ✧ Preparation of application for exemption of genome edited events	✧ Bioinformatic tools for genome editing ✧ Designing of guide RNAs & Cloning into intermediate vector ✧ Clone confirmation in intermediate vector ✧ Plasmid isolation, restriction enzyme digestion, purification ✧ Ligation into destination vector and bacterial transformation ✧ Seed sterilization and germination ✧ Agrobacterium culture inoculation ✧ Agrobacterium-infection of rice calli and co- cultivation ✧ Subculture of regenerating calli on to shoot regeneration medium ✧ In-vitro rooting of putative transformed shoots ✧ PCR confirmation of putative transformants ✧ Validation of edited lines through T7 endonuclease assay ✧ Sequence alignment ✧ Characterization of the edits/ mutations

Eligibility

The researchers/scientists working in the public/ private organization. The applicant should hold permanent position in respective organization. The applications forwarded by the competent authority will only be considered. Preference will be given to the participants working on genome editing, plant tissue culture, transgenics and RNAi technology. A maximum of 25 participants will be selected by a screening committee.

How to apply

Eligible and enthusiastic candidates may submit their application form in the prescribed proforma attached along with proof of payment via e-mail to **"crisprcastrainingatiirr@gmail.com"**.
Note: The participants are encouraged to carry their own laptops for the training program.

Course fee*

Public- Rs. 15,000/-; Private- Rs. 50,000/-
* The course fee includes the boarding and lodging. The applicants need to arrange travel expenses on their own. Payments may be made to following account:
Account Name: ICAR Unit- Indian Institute of Rice Research
Account No: 52114970145
Branch: Budvel, State Bank of India, IFSC: SBIN2220378
Please mention transaction ID and include receipt of payment while submitting the application.

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 used in the Genome editing training course.

Venue

The venue of the workshop is Seminar Hall-1, ICAR- Indian Institute of Rice Research, Hyderabad, India.

Duration

The 10 days training is scheduled from 14th Oct - 23rd Oct 2024. The participants are required to reach ICAR-IIRR by the evening of 13th Oct 2024 and can plan their return journey after 18:00 hours on 23rd October.

Important Dates

Last date of receipt of applications: **25th September, 2024**
Intimation for selected candidates: **1st October, 2024**

Accommodation

Boarding and lodging for all the selected participants and will be provided in the ICAR-IIRR guest house on twin sharing basis.

How to reach venue

ICAR-IIRR is located at about 20 km from Secunderabad Railway Jn. Taxi and auto services are available from railway station to the institute. Rajiv Gandhi International Airport (HYD) is 20 km away from the institute.

Contact information

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Affix Recent Passport size Photograph

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Application form

Title (Dr/Mr/Ms/Mrs)	Gender (M/F)
First Name	
Middle Name	
Family Name	
Designation/Job title	
Organization (with address) State/Province; City; Postal/Zip Code; Country	
Date of Birth (age in years)	
Email (give primary and alternate email, if available)	
Mobile No.	
Phone No.	
The transaction ID of fee payment	

Educational Qualifications (Post graduation onwards)			
Degree	**Year**	**Subject(s)**	**University/Institute**
Career summary			
Designation	**From-to**	**Nature of research & responsibilities**	**University/Institute**

How did you find about the training (Restrict to 100 words)
Describe your responsibilities and job description: (Restrict to 200 words)
How will this training help you? (Restrict to 200 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)

.....

..... Date..... Signature.....

Place.....

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