

**NAHEP-CAAST sponsored training programme on
“Genome Editing of Crops: Methods and Applications”
from December 27, 2019 to January 8, 2020**

Organized by

**ICAR-National Institute for Plant Biotechnology, New Delhi &
ICAR-Indian Agricultural Research Institute, New Delhi**

Schedule of training program

Date	Time	Lecture/Practical	Faculty
27-12-2019	10:30-11:30h	Inauguration	GS Sirohi Conference Hall, Division of Plant Physiology, IARI, New Delhi
	12:00-12:30h	Pre-training Evaluation	Dr. Anirban Roy & Co-Coordiators
	12:30-13:30h	Land mark events and heroes of CRISPR	Dr. Anirban Roy Division of Plant Pathology, IARI, New Delhi
	14:30-17:30h Practical	GuideRNA design-Tools	Dr. Anshul Watts & Dr. R.C. Bhattacharya NIPB, New Delhi
28-12-2019	10:00-11:00h	Genomic Resources and gate ways of their utilization	Prof. N. K. Singh Director, NIPB, New Delhi
	11:30-12:30h	Mechanism of genome editing (CRISPR)	Dr. R.C. Bhattacharya NIPB, New Delhi
	12:00-13:00h	Progress Review & Discussion	Course Director/Coordiators
	14:30-17:30h Practical	<i>In vitro</i> validation of gRNA	Dr. Anirban Roy Division of Plant Pathology IARI, New Delhi & Dr. Anshul Watts & Mr. Ritesh Kumar Raipuria, NIPB, New Delhi
29-12-2019		Sunday	
30-12-2019	10:00-11:00h	Knock down vs knock out of genes in trait modification	Dr Sunil Mukherjee Division of Plant Pathology, IARI, New Delhi
	11:30-12:30h	Recent developments in CRISPR variants	Dr. Deepak Bisht NIPB, New Delhi
	12:00-13:00h	Progress Review & Discussion	Course Director/Coordiators
	14:30-17:30h Practical	Construction of genome editing vector – Ligation, transformation & Multiplexing sgRNA constructs	Dr. R.C. Bhattacharya NIPB, New Delhi & Dr Anirban Roy Division of Plant Pathology IARI, New Delhi &

			Dr. Anshul Watts & Mr. Ritesh Kumar Raipuria, NIPB, New Delhi
31-12-2019	10:00-11:00h	Potential application of CRISPR in improving plant traits	Dr. M.K. Reddy, Group leader, Crop Improvement ICGEB, Aruna Asaf Ali Marg, New Delhi-110 067
	11:30-12:30h	CRISPR-Cas technology as next generation breeding tool	Dr. Ashok K Singh Joint-Director Research IARI, New Delhi
	12:00-13:00h	Progress Review & Discussion	Course Director/Coordinators
	14:30-17:30h Practical	Construction of genome editing vector –plasmid isolation and confirmation by PCR	Dr. R.C. Bhattacharya & Dr. Anshul Watts & Mr. Ritesh Kumar Raipuria, NIPB, New Delhi
1-1-2020	10:00-11:00h	Improving fungal disease resistance in plants through Genome editing	Dr. Aundy Kumar Division of Plant Pathology, IARI, New Delhi
	11:30-12:30h	Genome editing in virus management in crops	Dr Anirban Roy Division of Plant Pathology, IARI, New Delhi
	12:00-13:00h	Progress Review & Discussion	Course Director/Coordinators
	14:30-17:30h Practical	<i>In vivo</i> validation – Transient by Agroinoculation & validation by T7 nuclease assay	Dr. Anirban Roy Division of Plant Pathology, IARI, New Delhi
2-1-2020	10:00-11:00h	Genome editing in Insect/Nematodes	Dr. Subramanian S Division of Entomology, IARI, New Delhi
	11:30-12:30h	Genome editing for human health management	Dr. Sivaprakash Ramalingam Principal Investigator, Genome Engineering and Stem Cell Laboratory, CSIR-IGIB, Sukhdev Vihar, New Delhi - 110 025
	12:00-13:00h	Progress Review & Discussion	Course Director/Coordinators
	14:30-17:30h Practical	<i>In vivo</i> validation – Protoplast transformation & Agrobacterium mediated transformation	Dr. N.C. Gupta & Dr R.C. Bhattacharya NIPB, New Delhi
3-1-2020	10:00-11:00h	Genome editing in crops for nutritional quality	Dr. Siddharth Tiwari National Agri-Food Biotechnology Institute (NABI), Main Campus, Sector 81, Sahibzada Ajit Singh Nagar, Punjab – 140306

	11:30-12:30h	Genome editing in Animals	Dr. Sachinandan De Principal Animal Genomics Lab. Animal Biotechnology Centre. National Dairy Research Institute Karnal- 132001, Haryana
	12:00-13:00h	Progress Review & Discussion	Course Director/Coordinators
	14:30-17:30h Practical	DNA & RNA isolation from CRISPR-Cas9 lines	Ms. Pragya Yadav, Mr. Shashank K. Yadav & Dr. Archana Watts Division of Plant Physiology, IARI, New Delhi
4-1-2020	10:00-11:00h	Genome editing in improving abiotic stress tolerance in crops	Dr. C. Viswanathan Division of Plant Physiology, IARI, New Delhi
	11:30-12:30h	Visit to NPF & Phenomics facility	
	12:00-13:00h	Progress Review & Discussion	Course Director/Coordinators
	14:30-17:30h Practical	Identification of CRISPR-Cas edited mutant plants by Heteroduplex assay & RE analysis	Dr. Monica Saifi & Dr. Shivani Nagar Division of Plant Physiology, IARI, New Delhi
5-1-2020		Sunday	
6-1-2020	10:00-11:00h	Regulation of GE products in India	Dr. S.R. Bhat Emeritus Scientist NIPB, New Delhi - 110012
	11:30-12:30h	Regulation of genome edited crops- Global Scenario	Dr. Amitabh Mohanty National Genomics and Genotyping Facility (NGGF)-DBT NIPGR, New Delhi-110067
	12:00-13:00h	Progress Review & Discussion	Course Director/Coordinators
	14:30-17:30h Practical	Identification of CRISPR-Cas edited mutant plants by PCR- Fragment length polymorphism & DNA sequence analysis	Mr. Santosh Kumar VV & Dr. Nagaraj Kumar M. Division of Plant Physiology, IARI, New Delhi
7-1-2020	10:00-13:00h	Group discussion on students' research proposal	Course Director, Coordinators, Co-coordinators, CAAST-Core Team
	14:30-17:30h Practical	Real time-qPCR for detection of virus in genome-edited lines	Dr. Anirban Roy Division of Plant Pathology, IARI, New Delhi
8-1-2020	10:00-10:30h	Post-training evaluation	
	11:00-12:30h	Valedictory Function	