



ANNOUNCEMENT



5th Centre for Advanced Faculty Training (CAFT)

On

Genome utilization and editing of plant for useful traits

February 7 to February 27, 2024



Organized by

ICAR-National Institute for Plant Biotechnology
(Formerly known as NRCPB)
Pusa Campus, New Delhi -110 012
India
<https://nipb.icar.gov.in/>

Accommodation and Travelling Allowance

Participants will be paid travel fare for to and fro journey by rail or bus as per their entitlement class of travel restricted however to the maximum of AC II Tier. TA will be paid on subject to the proof of travel and availability of funds. Free boarding and lodging (shared basis) will be provided to the participants during the training program.

How to reach NIPB

NIPB is situated within the LBS Building at IARI, Pusa campus which is well connected to all the three major railway stations at Delhi by metro (nearest Metro Station: Rajendra Place), local bus, pre-paid auto and taxi services. It is located about 8 km west of New Delhi railway station and 10 km from the interstate bus terminal. It is 20 km away from Indira Gandhi International Airport, New Delhi.

Weather

Delhi is situated at 28.38° North and 77.13° East and falls in Northern India. Weather during this period will be cold with average temperatures of 17-22°C.

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Background and Objectives

The National Institute For Plant Biotechnology (NIPB), Pusa Campus, New Delhi is a premier research institute of ICAR engaged in research and human resource development in frontier areas of Plant Molecular Biology and Biotechnology. The programme intends to impart hands on training to the participants on next generation sequencing (NGS) data analysis pertaining to whole genome assembly and annotation, molecular marker discovery, transcriptome analysis, miRNAs lncRNAs discovery, various technique related to Genome Editing etc. This will also cover the basic orientation about linux, R packages, CLC Genomics, genome editing tool box etc.

About the training

The centre is organizing a training on “Genome utilization and editing of plant for useful trait” sponsored by ICAR, New Delhi on **7th Feb- 27th Feb, 2024** for the teachers/research personnel of State Agricultural Universities, ICAR Institutes, SAUs and CUs. Next generation sequencing are recent techniques which have wide applications in Agriculture. In this training, various techniques related to sequence driven research will be taught.

The program has been designed with the objective to develop trained human resource on various techniques related to NGS, as well as in the analysis and annotation of genomic and transcriptomic data, the identification of differentially expressed genes and development of high throughput genotyping markers. In recent times, development of CRISPR-Cas based genome editing technology has provided a new dimension in the way of plant genome utilization. This training will also provide a brief introduction and exposure to this technology.

Following topics will be covered during practical classes

- *Introduction to linux (Ubuntu)*
- *Introduction to R programming language*
- *NGS data quality check, raw data quality assessment*
- *Genome and transcriptome assembly*
- *CLC genomics workbench and BLAS2GO*
- *RNAseq analysis for differential gene expression*
- *Genome-wide repeat analysis and phylogenetic analysis*
- *Construction of high density linkage map and QTL mapping*
- *Genetic diversity, population structure and GWAS analysis*
- *Data analysis for high throughput SNP genotyping using SNP chips*
- *Genome Editing Toolbox – sgRNA design, off-target mutation analysis, mutants discovery through Sanger sequencing, designing of marker to track the target mutation. etc.*

Curriculum

A series of lectures and practicals will cover principles and applications of gene identification, isolation and functional characterization for application in crop improvement. Structured hands-on training by the experienced faculty in various routine and contemporary techniques will get special emphasis in the program. An educational tour to facilities of IASRI and other institutions carrying out research in the area of bioinformatics and biotechnology will be arranged.

Faculty

The faculties are experienced scientists from the NIPB for delivering lectures and conducting practicals. Guest faculty comprising of experts from IARI, NBPGR, NIPGR, Delhi University and other reputed institutions of India including private companies will be invited to deliver lectures on specific areas of specialization on NGS data analysis and its application in plant science.

Facilities

NIPB has molecular biology laboratories equipped with high throughput genomics and proteomics facilities, Next generation sequencing systems, High throughput genotyping, Microarray, MALDI -TOF/TOF, Tissue culture facility for plant transformation etc. Additionally, the Institute has a high capacity data center with several terminals, a transgenic glass house facility with a controlled environment, and a phenotyping facility for conducting trait analyses.

How to apply

Candidates desirous of participating in the course and fulfilling the eligibility conditions shall apply through proper channel. The participants should submit their applications **only through online** using CBP portal (<http://cbp.icar.gov.in>). After filling the online application, take a print out and get it approved by the competent authority of the organization. Upload the scanned copy of application again through CBP portal. The last date for uploading of complete application (proper channel) at CBP portal is 15-1-2024. Selected candidates will be informed prior to the start of the training program. Application will be accepted strictly on line only through CBP portal and **no hard copy correspondence is required.**

Eligibility

Applicant must be a Ph.D in Agriculture/ Molecular Biology/ Biotechnology/ Genetics/ Physiology/ Biochemistry/ Microbiology or any other related discipline working in the cadre of Scientist/ Senior Scientist/ Principal Scientist and or equivalent position in any of the ICAR Institutes/ SAUs/CAUs or equivalent Govt Organizations.

Desirable: Working knowledge of computer, internet, tissue culture and basic bioinformatics.

Important Dates

Last date for receiving application: 15.01. 2024

Intimation of selection : 22.01. 2024

Commencement of the course : 07. 02. 2024