About Institute

Keeping in view the importance of buffalo for rural economy of India, ICAR-Central Institute for Research on Buffaloes was established in February 1985 at Hisar by the Indian Council of Agricultural Research to promote and undertake research on all aspects of buffalo production with a vision to develop and propagate high yielding elite buffalo germplasm for quality milk and meat production. Over the years, it has gained prominence as the front ranking research organization on global basis. The main campus at Hisar has Murrah herd (over 500 heads) while the sub-campus, at Nabha (Punjab), has Nili-Ravi stock (over 500 heads), for undertaking research on various aspects of buffalo breeding, physiology, reproduction, nutrition and management. Research work of the institute is supported through three divisions viz, Animal Physiology and Reproduction, Animal Nutrition and Feed technology and Animal Breeding and Genetics. Activities of the Animal Physiology and Reproduction includes semen freezing, in-vitro embryo production (IVF), transgenic/gene-edited embryo production, embryonic and adult stem cell research, and embryo transfer in buffalo and all major reproductive biotechnologies including stem cell research. In 2015, CIRB became India's second institute by producing a cloned buffalo bull, named Hisar-Gaurav (HG); in 2017, the team had cloned an Assamese buffalo bull in the field, away from the institute. ICAR-CIRB, Hisar produced 10 cloned buffalo calves during 2015-2020 and this achievement of producing maximum clones is recorded in the India book of records. Division has several on-going externally funded projects, organized ICAR and DBT sponsored summer schools and short course and interactive meets.

About Training

The upcoming training program is designed to provide participants with a comprehensive understanding and practical exposure to modern genome editing techniques. It will begin with sessions on the fundamentals of CRISPR/Cas systems, genome editing tools, and the mechanisms underlying targeted gene modification. Participants will also explore transcriptome analysis, covering the process from RNA sequencing to biological interpretation. An introductory module on R programming will help trainees gain essential skills in data handling, visualization, and analysis for biological research. The program will include extensive hands-on training on guide RNA design, plasmid/RNP preparation, delivery of CRISPR components into mammalian cells or embryos, in vitro embryo culture, and validation of genome editing efficiency. Trainees will also learn methods for mutation detection, sequencing analysis, and genotyping, along with demonstrations of online tools for gRNA design, off-target prediction, and sequence analysis. Additional sessions will focus on assessing the impact of mutations on protein structure and their validation. Diversified lectures and practical sessions led by leading researchers will form an integral part of the curriculum, ensuring participants receive exposure to cutting-edge developments and real-world applications. The program will also include interactive learning components such as case studies, troubleshooting discussions, and expert lectures to enhance conceptual understanding. Animal scientists, teachers, research scholars, students and professionals who require comprehensive knowledge to address farmers' challenges will be the primary target audience and beneficiaries of this training program. By the end of the training, participants are expected to gain the necessary knowledge and skills to independently plan, design, and execute genome editing experiments.

Course Outline

Comprehensive Coverage of Genome Editing Basics: Fundamentals of CRISPR/Cas systems, genome editing tools, and mechanisms of targeted gene modification.

Exploring the Transcriptome: From RNA Sequencing to Biological Insight

Introduction to R Programming: Basics of R for data handling, visualization, and analysis in biological research.

Hands-on Experience on:

- Practical sessions on guide RNA design, plasmid/RNP preparation, and validation of genome editing efficiency
- Exposure to methods for delivery of CRISPR components into mammalian cells, embryos, or zygotes.
- In vitro embryo culture
- Training on mutation detection, sequencing analysis, and genotyping of edited cells or embryos
- Demonstrations on online tools for gRNA design, off-target prediction, and sequence analysis.

Effect of mutations on protein structure and their validation

Interactive Learning:

Case studies, troubleshooting sessions, and expert lectures from experienced genome editing researchers.

Eligibility:

Applications are invited from scientist, professors/faculty including researchers and students of SAUs and CAUs and other Universities. Basic qualification: MVSc/MSc (Life Science) or equivalent.

Note: It is mandatory for applicants to submit a soft copy of the SC caste certificate issued by the state/central government and Aadhar card/Voter Card/PAN Card.

Registration Fee:

There is no registration/course fee.

How to apply:

Interested candidates are required to submit the application in prescribed format via email to the course director at meetipunetha283@gmail.com The application must be duly approved by the competent authority

Certificate:

A certificate will be awarded to the participants on the successful completion of the course.

Financial Assistance:

The participants will be paid T.A. for to and fro journey by rail/ bus/ public transport by the shortest route as per entitlement, but restricted to A.C II train fare (on producing documentary evidence). They should produce a certificate from the parent organization to the effect that they are not being paid T.A. and D.A. for this course.

Boarding and Lodging:

Accommodation will be arranged free of cost in the institute guest house for the period of their stay during the course. Wholesome food will be provided free of cost to all the outside participants. Local participants will be provided with minimum hospitality as per ICAR rules. (Please do not bring your family members along with you. It will not possible to arrange for their accommodation at Hisar during the period.)

Mode of selection:

The selection of candidates for the Hands-on Training Programme will be based on the relevance of the candidate's research interests and institutional requirements. Priority will be given to applicants whose current research focuses on areas where genome editing technologies, such as CRISPR-Cas9. A total of 10 candidates will be selected for this training.

ALL CORRESPONDENCE SHOULD BE ADDRESSED TO:
DR. MEETI PUNETHA
SCIENTIST & COURSE DIRECTOR
TEL. 01662- 281647 (O), 9997173436 (M)

E-mail: meetipunetha283@gmail.com
For updates please log on to:
https://cirb.res.in

Note: Last Date for Application Form Submission is 30/11/ 2025

APPLICATION FORM FOR PARTICIPATION IN TRAINING COURSE

From Genome to Data Hands-on Training on Gene Editing, Transcriptomics, and Omics Analytics
Sponsored under ICAR-NPGET project for Schedule Caste
Organized at
ICAR- Central Institute for Research on Buffaloes
Hisar- 125001 (Haryana) INDIA
December 15-17, 2025

1. Name (in block letter) ....

2. Gender ....

3. Academic ....

3. Qualifications ....

4. Designation ....

5. Discipline/Field of Study ....

6. Institution/Organization ....

7. Address for Correspondence ....

9. Email: ....

10. Mobile Number ....

11. Area of Interest / Specialization ....

Declaration

I hereby declare that the information provided above is true to the best of my knowledge. I agree to abide by the rules and regulations of the training programme.

Date: _____   Signature of Applicant: _____

Recommendation of the Head of the Institute

Certified that the information provided by the applicant is correct. The applicant will be relieved to attend the training, if selected

Signature & Seal of Head of Institution

Date: _____

Note: Attached valid copy of category/caste certificate/Aadhar card/Voter Card/PAN Card