



# Training Program

on

# “CRISPR/CAS9 AND BAC BASED VIRAL GENOME EDITING”

*Sponsored under*

**ICAR-NPGET PROJECT FOR SCHEDULE CASTE**

**March 17-19, 2025**

**Patron**

**Dr. T. K. Bhattacharya**

Director

ICAR- National Research Centre on Equines

**Course Director**

**Dr. Bidhan Chandra Bera**

Principal Scientist

ICAR- National Research Centre on Equines

**Course Coordinator**

**Dr. Taruna Anand**

National Fellow

ICAR- National Research Centre on Equines

*Organized by*

CENTRE OF EXCELLENCE IN GENOME EDITING

**ICAR- National Research Centre on Equines**

Sirsa Road, Hisar, Haryana-125001

# APPLICATION FORM FOR PARTICIPATION IN TRAINING COURSE

**“CRISPR/Cas9 and BAC based Viral genome editing”**

(Sponsored under ICAR-NPGET Project for schedule caste)

Organized at

**ICAR- National Research Centre on Equines**

**Hisar, Haryana-125001, INDIA**

**March 17-19, 2025**

1. Full Name (in block letters)

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2. Designation

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3. Present employer and address

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4. Contact details of applicant

Address

.....

Email

.....

Tell / Mob No.

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5. Date of Birth

6. Sex:  Male  Female

7. Teaching/Research/Professional Expertise

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8. Educational Qualifications

Examination Passed	Subject Main	Year of Passing	Class ranks distinctions	University of Institution
Bachelor Degree				
Master Degree				
Doctoral Degree				
Other Certificates Diploma, Degree if any				

Date.....

Place.....

**Signature of Applicant**

11. Recommendation of forwarding institute :

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Signature.....

Date.....

Designation.....

Address.....

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**Note : Attached Valid Copy of Category / Caste And Aadhar / Voter Card / Pan Certificate**

## About Institute

The Indian Council of Agricultural Research (ICAR) established the National Research Centre on Equines (ICAR-NRCE) in Hisar, Haryana, to advance research on equine health and productivity. ICAR-NRCE is a leading institute equipped with state-of-the-art laboratories and facilities dedicated to improving equine health, management, and disease control. Its research activities are supported by specialized services such as an advanced research laboratory, experimental animal facility, microbial containment laboratory, and the Info-Equine Museum, which collectively enable a comprehensive approach to equine research. Additionally, the centre is complemented by the Equine Production Centre in Bikaner, Rajasthan, which focuses on equine breeding and management.

ICAR-NRCE also houses the National Centre for Veterinary Type Cultures (NCVTC), a national repository of veterinary microbes established in 2005. Operating through 15 network units across the country, the NCVTC collects and preserves veterinary microbes crucial for research and disease management.

With advanced laboratories and a team of skilled scientists, ICAR-NRCE is at the forefront of vaccine research and development. The centre conducts cutting-edge research in immunology, biotechnology, and genetic engineering, with a strong focus on designing vaccines for equine and livestock diseases. The important work of the institute includes developing vaccines for emerging infectious diseases, zoonoses, and strengthening immune responses in animals through novel vaccine platforms. Additionally, genome editing technologies such as CRISPR-Cas9 are explored to create more effective, targeted vaccines with improved safety profiles.

As part of its mission to drive innovation and knowledge exchange, the centre offers specialized training programmes. One such initiative is the National Hands-on Training Programme on Strategies in Vaccine Design Using Genome Editing Technologies, which equips participants with the skills to utilize CRISPR-Cas9 and Bacterial Artificial Chromosome (BAC)-based strategies in the development of vaccines. This training programme aims to support the researchers working on innovative solutions to combat diseases in equines, livestock, and other animals, contributing to advancements in animal health and vaccine biotechnology.



## About Course

The field of genome editing has revolutionized veterinary and agricultural research, providing precise and efficient tools for genetic modification. Among these, CRISPR-Cas9 has emerged as a powerful technology with significant applications in livestock vaccine development. This hands-on training course is designed for researchers, scientists, and professionals seeking in-depth knowledge and practical expertise in advanced genome editing techniques. Participants will explore CRISPR-Cas9 and Bacterial Artificial Chromosome (BAC)-based strategies for viral gene deletion, focusing on livestock vaccine development. The course covers key aspects such as the mechanisms of CRISPR-Cas9 and BAC technologies, guide RNA (gRNA) design and optimization using bioinformatics tools, selection of target genes for vaccine development, and the generation and delivery of CRISPR constructs. In addition to theoretical knowledge, participants will gain practical experience through hands-on sessions involving gRNA design, viral genome editing, and BAC-based approaches for modifying large DNA fragments. This training provides a valuable opportunity to apply cutting-edge genome editing techniques in a laboratory setting, equipping participants with essential skills to advance vaccine research and development.

## Course Objective

- ❖ Understand CRISPR-Cas9 and BAC technologies for viral genome editing.
- ❖ Design and optimize guide RNAs (gRNAs) using bioinformatics tools.
- ❖ Identify and modify viral genes for vaccine development.
- ❖ Construct and deliver CRISPR-Cas9 components for genome editing.
- ❖ Apply BAC-based strategies for large DNA fragment modifications.
- ❖ Gain hands-on laboratory experience in gRNA design, viral genome editing, and BAC-based modifications.

## Eligibility

Applications are invited from the schedule caste (SC) community scientist/faculty including research staff (RAs and SRFs) of ICAR/SAUs/CAUs and other universities/Institutes. Basic Qualification: M.V.Sc./ M.Sc. (Life Sciences) or equivalent.

**Note:** It is mandatory for applicants to submit a soft copy of the SC community certificate issued by the state/ central government and an Aadhar card with the filled application form for consideration

## Registration fee

There is no registration/course fee for the training programme.  
TA has to be borne by the participants.

## How to apply

Interested candidates are required to submit their application in the prescribed format via email to the course coordinator at [bcbpatent@gmail.com](mailto:bcbpatent@gmail.com). The application must be duly approved by the competent authority of the applicant's organization (such as the HOD, Dean, Director, or Vice-Chancellor).

Please note, applications sent without proper institutional approval or through unofficial channels will not be considered for screening. Ensure that all required documents and the approval from your organization are included for your application to be processed.

**The application must reach by 12 March, 2025.**

## Mode of selection

The selection of candidates for the National 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 and BAC-based strategies, can be directly applied to vaccine development. A total of 10 candidates will be selected for this training. The selection process will ensure that the chosen participants are best positioned to benefit from the programme and to apply the acquired knowledge to their research and institutional needs.

## Boarding and Lodging

Boarding and Lodging will be provided free of cost. Accommodations will be provided free of cost at the institute's accommodation facilities on a sharing basis if available. Participants are kindly requested not to bring any family members along, as the accommodation is intended for the trainees only. Further details regarding the accommodation will be shared with the selected candidates.



## Organizers:

*All correspondence should be addressed to:*

***Dr. B. C. Bera***

*Principal Scientist & Course Director*

***ICAR- National Research Centre on Equines***

*(Indian Council of Agricultural Research)*

*Hisar, Haryana-125001, INDIA*

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