



Training Report

National Training Programme on

“The Know-how of Genome Editing Technology in Animals”

Date: 10th to 17th February, 2025

Venue: ICAR-NRC on Pig, Rani, Guwahati, Assam

Course Director:	Dr. Vivek Kumar Gupta	Director, ICAR-NRC on Pig
Coordinators:	Dr. Jaya	Scientist, ICAR-NRC on Pig
	Dr. Satish Kumar	Scientist, ICAR-NRC on Pig
	Dr. Rafiqul Islam	Pr. Scientist, ICAR-NRC on Pig
	Dr. Mohan N.H.	Pr. Scientist, ICAR-NRC on Pig

An eight-day national residential training program on “**The Know-how of Genome Editing Technology in Animals**” was successfully held at ICAR-NRC on Pig, Rani, for the scheduled caste (SC) students, which comprised of science graduates and post-graduates. The training was sponsored by the ICAR-funded “Network Program on Application of Genome Editing Technology for Improvement in Livestock Health and Production (NPGET)” project “Development of myostatin knock-out pigs” under scheduled caste sub plan (SCSP) component. The training was attended by 11 students (6 male and 5 females), of various universities from different states like Assam, Tripura, West Bengal and Uttar Pradesh.

The training program commenced on 10th February 2025, with registration, participant orientation and a pre-training assessment of the students. Dr. V.K. Gupta, Director, ICAR-NRC on Pig interacted with the trainees in the inaugural session and encouraged them to take interest in the frontier areas of science like genome editing. Introductory sessions covered the application of genome editing technologies in boosting health and productivity of livestock and the basics of genome editing workflow. Hands on sessions were conducted on foundational supportive methodologies for gene editing in animals like genomic data retrieval and analysis of protein sequence for pre-assessing the edit/target site, guide RNA design, genomic cleavage detection assay, TIDE analysis, and genomics and transcriptomics data analysis through next-generation sequencing approach. Practical sessions were also conducted on DNA and RNA isolation from biological samples, agarose gel electrophoresis, histological techniques and preparation of slides for H/E staining and immunohistochemistry, different microscopic methods of semen analysis and ELISA.

Participants were also trained on the standard operating procedure of a cell culture laboratory, preparation of cell culture media and cell culture techniques like seeding, passaging by trypsinization, cell viability count, microscopic observation of different cell types, cell proliferation assay and cryopreservation of cells. Demonstrations were conducted on oocyte retrieval, grading, analysis, in vitro maturation and in vitro fertilization. Students were also exposed to various lab methodologies used for validation of genomic edits and downstream techniques like different PCR types viz. gradient PCR, real time PCR, immunolocalization of proteins, SDS-PAGE and western blotting, application of atomic absorption spectroscopy in analysing biological samples, metagenomics and its application in biological research with special reference to genome-edited animals, principles of LAMP assay and its application, different methods of genotyping and approach to analysis and food microbiology analysis

Feedback from participants indicated high satisfaction with the training program. The event concluded with a valedictory session attended by Dr. Rafiqul Islam, Principal Scientist & Nodal Officer of the Training Cell; Dr. Jaya, Co-ordinator and PI, NPGET Project, Development of myostatin knock out pigs and Dr. Satish Kumar, Scientist and Co-ordinator. During the session, participants expressed their confidence in applying the techniques they had learned, highlighting the program's positive impact on improving their research skills. Training certificates were presented to the trainees during the session. The event ended with a vote of thanks from Dr. Jaya, Scientist, who thanked the Director of the institute for his continuous guidance and support, the resource persons for their valuable contributions and the trainees from different states for their enthusiastic participation.

Some Glimpses of the Training Programme



Trainees with The Director of the Institute and Training Co-ordinators



Training coordinators addressing the trainees



Training Kit Distribution to the Trainees



Students – scientist interaction during the training sessions



Hands-on sessions of the students during the training programme



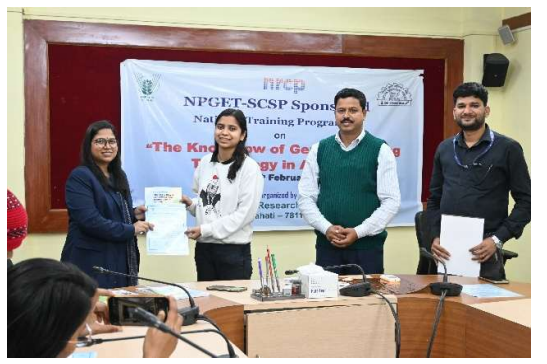
Sessions during the training programme



Practical session of the training programme



Training material distribution to the participants



Certificate distribution to the participants