Skill Development Programme at ICAR – NBAGR

Training on "Whole Genome Sequence Data Analysis"

(Hybrid mode) December 15-19, 2025

National Bureau of Animal Genetics Resources (ICAR – NBAGR) has travelled a long journey in striving for excellence in innovative research to identify the uniqueness and genetic potential of country's vastly distributed livestock and poultry genetic resources. The institute is using advanced genomic tools to understand population structure, genetic diversity and unique traits in native animal genetic resources (AnGR). Under skill development programme, HRD-Cell of the Bureau has been regularly organizing different training programmes from time to time to benefit various stakeholders. In the similar lines, a training programme on "Whole Genome Sequence Data analysis" from December 15-19, 2025 is being organized at ICAR-NBAGR, Karnal.

TRAINING MODE

The training programme will be conducted in hybrid mode. A total of 25 participants will be selected on first-come, first-serve basis for attending the training course in person. Boarding and lodging facility will be provided to the offline participants in the institute guest house on payment basis as per the ICAR guidelines. Rest of the participants may join the course in virtual mode. The online participants should have high speed internet connection. The appropriate link for the day-to-day classes and hands on training modules will be provided to them. Participants are expected to work on their laptops to gain hands-on experience.

TARGET GROUPS AND CLOSING DATE OF APPLICATION

Scientists, faculty members, young researchers and students from various organizations, universities and institutions are the target group for this training course. The applications in the enclosed format should be mailed to hrdcellnbagr@gmail.com before the last date. Selected participants will be informed through e-mail.

Last date for receipt of applications: 10 December 2025

Application Submission:

Interested candidates are requested to submit their applications as per the attached proforma

COURSE CONTENT

Day 1

» Whole Genome Sequencing (WGS): Basic concept, and application
» Overview of Linux and basic commands commonly used in WGS analysis
» Understanding WGS data format and FASTQ files
» Quality assessment of WGS raw data using FastQC or MultiQC softwares
» Trimming of adaptors using various softwares

Day 2

» Downloading of FASTQ files from public domain in Linux environment
» Downloading and indexing of reference genomes
» Mapping of WGS data to reference genome using BWA/Bowtie 2 tools
» Assessment of mapping quality with reference genome

Day 3

- » Introduction to GATK best practices pipeline
- » Conversion of SAM to BAM, Mark duplicates and base recalibration
- » Variant calling using Haplotype caller
- » Combining multiple GVCF files to single VCF file for variants
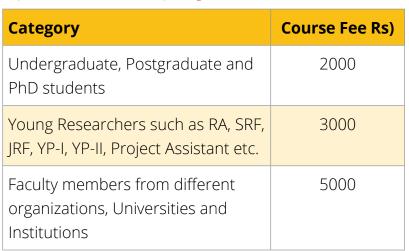- » Understanding GVCF and VCF file formats for genome analysis

Day 4

- » Variant calling: Introduction to Freebayes and mpileup based Calling of variants
- » Filtering, processing and reading of VCF data using BCFTools
- » Counting number of variants (SNPs/InDels) and splitting of VCF files
- » Analysis of heterozygosity, FST etc. using VCFTools

Day 5

- » Functional annotation and Categorization of SNPs using SnpEff and SnpSift
- » Conversion of VCF file to PLINK Format
- » Filtering and analysis using PLINK software
- » Estimating genetic diversity, PCA and Phylogeny

FEE DETAILS - PAYMENT MODE - (BANK DETAILS) - QR CODE

SCAN & PAY

Category	Course Fee Rs)
Undergraduate, Postgraduate and PhD students	2000
Young Researchers such as RA, SRF, JRF, YP-I, YP-II, Project Assistant etc.	3000
Faculty members from different organizations, Universities and Institutions	5000

(GST@18% on course fee)

- » **A/c Name :**   **ICAR-Unit-NBAGR, Karnal**
- » **A/C No :**   **10093065125**
- » **Bank and Branch:**   **State Bank of India**
- » **Branch:**   **Model Town Branch**
- » **IFSC code :**   **SBIN0001761**

Course Director

Dr NH Mohan
Director, ICAR-NBAGR, Karnal

Course Coordinators

Dr. Manishi Mukesh
Principal Scientist, Animal Biotechnology

Dr. Ravi Kumar Gandham
Principal Scientist and Head, Animal Biotechnology

Course Co-Coordinators

Dr. Mahesh Dige
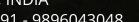Senior Scientist, Animal Genetic Resources

Dr. Amod Kumar
Senior Scientist, Animal Genetics

Contact Details

Dr. Manishi Mukesh
Principal Scientist and I/C, HRD Cell
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Skill Development Programme (Series-III) at ICAR-NBAGR, Karnal

Training on "Whole Genome Sequence Data analysis"
(Hybrid mode) December 15-19, 2025

Application form

1.   Name (Prof/Dr/Mr/Mrs/Ms) _____

2. Designation (if employed) _____ Organization _____

3. If Student

    a.   Degree_____ Year_____ Division/Dept_____

    b.   Major advisor_____ Institute _____

    c.   Current area of work _____

4. Date of birth _____

5. Address _____

_____

_____

        Mobile No. _____

        Fax No. _____

        Email _____

6. Fee payment details

        Transaction ID_____ Date_____

7. Whether attending online or offline _____

Notes :

❖ Duly filled applications must be sent through email to: hrdcellnbagr@gmail.com

❖ Last date for submission of applications: 10.12.2025

❖ Care should be taken while filling the application form. Certificate will be issued on the name that is mentioned in the application form