ICAR Sponsored Winter School

on

Omics Era: Genome to Pangenome, Proteome, and Metabolome in Animal Science

(20th January – 9th February, 2026)

Sponsored by

Agricultural Education Division
Indian Council of Agricultural Research

Organized by

Director

ICAR- National Bureau of Animal Genetic Resources
Karnal-132001 (Haryana) INDIA

Background

In today's rapidly advancing omics era, animal science is being transformed by the integration of genomics, transcriptomics, proteomics, and metabolomics. The shift from a single reference genome to pangenomes captures the full genetic diversity within species, revealing unique variants that shape productivity, adaptability, and disease resistance. By connecting the genome to the proteome and metabolome, researchers can trace how genes translate into functional proteins and metabolic pathways that define animal health and performance. These insights are critical for addressing modern challenges such as climate change, emerging diseases, and sustainable livestock production. Omics - driven approaches are enabling precision breeding, improved nutrition, and targeted interventions that enhance animal welfare and productivity. Together, these technologies mark a new era of data-driven innovation in animal science, bridging molecular discoveries with real-world applications for food security and sustainability.

About the Institute

ICAR-National Bureau of Animal Genetic Resources

NBAGR is one of the six Bureau's under the Indian Council of Agricultural Research (ICAR) established in 1984, with a mission to protect and conserve Indigenous farm Animal Genetic Resources (AnGR) for sustainable utilization and livelihood security in the country. It has the specific mandate - 1) Identification, evaluation, characterization, conservation and utilization of livestock and poultry genetic resources of the country; and 2) Coordination and capacity building in animal genetic resources management and policy issues. The Bureau has a number of activities including conducting survey to explore and characterize new potential populations, document and register such populations, prioritization and conservation of indigenous breeds, identifying unique traits and their evaluation and utilization. As an Animal Bureau of the country, it also coordinates with various national and international agencies including the UN Food & Agriculture Organization, pertaining to the AnGR. It is also a nodal agency for UN Sustainable Development Goal (SDG) 2 Indicator 2.5.1 and 2.5.2.

About the Course

The Winter School "Omics Era: Genome to Pangenome, Proteome, and Metabolome in Animal Science" is designed to provide participants with an in-depth understanding of the latest advances and analytical approaches in animal science and systems biology. With the emergence of next-generation sequencing (NGS) and multi-omics integration, animal science has entered a transformative phase where genome-wide data can be leveraged to decode complex traits, improve productivity, and enhance resilience in livestock. This course bridges fundamental genomic principles with advanced computational practices - covering genome assembly, variant calling, transcriptome analysis, interactome and regulatory network construction, whole-genome and pangenome approaches, proteomics, and metabolomics. Through comprehensive lectures and practical hands-on sessions, participants will explore a wide range of tools and pipelines, including R, Linux, RNA-seq, WGS-GATK, GWAS, genomic selection, and graph-based pangenome construction. The program emphasizes data quality control, interpretation of high-throughput sequencing outputs, and integration of multi-layer omics data to generate meaningful biological insights. Faculty experts from across the genomics and computational biology disciplines will guide participants through each stage - from data generation to biological interpretation - ensuring both conceptual clarity and

technical proficiency. In today's era of precision livestock improvement, this training equips animal scientists, researchers, and students with the skills needed to apply omics technologies to real-world challenges such as disease resistance, climate adaptability, genetic diversity conservation, and sustainable breeding programs. By the conclusion of the course, participants will be prepared to confidently analyze and interpret complex genomic datasets, enabling them to contribute effectively to the next generation of data-driven animal science and genetic resource management

Eligibility

Candidates working in the capacity of Scientists, Assistant Professors or in equivalent positions and above in the National Agriculture Research System (NARS) including ICAR Institutes /SAUs /SVUs/CAUs along with Agriculture faculty of AMU, BHU, Vishva Bharati and Nagaland University area of Agriculture, Veterinary, Animal Sciences, Fishery sciences or Community Sciences and other relevant disciplines, actively engaged in research, teaching, or extension activities are eligible to participate in the Winter School. The total number of participants will be limited to 25.

Duration of Winter School

Duration of Winter School is 21 days with effect from 20th January, 2026 to 9th February, 2026 (both days inclusive). The participants are expected to arrive at ICAR-NBAGR, Karnal, latest by the evening of 19th January and can leave after 18.00 hrs on 9th February, 2026.

Application and Registration

Download and Fill the Application Form

Download the official Winter School Application Form from the link below, fill all details and get approval from the competent authority.

https://docs.google.com/document/d/1bgR3V4BzMXZu34fwm4r3TymPlJIXEfqeobFjyoZCnAg/export?format=docx

Make the Online Payment

Pay the training/registration fee through online bank transfer method (NEFT / IMPS / UPI) or scan the Barcode. Use the following bank details:

Beneficiary Name	: I.C.A.R. Unit NBAGR, Karnal
Bank Name	: State Bank of India (SBI)
Account Number	: 10093065125
IFSC Code	: SBIN0001761
Branch	: Model Town, Karnal

Save the payment proof/receipt (screenshot or PDF format for uploading to the google form).

Fill Out the Google Form (Compulsory)

Scan the QR code or click the link -

https://docs.google.com/forms/d/e/1FAIpQLSfNZ00RKjC2IMWoYM2MLNce8iKqq7O8VUKAiMRCujGFBFUAhA/viewform and fill all the personal and professional details accurately and **upload the required documents** (Scanned copy of the approved Application Form (PDF); Payment proof/receipt (PDF or image). Review the information carefully, then submit the form.

Email Submission (Optional)

After submitting the Google Form, you may additionally email your duly approved and scanned application form to the email: nbagrwsc@gmail.com

Location and Climate

NBAGR, situated in the Karnal district of Haryana, is a well-connected and easily accessible destination by rail, and road. Participants traveling by train or bus can conveniently arrive at Karnal Railway Station or the Karnal ITI Chowk/New Bus Stand. From these points, taxis, cabs, or auto - rickshaws are readily available to reach the ICAR–National Bureau of Animal Genetics Resources (NBAGR) Campus, which is located approximately 7 km from the railway station, 2 km from the new bus stand and 500 meter from the ITI Chowk. ***Participants are advised to book their return tickets in advance to avoid last-minute inconvenience. The climate in Karnal during February is cool and pleasant. Daytime temperatures typically range between 15°C and 24°C. However, the evenings and nights can be quite chilly, with temperatures dropping to 5°C to 8°C. Participants are advised to carry adequate warm clothing***

Important dates

Last Date for receipt of application	:	**20 December, 2025**
Intimation of selection	:	**21 December, 2025**
Confirmation of participation by candidate	:	**22 December, 2025**
Commencement of training programme	:	**20 January, 2026**

Note: *Once selected, the candidates will be intimated through email to which they should promptly reply with firm acceptance and travel plan.*

Boarding, Lodging and TA

The selected participants will be provided free boarding and lodging in the institute guest house. Food expenses will be borne by the organizers as per ICAR norms. All participants will be reimbursed for the to and fro travel fare for the journey to Karnal by rail or bus via the shortest route. The payment will be made as per the entitled class of travel, but restricted to the maximum of **AC-II tier train fare/bus fare (as per actuals).** Local participants are not eligible for boarding and lodging, however, they will be provided lunch and inter-session tea. Participants are requested not to bring family members with them, as the institute has limited hostel facilities. No DA will be paid to participants.

Chief Patron

Dr. N.H. Mohan
Director, ICAR-National Bureau of Animal Genetic Resources,
Karnal -132001, Haryana INDIA

Patrons

Dr. A.K. Mishra
Head, Division of Animal Genetic Resources
ICAR-National Bureau of Animal Genetic Resources, ICAR-NBAGR, Karnal
Karnal -132001, Haryana INDIA

Dr. S.P. Dixit
Head, Division of Animal Genetics
ICAR-National Bureau of Animal Genetic Resources, ICAR-NBAGR, Karnal
Karnal -132001, Haryana INDIA

Course Director

Dr Ravi Kumar Gandham VPPS, Principal Scientist and Head - AB Division, ICAR-NBAGR, Karnal

Course Coordinators

Dr M.S. Dige, Senior Scientist, AGR Division, ICAR-NBAGR, Karnal
Dr Amod Kumar, Senior Scientist, AG Division, ICAR-NBAGR, Karnal

Course Co-Coordinators

Dr. Saket Niranjan, Principal Scientist , AG Division, ICAR-NBAGR, Karnal
Dr. Karan Veer. Singh, Principal Scientist, AB Division, ICAR-NBAGR, Karnal
Dr. Monica Saini, Senior scientist, AGR Division, ICAR-NBAGR, Karnal

Best Weekend gateways

Dharmakshetra - Kuruskshetra

APPLICATION FORM

ICAR Sponsored Winter School

Omics Era: Genome to Pangenome, Proteome, and Metabolome in Animal Science

(20th January – 9th February, 2026)

(Fill in Capital Letters)

1. Full Name:

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2. Designation: ……

3. Discipline: ……

4. Present employer and address: ……

5. Address for correspondence (along with mobile/telephone no. and email)

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6. Date of Birth: …… 7. Sex: (Male/Female): ……

8. Teaching/Research/Professional experience ……

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9. Marital Status: (Married/Unmarried)

10. Online Payment transaction ID …….. for Rs. 50/- Dated ……..

11. Mention if you have participated in any Research Seminar/Summer/Winter School/Short Course, etc. during the previous years under ICAR/ Other organizations

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12. Academic Record

Degree	Discipline	Year	University
PhD			
Masters			
Graduation			

Date:

Place: Signature of Applicant

Recommendation of the forwarding Authority

Date: Signature of Sponsoring Authority with Seal

Key steps : Download the Application - get it signed by the competent authority - upload to the google form along with receipt pdf at the respective place holders

Application Download & Google Form Link

Step: 1 Application Form Link : https://docs.google.com/document/d/1bgR3V4BzMXZu34fwm4r3TymPlJIXEfqeobFjyoZCnAg/export?format=docx

Step: 2 Google Form Link: https://docs.google.com/forms/d/e/1FAIpQLSfNZ00RKjC2IMWoYM2MLNce8iKqq7O8VUKAiMRCujGFBFUAhA/viewform

For Any Queries - Course Director - Dr. Ravi Gandham's Contact - Mob. 9458687850 | Email: nbagrwsc@gmail.com