



**A report on the Fourth Annual Meeting and National
Conference of Animal Physiologists Association (APA)
01-02 March, 2024**



The 4th Annual Convention of Animal Physiologists Association (APA) and National Conference on “*Advanced physiological strategies for sustainable livestock production and reproduction*” was organized by Division of Animal Physiology and Biochemistry, ICAR-CSWRI at Avikanagar on date 01-02 March, 2024.

The livestock sector has far reached implications for the rural poverty, rural employment, women empowerment, youth involvement, female and child nutrition, protein hunger, soil quality management and production system sustainability as well as ecosystem stability. Sustainable and efficient livestock production system is the key to meet rising global demand of livestock production besides environment conservation. Establishment of such a livestock production system depends on effective adaptation, resilience, and mitigation measures to potent threats and challenges posed by the environment. It further requires scaling up of these measures through farmer’s friendly policies. In view of the continuing research on interactions of the livestock production attributes with the environmental factors such as climate change, vulnerable agro climatic regions, unpredictable occurrence of natural disasters, and projected occurrences of natural calamities such as draught, water unavailability and declining water and feed quality, this conference is expected to provide a suitable platform for sincere deliberations on innovative and effective physiological approaches in order to deliver suitable measures for improving livestock production and farmer’s income. The conference was covered in 6 technical sessions including- Omics approaches in understanding livestock physiology, Gamete biology and upstream reproductive technologies, Climate and adaptation Physiology, Systems biology approaches for optimizing health and production, Cellular and molecular biology, Nutrigenomics for Livestock, Poultry and wildlife.

The inaugural session held on 01.03.2024 at 9.30AM. Dr. Arun Kumar, Director, ICAR-CSWRI welcomed the guests. He thanked the Chief Guest of the inaugural session and other dignitaries for gracing the occasion. The Chief Guest of the function Dr. A.K. Tiwari, Director, ICAR-CARI, Izatnagar in his address stressed upon strategies for mitigation and sustainable livestock production with the changing climate. Dr. G. Singh, President APA briefed about the



activities of the association and its mandate for the development and progress of animal physiology research and education in the nation. Dr. Vikash Chandra, Secretary, APA announced the awardees of different APA awards and Dr. S.S. Dangi, Scientist and organizing secretary APACON 2024, ICAR-CSWRI, briefed about the conference. The inaugural session ended with the vote of thanks by Co-organizing secretary, Dr. Ajit Singh Mahla.



Release of Compendium of APACON 2024



Chief Guest, Dr. A.K. Tiwari, addressing the delegates

APA felt proud privilege to felicitate two stalwarts: **Dr. J. P. Mittal**, and **Dr. J.S. Arya** with **Lifetime Achievement Award for 2022 and 2023**, respectively. **Prof. (Dr.) Sarvajeet Yadav**, and **Dr. Ninan Jacob** were felicitated with **APA Fellow for 2022 and 2023**, respectively.



APA Lifetime Achievement Award-2022 conferred to Dr. J.P. Mittal



APA Lifetime Achievement Award-2023 conferred to Dr. J.S. Arya



APA fellow- 2022 conferred to
Prof. (Dr.) Sarvajeet Yadav



APA Fellow- 2023 conferred to
Dr. Ninan Jacob

The inaugural session was followed by key note address by **Dr. Surinder S. Chauhan**, Associate Professor, The University of Melbourne, Australia was given on “*Effect of short-term heat stress on meat quality*”

Session-I “Omics Approaches in Understanding Livestock Physiology” was chaired by **Dr. Ravi Kumar Gandham** and Co-chaired by **Dr. Vijay Kumar**. In this session two lead papers and 6 oral presentations were presented. The key recommendations in this session are as follows:



- Well-designed, controlled environmental studies on the impact of high ambient temperatures are required for future research to have more effective heat stress mitigation strategies.
- In pigs, the transcriptomic approach can be used to selectively manipulate the signal molecules involved in multiple ovulations.
- Milk somatic cell proteomic profiling has important implication in utilizing the protein markers for diagnosis of sub-clinical mastitis in cows.
- GDF9 regulating fecundity and prolificacy can be used for selecting does for identifying specific signal transduction mechanism governing the prolific and non-prolific goats.



Session-II “*Gamete biology and upstream reproductive technologies*” was chaired by **Dr. Sarvajeet Yadav** and Co-chaired by **Dr. Vikrant Singh Chauhan**. In this session two lead papers and 6 oral presentations were presented. The key recommendations in this session are as follows:



- Embryo transfer Technology can be used in horses for faster propagation of elite germplasm.
- Sperm ion channels may be targeted for the understanding of fertility competence.
- Astaxanthin supplementation mitigates heat-stressed goats and further research is needed to elucidate the underlying mechanisms and pathways involved in these effects.
- Supplementation of 0.1 mg/mL Zn nanoparticles in goat freezing extender improved post thaw semen quality.
- Fecal progesterone metabolites positively correlate with serum progesterone level. Thus, can be used for diagnosing early pregnancy in ewes.
- Feeding dried ethanol extract of Moringa leaves @ 160mg/kg body weight reduces total sperm abnormality in prepubertal rams.

Session-III “*Climate and Adaptation Physiology*” was chaired by **Dr. Gyanendra Singh** and Co-chaired by **Dr. Brijesh Yadav**. In this session two lead papers and 9 oral presentations were presented. The key recommendations in this session are as follows:



- For sustaining livestock production modification of shelter, nutrition and selection of adapted breeds are essential.
- More studies are required regarding host-microbiome interaction during heat stress in ruminants.
- Geothermal system can efficiently bring temperature of animal shed near comfortable and improve growth performance in growing buffaloes.

Session-IV “*Systems biology approaches for optimizing health and production*” was chaired by **Dr. P.S.P. Gupta** and Co-chaired by **Dr. S.P. Singh**. In this session three lead papers and 4 oral presentations were presented. The key recommendations in this session are as follows:



- In-utero heat stress may lead to altered physiological indices in calves. Addressing late gestational heat stress is crucial for the well-being and productivity of pregnant dams and future performance of calves.
- A fresh rabbit amniotic membrane can be used as bioscaffold effectively for subcutaneous wound healing.
- Biodegradable osteomimetic nanofibrous scaffold can promote bone tissue infiltration and osteogenesis.
- Repeated injections of trace minerals and multivitamins on 30th, 15th and 7th day before and after expected calving day in dairy cows enhance immune cell functions, reduce oxidative stress and regulate inflammatory response in cows and their calves.



Session-V “Cellular and Molecular Biology” was chaired by **Dr. Raghvendra Singh** and Co-chaired by **Dr. Rakesh Kumar Singh**. In this session three lead papers and 4 oral presentations were presented. The key recommendations in this session are as follows:

- The Patch clamp method is a promising tool for studying the ion channel function in sperm cells for studying sperm biology.
- Gene editing in livestock has the potential to revolutionize agriculture by creating healthier, more efficient and environmentally sustainable livestock breeds.
- Cellular senescence and the understanding of molecular clock of aging has usefulness in animal physiology.
- Cellular adaptation can be estimated by expression dynamics studies of HSP90 gene on goats.
- Integrated analysis of lncRNA and mRNAs gave an insight to the regulatory pathways during follicular to luteal transition in pigs.





Session-VI “Nutrigenomics for Livestock, Poultry and Wildlife” was chaired by **Dr. Anand Laxmi** and Co-chaired by **Dr. Rokade Jaydip Jaywant**. In this session three lead papers and 6 oral presentations were presented. The key recommendations in this session are as follows:



- Lessening the time gap between the hatch and first exposure to feed in chick life is essential for the development of intestinal tract and resistance to any disease challenges in later life.
- Supplementation of 1% peppermint powder in diet of grower birds improves the production performance, antioxidant functions and immunity response during extreme summer under Himalayan ecosystem.
- There is a scope for increasing egg production at farm level in native breeds by supplementing trace minerals like selenium (Se enriched yeast) especially during early laying period.

Apart from above technical sessions Young Scientist Award Session and Mid-Career Award Session were also organized.

Young Scientist Award Session was chaired by **Dr. Yashpal** and Co-chaired by **Dr. S.S. Dangli**. In this session 09 participants contested for the award.

Mid-Career Award Session was chaired by **Dr. Ninan Jacob** and Co-chaired by **Dr. Vikash Chandra**. In this session 04 participants contested for the award.

During the conference two poster sessions were also held. **Poster Session-I** was chaired by **Dr. Srikant Kulkarni** and Co-chaired by **Dr. R.A. Legha**. **Poster Session-II** was chaired by **Dr. G.P. Kalmath** and Co-chaired by **Dr. K.B. Bahiram**.





The two-day 4th Annual Convention of Animal Physiologists Association (APA) and National Conference concluded with plenary session cum valedictory ceremony held on the evening of 2nd March, 2024. **Dr. A. Sahoo, Director, ICAR-NRCC** was the Chief Guest of the programme. **Dr. Gyanendra Singh**, President APA, **Dr. Vikash Chandra**, General Secretary, APA, **Dr. Arun Kumar**, Director, ICAR-CSWRI and **Dr. S.S. Dangi**, Organizing Secretary APACON 2024 graced the occasion on the stage.

Dr. Arun Kumar welcomed the Chief Guest and other dignitaries followed by his address. The brief report of the conference was presented by the organizing secretary, Dr. S.S. Dangi. The winners of oral and poster presentations were awarded certificate by the chief guest. In his address to the delegates, **Dr. A. Sahoo** congratulated all the awardees and making the conference a successful one. He stressed on the unity of all the Animal Physiologists in India. The session concluded with vote of thanks by **Dr. Ajit Singh Mahla**.

Awardees of APACON 2024

S.No.	Name of the Award	Name of awardees
1.	Life- time Achievement Award- 2022	Dr. J. P. Mittal
2.	APA Fellow- 2022	Dr. Sarvajeet Yadav
3.	APA Mid Career Award- 2022	Dr. Dilip Kumar Swain
4.	APA Yung Scientist Award- 2022	Dr. Jaya
5.	APA Best PhD Thesis Award- 2022	Dr. Sayed Nabil Abedin
6.	APA Best MVSc Thesis Award- 2022	Dr. Priyanka M. Kittur Dr. Anamika Pandey
7.	APA Best Research Paper Award- 2022	Dr. Dilip Kumar Swain

S.No.	Name of the Award	Name of awardees
1.	Life-time Achievement Award- 2023	Dr. Jhamman Singh Arya
2.	APA Fellow- 2023	Dr. Ninan Jacob
3.	APA Mid Career Award- 2023	Dr. Shiva Pratap Singh
4.	APA Yung Scientist Award- 2023	Dr. Lakshmi Devi H.
5.	APA Best PhD Thesis Award- 2023	Dr. Archita Singh
6.	APA Best MVSc Thesis Award- 2023	Dr. Rony S. Emmanuel Dr. Afreed Muhammed N. V.
7.	APA Best Research Paper Award- 2023	Dr. Somagond Y.M.



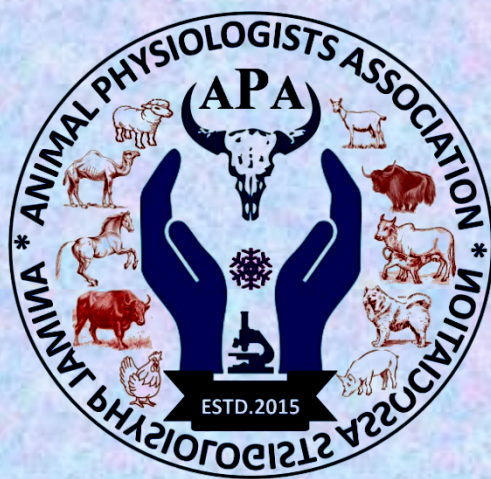
APA Best oral presentation Awards

S.No.	Name of the session	Name of awardees
1.	Omics approaches in understanding livestock physiology	Dr. R.K.Paul Dr. Anjali
2.	Gamete biology and upstream reproductive technologies	Dr. Anamika Pandey Dr. G.P. Kalmath
3.	Climate and adaptation physiology	Dr. Vijay Kumar Dr. Afreed Muhammad N.V.
4.	System biology approaches for optimizing health & production	Dr. Rony S. Emmanuel
5.	Cellular & Molecular Biology	Dr. Neha Rajawat
6.	Nutrigenomics for livestock, poultry and wildlife	Dr. Ajit Singh Mahla

APA Best poster presentation Awards

S.No.	Name of the session	Name of awardees
1.	Session I	Dr. Gagan Chawla Dr. Priyanka Kumari Dr. Mahesh Gupta Dr. Shankar Lal
2.	Session II	Dr. V. Ralte Dr. Sweta Sharma





With Best Compliments