Dr. Ravi Ranjan

Senior Scientist

Division: Animal Physiology and Reproduction Division

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1. **Academic Qualifications:** PhD, Veterinary Physiology, ICAR-Indian Veterinary Research Institute, Izatnagar, Bareilly, U.P.
2. **Current Research Area:** Reproductive Biotechnology
3. **Major Research Accomplishments:**
    - Refinement and standardization of goat semen and embryo freezing protocol and Artificial Insemination and produced number of kids at this Institute. Overall, a success rate of 37.57% was recorded on the basis of actual kidding rate in different breed of goats maintained at this Institute under Semi-Intensive Management System in 2016-17.
    - Transfer of Technology "Goat Semen Diluent Composition (TCFEYG) and Cryopreservation Protocol" to Aegipan Animal Biocare Pvt. Ltd. Hooghly, W.B. India.
    - Refinement and standardization of surgical Embryo Transfer Technology in goats and produced number of IVF and ET kids.
    - Standardization of Hypo Osmotic Swelling Test and development of Dual staining test for viability and acrosomal integrity in same glass slide.
    - Standardization of different types of additives, membrane stabilizer, chelating agents, antioxidants etc. in goat semen dilutor for optimum post thaw quality.
    - Optimization of diploid parthenogenetic embryo production.
    - Developmental potency of diploid parthenogenetic embryos after transfer in caprine and got 34 days parthenogenetic fetus and confirmed by different molecular and biotechnical tools (sexing by PCR, Microsatellite Analysis).
    - Reprogramming of fetal cells by avian "Extract Egg" for generation of pluripotent stem cell like cells and parthenogenetic embryos in caprine.
    - Developed different culture media on multiplication of mesenchymal stem cells in caprine.

4. Awards:

- S C SUD Memorial Best Doctoral Thesis Award. Society of Animal Physiologist of India (SAPI). 2015.
- Best oral presentation award at ISSGPU-2017, National seminar on Small Ruminants: National scope on up scaling production to product value addition and their safety at ICAR-CIRG Makhdoom from 9-10th November, 2017.
- Awarded a certificate of merit for the best paper presentation as co-author in National seminar on Small Ruminants: National scope on up scaling production to product value addition and their safety at ICAR-CIRG, Makhdoom from 9-10th November, 2017.
- Qualified ICAR JRF and UGC/CSIR NET
- Different Hindi Awards by ICAR-CIRG on Hindi Pakhwada
- Advisory member and RDC member of Master and Ph.D. scholar Thesis Programme. Ganeshi Lal Agrawal (GLA) University, Mathura, U.P.
- External Examiner BR Ambedkar University, Agra, U.P.
- Question paper setter Sardar Ballav University of Agriculture and Technology, Meerut, U.P.

5. Training:

- Course co- coordinator of International training programme to Mongolian scientists under ITEC programme from 26-11-2007 to 25-01-2008. Ministry of External Affairs, Government of India
- Course co- coordinator of Summer School On "Improving Reproduction Rate through Assisted Reproductive and Stem cell Technologies for enhancing production in Small Ruminants" from 06-26 July, 2017 sponsored by ICAR, New .Delhi
- Organized a Training Programme on "Advances in Goat Rearing" sponsored by JEEVIKA, Bihar from 19-01-2016 to 25-01-2016.
- Coordinator of Hands on Training on "Semen Freezing and Artificial Insemination in Goats" from 10-16 April, 2018.
- Coordinator of Hands on Training on "Semen Freezing and Artificial Insemination in Goats" from 10-16 July, 2018.
- Coordinator of Workshop on frozen semen technology, IMV Co. France & ICAR-CIRG, Mathura, U.P. 2009.

- Organized a Brain Storming meeting on "Action plan for implementation of Artificial Insemination in goat in India" was organized at ICAR-Central Institute for Research on Goats, Makhdoom, PO Farah-281122 Mathura (UP) under the chairmanship of Prof. M. L. Madan on 3rd May, 2017.
- Coordinator of National Training Programme for "Scientific Goat Farming" organized by Institute.
- Coordinator of "Farmer First" Training Programme organized by Institute in collaboration with IVRI, Bareilly

6. Patents, technology, methodology, genetic stock, variety etc.

- Transfer of Technology "Goat Semen Diluent Composition (TCFEYG) and Cryopreservation Protocol" to Aegipan Animal Biocare Pvt. Ltd. Hooghly, W.B. India on 01-06-2018.
- Refinement and standardization of goat semen and embryo freezing protocol and Artificial Insemination in goats and produced number of kids at this Institute.
- Standardization of Hypo Osmotic Swelling Test and development of Dual staining test for viability and acrosomal integrity.
- Standardization of different types of additives, membrane stabilizer, chelating agents, antioxidants etc. in goat semen dilutor for optimum post thaw quality.

7. Publications: Best 20 publications only

1. **Ranjan R,** Priyadharsini R, Goel A K, Singh B, Kumar S, Kharche SD and Jindal SK. (2017). Effect of Membrane Stabilizer on the Freezability of Buck Semen. Indian Journal of Animal Sciences 87 (4): 435-36.
2. **Ranjan R**, Singh R, Kumar K, Sarkar M, Das BC and Bag S. (2016). Insulin like growth factor 2 (Igf2) and its receptor gene (Igf2r) showed opposite expression in diploid parthenogenetic embryos in Capra hircus. Indian Journal of Animal Sciences 86 (01): 45–48.
3. **Ranjan R**, Goel AK, Ramachandran N, Kharche SD and Jindal SK. (2015). Effect of egg yolk levels and equilibration periods on freezability of Jamunapari buck semen. The Indian Journal of Small Ruminants 21(1): 32-36.
4. **Ranjan R**, Singh R, Kumar K, Sarkar M, Das BC and Bag S. (2015). Expression profile of H19 and Peg1 among diploid parthenogenetic, female sexed IVF and in vivo derived

embryos during pre-implantation development in goat. Indian Journal of Animal Sciences 85 (11): 1199–1201.

5. **Ranjan R**, Goel AK, Ramachandran N, Kharche SD Gangwar C and Jindal SK. (2014). Comparison between normal and dual staining technique for evaluating acrosome status and viability in frozen thawed buck spermatozoa. The Indian Journal of Small Ruminants 20(2): 50-53.
6. **Ranjan R**, Singh R, Kumar K, Sarkar M, Das BC and Bag S. (2014). Necdin and neuronatin genes expression among diploid parthenogenetic, IVF and in vivo derived female sexed embryos during preimplantation development in goat. Indian Journal of Animal Sciences 84(8): 842–845.
7. **R Ranjan,** Das BC and Bag S. (2014). Effect of cytochalasin B during oocyte maturation for parthenogenetic embryos generation in goat Indian Journal of Animal Sciences 84 (3): 271–274.
8. **Ranjan R**. Singh RK, Yasotha T, Kumar M, Puri G, Kumar K, Singh R, Bhure S, Malakar D, Bhanja SK, Sarkar M, Das BC and Bag S. (2013). Effect of Actin Polymerization Inhibitor During Oocyte Maturation on Parthenogenetic Embryo Development and Ploidy in Capra Hircus. Biochem Genet. 51 (11-12), 944-953.
9. **Ranjan R**, Singh RK, Yasotha T, Kumar M, Kumar K, Singh R, Houque M, Mourya VP, Singh G, Sarkar M, Das BC and Bag S. (2013). Survivability of parthenogenetic embryos following in vivo transfer in naturally synchronized Capra Hircus. In Vitro Cell.Dev.Biol.—Animal (2013) 49:486–491. DOI 10.1007/s11626-013-9643-z.
10. **Ranjan R**, Das BC and Bag. (2013). Molecular sexing of IVF and in vivo derived embryonic cell colony in goat. Indian Journal of Animal Sciences 83 (10): 1039–1041.
11. **Ranjan R**, Ramachandran N, Jindal SK and Sinha NK. (2009). Hypo osmotic swelling test in frozen thawed goat spermatozoa. Indian Journal of Animal Science. 79 (10):1022-1023.
12. **Ranjan R**, Ramachandran N, Jindal SK, Sinha NK, Goel AK,. Kharche SD and Sikarwar AKS. (2009). Effect of egg yolk levels on keeping quality of Marawari buck semen at refrigeration temperature. Indian Journal of Animal Science. 79 (7):10-13.

13. **Ranjan R**, Singh SV and Upadhyay RC. (2007). Status of antioxidant enzymes in different body organs of male buffaloes. Italian Journal of Animal Science. 6(2): 551-554.
14. Kumar M, Yasotha T, Singh RK, Singh R, Kumar K, **Ranjan R**, Das, BC, Chetan DM, Sarkar M and Bag S. (2013). Generation of transgenic mesenchymal stem cell expressing green florosencent protein as reporter gene using no viral vector in caprine. Indian Journal of Experimental Biology 51: 502-509.
15. Singh R, Kumar K, **Ranjan R**, Kumar M, Yasotha T, Singh RK,. Das BC, Sarkar M and Bag S. (2013). Comparative expression analysis of embryonic development related gene at different stages of parthenogenetic and in vitro fertilized embryos in caprine. Zygote 11, DOI 10.1017/S096719941300049X.
16. Kharche SD, Goel AK, Jindal SK, **Ranjan R**, Rout PK, Agarwal SK, Goel P, Saraswat S, Vijh RK, Malakar D, Bag S, Sarkhel B and Bhanja SK. (2014). Development of parthenote following in vivo transfer of embryos in Capra hircus. In Vitro Cellular & Developmental Biology - Animal 50 (10): 893-898.
17. Pankaj R S, Satisha KB, Venkatesh V, Gupta R, Kumar K, Das BC, Majumdar AC, Bag S and **Ranjan R***. (2012) Effect of different activation protocol on generation of parthenogenetic embryos in caprine. Indian Journal of Animal Sciences 82 (11): 1323–1326.
18. Ramachandran N, Singh NP, **Ranjan R*,** Singh MK and Shinde AK. (2017). Assessment of rearing systems and seasons on nutrient intake and semen freezability in Jamunapari bucks. Indian Journal of Animal Sciences 86 (11): 1259–1262
19. Gangwar C, Kharche SD, **Ranjan R**, Kumar S, Goel AK and Jindal SK. (2015). Effect of vitamin C supplementation on freezability of Barbari buck semen. Small Ruminant Research 129: 104–107.
20. Kumar A, Kumar K, Singh R, Puri G, **Ranjan R**, Yasotha T, Singh RK, Sarkar M and Bag S. (2012). Effect of mitotic inducers and retinoic acid blocker on expression of pluripotent genes in ES cells derived from early stage in vitro-produced embryos in buffalo. In Vitro Cell.Dev.Biol.—Animal 48: 625–632