

Dr. (Mrs.) Nirmal Sangwan	
	<p>Professor Department of Veterinary Physiology and Biochemistry, Lala Lajpat Rai University of Veterinary and Animal Sciences, Hisar-125004 (Haryana) India.</p>
	<p>Professional brief: Professor Nirmal Sangwan has been Director, Human Resource Management at Lala Lajpat Rai University of Veterinary and Animal Sciences, Hisar from 1stApril, 2018 to 31st March, 2022. She has also been acting as Nodal Officer, ICAR; Nodal Officer, National Academic Depository; Nodal Officer Indian Agricultural Universities Association; In charge, Women Cell of the University, Chairperson of Intellectual Property Rights and Commercialisation Core Group; Chairperson of the Post Clearance Committee of University; Chairperson of memorandum of understanding Committee and facilitated signing of many National and International MoUs; Chairperson of Committee for forwarding of applications of teachers for attending trainings, conferences, symposium etc. within India and abroad; Member of BSMAC (for Restructuring of Master’s and Ph.D. Curriculum, Syllabi and Academic Regulations for the disciplines of Agricultural Sciences in India by ICAR; Chief Editor of Annual Reports of University during holding the post of Director, Human Resource Management. She has been Head of the Department of Veterinary Physiology and Biochemistry, LUVAS, Hisar from April 8, 2013 to April 7, 2017; member of Board of Studies, Academic Council; Secretary, Institutional Animal Ethics Committee, Member of Editorial Board of Haryana Veterinarian Journal, Member of Test Development Committee for AIEEA-PG conducted by NTA, India; Expert for selections/promotions at ASRB, New Delhi; General Secretary of Association of One Health Biochemists , etc.</p> <p>Recipient of Association of Commonwealth Universities Bursary Award, 2019, London, UK for Human Resource Development activities; “Vimal Shrinivas Kshirsagar Memorial Best Lady Veterinarian Award- 2020”; Post-Doc Fellowship during 1995 at Moredun Research Institute, Edinburgh, U.K.; Adjudged Best NSS Volunteer of the Haryana Agricultural University, Hisar for outstanding social work done in 1981; HAU Merit Scholarship during M.V.Sc., Ph.D.; Adjudged Best Woman Athlete of Dayanand College, Hisar in 1980 and was awarded “College</p>

	<p>Colour ; Captain HAU Hockey Team in 1984 for state and inter-university tournaments; Best Hockey player of the College thrice; Elected as Secretary-cum-Treasurer and Councillor of the College Students' Union, 1989 and many more.</p> <p>Since obtaining her Ph. D. degree she has had rich and varied experience in academics being actively engaged in teaching, training and research. Published more than 50 research papers in national and international journals of repute, published more than 20 Manuals, Reports, Compendiums etc., presented papers (about 50) and Chaired sessions in National and International Conferences and has undertaken UGC, DBT and ICAR Research Projects. Her research interests are on studying inter-relationships between clinical nutrition and parasitic diseases as well as Structural and Functional Proteomics. Organised National Conference of SVBBI, 2018 and various types of trainings, workshops, courses etc. and has also guided many M.V.Sc. and Ph.D. students.</p>
Educational Qualifications	<p>1995 Post-Doc Fellowship at Moredun Research Institute, Edinburgh, UK.</p> <p>1993 Ph.D., HAU, Hisar</p> <p>1987 M.V.Sc. , HAU, Hisar</p> <p>1984 B.V.Sc. & A.H. , HAU, Hisar</p>
Employment Details	<p>Professor (Veterinary Biochemistry), LUVAS, Hisar April 1, 2022 to Continue</p> <p>Director, Human Resource Management from 1st April, 2018 to 31st March, 2022</p> <p>Professor (Veterinary Biochemistry), LUVAS, Hisar April 8, 2017 to March 31, 2018</p> <p>Professor and Head (Vety. Physiology & Biochemistry),LUVAS, Hisar April 9, 2013 to April 7, 2017</p> <p>Professor (Vety. Biochemistry), CCS HAU, Hisar and LUVAS Aug. 29, 2007 – to April 8, 2013</p> <p>Associate Professor (Vety.Biochemistry), CCS HAU, Hisar; July 3, 2002 – August 28, 2007</p> <p>Scientist (Vety.Biochemistry), CCS HAU, Hisar; Jan.4, 2000 – July 2, 2002</p> <p>Scientist (Animal Biochemistry), HAU Regional Research Station Karnal; Aug. 29, 1999 –Jan.3, 2000</p> <p>Assistant Scientist (Animal Biochemistry, Sr.scale), HAU Regional Research Station, Karnal; Aug.29, 1995- Aug. 28, 1999</p> <p>Assistant Scientist (Animal Biochemistry), HAU Regional Research Station, Karnal; Aug.29, 1990 to Aug.28, 1995</p> <p>Assistant Professor (Veterinary Physiology), Deptt.of Veterinary Physiology PAU, Ludhiana, Sept.1987 to Feb. 1988</p>
Research Interests	<p>Inter-relationships between clinical nutrition and parasitic diseases</p>

	<p>Identification and characterization of novel peptides of clinical importance from salivary glands of <i>Hyalomma ticks</i>' Structural and functional proteomics</p>
<p>Membership of scientific societies</p>	<ol style="list-style-type: none"> i. Life member of the Indian Association of Lady Veterinarians since 1988. ii. Life member of the Society of Animal Physiologists of India since 1992. iii. Life Member of CCS HAU Alumni Association iv. Member of Haryana Veterinary Council since 1984. v. Life member of Indian Peptide Society since 2008. vi. Life member of Society for Veterinary Sciences and Biotechnology since 2013. vii. Life member of Society of Veterinary Biochemistry and Biotechnology since 2015. viii. Life member of Animal Physiologists Association since 2018. ix. Life member of Indian Association for the Advancement of Veterinary Research (IAVVR) since 05.02.2019. x. Life Member of Society of One Health Biochemists since July, 2021.
<p>Selected Publications</p>	<p>Sangwan, N., Suttle, N.F. and Knox, D.P. (2022). Effects of chronic exposure to molybdate and tetrathiomolybdate via drinking water in immature rats acutely infected with <i>Nippostrongylus brasiliensis</i>: 1. Health of host and outcome of infection. <i>Journal of Comparative Pathology</i>. Accepted. [EMID: 61e86e7682dae95e]. (NAAS rating 7.31)</p> <p>Suttle, N.F., Sangwan, N. and Knox, D.P. (2022). Effects of molybdate and tetrathiomolybdate supplementation of drinking water in immature rats acutely infected with <i>Nippostrongylus brasiliensis</i>: 2. Copper status and accretion of molybdenum in tissues. <i>Journal of Comparative Pathology</i>. Accepted. [EMID: 151d38fb1aac7ac4]. (NAAS rating 7.31)</p> <p>Ghosh, M., Sangwan, N., Chakravarti, S. Banerjee, S., Ghosh, A., Kumar R. and Sangwan, A. K. (2019). Molecular Characterization and Immunogenicity Analysis of 4D8 Protective Antigen of <i>Hyalomma anatolicum</i> Ticks Collected from Western India. <i>International Journal of Peptide Research and Therapeutics</i>. 25: 1291–1308. https://doi.org/10.1007/s10989-018-9776-8 (NAAS rating 7.93)</p> <p>Gaur R.S., Sangwan, AK, Sangwan, N., Ghosh, M. and Kumar, S. (2017). Comparative study of esterases in deltamethrin and diazinon resistant <i>Rhipicephalus microplus</i> and <i>Hyalomma anatolicum</i> ticks collected from the Trans-Gangetic plains of India. <i>Experimental and Applied Acarology</i>. 73(1):115-27. (NAAS rating 7.81)</p>

Sangwan, N., Sangwan, A. K., Paliwal, N., and Ghosh, M. (2013, May). Antithrombotic and fibrinolytic peptides in salivary glands of *Hyalomma a. anatolicum* (Acari: ixodidac) ticks. In *Biopolymers* (Vol. 100, No. 3, pp. 258-259). 111 RIVER ST, HOBOKEN 07030-5774, NJ USA: WILEY-BLACKWELL. (NAAS rating 8.51)

Sangwan, N., Chaudhri, S.S., Rao, A.R., Sangwan, A.K. and Gupta, R.P. (1993). Folacin and cyanocobalamin in relation to natural *Trypanosoma evansi* infection in buffaloes. *Trop. Anim. Hlth. Prod.* **25**: 79-84. (NAAS rating 7.56)

Sangwan, N., Chaudhary, S.S., Sangwan, A.K. and Gupta, R.P. (1993). Effects of acute fascioliosis on trace elements in sheep. *Indian J. Anim. Sci.*, **63**: 731-732. (NAAS Rating 6.32)

Sangwan, N. and Sangwan, A.K. (1998). *In vitro* effects of leaf extracts of *Melia azedarach* on mortality of *Haemonchus contortus*. *Indian J. Anim. Res.* **32(1)**: 70-72. (NAAS Rating 6.44)

Sangwan, N. and Sangwan, A.K. (1999). Thiamin, riboflavin and ascorbic acid in relation to tropical *Theileriosis* in cattle. *Indian J. Anim. Sci.* **69(5)**: 316-317. (NAAS Rating 6.32)

Sangwan, N., Sangwan, A.K., Singh, S. and Agarwal, V.K.(2002). Cortisol and thyroid hormones in relation to bovine tropical *Theileriosis*. *Indian J. Anim.Sci.* **72(12)**: 1098-99. (NAAS Rating 6.32)

I. Publications: For Details see Annexure - 1

- A. Research papers: **53**
- B. Full papers in conference proceedings: **6**
- C. Author/Co-author of Veterinary Biochemistry Manuals: **8**
- D. Souvenir-cum-Book of Abstracts/Annual Reports/Compendiums/Ranking Reports: **24**
- E. Lead papers/Invited Lectures: **15**
- F. Chapters/ papers in Manuals/ Compendia: **4**
- G. Popular Articles: **9**
- H. Abstracts in International Conferences: **5**
- I. Papers/ Abstracts in National Conferences: **62**
- J. Research cited in Books: **1**
- K. mRNA sequences of ticks in International Gene Bank (www.ncbi.nlm.nih.gov) database: **3**

II. Awards/ Fellowships/Recognitions received:

- recipient of **ASSOCIATION OF COMMONWEALTH UNIVERSITIES BURSARY AWARD, 2019, LONDON, UK** for Human Resource Development activities.
- Awarded “**Vimal Shrinivas Kshirsagar Memorial Best Lady Veterinarian Award- 2020**” in 20th Indian Veterinary Congress and XXVII Annual Conference of IAAVR held on 21-22nd February, 2020 at Madras Veterinary College, Chennai.
- Awarded **Post-Doc Fellowship** during 1995 at Moredun Research Institute, **Edinburgh, U.K.**
- **Adjudged Best NSS Volunteer of the Haryana Agricultural University, Hisar** for **outstanding social work** done in 1981.
- **HAU Merit Scholarship** during Ph.D.
- **HAU Merit Scholarship** during MVSc.
- **State Sports Scholarship** during 1980-1984.
- Adjudged **Best Woman Athlete** of Dayanand College, Hisar in 1980 and was awarded “**College Colour**”.
- **Captain HAU Hockey Team in 1984 for State and Interuniversity tournaments.**
- **Best Hockey player of the College thrice, 1982, 1983 and 1984.**
- **Represented Haryana in 39th National Women’s Hockey Championship in 1984 at Bangalore.**
- Represented **HAU in All India Inter-Varsity Hockey Championships four times.**
- **Best Folk Dancer of the College in 1983.**
- **Member of Executive Committee of the HAU Yoga Club for the year 1983.**
- **Executive Member of HAU Blue Cross Society in 1983.**
- **Nominated Class Representative in the Literary and Cultural Society of the College of Veterinary Sciences for the year 1984.**
- Elected as **Secretary-cum-Treasurer and Councillor of the College Students’ Union, 1989.**
- **Executive member** of Veterinary College Teachers Association **twice.**
- **Certificate of Honour** in recognition of contribution made as **Principal Investigator of externally funded project (UGC)** during the years 2011-2014.
- Working as an **expert for selections/promotions at ASRB, New Delhi, India.**

- **MEMBER OF BSMAC** (Broad Subject Matter Area Committee for Restructuring of Masters and Ph.D. Curriculum, Syllabi and Academic Regulations for the disciplines of Agricultural Sciences in India”) by ICAR, India and **Convened** second meeting of BSMAC at Lala Lajpat Rai University of Veterinary & Animal Sciences on 28th and 29th December, 2018.
- **Felicited** by the organizers of **Society of Veterinary Biochemists and Biotechnologists of India (SVBBI)** for my **outstanding contribution** in the field of Biochemistry, Biotechnology and allied subjects and involvement in society activities during Annual Convention and National Symposium of Society of Veterinary Biochemists and Biotechnologists of India, Bhubaneswar, March 11-12, 2016.
- Nominated **Zonal secretary** of the Society of Veterinary Biochemists and Biotechnologists of India (SVVBI) at Bhubaneswar in 2016.
- Nominated **Advisor to Editorial Board** for forthcoming Journal of Society of Veterinary Biochemists and Biotechnologists of India (SVVBI) at Bhubaneswar in 2016.
- **Nominated to participate** in the discussions held by **Education Committee of the Veterinary Council of India** regarding under graduate courses and proposed changes towards annual system of education held on 10th – 11th April, 2015 at College of Veterinary Science and Animal Husbandry, Nanaji Deshmukh Pashu Chikitsa Vigyan Vishwavidyalaya, Indore Mhow, M.P.
- **Member of Editorial Board of Haryana Veterinarian** Journal from 01.01.2014 to 31.12.2015.
- Appointed as **inspector** to inspect the physical facilities available at college of Veterinary and Animal Science, Navania, Vallabh Nagar, Udaipur under Rajasthan University of Veterinary and Animal Sciences, Bikaner from July 29-31, 2015 as per the provisions of section 19 of the Indian Veterinary Council Act 1984, and VCI (Inspector and Visitors) Regulations, 1991.
- Acted as **Incharge B.V.Sc. and A.H. first Year** for two years from July, 2013 to July, 2015.
- Acted as **Chairman of the Committee** constituted by the Worthy Vice-Chancellor, submitted recommendations on the “**Road-map for raising the status of Lala Lajpat Rai University of Veterinary and Animal Sciences, Hisar as a State University into the Central University of Livestock, Education and Research**”.
- **Nominated** as Member of **Test Development Committee for AIEEA-PG-2019** by National Testing Agency, India.
- Appointed as an expert for preparation of question papers for **Junior Research Fellow, ICAR examinations** many times.
- Attended **selection Committee Meetings** for faculty selections many times at ASRB, New Delhi, Meerut, Palampur, Mathura, etc.
- Worked as **Secretary, Institutional Animal Ethics Committee** from Feb. 2007 to Feb. 2010.
- **Worked as Nodal Officer, DVL** from July, 2013 to April, 2017.

- **Member** of the Committee to re-look into the **rules and regulations** and other related matters with respect to all the Diploma courses being run at LUVAS.
- **Invited to present a lead paper on “Metabolomic Approaches in Animal Health and Production”** in the session Livestock health and production in XXIII ANNUAL CONFERENCE OF SOCIETY OF ANIMAL PHYSIOLOGISTS OF INDIA held at Central Institute for Research on Buffaloes Hisar-125001 (Haryana) from 27-28 November, 2014.
- **Chaired the session on “National Veterinary Physiology Quiz Madan Trophy”** for EDU-EXCEL during the SAPI conference, held at CIRB, Hisar.
- **Chaired a session** in Annual Convention and National Symposium on, **“Use of Advanced Technology of Biochemistry and Biotechnology in Livestock Health, Production and Reproduction”**, of Society of Veterinary Biochemists and Biotechnologists of India, Bhubaneswar, March 11-12, 2016.
- **Invited to present a lead paper** entitled, **“Functional Proteomics: Perspectives and Challenges in Improving Animal Health”** in Annual Convention and National Symposium of Society of Veterinary Biochemists and Biotechnologists of India, held at Bhubaneswar.
- **Young Scientist Award** was presented to my Ph.D. student Mayukh Ghosh inSVBBI2018 for outstanding research work done during Ph.D. under my Guidance. He was also awarded **INSPIRE Fellowship** during Ph.D.
- **Second Best Poster Award** was presented to my M.V.Sc. student Surbhi inSVBBI2018 for best research work done during M.V.Sc. under my Guidance. She was also awarded **ICMR Fellowship** during Ph.D. done under my supervision.

III. ADMINISTRATIVE EXPERIENCES:

- Worked as **Director, Human Resource Management**, LUVAS, Hisar from 1st April, 2018 to 31st March, 2022.
- Chairman of the various committees of LUVAS as Director, Human Resource Management:
 - (i) Memorandum of Understanding Committee
 - (ii) Post Clearance Committee.
 - (iii) Committee for forwarding of applications of teachers for attending trainings, conferences, symposium etc. within India and abroad.
 - (iv) Intellectual Property Rights and Commercialisation Core Group Committee
 - (v) Committee for preparing the action taken on digital initiatives in higher education.
 - (vi) Prevention of Sexual Harassment at work place Committee
- Worked as **Alternate Dean, Post Graduate Studies**, LUVAS, Hisar from 4th April, 2018 to 31st March, 2022.

- worked as head of department of veterinary physiology and biochemistry from 6th April, 2013 to 7th April, 2017.
- Member of the Board of Studies, LUVAS, Hisar from 09.04.2013 to 07.04.2017.
- Member of the Academic Council, LUVAS, Hisar from 2015 to April, 2017.
- Special Invitee of the Academic Council, LUVAS, Hisar from April, 2018 to 31st March, 2022.
- Member Secretary of Intellectual Property Rights and Commercialisation Advisory Board of LUVAS.
- Worked as University Nodal Officer of the followings:
 - (i) Indian Council of Agricultural Research including ICAR Educational Portal, AURS for ranking of agricultural universities, AUPIMS, ALUNET, Direct Benefit Transfer (DBT) Portal, DRIVE, ICAR e-Learning Portal etc. from 4th April, 2018 to 31st March, 2022.
 - (ii) National Academic Depository from May, 2018 to 31st March, 2022.
 - (iii) National Institute of Ranking Framework from April, 2018 to March, 2022.
 - (iv) Association of Commonwealth University measures from June, 2018 to March, 2022.
 - (v) NAAC, from 2020 to 2022.
 - (vi) Accreditation System of HAEI.
 - (vii) Indian Agricultural University Association (IAUA) from 2020 to 2022.
 - (viii) NAARM S&T Survey from May, 2018 to 31st March, 2022.
 - (ix) State Training Council (HIPA) from July, 2021 to March, 2022.
 - (x) Worked as Nodal Officer, DVLT from July, 2013 to April, 2017.
- Worked as Secretary, Institutional Animal Ethics Committee from Feb. 2007 to Feb. 2010.
- Member of Editorial Board of *The Haryana Veterinarian* Journal from 01.01.2014 to 31.12.2015.
- Incharge Women Cell of LUVAS, Hisar for four years 2018-2022.
- Signing of MoUs:

Being Chairperson of IPR Management and Commercialization Core Group Committee of LUVAS facilitated signing of many National and International MoUs between:

 - a. LUVAS, Hisar and CCS HAU, Hisar
 - b. LUVAS and CDLU, Sirsa
 - c. LUVAS and NIAW, Faridabad
 - d. LUVAS and Ayurved Research Foundation
 - e. LUVAS and CCS NIAH, Baghpat (09.08.2019)
 - f. LUVAS and University of Guelph, Ontario, Canada (28.11.2019)
 - g. LUVAS and DNA Xperts Pvt. Ltd., Noida, UP. (30.11.2019)

- ii. LUVAS and AII & D, Haryana (05.12.2017)
- i. LUVAS and Govt. ITI (Women), Hisar (20.03.2020)
- j. LUVAS and D.N. College, Hisar (07.09.2020)
- k. LUVAS and Infilbnet Centre, Gandhinagar, Gujrat (23.12.2020)
- l. LUVAS and Kurukshetra University, Kurukshetra (16.06.2021)
- m. LUVAS and IITR Roorkee (01.07.2021)
- n. LUVAS and Central Sheep Breeding Farm, Hisar (07.07.2021)
- o. Punjab Engineering College, Chandigarh (22.10.2021)
- p. LUVAS and Cellmed India Ltd., Delhi (30.03.2022)

IV. CONFERENCE/ TRAININGS/ WORKSHOPS/ OTHER EVENTS ORGANISED:

1. Organized “3rd Induction training for newly recruited faculty of LUVAS”, Hisar, India from 10.7.2018 to 8.8.2018 as **Training Director**.
2. Organized “Third Convention of Society of Veterinary Biochemists and Biotechnologists of India (SVBBI) and National Symposium on “Bridging Biochemical Interventions and Environmental Remediation for One Health Improvement” held on 2-3 November, 2018 as **Organising Secretary**.
3. Organised one week IPR workshop on “Sensitizing youth in Protecting IPRs and Fostering Innovation in the University” from 06.09.2018 to 12.09.2018 for B.V.Sc. & AH final year students as **Course Director**.
4. Convened “Second meeting cum workshop of **BSMAC**” at Lala Lajpat Rai University of Veterinary and Animal Sciences on 28th and 29th December, 2018.
5. Organised training programme for the faculty members for performing duties of DDO in any department/administrative office on ‘DDO Training for Faculty and Staff Members’ as **Training Director** from 12.02.2019 to 19.02.2019 held at LUVAS, Hisar.
6. Organised ‘4th Induction Training for newly recruited Faculty Members’ as **Training Director** held from 12.02.2019 to 19.02.2019 at LUVAS, Hisar.
7. Organised “State Eligibility Test in Computer Appreciation and Application (SETC) for employees of LUVAS” as **Course Director** from 23.05.2019 to 01.06.2019 at Computer Centre, LUVAS, Hisar.
8. Organised ‘1st Orientation Course of 21 days for Newly Recruited Assistant Professors/Scientists and Equivalents’ as **Course Director** from 11.12.2019 to 31.12.2019 at LUVAS, Hisar.
9. Organised a training on “Public Finance Management System” as **Training Director** for administrative cum office staff of LUVAS from 13.01.2020 to 14.01.2020.

10. Conducted '*2nd Orientation Course of 21 days for Newly Recruited Assistant Professors/Scientists and Equivalents*' as **Course Director** held from 11.02.2021 to 04.03.2021 at LUVAS, Hisar.
11. Conducted '*3rd Orientation Course of 21 days for Newly Recruited Assistant Professors/Scientists and Equivalents*' as **Course Director** held from 03.03.2022 to 24.03.2022 at LUVAS, Hisar.

V. RESEARCH WORK ENGAGED IN:

1. Assessing the trace elements and vitamin status of animals in relation to parasitic diseases in domestic animals and studying inter-relationships between clinical nutrition and parasitic diseases.
2. Elucidating the biochemistry of inflammatory responses to parasites and their nutritional manipulation.
3. Studying the biochemical changes in excretory/ secretory products of *in vitro* cultured *Haemonchus contortus* in response to inorganic salt supplementation.
4. Identification and characterization of novel peptides of clinical importance from salivary glands of *Hyalomma* ticks"
5. Structural and functional proteomics.
6. Exploration of detoxification mechanisms of acaricide resistance in Ixodid ticks.

VI. RESEARCH PROJECTS HANDLED:

1. Worked as **Co-Investigator** in "*National Agricultural Research Project*" from 1990-1994 at Regional Research Station, Uchani, Karnal, India
2. Worked as **Principal Investigator** of scheme entitled "*Study on Lifetime Endocrine Status of Buffalo*".
3. Worked as **Co-Investigator** of the scheme entitled "*Immunization of Cattle Against Hyalomma ticks*" sponsored by DBT, New Delhi.
4. Worked as **Principal Investigator** of the scheme entitled "*Biochemical changes in Malnutrition and Parasitic diseases*" from May, 2002 to Aug., 2009.
5. Acted as **Principal Investigator** of research scheme entitled "*Identification and characterization of novel peptides of clinical importance from salivary glands of Hyalomma ticks*" sponsored by UGC, New Delhi from 01.09.2011 to 31.08.2014.
6. Worked as **Co-PI** of "*All India Network Programme on Neonatal Mortality in Farm Animals*" funded by ICAR from 01.04. 2014 to 31.03.2020.

VII. MEMBERSHIP OF SCIENTIFIC SOCIETIES:

- (i) Life member of the *Indian Association of Lady Veterinarians* since 1988.
- (ii) Life member of the *Society of Animal Physiologists of India* since 1992.
- (iii) Life Member of *CCS HAU Alumni Association*.
- (iv) Member of *Haryana Veterinary Council*.
- (v) Life member of *Society for Veterinary Sciences and Biotechnology* since 2013.
- (vi) Life Member of *LUVAS Alumni Association* since 2014.
- (vii) Life member of *Society of Veterinary Biochemists and Biotechnologists* of India since 2015.
- (viii) Life member of *Animal Physiologists Association* since 2018.
- (ix) Life member of *Indian Association for the Advancement of Veterinary Research (IAVVR)* since 05.02.2019.
- (x) Founder and Life member of *Society of One Health Biochemists (SOHB)* since July, 2021.

VIII. NATIONAL/ INTERNATIONAL CONFERENCES/ SEMINARS/ SYMPOSIUMS/ WORKSHOPS/ SUMMER SCHOOLS etc. ATTENDED:

1. IV Annual Conference of *Society of Animal Physiologists of India* at CIRG Makhdoom, 1988.
2. *II World Buffalo Congress*, New Delhi, India, 1988.
3. Second Congress of *Asian and Oceanian Physiological Societies*, New Delhi, 1990.
4. *VIII Annual Conference of Society of Animal Physiologists of India (SAPI)* held at HAU, Hisar, 1992.
5. *All India Dairy Husbandry Officers Workshop* at N.D.R.I., Karnal in Dec. 1993.
6. *VIII National Congress of Veterinary Parasitology and National Symposium on Molecular Parasitology*, HAU, Hisar, 1996.
7. *Workshop on Use of Iodised Salt in Animals* at N.D.R.I., Karnal in Dec. 1996.
8. Workshop on *Computer Applications in Animal Biotechnology*, NDRI, Karnal, 1997.

7. **INTERNATIONAL CONFERENCE ON SUSTAINABLE ANIMAL PRODUCTION AND ENVIRONMENT. Future Challenges**, at Hisar, Nov.1999.
10. **Patent Awareness Workshop** held on 25th Aug., 2001 at GJU, Hisar.
11. **1st Convention of CCS Haryana Agricultural University Alumni Association** at Hisar Feb.2-3, 2002.
12. **Orientation training programme of Veterinary Council of India** regarding upgradation of knowledge on VCI Act and Regulation made therein, held on 6-7th March, 2002 at CCS HAU Hisar
13. **2nd Convention of CCS Haryana Agricultural University Alumni Association** at Hisar Feb.2-3, 2003.
14. **“3rd Convention” of CCS Haryana Agricultural University Alumni Association** at Hisar Feb.19-20, 2005.
15. **Seminar** organized by Veterinary Council of India on **“Revision of Undergraduate Veterinary Course Curricula (Basic and Production subjects)”** held at Hisar on 25-26 April, 2005.
16. **“2nd Indian Peptide Symposium”** held at National Institute of Immunology, New Delhi from Feb. 26 – 27, 2009.
17. **“XX National Congress of Veterinary Parasitology” and Symposium on Parasitology Today- Ecology to molecular Biology**, Feb. 18-20, 2010, CCS HAU, Hisar.
18. A workshop on **“Policy of Engaging/Outsourcing of Services/ Activities”** on August 7, 2010, organized by Office of Comptroller, CCS HAU, Hisar.
19. A conference and CME of **“Association of Clinical Biochemists of India (Haryana Chapter)”** on September 9, 2012, organized by Maharaja Agrasen Medical College, Agroha (Hisar).
20. 7th Spirituality in Researchers (SIR) Conference and meditation Retreat on **“Role of Researchers in Shaping the Society”** from 30.08.2013 to 02.09.2013 at Mount Abu, Rajasthan.
21. National seminar on **“Role of Veterinarians in Quality Assurance of Livestock Products and International Trade”** and 12th convocation of National Academy of Veterinary Sciences” from 28th Jan. to 2^{9th} Jan. 2014 at LUVAS, Hisar.
22. **“Buffalo Mela and Kisan Gosthi”** on 1st Feb, 2014 at CIRB, Hisar.
23. 2nd Annual Meeting of **“Society of Veterinary Science and Biotechnology” and National Seminar on “Biotechnological Approaches to Challenges in Animal Health**

and Production on 06-07 March, 2014 held at Pt. Deen Dayal Upadhyaya Pashu Chikitsa Vigyan Vishwavidyalaya Evam Go-Anusansthan, Mathura, U.P. and presented a lead paper.

24. Brain storming workshop on **“Post-harvest Technology and Value Addition in Haryana”** at HRM CCS HAU, Hisar on 09 June, 2014 organized by Kisan Ayog, Punchkula.
25. **“XXIII Annual Conference of Society of Animal Physiologists of India (SAPI)” and National Symposium on Physiological Determinants of Climate Resilient and Sustainable Animal Production**, held at CIRB, Hisar from 27 to 28 November 2014.
26. Participated in the discussions held by **Education Committee of the Veterinary Council of India regarding under graduate courses and proposed changes towards annual system of education** held on 10-11.04.2015 in the premises of COVSc & AH, Nana Deshmukh Pashu Chikitsa Vigyan Vishwavidyalaya, Indore, M.P. at Mhow, M.P.
27. **1st Annual Review Meeting of ICAR-All India Network Programme on Neonatal Mortality in Farm Animals (AINP-NM)** on September 22, 2015 at NRCE, Hisar, Haryana.
28. Annual Convention of Veterinary Biochemists and Biotechnologists of India (SVBBI) and National Symposium on, **“Use of Advanced Technologies of Biochemistry and Biotechnology in Livestock Health, Production and Reproduction”**, held at Bhubaneswar, March 11-12, 2016.
29. **3rd Workshop-cum-interactive Meet of Nodal Officers of SAUs/CUs/DUs for Agricultural Education Division, ICAR, New Delhi**, from May 4-5, 2018 at Port Blair, Andaman and Nicobar Islands.
30. **2nd Annual Convention of Veterinary Biochemists and Biotechnologists of India (SVBBI) and National Symposium on, “Use of Advanced Technologies of Biochemistry and Biotechnology in Livestock Health, Production and Reproduction”**, held at Bangalore, June 2-3, 2017.
31. National level review meeting of **“National Academic Depository at UGC, Delhi”** on 19.6.2018.
32. One day Workshop on, **“Developing Gender Sensitivity at Workplace”** organized by Directorate of Human Resource management, LUVAS, Hisar on November 07, 2017.
33. **XVII Annual Conference of Indian Society of Veterinary Pharmacology and Toxicology and National Symposium on Combating Antimicrobial Resistance** held at LUVAS, Hisar on Dec. 20-22, 2017.
34. **Meeting of BSMA** on July 16, 2018 at Sri Venkateswara Veterinary University, Tirupati.
35. **Training Workshop on Sexual Harassment of Women at Workplace (Prevention, Prohibition & Redressal) Act, 2013** at National Law University, Delhi from Oct. 6-7, 2018.

36. ***National Workshop as Subject Matter Specialist*** from October 22 to October 23, 2018 at TANUVAS, Chennai.
37. ***3rd Convention of Society of Veterinary Biochemists and Biotechnologists of India (SVBBI) and National Symposium on “Bridging Biochemical interventions and Environmental Remediation for One Health Improvement”*** held at LUVAS, Hisar on Nov. 2-3, 2018.
38. ***National Conference on “Propelling Transition towards Sustainable Food Production through Rekindling Physiological Strategies for Addressing Contemporary Challenges”*** at ICAR- Indian Veterinary Research Institute, Izatnagar from Dec. 22-23, 2018.
39. ***19th Indian Veterinary Congress and XXVI Annual Conference of IAAVR and National Symposium*** from February 1-2, 2019 at West Bengal University of Animal & Fishery Sciences, Kolkata.
40. ***4th Workshop-cum-interactive Meet of Nodal Officers of Agricultural Universities for Agricultural Education Division, ICAR, New Delhi*** on 9-10th April, 2019 at Assam Agricultural University, Jorhat, Assam.
41. ***4th UCEA International Conference The “HE Workforce Exploring Global Perspectives” held at British Medical Association House, London*** from 9th July, 2019 to 10th July 2019 and Study Tours to Imperial College, London and University of Surrey on 11th and 12th July, 2019.
42. ***First Alumni Convention and National Symposium on Livestock Sustainability for Food Security in India*** on 22-23 Aug., 2019 at LUVAS, Hisar.
43. ***NTA workshop*** as Subject Expert for AIEEA-PG/AICE-JRF/SRF exam from 12.10.2019 to 14.10.2019 at ICAR- National Dairy Research Institute, Karnal.
44. ***20th Indian Veterinary Congress, XXVII Annual Conference of IAAVR and National Symposium on “Veterinary Research Priorities in Translational Animal Health, Production and Food safety”*** on 21-22nd February, 2020 at Madras Veterinary College, Chennai.
45. ***5th Annual Workshop-cum-interactive Meet of Nodal Officers of Agricultural Universities for Agricultural Education Division, ICAR, New Delhi*** through Zoom Application of Video Conferencing on 8th May, 2020.
46. Virtual meeting held on June 11, 2020 with ***Nodal Officers of Agricultural Universities and Agricultural Education Division, ICAR, New Delhi*** through video conferencing.
47. Attended online programme based on ***“Sustainable Urbanisation - A Call to Action Across the Commonwealth”*** from 24th June, 2020 – 02nd September, 2020.

48. Attended Online *Workshop for the Nodal Officers of Agricultural Universities* organized by ICAR, New Delhi on 31 July, 2020.
49. Attended **“Fourth BSMA (Broad Subject Matter Area) meeting for syllabus revision to finalize the syllabus”** organized by ICAR, New Delhi on 18th August, 2020 virtually.
50. Attended **“National Webinar on protection of Gender Rights”** organized by National Law University, Nagpur on 23rd August, 2020 virtually.
51. Attended **“ACU HR in HE Community Virtual Conference 2020 - Changing World: HR’s response to the COVID-19 crisis”** organized by Association of Commonwealth Universities in partnership with Amity University, Gurugram, India from 23-24 September, 2020.
52. Attended Global Summit on **“Responsible Artificial Intelligence for Social Empowerment”** organized by Govt. of India virtually from 5-9 October, 2020 virtually.
53. Attended **‘ASSOCHAM 14th Higher Education Summit’** organized by ASSOCHAM Education Council from 18-20th February, 2021 virtually.
54. Attended **‘18th World Education Summit, Higher Education 2021’- The Premier Global event** on “Innovation in Education” virtual conference scheduled on 3rd March, 2021.
55. Attended webinars organized during two days Virtual Krishi Mela dated March 9-10, 2021 at CCS HAU, Hisar.
56. Attended Webinar on **‘World University Ranking in Indian Context, India**, held on April 05, 2021.
57. Attended a webinar on **“Vaccine and Medication Equity”** held on 18.05.2021.
58. Attended an online **“Review meeting for the Nodal Officers taking care of NAHEP Component 2 activities and AU- PIMS sub Nodal Officers/ Co-coordinators”** on 22nd June 2021 by ICAR – Indian Agricultural Statistics Research Institute (IASRI).
59. Attended online **“Meeting of State Training Council (STC) for implementation of the Haryana State Training Policy”** held on 08.10.2021 at Haryana Niwas, Sector-3, Chandigarh, under the chairmanship of Chief Secretary to Government of Haryana.
60. Attended a virtual webinar on **Celebration of "Vigyan Utsav" as a part of "Azadi Ka Amrit Mahotsav"** by ICAR-Indian Agricultural Statistics Research Institute, New Delhi, on October 28, 2021,
61. Attended a **webinar for sensitizing all Higher Education Institutions (HEI’s) across the Country about NEP and bringing HEIs forward for NAAC Assessment and Accreditation process** on 17.11.2021.
62. Attended online Orientation Workshop for all Nodal Officers on NAARM’s DRIVE Dashboard and National S&T Survey from Nov. 26-29, 2021 (attended on 27.11.2021).
63. Attended **Sixth edition of Annual Internationalisation of Higher Education Conference**

organised by SYMBIOSIS CENTRE FOR INTERNATIONAL EDUCATION (SCIE) and SYMBIOSIS International (Deemed University), SIU in collaboration with the Association of Indian Universities (AIU) and Obreal Global Observatory, India chapter and India's Services Export Promotion Council (SEPC) on '*Interregional Cooperation for Effective Internationalisation of Higher Education*' from 14-16 April, 2022 (Virtual).

64. Attended a lecture on "*Women in Leadership Role in India*" under *Azadi ka Amrit Mahotsav* organised by ICAR on June 20, 2022.

IX. ADDITIONAL TRAININGS ACQUIRED:

- (i) Advanced Training in "*Buffalo Production and Management*" from July 9, 1991 to July 29, 1991 at CIRB, Hisar.
- (ii) "*Faculty Development Programme in Educational Technology*" from May 5 to June 2, 1999 organized by Academy of Agricultural Research and Education Management at CCS HAU, Hisar.
- (iii) Refresher course on "*Faculty Development Programme in Extension Management*" from July 15, 1999 to Aug.11, 1999 at CCS HAU, Hisar.
- (iv) Attended "*Computer training*" from Dec.2-29, 1999 at CCS HAU, Hisar
- (v) Refresher course on "*Interactive Skills and Scientific Writing*" from July 4- 31, 2001 at CCS HAU Hisar.
- (vi) "*Orientation training for updating knowledge in respect of Indian Veterinary Council Act, 1984 and regulations framed there under*" from March 6 -7, 2002 at CCS HAU, Hisar.
- (vii) Attended a summer school on "*Intellectual Property Rights in Relation to Agriculture and Allied Fields*" from August 17-26, 2005 at CCS HAU, Hisar.
- (viii) Refresher course on "*Research Management*" from 23rd May, 2007 to 12th June, 2007 at CCS HAU, Hisar.

X. LEAD PAPERS/ INVITED LECTURES/ TALKS DELIVERED:

- (i) Delivered an Invited Talk on "*Oral Rehydration Therapy in Animals*" to farmers and veterinarians in a workshop organized by Society for Prevention of Cruelty to Animals at Veterinary Hospital, Karnal, 1993.
- (ii) Delivered an Invited Talk on "*Organ Function Tests and Their Importance in Disease Diagnoses*" in the Training on Advances in Clinical Diagnostic Techniques and Post Mortem examinations and despatch of specimens held from March 9-29, 2005 at CCS HAU, Hisar.

- (iii) Delivered an Invited Talk on ***“Blood Biochemical Analysis Using Auto-analyzer”*** in Training on Advances in Clinical Diagnostic Techniques and Post-Mortem examinations and despatch of specimens held from March 9-29, 2005 at CCS HAU, Hisar.
- (iv) Delivered an Invited Talk on ***“Acid-Base Physiology and Function during Anaesthesia”*** in a refresher course on Pragmatic Practice of Canine Anaesthesia held from 15 – 28 April, 2009 at CCS HAU, Hisar.
- (v) Delivered a Lead Paper on ***“Exploiting Interactions and Synergisms between Nutrition and Parasites to Control Gastrointestinal Helminthes in Ruminants”*** in XX National Congress of Veterinary Parasitology and Symposium on Parasitology Today- Ecology to molecular Biology, Feb. 18-20, CCS HAU, Hisar. p.55.
- (vi) Delivered a Lead Paper on ***“Potential of Proteomics in Animal Health and Production”*** in 2nd Annual Meeting of Society of Veterinary Science and Biotechnology and National Seminar on Biotechnological approaches to challenges in animal health and production held at Mathura, pp. 131- 135.
- (vii) Delivered a Lead Paper on ***“Metabolomic Approaches in Animal Health and Production”*** in XXIII Annual Meeting of Society of Animal Physiologists of India and National Symposium on Physiological Determinants of Climate Resilient and Sustainable Animal Production held at CIRB, Hisar on Nov.27-28, pp.220- 223.
- (viii) Delivered a Lead Paper on ***“Functional Proteomics: Perspectives and Challenges in Improving Animal Health”*** in Annual Convention and National Symposium of Society of Veterinary Biochemists and Biotechnologists of India, held at Bhubaneswar, March 11-12, 2016.
- (ix) Delivered a Lead Paper on ***“Role of Metabolomics in Biomarker Discovery: Challenges and Future Perspectives”*** in Annual Convention and National Symposium of Society of Veterinary Biochemists and Biotechnologists of India, held at Bangaluru, June 2-3, 2017.
- (x) Delivered a Lead Paper on ***“Biochemical Basis of Antimicrobial Resistance and its Prevention”*** in XVII Annual Conference of Indian Society of Veterinary Pharmacology and Toxicology and National Symposium on Combating Antimicrobial Resistance held at LUVAS, Hisar, Dec. 20-22, 2017.
- (xi) Delivered a talk on ***“Functions and Responsibilities of Directorate of Human Resource Management of LUVAS”*** in 3rd and 4th Induction Trainings organised by DHRM from 10.07.2018 to 8.8.2018 and 12.02.2020 to 19.02.2020 respectively.
- (xii) Delivered a talk on, ***“Funding agencies and Guidelines for Organising Conference / Symposium / Seminar / Workshop, etc.”*** in ***“1st Orientation Training”*** organised by DHRM, LUVAS, Hisar from 11.12.2019 to 31.12.2019.
- (xiii) Delivered a talk on, ***“Liaising with National and International Statutory Bodies”*** and ***“Funding agencies and guidelines for holding Conferences / Workshops, etc.”*** in ***“2nd***

Orientation Training organised by DHRM, LUVAS, Hisar from 11.02.2021 to 04.03.2021.

- (xiv) Delivered an **Invited Talk** virtually on "**Requirement, Gaps and Opportunities in Human Resource Development in Veterinary Sector: University Initiatives**" on Celebration of "Vigyan Utsav" as a part of "Azadi Ka Amrit Mahotsav" by ICAR-Indian Agricultural Statistics Research Institute, New Delhi, on October 28, 2021.
- (xv) Delivered a talk on, "**Liaisoning with National and International Statutory Bodies**" and "**Funding agencies for holding Conferences / Workshops, etc.**" in "**3rd Orientation Training**" organised by DHRM, LUVAS, Hisar from 03.03.2022 to 24.03.2022.

XI. STUDENTS GUIDED:

- (1) No. of PG students completed degrees: Five (M.V.Sc.); Two Ph.D. under my supervision

XII. EXTENSION:

- i) Diagnostic facilities were provided to farmers and veterinarians at the Regional Research Station, Karnal, from 1990 - 2000. The location specific studies conducted on the diseases of cattle, buffalo, and sheep were possible due to integration of research and extension activities at the Regional Research Station, Karnal.
- ii) Delivered a lecture on "**Oral rehydration therapy in animals**" to farmers and veterinarians in a meeting organized by *Society for Prevention of Cruelty to Animals* at Veterinary Hospital, Karnal, 1993.
- iii) Regularly participated in *Ganna Melas* organized by *Regional Research Station, Karnal* and advised farmers about animal health.
- iv) Helped in organization of *VIIIth National Congress of Veterinary Parasitology & National Symposium on Molecular Parasitology*, held at CCS HAU, Hisar 1996 and was member of the various committees to organize the conference.
- v) Member of the various committees to organize the *workshops/conferences* held at *Regional Research Station, Karnal* in relation to *Sugarcane Research*.
- vi) Participated in *Annual Kisan Melas and Farm Darshan* organized by the Directorate of Extension, CCS HAU Hisar and participated in buzz sessions.
- vii) Acted as *Convener of Registration Committee* for 'PASHUDHAN-DIWAS' held on 28.01.2012 at LLRUVAS, Hisar.
- viii) *Chairman of the Registration Committee* of the *Pashudhan Diwas* and *Animal Husbandary Officers Workshop* held at LUVAS, Hisar on 1-2 December, 2014.
- ix) Participated in *Krishi Mela (Rabi)* organized from September 09-10, 2014. Displayed material in stall.

- x) Participated in *Kisan Diwas* – 2014 held on 23rd December, 2014 organized by CCS HAU, Hisar and displayed the posters for the benefit of the farmers.
- xi) Prepared Question-Answer in Hindi related to Veterinary Physiology and Biochemistry for publication in the form of a book by DEE, LUVAS, Hisar.
- xii) Prepared SMS in Hindi related to Veterinary Physiology and Biochemistry, as desired by DEE, LUVAS, Hisar for the benefit of the farmers.
- xiv) *Chairman* of the Registration Committee of the “*Mahila Sammelan*” held on 29th March, 2015 at LUVAS, Hisar.
- xv) Participated in *Krishi Mela* organized from September 09-10, 2015. Displayed scientific material in stall and attended the queries of farmers.
- xvi) Participated in *Krishi Mela* on March 09, 2016. Displayed scientific material in stall.
- xvii) Attended co-curricular and extra-curricular activities of the College/ University such as celebrations of World Veterinary day, Republic day, Independence Day, International Yoga Day etc. during 2000 to 2022.
- xviii) Attended various guest lectures, clinical conferences and faculty seminars held in the University.
- xix) Actively participated in First Convocation of LUVAS held on January 28th, 2016.

Annexure – 1

LIST OF PUBLICATIONS OF DR. (MRS.) NIRMAL SANGWAN

A. Research Papers:

1. **Sangwan, N.** and Nangia, O.P. (1988). Diurnal variations in ciliate protozoa in buffalo rumen with changes in feeding frequency. In: *Post-Congress Proceedings of II World Buffalo Congress*, New Delhi, **Vol. II**, pp 329 – 335.
2. **Sangwan, N.** and Nangia, O.P. (1988). Effects of feeding frequency on microbial protein synthesis and ammonia in buffalo rumen. In: *Post-Congress Proceedings of II World Buffalo Congress*, New Delhi, **Vol.II**, pp 323-328.
3. **Sangwan, N.,** Singh, A., Singha, S.P.S., Singh, R. Bhullar, M.S. and Setia, M.S. (1988). Changes in physical and chemical characteristics of milk during progression of lactation in buffaloes. In: *Post-Congress Proceedings of II World Buffalo Congress*, New Delhi, **Vol.II**, pp 276-279.
4. **Sangwan, N.,** Nangia, O.P. and Garg, S.L. (1990). Effects of feeding frequency on pH and volatile fatty acids in rumen of buffaloes. *Indian J.Anim.Sci.* **63**: 600-602.

5. **Sangwan, N.**, Chaudhri, S.S., Rao, A.R., Sangwan, A.K. and Gupta, R.P. (1993). Folicin and cyanocobalamin in relation to natural *Trypanosoma evansi* infection in buffaloes. *Trop. Anim. Hlth. Prod.* **25**: 79-84.
6. **Sangwan, N.**, Chaudhary, S.S., Sangwan, A.K. and Gupta, R.P. (1993). Effects of acute fascioliosis on trace elements in sheep. *Indian J. Anim. Sci.*, **63**: 731-732.
7. Sangwan, A.K., **Sangwan, N.**, Chaudhri, S.S. and Gupta, R.P. (1994). Clinical efficacy of a herbal gel and ointment (charmil) against mange in rabbits. *Indian Vet. J.* **71**: 925-927.
8. Sangwan, A.K., Chaudhri, S.S., **Sangwan, N.** And Gupta, R.P. (1994). Seasonal distribution of Theileria in *Hyalomma anatolicum anatolicum* ticks of an endemic area in Haryana, India, *Trop. Anim. Hlth. Prod.* **26**: 241-1246.
9. Sangwan, A.K., Chaudhri, S.S., Gupta, R.P. and **Sangwan, N.** (1995). Comparative efficacy of ivermectin, diazinon and malathion against sheep scab. *Indian Vet. J.*, **72**: 503-506.
10. Chaudhri, S.S., Sangwan, A.K., Singh, U., Kumar, S., Gupta, R.P. and **Sangwan, N.** (1995). Trypanosomiosis in cattle and buffaloes with comparative efficiency of different diagnostic methods. *Indian J. Anim.Sci.* **65(8)**: 881-882.
11. **Sangwan, N.**, and Rao, A.R. (1996). Response to electrolytes in buffalo-calves during acidosis. *Indian J.Anim.Sci.* 66(5): 449-456.
12. **Sangwan, N.** Suttle, N.F., Knox, D.P. and McLean, K. (1997). Effects of marginal copper deficiency on the outcome of a *Nippostrongylus brasiliensis* infection in rats. In *Trace Elements in Man and Animals – 9: Proceedings of the Ninth International Symposium on Trace Elements in Man and Animals. Edited by P.W.F. Fischer, M.R. L'Abbé, K.A. Cockell, and R.S. Gibson.* NRC Research Press, Ottawa, Canada. pp. 438 -439.
13. Sangwan, A.K., Banerjee, D.P. and **Sangwan, N.** (1998). Immunization of cattle with nymphal *Hyalomma anatolicum* extracts: Effects on tick biology. *Trop. Anim. Hlth. Prod.* **30**: 97-106.
14. **Sangwan, N.** and Sangwan, A.K. (1998). *In vitro* effects of leaf extracts of *Melia azedarach* on mortality of *Haemonchus contortus*. *Indian J.Anim. Res.* **32(1)**: 70-72.
15. **Sangwan, N.** and Sangwan, A.K. (1998). Effects of feeding leaves of *Melia azedarach* on establishment of *Haemonchus contortus* infection in sheep. *Indian J.Anim.Res.* **32(1)**: 60-64.
16. **Sangwan, N.** and Sangwan, A.K. (1999). Thiamin, riboflavin and ascorbic acid in relation to tropical *Theileriosis* in cattle. *Indian J.Anim. Sci.* **69(5)**: 316-317.
17. **Sangwan, N.** and Sangwan, A.K. (2000). Trace elements in relation to *Haemonchus contortus* infection in sheep. *International J.Anim.Sci.* **15(1)**: 23-28.
18. Sangwan, A.K., **Sangwan, N.** and Goel, M.C. (2000). Progressive displacement of *Hyalomma* ticks by *Boophilus microplus* in Haryana. *Journal of Parasitic Diseases*, **24**: 95-96.

17. **Sangwan, N., Sangwan, A.K., Singh, S. and Agaiwal, V.K.**(2002). Cortisol and thyroid hormones in relation to bovine tropical *Theileriosis*. *Indian J.Anim.Sci.* **72(12)**: 1098-99
20. **Sangwan, N. and Sangwan, A.K.** (2006). Distribution of iron in plasma, erythrocytes and tissues of calves with the progression of *Theiera annulata* infection. *Journal of Parasitic Diseases*, **30**: 41 – 44.
21. Singh, R., Garg, S.L., **Sangwan, N.** and Jit Singh (2006). Peripheral concentration of cortisol in buffaloes suffering from Foreign Body Syndrome (FBS). *Buffalo Bulletin* , **24(4)**: 88-90.
22. Sangwan, A. K., **Sangwan, N.** and Gupta, S. K. (2007). Anthelmintic resistance in trichostrongylids of small-holder sheep production system in some areas of Haryana. *The Haryana Veterinarian*, **45**: 76-78.
23. **Sangwan, N.** and Sangwan, A.K. 2007. Zinc distribution or loss in relation to progression of *Theiera annulata* infection in cross-bred calves. *Journal of Veterinary Parasitology*, **21(1)**: 63-65.
24. **Sangwan, N.** (2007). Role of nutraceuticals in animals“ health and disease prevention.*INTAS Polivet*, **8(1)**: 73-80.
25. **Sangwan, N., Sangwan, A.K. and Chaudhri, S.S.** (2007). *Trypanosoma evansi* infection in rabbits: studies on the development of anaemia and copper and iron levels in rabbits. *Journal of Parasitic Diseases*, **31(1)**: 29-32.
26. **Sangwan, N.** and Sangwan, A.K. (2007). Changes in blood and tissue copper levels due to *Theiera annulata* infection in cross-bred calves. *Indian Journal of Animal Research.* **41(4)**: 278 – 281.
27. Singh, R., Garg, S.L., **Sangwan, N.** and Gera, S. (2008). Haematological profile of buffaloes suffering from foreign body syndrome. *The Haryana Veterinarian*, **47**: 91-93.
28. Singh, R., Garg, S.L., **Sangwan, N.** and Gera, S. (2008). Peripheral concentration of thyroid hormones (T3 and T4) in buffaloes suffering from foreign body syndrome. *The Haryana Veterinarian*, **47**: 115-116.
29. **Sangwan, N.** and Rao, A.R. (2010). Folacin, cobalamin and iron-binding capacities in response to parenteral haematinic supplementations in blood of buffaloes. *The Haryana Veterinarian*, **49**: 56 – 58.
30. **Sangwan, N.** and Sangwan, A.K. (2011). Aggravation of *Phalaris minor* toxicity by concurrent paramphistomosis and palliative role of cobalt supplementation in sheep. *Journal of Veterinary Parasitology*, **25(1)**: 21-25.
31. Ghosh M., **Sangwan N.**, Paliwal, N. and Sangwan, A.K. (2013). Molecular polymorphism of salivary gland proteins in *Hyalomma a. anatolicum* and *Hyalomma dromedarii* (Acari: Ixodidae) ticks. *The Haryana Veterinarian*, **51**: 75-77.
32. **Sangwan, N., Sangwan, A. K., Paliwal, N., and Ghosh, M.** (2013). Antithrombotic and fibrinogenolytic peptides in salivary glands of *Hyalomma a. anatolicum* (Acari: ixodidac) ticks.

33. Ghosh M, **Sangwan N**, Sangwan A.K., Kumar, R. and Gaur, R.S. (2014). Tissue distribution of different minerals and antioxidant status in various organs of *Hyalomma a. anatolicum* (Acari:Ixodidae) ticks. *Journal of Cell and Tissue Research*, **14(2)**: 4273 – 4277.
34. Ghosh M, **Sangwan N**, Sangwan A.K. (2014). Variations in free radical scavenging activities and antioxidant responses in salivary glands of *Hyalomma a. anatolicum* and *Hyalomma dromedarii* (Acari:Ixodidae) ticks. *Veterinary World*, **7(10)**: 876-881.
35. Ghosh M, **Sangwan N**, Sangwan AK (2015). Partial Characterization of a Novel Anti-inflammatory Protein from Salivary Gland Extract of *Hyalomma anatolicum anatolicum* (Acari: Ixodidae) Ticks. *Veterinary World*, **8(6)**:772-776.
36. Ghosh, M., **Sangwan, N.**, Sangwan, A. K., Kumar, R., & Gaur, R. S. (2016). Sexual alteration in antioxidant response and esterase profile in *Hyalomma anatolicum anatolicum* (Acari: Ixodidae) ticks. *Journal of Parasitic Diseases*, 04: 1-6. (NAAS – 4.65)
37. Surbhi, **Sangwan, N.**, Sangwan, A. K., Singh,V. and Kumar, A.(2016). Inhibition of bovine platelets aggregation in response to *Hyalomma anatolicum* salivary gland proteins/peptides. *Veterinary world*, 9(11): 1264-1268.
38. Gaur R.S., Sangwan, AK, **Sangwan, N.**, Ghosh, M. and Kumar, S. (2017). Comparative study of esterases in deltamethrin and diazinon resistant *Rhipicephalus microplus* and *Hyalomma anatolicum* ticks collected from the Trans-Gangetic plains of India. *Experimental and Applied Acarology*. 73(1):115-27. (NAAS – 7.81)
39. Sharma, S., Singh, S., **Sangwan, N.**, Singh, V., Chaubey, K., Gupta, S. and Singh, M. (2017). Metabolic adjustments as signatures for pathogenesis and diagnosis of Johne's disease in goats. *The Haryana Veterinarian*. **56 (2)**: 179-183.
40. Surbhi, **Sangwan, N.** and Sangwan, A.K. (2018). Molecular characterization of anti-platelet aggregating proteins in salivary gland extracts of *Hyalomma anatolicum* ticks. *Indian Journal of Animal Research*: 1-7.DOI: 10.18805/ijar. B-3521.
41. Surbhi, **Sangwan, N.** and Sangwan, A.K. (2018). *In vitro* effects of *Rhipicephalus (Boophilus) microplus* tick's salivary gland inhibitory proteins/peptides on bovine platelet aggregation and adhesion. *Journal of Entomology and Zoology Studies*. 6(3): 1281-1286.
42. Surbhi, **Sangwan, N.**, Sangwan, A.K. and Kumar, A. (2018). Inhibition of bovine platelet aggregation by salivary gland proteins/peptides of *Rhipicephalus (Boophilus) microplus* ticks. *The Pharma Innovation Journal*; 7(5): 598-601.
43. Surbhi, **Sangwan, N.**, Sangwan, A. K., Singh, V. and Kumar, A (2018). Electrophoretic Characterization of Anti-platelet Aggregating Proteins/Peptides from Salivary Gland of *Rhipicephalus (Boophilus) microplus*. *International Journal of Current Microbiology and Applied Sciences*; 7(7): 2619-2626.

44. Surbhi, Sangwan, N., Sangwan, A. K. and Daroga, S. (2018). Effect of *Rhipicephalus (Boophilus) microplus* ticks salivary gland proteins/peptides on mobilization of intracellular calcium ion. *The Pharma Innovation Journal*; 7(7): 256-269.
45. Kumari, S., Sangwan, A.K., Sangwan, N. and Gupta S. (2018). Acaricide resistance in *Rhipicephalus (Boophilus) microplus* ticks against deltamethrin and amitraz in Haryana. *The Haryana Veterinarian*. 57(1): 101-102.
46. Surbhi, Gupta S., Sangwan, A.K. and Sangwan, N. (2018). Synthetic pyrethroids and amitraz resistance in *Hyalomma anatolicum* ticks of Sirsa district, Haryana. *The Pharma Innovation Journal*. 7(8): 576-578.
47. Surbhi, Gupta S., Sangwan, A.K. and Sangwan, N. (2018). Determination of efficacy of commercial acaricides against *Ornithodoros savignyi* ticks collected from Haryana. *Journal of Entomology and Zoology Studies*. 6(5): 237-239.
48. Surbhi, Sangwan N, Sangwan AK and Gupta S. (2019). Acaricide resistance status of *Hyalomma anatolicum* and *Rhipicephalus (Boophilus) microplus* ticks collected from various locations of Haryana. *The Haryana Vet*, 58(2): 288-289.
49. Surbhi, Sangwan N, Sangwan AK and Gupta S. (2019). Development of stage specific and sex related changes in esterase pattern of *Hyalomma anatolicum* and *Rhipicephalus (Boophilus) microplus* ticks of Haryana. *The Haryana Vet*, 58(2): 228-231.
50. Sharma, S., Singh, S., Gautam, AK., Mishra, SR., Gupta, S., Chaubey, KK. and Sangwan, N. (2019). Assessment of lipid profile and acute phase proteins in MAP (*Mycobacterium avium* subspecies *paratuberculosis*) infected and healthy goats. *Indian Journal of Animal Sciences*, 89 (12): 1313 -1317.
51. Ghosh, M., Sangwan, N., Chakravarti, S. Banerjee, S., Ghosh, A., Kumar R. and Sangwan, A. K. (2019). Molecular Characterization and Immunogenicity Analysis of 4D8 Protective Antigen of *Hyalomma anatolicum* Ticks Collected from Western India. *International Journal of Peptide Research and Therapeutics*. 25, 1291–1308. <https://doi.org/10.1007/s10989-018-9776-8> (Naas rating 7.22, Impact factor- 1.5)
52. Sangwan, N., Suttle, N.F. and Knox, D.P. (2022). Effects of chronic exposure to molybdate and tetrathiomolybdate via drinking water in immature rats acutely infected with *Nippostrongylus brasiliensis*. 1. Health of host and outcome of infection. *Journal of Comparative Pathology*. Accepted. [EMID:61e86e7682dae95e]
53. Suttle, N.F., Sangwan, N. and Knox, D.P. (2022). Effects of molybdate and tetrathiomolybdate supplementation of drinking water in immature rats acutely infected with *Nippostrongylus brasiliensis*. 2. Copper status and accretion of molybdenum in tissues. *Journal of Comparative Pathology*. Accepted. [EMID:151d38fb1aac7ac4].

B. Full papers in Conference proceedings:

1. Sangwan, N. (2010). 'Exploiting interactions and synergisms between nutrition and parasites to control gastrointestinal helminthes in ruminants'. In: Proceedings of XX National Congress of

veterinary Parasitology and Symposium on Parasitology Today-ECOLOGY to MOLECULAR BIOLOGY, Feb. 18-20, CCS HAU, Hisar. p.55.

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