

CURRICULUM VITAE

PROF. VICTOR TREVOR TSUMA, PhD

**Department of Clinical Studies, Faculty of Veterinary
Medicine**

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Date of Birth: 16th May 1965

Nationality: Kenyan

Sex: Male

Marital Status: Married

1. EDUCATION/QUALIFICATIONS

1995: Doctor of Philosophy (PhD), Department of Obstetrics and Gynaecology, Swedish University of Agricultural Sciences (SUAS), Uppsala, Sweden.

1991: Diploma in Animal Reproduction, SUAS, Uppsala, Sweden.

1991: Fellow of the Royal Veterinary College Stockholm (FRVCS).

1989: Bachelor of Veterinary Medicine (BVM), University of Nairobi, Kenya.

1983: Kenya Advanced Certificate of Education (KACE), Menengai High School, Nakuru, Kenya.

1981: Kenya Certificate of Education (KCE), Kibabii High School, Bungoma, Kenya.

1977: Certificate of Primary Education (CPE), Naivasha Primary Boarding School, Naivasha, Kenya.

2. TEACHING EXPERIENCE

Nov. 2014 to date: Associate Professor, Clinical Studies Department, Faculty of Veterinary Medicine, University of Nairobi, Kenya.

Sept. 1999 – Nov. 2014: Senior Lecturer, Clinical Studies Department, Faculty of Veterinary Medicine, University of Nairobi, Kenya.

Nov. 1996 – Sept. 1999: Lecturer, Clinical Studies Department, Faculty of Veterinary Medicine, University of Nairobi, Kenya.

Aug. 1989 – Nov. 1996: Assistant Lecturer, Clinical Studies Department, Faculty of Veterinary Medicine, University of Nairobi, Kenya.

I am an Associate Professor in the University of Nairobi, Faculty of Veterinary Medicine in the Department of Clinical Studies focusing on Theriogenology (Animal Reproduction and Obstetrics). I am currently the Head of the Theriogenology Section, Clinical Studies Department. I have developed teaching and learning materials and conducted lectures, practicals, demonstrations and ward rounds for undergraduate Bachelor of Veterinary Medicine students and postgraduate students in the Department of Clinical Studies. I have had hands-on clinical experience in veterinary practice providing clinical services, herd health, extension and outreach to farmers and other stakeholders in the livestock industry through field days in Nairobi and its surrounding areas and many parts of Kenya in both food and companion animals. I have supervised and am currently supervising MSc and Ph.D. students, and conducting research on various aspects in the livestock industry. I have been involved in the development and review of various curricula (MSc, Bachelors, Diploma and Certificate level) in the Faculty of Veterinary Medicine, University of Nairobi, and also for the Kenya Veterinary Board. These include development of Masters curricula in Veterinary Medicine, Veterinary Surgery, and Theriogenology; BSc in Biomedical Technology curriculum; Diploma in Animal Health and

Production curriculum; Certificate Course in Artificial Insemination and Fertility Management curriculum; Ovum pickup and in vitro embryo production-embryo transfer (OPU-IVEP-ET) curriculum; and, Animal Welfare curriculum, which are all currently in use.

3. SUPERVISION OF POSTGRADUATE STUDENTS

- i) Completed PhD student supervision at the Department of Clinical Studies, Faculty of Veterinary Medicine, University of Nairobi,
 - a. Dr. T. O. Abuom (2014): Infectious abortion and associated risk factors in dairy cattle farms in Nakuru district, Kenya. Co-Supervisors: Prof. Njenga Munene (Egerton University), Prof. J.K. Wabacha (AU-IBAR), Prof. John Van Leeuwen (Canada).
- ii) Ongoing Ph.D student supervision at the Department of Clinical Studies, Faculty of Veterinary Medicine of the University of Nairobi,
 - a. Dr. David K. Kios: The effects of variable reproductive hormonal levels on the quantity and quality of embryos within the existing field conditions in Kenya. **Funded by DAAD, research on-going.** Co-Supervisors: Dr. H.M. Mutembei (UON), Prof. E.R. Mutiga (UON).
 - b. Dr. Ambrose K. Kipyegon: Evaluation of the reproductive effects of effluent contaminated water on boar and mice testis. **Research ongoing.** Co-Supervisors: Dr. H.M. Mutembei (UON), Dr. J. Oduma (UON).
 - c. Dr. Ken Mbai: Comparison of plant and animal based diluents for room temperature and deep frozen storage of goat buck semen. **Proposal development.** Co-Supervisors: Dr. H.M. Mutembei (UON).
 - d. Dr. Joan Muraya: Effect of time of hormone administration on superovulatory response of embryo transfer donor cows. **Proposal development.** Co-Supervisors: Dr. H.M. Mutembei (UON).
- iii) Completed M.Sc. student supervision at the Department of Clinical Studies, Faculty of Veterinary Medicine of the University of Nairobi,
 - a. Dr. Anne N. Ndeke (2015): Reproductive performance of the Galla and Toggenburg goats and their crosses in Mwingi district, Kenya. Co-Supervisors: Dr. H.M. Mutembei (UON).
 - b. Dr. J. Muraya (2013): A study of follicular dynamics in the Kenyan Boran cow. Co-Supervisors: Dr. H.M. Mutembei (UON), Dr. Okeyo Mwai

- (ILRI).
- c. Dr. A. Kipyegon (2011): Effect of oral administration of *Carica papaya* on boar testis. Co-Supervisors: H.M. Mutembei (UON), Dr. J. Oduma (UON).
 - d. Dr. B.S. Muasa (2010): Effect of follicle size and cumulus oocyte complex grade on in vitro embryo developmental competence for Boran cows. Co-Supervisors: H.M. Mutembei (UON), Dr. Okeyo Mwai (ILRI).
 - e. Dr. T.O. Abuom (2006): Periparturient conditions in smallholder dairy cattle herds in Kikuyu division of Kiambu district. Co-Supervisors: Prof. Njenga Munene (UON), Prof. J.K. Wabacha (UON), Prof. John Van Leeuwen (Canada).
 - f. Dr. H.M. Mutembei (1998): Reproductive parameters of German Shepherd Bitches in Kenya. Co-Supervisors: Prof. E.R. Mutiga (UON).
- iv) Ongoing M.Sc. student supervision at the Faculty of Veterinary Medicine of the University of Nairobi,
- a. Dr. Laban N. Makau: Estimating the prevalence of mastitis in dairy goats in Machakos County. **Thesis writing.** Co-Supervisors: Prof. J.N. Ombui (UON), Prof. P.M. Kitale (UON).
 - b. Dr. James M. Mutuku: Evaluation of reproductive performance of dairy cattle in zero grazed smallholder dairy herds in Kikuyu district, Kiambu County. **Thesis writing.** Co-Supervisors: Dr. H.M. Mutembei (UON).
 - c. Dr. Paul Juma: Effects of extenders and seminal plasma on quality of stored buck semen for enhanced dairy goat productivity. **Proposal submitted to Board of Post-graduate studies.** Co-Supervisors: Dr. H.M. Mutembei (UON), Prof. G.J. Agumba (UON).

4. SUPERVISION OF UNDERGRADUATE STUDENT PROJECTS

- 1) Rapando A. Peter (2013): Pyometra in bitches – A retrospective study on the epidemiology of canine pyometra.
- 2) Oliangá F. Ochieng (2012): A prospective study on preferential mating in the smallholder dairy systems in Kenya.
- 3) Susan (2009): Characteristics of smallholder pig production in Kiambu, Kenya.

5. POSTGRADUATE THESES EXAMINATIONS

i) PHD THESES

- 1) Dr. Abuom, T. O. (2014): Infectious abortion and associated risk factors in dairy cattle herds in Nakuru district. Department of Clinical Studies, Faculty of Veterinary Medicine, University of Nairobi. **Internal Examiner.**
- 2) Dr. Nyongesa, A.W. (2013): Mechanism of action of purified cathinone from khat (*Catha edulis*) on behavioural and reproductive function in vervet monkey (*Chlorocebus aethiops*). Department of Veterinary Anatomy and Physiology, Faculty of Veterinary Medicine, University of Nairobi. **Internal Examiner.**

ii) MSC THESES

- 1) Dr. Papah, M.B. (2012). The structure of the male reproductive organs in Lake Magadi tilapia (*Alcolapia grahami*). Department of Veterinary Anatomy and Physiology, Faculty of Veterinary Medicine, University of Nairobi. **Internal Examiner.**
- 2) Dr. Kinyua K.K. (2012). Department of Public Health, Pharmacology and Toxicology, Faculty of Veterinary Medicine, University of Nairobi. **Board member.**
- 3) Dr. Origa, R.A. (2012). Assessment and comparison of bull semen fertility based on in vitro criteria. Department of Clinical Studies, Faculty of Veterinary Medicine, University of Nairobi. **Board member.**
- 4) Dr. Bundi, R.M. (2011). The prevalence, risk factors, anti-bacterial sensitivity and usefulness of Petrifilms as a diagnostic tool for bovine mastitis in Mukurwe-ini and Greater Nakuru Districts, Kenya. **Board member.**
- 5) Dr. Muasa, B.S. (2010). Effect of follicle size and cumulus oocyte complex grade on in vitro embryo developmental competence for Boran cows. Department of Clinical Studies, Faculty of Veterinary Medicine, University of Nairobi. **Internal Examiner.**
- 6) Dr. Kisipan, L.M. (2009). The morphology and morphometry of the male reproductive system of Rufus sengi (*Elephantulus refescens*). Department of Veterinary Anatomy and Physiology, Faculty of Veterinary Medicine, University of Nairobi. **Internal Examiner.**

7) DR. Nyongesa, A.W. Department of Veterinary Anatomy and Physiology, Faculty of Veterinary Medicine, University of Nairobi. **Internal Examiner.**

8) Obiero, J.A. (2007). Hormonal influence on normal microbial flora of the reproductive tract in female baboons (*Papio spp*). Department of Veterinary Anatomy and Physiology, Faculty of Veterinary Medicine, University of Nairobi. **Internal Examiner.**

6. PUBLICATIONS

i) Peer-Reviewed Journals

- 1) Mutembei, H.M., **Tsuma, V.T.**, Muasa, B.T., Muraya, J. and Erastus, R.M. (2015). Bovine in vitro embryo production and its contribution towards improved food security in Kenya. *Afr. J. Food, Agric. Nutr. Dev.*, 15(1): 9722-9743.
- 2) Kipyegon, A.N., Mutembei, H.M., **Tsuma, V.T.** and Oduma, J.A. (2012). Effects of ripe *Carica papaya* seed powder on testicular histology of boars. *Int. J. Vet. Sci.*, 1: 1-4.
- 3) Abuom, T.O., Njenga, M.J., Wabacha, J.K., **Tsuma, V.T.** and Gitau, G.K. (2012). Incidence and risk factors of periparturient conditions in smallholder dairy cattle herds in Kikuyu Division of Kiambu District, Kenya. *Ethiop. Vet. J.*, 16: 85-102.
- 4) Mutembei, H.M., Muasa, B.S., Origa, R., Jimbo, S., Ojango, J.M.K., **Tsuma, V.T.**, Mutiga, E.R. and Okeyo, A.M. (2009). Delivery of appropriate cattle genotypes to Eastern African smallholder farmers through in vitro embryo production technologies – the technical procedures, prospects and challenges. *Aspects of African Biodiversity. Royal Society Chemistry Journal*, 32: 84-90, ISBN: 978-1-84755-948-7.
- 5) **Tsuma, V. T.** and Abuom, T. O. (2008). A case report of *Schistosomus Reflexus* in a lamb. *Kenya Veterinarian*, 32: 41-43.
- 6) Gitonga, N.P., Agumbah, G.J.O. and **Tsuma, V.T.** (2007). The importance of vaginal cytology and challenges encountered when investigating infertility cases of breeding bitches in Kenya. *Kenya Veterinarian*, 31: 40-44.
- 7) **Tsuma, V.T.**, Mbai, K., Gitonga, P.N., Abuom, T.O., Ndurumo, S.M, Bwanga, C. O. and Wabacha, J.K. (2006). Fertility of zero-grazed dairy cattle following hormone treatment and fixed-time artificial insemination. *Kenya Veterinarian*, 30: 68-72.

- 8) Njenga, J. M. and **Tsuma, V. T. (2004)**. Sudden death following rupture of the middle uterine artery, in a bovine dystocia. *Kenya Veterinarian*, 26: 27-28.
- 9) Mogoia, E.G.M., Omiti, J.M., **Tsuma, V.T.** and Bwanga, C.O. (2004). Some constraints and opportunities in the privatization of animal breeding services in Kenya. *Kenya Veterinarian*, 27: 45-48.
- 10) Mutembei, H.M., Mutiga, E.R. and **Tsuma, V.T. (2002)**. An epidemiological survey demonstrating decline in reproductive efficiency with age and non-seasonality of reproductive parameters in German shepherd bitches in Kenya. *J. S. Afr. Vet. Ass.*, 73(1): 36-37.
- 11) Mutembei, H.M., Mutiga, E.R. and **Tsuma, V.T. (2000)**. A retrospective study on some parameters of German shepherd bitches in Kenya. *J. S. Afr. Vet. Ass.*, 71(2): 115-117.
- 12) **Tsuma, V.T.**, Einarsson, S., Madej, A., Forsberg, M. and Lundeheim, N. (1998). Plasma levels of progesterone and cortisol after ACTH administration in lactating primiparous sows. *Acta Vet. Scand.*, 39: 71-76.
- 13) Madej, A., Einarsson, S., Mburu, J.N. and **Tsuma, V.T.** (1998). Involvement of thyroid hormones and cortisol in the stress response and their possible effects on fertility in the pig. *Reprod. Dom. Anim.*, 33: 317-320.
- 14) Magnusson, U., Wattrang, E., **Tsuma, V.T.** and Fossum, C. (1998). Effects of stress resulting from short-term restraint on in vitro functional capacity of leucocytes obtained from pigs. *Am. J. Vet. Res.*, 59: 421-425.
- 15) **Tsuma, V.T.**, Einarsson, S., Madej, A., Kindahl, H. and Lundeheim, N. (1996). Effect of food deprivation during early pregnancy on endocrine changes in primiparous sows. *Anim. Reprod. Sci.*, 41: 267-278.
- 16) **Tsuma, V.T.**, Einarsson, S., Madej, A., Kindahl, H., Lundeheim, N. and Rojkittikhun, T. (1996). Endocrine changes during group housing of primiparous sows in early pregnancy. *Acta Vet. Scand.*, 37: 481-490.
- 17) Einarsson, S., Madej, A. and **Tsuma, V.T.** (1996). The influence of stress on early pregnancy in the pig. *Anim. Reprod. Sci.*, 42: 165-172.
- 18) **Tsuma, V.T.** (1995). Clinical and endocrine studies in primiparous sows: effect of weaning during early lactation and of group housing and fasting during early pregnancy.

Ph.D. Thesis. Swedish University of Agricultural Sciences, Uppsala, Sweden. ISBN 91-576-5044-6.

- 19) **Tsuma, V.T.**, Einarsson, S., Madej, A. and Lundeheim, N. (1995). Cortisol and B-endorphin in peripheral circulation around weaning in primiparous sows. *Anim. Reprod. Sci.*, 37: 175-182.
- 20) **Tsuma, V.T.**, Einarsson, S., Madej, A. and Lundeheim, N. (1995). Hormone profiles around weaning in cyclic and anoestrous sows. *J. Vet. Med. A.*, 42: 153-163.
- 21) Roozen, A.W.N., **Tsuma, V.T.** and Magnusson, U. (1995). Effects of short-term stress on plasma concentrations of catecholamines, B-endorphin, and cortisol in gilts. *Am. J. Vet. Res.*, 56: 1225-1227.
- 22) Einarsson, S. and **Tsuma, V.T.** (1994). Relationship between nutrition and fertility. *Reprod. Dom. Anim.*, 29: 340-342.
- 23) Mutiga, E.R., Munyua, S.J.M. and **Tsuma, V.T.** (1994). The effect of improved reproductive herd health on milk production from peri-urban dairy farms. *Kenya Veterinarian* 18: 3-6.
- 24) Mutiga, E.R., Mbai, K., **Tsuma, V.T.**, Karitu, P.T. and Ojiayo, S.O. (1993). Incidence and causes of retained placenta in small-holder dairy herds. *Indian Vet. J.*, 70: 333-336.
- 25) **Tsuma, V.T.** and Magnusson, U. (1992). Opsonic activity in mammary secretion and serum of gilts during the lactation period. *J. Vet. Med. B.*, 39: 285-289.

ii) Submitted Papers

- 1) Muasa, B.S., Mutembei, H.M., Camargo, L.S.A., Viana, H. and **Tsuma, V.T.** (2014). Follicle size of origin affects Glucose-6-phosphate dehydrogenase activity and developmental competence of oocytes from Boran cows. *J. Rep. Dom. Anim – OA-Feb-2014-001*.
- 2) Abuom, T.O., Njenga, M.J., Wabacha, J.K., **Tsuma, V.T.** and Van Leeuwen J. (2014). Seroepidemiological survey of *Neospora caninum* and its risk factors in farm dogs in Nakuru district, Kenya.

iii) Conference Papers

- 1) Abuom, T.O., Njenga, M.J., Wabacha, J.K., **Tsuma, V.T.** and Van Leeuwen J. (2014). Seroepidemiological survey of Neospora caninum and its risk factors in farm dogs in Nakuru district, Kenya. Proc. 9th Biennial Scientific Conference of the Faculty of Veterinary Medicine, Nairobi, Kenya, 22-23.
- 2) Kipyegon, A.N., Mutembei, H.M., **Tsuma, V.T.** and Oduma, J.A. (2014). Seminiferous epithelium response to dietary carica papaya seed powder. (ID 39). 48th Kenya Veterinary Association Annual Scientific Conference, Eldoret, Kenya.
- 3) Kiura, J.N., et al., (2013). Towards enhancing the value of dairy goats in Kenya: a case study of Kericho and Bomet counties. Eastern Africa Agricultural Productivity Project (EAAPP) Mini-Scientific Conference, Techno-fair of Innovations and Open day- 13th – 15th November, Morendat Training Centre, Naivasha, Kenya.
- 4) **Tsuma, V.T.**, Mutembei, H.M. and Mutiga, E.R. (2011). Assisted Reproductive Technologies in Livestock: Current status in Kenya. 45th Kenya Veterinary Association Annual Scientific Conference, Kisumu, Kenya. 4.
- 5) Muasa, B.S., Mutembei, H.M., **Tsuma, V.T.**, Origa, R.A., Camargo, L.S.A., Viana, J.H.M. and Okeyo, A.M. (2011). In vitro embryo production using Boran (Bos indicus) oocytes in Kenya. Reprod. Dom. Anim., 46 (Suppl. 3): 132.
- 6) Mutembei, H.M., Muasa, B.S., Origa, R., Jimbo, S., Ojango, J.M.K., **Tsuma, V.T.**, Mutiga, E.R. and Okeyo, A.M. (2008). Delivery of appropriate genotypes to Eastern African smallholder farmers through in vitro embryo production technologies. Proc. Biodiversity Conference, 16-17.
- 7) Mutembei, H.M., Muasa, B.S., Origa, R., Jimbo, S., Ojango, J.M.K., **Tsuma, V.T.**, Mutiga, E.R. and Okeyo, A.M. (2008). In vitro fertilization in cattle and its potential practical application in Kenya. Proc. 6th Biennial Scientific Conference of the Faculty of Veterinary Medicine, Nairobi, Kenya, 15-17.
- 8) **Tsuma, V.T.**, Mbai, K., Gitonga, P.N., Abuom, T.O., Ndurumo, S.M. and Wabacha, J.K. (2006). Fertility of zero-grazed dairy animals following hormone treatment and fixed

time insemination. Kenya Veterinary Association Annual Scientific Conference, Mombasa, Kenya.

- 9) Gitonga, P.N., Agumba, G.J.O. and **Tsuma, V.T. (2006)**. Challenges encountered when investigating infertility in breeding bitches: How far is a breeder willing to go? Annual General Meeting of the Kenya Veterinary Association, Mombasa, Kenya.
- 10) Munyua, M., Mbai, K., Thaiya, A.G., Wabacha, J.K. and **Tsuma, V.T. (1999)**. Reproductive health care in dairy animals. CAIS Magazine, Oct. 1999. PP 25-26.
- 11) Mutembei, H.M., Mutiga, E.R. and **Tsuma, V.T. (1998)**. Reproductive parameters in Kenyan GSD bitches. Proc. Biennial Scientific Conference of the Faculty of Veterinary Medicine, Nairobi, Kenya.
- 12) **Tsuma, V.T.**, Einarsson, S. and Madej, A. (1996). Adrenocortical activity and reproduction in primiparous sows. . Proc. 14th Int. Pig Vet. Soc. Congr., Bologna, Italy. PP 565.
- 13) Einarsson, S., Sterning, M., **Tsuma, V.T.** and Rydmer, L. (1995). Oestrus in primiparous sows: relationships with weight loss, metabolism and endocrine regulation. 46th Annual Meeting of the European Association for Animal Production, Prague, Paper P4.6, PP 331.
- 14) **Tsuma, V.T.**, Einarsson, S., Madej, A. and Lundeheim, N. (1994). Endocrine changes during grouping of primiparous sows in early pregnancy. Proc. 13th Int. Pig Vet. Soc. Congr., Bangkok, Thailand. PP 501.
- 15) **Tsuma, V.T.**, Einarsson, S., Madej, A. and Lundeheim, N. (1994). Endocrine changes during fasting of primiparous sows in early pregnancy. Proc. 13th Int. Pig Vet. Soc. Congr., Bangkok, Thailand. PP 502.
- 16) **Tsuma, V.T.**, Einarsson, S., Madej, A. and Kindahl, H. (1994). Effects of fasting sows during early pregnancy on hormone patterns and embryonic survival. J. Reprod. Fertil. Abstract series No. 14. PP 27.
- 17) **Tsuma, V.T.**, Einarsson, S., Madej, A., Rojkittikhun, T. and Lundeheim, N. (1993). Peripheral plasma concentration of B-endorphin and cortisol in sows around weaning. Proc. IV Int. Conf. On Pig Reprod. Missouri, USA.

- 18) Mbai, K., Munyua, S.J.M., Gathumbi, P.K., **Tsuma, V.T.** and Nguhiu, J.M. (1991).
Ovine contagious epididymitis associated with Actinobacillus seminis. Proc. Of the 9th
SR-CRSP Scientific Workshop, Nairobi, Kenya. PP 176-178.

iv) Training Manuals

- 1) Tsuma, V.T. (2014). Goat Artificial Insemination Training Manual.
- 2) Mogo, M., Tsuma, V.T. and Mutembei, M. (2009). Research animal handling and care and occupational health and safety training manual.
- 3) Tsuma, V. T. et al. Artificial Insemination Reference Manual.

7. CONFERENCES/CONGRESSES/TRAININGS/SEMINARS/PROFESSIONAL MEETINGS ATTENDED

- 2014:** Preclinical safety in anti-cancer drug development, 26th November, Biotechnology Research Institute, Kenya Agricultural and Livestock Research Organization (KALRO), Muguga, Kenya. **Role: participant.**
- 2014:** Genomic selection for livestock breeding, 25th November, Kenya Animal Genetics Resource Centre (KAGRC), Nairobi, Kenya. **Role: participant.**
- 2014:** Training of trainers course in the harmonized artificial insemination curriculum and refresher modules 1, 2 and 3, 15th to 17th October, Animal Health and Industry Training Institute, Nairobi, Kenya. **Role: Facilitator.**
- 2014:** Faculty of Veterinary Medicine (FVM) 9th Biennial Scientific Conference, 3rd to 5th September, Faculty of Veterinary Medicine, University of Nairobi, Nairobi, Kenya. **Role: participant.**
- 2014:** Training of Trainers workshop on Artificial Insemination in Indigenous Goats, 3rd -7th March, University of Agriculture, Faisalabad, Pakistan. **Role: Resource person and participant.**
- 2013:** Dairy extension packages peer-review workshop, 18th -20th December, Kenya Agricultural Research Institute (KARI), Naivasha, Kenya. **Role: Peer Reviewer.**

- 2013:** Eastern Africa Agricultural Productivity Project (EAAPP) Mini-Scientific Conference, Techno-fair of Innovations and Open day- 13th – 15th November, Morendat Training Centre, Naivasha, Kenya. **Role: Participant and co-presenter.**
- 2013:** World Society for the Protection of Animals (WSPA) International Disaster Management Training, 18th-21st June, Kenya Wildlife Training Institute, Naivasha, Kenya. **Role: Trainee.**
- 2013:** 47th Kenya Veterinary Association (KVA) Annual Scientific Conference and Exhibition, 24th to 26th April, Whitesands Hotel, Mombasa, Kenya. **Role: Session Chair and participant.**
- 2013:** Inter-University workshop to bring together faculties from One Health Central and East Africa (OHCEA) institutions to nurture collaboration, co-teaching, curriculum review and partnership, 21st -25th January, Panari Hotel, Nairobi, Kenya. **Role: Presenter and participant.**
- 2012:** Kenya Veterinary Board (KVB)-Micro Enterprise Support Program Trust (MESPT) national stakeholders workshop on artificial insemination curriculum and refresher training modules at the Kenya Agricultural Research Institute headquarters, 29th November, Nairobi, Kenya. **Role: facilitator.**
- 2012:** Working safely with genetically modified animals and animal production/health inputs and outputs. Jacaranda hotel, 20th to 21st November, Nairobi, Kenya.
- 2012:** Livestock emergencies guidelines (LEGS) training at Clinical Studies Department, University of Nairobi, 7th to 9th November, Nairobi, Kenya.
- 2012:** Kenya Veterinary Board (KVB)-Micro Enterprise Support Program Trust (MESPT) workshop on development of a harmonized curriculum for artificial insemination (AI) training in Kenya, and development of refresher training modules for AI service providers, 8th to 13th October, Machakos, Kenya. **Role: resource person.**
- 2012:** Joint Faculty of Veterinary Medicine (FVM) 8th Biennial Scientific Conference and 46th Kenya Veterinary Association (KVA) Annual Scientific Conference and Exhibition, 25th

- to 27th April, Safari Park Hotel, Nairobi, Kenya. **Role: member of the Scientific Organizing Committee and participant.**
- 2011:** National Stakeholders workshop on Use of Reproductive Technologies for Animal Breeding in Kenya. Naivasha, Kenya. **Role: member of the Organizing Committee and participant.**
- 2011:** Training of trainers workshop on Basics of Veterinary Emergency Response Operations, 6th to 12th November, Kenya Wildlife Service Training Institute, Naivasha, Kenya. **Role: trainer and trainee.**
- 2011:** Dairy goat stakeholder's workshop to develop a Breeding manual for dairy goat farmers in Kenya. Nakuru, Kenya. **Role – resource person.**
- 2011:** 45th Kenya Veterinary Association annual conference, 27th to 29th April, Kisumu, Kenya. **Role: presenter and participant.**
- 2010:** Stakeholder's workshop on Strategies for promotion of good animal welfare, 28th to 29th October, Agricultural Information Resource Centre, Nairobi. **Role: participant.**
- 2010:** In vitro embryo production-ovum pick up and embryo transfer (IVEP-OPU-ET) workshop, 11th to 15th October, ILRI Nairobi and Machakos, Kenya. **Role: Resource person.**
- 2010:** Africa-Brazil Agricultural Innovation Marketplace Forum, 6th to 7th October, Brasilia, Brazil.
- 2010:** 7th Faculty of Veterinary Medicine Biennial Scientific Conference, 8th to 10th September, Nairobi, Kenya. **Role: member of the Scientific Organizing Committee.**
- 2010:** PhD Supervision training. PREPARE – PhD project, 2nd – 4th March. University of Nairobi.
- 2009:** 1st PanAfrican Seminar on Alternatives to Animal Experiments in Educational Training. 23rd – 24th September. Kenya Institute of Education, Nairobi, Kenya.
- 2009:** Training in Ovum-pick-up (OPU) for embryo transfer in cattle and artificial insemination in goats, 29th June to 3rd July at Embrapa Brazil.

- 2009:** Training in estrus synchronization, artificial insemination and ultrasonographic imaging of the reproductive system in goats, 29th June to 3rd July at Embrapa Brazil.
- 2009:** Performance Enhancement Strategy course, 31st January, University of Nairobi, Kenya.
- 2008:** Biosafety bill and Genetically Modified Organisms (GMO) workshop, 21-22nd November, University of Nairobi, Kenya.
- 2006:** Participatory Integrated Community Development (PICD) training, Machakos, Kenya.
- 2001:** Proposal writing for Policy Research workshop, by 2020 Vision Network for East Africa, March, University of Nairobi, Kenya.
- 1996:** 14th International Pig Veterinary Society Congress, 7th – 10th, July, Bologna, Italy. **Role: Presenter and participant.**
- 1994:** 13th International Pig Veterinary Society Congress, Bangkok, Thailand.
Role: Presenter and participant.
- 1993:** IV International Conference on Pig Reproduction, Missouri, USA. **Role: Presenter and participant.**

8. EXAMINERSHIP

2002 - 2005: External examiner for Theriogenology.

I have served as an external examiner for Theriogenology at Sokoine University of Agriculture, Morogoro, Tanzania. I evaluated the Theriogenology curriculum and the examination process as a quality control measure to ensure the graduates trained were of high standards.

1996 – Present: Examiner for Postgraduate Theses

I have internally and externally examined postgraduate theses at the University of Nairobi and at Sokoine University of Agriculture, Tanzania, to ensure originality and compliance with high standards.

9. INVITED REVIEWS AND EDITORSHIP OF JOURNALS AND OTHER PUBLICATIONS

2012 – Present: Referee, Journal of Agriculture, Science and Technology (JAGST), a journal of the Jomo Kenyatta University of Agriculture and Technology.

2012: Review of modules for the harmonized artificial insemination training curriculum and refresher modules. **Role: Resource person.**

2006 – Present: Member, Scientific & Editorial Committee of Kenya Veterinary Association

I participate in processing the review and publication of scientific papers submitted to the Kenya Veterinarian, organizing scientific conferences and continuing veterinary education programs, and establishment of collaborative links with relevant scientific and regulatory institutions.

2003 - 2005: Member, Harmonization of Artificial Insemination Training Task Force

I participated in review and harmonization of the training curriculum for artificial inseminators (AI) in Kenya. The task force came up with minimum training guidelines for AI service providers.

2000 – Present: Reviewer, Kenya Veterinarian

I review scientific papers submitted to the Kenya Veterinarian, a journal of the Kenya Veterinary Association for scientific merit.

1999 – 2001: Reviewer, Proposals Submitted to the Agricultural Research Fund (ARF)

I reviewed and discussed the scientific merit and quality, appropriateness of research methodology, feasibility of the proposal, achievement of synergies and cost-effectiveness, and benefits in relation to cost of proposals submitted to the ARF for funding.

10. COMPLETED RESEARCH PROJECTS

- i) Department of Obstetrics and Gynaecology, Swedish University of Agricultural Sciences, Uppsala, Sweden. During the 19th Swedish International Course on Animal Reproduction

(SIPAR), learnt and applied laboratory techniques to evaluate the immune status of the gilt around farrowing and how this affects the pathogenesis of the Agalactia Syndrome in pigs. Also learnt a number of computer programs, as well as scientific write up techniques. For doctorate work, learnt and applied clinical and endocrinological techniques to study the effect of stress on reproductive performance in sows. **(My PhD research work).**

- ii) Fertility of zero-grazed dairy animals following hormone treatment and fixed-time artificial insemination. The study evaluated the role of hormones in management of difficult breeding in smallholder dairy cows. Such cows would be made pregnant using hormones and fixed time insemination, cutting on the need for heat observation. **2006. (Lead researcher).**
- iii) Peri-parturient problems affecting dairy cows in Kenya. The study looked at the common problems affecting smallholder dairy cows around the time of calving. The study ranked the problems and recommended on their economic significance and how they could be managed. **2007. (Supervisor).**
- iv) Risk factors associated with pre-weaning mortality and mastitis in dairy goats in Kenya. Looked at factors that contribute to mastitis and pre-weaning kid mortality. Data analysis. **Funded by the Commission for Higher Education (CHE). (Co-investigator).**
- v) Infectious abortion and associated risk factors in dairy cattle farms in Nakuru district, Kenya. **(Supervisor).**
- vi) Application of assisted reproductive technologies (in vitro embryo production (IVEP) and embryo transfer (ET) and use of sexed semen) to improve cattle production in Kenya. The study evaluated matching of genotype to production environment to enhance dairy productivity. **Funded by Bill and Melinda Gates Foundation and Heifer Project International. (Collaborator).**
- vii) Factors affecting oocyte competence for in vitro embryo production. **(Collaborator).**
- viii) Effect of Carica papaya on fertility in the boar. **2011. (Supervisor).**
- ix) Follicular dynamics in the Boran cow. **(Supervisor).**

11. ON-GOING FUNDED PROJECTS

- i) Enhancing dairy goat productivity in Kenya using better breeding strategies, good husbandry practices and stakeholder capacity building. **On-going project funded by the East African Agricultural Productivity Project. (Principal investigator).**
- ii) Factors affecting superovulatory response in multiple ovulation and embryo transfer (MOET) schemes in Kenya. **On-going project funded by the East African Agricultural Productivity Project and DAAD. (Lead supervisor).**

12. CONSULTANCIES

a.) Assessments and Evaluations

2014: Evaluation of performance of introduced goat breeds in Turkana County. Funded by DFID through Trocaire Kenya. **Role: Lead Consultant.**

2010: With another consultant, I evaluated artificial insemination technicians on artificial insemination (AI) in dairy goats and evaluated conception rates in dairy goats following AI, and conducted training in estrus synchronization, AI and pregnancy diagnosis by ultrasonography in dairy goats. A project funded by GTZ/PSDA (Promotion of Private Sector Development in Agriculture) program. **(Role: Team leader/consultant).**

2010: I worked with the manager of the Animal Unit at the International Livestock Research Institute (ILRI) to develop and put in place an emergency response plan for mitigation against occurrence of Foot and Mouth Disease (FMD) at the institute's Nairobi campus. **(Role: Consultant).**

2009: I worked with a team of consultants from Kesarine and Associates undertaking evaluation of the current status of Decentralized Community Based Animal Health Services in Kenya: A case of Institutional Stakeholders and Field Studies in Narok and Kajiado districts, funded by the Food Agricultural Organization (FAO). The assignment informed policy issues on the role of community animal health workers on service delivery in the livestock sector. **(Role: Team member).**

2008: I worked with a team of consultants from University of Nairobi, undertaking farm trials to evaluate the effect of different mineral formulations on milk production,

mastitis and reproductive efficiency in dairy cows funded by Cooper Kenya Ltd
(Role: Team member and leader of the reproductive efficiency component).

b.) Trainings Conducted

- 2014:** Training of trainers course in the harmonized artificial insemination curriculum and refresher modules 1, 2 and 3, 15th to 17th October, Animal Health and Industry Training Institute, Nairobi, Kenya. **(Role: Facilitator).**
- 2014:** Training of Trainers workshop on Artificial Insemination in Indigenous Goats, 3rd -7th March, University of Agriculture, Faisalabad, Pakistan. **(Role: Resource person).**
- 2011:** I together with other colleagues from the University of Nairobi and the International Livestock Research Institute (ILRI) conducted the “2nd Ovum Pick Up-Invitro Embryo Production-Embryo Transfer (OPU-IVEP-ET) Course” in Nairobi, Kenya. **(Role: Trainer).**
- 2010:** I together with other colleagues from the University of Nairobi, and the International Livestock Research Institute (ILRI), Kenya, trained a team from the Ethiopian Institute of Agricultural Research (EIAR) on In vitro Embryo Production (IVEP), Ovum Pick Up (OPU) and Embryo Transfer (ET) in Nairobi, Kenya. **(Role: Trainer).**
- 2010:** I together with other colleagues from the University of Nairobi, International Livestock Research Institute (ILRI), Kenya, and EMBRAPA, Brazil, developed and conducted the “1st International Brazil-Kenya Ovum Pick Up-Invitro Embryo Production-Embryo Transfer (OPU-IVEP-ET) Course” in Nairobi, Kenya. **(Role: Trainer).**
- 2009:** I together with a team of consultants developed a training manual and undertook training in Research Animal Handling and Care and Occupational Health and Safety for animal handlers at the International Livestock Research Institute. The outcomes included a training manual and well-documented research animal use protocols. **(Role: Co-consultant and Trainer).**

13. PROFESSIONAL RELATED ACTIVITIES

2013 – Present: Section Head, Theriogenology, University of Nairobi.

I am the Academic and Administrative head of Theriogenology (Animal Reproduction and Obstetrics), one of the three academic disciplines of the Department of Clinical Studies, Faculty of Veterinary Medicine, University of Nairobi. As the head I am responsible for the day to day running of the section, and implementation of the discipline in the various curricula. I schedule lectures and clinical rotations and receive feedback from students on course delivery.

2013 – 2014: Chairman, Faculty of Veterinary Medicine Curriculum Committee, University of Nairobi.

The committee considers curriculum issues of academic interest and makes recommendations to the Faculty Board. It considers new courses and changes in the existing curricula, ensures the design and content of the curriculum and assessment will allow students appropriate learning opportunities, and benchmarks the curriculum with similar curricula globally.

2013 – Present: Member, One Health Committee, Faculty of Veterinary Medicine, University of Nairobi

The committee plans, prioritizes and monitors implementation of One Health activities in the faculty.

2011 – 2013: Professional Expert, BREAD project at the International Livestock Research Institute (ILRI)

I have been a professional expert in the ‘BREAD’ project entitled “Basic Mechanisms Underlying Species Specific Trypanosome Resistance” which is an international collaborative project between organizations in the US, UK and Kenya. I am responsible for the experimental and routine manipulation and welfare of cattle used as embryo donors and recipients in the project and providing advice and guidance on reproductive physiology aspects to the other team members.

2011 – Present: Communication Officer and Member, Veterinary Emergency Response Unit (VERU), Clinical Studies Department, University of Nairobi.

I am a member and current Communication Officer of the Veterinary Emergency Response Unit (VERU), its only one in the region, of the University of Nairobi. I have been trained in various aspects of disaster management, especially as it relates to livestock. I have trained others on data collection in disasters. I participated in the damage analysis and needs assessment (DANA) of the effect of the drought that ravaged the country in 2011 on livestock and the communities in the larger Mwingi district of Kenya. As the communication officer in the team, I was responsible for data collection, processing and reporting. Subsequent to the DANA, we developed drought mitigation strategies for the communities and their livestock, including a rapid response that we already conducted, and medium and long term strategies that will be carried out over a five year period. These activities are all funded by the World Society for the Protection of Animals (WSPA).

2011: Collaborator, Sexed semen, In vitro Fertilization, Embryo Transfer (SIFET) project, International Livestock Research Institute (ILRI)

I was a collaborator in the SIFET project at ILRI, that was using sexed semen and in vitro embryo production (IVEP) to produce F1 (Boran X Bos taurus) embryos and calves to match genotype and production environment. I was responsible for donor and recipient cow selection and preparation, ovum pick-up and embryo transfer. Our team produced the first IVEP ('test-tube') calf in East Africa.

October 2001 – April 2010: Section Head, Theriogenology, University of Nairobi.

I have served as the Academic and Administrative head of Theriogenology (Animal Reproduction and Obstetrics), one of the three academic disciplines of the Department of Clinical Studies, University of Nairobi. As the head I was responsible for the day to day running of the section, and implementation of the discipline in the various curricula. I scheduled lectures and clinical rotations and received feedback from students on course delivery.

November 1996 – September 1999: Lecturer, University of Nairobi.

Developed teaching and learning materials and conducted lectures, practicals, demonstrations and ward rounds for undergraduate Bachelor of Veterinary Medicine students. Carried out clinical duties in the large animal unit.

August 1989 – November 1996: Assistant Lecturer, University of Nairobi.

Developed teaching and learning materials and conducted lectures, practicals, demonstrations and ward rounds for undergraduate Bachelor of Veterinary Medicine students. Carried out clinical duties in the large animal unit.

2011 – 2013: Member, Faculty of Veterinary Medicine Time-tabling Committee

The committee prepares the timetable for all the academic programs of the faculty.

2008 – 2014: Member, Faculty of Veterinary Medicine Biennial Scientific Committee

The committee organizes and coordinates the faculty of Veterinary Medicine Biennial Scientific conference, liaises with the Dean's office in fundraising, and publishes proceedings of the conference.

2008 – Present: Member, Genetic Advisory Committee, Kenya Animal Genetic Resource Centre

I participate in the selection and recruitment of bulls that will be used for semen collection for national artificial insemination and also the selection of cows that can be used as bull dams. I also participate in determination and selection of any genetics that need to be imported into the country.

14. PARTICIPATION IN ORGANIZATION OF SCIENTIFIC MEETINGS

As a member of the Faculty of Veterinary Medicine Biennial Scientific Committee, I participated in the organization of the 6th, 7th, and 8th biennial conferences in Nairobi, Kenya.

15. ADMINISTRATIVE EXPERIENCE

I have been and still am the Section Head of Theriogenology, one of the academic disciplines of the Department of Clinical Studies, Faculty of Veterinary Medicine, University of Nairobi.

I have also acted as the Chairman of the Department of Clinical Studies on a number of occasions.

16. MEMBERSHIP OF LEARNED PROFESSIONAL BODIES

I am a registered Veterinary Surgeon with the Kenya Veterinary Board (Reg. No. 1596), and also a member of the Kenya Veterinary Association.

REFEREES

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