

Curriculum Vitae

NAME: CHARLES NGULI KIMWELE

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EDUCATIONAL BACKGROUND

<u>YEAR</u>	<u>INSTITUTION</u>	<u>QUALIFICATION</u>
1983-1987	University of Nairobi, College of Agriculture and Veterinary Sciences	Bachelor of Veterinary Medicine
1988-1991	University of Nairobi, College of Agriculture and Veterinary Sciences	Master of Science (Comparative Mammalian Physiology)
1996-2000	University of St. Andrews, Scotland	Ph.D

WORK EXPERIENCE

1987-1988

Veterinary Officer (Hygiene) in charge of Busia District. Duties included implementing management practises relating to meat and hides and skins hygiene from the producer through to the retailer.

1988-1992

Assistant Lecturer, Department of Animal Physiology, Faculty of Veterinary Medicine. Engaged in teaching undergraduates and research.

1992-2003

Lecturer, Department of Animal Physiology, Faculty of Veterinary Medicine, University of Nairobi.

2003-2005

Adjunct Professor, Western Kentucky University (WKU). Teaching undergraduate and graduate students and research at the Biotechnology Center, WKU.

2003- date

Senior Lecturer, Department of Animal Physiology, Faculty of Veterinary Medicine, University of Nairobi. Involved in teaching and examining physiology, ethology, wildlife conservation, conservation genetics, population genetics and biotechnology to undergraduate and postgraduate students.

2004-2006

Chairman, Youth for Conservation Management Council

2004-2010

Co-ordinator, University of Nairobi – Western Kentucky University Program

2005-2012

Scientific Advisor – Kenya Coalition for Wildlife Conservation and Management

2004

Visiting Scott Professor of Physiology, WKU

2005 - 12

- Co-Founder, Africa Center for Biodiversity Conservation (ACBC)
- Chairman, Board of Directors and Scientific Advisor, Africa Network for Animal Welfare
- Member Faculty Timetabling Committee

2008/9

- Visiting Assistant Professor, WKU
- Member, Policy Committee, AWAKE (Animal Welfare Action Kenya)

2009-13

- Member, Faculty of Veterinary Medicine Biennial Scientific Conference Committee
- Member Faculty Postgraduate Studies Committee

2010-13

- Member, Faculty of Veterinary Medicine Biosafety, Animal Use, Care and Ethics committee
- WSPA/African advisor – Research and Policy
- PAAWA advisor – Research, ADAW, Policy and Legislation (to 2012)
- Member, Board of Directors, ANAW-US (to 2012)

2011-12

Member (Vice-Chairman) Ministerial Taskforce to review animal welfare policy and legislative framework

2013 to date

Chairman, Department of Veterinary Anatomy and Physiology

2014 to date

World Society for the Protection of Animals (now World Animal Protection) advisor on Animal Welfare Research and Policy.

Research activities/interests.

1. Endocrinology

Growth metabolism in the crocodile, *Crocodylus niloticus* as influenced by recombinant human and bovine growth hormone.

2. Molecular genetics

Conservation genetics

Molecular behavioural ecology and biodiversity

- Investigated the adaptive implications of the communal nesting system of the ostrich *Struthio camelus massaicus* by estimating their reproductive success using microsatellite molecular genetic markers.
- Investigated the primary sex ratio of the ostrich *Struthio camelus massaicus* and its significance comparative to the secondary sex ratio using molecular sex markers.

Conservation genetics

- Assessed the genetic diversity of a small fragmented and endangered population of the east african bongo antelope (*tragelaphus eurycerus isaaci*) using molecular genetic markers
- Wildlife forensics
 - Application of PCR-RFLP as molecular markers to identify some game meat species in Kenya. Pilot study undertaken at Western Kentucky University to investigate the potential of PCR-RFLP for molecular species identification. This project involved sequencing of mitochondrial cytochrome B gene of 10 ungulate game species and 3 reference domestic species (NCBI Accession Nos. AY534338-349) leading to identification of conserved homologous primers and restriction sites for use in PCR-RFLP.
 - East African wildlife game species identification using partial mitochondrial DNA sequences.

Quantitative genetics

- Mapping of quantitative trait loci (QTL) for trypanotolerance in N'dama and Boran backcross cattle under natural tsetse challenge in Narok, Kenya.

3. Veterinary ethology, ethics and animal welfare

- Assessment of chimpanzee psychological status in the wild and under captive state.
- Ethical use of animals in research and experimentation.

SUPERVISION

Ph.D level

Completed

1. Mapping of quantitative trait loci (QTL) for trypanotolerance in N'dama and Boran backcross cattle under natural tsetse challenge in Narok , Kenya. – Orenge, C.O. (University of Nairobi 2010).
2. Use of DNA forensics towards conservation of elephants (*Loxodonta Africana*) in Kenya. Mwangi J. K. (Jomo Kenyatta University of Agriculture and Technology (JKUAT) 2015).

Ongoing

1. An *in vitro* pharmacophysiological anti-cancer potential of medicinal plants used in Kakamega County, Kenya.

MSc level

Completed

1. MSc student - Assessment of genetic diversity of a small fragmented and endangered population of the east african bongo antelope (*tragelaphus eurycerus isaaci*) using molecular genetic markers - Kavembe G.D. (University of Nairobi 2008)
2. Estimating the prevalence of game meat utilization in commercial outlets in Nairobi using mitochondrial DNA sequences – Karisa B. (University of Nairobi 2008)
3. Transcriptional regulation of NOS3 gene expression in pulmonary myofibroblast differentiation and implications of this in pulmonary fibrosis – Ochwangi D.O. (University of Nairobi 2011)
4. Cytochrome Oxidase 1 gene and its application in wildlife forensics in Kenya – Mururu M. M. (Jomo Kenyatta University of Agriculture and Technology (JKUAT) 2014).
5. Optimisation of Mitochondrial Cytochrome Oxidase 1 gene as a tool for wildlife species identification – Song'oro E.K. (Jomo Kenyatta University of Agriculture and Technology (JKUAT) 2014).

Ongoing

6. Use of Cytochrome C oxidase 1 gene in identification of wildlife species: A molecular tool in forensic science. Mbugua D.

PUBLICATIONS

1. Andersen O., Kimwele C., Aulie A. and Kanui T. (1990). Effects of recombinant human growth hormone in juvenile Nile crocodiles (*Crocodylus niloticus*). *Comp. Biochem. Physiol.* 97A, 607-609.
2. Kimwele C (1991). Effects of recombinant human growth hormone in juvenile Nile crocodiles. *MSc. Thesis*.
3. Kimwele C., Kanui T., and Aulie A (1992). Effects of recombinant human growth hormone on anorexic Nile crocodiles (*Crocodylus niloticus*). *Comp. Biochem. Physiol.* 102A, 553-557.
4. Kanui T., Kimwele C. and Aulie A (1993). Influence of recombinant bovine growth hormone on growth and feed intake in juvenile Nile crocodiles (*Crocodylus niloticus*) *Comp. Biochem. Physiol.* 106A, 381-384.
5. Kimwele C., Graves J., Burke T., & Hanotte O. (1998) Development of microsatellite markers for parentage typing of chicks in the ostrich *Struthio camelus*. *Mol. Ecol.*, 7, 249-251.
6. Kimwele C (2000)

A molecular analysis of the ostrich *Struthio camelus massaicus* communal nesting system. *Ph.D Thesis*. University of St. Andrews, Scotland.

7. Kimwele C & J. Graves (2003). A molecular genetic analysis of the communal nesting of the ostrich (*Struthio camelus*). *Mol. Ecol.*, 12, 229-236
8. C. Kimwele; F. Waweru (2006) Contemporary Kenyan Wildlife Conservation – In Support of Autonomy Supportive Environment (ASE) - Eastern Africa Environmental Network (EAEN) Proceedings and Journal (2006)
9. C. Kimwele; F. Waweru (2006). Wildlife Conservation Issues in Kenya. *Action Aid International Kenya*
10. C. Kimwele (2007): Pig production Good Agricultural Practice in Kenya. *Compassion in World farming*
11. C. Kimwele, Kariuki, F. Mukwanja, J. Ngonyo (2009). Animal Welfare in Kenya; Advances and shortcomings.
12. P. J. Faria, G. D. Kavembe, J. O. Jung'a, C. N. Kimwele, L. D. Estes, P. R. Reillo, A. G. Mwangi M. W. Bruford (2011). The use of non-invasive molecular techniques to confirm the presence of mountain bongo *Tragelaphus eurycerus isaaci* populations in Kenya and preliminary inference of their mitochondrial genetic variation. *Conserv Genet* DOI 10.1007/s10592-011-0181-5
13. H. R. Ferdowsian, D. L. Durham, C. Kimwele, G. Kranendonk, E. Otali, T. Akugizibwe, J.B. Mulcahy, L. Ajarova, C. M. Johnson (2011) Signs of mood and anxiety disorders in chimpanzees. *.PLOS One* 2011: 6(6):e19855 21698223
14. Caleb Orege, Leonard Munga, Charles Kimwele, Steve Kemp, Abraham Korol, John Gibson, Olivier Hanotte, Morris Soller (2011) Expression of trypanotolerance in N'Dama x Boran crosses under field challenge in relation to N'Dama genome content. *BMC Proc.* 2011 Suppl 4:S23
15. Caleb Orege, Leonard Munga, Charles Kimwele, Steve Kemp, Abraham Korol, John Gibson, Olivier Hanotte, Morris Soller (2012) Trypanotolerance in N'Dama x Boran crosses under natural trypanosome challenge: effect of test-year environment, gender, and breed composition. *BMC Genetics* 13:87
16. Charles Kimwele, Duncan Matheka, Hope Ferdowsian (2011) A Kenyan perspective on the use of animals in science education and scientific research in Africa and prospects for improvement. *The Pan Afri Med Journal.* 2011;9:45
17. Kimwele C. N., Karisa B. K., Stokes M., Junga J. O., Hanotte O., Skilton R. A., and McElroy D. (2012) DNA species surveillance: Monitoring bushmeat poaching and trading in Kenya using partial cytochrome b gene. *Afr. J. Biotech* Vol. 11(78), pp. 14276-14286.
18. Ferdowsian, H. R., Durham, D. L., Johnson, C. M., Brüne, M., Kimwele, C., Kranendonk, G., Otali, E., Akugizibwe, T., Mulcahy, J.B., Ajarova, L. (2012). Signs of generalized anxiety and compulsive disorders in chimpanzees. *Journal of Veterinary Behavior: Clinical Applications and Research*, 7(6), 353-361.
19. Dominic Ochwang'i a, Charles Kimwele, Stephen G. Kiama, and Nancy Rice (2013). Transcriptional regulation of Rat Endothelial Nitric Oxide Promoter in Pulmonary Myofibroblasts cells and its implications in Pulmonary Fibrosis. *Afr. J. Pharmacol. Ther.* 2013. 2(1): 1-8

20. Edinah Songoro, Ann Muigai, Charles Kimwele, Erastus Gatebe, Mercy Mwaniki, Julius Kinuthia and Zipporah Osiemo (2012). Optimisation of PCR conditions to amplify mitochondrial PCR COI gene fragments of wildlife species in Kenya. *Asian J. Biol. and Life Sc.* 1 (3): 191-5
21. Mururu M. M., Muigai A.W.T., Kimwele C, Gatebe E, Kinuthia J, Mwaniki M, Gakuya F, Kwamboka E, Mbugua D. (2013). Cytochrome 1 oxidase gene and its application in wildlife forensics in Kenya. *F. J. Sc. Tech.* 3: 108-119.
22. Dominic O. Ochwang'i, Charles N. Kimwele , Jemimah A. Oduma , Peter K. Gathumbi , James M. Mbaria, Stephen G. Kiama (2014). Medicinal plants used in treatment and management of cancer in Kakamega County, Kenya. *Journnal Of Ethnopharmacology*
23. D. Mbugua, C.N. Kimwele, J.O. Jung'a, E. Gatebe, F. Gakuya., M.J. Kinuthia, M.M. Mugambi, E.S. Kwamboka (2014): Use of cytochrome oxidase 1 gene region: a molecular tool for the domestic and wildlife industry in Kenya (2014). *Scientific Journal of Animal Science* 3 (3) 87-94
24. The selection of a standard STR panel for DNA profiling of the African elephant (*Loxodonta Africana*) in Kenya (2014). *Conservation Genet Resour* DOI 10.1007/s12686-014-0366-6

CONFERENCES/SEMINARS

1. Kimwele C.N. & Graves, J. Isolation and characterisation of the ostrich, *Struthio camelus massaicus*, microsatellite markers. Postgraduate conference, University of St. Andrew, 1998.
2. Kimwele, C. N. & Graves, J. Molecular analysis of the ostrich, *Struthio camelus massaicus*, communal nesting system. Postgraduate conference, University of St. Andrew, 1999.
3. Kimwele C.N. & Graves, J. A molecular analysis of the communal nesting system of the ostrich *Struthio camelus massicus*. XXVII International Ethological Conference, Tuebingen, 2001.
4. Kimwele C.N. A molecular analysis of the ostrich sex ratio – an adaptive adjustment? Faculty of Veterinary Medicine Biennial Conference (2002)
5. Kimwele, C.N. A molecular analysis of the ostrich *Struthio camelus massaicus* communal nesting system. National Museums, Nature Kenya.
6. Kimwele C.N. Molecular analysis of the ostrich nesting system and use of PCR-RFLP in countering bush-meat trade in Kenya – University of Tennessee, Tennessee, USA (2003)
7. Kimwele, C. N. Molecular analysis of the ostrich nesting system and use of PCR-RFLP in countering bush-meat trade in Kenya – Western Kentucky University, Kentucky, USA (2003)
8. Kimwele. C. N. ; McElroy & Stokes, M. A Scientific Anti-poaching Tool: Identification of East African Wildlife Game Species Using a Molecular Marker - Eastern Africa Environmental Network (EAEN), 16th annual conference (2006)
9. Kimwele, C. , Waweru F. Contemporary Kenyan Wildlife Conservation – In Support of Autonomy Supportive Environment (ASE) - Eastern Africa Environmental Network (EAEN), 16th annual conference (2006)
10. Orenge, C.O., Korol, A.B., Kemp, S., Kimwele, C.N., Munga, L.K., Gibson J.P., Hanotte, O., Murilla, G and Soller, M. (2007). Detection of quantitative trait loci (QTL) controlling trypanotolerance

in a backcross of (Ndama × Boran) × Boran cattle population under natural exposure in Narok, S.W. Kenya. *Proceedings of the 29th Meeting of the International Council for Trypanosomiasis Research and Control (ISCTRC) Conference, 1-5 October, Luanda, Angola, OAU/STRC Publication 124 (in press)*

11. Munga, L. K., Orenge, C. O., Hanotte, O., Makumi, J., Ngeranwa, J., Gibson, J. P., Korol, A., Kemp, S., Soller, M., Murilla, G. A and Nagda, S. (2007). The impact of environmental factors on tsetse fly catches and trypanosomiasis prevalence and diminazene treatments in N'Dama-Boran crossbreed cattle in Mara, Southern Kenya. *Proceedings of the 29th Meeting of the International Council for Trypanosomiasis Research and Control, 1-5 October 2007. Luanda Angola, OAU/STRC Publication 124 (In press)*
12. Orenge, C.O., Munga L.K., G.Murilla, S.J.Kemp, C.N. Kimwele, J.P. Gibson, A.B. Korol, O.Hanotte and M.Soller (2008). Expression of trypanotolerant quantitative trait loci (QTL) in cattle population under natural tsetse and trypanosomiasis challenge. *A full oral presentation (abstract no.4911) given during the 10th World conference on Animal production (WCAP) on 23rd-28th in CapeTown, South Africa*
13. Kimwele C.N. (2010) A Kenyan Perspective on The Use Of Animals In Science In Africa And The Prospects For Improvement. *PCRM (Physicians Committee for Responsible Medicine) conference on Animals, Research, and Alternativess in Washington DC.*
14. Kimwele, C. N. (2010) Animal Welfare: Current Status and the Future Trends in the Changing Environment. 7th Biennial Scientific conference, Faculty of Veterinary medicine, University of Nairobi.
15. Attendance (2010): *AU-IBAR's 8th Conference of Ministers May 2010 in Entebbe*
16. Kimwele C.N. (2011) World Society for the Protection of Animals role in the animal sector (2011). *19th conference of the OIE Regional Commission for Africa Kigali, Rwanda.*
17. Kimwele C.N. (2013) World Society for the Protection of Animals role in the animal sector. *20th conference of the OIE Regional Commission for Africa Lome, Togo.*
18. Kimwele C. N (2014) Status of Animal Welfare in Africa. *KVA World Animal Day Conference*

Programs/Projects

1. Co-founder and coordinator, Western Kentucky University, USA – University of Nairobi collaborative program.
2. Co-founder, African Center for Biodiversity Conservation
3. Founder, Biotechnology Research Laboratory – Department of Veterinary Anatomy and Physiology.
4. Wildlife Forensics project – collaborators: JKUAT, KWS and ILRI

Previous grants.

1. Norad Ken 046 Project.
2. Deans committee, University of Nairobi

3. NERC (Natural Environment Research Council), UK, grant GR9/1379.
4. Western Kentucky University Grant.
5. Born Free Foundation Grant 2008
6. NSF/Bill and Melinda Gates Foundation Grant, 2011
7. JKUAT, 2011
8. NACOSTI, 2011

Other responsibilities and membership (Social responsibility/Extracurricular functions)

- i. Kenya Veterinary Association (Professional)
- ii. Kenya Veterinary Board (Professional)
- iii. UoN Alumni
- iv. Nature Kenya
- v. National Museums of Kenya
- vi. FoNNaP (Friends of Nairobi National Park)