



Overview

I am a Professor of Tropical Livestock Genetics at the University of Edinburgh currently seconded to The International Livestock Research Institute, Nairobi and Deputy Director of the Centre for Tropical Genetics and Health. I conceived, developed and now lead *LiveGene*, the ILRI genetics group and I was ILRI's interim Deputy Director General for Biosciences for 2 years. I have been directly involved in the mobilisation of over \$70m and my team and I currently hold grants with a value of some \$25m from a mix of donors.

I love new ideas and especially enjoy connecting people and ideas in novel and innovative ways

I have a diversity of non-academic interests and qualifications which I believe reflect personal discipline and bring a breadth of knowledge and understanding to my work. These include flying as a private pilot, ocean sailing, amateur radio and electronics. I enjoy languages and can get by in Kiswahili. I am a capable Perl, python and SQL programmer and have developed several web services that are in daily use monitoring a range of critical systems at ILRI.

Employment History

Jan 2015 – Present	Deputy Director of Centre for Tropical Livestock Genetics and Health (CTLGH) and Professor of Tropical Livestock Genetics, University of Edinburgh (UoE), Roslin Institute Following development of the ILRI <i>LiveGene</i> structure and continuing discussion with the Bill and Melinda Gates Foundation, CTLGH was formed as a joint venture between UoE (Roslin), SRUC and ILRI. This is successfully attracting significant funding and collaborations. As well as playing a key role in establishing the consortium, obtaining funding and overall program development, I am responsible for the bio-banking and bioinformatics and reproductive technology research groups.
June 2012 - Present	Acting DDG Biosciences and Livestock Genetics Program Leader at International Livestock Research Institute (ILRI), Nairobi, Kenya Two years as acting DDG-Biosciences, responsible for overall coordination of Biosciences within ILRI as well as specific responsibilities for genomics and bioinformatics.
Sep 2005 - Jun 2012	Senior Scientist and Genomics Team Leader at International Livestock Research Institute (ILRI), Nairobi, Kenya As part of the Wellcome Trust-funded project, I had spent significant time with collaborators at ILRI and in 2005 ILRI requested that I take a formal secondment from Liverpool to take a lead in their broader

livestock genetics program.

I eventually took-on the leadership of the ILRI genomics research with a special interest in livestock diversity and disease resistance mechanisms. During this period I also developed a major new project on viral pathogens with a grant from Google.org. Other on-going funding includes development of a transgenic disease resistant cow by genome editing (NSF-BMGF, BREAD) and chicken diversity studies.

Sep 2005 - Jun 2012 **Ocean Youth Trust, UK.**
Ocean Youth Trust (OYT) is a charity working with disadvantaged or vulnerable young people by exposing them to the challenging environment of a working sailing vessel. I served on the Board of Trustees with special responsibility for vessel maintenance and liaison, sailed as a volunteer mate, and developed a data-driven web site managing vessel and client logistics and providing real time vessel tracking.

Sep 2000 – Jan 2015 **Professor of Molecular Genetics, University of Liverpool, United Kingdom**
Received programme grant from Wellcome Trust (~\$8m) to establish consortium to investigate mechanisms of disease resistance in West African cattle. This project developed a series of novel approaches to combine genomic, expression and population data to identify genes of interest and led to the establishment of a very strong and successful consortium which continues to this day with numerous publications including in *PNAS*.

Feb 1995 - Sep 2000 **Lecturer at University of Liverpool, United Kingdom**
In addition to teaching and administrative responsibilities, I led analysis of host-pathogen interaction in a novel advanced mouse intercross. Also provided genetics and informatics expertise to a number of projects especially those involved in analysis of familial pancreatic cancer. Attracted significant funding from Wellcome Trust, Biotechnology and Biological Sciences Research Council and Cancer Research UK. Was catalytic in establishing the University's molecular ecology group which became a Centre of Excellence.

1991 - Feb1995 **Project Leader of Ruminant Genetics Project Leader at International Laboratory for Research on Animal Diseases (ILRAD)**
Initiated genomics research at ILRAD which developed a large panel of (SSR) genetic markers for African cattle, many of those markers are still in use around the world for breed characterisation. Performed all the analysis of this work and developed a series of new tools to facilitate primer design and data management. Led the hunt for genes associated with trypanotolerance in West African cattle and a mouse model. This work was subsequently published in *Nature Genetics* and *PNAS*.

1985 - 1991 **Scientist then Senior Scientist at ILRAD**
Continued BoLA research and initiated links with groups working on

resistance to trypanosomiasis in West African cattle. Travelled extensively in East and West Africa to obtain samples.

1983 - 1985

Research Associate, International Laboratory for Research on Animal Diseases (ILRAD), Nairobi, Kenya

Tasked with establishing a BoLA typing platform from scratch in order to support various aspects of the immunology programme, particularly ECF vaccine development. Developed a unique robotic microplate reader for this assay, which transformed productivity.

1980 -1983

Technical Support Officer based at Kenya Agricultural Research Institute, Muguga. Funded by UK Overseas Development Administration.

Characterising the Major Histocompatibility Antigens (BoLA) of indigenous African cattle in order to understand their role in restricting response to a potential East Coast Fever vaccine based on transformed cell lines. Travelled extensively throughout Kenya and East Africa sampling cattle from extremely remote regions. Developed a panel of serological reagents to characterise previously unknown antigens. Collaborated extensively with international BoLA community to test these reagents alongside existing panels.

Developed a suite of Pascal programs which became the global standard for managing and analysing serological data. My PhD was based on this research.

Education

November 1985, PhD University of Edinburgh.

July 1979, BSc (Hons) Zoology, University of Wales.

Selected Publications

- Sara Silva Pereira, Kayo J. G. de Almeida Castilho Neto, Craig W. Duffy, Peter Richards, Harry Noyes, Moses Ogugo, Marcos Rogério André, Zakaria Bengaly, Steve Kemp, Marta M. G. Teixeira, Rosangela Z. Machado, Andrew P. Jackson. (2020) Variant antigen diversity in *Trypanosoma vivax* is not driven by recombination. *Nature Communications*, in press
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- Srikanth, K., Kumar, H., Park, W., Byun, M., Lim, D., Kemp, S., ... Park, J.-E. (2019). Cardiac and Skeletal Muscle Transcriptome Response to Heat Stress in Kenyan Chicken Ecotypes Adapted to Low and High Altitudes Reveal Differences in Thermal Tolerance and Stress Response. *Frontiers in Genetics*, 10. <https://doi.org/10.3389/fgene.2019.00993>
- Kim, J., Hanotte, O., Mwai, O. A., Dessie, T., Salim, B., Diallo, B., ... Kim, H. (2017). The genome landscape of indigenous African cattle. *Genome Biology*, 18(1). <https://doi.org/10.1186/s13059-017-1153-y>
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- Taye, Mengistie, Lee, W., Jeon, S., Yoon, J., Dessie, T., Hanotte, O., ... Kim, H. (2017). Exploring evidence of positive selection signatures in cattle breeds selected for different traits. *Mammalian Genome*, 28(11–12), 528–541. <https://doi.org/10.1007/s00335-017-9715-6>
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- Yu, M., Muteti, C Ogugo, M, Ritchie, W.A., Raper, J., Kemp, S.J (2016) Cloning of the African indigenous cattle breed Kenyan Boran. *Animal Genetics* 47: 510-511
- Benavides, M. V., Sonstegard, T. S., Kemp, S., Mugambi, J. M., Gibson, J. P., Baker, R. L., ... Van Tassell, C. (2015). Identification of novel loci associated with gastrointestinal parasite resistance in a Red Maasai x Dorper backcross population. *PLoS One*, 10(4). article. <http://doi.org/10.1371/journal.pone.0122797>
- Cook, A., Bronsvoort, M., Kemp, S., Agwanda, B., & Fevre, E. (2014). A Metagenomic Approach Identifies Plasmodium Species In Bats In Kenya. conference.
- Lichoti, J. K., Kihara, A., Oriko, A. A., Okutoyi, L. A., Wauna, J. O., Tchouassi, D. P., ... Mbabu, R. M. (2014). Detection of rift valley Fever virus interepidemic activity in some hotspot areas of kenya by sentinel animal surveillance, 2009–2012. *Veterinary Medicine International*, 2014. article. <http://doi.org/10.1155/2014/379010>
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