

DEPARTMENT OF GENETICS

• ANIMAL GENETICS

DR ALETTA VAN DER MERWE



I am a Principle Investigator in the Molecular Breeding and Biodiversity group in the Genetics Department, Stellenbosch University. My teaching and research focus is Molecular Population and Evolutionary Genetics of Marine and Aquatic species with aim to incorporate data on population and demographic estimates into management and conservation of commercially important species. My experience in genetic data analysis ranges from the basic tools for population data analysis to more advanced methods in which genetic data are simulated to infer biological and evolutionary historical processes over a broad range of organisms including marine species, plant pathogens and livestock animals. I also have an interest in Wildlife Forensics and have acted as an expert witness in several court cases regarding the prosecution of abalone poachers. I am currently supervising a total of 9 postgraduate projects (4 PhDs, 3 MSc and 1 HonsBSC) of which five are relating to population genetic structure, evolutionary history and reproductive biology of elasmobranchs. Other projects include population structure assessment of aquaculture species, molecular characterization of the black soldier fly and genetic mapping and transcriptomic profiling of dwarf traits in apple.

Recent publications:

- Gledhill KS, Kessel ST, Guttridge TL, Hansell A, Bester-van der Merwe AE, Feldheim KA, Gruber SH, Chapman DD (2015) Genetic structure and population dynamics of blacktip sharks *Carcharhinus limbatus* Müller & Henle, 1839 from Bimini, Bahamas. (accepted *Journal of Fish Biology*)
- Swart BL, von der Heyden S, Bester-van der Merwe A, Roodt-Wilding R (2015) Molecular systematics and biogeography of the circumglobally distributed genus Seriola (Pisces: Carangidae). Molecular Phylogenetics and Evolution, 93, 274-280
- Bester-van der Merwe AE & Gledhill K (2015) Molecular species identification and population genetics of chondrichthyans in South Africa current challenges, priorities and progress. *African Zoology*: 1-15
- Bitalo DN, Maduna SN, da Silva C, Roodt-Wilding R & Bester-van der Merwe AE (2015). Differential gene flow patterns for two commercially exploited shark species, tope (*Galeorhinus galeus*) and common smoothhound (*Mustelus mustelus*) along the south-west coast of South Africa. *Fisheries Research*, 172, 190-196.
- Mirimin L, Kerwath SE, Macey B, Bester-van der Merwe A, Lamberth SJ, Bloomer P, Roodt-Wilding R (2015) Genetic analyses reveal declining trends and low effective population size in an overfished South African sciaenid species, the dusky kob (Argyrosomus japonicus). Marine and Freshwater Research 02/2015
- Maduna SN, Rossouw C, Roodt-Wilding R, Bester-van der Merwe AE (2014) Microsatellite cross-species amplification and utility in southern African elasmobranchs: A valuable resource for fisheries management and conservation. BMC Research Notes 7(352):1-12.
- Mirimin L, Kerwath SE, Macey BM, Bester-van der Merwe AE, Lamberth SJ, Bloomer P, Roodt-Wilding R (2014) Identification
 of naturally occurring hybrids between two overexploited sciaenid species along the South African coast. *Molecular Phylogenetics and Evolution* 76:30-33.
- Rhode C, Maduna SN, Roodt-Wilding R, **Bester-van der Merwe AE** (2014) Comparison of population genetic estimates among wild, F1 and F2 cultured abalone (*Haliotis midae*). Animal Genetics 45:456-459.
- Bester-van der Merwe AE, Blaauw S, du Plessis J, Roodt-Wilding R (2013) Transcriptome-wide Single Nucleotide Polymorphisms (SNPs) for abalone (*Haliotis midae*): validation and application using Goldengate medium-throughput genotyping assays. International Journal of Molecular Sciences 14(9):19341-19360.
- Mirimin I, Ruiz Guajardo JC, Vervalle J, **Bester-van der Merwe AE**, Kerwath SE, Macey B, Bloomer P, Roodt-Wilding R (2013) Isolation and validation of microsatellite markers from a depleted South African sciaenid species, the dusky kob (*Argyrosomus japonicus*), by means of the FIASCO/454 approach. *Conservation Genetic Resources* DOI 101007/s12686-013-9922-8
- Rhode C, Vervalle J, Bester-van der Merwe AE, Roodt-Wilding R (2013) Detection of Molecular Signatures of Selection at Microsatellite Loci in the South African Abalone (*Haliotis midae*) using a Population Genomic Approach. *Marine Genomics* 10:27-36
- Sandenbergh L, Roodt-Wilding R, **Bester-van der Merwe AE** and Cloete SWP (2013) Analysis of a South African Merino flock divergently selected for reproductive potential. *Proc. Assoc. Advmt. Anim. Breed. Genet.* 20:98-101
- Bester-van der Merwe AE, D'Amato ME, Swart BL, Roodt-Wilding R (2012) Molecular phylogeny of South African abalone, its origin and evolution as revealed by two genes. *Marine Biology Research* 8:727-736



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- Davids AH, Cloete SWP, Bester-van der Merwe AE, Muchadeyi FC, Slabbert R, Dzama K (2012) Genetic variation within and between three ostrich breeds estimated using microsatellite markers. South African Journal of Animal Science 42:156-163
- Rhode C, Hepple J-A, Jansen S, Davis T, Vervalle J, **Bester-van der Merwe AE**, Roodt-Wilding R (2012) A population genetic analysis of abalone domestication events in South Africa: Implications for the management of the abalone resource. *Aquaculture* doi:10.1016/j.aquaculture.2012.05.012
- Slabbert R, Hepple J, Franchini P, **Bester-van der Merwe AE**, Roodt-Wilding R (2012) Microsatellite marker development in the abalone Haliotis midae using pyrosequencing (454) and their application: Characterisation in silico analyses and linkage mapping *Genetics and Molecular Research* 11(3):2769-2779
- Bester-van der Merwe AE, Roodt-Wilding R, Volckaert FAM, D'amato ME (2011) Historical isolation and hydrodynamically
 constrained gene flow in declining populations of the South African abalone, Haliotis midae. Conservation Genetics 12:543-555
- Lehmensiek A, Bester-van der Merwe AE, Sutherland MW, Kriel WM, Potgieter GF, Prins R, Platz G (2010) Population structure of South African and Australian Pyrenophora teres isolates. Plant Pathology 59:504-515

International and National Collaborators include:

- Queensland Department of Primary Industries and Fisheries, Australia (Prof Jennifer Ovenden)
- The Institute of Environment, University of the Matanza Riachuelo, Argentina (Juan Martín Cuevas)
- Department of Agriculture, Forestry and Fisheries, South Africa (Charlene da Silva, Dr Brett Macey, Dr Sven Kerwath)
- Oceans Research, Mosselbay (Enrico Gennari)
- KwaZulu Natal Skarks Board (Dr Sabine Wintner, Dr Geremy Cliff)
- South African Shark Conservancy (Meaghen McCord, Katie Gledhill, Tamzyn Zweig)
- **Department of Animal Science**, SU, South Africa (Prof SWP Cloete, Prof Kennedy Dzama)
- Department of Genetics, University of Pretoria, South Africa (Prof Paulette Bloomer)
- **CenGen**, Worcester, South Africa (Dr Renèe Prins)
- Department Plant Pathology, SU, South Africa (Prof Altus Viljoen)
- Agricultural Research Council- Grain Crops Institute, South Africa (Aneen Schoeman)
- Agricultural Research Council, Infruitec, South Africa, Kenneth Tobutt