

## College of Agriculture and Environmental Sciences

### Research focus areas for 2020: Department of Life and Consumer Sciences - Life Sciences

Focus area	Researchers in the focus area	Specialisation of researchers in the focus area	Profile of the researcher	Research project themes	Capacity per researcher for 2020
<b>Molecular and Cell Biology in Health</b>  <b>Contact person: Prof Ntwasa</b>	Prof Dewar	Microbiology	Professor of Biotechnology in the Department of Life & Consumer Sciences. He focuses on water research and rotaviruses.	1. Water research and biochemistry of rotavirus	Masters: 0 PhD: 0 <b>(Retiring end of 2019)</b>
	Prof Ntwasa	Biochemistry	Professor of Biotechnology in the Department of Life & Consumer Sciences. Research in Prof Ntwasa's group focuses on anti-cancer and anti-microbial drug discovery and the molecular basis of carcinogenesis. The group offers training in drug Discovery and Development Research (DDDR) as well as fundamental research in Biomedical Sciences.	1. Anticancer and antimicrobial DDDR 2. Molecular basis of carcinogenesis	Masters: 5 PhD: 3
	Prof Gildenhuys	Protein Biochemistry	Prof Gildenhuys is a professor in the Department of Life and Consumer Sciences. She holds a PhD from University of the	1. Viral capsid proteins 2. Protein ligand interactions 3. Protein stability and folding	Masters: 1 PhD:1

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			Witwatersrand. Her research focuses on studying proteins stability and function. <b>Methodology expertise:</b> Protein purification, Bacterial protein expression, Spectroscopic analysis (Circular dichroism and Fluorescence), DSC (Differential scanning calorimetry), ITC (Isothermal titration calorimetry)		
	Dr Parbhoo	Protein Biochemistry	Dr Parbhoo is a Lecturer in the Department of Life and Consumer Sciences. He holds a PhD from University of the Witwatersrand. His research focuses on studying proteins stability and function. Methodology expertise: Protein purification (chromatography), Bacterial protein expression, Spectroscopic analysis (Circular dichroism and Fluorescence), ITC (Isothermal titration calorimetry), flow cytometry computational molecular docking and drug design.	<ol style="list-style-type: none"> <li>1. Overexpression of virus capsid proteins</li> <li>2. Computational docking of anti-cancer compounds</li> <li>3. Anti-cancer assays</li> </ol>	Masters: 2 PhD: 1
	Mr Mkhombo	Protein Biochemistry	Mr Mkhombo is a lecturer in the Department of Life and Consumer Sciences. Currently he has registered for a PhD degree and investigates the determination types of advanced glycation end-products formed such as carboxymethyllysine and crosslinks formation like dimers or trimers in diabetes.	<ol style="list-style-type: none"> <li>1. Enzyme kinetics under different conditions</li> </ol>	Masters: 1 PhD: 0

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	Prof Christian	Genetics Molecular Biology	Prof Riann Christian is an associate professor in the Department of Life and Consumer Sciences. She obtained her MSc from University of KwaZulu-Natal and her PhD from University of the Witwatersrand. She has 13 years' experience in molecular biology in insecticide resistance in malaria vectors <b>Methodology expertise:</b> DNA and RNA extraction, PCR, cDNA synthesis, cloning, QPCR, biochemistry, ELISA, <i>Taqman</i> assays, microarrays, insecticide susceptibility assays, fungal insecticide assays, RNA interference, CRISPRi	<ol style="list-style-type: none"> <li>1. Insecticide resistance</li> <li>2. Gene expression studies</li> <li>3. Molecular characterization and detection of infection in vectors</li> </ol>	Masters: 3 PhD: 1
	Dr Mapholi	Genetics and Molecular Biology	Dr Ntanganedzeni Mapholi is a Senior Lecturer in the Department of Life and Consumer Sciences. She obtained her Doctoral Degree in Animal Science from the University of Stellenbosch. Her research focuses on the following: Breeding and Genomics, Genetic diversity, and DNA forensics.	<ol style="list-style-type: none"> <li>1. QTL mapping</li> <li>2. Genome sequencing</li> <li>3. Gene expression</li> <li>4. DNA profiling</li> <li>5. Genetic characterization of tick species</li> </ol>	Masters: 2 PhD: 2
	Dr Masebe	Microbiology and Molecular Biology	Dr. Tracy Masebe is a Senior Lecturer in the Department of Life and Consumer Sciences. She obtained her Doctoral Degree in Microbiology from the University of Venda. Her research focuses on the following: Tick-borne pathogens, Molecular Biology, HIV Pharmacogenomics, and Investigation of bioactive compounds with anti-HIV properties.	<ol style="list-style-type: none"> <li>1. Genetic diversity and characterization of microbial pathogens</li> <li>2. Gene expression</li> <li>3. Genome Sequencing</li> </ol>	Masters: 3 PhD: 2
	Ms Lithole	Molecular Biology	Ms Lithole is a lecturer of Zoological Sciences in the Department of Life and Consumer	<ol style="list-style-type: none"> <li>1. Molecular Epidemiology of Zoonotic Disease.</li> </ol>	Masters: 1

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			Sciences. She holds an MSc in Zoology from the University of Pretoria (UP). Currently registered for a PhD with North-West University (NWU). Her research focus is on Tick-borne diseases of veterinary, medical and environmental importance. Her research interests molecular epidemiology		
	Prof Tsotetsi-Khambule	Epidemiology of parasitic helminths of veterinary importance	Prof Tsotetsi-Khambule is an Associate Professor in the Department of Life and Consumer Sciences. She obtained her MSc from the University of the North and her PhD from Rand Afrikaans University, now UJ. Her research focus is on the epidemiology of parasitic helminths and parasites of one health importance.	<ol style="list-style-type: none"> <li>1. Development of molecular diagnostic tools for nematodes of livestock.</li> <li>2. Anthelmintic resistance in livestock</li> <li>3. Anthelmintic activity of medicinal plants.</li> <li>4. Prevalence and distribution of parasites of one health importance.</li> </ol>	<p>Masters: 1</p> <p>PhD: 1</p>
	Mr Monyama	Molecular Biology	Mr Monyama is a lecturer in the Department of Life and Consumer Sciences. He holds a Master's degree from the University of South Africa. His research focus is on - Molecular characterization of flies and pathogens they are harbouring or transmitting. Where I am more interested in doing metagenomics, gene discovery (transcriptomic), epidemiology and molecular diagnostics.	<ol style="list-style-type: none"> <li>1. Molecular characterization</li> <li>2. Molecular epidemiology and diagnostics</li> <li>3. Metagenomics</li> </ol>	<p>Masters: 0</p> <p>PhD: 0</p>
	Dr Myburgh	Cardiovascular Physiology	Dr Myburgh is a lecturer in the Department of Life and Consumer Sciences. She holds a PhD in Physiology (specializing in Cardiovascular Physiology) from the North-West University. Her research focuses on cardiovascular physiology and oxidative stress,	<ol style="list-style-type: none"> <li>1. Cardiovascular physiology in South Africa</li> </ol>	<p>Masters: 1</p> <p>PhD: 1</p>

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			especially in the South African population that is burdened by cardiovascular disease.		
	Mr Chabalala	Aquatic Zoology	<p>Mr Chabalala is a lecturer in the Department of Life and Consumer Sciences. He holds a Master's of Science degree in Zoology from the University of Limpopo. His research focus is freshwater ecology, Zooplankton and phytoplankton, entomology and parasitology.</p> <p><b>Methodology expertise:</b> water quality analysis, Health Assessment Index &amp; Histopathology, Integrated Parasite Index, Age determinations, Fish &amp; Plankton species identification techniques.</p>	<ol style="list-style-type: none"> <li>1. Freshwater ecology</li> <li>2. Animal health and parasitology</li> <li>3. Entomology (Ants studies)</li> </ol>	Masters: 0 PhD: 0
	Mrs Molefe	Microbiology	<p>Mrs Letlhogonolo R. Molefe is a lecturer in the Department of Life and Consumer Sciences. She holds a Master's degree from the North West University. Her research focus is the reduction of post-harvest losses in tomato fruits through the use of fungal bio-preservatives: food safety and development of food preservatives.</p> <p><b>Methodology expertise:</b> molecular biology, proteomics, probiotics, Sanger sequencing, NGS, shelf-life and storage.</p>	<ol style="list-style-type: none"> <li>1. Genetic diversity and characterization</li> <li>2. Isolation and identification of Microbial species</li> <li>3. Genome Sequencing</li> <li>4. Characterisation of food pathogens</li> <li>5. Prevalence of mycotoxins in foods and decontamination</li> </ol>	Masters: 0 PhD: 0
	Mr Malindisa	Drug discovery and development of anticancer drugs targeting	Mr Sibusiso T Malindisa is a lecturer of Biotechnology in the Department of Life and Consumer Sciences. He holds an MSc in Molecular and Cell Biology from the University		Masters: 0 PhD: 0

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		the cell cycle proteins	of the Witwatersrand (Wits). Currently registered for a PhD. His research focus is on drug discovery and development of anticancer drugs targeting the cell cycle proteins. His research interests include pharmacodynamics and pharmacogenetics of anticancer drugs, anti-ageing and human genetics.  <b>Methodology expertise:</b> Genotyping, Cell Biology, Sanger Sequencing, Real-time PCR and general molecular biology techniques.		
	Dr Mlangeni	Molecular biology	Dr Malitaba Mlangeni is a Lecturer in the Department of Life and Consumer Sciences. She obtained her Doctoral Degree in Zoology from the North-West University. Her research focus on the following: Tick-borne pathogens, Equine venereal diseases, Equine parasites, Molecular biology, Serological Assays and Veterinary Parasitology.	Molecular characterization and Epidemiology of zoonotic diseases	Masters: 0 PhD: 0
	Dr KA Maswanganye	Animal physiology	Dr K Amanda Maswanganye is a Zoology Lecturer in the Department of Life and Consumer Sciences (Extended Science Program). She holds an MSc in Zoology from the University of Pretoria (UP). She is currently registered for a PhD. Her research focuses on the following: Zoology, Phytogeography, Population Genetics, Conservation and Species distributions in small mammals from southern Africa.	<ol style="list-style-type: none"> <li>1. Zoology</li> <li>2. Reproductive physiology Phylogeography</li> <li>3. Population Genetics</li> <li>4. Species distributions</li> <li>5. Conservation</li> </ol>	Masters: 0 PhD: 0

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	Dr Tambani	Molecular Biology and Protein Biochemistry	Dr. Tambani is a Lecturer in the Department of Life and Consumer Sciences. She holds a Doctoral Degree in Microbiology from the University of Venda. Her research focuses on, HIV diversity, replication and inhibition, Molecular Biology, Molecular modelling and peptide designing.	<ol style="list-style-type: none"> <li>1. HIV-1 proteins, structure/function, inter-subtype variation</li> <li>2. Development of peptides and molecular modelling targeting HIV-1</li> <li>3. Development of HIV-1 inhibitory assays</li> </ol>	Masters: 2 PhD: 1
<b>Industrial Applications of Natural Sciences</b>  <b>Contact person: Prof SL Lebelo</b>	Dr Nyila	Phytomedicine	Dr Nyila is a senior lecturer in the Department of Life and Consumer Sciences. He holds BSc (Majors in Microbiology and Biochemistry) from the University of the Western Cape, BSc (Honours in Microbiology) from the University of the Western Cape, MSc (Environmental Biotechnology) from Rhodes University, PhD (Plant Science /Botany) from the University of Pretoria. His PhD thesis title is <i>Antilisterial bioactivity and /or biofilm-formation by compounds from Plectranthus ecklonii Benth. and Acacia karroo Hayne</i>	<ol style="list-style-type: none"> <li>1. Antibacterial activity of medicinal plants against foodborne pathogens.</li> <li>2. Medicinal plants with antibacterial activity against <i>Listeria monocytogenes</i>.</li> <li>3. Phytomedicine and phytochemistry</li> <li>4. Food microbiology</li> </ol>	Masters: 3 PhD: 1
	Prof Lebelo	Phytomedicine	Prof SL Lebelo is an Associate Professor and Chair of the Department of Life and Consumer Sciences. He holds a PhD from the University of the Western Cape. His research focus is on medicinal plant use in the treatment and management of ailments such as hypertension, diabetes, pain, and male infertility.  <b>Methodology expertise:</b> Qualitative and quantitative studies	<ol style="list-style-type: none"> <li>1. Phytochemical screening of plants extracts</li> <li>2. Identification of active compounds</li> <li>3. Androgenic, anti-diabetic, anti-inflammatory, and anti-hypertensive properties of medicinal plants</li> </ol>	Masters: 5 PhD: 2

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	Prof SR Magano	Medicinal plants and Tick Biology	Professor of Zoology in the Department of Life & Consumer Sciences. He is currently seconded to the position of Directorship, School of Agriculture and Life Sciences and Acting Deputy Executive Dean of CAES. His research focuses on medicinal plants and tick biology.	<ol style="list-style-type: none"> <li>1. Medicinal plants use</li> <li>2. Tick biology</li> </ol>	PhD: 2
	Ms Mulaudzi	Phytomedicine	Ms Rofhiwa Mulaudzi is a Lecturer of Botany in the Department of Life and Consumer Sciences. She holds an MSc in Botany from the University of Kwa-Zulu Natal (UKZN). Currently registered for a PhD the University of the Witwatersrand (Wits). Her research focus is on Conservation and sustainable utilization of medicinal plants; biodiversity; Ecology; Essential plants and Phytomedicine.	<ol style="list-style-type: none"> <li>1. Medicinal Plants</li> <li>2. Identification of active compounds</li> </ol>	Masters: 0
	Dr Dinga	Grassland Ecology	Dr Mamokete Dinga is a Senior Lecturer in the Department of Life and Consumer Sciences. She holds a PhD from University of the Free State. Her research focus is on vegetation classification and mapping; biodiversity, climate change and ecosystem functioning; and also plant-grazer interactions in grassland.	<ol style="list-style-type: none"> <li>1. Biodiversity and productivity in the Grassland Biome of South Africa</li> </ol>	Masters: 2 PhD: 1
	Dr Tabit	Food microbiology	Prof Frederick T Tabit is a professor in the Department of Life and Consumer Sciences. He holds a Masters in Bio-and Food Technology from Lund University (Sweden) and PhD in Food Science from University of Pretoria (South Africa). His research focus is	<ol style="list-style-type: none"> <li>1. Microbial quality of foods</li> <li>2. Characterisation of food pathogens</li> <li>3. Prevalence of mycotoxins in foods and decontamination</li> </ol> (Contact me @ <a href="mailto:tabitft@unisa.ac.za">tabitft@unisa.ac.za</a> for details)	Masters: 2 PhD: 1



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			on Food product development, food safety and food microbiology.  <b>Methodology expertise:</b> Experimental research		
	Dr Mosebi	Protein Biochemistry	Dr Mosebi is as senior lecturer in the Department of Life and Consumer Sciences. He obtained his PhD from the University of the Witwatersrand. His research focuses on mechanisms of viral pathogenesis and antiviral drug discovery, as well as the development of novel diagnostic tools for animal and human diseases. He uses cell biology, genetics, structural biology, molecular modelling and drug discovery techniques to investigate and understand the molecular properties of HIV integration, viral-host factor relationships in viral pathogenesis and replication of retroviruses (e.g., HIV-1).	<ol style="list-style-type: none"> <li>1. Drug Discovery in HIV and cancer (<i>in-silico</i> modelling, compound synthesis and screening).</li> <li>2. Food security (discovery, design and development of novel insecticidal agents in the agricultural sector)</li> <li>3. Development of novel diagnostic tools for cancer, HIV and zoonotic diseases (e.g., rift valley fever virus).</li> </ol>	PhD: 2 MSc: 2
	Mr. Twala	Protein Bioinformatics	Mr. Charmy S. Twala is a lecturer in the Department of Life and Consumer Sciences. He holds an HDIP in Computer Science, and an MSc in Molecular and Cell Biology, majoring in Biochemistry and Bioinformatics from the University of the Witwatersrand (Wits). Currently registered for a PhD. His research focus adopts a computational approach on drug discovery and development of anticancer drugs targeting cell cycle proteins. His research interests include lead	<ol style="list-style-type: none"> <li>1. <i>In silico</i> protein modelling and validation.</li> <li>2. Database screening (High throughput Virtual screening (HTVS), Standard precision (SP), and Extra precision (XP)) and molecular docking.</li> <li>3. Lead Optimisation to improve pharmacodynamics and pharmacokinetics of anti-cancer drugs.</li> </ol>	PhD: 0 Masters: 0

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			optimisation to produce preclinical drug candidates and the development of novel drug delivery systems.		
	Ms Mankga	Plant Phylogenetic	Ms Ledile T Mankga is a lecturer in the Department of Life and consumer Sciences. She holds an MSc degree at the University of Johannesburg. I am interested in 1) understanding patterns of biodiversity at different geographic and temporal scales 2) explaining the tremendous disparity in the number of species among different taxonomic groups 3) origin and evolution of biodiversity by reconstructing time-calibrated phylogenetic trees to estimate evolutionary processes governing biodiversity assemblages over space and time.	<ol style="list-style-type: none"> <li>1. Plant systematics</li> <li>2. Macroevolutionary approaches with phylogenies</li> </ol>	Masters: 2 PhD: 1
	Mr Mudau	Terrestrial Ecology/ Crop Production	Mr Ambani R Mudau is a lecturer in the Department of Life and Consumer Sciences. He holds a Masters in Agricultural Science from University of South Africa. His research focus is on production strategies and postharvest effect on the quality of baby spinach. From Botany perspective, his research interests include human disturbance on woodland regeneration community. <b>Methodology expertise:</b> Qualitative and quantitative research	<ol style="list-style-type: none"> <li>1. Preharvest and post-harvest conditions on quality of green leafy vegetables</li> <li>2. Implications caused by processing types i.e. fresh, frozen and canned on the nutritional quality of green leafy vegetables</li> <li>3. The impact of disturbance [tree (preferably alien species)-cutting] versus resprouting ability on species diversity</li> </ol>	Masters: 0 PhD: 0

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	Ms Tlakula	Medicinal Plant and Conservation Botany	Ms. Pearl K Tlakula is a lecturer in the Department of Life and Consumer Sciences. She holds a Post Graduate Certificate in Higher Education University of Pretoria (UP), Masters in Plant Sciences University of Pretoria (UP) and Honours Bachelor of Science in Botany from University of South Africa (UNISA). Her research focus is on The use of Medicinal by local people, Conservation Ecology and Curriculum and Instructional design in Higher Education. Methodology expertise: Survey and Field Excursion data collection research	<ol style="list-style-type: none"> <li>1. Medicinal Plants</li> <li>2. Conservation Ecology</li> <li>3. Curriculum and Instructional Design</li> </ol>	Masters: 0 PhD: 0
Wildlife Ecology	Dr McIntyre	Vertebrate spatial- and behavioural ecology	Dr McIntyre is a senior lecturer in the Department of Life and Consumer Sciences. His research interests are mostly focussed on the ecology and behaviour of vertebrates. He is particularly interested in behavioural adaptation (“plasticity”) and its role in helping animals cope with environmental changes.  <b>Methodology expertise:</b> Biologging approaches for studying the movement and behaviours of animals; Camera-trapping for population-level studies.	<ol style="list-style-type: none"> <li>1. Ecology of African clawless otters and other riparian predators</li> <li>2. Spatial- and behavioural ecology of seals</li> <li>3. Human-wildlife conflict</li> </ol>	Masters: 1 PhD: 1