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# SQUARED² UP

Newsletter of the Faculty of Natural and Agricultural Sciences

December 2022

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Make today matter

## UP part of international study that reveals role of termites in earth's carbon cycle

The University of Pretoria (UP) recently participated in an international study led by the University of Miami to investigate termite and microbial wood discovery and decay.

"From a southern African perspective, this study shows how important termites are in the decay of wood, particularly in dry savannas," says Professor Mark Robertson of UP's Department of Zoology and Entomology.

Most people think termites are a nuisance that consumes wood in homes and businesses – yet these termites represent less than 4% of all termite species worldwide.

Termites are critical in natural ecosystems – especially in the tropics – because they help recycle dead wood from trees. Without such "decayers", the environment would be piled high with dead plants and animals. But new research indicates that these energetic, wood-consuming insects could soon move towards the North and South poles as global temperatures rise due to climate change.

Extraordinary Professor Catherine Parr and PhD student Katherine Bunney were instrumental in UP's contribution to the global study, which was published in the journal *Science*, particularly from the perspective of termite activity and biodiversity in the southern hemisphere. The UP team ran field experiments in a relatively wet savanna near Hoedspruit and further north in a much more arid savanna in the Nwanedi Nature Reserve, using wood blocks in decomposition bags.

"Upon returning to collect our wood decomposition bags after just six months, I was intrigued to discover that the contents of every 'open' bag [those allowing termite access] were almost entirely consumed," Bunney says. "The wood blocks were hollowed out, leaving just a thin shell of wood, and were filled with termite sheeting soil and dead termites. In contrast, the closed bags were just as they had been left six months prior. Our site [Nwanedi Nature Reserve] is incredibly dry; it's hot with a lot of bare ground. In summer, it was too hot to do much fieldwork after 9 am. This is a seemingly inhospitable place, yet termite activity is so high."

Through this study, which was led by University of Miami Professor Amy Zanne, researchers learned that termites are pivotal in breaking down wood, contributing to the earth's carbon cycle. They also discovered that termites are significantly sensitive to temperature and rainfall; this means that as temperatures rise, the insect's role in wood decay will likely expand beyond the tropics.

"With temperatures warming, the impact of termites on the planet could be huge," says Prof Zanne, the Aresty Chair of Tropical Ecology in the College of Arts and Sciences' Department of Biology.

For the study, Prof Zanne, along with more than 100 collaborators, studied locations across the globe where bacteria and fungi (microbes) and termites consume dead wood. They investigated how temperature and rainfall affected the discovery and decay of wood by using the same experimental set-up at more than 130 sites in a variety of habitats across six continents. Their results suggest that areas with high termite activity should increase as the earth becomes warmer and drier.

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## In Memoriam




RE.SEARCH is a digital magazine where the University of Pretoria highlight some of its impactful research, knowledge and solutions. The Faculty of Natural and Agricultural Sciences (NAS) features prominently in this fourth edition, with this issue focusing on transdisciplinary research. Visit the Research Matters website for the first, second and third editions and more NAS and UP research.


# Message from the Dean

Prof Barend Erasmus

*When I look back on 2022, two elements stand out for me – how quickly the year went and the buzz and energy that came from having a campus full of students again.*

It has been a productive and successful year for NAS. Even if we didn't progress as quickly as I had hoped on all fronts, we have initiated all planned activities and made significant strides towards completing them. We have a balanced and well-thought-out plan for 2023, and I look forward to seeing how we can use the outcomes of the quinquennial quality review process to leverage the changes and improvements we want.

We continue to refine our hybrid teaching model, and I am proud of the continued innovation to ensure the best possible pedagogy. Our Faculty-student house, NATHouse, again rewarded staff with the best first-year and senior lecturer's awards (page 39), while excellence was also rewarded in each of the clusters in NAS (page 38). Congratulations to all these winners! May you continue to inspire and shape the great minds of the future. Your dedication to your students and excellence in teaching was evident in the nominations they submitted.

Our research endeavours continue to reach new heights. NAS researchers rise to the challenge of sharing their transdisciplinary research in the latest edition of the University's Re.Search magazine (page 3). We feature many research highlights relating to food security and conservation focus areas in NAS. Our global engagement is evidenced by the awards to NAS staff and students during the year. In this edition, our partnerships for impact are also highlighted through the feedlot challenge with industry (page 34), the launch of the African Phytomedicine Scientific Society (page 14) and international contributions to global studies addressing the "wicked challenges" of our time. We round off the bumper edition with highlights of the NAS anti-discrimination and social justice week activities (page 45) and a challenge to all readers to calculate their carbon footprint (page 51).

We pay our respects to those who lost loved ones and colleagues in 2022. Prof Raymond Naude (page 60) and Dr Fanie Terblanche are just two of them (page 59).

I encourage you all to take a well-deserved break. Take the time to appreciate your loved ones and do the things that inspire and keep you happy. I wish you, and your loved one's a safe and joyous holiday and look forward to welcoming you back in the New Year.

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Please send your comments on the newsletter or suggestions/ideas for articles to martie.meyer@up.ac.za

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*"Termites had their biggest effects in places like tropical savannas, seasonal forests and subtropical deserts," Prof Zanne explains. "These systems are often underappreciated in terms of their contributions to the global carbon budget."*

The global study helped scientists to glean broader insight into wood decay, says Associate Professor Amy Austin, an ecology expert at the Universidad de Buenos Aires and a collaborator of Prof Zanne's.

"The inclusion of arid, hot bioregions, particularly in the southern hemisphere, where termites are often plentiful and active, allowed for novel insight into their role in carbon turnover," Prof Austin says. "As ecologists, we may need to broaden our consideration of woody ecosystems beyond a closed-canopy forest and recognise that woody carbon stores in drier ecosystems are an important component of the global carbon cycle."

Although microbes and termites both decompose dead wood, there are important differences between them. While microbes need water to grow and consume wood, termites can function at relatively low moisture levels. Termites can search for their next meal, even if it is dry, and carry what they want back to their mounds; they can even move their colony into the wood they are consuming.

"Microbes are globally important when it comes to wood decay, but we have largely overlooked the role of termites in this process," Prof Zanne says. "This means we are not accounting for the massive effect these insects could pose for future carbon cycling and interactions with climate change."

Termites release carbon from the wood as methane and carbon dioxide, two of the most important greenhouse gases. Therefore, Prof Zanne says, termites may increasingly contribute to greenhouse-gas emissions with climate change.
"I am fascinated by how microbial and termite wood decay affects how carbon is being released back into the environment," says Prof Zanne, who has been studying the feedback from wood-based carbon release for more than a decade.

Prof Zanne began her termite research in 2008, connecting with other wood decay experts as she attended a working group in Sydney, Australia. That led to a large research project funded by the National Science Foundation and Natural Environment Research Council in Queensland, Australia, which included collaborating with artist Donna Davis to portray termites, microbes and decaying wood.

Prof Zanne expanded the study globally through social media and word of mouth, including researchers across career stages and locations, with everyone running the same experiment using locally sourced materials.

André M D'Angioli, a Brazilian biologist, collaborated on the project as part of his doctoral dissertation at Universidade Estadual de Campinas.

*Prof Mark Robertson*

"Being involved in the global wood project was a major step for my research," he says. "It was fascinating to see how the regional-scale data I collected in Brazil was related to the global patterns found in this paper."

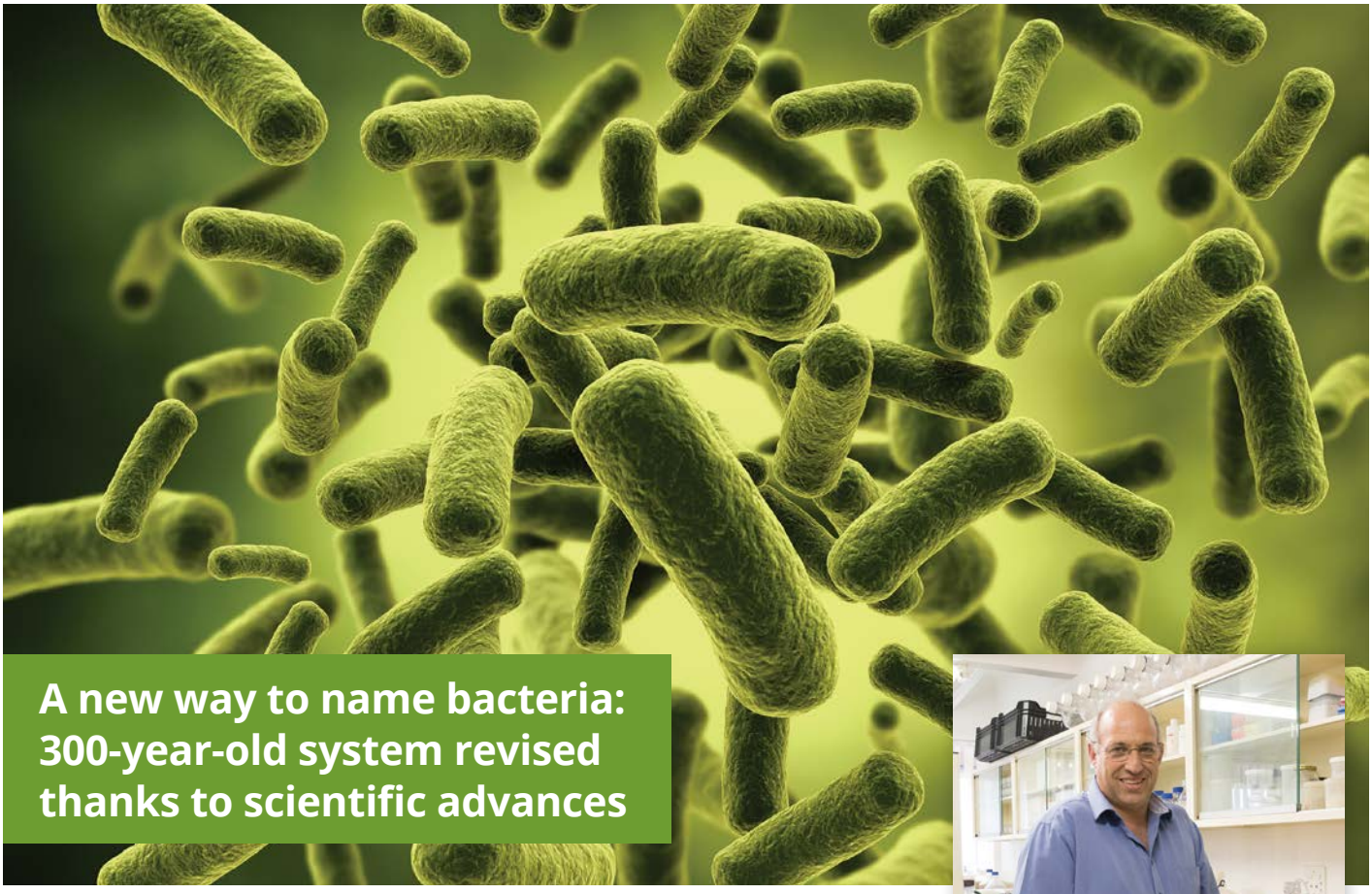
Prof Zanne says the chance to spearhead a global-scale research endeavour was extremely rewarding. "This is one of the most incredible projects I've worked on," she says. "It was a truly international collaboration. Our ability to better understand wood decay and parts of the carbon cycle on a global scale is now stronger because of this research."

The study, "Termites sensitivity to temperature affects global wood decay rates", was published in *Science*.

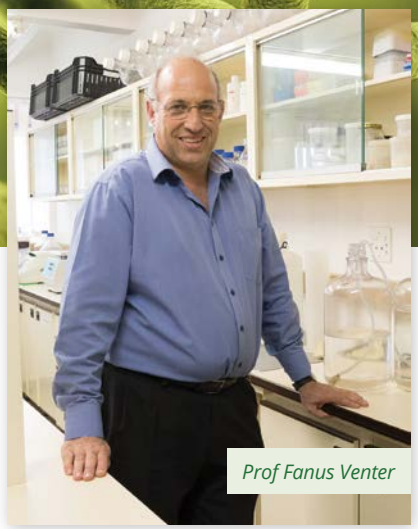
*Credits: Prof Mark Robertson, Prof Catherine Parr, Katherine Bunney. Thumbnail image credit: Photos by Rebecca Clement. Artwork by Donna Davis*

**Related story:**
https://www.up.ac.za/research-matters/news/multimedia-3107465-termites-sensitivity-to-temperature-affects-global-wood-decay-rate

# Research



# A new way to name bacteria: 300-year-old system revised thanks to scientific advances



*Prof Fanus Venter*

Nearly 300 years ago, the Swedish botanist Carl Linnaeus secured his place in scientific history when he created what's known as the binomial system. The year was 1737 and, due to the large diversity of plants and animals collected by naturalist explorers in different parts of the world, Linnaeus saw the need to develop a logical system to classify and group this material in a systematic way.

It's a system that's stood the test of time – his basic formula is still in use.

The naming convention applies to all biological organisms: plants, animals and bacteria. Each species receives a name consisting of two parts. The genus name is similar to a surname; all species that share this name are closely related. The second name is unique for each species within the genus. This combination creates a unique name for any described organism. Well-known examples include *Homo sapiens* (modern humans) and *Escherichia coli* (bacteria).

One of the main benefits of assigning universally accepted distinct names is that it helps people, particularly scientists, clearly communicate about a specific organism, regardless of language or geographic barriers. Another boon is that unique names link all the available information on a species together. It also helps scientists to understand shared characteristics and relationships between organisms.

Naming decisions are not made in a vacuum. Although ideas of what species are and how to recognise them have developed over the past 300 years, the naming system as proposed by Linnaeus remained unchanged.

There are "rule books" for the naming of organisms, generally referred to as "codes". There are different codes for naming animals, plants, algae and fungi, viruses and bacteria. The Botanical Code, which initially also dealt with bacteria, was first developed in 1867 and is revised every six years during the International Botanical Congress. The Bacterial Code was first published as a separate document in 1947 and was updated this year by the International Committee on Systematics of Prokaryotes.

But the existing code was not enough to deal with technological advances that have changed how prokaryotes can be studied. So, a new, complementary code has been introduced.

## A stable system

If the description of a new species meets all the requirements set out in the rules in the relevant code, the name will be validated – made permanent. Each new species is also linked to type material: something concrete to compare other individuals against. The type can be represented by museum or herbarium examples, living cultures or even drawings. But this system doesn't work well for prokaryotes. These single-cell organisms, which don't have nuclei, are commonly referred to as bacteria (though they also include the *Archaea*, a group of micro-organisms that are similar to but distinct from bacteria). Prokaryotes are named under the International Code of Nomenclature of Prokaryotes.

Unlike other disciplines' naming rule books, this code is strict about type material: only a pure culture of the bacterium, available from collections in two different countries, counts as type material. But there's a problem: most bacteria still can't be grown in pure culture, on its own in a Petri dish in the laboratory.

This means that, under the code, they could not be named.

A new initiative, SeqCode, will change the game by allowing DNA sequencing data to serve as the type. I was one of several biologists around the world involved in creating the SeqCode and I believe it is a great achievement.

A formal and stable naming system for all bacteria will help science to unlock the hidden potential of the planet's biodiversity and to understand their role in the functioning of ecosystems. It will also help scientists to communicate their findings to each other – a big step towards perhaps identifying the next generation of antibiotics or cancer treatment.

## Genome sequencing

It's unknown how many prokaryotic species there are – there could be millions or trillions. But only around 18,000 have been given permanent (valid) names so far. The increasing ubiquity of genome sequencing is an opportunity to change this. Rather than having to grow a prokaryotic species in a laboratory to then study and describe its characteristics, biologists can now sequence the organisms' DNA directly from an environmental sample to obtain a complete or near complete genome. The genome is the DNA blueprint of the bacterium which encodes all the functions the organism will be able to perform.

The sequence data is stable enough and adequate to be used to recognise other members belonging to the same species.

In 2018 an international group of bacterial taxonomists and ecologists attended a workshop in the US, funded by the US National Science Foundation, to discuss the future of bacterial taxonomy. The attendees recognised that genome sequencing was a good, scientifically sound way to give many prokaryotes permanent names. This idea was supported by many other microbiologists around the world.

However, a proposal to change the existing code to allow genome sequences as types was not accepted by the International Committee on Systematics of Prokaryotes. With the support of the International Society for Microbial Ecology, some of the meeting attendees began discussing other possibilities.

The idea of an entirely separate code for naming genomically described prokaryotes emerged. Wide consultation followed, and, in September 2022, SeqCode – or, to give it its full name, the Code of Nomenclature of Prokaryotes Described from Sequence Data, was launched.

This doesn't replace the existing code. Bacteria can still be named under the Bacterial Code when a pure culture is available.

It is possible that, in coming years, similar adjustments might be made to – or new codes created for – naming other genomically described micro-organisms such as yeasts and other fungi.

**Author:** Prof Fanus Venter, Professor in Microbiology and Deputy Director of the Forestry and Agricultural Biotechnology Institute (FABI), University of Pretoria.

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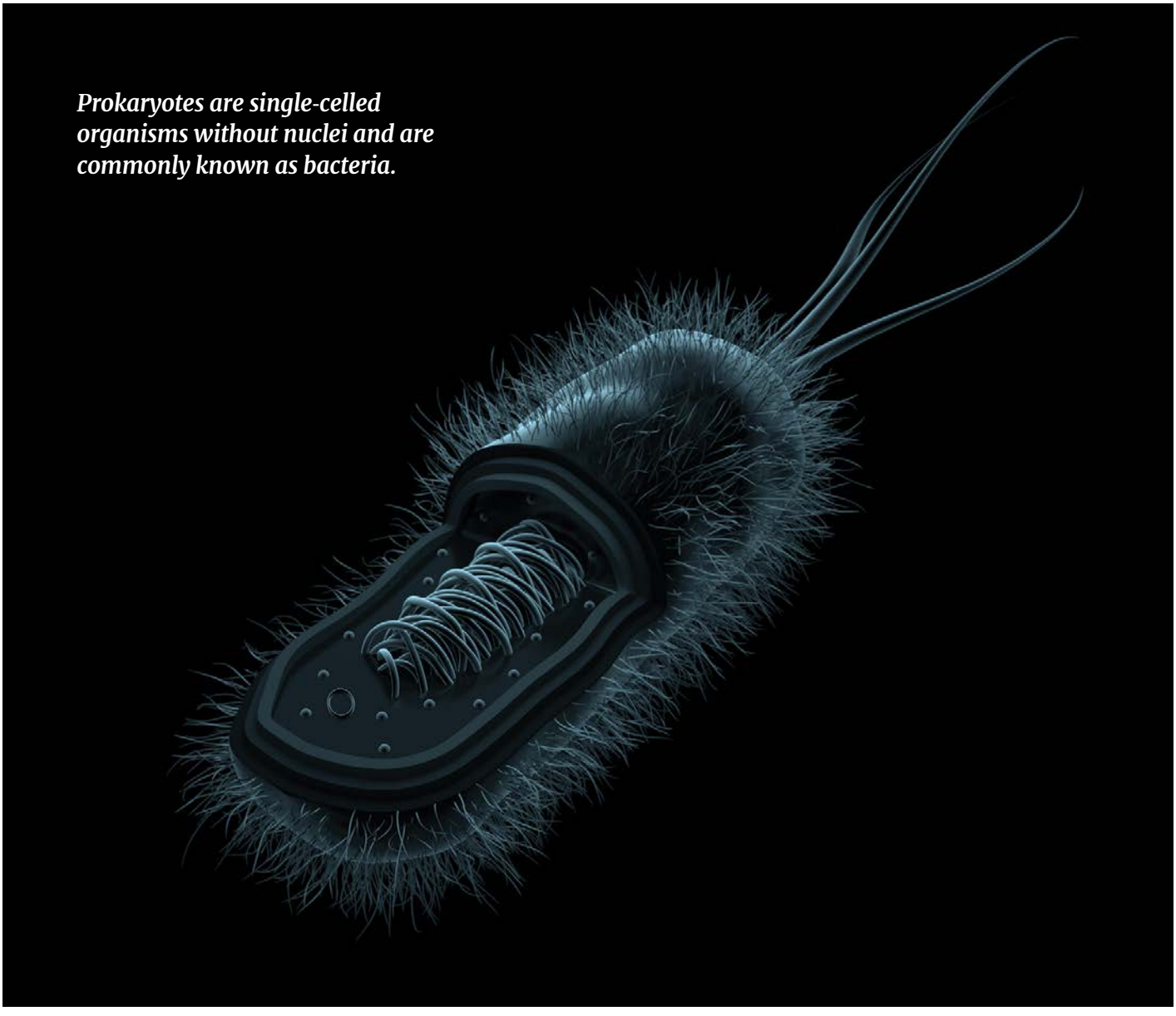


*Prokaryotes are single-celled organisms without nuclei and are commonly known as bacteria.*

# Flour power: UP researchers boost nutritive benefits of sweet potato with novel drying technology

Researchers at the University of Pretoria (UP) have found a way to make orange-fleshed sweet potato last longer in an effort to benefit from this smart crop and address micronutrient deficiencies among young children and pregnant women.

As part of InnoFoodAfrica, a multinational, cross-continental project that aims to enhance food and nutrition security in Africa, UP researchers have discovered that they can leverage the health benefits of the vegetable by making it into flour.

Identified by their orange pulp, orange sweet potatoes contain beta-carotene, which is converted into vitamin A in the body. However, these potatoes have a short shelf life of only two to three weeks – but by making flour out of them, the UP team has found a way to expand the number of ways orange-fleshed sweet potatoes can be used.

PhD Food Sciences candidate Daddy Kgonothi has been central to the development of this flour, and has been working under the guidance of Professor Naushad Emmambux and Dr Nwabisa Mehlomakulu of the Department of Consumer and Food Sciences at UP.

"We dried the sweet potatoes and made it into flour by way of various drying methods, which we compared with the freeze-drying method," Kgonothi explains. "Since it is a very perishable product, drying and milling the potatoes into flour is one of the best methods one can apply – flours can have a shelf life of at least a year."

The process began with the team sourcing sweet potatoes from a commercial farm in North West, following a four- to six-month growth period, from planting to harvesting.

"It is a seasonal crop and, in South Africa, it is planted around November or December," Kgonothi says. "The harvest takes place between March and June or July."

The team then set about testing different drying methods. "The whole process took about three weeks, which included testing the drying process and doing the actual drying and milling," Kgonothi says. "We used microwaves, infrared applications and convection ovens to dry the potatoes, and discovered that when we combined microwave drying with infrared drying, the process was much faster. There was also a higher retention of beta-carotene."

With vitamin A deficiency being one of the leading causes of micronutrient deficiencies in children up to the age of six and among pregnant women, flour made from orange-fleshed sweet potato could offer a helpful solution. Also, because the novel drying technology (of combining microwave and infrared applications) results in a higher retention of beta-carotene, the orange-fleshed sweet potato flour that is produced will be a particularly strong source of vitamin A.

*Prof Naushad Emmambux*

*Mr Daddy Kgonothi*

*"The flour is also a good source of dietary fibre, and of minerals such as iron, zinc and phosphorus,"* Kgonothi says.

"Orange-fleshed sweet potatoes can be used in several ways," he adds. "One way is to boil it as a root and consume it, or to make fried chips from it. As flour, the application of orange-fleshed sweet potatoes is more diverse: the flour can be used in baked products like fortified bread or biscuits; as stabilisers in soups; as a thickening agent, due to its rich dietary fibre; and because of its low viscosity, it can be used to make baby food – it is easy for infants to swallow."

Click here to see how the flour is milled.

**To learn more about the Innofood Africa project, please visit:** https://innofoodafrica.eu/

# Dr Luis Pertierra joins call to protect Southern Ocean

Photo credit: Courtesy of Dr Luis Perierra

Dr Luis Pertierra

***The Southern Ocean around Antarctica needs urgent protection – for the sake of the rest of the world. This marine wilderness is threatened by climate change and commercial fisheries says University of Pretoria (UP) macro-ecologist Dr Luis Pertierra, an expert on the natural value of the Antarctic.***

He has added his voice to other leading international researchers who want formal marine-protected areas and fishing bans for Earth's most southern waters. He also urges other scientists and conservation practitioners to add their voices to the call by signing a petition under the banner "Scientists uniting to protect Antarctica's ocean".

Dr Pertierra, of UP's Department of Plant and Soil Sciences has co-authored a newly released policy forum titled 'Protect global values of the Southern Ocean ecosystem' in the leading *Science* journal. In addition to being a macro-ecologist, Dr Pertierra is also a bio-geographer who studies how changes in the polar regions affect the world at large, especially the biodiversity found on land.

UP alumnus Prof Steven Chown of Monash University in Australia was another co-author of the paper. He is Director of the Securing Antarctica's Environmental Future project and the former president of the international Scientific Committee on Antarctic Research.

The policy is being put forward to coincide with high-level conservation-related policy discussions in Hobart, Australia, at the 41st meeting of the Commission for the Conservation of Antarctic Marine Living Resources. The commission is an arm of the Antarctic Treaty system, which manages marine living resources in the Southern Ocean. The Southern Ocean contains about 10% of the world's seawater. It is of global importance because, among others, it has immense wilderness and ecological value within the planet's system at large and plays a critical role in climate regulation and carbon storage.

"People do not appreciate how important it is to us," says Dr Pertierra, who recently led a global assessment of the state of

ecosystem services in Antarctica, their value for the world and how these services can be managed into the future.

Antarctic waters affect Earth's climate, moderate sea level, and play a vital role in global ocean circulation and nutrient cycling. The waters disproportionately absorb or capture carbon dioxide and heat being produced elsewhere in the world. The Southern Ocean, therefore, helps to regulate temperatures and climates. It buffers the rest of the world from the impacts of climate change, such as rising sea levels, which can influence the livelihood of people living in coastal areas.

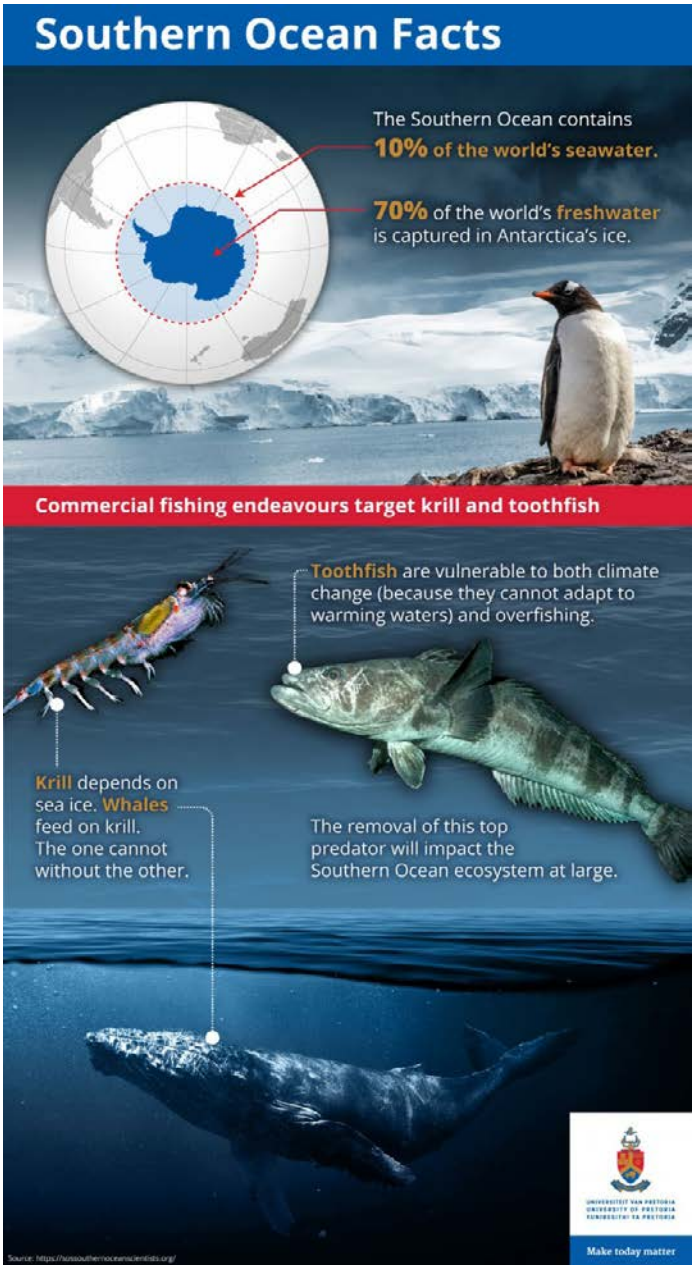
The Southern Ocean also plays an important role in oxygen production, while its food web supports iconic animals such as whales and penguins.

"Allowing fishing to continue in its current form is increasingly unsustainable, with benefits captured by a few wealthy nations and little contribution being made to food security," the authors of the *Science* paper say. "Fishing jeopardises the Southern Ocean ecosystem and its globally significant services. Stronger management action is required, including managing ecological and climate resilience, implementing marine-protected areas, and considering the full suite of values for future generations and a potential moratorium on Southern Ocean fishing."

"We should impose more restrictions on the few companies that benefit from fishing and hunting activities in the region because these are increasingly impacting the other intangible benefits that the region holds for the rest of the world," Dr Pertierra adds.

** The international sovereignty of Antarctica and the Southern Ocean (also known as the Antarctic Ocean) is suspended under the Antarctic Treaty.*

Click on the infographic on the right to learn some quick facts on the Southern Ocean or click here to view pictures from the field.




*Photos credit: Courtesy of Dr Luis Perierra*

# UP Whale Unit conducts annual aerial survey of southern right whales

***The Mammal Research Institute (MRI) Whale Unit at the University of Pretoria (UP) recently conducted its 43rd annual aerial survey to monitor the South African population of southern right whales.***

During the survey, 658 southern right whales were sighted between Nature's Valley on the Garden Route and Muizenberg in Cape Town. The researchers also noted a slight increase in calving females and an exceptionally low number of unaccompanied adults, indicating a low migration rate to the South African coast.

The findings will allow the team to monitor the recovery of the South African population of southern right whales and investigate possible causes and consequences of the decrease in sightings along our shores in recent years.

During the four-day aerial survey, which made use of an AS350 (Squirrel) under charter from Silvercross Helicopters, all cetaceans were recorded with a special focus on southern right whales. Photographs were taken of southern right calving females (those with associated calves) and of whales with a brindle, grey or white blaze colouration.

"Just under 21 hours of flying time was needed to complete the survey," says Dr Els Vermeulen, research manager at the MRI Whale Unit. "During that time, 304 calving females (equating to 608 whales) and 50 adult whales without a calf (so-called "unaccompanied adults") were counted and photographed, bringing the total of southern right whales spotted to 658."

The vast majority of southern right whales were observed between De Hoop Nature Reserve and Hermanus New Harbour, as is usually the case. Other than southern right whales, the team observed four humpback whales, several groups of humpback dolphins and bottlenose dolphins, and 32 large sharks.

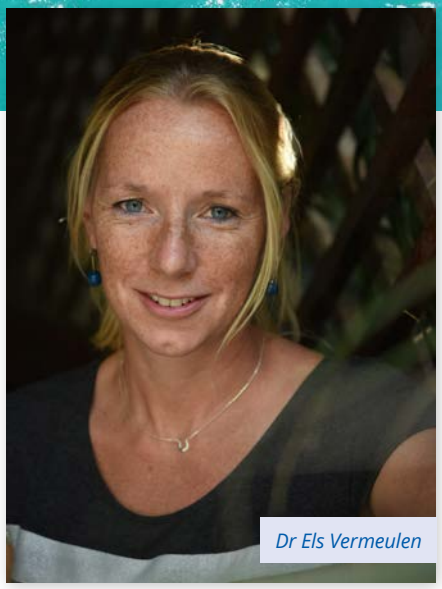
The number of calving females is slightly higher than the number recorded in 2015 (249 calving females) but is still well below what is expected under "normal conditions". "This data demonstrates that females are still calving at lengthier and non-regular calving intervals, which we will corroborate with the photo identification data," Dr Vermeulen says.

As in the past decade, the number of unaccompanied adults (males and non-calving females) continues to remain extremely low, indicating that they are still not migrating to the South African coast at the same rate as they used to.

A total of 15 116 photographs were taken during the survey for photo identification purposes, and will be analysed to identify individual whales. Such photo identification analyses make use of a computer-assisted image recognition system; the whales are then matched by eye. The process usually takes about two months to complete.

Through such analyses, the unit will be able to determine which females calved this year, how long it took them to produce a new calf, their individual distribution and movement patterns and, with considerable accuracy, assess their overall reproductive success. "These aspects are vital to monitor the recovery of the South African population of right whales, which has been increasing at a rate of 6.5% per year since international protection of the population against whaling," Dr Vermeulen says. "These analyses will also allow us to investigate further possible causes and consequences of the concerning decrease in sightings along our shores in recent years.

"The MRI Whale Unit wishes to thank ale who continue to support the survey, such as Silvercross Helicopters, De Hoop



*Dr Els Vermeulen*

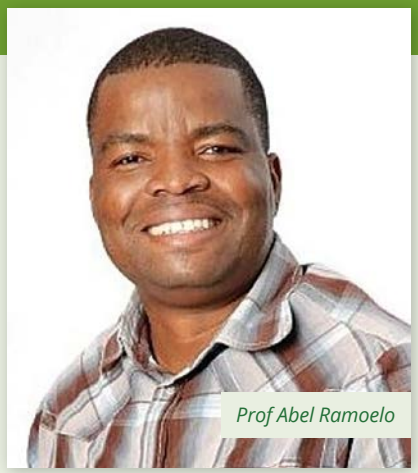
Collection, Grootbos, Orms, Canon South Africa, Denel Overberg Test Range and private citizens along the route," she adds. "The survey was carried out under a permit from the Department of Forestry, Fisheries and the Environment to approach whales, and under specific Marine Protected Area permits from the relevant conservation authorities. This year's survey was funded by TotalEnergies, to whom we are thankful for their continued support."

If you wish to support this important research and conservation programme and stay up to date on the status of the unit's southern right whale research, please get in touch with the MRI Whale Unit to find out more about its exciting and informative adoption programme run in collaboration with WWF South Africa. Symbolic whale adoptions make unique and exciting gifts and are an authentic opportunity for corporate environmental responsibility. All funds raised in this way directly support the unit's fieldwork.

Donate here

**Stay up to date with the MRI Whale Unit's research via social media:**

# New book on Remote Sensing of African Mountains-Geospatial Tools Toward Sustainability

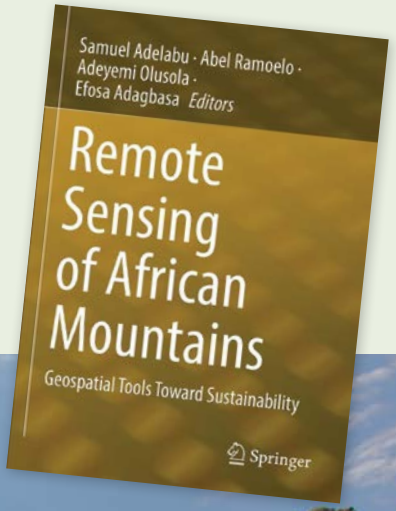


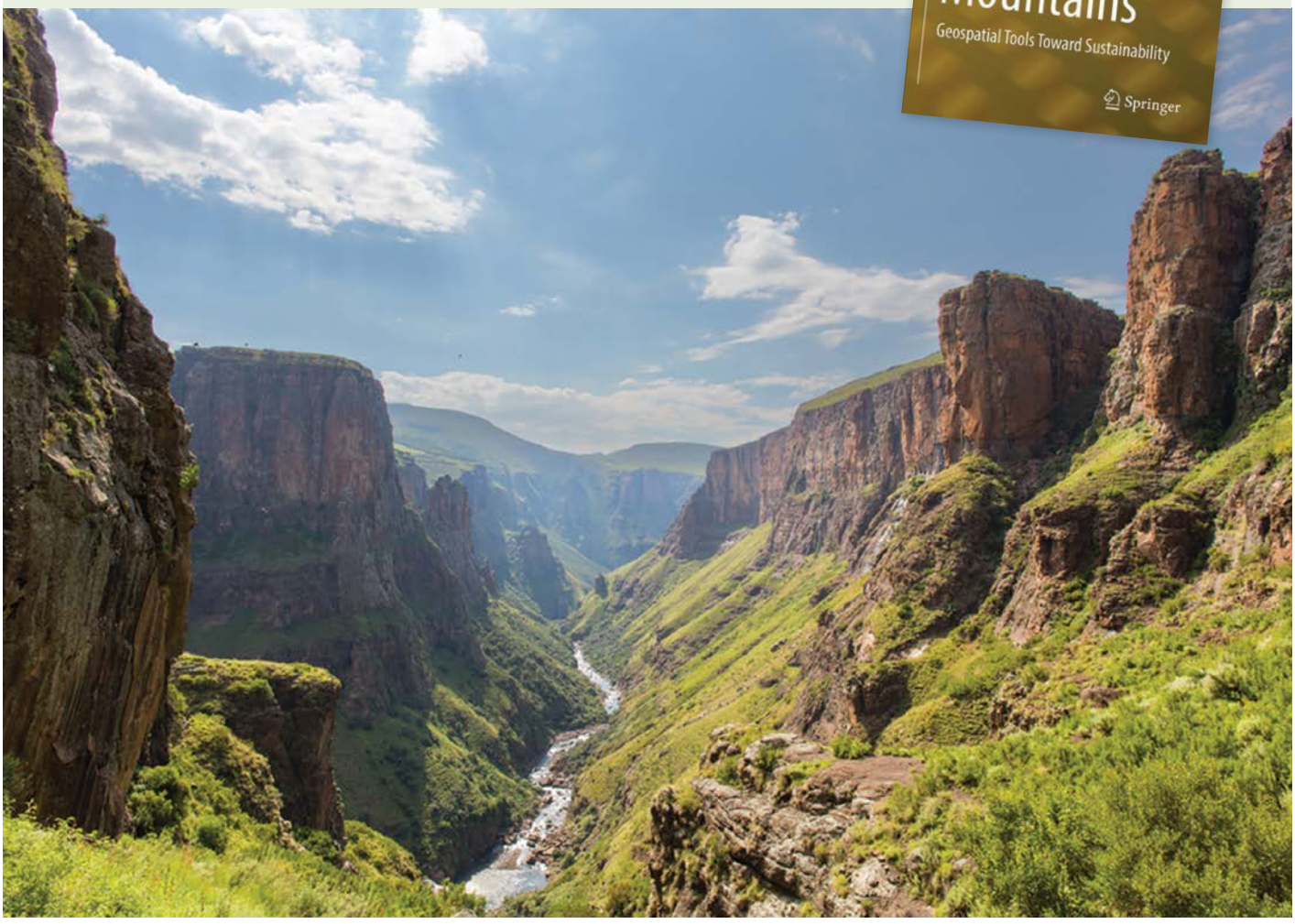
*Prof Abel Ramoelo*

Prof Abel Ramoelo, Director of the Centre for Environmental Studies, was a Guest editor for the book titled "Remote Sensing of African Mountains: Geospatial Tools Toward Sustainability". The book was co-edited with academics from the University of Free State led by Prof Samuel Adelabu.

It was sought to encourage remote sensing techniques to study mountain environments; examine the role climate change plays within the mountain systems, and finally raise awareness about mountain ecosystem management and sustainability to inform policy. The summary of the book is presented below as published.

**About the published book:**
"This edited volume focuses on using remote sensing techniques to assess and monitor mountainous ecosystems in Africa, focusing on tracking changes related to climate change and human activity. The book is timely, as the interaction of mountain environmental dynamics with conservation and sustainability is an under-researched issue. The chapters in this volume use remotely sensed data to study a variety of topics related to mountains and their ecosystems, including but not limited to vegetation, energy systems, environmental hazards, ecosystem services, diseases, climatic shifts, geological formations and geomorphological dynamics. The ability to monitor, assess and analyse mountainous regions is aided by the availability of remote sensing products such as optical and microwave sensors and low-cost unmanned aerial vehicles (UAVs). The works presented here push the frontier of knowledge on mountain studies and will help shape local, national and global assessments and policies, including efforts toward achieving the African Agenda 2063. The book will interest researchers and students in remote sensing, geography, ecology and sustainability, as well as government organisations and conservation specialists."



# Prof Namrita Lall: A trailblazer in medicinal plant sciences

Professor Namrita Lall, the NRF/DSI SARChI chair for Plant Health Products from Indigenous Knowledge Systems (IKS), hosted a prestigious event on 15 November showcasing the most recent achievements resulting from her Medicinal Plant Sciences research group at the Department of Plant and Soil Sciences.

The event included showcasing the recent publication of a book edited by Prof Lall (Medicinal Plants for Cosmetics, Health and Diseases), the founding of a new society (African Phytomedicine Scientific Society - APSS) and the commercialisation of Limunone, a complementary medicine with liver protecting and immune-boosting properties.

Prof Lall is one of the founders of the Medicinal Plant Sciences programme at UP and heads a research team of approximately 20 postgraduate students and three postdoctoral researchers. Her research team focuses on the scientific validation of traditionally used medicinal plants to develop cosmeceutical and pharmaceutical products.

Numerous delegates from academic institutions, manufacturers and formulators in the natural product industry (BioMedical Emporium, Blyde Botanics, Botanica Natural Products/Timola, Zuplex, Kalahari Lifestyle, Private Label Brands, Botanichem, DDrPHYTO Medicinal Plants, Letago Pharmaceuticals), government departments (Department of Trade and Industry, Industrial Development Corporation of South Africa and the South African National Convention Bureau), funders (Water Research Commission and Department of Science and Innovation) and the event sponsor, The Scientific Group, attended the event.

Prof Lall shared her research interests and her **journey from the publication of her first book in 2018 to the publication of her most recent release, which forms part of a four-book series focused on medicinal plants and their uses**. This recent release describes human diseases and how plant bio-actives can aid their prevention, treatment and management. One of her books was recommended by Choice Review as course material for undergraduate and postgraduate students at Western Illinois University, USA. The books are available for purchase directly from her administrative assistant (kyle.vanwyk@up.ac.za) and can also be found on the publisher's websites.

During these presentations, Prof Lall took the opportunity to share three future events that she is involved with, including the Volkswagen Summer School in March 2023, funded by the Society for Medicinal Plant and Natural Product Research (GA) and Volkswagen Stiftung Organization. The second one is the 23rd International Congress for the International Society for Ethnopharmacology (ISE) in October 2024, an event she is organising as president-elect of the Society. Lastly, the 1st Annual Congress for the APSS will take place next year in September.

The launch of the **African Phytomedicine Scientific Society (APSS)** was a hot topic at the event, with Dr Ibukun Michael Famuyide, a postdoctoral researcher from the Onderstepoort Campus, highlighting the crucial role that the society will play in increasing networking, collaboration and brainstorming on the African continent and proudly offering to become its first member. The society will allow for sharing of research equipment and skills transfer through student exchange programmes to produce quality scientific publications and natural products with commercial potential.

The programme also included fascinating talks from manufacturers, formulators and entrepreneurs within the natural product industry, whom all highlighted the need for safer and more effective African ingredients to reach global markets.

**Speakers at the launch event:**

*Front, from left: Prof Namrita Lall, Mrs Gill Whittington-Banda (CEO of Zuplex manufacturers and Muthi Futhi) and Dr Futhi Mkhize (Founder: Dr PHYTO Medicinal Plants).*

*Back, from left: Mrs Robyn Brown (Botanichem, representing Kalahari Lifestyle), Mr Jonathan Seaman (MSc student and founding member of APSS society) and Dr Portia Hlako Matamela (CEO: Letago Pharmaceuticals).*

*Prof Namrita Lall*

One of the event's other highlights was the **launch of the complementary medicine, Limunone**. Letago Pharmaceuticals, under the leadership of CEO Dr Portia Hlako Matamela, are commercialising this product. Dr Matamela mentioned her passion for indigenous knowledge and medicines developed from medicinal plants, which her herbalist grandmother sparked. Limunone contains an extract of *Euclea natalensis*, an active ingredient patented by UP and licensed to Letago Pharmaceuticals. This plant is used traditionally to treat symptoms associated with chest problems.

"I am particularly excited to see that, in addition to the Limunone product, other active ingredients from my research are available in finished formulations and were exhibited by BioMedical Emporium and Dr PHYTO Medicinal Plants. I hope the event will encourage other formulators to purchase these actives, which are available from Blyde Botanics, a start-up by two students from my research team, Mrs Bianca Payne and Dr Isa Anina Lambrechts (https://blydebotanics.com/) and Botanica Natural Products/Timola (https://botanica.africa/) and also encourage additional licensees to take the technologies and prototypes that have been developed through my research to the market. These include medicinal plant extracts or actives with finished formulations for several applications including skin hyper- and hypopigmentation, acne, wrinkle reduction, skin hydration, sun protection boosting properties and oral care," Prof Lall concluded.

Should you wish to contact Prof Lall, click here.

**Contact details of the African Phytomedicine Scientific Society (APSS) network:**

| | |
|---|---|
| Twitter | @theAPSSnetwork |
| LinkedIn | The APSS Network |
| Gmail | apssnetwork@gmail.com |

# Newly launched National Biosecurity Hub to support prevention, reduction and management of crop and animal diseases

The National Biosecurity Hub recently launched by the Department of Higher Education, Science and Innovation and the Department of Agriculture, Land Reform and Rural Development in collaboration with the University of Pretoria (UP) will greatly improve the way various stakeholders affected by biosecurity threats, including farmers, work towards a common goal, said UP's Professor Sunil Maharaj, Vice-Principal: Research, at the launch held at UP's Future Africa Institute.

"The hub will significantly enhance collaborative working arrangements between government and stakeholders affected by biosecurity threats, rather than having these groups act independently or in isolation," he said.

The hub, an initiative of the Department of Science and Innovation's (DSI) Agricultural Bio-economy Innovation Partnership Programme, will facilitate collaborative efforts to support the prevention, reduction and management of crop and animal disease and other matters related to food safety in South Africa. Innovation Africa @ UP will coordinate the hub.

During his welcome address to dignitaries – including Minister of Agriculture, Land Reform and Rural Development Thoko Didiza and Department of Higher Education, Science and Innovation Director-General Dr Phil Mjwara – and other attendees, Prof Maharaj said it took a great deal of willingness, expertise and hard work to get everyone to the official launch day of the National Biosecurity Hub.

"It is something we can solidly celebrate as it will play an inestimable role in building resilience in our country's economy, instilling confidence in our trading partners about our biosecurity strategies and standards, and meeting all our trading partners' related compliance regulations. This will help to increase our market access, economic growth and job creation along the value chain," he said.

Prof Maharaj explained that the hub will empower South Africa's monitoring and early detection efforts regarding biosecurity issues. It will also lead to speedy and appropriate responses to contain and eradicate risk.

## A central repository

DSI Biotechnology Director Mineshree Jugmohan-Naidu noted that the hub would provide research and information services to the public and private sectors with a view to meet international trade sanitary and phytosanitary (SPS) requirements and strengthen biosecurity.


*UP's Professor Sunil Maharaj and Minister of Agriculture, Land Reform and Rural Development, Thoko Didiza.*

"The biosecurity information hub is a central repository and will harness all of the work being done in the sector and the country in terms of biosecurity. The hub will be overseen by a steering committee comprising various stakeholders, including scientists. At the same time, a National Biosecurity Hub e-journal will document the works and findings of the hub," she said.

Dr Mjwara, who spoke on behalf of Minister of Higher Education, Science and Innovation Dr Blade Nzimande, indicated that the launch of the National Biosecurity Hub should be seen as an intervention to strengthen the existing efforts of all stakeholders to support robust, sustainable and responsive systems for plant health, animal health and food safety. He said the hub should also be seen as an undertaking to ensure that South Africa's efforts to strengthen biosecurity are sustainable and have a greater impact.

This includes developing and using information technology to strengthen sanitary and phytosanitary information, and surveillance systems to safeguard agricultural products and processes to facilitate international trade.

"All of this will enhance our capacity to respond more effectively to one of the most urgent challenges facing our country, which is the challenge of food security," he said. "It is important to prevent or limit the introduction and spread of quarantine pests and diseases to prevent their potential impact on sustainable production or risks to the territories of trading parties," said Minister Didiza.

***'Plant health and biosecurity are fundamental to all life on earth.'***

"In recent times, however, disputes around the scientific justification of SPS measures have become a key feature of international trade. Despite having an international framework to ensure fair and consistent trade, South Africa has not escaped this disturbing trend. Our observations are that unjustified strengthening of SPS measures is directed to inhibit South Africa's competitiveness in key export markets," she said.

"As we are consolidating our biosecurity efforts domestically, it also positions South Africa to play a leading role in managing agricultural pests and diseases at a sub-regional and regional level. This is particularly important as pests and diseases do not respect geographical borders. An emergent threat manifesting in an African country north of the equator cannot be disregarded as the movement of people and vectors can easily transport such a disease into southern Africa," she added.

In his message of support, Osama EL Lissy, Secretary of the International Plant Protection Convention (IPPC), thanked the National Plant Protection Organisation of South Africa (NPPOZA) for leading this initiative. "Plant health and biosecurity are fundamental to all life on earth. I am certain that this biosecurity hub will be an excellent forum to facilitate sharing of knowledge, enhancing cooperation and working together to develop ways of strengthening plant health and biosecurity in the region," he said.

During a panel discussion, Sinelizwi Fakade, founder and chairperson of Ukhanyo Farmer Development, said profitability and quality were important elements influencing farmers' bottom line. "Therefore, biosecurity is important, and farmers need to ensure that it is happening," he said.

# We need to protect white rhino cows to charge at the threat of poaching

*Prof Adrian Shrader*

We could double the number of white rhino females in the coming decade by protecting them from poaching, which has been steadily increasing over the last decade. This is according to UP researchers and their colleagues who suggest practical solutions to protect these magnificent animals, most of which live in the Kruger National Park.

"To protect females in Kruger National Park, we suggest several tractable actions [such as] dehorning, translocating, and manipulating the behaviour of female white rhinos, coupled with harsher punishments for poaching them," says Professor Robert McCleery of UP's Mammal Research Institute.

If we don't, researchers predict that white rhino numbers could plummet by 35%.

Prof McCleery and colleagues said this in a commentary about practical solutions to protect white rhinos from poaching Prof McCleery had been part of a study led by Dr Zoliswa Nhleko from the University of Florida. They had looked in detail at how the steady increase in poaching over the last 10 years affected white rhino populations in the Kruger National Park. This is a protected area in South Africa where most of the world's white rhinos live.

But poaching doesn't just kill the targeted horned animal, says Mammal Research Institute's Professor Adrian Shrader in another recent commentary on Nhleko's study. "As Nhleko pointed out, we also need to consider the number of orphans and youngsters that have died because of their mothers' deaths," he says.

Nhleko had calculated that overall, each female white rhino would typically give birth to six calves in its lifetime. Now, many barely manage to give birth to just one calf before they are killed, which means that for every poached female rhino, just over five future calves are lost.

If local communities, regulators and game farm owners can reduce the poaching of female white rhinos by half, the researchers predict that white rhino numbers can double over the next 10 years.

"By taking swift and practical actions that are within the control of local managers, there is real hope that the white rhino can again become a conservation success for Africa and the planet," Prof McCleery says.

***"I, for one, hope that these findings are utilised and that we can make meaningful efforts towards a better future for this iconic African mammal," says Shrader. "Long live the white rhino!"***


# Global Engagement

# Department of Zoology and Entomology ranked 32ND GLOBALLY

***The University of Pretoria's (UP) Department of Zoology and Entomology has been ranked 32nd in the world for its research impact by the University Ranking by Academic Performance (URAP) for 2021-2022.***

Professor Armanda Bastos, head of the department in the Faculty of Natural and Agricultural Sciences, noted that the department has improved both the quality and quantity of outputs year after year. "This is an incredible achievement and a testament to the high standard of research in the department," she said. Prof Bastos since concluded her term as the head of the department at the end of October 2022.

This is the third consecutive upward climb for UP's Zoology ranking. It moved from 54th in 2019 to 50th in 2020, then 45th the following year, and now a leap of 13 places to position 32.

Zoology was one of 78 subjects at 3 000 higher education institutions assessed for URAP's 2021 – 2022 rankings, with first place going to the University of São Paulo in Brazil. The subject rankings are based on six academic performance indicators that are primarily focused on the quality and quantity of publications, sourced from databases such as Scopus and the Web of Science and on international research collaborations.

For each subject, URAP calculates the number of articles over the past five years and then its ratio to the total number of articles in that subject worldwide over the same period. Chris Weldon, Associate Professor of Applied and Physiological Entomology at UP, said the department values the ranking. "[The URAP ranking] reflects how well an institution is doing relative to the rest of the world, rather than just who is the best," he said.

UP Zoology scored the highest for its current research output and number of citations, that is, how often its research has been quoted. This was followed by the impact of its articles over the past five years and its international collaborations. Essentially, the department was recognised for its scientific productivity, research impact and quality, and its international acceptance.

Prof Weldon said one of the most significant changes in the department's research patterns over the past ten years was that it was publishing more in higher-impact journals. "We're being cited more often because of that," he said. "We're also forming many more international collaborations so that the work we're doing is not just relevant and important for South Africa, but also globally."

Prof Bastos attributed the success to the department's three main strengths: "The diversity of research; strong national, regional and international networks; and the dedication of staff, students and affiliates," she said. "Zoology at UP covers everything from tiny viruses infecting wildlife up to the largest land and marine mammals. We have 13 academic programmes, having recently added three postgraduate Wildlife Management programmes."

She said the department's close association with three research institutes – the Mammal Research Institute, the Forestry and Agricultural Biotechnology Institute and the International Centre of Insect Physiology and Ecology – and the high proportion of its research chairs contributed to its strong performance in the ranking.

The department's research covers a broad range of subjects, including social insects – through the Social Insects Research Group – amphibians; reptiles; birds; subterranean, terrestrial, aquatic and marine mammals;

and diverse ecologies, from deserts to polar geographical areas.

"It also includes basic and applied research that spans the management of pest species (invertebrate and vertebrate), the impact of climate change and other anthropogenic drivers, wildlife diseases (inclusive of vector-borne and zoonotic diseases) as well as carnivore, elephant and restoration ecology," Prof Bastos explained.

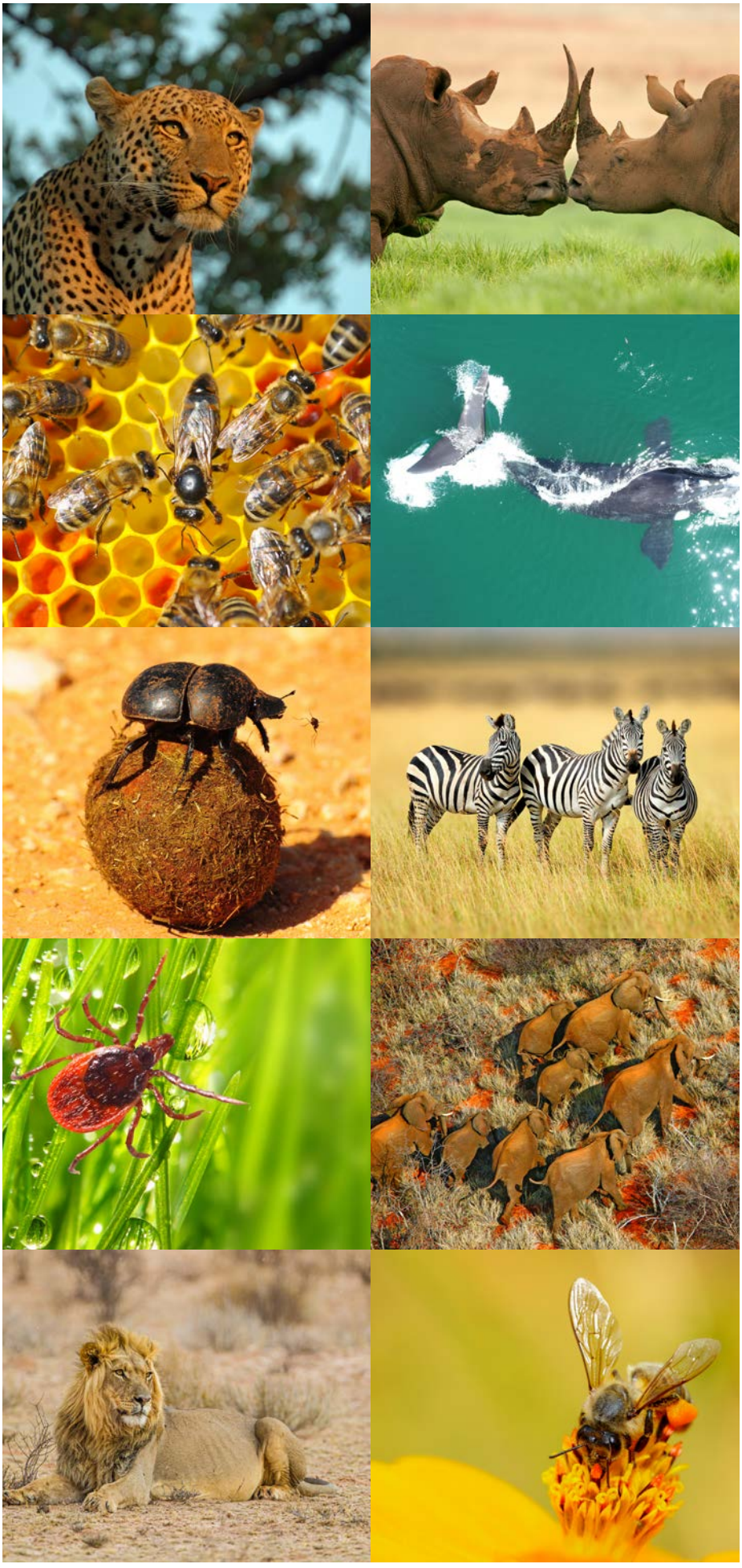
"We sit inland and are land-locked, but we have two highly successful marine mammal programmes," she added. "One is the Whale Unit at Hermanus, and the other is based on sub-Antarctic Marion Island and monitors seal populations. Both are long-term programmes that contribute to international monitoring."

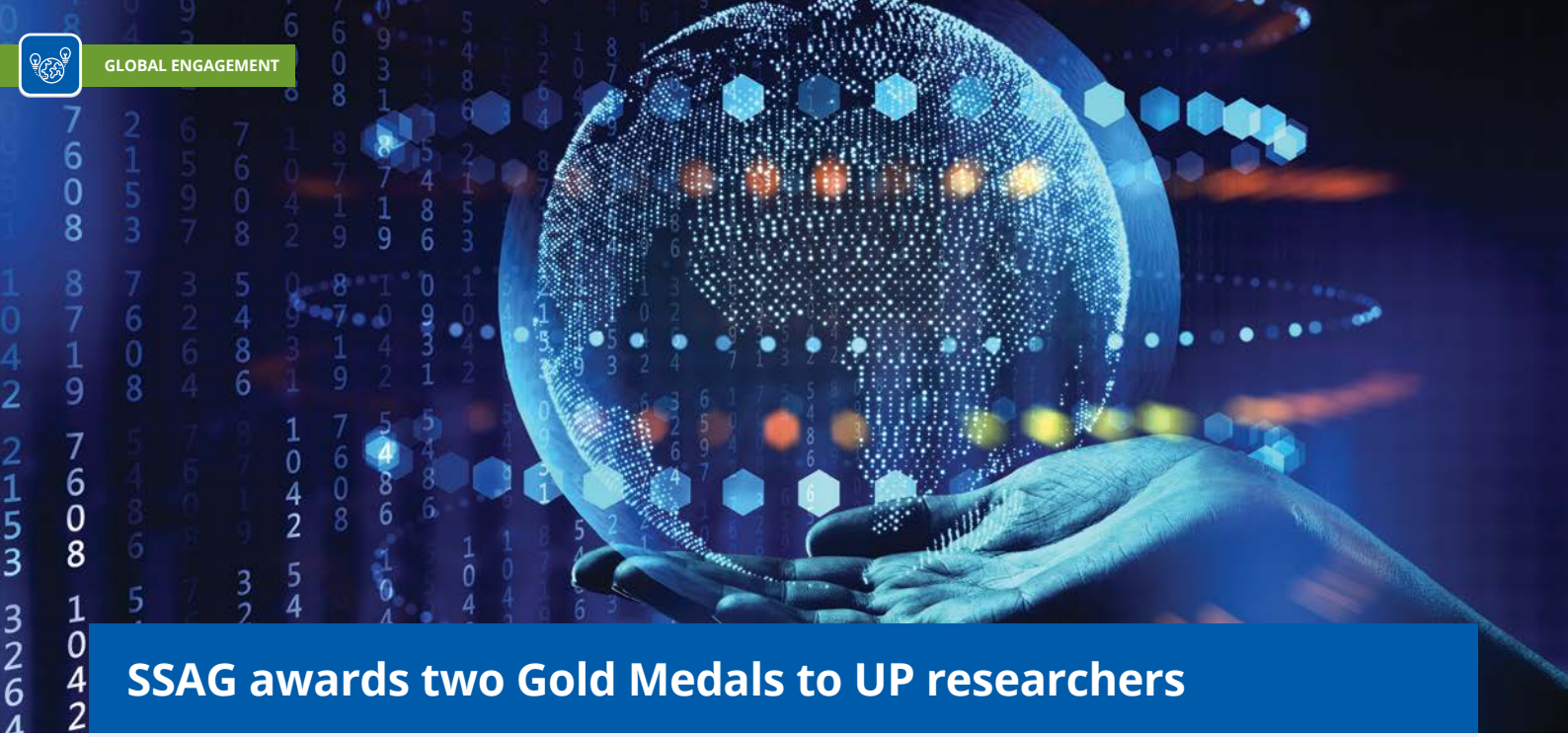
In addition to monitoring whales and seals, the department has a long-term monitoring project on the Sani Pass in the Maloti-Drakensberg Mountains. "Third-year students contribute annually to this project, which investigates the effects of altitude and climate on species, with a focus on ant diversity," Prof Bastos said. "This programme has been running for more than 16 years."

The department's specialised laboratories include a stable isotope facility, which can reconstruct past environmental and climatic conditions and explain past and modern human and animal diets; the only endocrine research laboratory in southern Africa, which conducts interdisciplinary research on free-roaming and captive animals; an ancient DNA laboratory; and a chemical ecology laboratory. "Our international networks have grown in the past few years," Prof Bastos said.

She sings the praises of her staff, students and collaborators associated with the department. "People have an incredible work ethic in this department. Our extraordinary staff members, some based in governmental and international institutions, contribute to the department's outputs. They're motivated to do the research, build capacity and transfer skills in the teaching and learning environment – and the students follow their example."

UP Vice-Chancellor and Principal Professor Tawana Kupe congratulated Prof Bastos and her team. "Our academics continue to produce high-quality research, despite the challenges brought about by the COVID-19 pandemic, showing that they are resilient," he said. "I am pleased with this. As a future-focused university, we need to keep improving our research outputs and the quality of our research, not to push our international ranking but to help transform our country, continent and world with high-impact research and innovations. We can achieve this through all your research and commitment."





# SSAG awards two Gold Medals to UP researchers

***The Society of South African Geographers (SSAG) Gold Medal, awarded in recognition of meritorious contribution to Geography in Southern Africa, grants honorary lifelong membership of the Society. The SSAG has awarded two Gold Medal Awards, to Prof Serena Coetzee and Dr Clinton van der Merwe.***

On receiving the award, Prof Coetzee, Professor and Head of the Department of Geography, Geoinformatics and Meteorology, said, "It is an honour, and I must say, a pleasant surprise, to receive this medal because I am not a trained geographer… but then I guess, this demonstrates the universal relevance of geography: everything is or happens somewhere on Earth, some things are just closer to each other than others, and 'geospatial' matters in everything we do, and very much so in the many challenges we face today, such as rapid urbanisation and climate change adaptation. Even though these challenges are serious and real, as academics, we get to have fun – we get paid for playing around with new tools, studying interesting datasets, exploring possible solutions, and meeting and collaborating with interesting people from different disciplines and different walks of life … and above all, we have the rewarding task of developing the next generation for whom we are trying to save the planet. It's very nice to get a medal just for having fun. May the fun continue…." Prof Coetzee concluded.

She has a C1 NRF rating with an impressive publication record, collaborating with researchers from at least 20 countries. Prof Coetzee has supervised and inspired a new generation of spatially skilled postgraduates, contributing to the development of science through her roles on editorial boards and as a reviewer for various journals and panels. She has led several applied projects that have positively impacted policy and communities. The Gold Medal award recognises Prof Coetzee's significant contributions to the field of spatial data infrastructure.

Dr Van der Merwe said, "being awarded the SSAG Gold Medal is a lifetime achievement and a tremendous honour to me. I am, first and foremost, a teacher at heart (more than a researcher), and this recognition from the SSAG has warmed my heart. I have taught Geography at school (and then University level) for over 25 years. Being a member of the SSAG is a real privilege. I want to thank all my mentors, Prof Christian Rogerson (UJ) and many others who have played an instrumental role in making me the Geographer I am!"

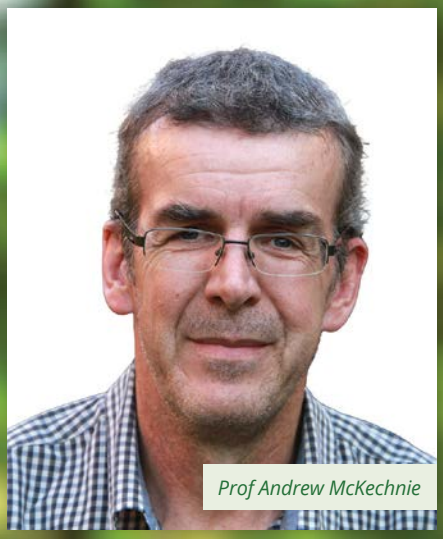
Dr Clinton van der Merwe has established himself as a geographer by contributing to debates and discussions on heritage. In parallel, he has made a significant contribution to Geography Education as a teacher, an educator of teachers, and a founding editor of the *Journal of Geography Education in Africa* (JoGEA). He is a founding member of the Southern African Geography Teacher's Association (SAGTA) and the South African National Geography Olympiad (SANGO). The Gold Medal Award recognises his research and teaching in the field of Tourism Geography; and his contributions to SSAG.

*Dr Richard Ballard (former president of the SSAG), Prof Serena Coetzee (UP) and Prof Jennifer Fitchett (SSAG president)*

*Dr Richard Ballard (former president of the SSAG, Dr Clinton van der Merwe (UP) and Prof Jennifer Fitchett (SSAG president)*

# Two NAS scholars honoured by Academy of Science

*Two scientists from the Faculty of Natural and Agricultural Sciences (NAS), Prof Andrew McKechnie and Professor Hettie Schönfeldt were inaugurated as fellows of the Academy of Science of South Africa (ASSAf) at the organisation's annual awards ceremony recently.*



*Prof Andrew McKechnie*

*Prof Hettie Schönfeldt*

Prof McKechnie, Professor and South African Research Chair (Conservation Physiology), Department of Zoology and Entomology and Prof Schönfeldt, SARChI Chair in the National Development Plan Priority Area of Nutrition and Food Security and Co-director: African Research Universities Alliance (ARUA): Centre of Excellence in Sustainable Food Systems join the ranks of many esteemed researchers receiving this prestigious honour.

"I am humbled to have been elected to the Academy, and would like to thank my students, postdocs and collaborators for their many contributions to the research programme this ASSAf membership recognises", Prof McKechnie said when asked for comment on this honour.

Prof Schönfeldt agreed that "ASSAf membership is viewed by many as the finest accolade an academic can receive during one's research career. As its mission is to recognise scholarly achievement and excellence in the application of scientific thinking for the benefit of society, I feel both feel honoured and humbled to receive this accolade."

One of the core functions of the academy is to honour the country's most outstanding scholars by electing them to join as members.

According to ASSAf, the criteria for election is "significant achievement in the advancement and application of science/ scholarship, both nationally and internationally". Members are drawn from a broad spectrum of disciplines. UP Vice-Chancellor and Principal Professor Tawana Kupe congratulated the new ASSAf fellows.

"The University of Pretoria is proud to play a key role in contributing to South Africa's academic expertise. Congratulations to the new UP ASSAf members whose multidisciplinary research will not just serve South Africa but will enrich societies on the African continent and beyond."

He added that as a future-focused university, "we produce innovative knowledge and ideas that address the most pressing global challenges. The fact that UP has over 70 ASSAf fellows is a testament to our significant impact on society."

A third researcher from UP, Professor Olalekan Ayo-Yusuf, Head of School and Professor at the School of Health Systems and Public Health, was also inaugurated at the same ceremony.

# Prof Abba B Gumel elected as Fellow of AMS

Professor Abba B Gumel, an Extraordinary Professor from the Department of Mathematics and Applied Mathematics, has recently been selected as a Fellow of the American Mathematical Society (AMS).

The Fellows of the American Mathematical Society program recognises members who have made outstanding contributions to the creation, exposition, advancement, communication, and utilisation of mathematics.

Professor Gumel was recognised for his contributions to the mathematical theory of epidemics, applied dynamical systems, and promoting the use of mathematics to help solve global public health challenges.

In his words: "It is a huge honour to be elected Fellow of the AMS. This honour will not have been possible without the excellent support and collaboration I received from my students (including high school and undergraduate and graduate research students), postdoctoral fellows and collaborators from around the world. I am also indebted to my many mentors, colleagues, friends and family for the unflinching support, kindness and encouragement."

Prof Gumel is a Professor of Mathematics at the Department of Mathematics, University of Maryland, College Park (where he holds The Michael and Eugenia Brin Endowed E-Nnovate Chair in Mathematics). As a mathematical biologist, he specialises in designing, rigorously analysing and parameterising novel mathematical models for gaining insight and understanding of the transmission dynamics and control of emerging and re-emerging infectious diseases of public health significance. He also holds a Fellow of the Society for Industrial and Applied Mathematics (SIAM), and is a winner of the 2021 Bellman Prize. Prof Gumel delivered the 2021 AMS Einstein Public Lecture in Mathematics and is a Fellow of the African Scientific Institute.

*Prof Abba Gumel*

According to Prof Mapundi Banda, Head of the Department of Mathematics and Applied Mathematics, this is a well-deserved recognition of Prof Gumel's outstanding contribution to the field of Mathematics. "He has contributed to our Department through co-supervision of doctoral and postdoctoral students and workshop organisation. He flies the UP flag high in his undertakings. We are very proud of his achievements and affiliation with us," Prof Banda said.

# Prof John Taylor awarded esteemed Clyde H Bailey Medal

Professor John Taylor, a Senior Research Fellow in the Department of Consumer and Food Sciences and an internationally renowned food scientist, has been awarded the Clyde H Bailey Medal by the International Association for Cereal Science and Technology (ICC).

The Medal is awarded by the ICC only once every four years for outstanding achievements in cereal science and technology. It is named after Professor Clyde Bailey (1887 – 1968), Dean of Agriculture at the University of Minnesota (1942 – 1952) and responsible for numerous fundamental research work in cereals. The Bailey Medal is one of the two premier cereal science and technology awards. The other is the T B Osborne Medal from the Cereal and Grains Association (formerly American Association of Cereal Chemists), which was also awarded to Prof Taylor last year.

Prof Taylor said. "Being awarded the Bailey Medal is uniquely special to me. I have been involved in the activities of ICC since way back in 1986 when my director at the CSIR asked me to serve as secretary of our local cereal science and technology group. Since then, ICC has made a huge and lasting impact on my scientific career and my life. Highlights include the 1993 international cereals conference held in Pretoria, the first international scientific conference held in South Africa for numerous years, serving as President of the ICC in 2009- 2010 and serving as a co-editor of the ICC Handbook of Cereal Science and Technology. My only hope is that I have given back to ICC and our African cereal science and technology community as much as I have received."

When asked how he felt about this esteemed medal, Prof Taylor said, "I am humbled that my peers in the international grain science community considered my contribution to our discipline worthy of this prestigious award. Especially as I am sure that by now, they were heartedly tired of writing nice things about my work. More seriously, receiving these two medals is a lot to live up to. All I can do is keep trying my best. While I am still able, my commitment is to apply my skills to help alleviate malnutrition in our continent by bringing the nutritional- and health benefits of whole-grain foods to people.

A significant theme of Prof Taylor's research has concerned sorghum's kafirin prolamin proteins. In addition to making some fundamental scientific contributions, his team has made significant innovations in utilising kafirin as a bioplastic polymer and a functional replacement for gluten in non-wheat types of bread. He has also contributed to improving African grain food nutrition in sorghum protein biofortification and essential mineral fortification.

Prof Taylor's work on sorghum malting and brewing has substantially impacted the development of the sorghum beverage industry in Africa. In addition, he has played a significant role in uplifting grain science education in Africa, supervising more than 100 master's and doctoral graduates from across the continent. His professional service has included the International Association for Cereal Science and Technology presidency, being a former associate editor of *Cereal Chemistry*, and being past editor-in-chief of the *Journal of Cereal Science*.

*Prof Hamit Koksel (from Turkey and Chair of the ICC Academy), Prof John Taylor and Prof Peter Shewry (from Rothamsted Research in the UK).*

# Hans Cloos Medal for 2022 awarded to Prof Louis van Rooy

Professor Louis van Rooy, an Extraordinary Professor from the Department of Geology, has recently been awarded the Hans Cloos Medal for 2022 by the International Association of Engineering Geology and the Environment (IAEG).

This medal, awarded biannually, is the senior award presented by IAEG, given to an engineering geologist of outstanding merit in commemorating the 'founder of geomechanics'.

"Receiving this medal, the highest award from the international engineering geology profession is immensely humbling. I see this as the culmination of my lifelong effort to promote this field of science, locally and in Africa. In the process, I made very good friends in Africa and internationally. These interactions enriched my views and knowledge, which I could again transfer to local students and guide relevant research focusing on solutions for African conditions. To be the only ever recipient from Africa is not only due to my efforts but rests on the support from colleagues and fellow African engineering geologists working hard to increase the relevance of engineering geology locally and adapt to our unique conditions. The medal adds to a highly satisfying and rewarding career in teaching engineering geology at UP," Prof Van Rooy explained what this award means to him. The recipient of this medal is a person of international repute who has made a significant contribution to engineering geology in their written papers or the development of engineering geology.

*Prof Louis van Rooy (middle) with two students from Nigeria.*

Prof Van Rooy served as president of SAIEG and vice-president for Africa of the IAEG. During his tenure in the latter, he travelled the continent, engaged with other countries and was instrumental in establishing national groups in various west and north African countries. He is the first receiver of this prestigious award from the southern hemisphere and Africa.

(Due to COVID-19, the physical presentation has been postponed to September 2023 at the international congress to be held in China).

The South African Institute for Engineering and Environmental Geologists (SAIEG) is a national voluntary group representing natural scientists practising engineering and environmental geology. It has gained recognition as a Voluntary Association from the South African Council for Natural Scientific Professions (SACNASP). It is affiliated with the International Association for Engineering Geology and the Environment as the South African National Group.

# SASBMB Gold Award for Prof Don Cowan

Professor Don A Cowan, Director of the Genomics Research Institute and the Centre for Microbial Ecology and Genomics, was recently awarded the South African Society of Biochemistry and Molecular Biology (SASBMB) Gold Award.

The SASBMB Gold Award is awarded to a senior member of the Society who has made an outstanding contribution to Biochemistry and/or Molecular Biology in Southern Africa and internationally.

Prof Cowan is delighted and honoured to receive the 2022 SASBMB Gold Medal Award. "I originally trained as a biochemist and, after my postdoctoral years, joined a good old-fashioned biochemistry department at UCL in London. I rapidly realised that my knowledge of biochemistry had huge gaps, some of which were subsequently filled in during the years of teaching protein chemistry to second-year students and tutoring medical students."

"Some twenty years ago, I reinvented myself as a molecular ecologist and spent the past two decades studying the microbiomics in extreme environments. With the rise in functional metagenomics, particularly the functional interpretation of Metagenome Assembled Genomes, it has become apparent that a solid grounding in biochemistry has become absolutely essential.

"I have to gratefully acknowledge the efforts of all those wonderful postdocs, PhD and MSc students that I have worked with over the years: we all know that these young researchers not only catalyse the careers of those above them, but some will become the research leaders of the future," Prof Cowan concluded.

Prof Cowan's research is in microbial ecology, microbial genomics and applied microbiology, where he and his team use modern 'omics' methods to understand the diversity and function of microorganisms in different environments. Much of his research focuses on the microbiology of extreme environments, including hot (Namib) and cold (Antarctic) desert soils,

*Prof Don Cowan*

but he also supervises research projects investigating the rhizospheric zones of economic crop plant species. He is currently leading the pan-African African Soil Microbiome project.

Prof Cowan has an NRF A1 rating, the 2019 Royal Society of South Africa's John F.W. Herschel medal, the University of Pretoria's 2020 Exceptional Supervisor's Award and now the SASBMB 2022 Gold Medal.

# Prof Webb scooped up David Uys trophy for second time

*Prof Edward Webb with the trophy*

Prof Edward Webb, Professor in Animal Science and the Crocodile production research group, was recently awarded the David Uys trophy at the 2022 Congress of the South African Society of Animal Science. It is the second time that he has scooped up this award.

This award is the most prestigious for authors published in the South African Journal of Animal Science (SAJAS). The crocodile research group consist of Profs Webb, Veldsman, Myburgh and Swan, and this award was for a paper published in 2021 titled "Effects of stocking density on growth and skin quality of grower Nile crocodiles (Crocodylus niloticus)".

The research was conducted under the auspices of the Exotic Leather Research Centre (ELRC) of the University of Pretoria. The study was conducted at the request of the National Council of Societies for the Prevention of Cruelty to Animals (NSPCA) due to concerns about management practices and stocking densities used in commercial crocodile production in South Africa.

South Africa is among the leading producers of exotic leather, but we do not harvest wild crocodiles like some of our neighbouring countries. Instead, South African crocodile farmers breed crocodiles in captivity to produce exotic leather and crocodile meat. This provides a sustainable way to use this valuable resource and adds to ecotourism and the conservation of this remarkable species of animals in South Africa. The David Uys trophy is awarded based on the number of downloads and citations, hence its scientific contribution to Animal Science research. This is the second time Prof Webb has received this trophy.

"The first time was in 2018, for a paper published from research that emanated from my Production Physiology and Meat Science Research programme on the effects of non-genetic factors on the production and reproduction efficiency of extensive beef cattle in South Africa. This research was ground-breaking because one of the first studies to quantify the effects of non-genetic factors such as soil pH, soil chemistry and fertility, and climatological factors such as temperature and humidity, and their interactions on the fertility and productivity of extensive beef cows. That research contributed to a better understanding of the factors affecting beef production to make such systems more productive and environmentally sustainable," concluded Prof Webb.

# Prof Reyers plays instrumental role in UN's latest Human Development Report

Prof Belinda Reyers, Professor of Sustainability Science in the Faculty of Natural and Agricultural Sciences, has spent the past three years working with the team behind the UN Human Development Report as a member of their Advisory Group and a member of the High-Level Advisory Panel on the Special Report on Human Security.

This annual Human Development Report (HDR 2021-22) titled: "Uncertain Times, Unsettled Lives: Shaping our Future in a Transforming World" was released in September and demonstrated how multiple layers of uncertainty are stacking up and interacting to unsettle life in unprecedented ways.

Prof Reyers explained, "These days, we seem to reel from one crisis straight into another while also dealing with what the report calls a new "uncertainty complex" of sweeping social and economic shifts, dangerous planetary changes, and concerning increases in polarisation. It comes, therefore, as no surprise that the report finds that the Human Development Index, an annual measure of a nation's health, education, and standard of living, has declined globally for two years in a row, falling back to its 2016 levels, reversing much of the progress made over the past decade towards the Sustainable Development Goals. These declines are being felt everywhere, with 90% of the world's countries reporting a decrease in human development.

As a South African researcher working on understanding and engaging with the complex interdependencies and relationships connecting people and the planet, Prof Reyers has been able to help ensure the reports bring in more integrated perspectives on human development to acknowledge the importance of climate change, biodiversity loss, environmental degradation and pollution on human development and inequality. As she made clear in her presentation at the launch of the 2020 HDR hosted by the Prime Ministers of Sweden and Barbados and the President of South Africa, "these are no longer just environmental risks; they are now some of the most important development risks facing the world" She has also been able to support more integrative and systemic perspectives navigating our way through these crises and uncertainties to, as the report says: "reimagine our futures, to renew and adapt our institutions and to craft new stories about who we are and what we value".

*Prof Belinda Reyers*

As someone who is committed to improving our scientific and political abilities to recognise, make visible and reimagine the complex social-ecological interdependencies linking people as individuals, but also as collectives, with species and ecosystems of all types, conditions and at all scales, Prof Reyers has been grateful to be included in the process of developing these reports. She has also used the process to inform and shape her current research. As she gets to conclude in the report, it is "in making clear how these interconnections shape identities, cultures, relationships, minds, mental and physical wellbeing and ultimately freedoms and choices in dynamic ways, [that] science and policy can overcome problematic divisions between environment and development to focus instead on the quality of relationships connecting people and planet and the reconfigurations of relationships needed to enhance capacities to navigate uncertain futures.

# UP alumnus featured on the 25 Rising Stars in Astronomy List

*Dr Gopolang Mohlabeng*

Dr Gopolang Mohlabeng's research into dark matter has received global recognition and earned the University of Pretoria (UP) alumnus a spot on the global 25 Rising Stars in Astronomy List.

The list profiles researchers in the astronomy field from across the world whose work has contributed to our understanding of what still remains one of the greatest mysteries of nature.

"It feels great to have the work I have done being recognised. I think for me this is not only about recognition for the work, but also to show that black people can be successful scientists and that we are part of what a physicist or astronomer looks like," said Dr Mohlabeng.

"This recognition makes me want to work harder and inspire other young people so their work can also be recognised in the future."

Dr Mohlabeng was born in Atteridgeville, Pretoria and now resides in California, United States of America. He graduated with a BSc in Physics in 2010 and currently works at the University of California, Irvine, as a postdoctoral researcher.

His area of research – dark matter – is as mysterious as the name suggests. "Dark matter makes up about 25% of the energy density of our universe," he explains.

"Everything that we can see and touch, like galaxies, planets, gas, etc., all make up 5%. The rest is something called dark energy. We do not know what dark matter or dark energy are, meaning that we only understand 5% of our universe."

"We are trying to understand what these 'dark sectors' are. I work particularly on understanding the fundamental nature of dark matter. I think of dark matter as a cosmic glue that holds the universe together. Without it, our galaxy, the solar system and the earth would not have formed. So naturally, we want to understand what it is."

Dr Mohlabeng describes himself as an astroparticle physicist. He says astroparticle physicists use knowledge of astrophysics and particle physics to understand the fundamental nature of the universe.

"We study the most fundamental building blocks of life to understand the universe from when it was formed until today."

He says his passion for science comes from the need to understand how things work and because he is curious.

***"My drive also comes from the potential discovery of new fundamental science that can shape the future of society."***

Dr Mohlabeng explains that during his undergraduate studies at UP, he was given the opportunity to conduct research. This gave him a feel for research and encouraged him to pursue a career in research.

"Also, some of the courses in physics and mathematics were more advanced and that helped me when I moved to my honours degree," he adds. He believes that alumni can help by giving back to their alma mater through knowledge.

"Alumni have had the chance to leave and interact with people from many other places, so they know how things can be done differently (for better or worse). There are things that I experienced in my alma mater that I think could be better and others that I have not found anywhere else."

He says that although he was initially accepted to study physics at another university, he chose to pursue the course with UP because the programme and department appealed to him, and he was interested in the various student programmes the university offered.

His advice to young people about perseverance and grit is simple: "When you have a dream you want to achieve, nothing will stop you. Have that tunnel vision and don't let anything get in your way. That is how I was able to make it."

# Two esteemed NAS researchers honoured with IUFRO Tree Pathology Award

Professors Brenda and Mike Wingfield recently received the outstanding Hartig-Patterson Award at the recent International Union of Forest Research Organizations (IUFRO) Division 7 Forest Health Meeting in Portugal Lisbon, 2022. IUFRO is a non-profit, non-governmental international network of forest scientists, headquartered in Austria.

**Prof Brenda Wingfield** holds the SARChI Chair in Fungal Genomics and has an NRF A-rating. **Prof Mike Wingfield**, also an NRF A-rated is an Advisor to the UP Executive and founding member of the Forestry and Agricultural Biotechnology Institute.

This new award was established to specifically recognise global contributions to the Forest Pathology field. The name of the award recognises Robert Hartig, who was a German forestry scientist and mycologist, and is considered to be the 'Father of Forest Pathology' for his foundational research into the etiology of tree diseases. Flora W Patterson was an American mycologist and plant pathologist. She was the first female hired for these roles and is considered the 'Mother of Forest Biosecurity' for her pioneering work in plant quarantine.

It is very fitting that the leadership team of Division 7, including Dr Tod Ramsfield (Canada), Dr Beccy Ganley (New Zealand), Dr Julio Diez Casero, and Prof Ecki Brokerhoff (Germany) announced that the first recipients of this award would not go to one, but two very worthy recipients—both for their long-standing and outstanding contribution to forest pathology. In accepting their awards presented by Dr Beccy Ganley, Prof Brenda and Prof Mike were surprised yet delighted to be appreciated by a community of scientists with whom they have interacted and collaborated throughout their careers.

*Prof Brenda Wingfield*

*Prof Mike Wingfield*

# Two NAS professors appointed to IAP

*Prof Christian Pirk*

*Prof Stephanie Burton*

Congratulations to Prof Stephanie Burton (Professor in Biochemistry and Professor at Future Africa) for her appointment as Co-Chair of the Interacademy Partnership (IAP) board for the 2022-2024 mandate, and Prof Christian Pirk (Department of Zoology and Entomology) for his appointment as a member of the IAP Development and Programme Committee on Policy Advice: http://ow.ly/ALtq50LzJGB

The InterAcademy Partnership (IAP) provides a collective, supportive mechanism for academies to further strengthen their crucial roles as providers of evidence-based policy and advice.

IAP is the global network of science, engineering & medical academies working together to provide independent expert advice on scientific, technological and health issues.

# Top NAS scholars honoured at UP's annual Academic Achievers' Awards

*The University of Pretoria's (UP) top academics took centre stage at the 22nd Annual Academic Achievers' Awards held recently, where the University celebrated scholars for their outstanding interdisciplinary research. Researchers from the Faculty of Natural and Agricultural Sciences (NAS) again scoop up many awards.*

The annual award ceremony, which has taken place virtually for the past two years due to the COVID-19 pandemic, was held at the Kievits Kroon, Kameeldrift-East, in Pretoria. The awards honoured 133 winners across eight categories, including 110 National Research Foundation-rated scientists.

"As academic achievers, you have demonstrated your academic excellence, which is generally defined as the ability to perform, achieve, and excel in teaching and learning, research, innovation, and engagement," said UP Vice-Chancellor and Principal Professor Tawana Kupe during his virtual address.

"We need far more academics to ensure our voices and expert comments are heard; that we share your research and findings. All of you here today have the gift of extraordinarily bright minds, and we need you to speak up and speak out in your areas of knowledge."

**Prof André Ganswindt** (Department of Zoology and Entomology and the Director of the Mammal Research Institute) and **Prof Christian Pirk** (Department of Zoology and Entomology) both won Exceptional Academic Achievers Awards. **Prof Thulani Hlatshwayo** (Department of Physics) walked away with an Exceptional Young Researchers Award.

**Prof Adrian Shrader** (Department of Zoology and Entomology) scooped up an individual Teaching Excellence Award.

**Dr Madelien Wooding** and **Dr Yvette Naudé** (both from the Department of Chemistry) were co-authors on an article with Prof Marietjie Venter (Department of Medical Virology, Faculty of Health Sciences) that won The Conversation Africa Award for Communication Excellence. The award was for the single most-read article in The Conversation Africa.

Click here to read more about all the UP researchers' achievements, including the latest NRF-rated staff.

*Prof André Ganswindt*

*Prof Christian Pirk*

*Prof Thulani Hlatshwayo*

*Prof Adrian Shrader*

*Dr Yvette Naudé and Dr Madelein Wooding*

# NAS boast nine NRF Y-rated researchers

***Nearly fifty per cent of this year's National Research Foundation (NRF) Y-rated scientists – a total of nine young researchers hail from the Faculty of Natural and Agricultural Sciences (NAS). We are very proud of you!***

Young researchers (40 years or younger), who have held the doctorate or equivalent qualification for less than five years at the time of application, and who are recognised as having the potential to establish themselves as researchers within a five-year period after evaluation, based on their performance and productivity of quality research outputs during their doctoral studies and/or early postdoctoral careers.

*Dr Chimerre Anabanti*

*Dr Dina Coertzen*

*Prof Johan Ferreira*

*Dr Samkelo Malgas*

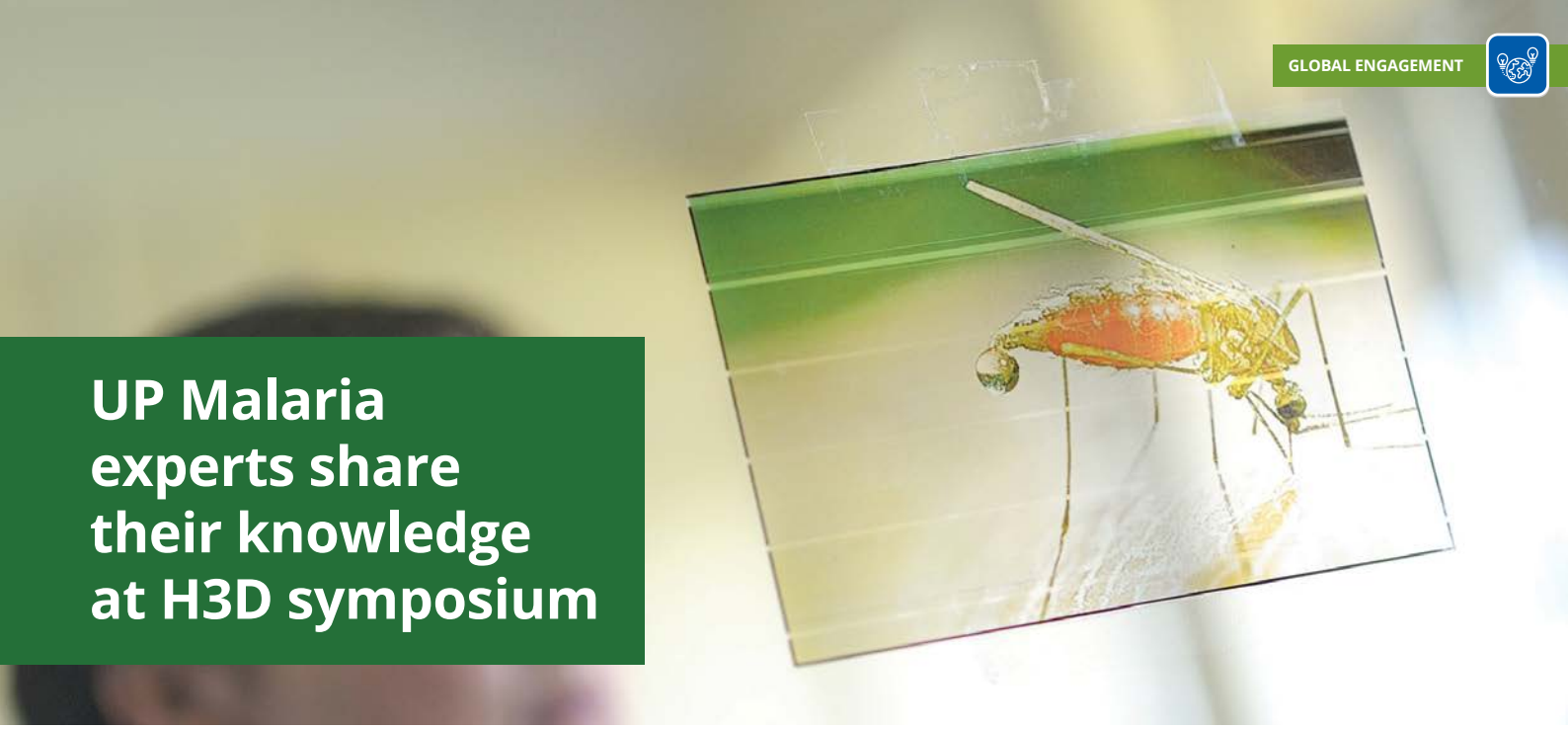
*Dr Najmeh Nakhaerad*

*Dr Victoria Rautenbach*

*Dr Christopher Schwanke*

*Dr Harry Wiggins*

*Dr Markus Wilken*



# UP Malaria experts share their knowledge at H3D symposium

***Malaria remains a serious public health concern, and challenges such as malaria parasite drug or antimalarial resistance are impacting heavily on the goal to eliminate the disease.***

Professor Lyn-Marie Birkholtz (DSI/NRF SARChI Chair in Sustainable Malaria Control) and seven researchers from her Malaria Parasite Molecular Laboratory (M2PL) research group presented some of the group's research at the 2022 H3D Symposium, hosted by the University of Cape Town's Holistic Drug Discovery and Development (H3D) Centre, during October in Stellenbosch.

The M2PL researchers are doing significant malaria parasite drug discovery work, including *Plasmodium* parasite surveillance and epidemiology and transmission dynamics.

The researchers, including Prof Birkholtz, four staff members and three PhD students, shared their research through oral presentations or posters during the four-day long symposium.

Posters were presented by Dr Janette Reader, Dr Mariëtte van der Watt, Mariska Naudé, Dr Jandeli Niemand and Nicola Greyling.

Dr Reader is appointed in the Department of Biochemistry, Genetics and Microbiology is one of five international researchers to produce transmissible forms of malaria parasites, and only one to stage-stratify transmissible forms of parasites for stage-specific antimalarial compounds globally. Her poster was titled "Streamlined and robust stage-specific profiling of gametocytocidal compounds against *Plasmodium falciparum*".

Dr Van der Watt, appointed in the School of Health Systems and Public Health, is one of less than five international researchers to robustly produce and maintain viable, stage-specific *Plasmodium falciparum* gametocytes in in-vitro cell culture. Her poster was titled "Repurposing open-source chemistry for transmission-blocking antimalarials".

Mariska Naude is a PhD student in the M2PL group. Her poster was titled "Profiling stage-specificity of gametocytocidal compounds to facilitate antimalarial drug discovery".

Dr Niemand, a Y1 NRF-rated researcher and the successor to the DSI/NRF SARChI Chair in Sustainable Malaria Control. Her research focus is on the proteonomic analysis of drug-treated parasites. Her poster was titled: "Asante potassium green-1 as a tool for analysing changes in *Plasmodium falciparum* intracellular K+ channels".

Nicola Greyling is another PhD student in the M2PL group. Her poster was titled: "A novel ex vivo *Plasmodium falciparum* platform to evaluate gametocytocidal activity of lead antimalarials ".

Ashleigh van Heerden, a PhD student in the M2PL group, presented an oral titled "Applying machine learning on chemo-transcriptomic profiles to stratify antimalarial compounds with similar mode of action".

Dr Dina Coertzen, a senior postdoctoral fellow in the M2PL group, had an oral presentation titled "Novel amino-artemisinin derivatives display potent dual activity against *P. falciparum*".

Prof Lyn-Marie Birkholtz was an invited speaker, and her presentation was titled "Transmission-blocking antimalarials: a tool to elimination?" She spoke about the importance of any new antimalarial treatment targeting more than one biological process to impact malaria transmission-blocking activity.

Prof Birkholtz and her group's presentations are always exciting and highlight the fantastic work done by the researchers. Their research contributes to preventing malaria parasite drug resistance from totally derailing the malaria elimination agenda. You make us proud, and your research contributions to fighting malaria make you real #lifechangers.

*Front: Dr Janette Reader, Dr Dina Coertzen and Mariska Naude. Back: Dr Mariëtte van der Watt, Dr Jandeli Niemand, Prof Lyn-Marie Birkholtz, Nicola Greyling, and Asleigh van Heerden.*

# MRI Research Fellow awarded US $150,000 Oppenheimer grant

Dr Liza le Roux, a research fellow of the Mammal Research Institute at the University of Pretoria and Assistant Professor at the University of Aarhus, Denmark, was recently awarded the US $150,000 Jennifer Ward Oppenheimer (JWO) Research Grant.

"I am immensely pleased to receive this funding from the Oppenheimer Foundation. I believe this research support is contributing to a fundamental and urgent question in our efforts to conserve biodiversity," Dr Le Roux said when asked for comment on this research grant.

"In this programme, I aim to develop a team to explore the potential of well-managed rangelands to provide ecological connectivity between isolated protected areas. Suppose we can show that certain rangeland management practically supports biodiversity conservation by providing the means for species to disperse between more pristine habitats. In that case, I hope we can garner some institutional and policy support to assist pastoralists in maintaining healthy rangelands for the benefit of both wildlife and people. Many rangelands are severely degraded and overgrazed, but this is frequently because pastoralists are under pressure to change traditional management practices, such as tracking seasonal changes in grazing resources. Rangelands are threatened and often seen in opposition to conservation when they can support conservation efforts if maintained in a semi-natural state."

Dr Le Roux added, "At the same time, protected areas are becoming increasingly more isolated. From an ecological perspective, isolation is very risky, especially when we know that future environmental conditions will likely change in response to climate change. Natural systems require gene flow between populations, and species in a changing environment often need to respond by shifting their distribution to a more suitable environment. Properly managed rangelands can provide that opportunity, and we must study the conditions under which this connectivity will be facilitated."

"On a personal level, receiving such financial backing will be immensely useful for my career. Of course, it allows me to ask the questions that interest me, but it will also be instrumental in boosting my research productivity, a prerequisite to being a successful scientist. Equally important, this grant allows me to establish a vast network of collaborators across the African continent. This means that the benefit of this funding will last me well beyond the funding period, as I am sure the connections established during this programme will lead to many future collaborations," Dr Le Roux concluded. As a South African large mammal ecologist, she specialises in studying trophic interactions and the impacts of large mammals on ecosystems' structure and function.

*Dr Liza le Roux*

Dr Le Roux has published 23 journal articles and two book chapters, one as lead author and one as co-author. Her total number of citations is 1061, with an h-index of 12 and an i10-index of 15.

The JWO Research Grant was established four years ago to assist early-career scientists in developing scientific solutions aimed at addressing African problems.

# Prof Dave Berger participates in the British Society for Plant Pathology Conference

We are all glad to be back at in-person conferences after the hiatus caused by the COVID pandemic. So is Prof Dave Berger of the Department of Plant and Soil Sciences and the Forestry and Agricultural Biotechnology Institute (FABI), who presented an invited talk at this year's British Society for Plant Pathology Conference (BSPP) Presidential Conference held at Newcastle University in the UK.

The theme was "Microbial Lifestyles – from saprophytes to pathogens ", and his talk fit the theme, titled "The lifestyle of the maize foliar pathogen *Cercospora zeina* – shy invader or party animal?"

He shared the working hypothesis of his research group that this fungal pathogen has both "personality traits" – since no symptoms are seen for two weeks after it penetrates leaf stomata, followed by a rapid symptom development and killing of plant cells.

The BSPP introduced a new conference activity called "Tools and Tricks of the Trade", which are mini-master classes in an aspect of plant pathology. Prof Berger presented one of these interactive events where he shared his experiences on the topic "Field surveys: boots in the ground, apps and artificial intelligence". In addition, he participated in the lunchtime "Career Chats" session for Early Career Researchers. Prior to the Conference, Dave secured a one-year grant from the BSPP small grant fund for a project on maize foliar diseases with collaborators in Kenya, namely CIMMYT and Maseno University.

Newcastle is in the north of England, so Prof Berger also visited the James Hutton Institute (JHI) in Dundee, Scotland. This was to strengthen collaborative links with Paul Birch, Petra Boevink (who attended SASPP2022 at Future Africa this year), Ingo Hein, and others at JHI. Profs Birch and Hein are both extraordinary professors at FABI. He presented a seminar entitled "The maize grey leaf spot pathogen, *Cercospora zeina*: field surveys, populations, and genomes in Africa". A highlight was a glasshouse tour of the Commonwealth Potato Collection, where Ingo Hein illustrated the value of a comprehensive crop germplasm collection combined with RenSeq genomics for disease-resistance breeding in potatoes.

While in the UK, Prof Berger also visited Dr Bridget Crampton, a former Department of Plant and Soil Sciences and FABI member who now works for Forest Research UK at the Alice Holt Research Station in Surrey. Bridget gave a quick overview of some of the local UK tree pests and pathogens on a walk through the extensive forest around the research station. A common autumn disease in the UK is Tar spot of Sycamore trees (*Rhytisma acerinum* (Pers), first described by Hendrik Persoon, one of the founders of "systematic mycology", who was born in Stellenbosch in 1761). Prof Berger saw Sycamore tar spot in rural areas in England and Scotland but not on Sycamore in the Royal Botanical Gardens in Edinburgh. Two hypotheses for the absence of the disease in urban areas are that the fungus is sensitive to air pollution or that noculum on fallen leaves is removed in urban areas.


*Prof Dave Berger (left) at the BSPP conference.*


*Prof Dave Berger and Dr Bridget Crampton at the Alice Holt Research Station, Surrey.*

# University of Pretoria and University of Bristol strengthen ties

The Pro Vice-Chancellor for Education at the University of Bristol, Professor Tansy Jessop, visited the University of Pretoria (UP) recently to discuss areas where both universities can produce transdisciplinary research, improve their curricula and create opportunities for students.

While explaining the purpose of the visit, Professor Loretta Feris, Deputy Vice-Chancellor: Academic at UP, said the universities are working towards strengthening their relationship through collaborative work and possibly having a memorandum of understanding in place.

During the visit, stakeholders from UP's various faculties and departments presented their goals. They highlighted areas of success, areas that need improvement and possible opportunities where collaboration with the University of Bristol would be impactful.

"As the Faculty of Natural and Agricultural Sciences, we are very diverse and are the largest of our kind in Africa," said UP's Professor Wolf-Dieter Schubert, who holds the division chair for research and postgraduate education within the Department of Biochemistry, Genetics and Microbiology.

"Through our interdisciplinary research, we seek to find solutions to modern issues of society such as food security and preservation and the sustainability of food production, and we are also quite interested in cures of infectious diseases such as malaria and TB," he said.

Setsipane Mokoduwe, Head of the International Cooperation Division, added that UP "is very diverse in its culture". "We have a large number of international students in both undergraduate and postgraduate programmes." This diversity was recently celebrated through the annual International Students' Day, where international students showcase their countries and cultures to the rest of the University community."

Prof Jessop addressed several issues of universal interest that align with her portfolio as Pro Vice-Chancellor for Education. These include student mental health and identifying at-risk students early by monitoring class attendance and participation. She pointed out that first-generation students also need support, and the University of Bristol has mechanisms that actively identify, select and support them.

Other common areas of universal interest are the promotion of curriculum transformation and monitoring student activity. This is done through sharing information on non-participation with the students' parents, caregivers or trusted individuals through an opt-in mechanism. About 98% of students agree to this.

"Many students deal with mental health issues, and Bristol has made an effort to try to save students' lives by identifying problems earlier," explained Prof Jessop. "We now have an opt-in system where students permit us to share information on their performance with their parents should we pick up that they are underperforming, missing classes or don't hand in assignments. It is a great way to alert parents to intervene and discover the problem. Not all students agree to it, but many have agreed, which helps us help them," she said.

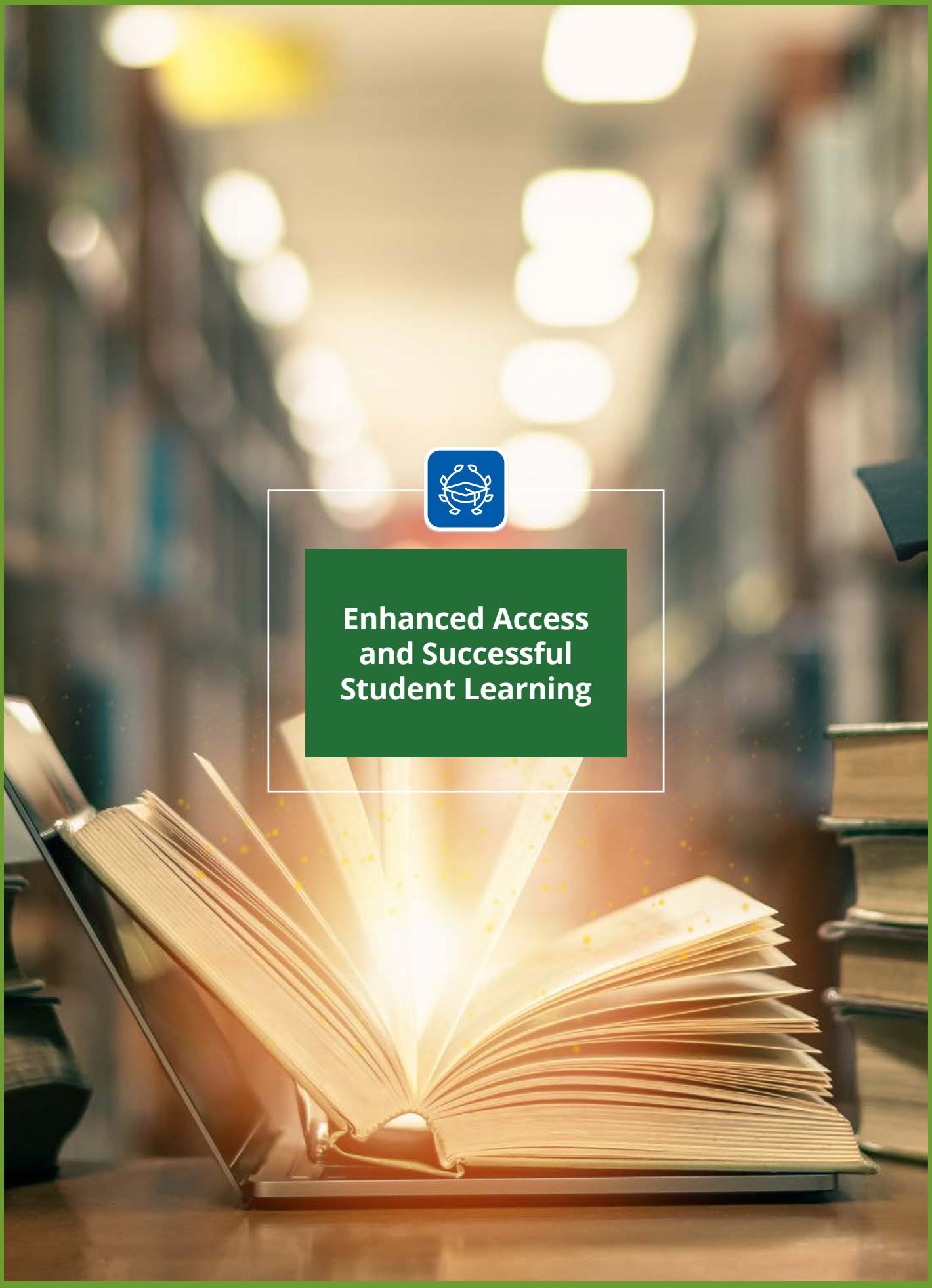
Prof Jessop also met with UP Vice-Chancellor and Principal Professor Tawana Kupe in a closed meeting to continue exploratory discussions about future collaborations and specific areas where both universities can assist one another. This visit also came in preparation for Prof Kupe's upcoming visit to the United Kingdom.

Prof Jessop expressed that, overall, the University of Bristol is interested in developing ties with the University of Pretoria about student and staff exchanges, either virtually or face-to-face. She is also keen for the universities to participate in joint workshops to enhance their academic offering.

*Prof Wolf-Dieter Schubert (Department of Biochemistry, Genetics and Microbiology).*

*Setsipane Mokoduwe, Head: International Cooperation Division at UP; Prof Tansy Jessop, Pro Vice-Chancellor for Education at the University of Bristol; and Fundie Nsibande, Junior International Programme Officer, UP.*

"There are many potential collaboration areas for us. The University of Pretoria is a leading institution in Africa, and Bristol is committed to African partnerships that will improve education for the future," Prof Jessop said.



# Enhanced Access and Successful Student Learning

# Animal Science Feedlot Challenge offers practical teaching and research opportunities

*Ready, set, feed! The University of Pretoria (UP)'s Department of Animal Science has established an innovative, practical approach to Animal Science teaching through a practical beef feedlot challenge.*

This year's winners were an all-female group, the MOOdonnas. The Feedlot Manager of the Year was also the team leader of the MOOdonnas, Marlize Grobbelaar.

"It is such an unbelievable honour winning this feedlot challenge as an all-female team. I am so proud of the MOOdonnas, for each team member gave their absolute best during this challenge. We also become close friends, for we have survived and strived through tough and good days. As a team, we decided that we were going to keep our heads down, work hard and focus on the final goal - to produce healthy, happy, good-growing bulls, and we did! I will pick this team again and again for any challenge because these are women to watch out for in this industry," Marlize explained.

She added, "This feedlot challenge was truly a challenge and an unbelievable experience. It took a lot of dedication and will to keep up a good and even pace right through this challenge, while balancing our final year studies. As feedlot managers, we had the responsibility of caring for these bulls, for they are totally dependent on us for feed, water, good health and much more. This was a major responsibility and we learned such valuable lessons from this. After this challenge, we are certainly more prepared to enter the agricultural industry."

The UP Agric Feedlot challenge is presented under the guidance of Prof Edward Webb. It aims to give final-year Animal Science students practical experience in the whole value chain of beef production.

"This project is a collaborative effort supported by several industry partners, notably SIS Livestock (Pty) Ltd, First National Bank, Santam, Essential Nutrient Systems, OctavoScene, Elanco, TalTec, Obaro, AgriGauteng and Vleissentraal Bosveld. The project is unique because it also served as the experimental part of a PhD study on the effects of nutrition and fattening on the quality of red meat," Prof Webb explained.

He added, "These aspects are important in modern animal production and will help improve the sustainability of red meat production in southern Africa by improving the efficiency of red meat production without compromising beef's quality attributes and acceptability of beef. The findings from this study will benefit the livestock industry through better knowledge of the effects of feeding methods, duration of fattening and the use of feed additives on carcass and meat quality, and improve compliance with quality criteria for the export of red meat."

The UP Agric feedlot challenge also provides an excellent opportunity for transdisciplinary teaching and research through the involvement of several other disciplines, such as Veterinary Science, Culinary Science at the Department of Consumer and Food Sciences, and Agricultural Economics. An exciting part

of this project is the annual Animal Science braai competition, which explains the most relevant meat preparation and cooking methods, with the added benefit of an almost festive day to enjoy various types of meats, wine and interesting discussions with experts in the culinary industry like Dr Hennie Fisher.

The benefits of this unique teaching approach include training students about the responsible use of natural resources, the inclusion of alternative feedstuffs for ruminant animal feeding, the responsible management of biosecurity, animal health and animal welfare, and the ethical aspects of animal food production. Many of these aspects stem from concepts included in the book chapter by Prof Edward Webb and Prof Elizabeth Webb titled "Ethics of Meat Production and Its Relation to Perceived Meat Quality", in the 2nd edition of the textbook titled "New Aspects of Meat Quality, From Genes to Ethics", edited by one of the leading researchers in the field Prof Peter Purslow and published by Elsevier.

Marlize and her MOOdonnas team members emphasised, "We have learned a lot about managing a feedlot, feeding bulls, animal health and welfare, and so much more. But I feel the biggest lesson from this challenge was time management and teamwork. Prof Webb said teamwork often makes the dream work, which is exactly why our MOOdonnas dream came true!"

*MOODonnas: Back (from left): Zane' Hausler, Elandie du Preez, Amanda Schutte, Kasandra van Deventer. Middle row (from left): Marlize Grobbelaar, Elzette Versluis, Nicole Nel, Lizaan Janse van Rensburg. Front: Anelie Joubert.*

# Overwhelming victories for NAS Animal Science at SASAS

***'What breed of cattle does the Honourable President Cyril Ramaphosa farm with?' If you guessed 'Ankole,' you are correct!***

This was one of the many questions asked to our quiz teams at the South African Society for Animal Science (SASAS) 53rd Annual Congress 2022, held in September in Pietermaritzburg.

The SASAS Veeplaas Student Quiz is a prestigious event open to teams from all tertiary institutions in South Africa. This year, preliminary rounds were held online, and the finals were held in person at the Congress. These students must have been full-time final year or postgraduate student who have not yet completed their MSc and have been younger than 25. UP's Department of Animal Science was incredibly proud that two teams of our teams qualified to compete in the final round of the event.

After various questions that covered themes ranging from nutrition, physiology and climate change to animal health and welfare, the quiz master announced that Tuks 1 had won the event, followed closely by half a point by Tuks 2! It was an emotional, proud moment for the teams after weeks of gruelling preparations.

The Student Quiz, however, was not UP's only victory at the Congress. Professor Edward Webb was presented with the David Uys Trophy for the Best Publication in the *South African Journal of Animal Science* by a SASAS member. Professor Webb has continuously been at the forefront of physiology research in the industry (read more on page 24).

Similarly, the Department of Animal Science also presented three papers and one poster at the Congress, with Elrie Botha being acknowledged for the Best Applied Animal Science Student poster.

SASAS plays a crucial role in the functioning of the animal science and agriculture industries, with the slogan 'Experiencia docet.' They aim to develop animal research, encourage effective animal production methods, and protect the environment and natural resources while advancing human welfare. These values are parallel to those of the Department of Animal Science, and we couldn't be prouder of our performance at the Congress.

*Gerhard Claasen, Mackayla Graham, and Chantelle Croucamp of Tuks 1*

*Adeline Snowdowne, André Schoeman and Jody Young of Tuks*

# NAS proudly celebrate three professorial inaugurations

*Three senior academics from the Faculty of Natural and Agricultural Sciences (NAS) delivered their inaugural addresses in the second semester of 2022. We are very proud of them, as this is a significant achievement in a researcher's career.*

## Prof Christine Maritz-Olivier

*Department of Biochemistry, Genetics and Microbiology*
22 November 2022

**Topic:**
Integrated tick control: Creating partnerships to transfer solutions from lab to farmer

*Prof Barend Erasmus (Dean: Faculty of Natural and Agricultural Sciences), Prof Loretta Feris (Vice-Principal: Academic, Prof Christine Maritz-Olivier and Prof Sanushka Naidoo (Head: Department of Biochemistry, Genetics and Microbiology).*

## Prof Lucy Moleleki

*Department of Biochemistry, Genetics and Microbiology*
31 August 2022

**Topic:**
Food crises during times of war and pandemics

*Prof Sanushka Naidoo (Head: Department of Biochemistry, Genetics and Microbiology), Prof Tawana Kupe (Vice-Chancellor and Principal), Prof Lucy Moleleki and Prof Barend Erasmus (Dean: Faculty of Natural and Agricultural Sciences)*

## Prof Marilé Landman

*Department of Chemistry*
18 August 2022

**Topic:**
Taming the Metal-Carbon Double Bond

*Prof Themba Mosia (Vice-Principal), Prof Marilé Landman and Prof Barend Erasmus (Dean: Faculty of Natural and Agricultural Sciences)*

# NAS Teaching and Learning Awards encourage passionate lecturers

*Awards in four clusters for excellence in teaching and learning in the Faculty of Natural and Agricultural Sciences (NAS) for 2022 were recently made at the annual Dean's breakfast.*

The cluster winners were: Dr Hanri Taljaard-Swart (Agricultural and Food Sciences), Dr Christel Hansen (Physical Sciences), Dr Quay van der Hoff and Dr Seite Makgai (Mathematical Sciences) and Dr Pam de Waal (Biological Sciences).

Dr Taljaard-Swart, a lecturer in the Department of Consumer and Food Sciences, said, "It was a great honour for me to be nominated in the first place and then to win this award. As someone passionate about teaching and learning, it is wonderful to receive recognition for the efforts that I have put into my teaching here at UP and to be appreciated by not only the students but also my colleagues. It is occasions like these that make every day worthwhile and encourage me to reach even greater heights in the coming years."

Dr Hansen, a senior lecturer in the Department of Geography, Geoinformatics and Meteorology, says, "Teaching is my passion, and the engagement with students a fulfilling one. I am grateful for receiving one of the Cluster Awards for 2022. Receiving recognition for the work that she puts in to not only disseminate information effectively but also enrich the learning environment of students means a lot."

"It is such an amazing honour to receive this award at this stage of my life. I am now retired and will miss teaching tremendously. I can only hope that I will be able to serve the students of UP for a few more years." Said Dr Quay van der Department of Mathematics and Applied Mathematics, on winning the cluster award in Mathematics. She shared this award with Dr Seite Makgai from the Department of Statistics.

Dr Pam de Waal is a senior lecturer in the Department of Biochemistry, Genetics and Microbiology and Chairs the Genetics division. She echoes other cluster winners' sentiments.

"I have been teaching Genetics for over twenty years. Every year I revisit and revise my teaching methods based on the understanding and skills acquired by the students in the previous year. The objective is to achieve the best academic outcome for every student. My teaching philosophy is based on inquiry-based learning (IBL) principles, collaborative learning and constructivism. I support student-centred, socially just teaching and learning. Exceptional graduates are produced through the time and effort of many dedicated lecturers in our faculty. The Teaching and Learning award for the Biological Sciences cluster means a great deal to me as it recognises my contribution to the academic development of our students," Dr de Waal said.

*From left: Dr Hanri Taljaard-Swart, Dr Christel Hansen, Prof Paulette Bloomer (Deputy Dean: Teaching and Learning), Dr Seite Makgai and Dr Pam de Waal.*

*Dr Quay van der Hoff, with Prof Mapundi Banda, Head of the Department of Mathematics and Applied Mathematics.*

# NAS awards best lecturers of 2022

*Praises sung by the students were the order of the day when the awards for best first-year lecturer and best lecturer for senior courses were made at the annual breakfast of the Faculty of Natural and Agricultural Sciences end of 2022.*

**Dr Brenda Mac'Oduol** (Department of Statistics) received the best first-year lecturer award. At the same time, Dr Jandeli Niemand (Department of Biochemistry, Genetics and Microbiology) and Dr Rimbilana Shingange (Department of Animal Science) shared the award for the best lecturer for senior courses.

Students were vocal with their compliments for Dr Mac'Oduol. Comments included: "She is funny, explains concepts very well and makes it easy to understand the work. Another student remarked: "Dr Mac'Oduol has a great passion for teaching and is very concerned for her students 'success. She ensured that each lecture we left understanding everything, and she went above and beyond to ensure that we had the best outcomes possible."

The students equally lauded **Dr Niemand** and **Dr Shingange** for their commitment to the students. "She motivates and inspires students to do better. Dr Niemand is on time for lectures, approachable, well-prepared and organised for lectures. She goes the extra mile to ensure that every topic covered is understood completely."

Dr Shingange also received many commendations from the students: "She always has clear communication, we know exactly when is what due as well as if there are any changes we need to be aware of.

Dr Shingange's passion for the subject sparks curiosity inside all of us; she makes the subject very interesting with a clear flow of the chapters."

"Firstly, to have been nominated for, and, secondly, to have won the award for Best Senior Lecturer, has been a complete honour, surprise and pleasure: This teaching and learning award is the first of my career, and to have it be Faculty-wide is incredible! I lecture some of the best and brightest students at the University, and being a part of their learning journey has been an absolute honour. I thank my students for taking the time to nominate and vote for me," Dr Shingage said on receiving the award.

Dr Brenda Mac'Oduol is equally elated about the award. "This award is a constant reminder that what we do goes a long way, with incomprehensible reach. The nomination and subsequent win came when the inevitable academic burnout was encroaching. All I could look forward to at the time was a much-desired break on an isolated beach, feet up while sipping a crisp beverage. Little did I know I would receive the most incredible honour thus far of my young academic career. I am profoundly humbled but challenged to strive to put my best foot forward even when the storms arise. Teaching first-year students have been my passion since the beginning. This award encourages me to know that the students see and acknowledge the effort put in and the dedication to my craft that is continually being sharpened. My greatest desire is to continue making a difference in the lives of those I encounter, whether in a lecture hall or on the tiled walkways of our sprawling campus. A luta continua, vitória é certa!"

Dr Carel Oosthuizen, NATHouse Guardian had the last word. "The NATHouse best lecturer awards are one of the year's highlights for students and lecturing staff in NAS. These awards allow students to show appreciation towards the lecturers for all their time and effort throughout a module. The lecturers nominated and reached the finals should all be proud of this achievement. Complying with the requirements takes time, patience and energy throughout the semester. I want to congratulate all the finalists and then specifically the winners of these awards., Well done, and thank you for all your effort in preparing our students for their futures!"

*Nomsa Mboneli (NATHouse Chair), Prof Paulette Bloomer (Deputy Dean: Teaching and Learning) and Dr Jandeli Niemand.*

*From left: Dr Brenda Mac'Oduol (Department of Statistics), Hangwelani Sikhwari (NATHouse: Academics and Vice-Chairperson) and Amber Fort (NATHouse Academic and Mamelodi Liaison).*

*Ms Rimbilana Shingange*

## NAS 2021 Graduation statistics

| | |
|---|---|
| 713 | **Undergraduate degrees** |
| 319 | **Honours degrees** |
| 193 | **Master's degrees** |
| 76 | **Doctoral degrees** |
| 1 301 | **Total degrees conferred** |

# Micke wins 'Visualize your Thesis' competition

**Micke Reynders, an MSc student in Chemistry, recently won the UP 'Visualize your Thesis' competition for the best one-minute audio-video presentation.**

*Prof Tawana Kupe (Vice-Chancellor and Principal) congratulates Micke Reynders on winning the institutional VYT competition.*

As a result of her win, she represented South Africa, together with Letacia Senake from UJ, online at the international Visualize Your Thesis Competition (VYT) held annually at the eResearch Australasia Conference, organised by the University of Melbourne.

This competition formed part of the Department of Research and Innovation's postgraduate research day, where students shared their research on driving sustainable solutions for global change.

Micke's one-minute VYT video is about incorporating a systems thinking approach in chemistry to equip students with the necessary skills to be better prepared to deal with the complexity of global sustainability challenges. She invented systems thinking intervention to scaffold the development of systems thinking skills and a sustainable action perspective in first-year chemistry students. Her video titled: 'Effectiveness of systems thinking visualization tool for first-year chemistry can be seen here or https://t.co/znlaFUowqh.

"I did not expect my video to win the local competition as the other VYT videos were of a such high standard. For my video to win at the International Competition, it must have received the most views. The video received much attention as it was ranked in the top 25% of over 22 million research outputs that have ever been tracked," she explained.

"I am grateful for the opportunity to share my research with the world. I want to thank my supervisor, Prof Lynne Pilcher and my co-supervisor, Prof Marietjie Potgieter, for all their support throughout the two years of my MSc", Micke concluded.

# Master's student in Geoinformatics selected for international internship

A master's student in Geoinformatics in the Department of Geography, Geoinformatics and Meteorology, Kayla Theron was recently selected as one of five students from partner institutions to do an UPGRADE internship at Florida International University in Miami.

The University Partnership to Grow Administration and Education (UPGRADE) set out to enhance university partnerships between the US and South Africa and focuses on increasing Science, Technology, Engineering and Mathematics (STEM) capacity and improving the knowledge and skills in university administration.

Florida International University (FIU) leads the project, with the US Embassy in South Africa providing financial support. University of Pretoria (UP), Tshwane University of Technology (TUT), University of Limpopo (UL) and University of Mpumalanga (UMP) are the South African partner institutions.

The main objectives of this project are to strengthen the postgraduate STEM capacity of the partners in South Africa and the capacity to administrate STEM programmes. It also aims to build partnership sustainability through a Memorandum of Understanding, scholarships, private sector involvement and linking up with other funding opportunities.

The short-term student exchanges at FIU will allow students to work on their postgraduate research projects while drawing on FIU curricula to build specific skills, link up with experts at FIU to improve research outcomes, and get exposure to international best practices in postgraduate research. It presents an opportunity for the students to learn new skills and prioritise the publication of results in scientific journals with FIU faculty co-authorship. The students will be encouraged to participate in student activities on the FIU campus.

Applications were open to South African citizens who are registered master's and doctoral candidates at the partner institutions. Candidates went through a rigorous selection process, and the other four students selected were: Ms KR Theron (UP), Ms KM Molabe (UL), Mr DT Chitima (TUT), Ms K Mabadahanye (UMP) and Mr N Naraindath (UP)

Through this internship, Kayla will now link up with experts at FIU to improve research outcomes and get exposure to international best practices in postgraduate research. It presents an opportunity to learn new skills and prioritise the publication of her research in scientific journals with FIU staff co-authorship. Kayla will travel to Miami, where she will be working on her postgraduate research project under the guidance of an assigned FIU faculty member.

*Kayla Theron*

She is no stranger to awards – Kayla received the SSAG Outstanding Honours Research Award for 2022 for her project titled *A street segment analysis of crime in Khayelitsha, South Africa*, under the supervision of Professor Greg Breetzke, currently also her MSc supervisor.

# NATHouse Executive Committee 2022/23 ready for challenges

NATHouse is the official faculty-student house of the Faculty of Natural and Agricultural Sciences (NAS). It has an academic focus and plays a vital role in linking students and staff. It is also their responsibility to actively identify student challenges, communicate them with the faculty executives and find workable solutions.

NATHouse's mission is to create opportunities and events for NAS students and other student houses to increase visibility and encourage diversity.

**Contact details:**
www.up.ac.za/nathouse or
nathousetuks@gmail.com

**Social media pages:**


*Front row: Ms Nomsa Mboneli (Chairperson). Second row, from left: Ms Keddah Mhlanga (Socials and Internal Culture), Mr Albert Retief (Community Engagement), Ms Hangwelani Sikhwari (Academics and Vice Chairperson), Mr Mologadi Maleka (Secretary and Postgraduate) and Ms Amber Fort (Academics and Mamelodi Liaison). Third row: Mr Hope Khoza (Vice-chair and Professional well-being). Fourth row, from left: Mr Keorapetse Lesolang (Marketing, Branding and Webmaster, and Clothing), Ms Khensani Ndlhovu (External Culture and Archives), Mr Nervin Orren (Sport), Mr Fidel Mbambo (Personal well-being and transformation) and Mr Minenhle Zama (Treasurer).*

# Transformed and Inclusive Community

# Meet the chair of the Research Subcommittee (RETHINK@NAS)

*RETHINK@NAS, the Faculty of Natural and Agricultural Sciences (NAS)' transformation initiative, comprises six subcommittees. In this issue, we focus on the chair of the Research subcommittee.*

Meet Prof Lise Korsten, Professor in the Department of Plant and Soil Sciences and Co-Director of the DST-NRF Centre of Excellence in Food Security—she has been employed by UP for 35 years.

**Q: Why do you believe it is essential that the Faculty has such an initiative as RETHINK@NAS?**

**A:** Putting people at the centre of our academic institute is one of the most critical transformation steps we can take. We need to embody change and consider all dimensions of transformation. One aspect of transformation that I am focusing on is academic transformation. That includes how we think about degree programmes, courses we offer or take, research projects and disciplines we work in. The notion of doing a superior degree or fields of study is a remnant of superiority, privilege and inequality. We are working in transdisciplinary teams now and have started to appreciate the diversity and richness of different disciplines; how we can jointly tackle global challenges and build a better future by transforming the academic landscape, we can ensure that we leave no one behind.

**Q: Why is it important to promote "Research" at the University and the Faculty?**

**A:** As a university becomes known for its research in specific fields, it will attract more quality students and top faculty staff, grants, have broader media coverage, and make an international and local impact. Agriculture is a critically important field of study, and we need to strengthen research in this field as much as we do in other disciplines since we need to feed the nation and ensure food security for all.

**Q: What initiatives are planned for this subcommittee? Progress since the start of this?**

A: We intended to establish a sound basis for discussions around academic equality recognition and appreciation for all fields of study. Also, to recognise scarce skills and support our students from less affluent schools and enable them to grow in their own right and be part of the academic and research environment. The most important project for 2022 was to focus on our postdoctoral fellows who are often neglected, not supported, not adequately paid and less often supported in building a solid and unique career path to fill the skills gaps and the missing middle. Giving our postdoctoral fellows a voice is essential to allow them to help shape the future and recognise their input and unique skills. This programme will continue into 2023.

## More about Prof Korsten:

**Q: Who inspires you?**

A: The first female President of the European Council, Ursula von der Leyen. You have to see her CV to appreciate this unique woman, wife and mother of seven children who is a 60-year-old gynaecologist who only started her political career in her early 40s (Fluent in French, English and German). She completed her master's degree in public health. She was later a Member of the academic staff, Department of Epidemiology, Social Medicine and Health System Research, Hanover Medical School (Medizinische Hochschule Hannover, MHH) 1998-2002. "Being yourself is not your ideology," Von der Leyen told MPs in the European Parliament in Brussels. "It's your identity,"

*Prof Lise Korsten*

**Her career spanned the following:**

- President of the European Commission 2019 - present
- Federal Minister of Defence, Germany 2013-2019
- Federal Minister of Labour and Social Affairs 2009-2013
- Member of the German Bundestag 2009-2019
- Federal Minister for Family Affairs, Senior Citizens, Women and Youth, Germany 2005-2009
- Minister for Social Affairs, Women, Family Affairs and Health in Lower Saxony, Germany 2003-2005
- Member of the CDU in the State Assembly of Lower Saxony 2003-2005 Member of the CDU

**Hobbies:** Horse riding and, more specifically, dressage and photography

**Favourite sports team:** Springboks

**Favourite song:** Dance me to the end of Love (Leonard Cohen)

# Farewell, Prof Anton Ströh

*UP tips its hat to recently retired Professor Anton Ströh, an extraordinary intellectual who devoted his academic life to the University.*

A man gifted with a mathematical brain and a strategic institutional mind is a rare find. A man who can comfortably transition between ideal structures of algebras, quantum statistical mechanics, institutional planning, research, innovation and postgraduate education is almost impossible to find. Such a man is Professor Anton Ströh. A man who devoted his highly distinguished career to UP.

With a deep sense of gratitude and pathos, we say goodbye to Prof Ströh, who, after 36 years of service to the University of Pretoria (UP), has taken early retirement, leaving his position as Vice-Principal: Research, Innovation and Postgraduate Education.

Addressing the University community, Vice-Chancellor and Principal Professor Tawana Kupe said: "Prof Ströh has been recovering from illness since the COVID-19 pandemic. While he is showing good progress, he has not yet fully recovered, so he decided to retire early for medical reasons from the end of September 2022.

"Prof Ströh has made a lasting impression on the institution in multiple areas and will be greatly missed. I want to thank him for his meaningful contribution in several key roles, as a leading academic in his own right and in his fields, as **Dean of the Faculty of Natural and Agricultural Sciences** and as a member of the Executive.

"He is an excellent fundraiser who raised millions of rands from corporates for research, including research chairs and postgraduate bursaries. His energy, passion and commitment will continue to assist UP in pursuing its goal of being recognised as a leading and impactful university in South Africa, on the African continent and globally. The University community wishes Prof Ströh a speedy and full recovery and a fulfilling retirement."

Prof Ströh completed his postgraduate studies at UP, obtaining his BSc (Hons) and MSc degrees cum laude, and was awarded his PhD in 1989. In 1986, he was appointed as a research assistant and in 1988, as a lecturer in the Department of Mathematics and Applied Mathematics. In 1994, the renowned Banach Centre in Warsaw invited him to do research for a period of six months. That same year, he received UP's Young Researcher of the Year Award.

In 1996, he was promoted to Associate Professor and Professor in 2000. At the same time, he was appointed the Head of the Department of Mathematics and Applied Mathematics in the Faculty of Natural and Agricultural Sciences.

In 2008, he was elected by the Senate as a member of the Council of the University and by the Council on the Standing Committee of Council in 2010. He was elected as Chair of the National Science Deans Forum in 2009.

**Prof Ströh served as Dean of the Faculty of Natural and Agricultural Sciences** before being appointed as Vice-Principal: Institutional Planning, Monitoring and Evaluation in 2014, followed by Research, Innovation and Postgraduate Education in April 2021.

Prof Ströh has made a significant contribution to his research field and received the Exceptional Achievers Award from UP multiple times.

He championed the University's drive to significantly increase its research output and establish local and international partnerships, networks and platforms to pursue transdisciplinary research. He significantly contributed to UP's focus on addressing the complex problems expressed in the 17 UN Sustainable Development Goals and Africa's Agenda 2063. He believed in UP's research ability to come up with solutions that have a significant and positive impact on society at large.

He worked closely with many of our institutes from inception, such as the Forestry and Agricultural Biotechnology Institute (FABI). For 20 years, he contributed to its growth from a small unit to a leading international research establishment addressing major national and global challenges, such as agriculture and food security, and smart forestry.

More recently, Prof Ströh was a strong supporter of Innovation Africa @UP as a flagship driver of transdisciplinary research and a platform that advances UP's role in the "most innovative square mile in Africa".

He proactively supported UP's commitment to growing the number of academic staff members with PhDs year after year and to increase its number of top international researchers by developing and supporting the doctoral and postdoctoral pipeline and UP National Research Foundation-rated researchers, now at 595, which is the highest nationally.

UP was in Prof Ströh's DNA. At all times, he foregrounded the importance of growing UP's reputation and stature by being an employer of choice. He made it known how proud he was of UP's staff and students for their hard work and commitment to quality,

*Prof Anton Ströh*

two characteristics that summed him up. In his role as Vice-Principal: Institutional Planning, Monitoring and Evaluation, Prof Ströh was also Chairperson of the Strategic Planning and Resource Allocation Committee, where he oversaw the development of the University's Financial Sustainability Plan and its implementation.

Prof Gerald Ouma, Senior Director: Institutional Planning, Monitoring and Evaluation, who worked with Prof Ströh for eight years, said: "I interacted with Prof Ströh on multiple levels. On a professional level, he was my line manager and, on a personal level, as a colleague. He is supremely talented, astute, and a thoughtful, compassionate human with excellent foresight and strategic ability.

"He welcomed fresh ideas being presented to him; he enjoyed brainstorming; and if he felt you had a better way forward, he'd happily say, 'Let's change course.'

"He made it easy to prepare University strategy documents because he understood every aspect and function of the institution exceptionally well, and there was not a single moment when I asked him for direction that he was not able to offer it or refer me to precisely the right person across all departments and faculties.

"Prof Ströh valued people relations and handled people carefully while conveying his message. Those who worked closely with him knew when he was unhappy with you.

"He is one of the few Executive members who thrived in all the portfolios he led, from security, infrastructure and information technology to institutional advancement and research. The research portfolio was his first love, and it is fitting that this was his final role with UP. It was an honour to serve the University alongside Prof Ströh; we already miss him and wish him the absolute best."

Saying goodbye is not easy. Fortunately, we are confident that we will maintain close contact with Prof Ströh, whom we wish the best health and life. We sincerely thank him for his collegiality and outstanding service to the University.

# NATHouse says NO to discrimination

*Discrimination has always been a social crisis in our communities and the world at large; our history books attest to this fact. The world community has taken many measures to eradicate this disease. However, despite the best efforts and progress made over the years, discrimination still lingers in the shadows of our communities.*

The University of Pretoria is not exempt from such an unfortunate illness; hence we, as NATHouse, have seen the inception of different programmes and events, such as Anti-discrimination Week, as a form of progress towards creating an environment that is inclusive and diverse in nature.

Anti-Discrimination Week is about raising awareness amongst UP staff and students on the impacts and effects of discrimination and encouraging victims and witnesses to report any form of discrimination.

As the student house of the Faculty of Natural and Agricultural Sciences, NATHouse, we hopped on Anti-discrimination Week 'wagon' in partnership with the staff of the Faculty. "Our main contribution to the week was setting up to reach out to students and asked them to write pledges on how they plan on standing up against discrimination and what their role would be in eradicating this horrendous norm," explained Nomsa Mboneli, Chair of NATHouse.

"Accompanying this, each student received a sticker to wear around campus to showcase their stance against discrimination. We extended this initiative to the Mamelodi Campus, received pledges, and distributed stickers. Those who could not attend the event were encouraged to fill out a Google form and pledge to be ambassadors of Anti-Discrimination."

"The week also happened to fall during our leadership training days. This allowed us to extend the message beyond just NAS; we gained the collaboration of other student leaders from various faculties and structures in the UP, to name a couple: EBIT House (Engineering, Build and Information Technology Executive Committee) and BOLD (The Disability Unit Executive Committee). Overall, the week was a success especially in spreading awareness," Nomsa concluded.


# New partnerships in NAS

*Three new partnerships, among others, have recently been established by Faculty researchers – the Capacitating One Health in Eastern and Southern Africa (COHESA), a New Zealand government infrastructure grant and the OneFood for Food Security.*

## UP participates in African multinational European-Union-funded One Health programme

A consortium of highly regarded African-based research organisations has been awarded substantial funds (€9 300 000) to generate an inclusive One Health (OH) Research and Innovation ecosystem to facilitate the rapid uptake, adaption and adoption of solutions to issues that can be dealt with using an OH approach across Eastern and Southern African countries. The OH concept recognises the interconnection between people, animals, plants, and their shared environment.

The four-year programme is entitled "Capacitating One Health in Eastern and Southern Africa (COHESA)" and is financially supported by the European Union OACPS Research and Innovation Programme. Eleven countries in the Eastern (Ethiopia, Kenya, Rwanda, Tanzania, Uganda) and Southern African regions (Botswana, Namibia, Malawi, Mozambique, Zambia, Zimbabwe) are beneficiaries of the programme; and will, in turn, embed One Health approaches among multiple stakeholders in their respective countries amongst diverse stakeholders.

The consortium, consisting of the International Livestock Research Institute (ILRI), the French Agricultural Research Centre for International Development (CIRAD) and the International Service for the Acquisition of Agri-biotech Applications (ISAAA AfriCenter), has enlisted the support of the University of Pretoria (UP) to assist in specific activities in the programme. UP researchers across the faculties of Natural and Agricultural Sciences (NAS), Health Sciences and Veterinary Sciences are actively assisting the consortium with curriculum and research expertise to help attain the programme's ambitious outputs, covering aspects of human health, plants, animals and the environment. UP staff are contributing to different work packages and has recently returned from a highly successful COHESA stakeholder meeting co-hosted in Gaborone by the COHESA consortium and the Botswana University of Agriculture and Natural Resources (BUAN).

The programme provides many networking and mutual learning opportunities between many continental stakeholders in the One Health domain. UP researchers and academics are genuinely grateful to be involved in the programme and to be able to contribute to embedding the One Health concept on the continent.

UP entities closely involved in the COHESA programme include the Department of Veterinary Tropical Diseases (Prof Henriëtte van Heerden), the Centre for Viral Zoonoses and Future Africa (Prof Wanda Markotter) and the African Centre for Gene Technologies in NAS (Dr John Becker).

Kindly contact john.becker@up.ac.za for further information regarding the University of Pretoria's participation in this programme.

# New Zealand partnership with NAS will help reduce greenhouse gases

As the Principal Investigator, Dr Linde du Toit from the Department of Animal Science in NAS has obtained funding from the New Zealand government in support of the Global Research Alliance on agricultural greenhouse gases (GHG).

The agreement between AgResearch Limited (NZAGRC) of R3 279 270 is the first part of the funding agreement. It will go towards capital equipment (a greenfeed cattle emission monitor) and two Smartfeed intake monitors. GreenFeed is a turn-key system designed to measure gas fluxes of Methane ($CH_4$), Carbon Dioxide ($CO_2$), and optionally, Oxygen ($O_2$) and Hydrogen ($H_2$) from individual animals. More details of the agreement will be shared as soon as the contracts are signed.

NZAGRC envisages enabling southern African countries to strengthen their national GHG inventories for livestock and allow them to continuously improve livestock inventories and support livestock-based emissions mitigation.

AgResearch Limited uses science to enhance the value, productivity and profitability of New Zealand's pastoral, agri-food and agri-technology sector value chains to contribute to economic growth and beneficial environmental and social outcomes for New Zealand. The capital equipment agreement is the first step to establishing a regional livestock GHG measuring hub for Southern Africa.

Their vast capabilities include seeds to pest control, high-value foods and farming systems. They are facilitating from the smallest rural project to the largest overseas research project. AgResearch produces science and technology projects to benefit the agricultural sector and New Zealand.

# CEFAS funds One Food for All research at UP

The United Kingdom (UK) Government's Centre for Environment, Fisheries and Aquaculture Science (CEFAS) and Animal and Plant Health Agency (APHA), in collaboration with the Department of Science and Innovation and CSIR, recently launched the UK government-funded One Food programme in South Africa, which aims to initiate a new movement - The One Health approach. This is designed-in to the operation of sustainable food systems. The programme explains the importance of identifying and controlling hazards in food systems as a tangible means to create safer, more sustainable food systems and a healthier environment.

The project is funded by the UK's Department for Environment, Food and Rural Affairs (DEFRA) in The Global Centre on Biodiversity for Climate. The first round of funding was awarded to Prof Lise Korsten (Department of Plant and Soil Sciences) and her team, focusing on One Food for Food Security. Three projects have been funded by CEFAS (close to R2 million) focusing on the circular food systems of small-scale aquaculture, waste management, animal farming and crop production for safe, nutritious fresh produce.

Transcending One Health and Biosecurity, the **One Food Frontier** emerges as a future focus that can provide the articulation between food safety, food security and sustainable food systems. Placing food in the middle of the table and inviting transdisciplinary intersections to take a seat will maximise efforts to address the major planetary challenges. Focusing on deep specialisation in areas such as animal and plant health, environmental contamination and pollution, ecological and socio-economical disruptors, biodiversity loss, climate change, water stress, land degradation and nutrition and public health can shift the debate to a more food-secure future. Through a more holistic approach, can we drive change towards achieving a just transition towards achieving the Sustainable Development Goals.

# Institutional Sustainability

# UP hosts two-day event on sustainable food systems


*FSNet-Africa team with Prosper Emmanuel Mafuma*

The African Research Universities Alliance Centre of Excellence in Sustainable Food Systems (ARUA-SFS) at the University of Pretoria (UP) recently hosted the Science Days and High-level Colloquium that centred on the theme 'From food security to sustainable food systems: Addressing the challenges and ensuring institutional alignment'.

ARUA-SFS was established as a partnership between UP and collaborating partner institutions – the University of Ghana and the University of Nairobi. ARUA-SFS aims to create a critical mass of talented researchers to find solutions to Africa's food security and nutritional challenges.
"I am excited that the ARUA Centre of Excellence in Sustainable Food Systems team took up the challenge to consider who is doing what research on sustainable food systems within our three universities," said UP Vice-Chancellor and Principal Professor Kupe about the event. "I hope that as the results of the talent-mapping exercise are presented, you will dig deep on what we can do better, not just as UP but as Africa."

The Food Systems Research Network for Africa (FSNet-Africa), a flagship project of ARUA-SFS, featured prominently at the event. It is led by three institutions – UP, the University of Leeds, and the Food, Agriculture and Natural Resources Policy Analysis Network. FSNet-Africa hosted a session in which it showcased its research model. Central to the model is working with stakeholders close to the challenges that researchers will be investigating.

According to Dr Elizabeth Mkandawire, FSNet-Africa Network and Research Manager, one of the exciting things she and the FSNet-Africa team are doing is to link two of their research teams with Prosper Emmanuel Mafuma, a young entrepreneur who is aiming to bring about social change through the sale of eggs. Prosper is an innovative entrepreneur who faces constraints in seeing them become a reality. He is an EZ Shuttle driver, which provides him with his primary source of income, but his dream is farming.

"He provides eggs to adolescents, primarily girls, to sell," she explained. "This business is his way of keeping adolescents focused on something that will prevent them from participating in social ills like drug use. We hope that by linking him to our researchers, particularly those involved in research focused on youth entrepreneurship, we can provide him with a platform to strengthen his business case and expand his vision. His business approach inspires us to think about how our work can positively impact not just food and incomes but broader society too."
FSNet-Africa provides Prosper with research-based information to support him in making decisions on how to grow his business. In turn, FSNet-Africa benefits from working with Prosper to ensure that their research ideas are not developed in isolation but with actual life knowledge and information to guide the research objectives and design.

"I came up with this project to get girls off the street," Emmanuel said. "I give them some eggs to sell, and they keep 20% of every sale of 30 eggs. Later, I involved young boys. Thus far, I have worked with 25 youths. I hope to have a broader social impact. We want to drive social change in our continent through food."

"I want to commend the leadership in ARUA, under the guidance of the Secretary-General, Prof Ernest Aryeetey, with whom I engaged on how to grow the ARUA programmes," Prof Kupe said. "It has given me great comfort to hear him praise the performance of ARUA-SFS, and as a vice-chancellor, there is nothing more gratifying than hearing about a well-performing entity."

# #worldfoodday2022: UP entomologists working towards food security

*A growing human population, warming climate, conflicts, and rising prices threaten people's already fragile food supply worldwide. This challenge is recognised by the annual declaration of 16 October as World Food Day by the United Nations.*

Food insecurity is when people do not have continuous access to sufficient, safe and nutritious food that meets their needs. Fruits are essential sources of vitamins and minerals that reduce the risk of non-communicable diseases, but many insect pests compromise their production and availability.

In the University of Pretoria Department of Zoology and Entomology, Professor Christopher Weldon and his research group are working to secure access to fruit. They are doing this by finding better ways to monitor insect pest populations, reduce them without relying on the widespread use of insecticides, and limit the damage caused by pest insects.

## Pest monitoring

Prof Weldon's team is working to improve the early detection of insect pests that have not yet arrived in South Africa. Odours are being used to improve sticky traps for detecting citrus psyllids that can transmit the devastating Asian citrus greening disease. An artificial intelligence system is also being developed to make it easier to find tiny psyllids on traps.

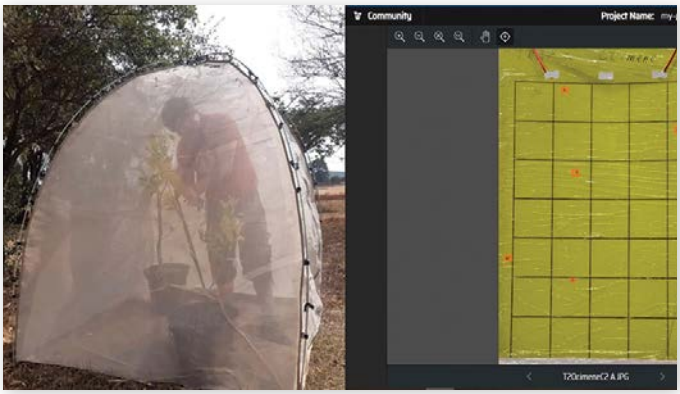
Research is also being done to better understand how weather and other environmental variables affect the effectiveness of traps to catch thrips in avocado and macadamia orchards and fruit flies in citrus orchards. "Temperature is really important for whether an insect will be caught in a trap because their flight is restricted when it is cool or very hot," Prof Weldon explains.

## Pest management

Fruit flies are recognised globally as among the most destructive pests of fruit. To limit the risk of fruit flies damaging fruit, a control tactic called "attract-annihilate" can be used to reduce fruit fly numbers. This tactic uses the attraction of flies to the smell of food or other chemicals (or baits) to small spots of insecticide and is being studied by Prof Weldon's team to improve how farmers use it. "Farmers need to put the baits in tree canopies because flies rarely visit spots on the ground," Prof Weldon says.

In addition, Prof Weldon's team is researching the potential for sterile insect technique for the invasive oriental fruit fly (Bactrocera dorsalis). In the sterile insect technique, large numbers of sterile fruit flies are released into the wild to mate with the pest population, leading to no fertilised eggs being laid. This is a proven way to control some fruit fly species, but, says Prof Weldon, "A lot of testing and optimisation is needed to sterilise and release high-quality oriental fruit flies for the method to be used successfully."

This research, which involves international collaboration and close cooperation with agriculture industries, shows how entomologists at the University of Pretoria are helping to improve the sustainable production of high-quality, nutritious food by managing insect pests.




*Dylan Pullock, an MSc Entomology student in the Department of Zoology and Entomology, is helping to improve the monitoring of citrus psyllids by adding odours to traps and detecting the pests on traps using artificial intelligence.*

*Msizi Ramaoka is an MScAgric (Entomology) student working out why fruit flies visit protein baits and how they should be applied to make them more effective.*

# Decarbonising your world

*Prof Mmantsae Diale*

Prof Mmantsae Diale, the leader of the Solar Energy Collection and Conversion Research Group and incumbent of the DSI/NRF SARChI Research Chair in Clean and Green Energy, enlightens us on how to decarbonise our world.

According to Prof Diale, "The earth is a spaceship with all the plus seven billion inhabitants on board. It needs maintenance which only the passengers can do. The transport company has designed the spaceship so that it has to be in constant motion to access fuel. Fuel is in the form of solar energy, constantly supplied without issues like mechanical parts in danger. This is an ideal transport."

She adds, "The spaceship is in danger of over-supply of greenhouse gasses (GHG) emitted by the passengers. The list of GHG includes carbon dioxide ($CO_2$), methane ($CH_4$), water vapour ($H_2O$), nitrous oxide ($N_2O$) and ozone ($O_3$). The function of GHG is to absorb and emit radiant energy within the thermal infrared range causing greenhouse effect. GHG are vital in controlling the temperatures of the spaceship without which the temperature would drop to negative -18°C. Presently the earth's temperature is about 15°C."

"Since the beginning of the industrial revolution, the inhabitants of the spaceship have increased the GHG from 280 ppm in 1750 to 421 ppm in 2022, about a 50% increase. Three million years ago, the level of GHG was as high as it is now. The increase continues, despite the natural carbon sinks in the carbon cycle. Therefore, the passengers of the spaceship called earth should make an individual effort to decrease the carbon footprint in the atmosphere," says Prof Diale.

Concluding, "While fossil fuels are considered the biggest contributor to the carbon footprint, there are other additives to the equation, fueled by behaviour, which includes the food we eat, the transport mode, technology we use, our electricity usage and other influential activities related to ego. There is more than one formula we can use to reduce your environmental carbon footprint."

Prof Diale shares the formula that Alexandra Shimo-Barry, author of "The Environment Equation", came up with to calculate your carbon footprint at home.

**Follow the below steps, and voila:**

1. Multiply your monthly electric bill by **105**
2. Multiply your monthly gas bill by **105**
3. Multiply your monthly oil bill by **113**
4. Multiply your total yearly mileage on your car by **.79**
5. Multiply the number of flights you've taken in the past year (4 hours or less) by **1,100**
6. Multiply the number of flights you've taken in the past year (4 hours or more) by **4,400**
7. Add **184** if you do NOT recycle newspaper
8. Add **166** if you do NOT recycle aluminium and tin
9. **Add 1-8 together for your total carbon footprint**

An ideal carbon footprint is, on average, between 16 000 and 22 000 pounds per annum. Under 6 000 is very low, and over 22 000 is very high.

The following living green practices can be used as a personal contribution to decarbonising the world:

- Replacing old appliances with newer energy-efficient appliances;
- buying green from farmers markets, where packaging is not exaggerated;
- eating less meat and meat products;
- going vegetarian or even vegan;
- recycle all waste;
- reduce printing; and
- educate others about the effects of carbon dioxide on the climate.

# Social Responsiveness and Societal Impact

# Prof Ncholu Manyala delivers NAS expert lecture

*Prof Ncholu Manyala*

Professor Ncholu Manyala, Professor of Physics and Chairperson of the SARChI Chair in Carbon Technology and Materials in the Department of Physics and Institute of Applied Materials, delivered an Expert Lecture on "Biomass-derived activated carbon for sustainable supercapacitor applications."

The electrical load shedding currently applied in South Africa and the ever-increasing consequences of global warming requires modern redress. Energy storage devices such as batteries and supercapacitors, combined with renewable energy from the sun and wind, are good alternatives to address these challenges. In his presentation, Professor Manyala discussed synthesising materials from biomass waste as electrodes for supercapacitors, energy storage devices with high specific power and moderate specific energy. The presentation also explained the effectiveness of activated carbon for energy storage.

Click here to watch the virtual expert lecture.

## First-ever QQR report done by NAS completed

The Faculty of Natural and Agricultural Sciences (NAS) recently completed an extensive and time-consuming Quinquennial Quality Review (QQR) for the first time in the Faculty's history.

This self-evaluation report was compiled by the executive members and staff of the Faculty responsible for the respective portfolios and highlighted the achievements and challenges between 2017 and 2022. After submitting the report to the University's Department of Institutional Planning for internal approval, the panel interviews were conducted by an expert panel comprising local and international reviewers. The Faculty is currently awaiting the report and findings of the panel.

This is only possible with Faculty and UP staff members' support, cooperation and hard work. Thank you again!

# Collaboration is key to enabling food security in Africa

Tackling poverty and food insecurity in Africa are critical challenges that need a collaborative approach across the continent. This is according to delegates who participated in a recent World Food Day webinar hosted by the University of Pretoria (UP) in association with the Food Systems Research Network for Africa (FSNet-Africa).

World Food Day is commemorated worldwide on 16 October to recognise the founding of the United Nations Food and Agriculture Organisation in 1945.

During the recent webinar, speakers focused on the theme 'Finding pathways towards agroecological transitions in Africa'. Senior researchers reflected on lessons from their past research, and fellows shared their aspirations for contributing to sustainable and equitable food systems.

"The COVID-19 pandemic is an obvious example of how the challenges of poverty and food insecurity easily become transnational," said Dr Emmanuel Abbey, a consultant with the African Research Universities Alliance (ARUA). "We must use a collaborative approach to deal with some of these challenges."

Dr Abbey said ARUA, formed in 2015, was premised on encouraging partnerships between African universities to address the brain drain and find solutions via "clusters of excellence" that tackle common challenges facing the continent. He added that ARUA is soon to release details of a study that show a significant increase in the contribution of African researchers to knowledge production globally from an average of 1% to between 5% and 6%.

## Right to food

"Our mission is to strengthen these universities through capacity building, making us stronger together," Dr Abbey said. "It's about coming together as a cluster to deal with food insecurity simply because no single university can do it independently."

Other speakers included Professor Julian May, Director of the Department of Science and Innovation-National Research Foundation Centre of Excellence in Food Security at the University of the Western Cape. "The right to food requires that food be available, accessible and adequate for everyone," Prof May said. "But not just food – people should eat healthily and have balanced diets."

It is disheartening, he added, that people around the world are still going to bed hungry on World Food Day, which is why it was essential to unpack the issue further, focusing on pertinent questions and policy interventions on the scientific research available and whether they're able to promote ecological growth transitions.

"We are about building capacity for African-focused food system research and developing long-term partnerships for research across one's sectors and geographies," Prof May said. "The other thing we need to pay attention to is that we are about implementing transdisciplinary research. We are not attending to these interconnected challenges in silos."

## Gains reversed by pandemic

Animal nutrition expert Professor, Alice Pell of Cornell's International Institute for Food, Agriculture and Development, addressed participants on sustainable food systems, highlighting the need for problem-solving given the numerous challenges.

Prof Pell, a visiting professor at UP affiliated with the University's Future Africa Institute, said that, globally, 828 million people are undernourished. That statistic has risen since the pandemic, she added.

"Before the pandemic, we were actually making some reasonable progress, but we've stopped, and we're going downhill," Prof Pell said. "Equally, we have a problem: about 39% of the global population is overweight or obese. That's as much of a health problem as undernutrition. Both overnutrition and undernutrition are related to poverty."

She cautioned that obesity is a challenge because it is associated with heart disease and diabetes, which diminishes the lifespan of patients. Prof Pell also cited climate change as a significant global challenge. "Every member of the planet eats; therefore, one has to make it a duty to understand the food system as a consumer, a producer or a researcher," she said.

Engineer Dr Selorm Dorvlo, an FSNet-Africa fellow from the University of Ghana, spoke about transforming food systems with agroecology, looking at possible pathways and interactions for integrating sustainable mechanisation. His research seeks to understand the effect of machinery on productivity and household income.

"Profitability is at the heart of farming," he noted. "So if you link the machinery used to how profitable the farm is, you can make a case for more use of this machinery."

## Increasing efficiency of the African food system

Dr Dorvlo said the overall impact of research is to improve livelihoods and achieve food security while reducing inequalities.

Dr Antoinette Anim-Jnr, a lecturer in the Department of Animal Science at Kwame Nkrumah University of Science and Technology in Ghana, said her study found that livestock can be used to increase the efficiency of the African food system and create a circular agri-food system.

"Investigations that address these existing gaps will go a long way to meeting our demand for animal-source foods as we strive to feed our growing population," she said. "Against this backdrop, our project seeks to explore agroecological practices to improve livestock production among smallholder farmers in rural Ghana."

FSNet-Africa fellow of the University of Zambia, Dr Bridget Bwalya Umar, pointed out that N'shima, a cooked maize product that is a staple food in Zambia, is under threat because most farmers are smallholders, which makes them both producers and consumers, so they grow the maize to sell and eat from the same produce.

"This creates a problem because, as farmers, they want to grow maize and have high yields and sell it," she explained. "But then when they buy it, they want it cheaply. This has forced the government to offer a subsidy, giving farmers hybrid maize seed and mineral fertiliser. This has been going on since independence in 1964. Farmers are used to getting fertiliser annually. The result is lower yields, as farmers grow an abundance of maize, add fertiliser and don't produce anything else or focus on general soil health. It's always about maize and the mineral fertilisers; because of that, they get meagre yields."

The webinar closed with a question-and-answer session.

*Delegates who participated in the UP-hosted World Food Day webinar themed 'Finding pathways towards agroecological transitions in Africa'.*


*Dr Graham Walker in action*

# Science circus at Sci-Enza mesmerises all

***Can you really launch marshmallows out of a vacuum cleaner, make rockets from everyday household items, or launch teddy bears using liquid nitrogen?***

The curiosity drew close to 200 people to Sci-Enza Science Centre in the Faculty of Natural and Agricultural Sciences to see Dr Graham Walker's Science Circus live!

Dr Graham Walker is from the Australian National University, working specifically at the Centre for the Public Awareness of Science within the university.

Dr Graham Walker has been performing science shows for almost three decades to demystify the myths that science is difficult and complex or only happens in laboratories. He excites and leaves the audience intrigued using simple materials you can get in your kitchen, from a vacuum cleaner demonstrating the relationship between time and velocity to the bicarbonate of soda rockets for teaching about Newton's Third Law.

The 'Science Circus' was made possible through the support and sponsorship of the Australian Government Direct Aid Program through the Australian High Commission South Africa.

# Sci-Enza's infamous Holiday Programme is back!

***This October, Sci-Enza Science Centre finally got to host its infamous onsite face-to-face holiday programme for grades R to six after a two-year-long break due to the lockdown restrictions.***

This programme was themed Nature Frenzy, where we looked at all things nature; the programme included engagement talks, various hands-on workshops, and fun educational nature-inspired games.

Ms Puleng Tsie, Sci-Enza Manager, share some of the highlights of their nature Frenzy programme:

**Rock hunt** in which the little adventurers (learners) went around campus looking for different types of rocks while learning about their classifications, functions, and formation.

In the **microscope workshop**, learners had an opportunity to learn and operate the microscope and have a magnified view of things they found in nature.

The **soil workshop** kept the little scientists busy as they experimented with the different soil types to see their water absorption capacities and determine the perfect soil for planting. Things also got artistically creative with the **'My perfect world workshop'**, where the little artists created their perfect world heavily inspired by nature. They also had to talk about how we, as humans, can help protect the environment and sustain its natural resources for current and future generations.

On **game time**, there was a Biomes, a variation of Bingo! With this game, learners also learned the taxonomy classification of various animals belonging to different biomes. Learners also had the butterfly trivia game, which came with lessons about a butterfly', how to differentiate between butterflies and moths, and many more.

There were a variety of engagement talks throughout the programme, kicking things off with the Sci-Enza team performing an **Oceans puppet show** for the little ones, which talked about endangered species, the importance of oceans, the negative impact that humanity inflicts on nature, and how this impact can be alleviated. The children were engaged and had much to say about these highlighted points.

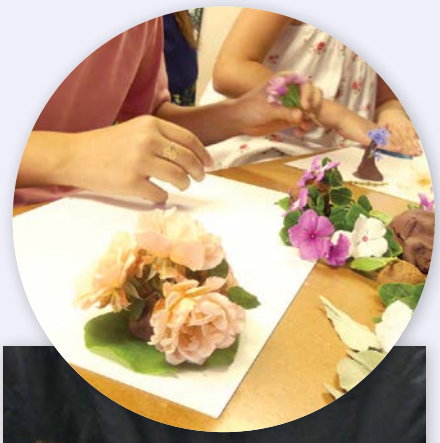
These talks included UP's very own experts about things in nature. Sci-Enza had the pleasure of hosting Dr Dawit Kidanemariam, a plant pathologist who studies viruses that infect plants. His talk explained the importance of understanding plant diseases, their effects on crop yield and how they can be managed. At the beginning of the talk, learners had no idea what plant pathology was, but at the end of the talk, we had learners who aspired to become plant pathologists. Celebratory moment!

The programme also hosted the Social Insects Research Group (SIRG), the Bee group from UP's Department of Zoology and Entomology. The SIRG delegation included Professor Christian Pirk, Dr Fiona Mumoki, Dr Bethelihem Mekonneni, and MSc student Ms Nombasa Qangule; they brought cool exhibitions which included different members of the bee colony (not live bees), bee wax, bee honey, and bee hives. The Sci-Enza's auditorium was buzzing with questions during the talk, and the enthusiasm about the bee talk was truly enchanting.

Lastly, the wonderful Manie van der Schijff Botanical garden tour with Mr Jason Sampson, the garden curator, as the tour guide. The tour gave an exciting insight into different types of plants, their history, classifications, and much more. The tour provided beautiful inspiration for our nature frenzy workshops.

Sci-Enza is sure to bring you another exciting holiday programme in December. Stay tuned, and be sure to take advantage of it.

For more information, please get in touch with Mrs Yvette Barrett at 012 420 3767 or sci-enza@up.ac.za



# Passionate young entrepreneur with a heart for babies excels in competition

A third-year BConsumer Science Clothing Retail Management student in the Department of Consumer and Food Sciences, Zellemari van Niekerk, recently ended up as one of the five finalists in a national entrepreneur competition with her baby clothing range, Foxi Original (FO). She also does this to pay for her studies.

Zellemari admits she was excited about making it so far in the Afriforum Entrepreneur competition. "It showed that my passion and hard work were being recognised. Being around finalists double my age with businesses over ten years old, I had to take a step back and look at how far I've come. For me, it's always how I can improve and do better. I have learned a lot from everyone and made wonderful friends and connections. Although it was one of the most stressful times in my career, it made me stronger as a person; and proud. I am proud to have brought up a business from the ground whilst studying."

She explains, "When I design and make baby clothes, I love to design unique and one-of-a-kind pieces. I do market research before I design collections by looking at the current trends and the market and asking my clients what they'd want their little ones to wear. When I make the clothes, I think of the photos I'll get back and how cute the baby will look. Custom outfits for birthdays, baptisms or weddings are some of my favourites as I get to design and make something so special for a milestone that baby reached or for someone's special day," Zellemari shares her passion for clothing and babies.

One of her lecturers, Dr Suné Donoghue, from the Department of Consumer and Food Sciences, only praises Zellemari and her work. "She is a real entrepreneur with her own business, studies clothing management and makes time to do community engagement."

Zellemari has been involved with a non-profit organisation, Rock of Hope and Joy – Place of Safety, loving homes for abandoned, abused and neglected babies and toddlers, for the past four years. "They are so close to my heart."

After completing her studies, she plans to continue with her business and says, "I love working for myself and am a leader at heart, so I will continue with FO. I would love to get some help and employ a seamstress or two; quality is essential when it comes to my products, so finding the perfect candidates will be a struggle, but I've been praying for the right people for a long time."

"The knowledge and skills I learn from my studies directly contribute to my achievements. Time management is one I've learned from studying whilst running my business is time management. I would get nothing done if I didn't plan my days by the hour. Another thing is communication skills. I would say that I am quite an introvert until you get to know me. I love talking to my clients and getting to know them, making the perfect clothing pieces for their little ones. Studying at UP has helped my social anxiety, especially when I do markets."

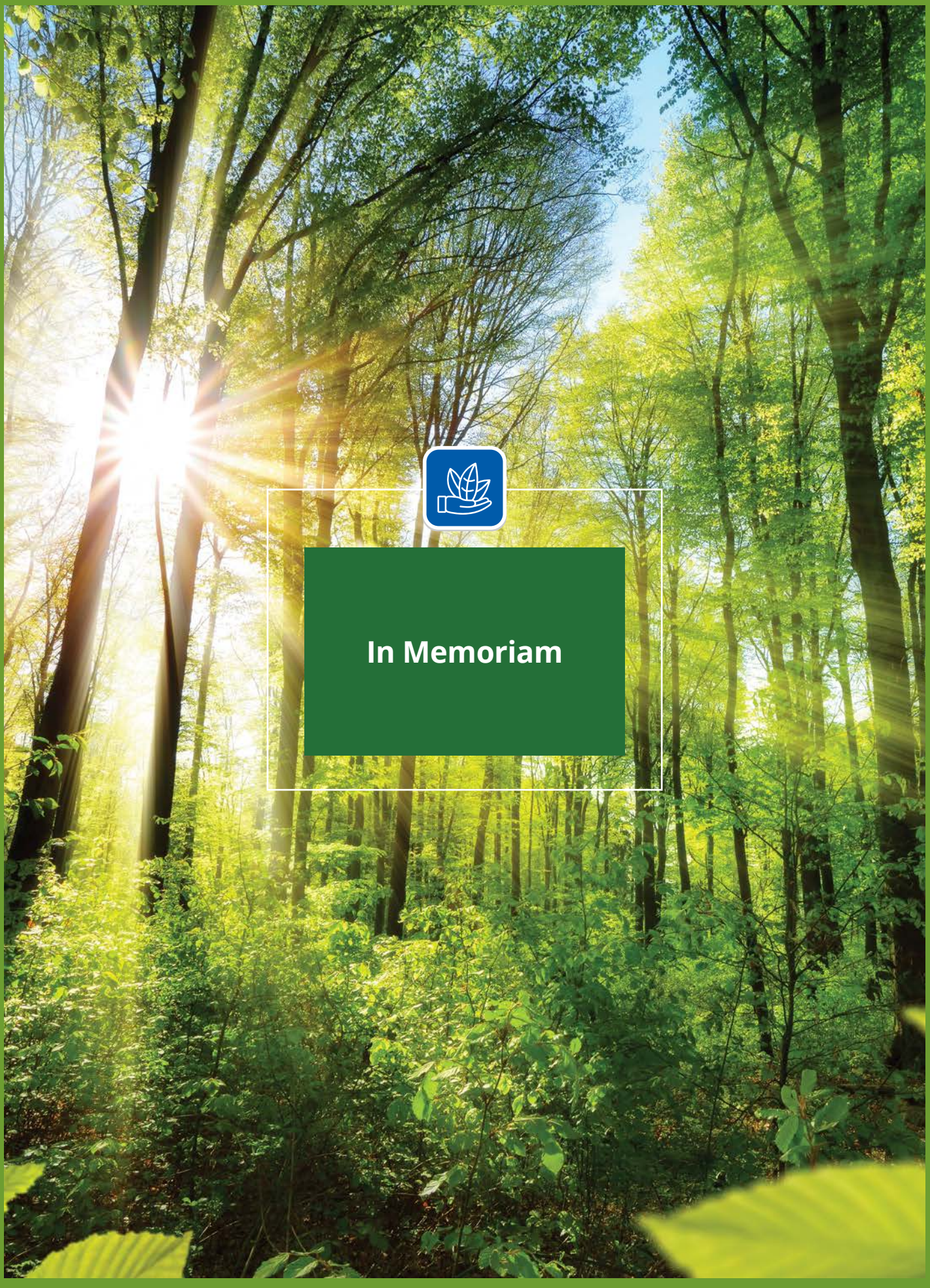
*Zellemari van Niekerk*

She does not have a role model in the same business or career. "But I admire Taylor Swift and her passion, resilience and ability to make art based on what she loves. Everyone always thinks that success is owed to them and that they deserve it. However, it is not true; if you don't work for it 24/7 and put your heart and soul into it to deserve it, it isn't for you. Success doesn't happen overnight." Zellemari's favourite quote: 'The world doesn't owe you anything. You must work for everything you get and appreciate every bit of success the world gives you', indeed emphasises this.

Zellemari concludes,

***"The one thing that will keep inspiring me to do what I do is the clients' love for Foxi Original. It motivates me to keep going, to design better and continue to do what I love. If I didn't have people supporting my business, I wouldn't be where I am today and where I hope to be one day."***


*Foxi Original designs by Zellemari*



# In Memoriam

# Final goodbye to Dr Fanie Terblanche

Dr Fanie Terblanche, a former senior lecturer in the Department of Agricultural Economics, Extension and Rural Development, passed away on 1 October 2022.

He was also a member of the UP School for Agriculture and Rural Development, specifically involved in curriculum development, lecturing and outreach programmes.

He was a proud alumnus of the University of Pretoria (UP) as he started with a BSc (Agriculture) in Animal Production in 1970 at UP and completed his undergraduate and postgraduate studies up to his PhD in 2000 in Agricultural Extension.

"Dr Terblanche was absolutely passionate about agricultural extension and the development of the capacity of students to provide a pipeline of extension services to support smallholders in South Africa," Prof Sheryl Hendriks, Head of the Department of Agricultural Economics, Extension and Rural Development said.

He was more than twenty years involved in Agricultural Extension in South Africa and also eight years in the agricultural training of prospective farmers at the Lowveld College of Agriculture in Nelspruit, Mpumalanga.

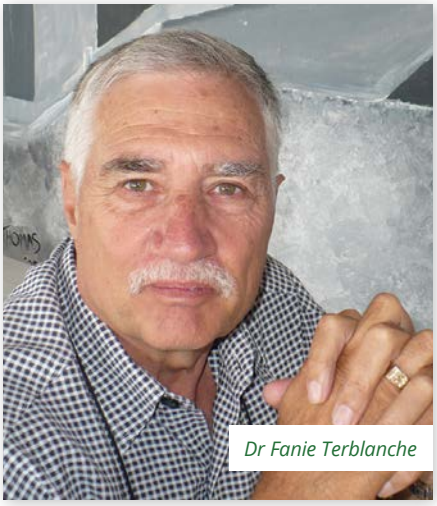
Dr Terblanche was appointed as a member of the University of Mpumalanga Senate and associate professor. He was also Chairperson of the Standards Generating Body for Agricultural Extension, responsible for developing Unit Standards in Agricultural Extension Education Programmes and the learnerships in Agricultural Extension through the Agricultural SETA.

More than 15 MSc and PhD students have graduated under his leadership. Dr Terblanche and his students have published many scientific papers, and he held an NRF C3 rating. He completed several valuable research studies and was a member of several international associations, including many national and international conference presentations with co-authors in different countries.

He was employed by UP for 20 years and was an excellent lecturer and a proud agricultural extensionist. His friends, colleagues, students, and the agricultural community will sorely miss him!

Dr Terblanche was a beloved dad and grandfather, a respected colleague and mentor, and highly regarded because of his immense impact on all individuals in his life. He was able to be a leader at local and international levels during his career, thus enabling him to share his love for agriculture with a vast number of people.

Notwithstanding the many accolades, Dr Terblanche received and his numerous publications, he always thirsted for more knowledge and to better himself in all facets of his life.



*Dr Fanie Terblanche*

Colleagues and students have described him as 'humble, patient, steadfast, always willing to listen, and someone to be admired as well as respected. He was an inspirational leader who made everybody feel like somebody, saw the potential in every student, and never judged people.'

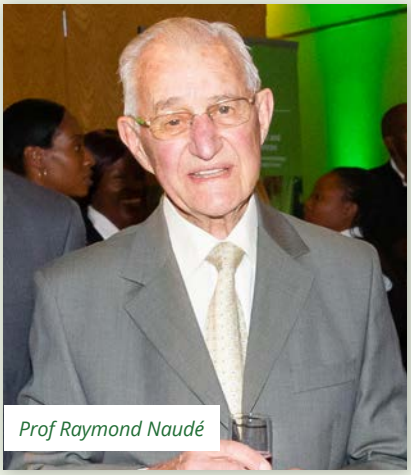
Dr Terblanche's influence and good character were not limited to his career only, he was a great gardener, fascinated by nature, a beloved friend and an adventurer who loved to travel.

His priority in life was his Christian faith, which he practised in his professional and daily life. He was an inspiration to many in his career and to all with whom he came into contact.

We reflect on Dr Terblanche's life of 74 years in the knowledge that he has had a full and happy life.

**Soli Deo Gloria!**

# Farewell to Dr Raymond Naude, father of meat science in SA



*Prof Raymond Naudé*

Dr Raymond Naudé, a former professor in the Faculty of Natural and Agricultural Sciences and alumnus of the University of Pretoria (UP), passed away on 2 October 2022 at 88.

His legacy comprises over 132 scientific and 108 popular publications, a one of its kind meat research facility at the Animal Production Institute of the Agricultural Research Council with funding from the former Meat Board and 10 PhD and 15 master's students to continue his work. As a young scientist employed by the Department of Agriculture, he obtained his MSc cum laude at UP three years later under the iconic Prof Jan Bonsma.

In 1968, Dr Naudé was commissioned to develop a meat research programme for South Africa. During 1968 and 1969, continuing to be employed by the Department of Agriculture, he had the opportunity to work at the Agricultural Institute in Dublin, Ireland, as well as the Meat Research Institute in Bristol, England, where he studied methods on carcass evaluation, muscle biochemistry, histology and other meat quality methods.

Upon his return, he applied these skills expertly to establish the Meat Research Laboratory at the Animal and Dairy Science Research Institute, Irene. Now the research concept "from farm to fork" could be extended into different programmes that, over years, served different disciplines and species along the value chain.

In 1974 he completed his DSc at UP on Intensive meat production of dairy breeds. Not only was he a founder-member of the South African Society for Animal Science (SASAS) in 1961, but he was awarded the SASAS Gold Medal award for the Year 1998 in acknowledgement of exceptional services rendered in furtherance of Animal Science over a period of many years. In 1986 he was awarded the National Agriculturist of the year by the Agricultural writers SA.

He was appointed Distinguished Professor by the Free State University in 1987 and the University of Pretoria in 1991.

Dr Naudé brought tremendous energy and utter devotion to his work and demanded no less from others. Yet he never forgot what was truly important in his life or that of his family, students, colleagues and friends worldwide. Hence, he became a role model for and friend to many of us, encouraging new ideas, acting as a soundboard and thus, indeed, the father of Meat Science in South Africa.

A friend many of us, we will dearly miss him for his trustworthy advice and whose memory will continue to inspire our work and lives.

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