

SQUARED² UP

Newsletter of the Faculty of Natural and Agricultural Sciences ■ Issue 2 ■ Sept 2012

University of Pretoria launches Institute for Food, Nutrition and Well-being



Just more than a week after G8 leaders had renewed their shared commitment to global food security through the New Alliance for Food Nutrition in May this year, the largest pool of food security related researchers located in one Institution launched a collaborative platform at the University of Pretoria (UP) with the same goal in mind.

The Institute for Food, Nutrition and Well-being (IFNuW) was officially launched at UP on 28 May 2012. Ms Sheila Sisulu, Deputy Executive Director of the World Food Programme, was the guest speaker. The IFNuW gives momentum to the fight against hunger, malnutrition and

disease by offering more than 100 researchers from five faculties and more than 30 academic departments, units and centres an opportunity to work beyond traditional knowledge boundaries.

These researchers, the largest collaborative group of its kind, are all actively contributing to diverse fields of study ranging from food production, animal diseases, African crops and probiotics to diabetes, laws on consumer protection and schools as agents of behavioural change.

To quote the Director of the Institute, Prof Sheryl Hendriks from the Department of Agricultural

Economics, Extension and Rural Development in the Faculty of Natural and Agricultural Sciences: "Research over the past 30 plus years has taught us a great deal about the causes of hunger and poverty. Yet, in comparison, the world knows very little about how to solve hunger and poverty."

According to Prof Hendriks, the IFNuW seeks to address underlying vulnerabilities and find ways of building a more resilient agriculture and food system to reduce hunger and malnutrition and promote consumption behaviour that will ensure human productivity and overall well-being.

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UNIVERSITEIT VAN PRETORIA
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Faculty of Natural and Agricultural Sciences



Improve our impact and footprint within Africa

Apart from establishing the Faculty as one of the top science faculties in South Africa, we strive to be the leading science faculty on the African continent, contributing significantly through its postgraduate research to some of the major challenges the continent faces in relation to poverty and food-, energy- and water security, climate change and its impact on agriculture, animal- and human health as well as economic sustainability. Although the Faculty already contributes substantially to some of these challenges, I believe that with the newly established Institutional Research Themes at UP which will focus on most of these critical areas, the Faculty will join hands with other faculties to significantly improve its impact and footprint within Africa. Read more about the official opening of the Institute for Food, Nutrition and Well-being (IFNuW), which was officially launched at UP on 28 May 2012, on page 1.

Being people centred, the Faculty continuously seeks for opportunities to recruit and appoint highly recognised researchers and academics. One of these new appointments is that of Prof Don Cowan, an international researcher of note and the former Director of the Institute Microbial Biotechnology and Metagenomics at the University of the Western Cape (UWC). He was appointed on 1 May to lead the newly established Centre for Microbial Ecology and Genomics (read more on page 11). We also bid two senior researchers goodbye who recently retired after decades of research and service to the University, Prof Norman Casey and Prof Wouter van Hoven (read more on page 12–13).

As always we are very proud of the outstanding achievements of our staff and students in the Faculty. Prof Jolanda Roux from the Faculty of Natural and Agricultural Sciences added yet another prestigious award to her list of accolades when she received the NSTF-BHP-Billiton award (sponsored by Eskom) for a female researcher for her outstanding contribution to SETI through Research Capacity Development over the last five to ten years (page 3). Prof Mike Wingfield, Director of the Forestry and Agricultural Biotechnology Institute (FABI) has been awarded the prestigious Johanna Westerdijk Award by the Centraalbureau voor Schimmelcultures (CBS) Fungal Biodiversity Centre (page 4). Gerda Fourie, a PhD student at FABI, is the proud recipient of the 2012 L'Oréal-UNESCO Award for Women in Science from sub-Saharan Africa (page 6) and the University scooped the first prize for the Best Science Show and second prize for the Best Exhibition in the tertiary institutions category at the Sasol Techno X (page 4). The Head of the Department of Chemistry, Prof Egmont Rohwer, recently delivered his inaugural address (page 5).

Research is part of our core business and the importance thereof is emphasised by the ground-breaking research performed by our staff and students. Read more about Ms Yvette Naudé (a PhD student) and Prof Egmont Rohwer from the Department of Chemistry who have developed

a novel technique to investigate DDT in indoor air and in soil (page 14). All roads led to the TRFCA Mimosa research station at the foothills of the Mulanje Mountains in Malawi where earlier this year several members from the SABINA/POL-SABINA network gathered to witness the official handover of the POL-SABINA rain shelter. This event marked the culmination of years of hard work and commitment from several dedicated role players (page 19). There is also an article on page 17 about the Minister of Agriculture and Forestry from the Central Equatorial State (CES) in the Government of South Sudan, Honourable Minister Michael Roberto Kenyi Legge, who has enrolled for a PhD in Food Security at the University of Pretoria.

The Physics Department hosted the 57th annual conference of the SAIP from 9 to 13 July 2012 with 550 delegates from South Africa and about 40 delegates from countries worldwide (page 20).

There are so many outstanding achievements by our staff, students and affiliates of which we are very proud. With this newsletter we aim to showcase some of it. We wish you all well for the rest of the second semester and trust that you will enjoy this update on the latest developments in our Faculty.

Prof Anton Ströh

Dean: Faculty of Natural and Agricultural Sciences

Message from the Dean

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The Institute for Food, Nutrition and Well-being (IFNuW) was officially launched at UP on 28 May 2012. Ms Sheila Sisulu, Deputy Executive Director of the World Food Programme, was the guest speaker.

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The appropriateness of and need for research at the interface of production, food safety, health, nutrition and economics is evident when one considers recent global and African crises that have highlighted the world's limited ability to solve complex and often recurring problems in the agriculture and food system.

"Tackling these problems requires innovative approaches to research beyond traditional knowledge silos and demands creative ways of communicating the scientific findings to policy makers and communities," said Prof Hendriks. "Transdisciplinary enquiry encourages active research conducted by teams of experts from different disciplines working beyond traditional knowledge boundaries to create new knowledge and solve complex problems."

Five simultaneous *Indabas* (meetings on a serious issue) on the same day as the official opening offered invited stakeholders from national and local government and international partners the opportunity to hear what UP researchers have learnt from research within the five key thematic areas of the Institute of Food, Nutrition and Well-being. This included a reflection on the value of the Institute and the vision of research for the future, learning from international and local experience of the challenges and successes with regard to these topics, engaging in open dialogue to identify priorities for research in these areas and discussing how to put research to use in policy and practice and identify partnerships to take these priorities forward.



Prof Sheryl Hendriks (Director of the Institute for Food, Nutrition and Well-being), Ms Sheila Sisulu (Deputy Executive Director of the World Food Programme) and Prof Cheryl de la Rey (Vice-Chancellor and Principal).

Prof Jolanda Roux receives prestigious NSTF-BHP Billiton Award

Prof Jolanda Roux from the Faculty of Natural and Agricultural Sciences added yet another prestigious award to her list of accolades when she received the NSTF-BHP-Billiton award (sponsored by Eskom) for a female researcher who has made an outstanding contribution to SETI through Research Capacity Development over the last five to ten years.

The award was presented by the Honourable Minister of Science and Technology, Ms Naledi Pandor, at the NSTF-BHP Billiton Awards gala dinner (the 14th annual event of this kind) held in Gauteng in June this year.

Prof Roux is a professor in the Department of Microbiology and Plant Pathology, a member of the management committee of the Forestry and Agricultural Biotechnology Institute at the University and manager of the Tree Protection Co-operative Programme's field and extension services.



Prof Jolanda Roux

Her research focuses on tree diseases and she is particularly passionate about tree health in general and fungi that cause diseases of trees on the African continent. She collaborates with researchers in many other parts of the world and has travelled widely to undertake her research.

Prof Roux has published over 100 papers on her research area and has successfully supervised six PhDs and 14 MSc students, with 14 more in the pipeline. She serves on a number of international committees and is currently the coordinator for the International Union of Forestry Research Organisation's Division Research Group on Forest Pathology. In 2011, she was awarded the Queen's Award for Forestry by the Commonwealth Forestry Association, which is when she met Queen Elizabeth II. Prof Roux has received many other forms of recognition for her work, notably the DST's "Distinguished Young Women in Science" award which she received in 2011.

She is currently the Vice-President of the Southern African Society for Plant Pathology, serves on the editorial boards of the *South African Journal of Science*, *Tropical Plant Pathology and Forest Pathology*, and is an honorary professor in the Chinese Academy of Forestry.

Prof Mike Wingfield, Director of FABI was also nominated for a NSTF-BHP Billiton Award.



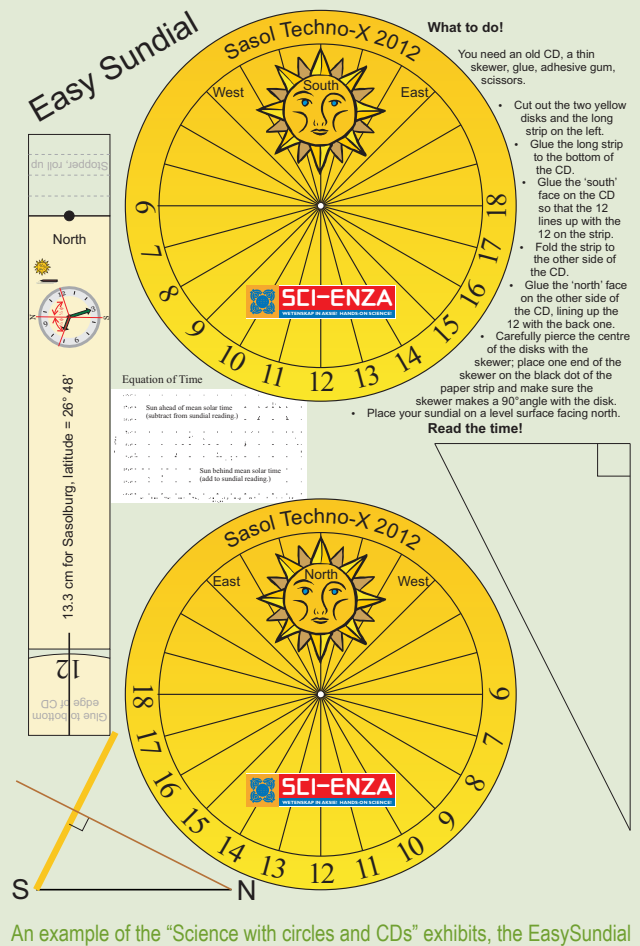
Learners at the Sasol Techno X.

Accolades for UP's science show at Sasol Techno X

The University of Pretoria scooped the first prize for the Best Science Show and second prize for the "Best Exhibition" in the tertiary institutions category at the Sasol Techno X from 13 to 17 August 2012.

Sasol Techno X is an exhibition that focuses on displays, workshops, tours, talks and hands-on activities aimed at enthusing learners, students and the general public about the endless possibilities of science and technology. Sasol Techno X seeks to expose, at a practical level, the many facets of technology and encourage learners to explore the wide range of exciting disciplines and career choices that science, maths and technology offer. This annual event sponsored by Sasol attracted more than 25 000 visitors this year.

UP's exhibition theme was "Science with circles and CDs" and all the different faculties made the theme their own. The Faculty of Health Sciences, for example, made wheelchairs for dolls from the CDs while the Faculty of Humanities made CD mobiles with photos and beads as well as hand puppets. Furthermore, UP staff members handed out protractors, made from used CDs.



An example of the "Science with circles and CDs" exhibits, the EasySundial

Another prestigious award for Prof Mike Wingfield

Prof Mike Wingfield, Director of the Forestry and Agricultural Biotechnology Institute (FABI), has been awarded the prestigious Johanna Westerdijk Award by the Centraalbureau voor Schimmelcultures (CBS) Fungal Biodiversity Centre. This Award is made on special occasions to an individual who has made an outstanding contribution to the culture collection of the CBS Fungal Biodiversity Centre, marking a distinguished career in mycology.

The CBS Fungal Biodiversity Centre is an institute of the Royal Netherlands Academy of Arts and Sciences (KNAW), situated in Utrecht; it maintains a world-renowned collection of living filamentous fungi, yeasts and bacteria. The Institute's research programmes principally focus on the taxonomy and evolution of fungi as well as on functional aspects of fungal biology and ecology, increasingly making use of molecular and genomics approaches.

Prof Wingfield is an internationally renowned researcher and was also recently selected to receive an honorary degree from the University of British Columbia. The degree will officially be awarded at the University's graduation ceremony in November.

He has published widely on the topic of tree health in more than 600 research papers, five books and in numerous prestigious invited presentations globally. He has served in many distinguished positions and has received numerous awards and honours for contributions to education, research and industry in South Africa and elsewhere in the world. Based on these contributions he has been elected as a fellow of scientific societies including the Royal Society of South Africa, Academy of Sciences of South Africa, the Southern African Society for Plant Pathology and the American Phytopathological Society. He is one of the few honorary members of the Mycological Society of America.

He has conducted research on tree pests and pathogens, especially concerning their global movement, for more than thirty years. His highly cited research in this field, conducted in many different countries of the world, has led to the discovery of some of the most important pathogens of trees grown commercially in plantations. It has also elucidated elements of the biology and global movement of many of the most important pests and pathogens of trees, substantially contributing to new management options and solutions to problems, thereby reducing losses to industry. Based on his research reputation, he has been a long term advisor of many major forestry corporations globally.



Prof Mike Wingfield receiving the Johanna van Westerdijk award from the Director of the CBS, Prof Dr Crous (a past PhD student of Wingfield) at Trippenhuis, the official home of the Netherlands Academy of Sciences in Amsterdam.

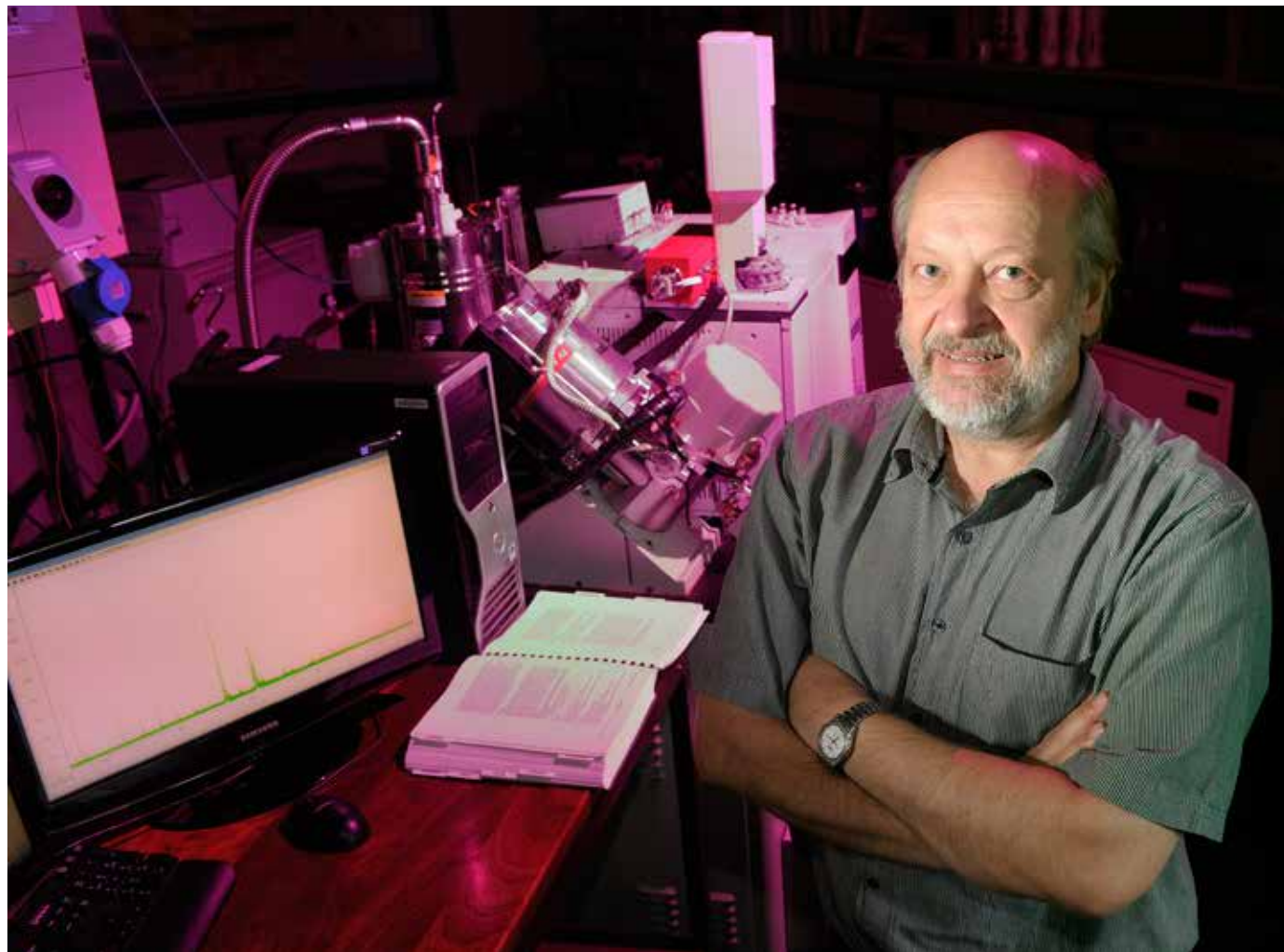
Head of Chemistry delivers inaugural address

The Head of the Department of Chemistry, Professor Egmont Rohwer recently delivered his inaugural address entitled “Mass Spectrometry, Chromatography, Chemistrywhat is the purpose?”

This multifaceted question was addressed through details of the speaker’s own career, drawing conclusions as to the role of Chemistry at the University of Pretoria and in our country. The use of expensive instruments and highly sophisticated infrastructure is justifiably under scrutiny when a university

of those with a better chance of serving the needs of society.

Analytical chemical technology provides the means to perform reality checks on theoretical models in the natural sciences and is thus fundamental to the advance of diverse disciplines that increasingly require understanding at the atomic and molecular level. The techniques of Chromatography and Mass Spectrometry(MS) are both about one hundred years old but commercial equipment only became available much later, largely through



Prof Egmont Rohwer

considers state-of-the-art education and research in the experimental sciences. Doubly so in a country with an emerging economy where the priority lies with primary education, crime prevention, health care, service delivery, housing and job creation. The apparent contradiction of high-tech science in a developing country can only be resolved when facilities are correctly managed, world class research leaders can be recruited, critical mass can be maintained over years, applied projects of obvious local relevance are tackled and research money can be leveraged from industry and international agencies with the common goal of sustainable development. Where these conditions cannot be guaranteed, responsible action requires such facilities to rather be closed down towards consolidation

the need of the petrochemical industry that, even today, grapples with quality control of products such as petrol or diesel that can contain more than 30,000 compounds. The two techniques couple synergistically and today all well-equipped government and industrial laboratories have GC-MS and LC-MS equipment to perform routine tasks. More sophisticated research is performed on multi-dimensional and high resolution instruments as found in the laboratories at UP. These non-routine techniques are required to train future analytical chemists and to support research in matters of health, water, energy, food, forensic science, biology, environmental pollution, archaeology and engineering – examples of such interdisciplinary projects are on-going at UP.

PhD student receives L'Oréal-UNESCO Award

Gerda Fourie, a PhD student at the Forestry and Agricultural Biotechnology Institute (FABI) in the Faculty of Natural and Agricultural Sciences, is the proud recipient of the 2012 L'Oréal-UNESCO Award for Women in Science from sub-Saharan Africa.

Gerda is a PhD student in microbiology at the University of Pretoria (UP) and one of ten inspiring women scientists from sub-Saharan Africa who have been honoured for their work in the scientific fields. She has been awarded a fellowship of US\$20 000 (R164 173) towards her studies.

The L'Oréal-UNESCO Regional Fellowships for Women in Science in sub-Saharan Africa is open to all women scientists (up to the age of 40) across sub-Saharan Africa who are working towards their PhD in all fields of science. The fellowship programme aims to increase representation of women in global scientific circles, thereby creating role models for future female generations.

Bertrand de Laleu, Managing Director for L'Oréal South Africa, says the programme was born out of the need to help women scientists overcome one of the most common obstacles they face in pursuing their careers: money. "The idea behind these fellowships is that one of those stumbling blocks – access to finance – is removed, so these women may reach their full potential as scientists," he says.

Gerda attained both her BSc in Microbiology and Plant Pathology and her honours in Microbiology at the University. Following the completion of her honours degree, she accepted a position as a Food Microbiologist at Food Consulting Services. The following year she worked as a research assistant at FABI.

In 2004 she enrolled for an MSc degree in Microbiology (part-time) at UP, obtaining her degree cum laude in 2008. She went on to publish two research papers based on her thesis and in 2009 she received the FABI award for best student publication. That same year she enrolled for a PhD degree in Microbiology at the University and was awarded an NRF Scarce Skills Bursary to help her complete her studies.



Gerda Fourie

"I have always been passionate about science and biology, and I enjoy the challenges and constantly changing environment of research. My research interests include the biology and evolution of *Fusarium oxysporum* and related fungi species in the *Gibberella fujikuroi* species complex, with specific focus on *F. circinatum*, the causal agent of pitch canker in pines," says Gerda.

Her current research is titled 'The evolution of mitochondrial genomes within the *Gibberella fujikuroi* species complex'. The *Gibberella fujikuroi* species complex (GFC) includes many economically important pathogens. Species in this complex are the focus of various ongoing genome sequencing projects that seek to better understand the genetics and biology of these fungi.

Gerda has presented her research at four international and three national conferences, and has authored or co-authored six ISI-rated publications (and has an h-index of 3). Apart from working towards obtaining her PhD, Gerda is involved in mentoring undergraduate students linked to the CTHB / Faculty of Natural and Agricultural Sciences, as well as BSc (Hons) and MSc students.



Mr Eckart Beneke received the JJ Veenstra floating trophy presented to him by Prof Eddie Webb, Head: Department of Animal and Wildlife Sciences.

Animal and Wildlife Sciences honours academic achievers

A total of seven bursaries and awards were presented to academic achievers from the Department of Animal and Wildlife Sciences at the Annual Merit Awards Function on 25 May 2012.

Prof Eddie Webb presented the JJ Veenstra Floating Trophy to Mr Eckart Beneke for the final year Animal Science student with the most zeal.

Prof Norman Casey from the Department presented three bursaries, namely the Prof DM Joubert bursary to Ms Bonita Nortjé, the Prof JC Bonsma bursary to Mr Gareth Salmond and the Prof C Maree bursary to Ms Casey Courtman.

The SASAS Prize for the best fourth year student in Animal Science in 2011 was presented to Ms An Jacques. The SASAS Northern branch Award for the most outstanding third year student in Animal Science in 2011 went to Ms Bianca van Wyk and the Koos van der Merwe AFMA Prize was awarded to Mr Rainer Rauch.

Animal Science student wins international scholarship

Nadia Swanepoel, a PhD student in the Department of Animal and Wildlife Sciences, was recently awarded a California Animal Nutrition Conference (CANC) scholarship.

As winner Nadia received a cash prize of \$1 500 as well as the opportunity to present her research as a 25 minute PowerPoint presentation rather than a poster.

She is currently doing research work for her PhD at the University of California, Davis, researching key protein sources in California to improve production efficiency in high producing dairy cattle; as a result of her research in this area, Nadia was awarded this scholarship.

Abstracts are sent to the CANC committee from across the state to enter the CANC poster competition. A

winner is selected based on originality of completed research with sound experimental design and interpretations.

Nadia obtained her BSc (Agric) Animal Science degree from the University of Pretoria (UP) in 2006. She then started her MSc degree through UP, under Prof Lourens Erasmus, while doing her practical project work during a seven month programme abroad, with Dr Peter Robinson at the University of California, Davis. She graduated cum laude with an MSc (Agric) Animal nutrition degree in 2009 and also received the SASAS bronze medal for a meritorious MSc thesis. She also received the AM Bosman Gold medal.

From October 2008 to October 2009 she worked as a Junior Nutritionist at Meadow Feeds in Clearwater, after which she became Nutritionist at the Meadow Feeds mill in Welkom until July 2011.

During this time she published two peer reviewed articles and co-authored two more. She also published one book chapter, with multiple meeting abstracts for the California Animal Nutrition conference as well as the American Dairy Science Association.

In August 2011 she started her PhD studies through the University of Pretoria.

Her first project was completed in February 2012 on a large scale commercial dairy in California, milking a total of 5 000 Holstein cows. They utilised four pens of 320

high producing cows, feeding four treatments over 16 weeks. This was the largest study of its kind ever conducted. The objective was to determine the optimum ratio between the two key protein sources in California, canola meal and dried distillers grains, the main by-product of the corn-starch ethanol industry. Cows fed a diet of 13.5% of the ration dry matter as canola meal, performed the best. However, a higher inclusion of canola meal did not perform as well, which will be the basis for her next project – what was the cause for hampered production at the high canola meal inclusion level? She is planning at least two more projects as part of her PhD degree.



Nadia Swanepoel and Prof Lourens Erasmus

MSc student wins Norman Rethman Planted Pastures Award



Leana Nel

Leana Nel, an MSc (Agric) Pasture Science student in the Department of Plant Production and Soil Science, recently received the Norman Rethman Planted Pastures Award at the Annual Congress of the Grassland Society of Southern Africa (GSSA), held in Langebaan, Western Cape. The Norman Rethman Award is given to the best planted pasture-related presentation by a young scientist at the congress.

This award was presented for the first time at the 47th Annual Congress of the Grassland Society of Southern Africa in July 2012. Leana Nel, an MSc (Agric) student in the Faculty of Natural and Agricultural Sciences, is honoured to be the first recipient of this award. Her presentation, entitled "The effect of seed coating on the germination and emergence of lucerne (*Medicago sativa L.*) in sub-optimal environments", aimed to identify the limitations that saline growing conditions can have on lucerne establishment, and how a seed coating technology can positively change those conditions. This paper addressed the effect a seed coating has on the establishment and growth response of Lucerne, which is the most common high protein roughage, produced in sub-optimal conditions in South Africa, for livestock and wildlife animal diets. This work forms part of Leana's MSc study on the role of seed coating on lucerne production.

The late Professor Norman Rethman was a founding member of the Grassland Society of Southern Africa in 1965. During his service at the University of Pretoria's Department of Plant Production and Soil Science, he made endless contributions to research, training and the education of students in the fields of forage science, agro-forestry and mine land reclamation. As part of the GSSA's campaign to revitalise and promote the scarce skill of Pasture Science in South Africa, the award was introduced to commemorate the exceptional contributions and memorable inspiration Prof Norman Rethman gave to young scientists in this discipline.

Christine Maritz-Olivier receives prestigious research award

Dr Christine Maritz-Olivier of the Department of Genetics and a member of the Anti-tick Vaccine Research Group was the recipient of the Best Biotechnology Research Award for 2012 at the annual Gauteng Department of Agriculture and Rural Development (GDARD) Symposium held in June.

Her research focuses on using an approach that combines functional genomics and reverse vaccinology to identify promising anti-tick vaccine candidates. Using this method, her group has identified a number of antigens, which have subsequently been expressed on a novel, cost-efficient on-membrane system and validated in cattle vaccine trials. Protective antigens capable of reducing tick maturation by 75% have been identified and are currently being tested in expanded vaccine trials.

Dr Maritz-Olivier is also collaborating with Pfizer Laboratories to evaluate the genetic diversity of Rhipicephalus ticks and their acaricide resistance status throughout South Africa. Anti-tick vaccines and the correct use of acaricides will significantly impact farming expenses, lessen environmental contamination, improve livestock production, lessen tick-pathogen transmission (animal health), food security (red meat and dairy) and the associated leather, hide and skin industries.

In collaboration with partners from the USA, UK and Australia, Dr Maritz-Olivier is involved in establishing a platform, funded by the Wellcome Trust, for completing the first tick genome and -interactome to gain insight into the host-pathogen-vector interphases. She is also co-authoring a book on aspects of modern vaccinology with Prof Matthias Giese of the University of Heidelberg, Germany, which will be published in 2013 by Springer (New York).



From the left: Dr Konanani Liphadzi (Chief Director: Department of Agriculture), Dr Christine Maritz-Olivier and Advocate John Nesidoni (Deputy Director General: Natural Resources Management)



Ryan Reisinger on Marion Island doing research (Photo: Chris Oosthuizen)

Prestigious medal for Ryan for his research on whales

Ryan Reisinger, a PhD student in the University's Department of Zoology and Entomology has been awarded the Junior Captain Scott medal by the SA Akademie vir Wetenskap en Kuns for Zoological Sciences. The medal is awarded annually for the best dissertation submitted at a South African university for an MSc degree, alternately in the animal and plant sciences. In 2012 animal sciences was eligible for the award.

He is currently busy with his PhD in Zoology at UP. Ryan has recently returned from his second overwintering expedition as a field assistant/marine mammal biologist (13 months at Marion Island). "On the first expedition from March 2008 to May 2009 I collected data on killer whales, which formed the basis of my MSc. The work focused mainly on building a photographic catalogue of the killer whales at the island which I could use to calculate the number of whales at the island. Along with observations of predation events

I could then make some rough calculations as to whether the killer whales could significantly affect populations of their prey: seals and penguins," Ryan explained.

"On the second expedition from March 2011 to May 2012 I collected data for my PhD, supervised by Dr Nico de Bruyn at the Mammal Research Institute (MRI), which is also on killer whales at the island. The PhD will build on my earlier work and will investigate the social structure of the killer whales there, their offshore movements and their foraging ecology. For the latter two aspects I was remotely (using a crossbow) deploying satellite tags on the whales and taking biopsy samples for stable isotope and fatty acid analyses."

He aims to complete his PhD in 2014.

Internationally acclaimed mathematician leads Faculty

Not only was he the youngest person ever to be appointed in this position, but he is also the first dean to be appointed for a third consecutive term. Prof Anton Ströh has been officially re-appointed as the Dean of the Faculty of Natural and Agricultural Sciences from 1 June 2012.

This appointment confirms his on-going list of achievements and reflects on his life and career – characterised by a long list of personal as well as professional highlights and achievements. Looking back on these, it is clear that the legacy that he will one day leave behind will be known as one of excellence.

Prof Ströh obtained his PhD at 24 and throughout his life demonstrated his passion for mathematics as researcher and problem-solver at heart.

In 1988 he was appointed as Lecturer in the Department of Mathematics and Applied Mathematics and in 1990 promoted to the position of Senior Lecturer. In 1994, the renowned Banach Centre in Warsaw invited him to do research for a period of six months. During this visit Prof Ströh managed to obtain a complete Riesz decomposition theory relative to closed ideals in operator algebras by solving in its most general form a question on ideal structures of operator algebras jointly with Prof L Zsido from Rome, Italy. In July of the same year he received the University's Young Researcher of the Year Award and in 1996 Prof Ströh was promoted to the position of Associate Professor. In January 2000 he was promoted to the position of Professor and in October 2000 he was appointed as the Head of the Department of Mathematics and Applied Mathematics. In the same year he was appointed as the Chairperson of the School of Mathematical

Sciences, which comprises the departments of Mathematics and Applied Mathematics, Statistics and Insurance and Actuarial Science. His first term as Dean kicked off in 2004 and he was reappointed in 2008 to serve another four years. In 2008 he was also elected by Senate as a member of the Council of the University and from 2010 elected by Council on the standing

health as well as economic sustainability. Although the Faculty already contributes substantially to some of these challenges, Prof Ströh believes that with the newly established Institutional Research Themes at UP which will focus on most of these critical areas, the Faculty will join hands with other faculties to significantly improve its impact and footprint within Africa. The

Faculty recently introduced a proper benchmarking process through which departments and disciplines identify well chosen peer institutions locally and internationally to measure its performance against and to seek ways in which departments can significantly improve their performances with regard to identified performance indicators. This initiative backed up by a proper recruitment and staff development programme will be some of the instruments the Faculty would like to focus on in order to achieve its longer term goals.

Prof Ströh has delivered various papers at local and international conferences and has been an associate organiser for five international conferences. He is the author of various research articles in internationally accredited journals. In 2001,

he received a gold medal from the South African Mathematical Society for his contribution to research capacity building and in 2003, 2006, 2009 and 2012 he received an Exceptional Achievers Award from the University of Pretoria. He is currently recognised by his international fraternity for the significant scholarly contributions in his research field and holds a B2 rating from the National Research Foundation (NRF).

Prof Ströh is married to Ronel and they have two sons, Werner and Reinhardt.



Prof Anton Ströh

Committee of Council. Prof Ströh was also elected Chair of the National Science Deans Forum (NSDF) in 2009.

Apart from establishing the Faculty as one of the top science faculties in South Africa, he also dreams about the Faculty being the leading science faculty on the African continent, contributing significantly through its postgraduate research to some of the major challenges the continent faces in relation to poverty and food-, energy- and water security, climate change and its impact on agriculture, animal- and human

UP appoints international expert in Genomics

Prof Don Cowan, an international researcher of note and the former Director of the Institute Microbial Biotechnology and Metagenomics at the University of the Western Cape (UWC) was appointed from 1 May to lead the newly established Centre for Microbial Ecology and Genomics (CMEG) at the University of Pretoria. The Centre is essentially a virtual platform that facilitates and hosts the Institutional Research Theme (IRT) for Genomics.

Prof Cowan was educated in New Zealand at the University of Waikato and completed a period of postdoctoral study there before moving to University College London as a lecturer in 1985. After 16 years in London, he accepted the position as Professor of Microbiology in the Department of Biotechnology at the University of the Western Cape, Cape Town, where he was a Senior Professor and Director of the 60-strong Institute of Microbial Biotechnology and Metagenomics.

He has published over 200 research papers, review articles and book chapters, and sits on the editorial boards of ten international journals.

Some of the achievements on Prof Cowan's impressive CV include the post of Deputy Professor at the University of Waikato (NZ), being elected as a Fellow of the Royal Society of South Africa in 2007, as a Member of the Academy of Sciences of South Africa in 2008, and as an Honorary Fellow of the Royal Society of New Zealand in 2009. He was awarded an NRF B1 rating in 2007, the UWC Vice-Rector's Award for Research Excellence

in 2008 and the South African Society for Microbiology Silver Medal in 2009. He is currently President of the Royal Society of South Africa.

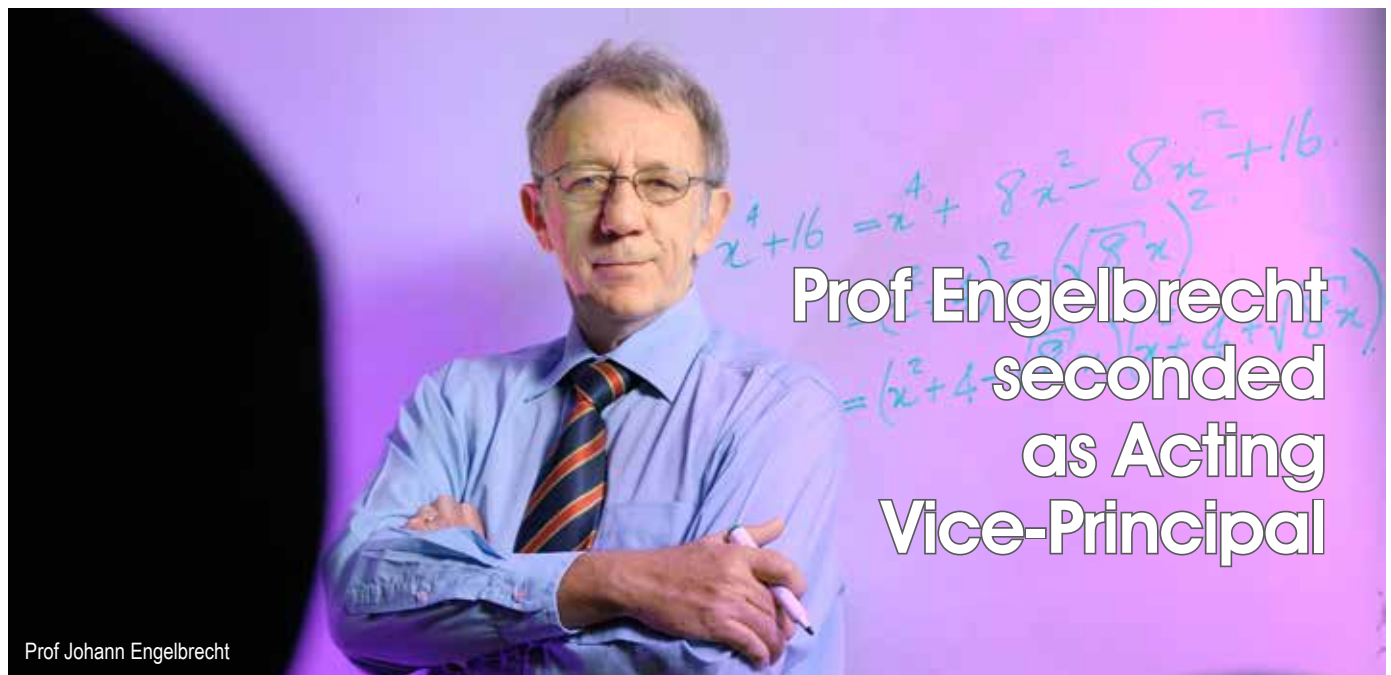
Prof Cowan's research activities encompass several disparate fields,

but many linked by the theme of environmental extremes. His collaborators include researchers in New Zealand, Chile, Hong Kong, France, the UK, China, Spain, Germany, Sweden and Norway.

Since his PhD studies, he has retained an interest in the ecology and enzymology of extreme thermophiles, organisms living at the temperature of boiling water. For the past decade he has worked at the other end of the temperature scale with New Zealand, Chinese and American scientists, studying the microbiology of the Dry Valleys of Eastern Antarctica. He collaborates with Ethiopian and Norwegian researchers to study organisms in the alkaline Rift Valley lakes and with South African and Spanish researchers on bacteria in high salt environments and with Namibian researchers on the microbial ecology of hot deserts.



Prof Don Cowan



Prof Johann Engelbrecht

Prof Johann Engelbrecht, Deputy Dean (Teaching and Learning and Community Engagement) in the Faculty of Natural and Agricultural Sciences, has been seconded as Acting Vice-Principal: Teaching and Learning and Student Affairs, with effect from 1 August 2012. Prof Engelbrecht will act in this capacity pending the filling of the post vacated by Prof Nthabiseng Ogude, who took up her new position as Vice-Chancellor and Principal at the Tshwane University of Technology on 1 August 2012.

Prof Engelbrecht has been employed by the University of Pretoria for more than 40 years. He was in the Department of Mathematics and Applied

Mathematics for many years before his appointment as Deputy Dean of the Faculty three years ago. He also serves as Director of the SA Mathematics Foundation on a part-time basis.

He is an active researcher in the field of mathematics education at tertiary level and is internationally recognised in this field. In the field of teaching and learning he received several awards, including the Claude Harris Leon Award Championship in Mathematics Teaching in 1998 and the South African Mathematical Society Award for the Advancement of Mathematics in 2005.



From the left: Prof Anton Ströh (Dean: Faculty of Natural and Agricultural Sciences), Prof Wouter van Hoven, Prof Norman Casey and Prof Eddie Webb (HOD: Animal and Wildlife Sciences).

Renowned Animal Scientist retires

Prof Norman Casey, from the Department of Animal and Wildlife Science in the Faculty of Natural and Agricultural Sciences, recently retired. He started his career at the University of Pretoria in 1979. He will still be of service as an emeritus professor doing research on microelements and water quality on the University's Experimental Farm, and will certainly continue to be active in his field.

The South Africa Society for Animal Science bestowed a Gold Medal on him in 2011. This award once again confirmed his academic stature as a research scientist, educationalist and leader.

It has been over 37 years since he graduated with a BSc (Agric) from the University of Natal and he has been living the professional discipline of Animal Science with an unreserved passion.

The salient points in Prof Casey's career are his role as a professor in Animal Science, the head of the academic department, an educator at undergraduate and postgraduate levels and a research leader and community leader within science – nationally and internationally.



Prof Norman Casey

Prof Casey was Head of the Department of Animal Science, to which the Centre of Wildlife Management was attached to form the Department of Animal and Wildlife Sciences, from 1992 until 2005. He also established regulations for the management of the University's Research Farms. He engineered the establishment of the Centre for Nutrition that has become a national and international reference on human nutrition.

His scientific discipline is livestock production physiology. Prof Casey has 83 science publications and over 200 other contributions as conference presentations, non-refereed publications, contributions to books and reference manuals and scientific technical reports.

His academic responsibilities include lecturing anatomy, physiology, meat science, livestock management and literature and research methodology. To date, he has supervised 49 master's and 17 doctoral candidates and successfully nominated two persons for an honorary doctorate degree from the University of Pretoria. He speaks proudly of the fact that the graduates are well established in industry, academia and science and that three of the doctoral graduates are currently heads of academic departments in southern Africa.

Prof Casey has served (and is still serving) the science community through a number of portfolios that include being the current President of the SA Council for Natural Scientific Professions (April 2009 to April 2013) and the President of the World Association of Animal Production (December 2008 to August 2013). He is a former president (2006 to 2008) and honorary president of the South African Society of Animal Science and is a founder and past chairperson of the South African Association for Professional Animal Scientists and the chairperson of the Professional Affairs Committee for Animal Science.

The South African Society of Animal Science has previously given recognition to Prof Casey's achievements and contributions by awarding him the Silver Medal in 1998 and the President's Award in 2005.

Distinguished wildlife management expert retires

Things change a lot in thirty years... things that were accepted as the norm then, are seen as an offence today.

When Prof van Hoven was appointed as lecturer in the Zoology Department at the University of Pretoria on 1 August 1972, "smoking was welcomed everywhere. Faculty meetings were held in the Senate Hall and at most meetings Rembrandt put out complimentary packets of cigarettes next to each copper ashtray fixed on the desks between seats. The place was blue from all the smoke right through the meeting." Nowadays a person will receive a fine for smoking in public.

After thirty years as a distinguished academic and researcher in Wildlife Management at the University of Pretoria, Prof Wouter van Hoven retired in 2012. He will still be involved in research and with a number of MSc and PhD programmes as well extension projects in Angola, Democratic Republic of the Congo and Zambia where new conservation areas are in the making. The Ecolife three week short course has become so popular that Discovery channel has requested the making of a 13 part, 27 minute series on it. Prof van Hoven will continue to manage this course and present certain lectures.

According to Prof van Hoven, "research initially focused on the rumen protozoa in the digestive tract of antelopes and their role in feed digestion. Gradually more focus was put on the digestive physiology in wild herbivores which led to unravelling the chemical defence role of condensed tannins and how this regulated kudu population density on game ranches and reserves. Having spent a year on sabbatical in the Veterinary Biochemical Department at the University of Utrecht in the Netherlands more research followed in wildlife nutrition."

that the emphasis now was more on the applied science of Wildlife Management; he joined Prof Bothma in developing the Centre for Wildlife

Management. Together with many graduate students a wide variety of research and extension projects were done on private lands as well as public conservation areas in South Africa and in other parts of Africa. Highlights of his career included his election as chairman of the Kissama Foundation in Angola and the restoration of the Kissama National Park in Angola in the midst of the civil war, where he was developing a wildlife



Prof Wouter van Hoven

management plan for the park and then airlifting a wide variety of wildlife, including 32 elephants, to restock the park. This was documented in a National Geographic documentary film. The Kidepo National Park in Uganda was ruined after Idi Amin and his troops stayed there while fleeing north at the end of his reign. A management plan for the wildlife and guidelines to restoration followed. The Dinder National Park in Sudan also suffered from the civil war between the north and the south and Prof van Hoven's assistance was requested by the Sudanese government to develop a Wildlife Management and Conservation plan.

In the 1980s Prof van Hoven was invited to become the head of Kollege House, a well-known men's residence on Campus. He did this for six years. He always quipped that he was asked to do the job because of his experience working with wildlife.

A year was also spent as guest professor in the Wildlife Department of Colorado State University and thereafter he was invited to join the board

of the International Council for Game and Wildlife Conservation with head office in Paris. Two years later he was elected Vice-President of this organisation. From both Europe and the USA more requests were made for wildlife management short courses in the Centre for Wildlife Management at UP. This was introduced in 2001 and since then many foreign students have been coming to UP for these courses; about 350 students will attend in 2012.

In 2007 Prof van Hoven was invited to become the first foreign Marsh Professor at the University of Vermont, USA. This is an honorary professorship at large, requiring only two weeks a year on campus having academic interaction and doing a number of lectures.

Some of the awards he received during his academic career at UP included the International Council for Game and Wildlife Conservation

Silver Medal for outstanding contributions in this field in 1994 and the Joseph R. Daly award for excellence in wildlife conservation at the United Nations in New York, from the UNDP and Wild Foundation (USA). Prof van Hoven also received the WWF Green Trust Award for Individuals in Action – for outstanding effort in the rehabilitation of the Quiçama National Park, Angola and the relocation of wildlife to the park in 2002 as well as the South African Game Association Chairman's Award for lifetime achievement for outstanding services to the wildlife industry.

His extensive publishing and research record includes: 75 scientific publications, 7 international scientific reports, 52 papers presented at international meetings, 24 popular scientific articles, 12 television documentaries, 12 chapters in textbooks, 35 MSc supervised studies completed, 8 PhD supervised studies completed, 4 MSc supervisions in progress, 3 PhD supervisions in progress, and 233 community outreach projects and extension reports completed as supervisor, team leader and/or directly.

New technique developed to determine DDT in indoor air and soil



Ms Yvette Naudé (a PhD student) and Prof Egmont Rohwer from the Department of Chemistry are isolating DDT from soil with a novel silicone rubber sampling loop

Ms Yvette Naudé (a PhD student) and Prof Egmont Rohwer from the Department of Chemistry have developed a novel technique to investigate DDT in indoor air and in soil.

The organochlorine insecticide DDT is still used for controlling the malaria mosquito in certain areas of South Africa. Traditional dwellings are sprayed on the inside with DDT. Contaminated dust inside the dwellings presents an additional pathway for exposure to DDT because dust may well be inhaled and swallowed.

Naudé and Rohwer developed a new solvent-free and therefore “green” method for the determination of DDT in indoor air and in soil. Instead of using conventional solvent extraction methods, the team uses silicone rubber in a unique way to isolate DDT from air and soil. This solvent-free technique is simple, cheap, fast, environmentally friendly and ultra-sensitive.

Furthermore, the researchers developed a one-step air sampling method to collect both gas phase DDT and adsorbed DDT on airborne dust particles, unlike conventional methods which entail two separate sampling steps. In addition, a new environmental forensic tool to evaluate commercial DDT composition was developed.

As a substitute for the present expensive methods the team devised an approach whereby conventional chromatographic equipment is used to first isolate the chiral compounds *o,p* DDT and *o,p* DDD (present as impurities in commercial DDT and in environmental samples). The isolated compounds are then analysed on a chiral column to measure their respective enantiomeric ratio. Subsequently, the team discovered that DDT/DDD ratios in indoor air and soil were unusual in that they did not match the ideal, certified ingredient composition of commercial DDT.

Naudé and Rohwer demonstrated the power of their new environmental forensic tool when they found that these unusual DDT/DDD ratios were not due to environmental degradation, but rather seemed to be the result of inferior DDT products used for indoor residual spraying, compromised with regards to insecticidal efficacy.



Grootfontein collection chamber (Photograph: Lani van Vuuren)

Pretoria's fountains still the cleanest water around

After 150 years the residents of Pretoria's central business district (CBD) are still dependent on the crystal clear waters of the fountains that have sustained the capital since the start of its existence.

A new Water Research Commission (WRC) funded project, led by the University of Pretoria (UP) aims to record the capital city's early water history and raise awareness of the role groundwater can play in large urban supply. "Through this project we hope to illustrate the role groundwater can play in meeting not only rural water demands but also urban demands," reports WRC Research Manager, Dr Shafick Adams. "Groundwater development has been placed high on the list of future water supply options for many areas, yet it remains underappreciated by the public and policy-makers alike."

The city of Pretoria was found in the immediate vicinity of an artesian water source. This source (called the Fountains to this day) is an unusually strong and consistent source (delivering 40 Ml/day) – the only water source for Pretoria from 1855 until 1935. Moreover, it yielded (and still does today) water of extremely good quality.

Pretoria is one of several cities and towns in South Africa fully or partially dependent on groundwater. Sustaining local communities for hundreds of years, the two springs in the Fountains Valley immediately to the south of the city were certainly the reason why the early white settlers, the Bronkhorst brothers, selected this site to establish their farm and eventually, why the ZAR decided to move its seat of government here. Yet, few Pretoria residents are even aware of the importance of this unobtrusive source, located in Groenkloof.

The Hydrological Heritage Overview project, as the WRC project is known, is recording Pretoria's development around its groundwater sources, including historical abstraction volumes and water quality, where available.

"Pretoria is an excellent example of the use of groundwater for urban water supply," notes project leader Matthys Dippenaar of UP's Geology Department. "For the people of Pretoria we hope that this project will create some awareness and appreciation, that they will realise just how important water – in this case groundwater – is in our lives. For fellow scientists, we aim to provide improved access to historical data." The City of Tshwane has graciously agreed to supply all available historical data and maps for inclusion in the project.

The Fountains are not the only groundwater source on which Pretoria is dependent. In general, groundwater makes up about 8% of the city's total water supply. There is also Grootfontein, whose water is pumped to the Rietvlei Water Treatment Works and mixed with treated water from the works. On the other end of the city, Sterkfontein provides water to the residents of Centurion. All the springs are still providing water of the highest quality, despite developments mushrooming around them and, as a result, do not need treatment prior to reticulation (although chlorine is added to the water before being piped).

With groundwater usually being a hidden resource, Pretoria's springs offer a rare visual glimpse of the Cinderella of water resources in South Africa. Once the project has been completed it will be made available to the public as comprehensively as possible. The project is expected to be completed in the first quarter of next year.

Anyone with anecdotes, photographs or other information about the fountains, and who would like to share them with the project team, can contact Matthys Dippenaar at Matthys.Dippenaar@up.ac.za or on 012 420 3117.

The study is managed by the WRC Manager, Dr Shafick Adams and he can be contacted on shaficka@wrc.org.za or 083 268 7945 or 012 330 0340.

CGIS receives research grant from Namibia



Dr Serena Coetzee

The Centre for Geoinformation Science (CGIS) in the Faculty of Natural and Agricultural Sciences received a joint research grant of R200 000 under the South African-Namibia Research Partnership Programme in May 2012. During the allocated two years bilateral project literature reviews, case studies, models and empirical studies will be employed to explore, describe, explain and understand the use of spatial data infrastructure (SDI) and geomatics in health care and information management in a developing country.

A major area of interest of this research project is the examination of contemporary national SDI policies, standards, regulations and geomatics applications in health and health information management. The principal investigators working on the project are Dr Serena Coetzee from CGIS and Dr Martin Hipondoka from the University of Namibia. Other collaborators are Dr Emma Nangolo, Mr Kisco Sinvula from Namibia and Mr Antony Cooper from the CSIR in South Africa. Mr Sinvula is enrolled for a PhD in Geoinformatics in the Department of Geography, Geoinformatics and Meteorology. Additional postgraduate students in the Department will be involved in the project.

The growing demand for geomatics, spatial information management and spatial data sharing across different disciplines and organisations has resulted in the development and implementation of spatial data infrastructures (SDIs), together with the theory and concepts behind them. Geomatics is a multi-disciplinary approach to collecting, storing, maintaining, analysing, presenting and distributing geographic information, i.e. information about phenomena on earth.

SDI is an evolving concept that seeks to facilitate and coordinate the exchange and sharing of spatial data and services between stakeholders from different levels in the geoinformation community. With this in mind, Namibia has embarked on a national SDI initiative with the goal that national spatial data assets are better managed and used. This has led to the Namibian SDI Act of Parliament which is currently going through the legislative procedures for approval. The Namibian SDI initiative takes the perspective that starts with an SDI at a local level and proceeds through the regional, national and global levels.

It is globally accepted that an effective and efficient health information management system plays a pivotal role in managing the rapidly increasing demand pressures on the acute segments of the health systems, as well as improving the general well-being of health information users. Furthermore, there is sufficient evidence that a spatial data infrastructure is essential for the planning, coordination and delivery of health services and facilities.

A National Health Spatial Data Infrastructure (NHSDI) is defined as a set of technologies, policies and people that promote spatial health data management, sharing and exchanging of geospatial health data at all levels of government, the private and non-profit sectors, and the academic community.

Cartography is the science and art of making a map. The processes and steps involved in the production of all types of maps are encapsulated in the term cartography. Thematic cartography is a subsection of cartography that deals in

detail with the production of thematic maps. A thematic map portrays the distribution of features, incidents or classifications related to a specific topic, such as incidents of HIV related mortality.

Thematic maps are an important source of information in an NHSDI. For example, a thematic map can show the distribution and frequency of visits to clinics. If thematic maps are prepared in different ways (e.g. the number of classes might differ), they cannot be overlaid to illustrate, for example, the difference in clinic visits between one year and another. What is needed is a (preferably standardised) description of a thematic map that facilitates thematic cartographic interoperability so that different thematic maps can be correctly interpreted when overlaid.

This research proposal builds on existing projects and collaborative work by the South African and Namibian researchers in the fields of geographical information science (GISc), SDIs and health information. The project will enable the researchers to exchange and transfer their respective knowledge, skills and experience.

Based on past research, the aim is to propose a model for an NHSDI in Namibia, which is aligned with subsector 4 "Geo-Spatial Information and Statistics" of the Innovative and Productive Usage of Technology and Research and Development goal of the Third National Development Plan (NDP 3).

This project will also aim to identify the critical success factors required in the design and development, standardisation and integration of an SDI and geomatics in the health sector of Namibia.

Community benefits from UP Moringa research

The Department of Plant Production and Soil Science, in partnership with the Innovation Hub (TIH) and BE@UP, organised a one day orchard management training workshop for the Moloto Communal Property Association (CPA) on the “miracle tree” – *Moringa oleifera* earlier this year at the UP Experimental Farm. Prof Elsa S du Toit has been leading the Moringa biofuel research focus area since 2005.

A training workshop was held to educate the community members on the socio-economic benefits of growing Moringa for its nutritional leaves and high quality seed oil. Thirty community members attended the workshop which was opened by Dr Charity Mbileni, Senior Manager for Green and Sustainable Development Projects at TIH. Prof Elsa du Toit and her postgraduate students, Mr Quintin Muhl and Mr Joseph Sithole, lectured and demonstrated cultivation practises at her established UP Moringa orchards. Social development aspects were presented by Dr Aart-Jan Verschoor. Principle project funder Blue IQ, in partnership with TIH and BE@UP,

established 30 hectares of Moringa trees in Moloto for the CPA members to apply their knowledge and skills they obtained during this training day. Gauteng MEC for Economic Development, Qedani Mahlangu, launched the Moloto Moringa project at a ceremony in February.



Prof Elsa S du Toit together with her postgraduate students and CPA members at the UP Hatfield Experimental farm Moringa orchard.

Minister from South Sudan enrolls for PhD in Food Security at UP

The Minister of Agriculture and Forestry from the Central Equatorial State (CES) in the Government of South Sudan, Honourable Minister Michael Roberto Kenyi Legge, has enrolled for a PhD in Food Security at the University of Pretoria (UP). The object of his proposed study will be to evaluate the impact of food and agricultural policies on household food security and nutrition in the CES.

Minister Kenyi graduated with a Master of Science in Food Security at the University of KwaZulu-Natal in 2011. His thesis was on “Agricultural Development and Food Security in post-conflict South Sudan”.

Minister Kenyi’s primary function is to provide planning and to ensure policy coordination and implementation in his ministry. He is also responsible for maintaining institutional relations with the international developmental communities, such as the Food and Agricultural Organisation (FAO) of the United Nations and United States Aid for

International Development, on matters relating to productivity and the effective use of resources.

Food and nutrition security remains the most fundamental challenge to the achievement of people’s general well-being and the economic growth of communities in the Central Equatorial State (CES) in South Sudan. Because of food shortages and grinding poverty, few people have access to adequate food supplies, and few are capable of utilising food effectively. For the last two decades, food and nutrition insecurity has been caused by a combination of factors, such as the disastrous effects of war, coupled with prolonged droughts and floods caused by climate instability.

With the Republic of South Sudan having emerged from war (note that hostilities are far from over, because of border disputes centering on matters concerning oil, as well as the persistent underlying religious antipathy that led to secession in the first place), Minister Kenyi acknowledged that some of the links between the CES and international developmental communities were still fragile, but that his state authorities were striving to strengthen these ties, partnering with other countries like South Africa. “Institutional setup in South Sudan still requires support in capacity building and the University of Pretoria can also be useful in helping us in institutional development and linkages within the country and with foreign countries like South Africa,” said Minister Kenyi.

Minister Kenyi said that despite its newly acquired sovereignty, the Republic of South Sudan would sustain its pre-independence ties with the University of Pretoria as initiated by the Government of North Sudan, and that he would personally engage the national Ministries of Agriculture and Fisheries in South Sudan to explore opportunities with the University to promote training, extension and exchange, as well as production techniques and research, all of which are currently non-existent in South Sudan.



Minister Michael Roberto Kenyi Legge (right) with his study leader, Prof Sheryl Hendriks, from the Department of Agricultural Economics, Extension and Rural Development and Director of the Institute for Food, Nutrition and Well-being.

Global warming could benefit potato industry

Potatoes may become one of the top staple crops.

Climate change could result in a positive outcome for the potato industry and possibly lead to potatoes becoming one of the top staple crops in the world, says Dr Jacquie van der Waals, University of Pretoria (UP) Potato Pathology Programme Manager in the Faculty of Natural and Agricultural Sciences.

She says potatoes appear to be the only crop which might thrive amid increasing carbon dioxide (CO₂) emissions.

Most crops are negatively affected, or not affected at all, by an increase in CO₂ emissions, but more potatoes are produced when the crop is faced with higher CO₂ emissions.

“As a result, we actually think the potato will (likely) become one of the top three staple crops in the world. Currently, the top three staple crops are maize, wheat and rice, with potatoes at number four, but the current top three staples will be unaffected or negatively affected by the increase in CO₂ emissions,” said Van der Waals.

However, she warns about the risk of some potato diseases increasing in intensity as a result of rising temperatures. The diseases would need to be overcome first to ensure the potato industry’s success.

The UP’s Potato Pathology Programme initiated a climate change project last year, in collaboration with other researchers at UP and the Wageningen University and Research Centre in the Netherlands. Its aim was to model South Africa’s climate between 1960 and the present and to determine how it is likely to change up to 2050, as well as the likely impact of climate change on potato diseases.

The Council for Scientific and Industrial Research provided modelled weather forecasts on which the study was based. The results of the study were compiled over the past three to four months and will be published in September. “We measured temperature and rainfall patterns to determine the likely changes in intensity of the five most common potato diseases and pests in South Africa,” Van der Waals explained.

The study concluded that South Africa’s temperature would rise by between 1.5 °C and 2 °C by 2050 in the inland regions, while the coastal areas will not warm as rapidly, owing to temperature regulation by the ocean.

In addition, it was determined that the total amount of rainfall will not drastically change, but rainfall patterns, however, will change with regard to timeframe and volume.

“The study analysed late blight, early blight, Pectobacterium and Dickeya, root knot nematodes and aphids (as vectors of Potato Virus Y) to determine whether they are likely to increase or decrease as a result of global warming. “This will enable potato farmers to adapt their management strategies accordingly,” Van der Waals stated.

The five diseases were modelled in four different climates in three different regions – the Sandveld, in the Western Cape, with its dry summers and wet winters; the Limpopo area, with its dry winters; and the eastern Free State, with its wet summers.

Van der Waals says the researchers determined that the only disease not likely to increase in intensity is late blight – a devastating disease that was responsible for the Irish Famine between 1845 and 1852. “The occurrence of late blight is likely to decrease in the eastern Free State because of the change in rainfall patterns and a rise in temperature, as it is a pathogen that likes cool weather conditions,” she pointed out. However, the other four diseases are likely to increase in intensity, as the pathogens respond to warm conditions.

“We have already started to see an increase in the occurrence of these diseases over the past ten years. Except for late blight, and in terms of all of the diseases, global warming is not a good scenario for the agriculture industry,” Van der Waals emphasised. Potato diseases can have a devastating impact on farmers, as they either affect the foliage of the plants, which affects their ability to photosynthesise, or the appearance of the tubers, which reduces the market value of the produce.

“Researchers have to find ways to manage and control the diseases to increase the plants’ resistance to them and aid farmers in producing better crops,” said Van der Waals.

The UP’s Potato Pathology Programme focuses on research management strategies to help control the potential increase in these diseases and urges farmers to look at either planting resistant cultivars or changing their management options to combat early blight, Pectobacterium and Dickeya, nematodes and aphids.

“Methods to combat the effects of global warming will not put greater financial pressure on farmers, as they will only need to employ a paradigm shift,” she concluded.

Credit to: *Engineering News*



Dr Jacquie van der Waals

Nutritional exposure and environmental sustainability of animal product intake in SA

The livestock sector is expected to provide safe, affordable and nutritious food for growing populations, offer a livelihood for producers, preserve natural resources and use them efficiently, and minimise health risk to human populations.

Towards this aim, current and relevant data is needed to guide production, processing and policy development, equip the red meat industry with the background information required to re-align consumer education projects and environmental policies, and ensure the sustainability of the livestock sector in South Africa, while contributing positively to the long term health status, well-being and food security of all South Africans.

This trans-disciplinary, cross-cutting project is researched by a team of experts within the

University's Institute of Food, Nutrition and Well-being (IFNuW), led by Prof Hettie Schonfeldt as the Principle Investigator. The rest of the team is Prof Edward Webb, Dr Beulah Pretorius and Ms Nicolette Hall from the Department of Animal and Wildlife Sciences, Prof Gerry Swan from the Faculty of Veterinary Science, and Prof Johann Kirsten from the Department of Agricultural Economics and Rural Extension. They aim to determine the contribution of red meat to the exposure of nutrients and anti-nutrients of South Africans and how this relates to the impact of the red meat production on the environment, simultaneously training postgraduate students.



We need nutritious food for growing populations.

South Africa is faced with a double burden of disease, including nutritional deficiencies and infectious diseases such as TB and HIV and the increasing prevalence of chronic diseases, such as cardiovascular diseases, certain cancers, diabetes and coronary heart disease. The link between nutrition and chronic malnutrition is known, but specific nutrition information (such as portion sizes and food intake) is required to improve and establish more correct correlations – both between the intake of nutrients towards achieving recommended daily amounts and the intake of anti-nutrients and excessive amounts of nutrients in terms of risk exposure.

POL-SABINA rain shelter officially opened

All roads led to the TRFCA Mimosa research station at the foothills of the Mulanje Mountains in Malawi in May 2012 where several members from the SABINA/POL-SABINA network gathered to witness the official handover of the POL-SABINA rain shelter.

This event marked the culmination of years of hard work and commitment from several dedicated role players. These role players include professor Apostolides (University of Pretoria), Mr Andrie Lombard (Consulting Engineer), Dr Albert Changaya and his team (Tea Research Foundation of Central Africa (TRFCA)), Ms Ella Nyakunu (POL-SABINA Project Manager) and especially Dr Morris (African Centre for Gene Technologies) who motivated for and obtained the funding necessary to execute this project. The project was funded by the European Union as part of the African, Caribbean and Pacific group of states Science and Technology Programme (ACP S&T).

The occurrence of droughts in several parts of the world has led to devastating consequences in agricultural production and it has become clear that the development of drought tolerant cultivars for all crops is necessary. The Malawi rain shelter is a framework with a movable roof covered with transparent sheets. The roof is controlled by an electric motor which allows

one to automatically adjust the setting from allowing water in to keeping water out, thereby controlling rainfall and permitting on-demand droughts for research and the development of prospective drought-tolerant cultivars. Hence, the rain shelter is a facility for growing quantities of test plants under controlled conditions so as to demonstrate their qualities to farmers and agro-industries.



POL-SABINA rain shelter

Although situated at the TRFCA, the facility is not just for tea research but also for researching other plants including medicinal herbs investigated by other SABINA partners. Once the plants are grown the next phase is to process them and extract the active ingredient(s). This is where the participation of the CSIR comes in, since the CSIR is equipped with a GMP

botanical supplies unit which can process pilot quantities of plant material to provide plant extracts for further testing and investigation.

As part of the POL-SABINA initiative, open days will be held at both this new rain shelter facility and at the CSIR in Pretoria. Farmers, entrepreneurs and the general public will be able to gain a better understanding of the potential of natural products and of the work being undertaken within the SABINA network. The attendees at the open days will be provided with opportunities for discussion and questions, and it is hoped that this will stimulate more awareness of the potential for the commercialisation of research projects.



Laser demonstration by the University of Stellenbosch



Scholars and delegates judging the physics demonstration competition



Prof JH van der Merwe (90) became a fellow of SAIP with SAIP President, Prof Simon Connell (right).

Hot topics discussed at 57th Physics conference

During the annual conference of the South African Institute of Physics (SAIP) this year the Higgs boson-like particle, a very interesting topic, was discussed. The first recipient of the prestige De Beers Gold medal was also honoured at the same event.

The Physics Department in the Faculty of Natural and Agricultural Sciences at the University of Pretoria (UP) hosted the 57th annual conference of the SAIP from 9 to 13 July 2012 with 550 delegates from South Africa and about 40 delegates from countries worldwide.

A special session was organised on 11 July to hear representatives of the SA-CERN collaboration discuss the latest results of the discovery of a Higgs boson-like particle. This experimental evidence gives credence to Peter Higgs's theory whereby the mass of fundamental particles is described by their interaction with a Higgs field. At the same conference, at the opening night, the Minister of Science and Technology, Mrs Naledi Pandor, opened the conference and reflected on the exciting times for physics in SA. The recent Square Kilometre Array (SKA) announcement and the Higgs boson-like discovery both created much excitement in the community.

The conference was preceded by a historic Astronomy Town Meeting, which brought together almost a hundred astronomers to discuss the opportunities and challenges facing this community. This was led by Prof Nithaya Chetty (UP), seconded to the NRF as Group Executive responsible for Astronomy.

Ms Elsabe Brits, from Media 24 (*Die Burger*), addressed the conference on the interaction required between scientists and the media, so that their results can get the publicity required. A special lecture demonstration competition was also held and this was judged by a group of learners from the UP with Science and JuniorTukkie programmes. More than a hundred learners speed-dated a group of physicists before participating in this event. Visit <http://indico.saip.org.za/conferenceDisplay.py?confId=14> for full details of the plenary speakers and programme.

At the conference banquet, previous winners of the De Beers Gold medal were made fellows of the SAIP and it was a special honour to have the 1984 winner there – Prof Jan van der Merwe (UP), recognised for contributions to the Theory of Epitaxial Growth.

UP: a proud partner of Global Young Academy

With a programme headlined by the South African Minister for Science and Technology, the Editor-in-Chief of *Science* magazine and other luminaries, the Global Young Academy (GYA) recently completed a very successful General Assembly meeting at the University of Pretoria's Gordon Institute of Business Science (GIBS). The University of Pretoria (UP) is extremely proud to be associated with GYA, as Prof Bernard Slippers, an Associate Professor in the Department of Genetics and the Forestry and Agricultural Biotechnology Institute (FABI) at the Faculty of Natural and Agricultural Sciences, is one of the Co-Chairs.

The meeting, held from 20 to 23 May, included 80 young scientists from 40 countries, distinguished senior scientists and science administrators from around the world. With the theme "Sustainability: Lessons on the road between Rio and Rio+20," the conference focused on concrete actions

young scientists can take to advance a sustainable future. Additionally, the meeting included the founders and founding members of the South African Young Academy of Science (SAYAS), who convened an inaugural meeting to participate in the GYA assembly. Five

leading young researchers from the University are also Founding Members of SAYAS, of which three are from the Faculty of Natural and Agricultural Sciences. They are Prof Bernard Slippers (FABI and Department of Genetics), Prof Andrew McKechnie (Department of Zoology and Entomology and a core team member of the DST/NRF Centre of Excellence at the Percy FitzPatrick Institute) and Prof Mathieu Rouget (Department of Plant Science). The other two UP members are: Prof De Wet Swanepoel from the Department of Communication Pathology (Faculty of Humanities) and Prof Rangan Gupta

from the Department of Economics (Faculty of Economic and Management Sciences).

Minister Naledi Pandor reminded delegates that "Rio+20 is a historic opportunity to define pathways to a sustainable future – a future with more jobs, more clean energy, greater security and a decent standard of living for all." Young scientists have a particular responsibility towards this, and much of this lies in the arena of engaging with the wider society and policy makers to promote an understanding of what is needed to achieve the goals of sustainability. Other speakers provided examples of how this goal can be accomplished.

Prof Howard Alper (co-chair of the IAP: Global network of Science Academies and GYA Board Member) remarked: "Challenges of clean water and electricity for all are no longer a scientific challenge, they are a leadership

challenge." He pointed out to the critical role that University-Industry partnerships can play in influencing leadership on these issues. Prof Helmut Schwarz (President of the Alexander von Humboldt Foundation and GYA Board Member) strongly promoted a focus on excellence and interconnectedness in the scientific community to build the capacity needed to confront the complex global challenges. His call to "fund excellent people, and fund them long term" resonated with the attendees.

Prof Bruce Alberts (Editor-in-Chief of *Science* magazine and GYA Board Member) made a strong call to scientists to get more actively involved and to care deeply about science education. "The future of the world depends on it," he said. Current approaches that are focused on simply transmitting lists of facts can bore children and do not promote an understanding of how science works and what its value to society is. This needs to change urgently and scientists have a responsibility to get involved in changing educational approaches and perceptions.

GYA members also exchanged their latest scientific results, including new discoveries and insights in quantum materials, open source information, green materials and genetic analysis. These science sessions drove the formation of new, interdisciplinary collaborations.

The General Assembly meeting took place at

GIBS in Illovo.

The Centre's outstanding conference facilities supported the conference's goals. For example, a professional media studio was used to record short web videos promoting the GYA's goals, such as establishment of national young academies around the world. The

GIBS atmosphere of friendly camaraderie and international collaboration supported the GYA's goals and the meeting.

During the last day of the General Assembly, GYA members elected new leadership, which included Prof Rees Kassen of Canada and Prof Bernard Slippers (who was re-elected) to serve as Co-Chairs.

Learn more about GYA at: <http://www.globalyoungacademy.net/>



Prof Gregory Weiss, University of California (Irvine), USA, previous co-chair of GYA and Prof Bernard Slippers (UP). The new co-chair is Prof Rees Kassen, University of Ottawa (Canada).

UP Malaria researchers commemorate World Malaria Day



Members of the UP CSMC with invited international speakers. From the left: Bianca Verlinden (PhD student and Coordinator: UP CSMC Student Forum); Prof Brenda Eskenazi (University of California, Berkley), Prof Riana Bornman (UP CSMC), Jonathan Chevrier (University of California), Prof Lyn-Marie Birkholtz (UP CSMC) and Prof Richard Hayne (Hong Kong University of Science and Technology and North West University).

Scientists at the University of Pretoria (UP) Centre for Sustainable Malaria Control (UP CSMC) commemorated World Malaria Day on 25 April with the motto 'Sustain gains, save lives: Invest in Malaria' in an effort to raise awareness for the fight against malaria.

Malaria is currently under control in South Africa but this control is very fragile due to the limited affectivities of our medicines and insecticides as well as leaky borders with neighbouring states from where malaria is imported. The UP CSMC is a multidisciplinary group of scientists from various faculties within the University (Institutional Research Theme) who combine their expertise in efforts to develop new and sustainable malaria control methods. Scientists from a number of departments in the Faculty of Natural and Agricultural Sciences are members of UP CSMC, including founding members from the Department of Biochemistry and newly joined members from the departments of Chemistry and Plant Sciences.

Internationally distinguished speakers were invited to share their expertise with members of UP CSMC, colleagues and students. Prof Richard Haynes (Department of Chemistry, Hong Kong University of Science and Technology, China) is currently a visiting Professor to the University of North West. Prof Haynes is a world leader in anti-malarial drug discovery and provided a

perspective on the artemisinin compounds isolated from traditionally used Chinese herbs, Qing Hao, as antimalarial drugs. From the treatment of malaria, discussions then moved to health related issues with Prof Brenda Eskenazi (Maternal and Child Health and Epidemiology, Director of the

Centre for Children's Environmental Health Research, University of California, USA)

introducing the possible detrimental effects of indoor residual spraying for mosquito control on childhood development. Prof Eskenazi is currently working with Professors Bornman and De Jager (Health Science Faculty, UP) on a study of this kind in Venda.

The World Malaria Day commemoration activities were organised by the UP CSMC Student Forum. This is a first-of-its-kind forum

which aims to develop an interactive platform for shared student activities within UP CSMC, mediate trans-disciplinary research activities between students within UP CSMC and allow cross pollination between various research topics on malaria at the University.

Malaria is a particularly important disease to various communities in South Africa and has devastating effects in other African countries. The UP CSMC intends to contribute world-class expertise in addition to fostering the next generation of researchers to continue the fight against this disease. Read more about the Centre at www.malaria.up.ac.za



Malaria is transmitted among humans by female mosquitoes.

Animal geneticist visits UP

Dr Eildert Groeneveld from the Institute of Farm Animal Genetics, Friedrich Loeffler Institute (FLI) at Mariensee, Germany, visited the Department of Animal and Wildlife Sciences during May.

He presented a lecture on SNP (single nucleotide polymorphism) data use and storage.

Dr Groeneveld is a quantitative breeding specialist and consults the pig breeding industry in Europe and the USA. He has developed various programs that are applied worldwide in quantitative animal breeding for estimation of genetic parameters and breeding values.



From the left: Prof Edward Webb (Head of the Department of Animal and Wildlife Sciences), Dr Carina Visser, Dr Eildert Groeneveld, Prof Este van Marle-Koster and Dr Japie van der Westhuizen.

Economic Report on Africa launched at UP

“Unleashing Africa’s potential as a pole of global growth” was the topic addressed at the Brown Bag seminar of the Postgraduate School of Agriculture and Rural Development (PGSARD) and the Public Policy and Governance Platform held in June 2012 at the University of Pretoria.

Dr Adam B Elhiraika, the Chief of the Macro-economic Analysis Section of the United Nations Economic Commission for Africa (UNECA), was the keynote speaker and also officially launched UNECA and the African Union Commission’s ECA Report on the Economic Commission for Africa for 2012.

Some of the key messages in the report included the fact that the world economy has slowed due to increased risks and uncertainties in 2011, and Africa is expected to feel the impact of the crisis through trade and capital flow channels in the short term. But improved domestic economic governance, stronger relations with emerging economies and the outcome of global economic rebalancing could open new opportunities for Africa’s long-term development. Indeed, Africa’s positive growth trend is poised to maintain a solid pace in the medium term, thanks to increased export gains (due to higher commodity prices and strong export demand) and buoyant domestic demand (arising from public investment spending, increased agricultural production, better economic management and strong recovery of capital and investment inflows).



Front: Ms Thinah Moyo, Ms Nandi Mkunqwana and Dr Ward Anseeuw.
Back: Mr Elvis Mtonga, Prof Charles Machethe, Dr Adam B Elhiraika and Mr Ravi Naidoo.

This said, numerous domestic and external financial resources available to African governments have not yet been fully realised, resulting in a gap between the current and potential mobilisation of financial resources. African governments have begun to strategize how to tap into new sources of financing, and many policy options exist to unlock them.

Furthermore, the report indicated that the African growth resurgence in an environment of improved economic management, good governance and control of corruption, as well as Africa’s resilience to the global economic and financial crisis, have shown to African leaders, institutions, development partners and other stakeholders that future world growth will depend on harnessing both the productive and untapped consumer demand of Africa.

Dr Elhiraika coordinates the Commission’s key annual flagship publication (the ERA) and co-coordinates the *African Economic Outlook*, a joint annual publication of the African Development Bank, United Nations Development Programme, OECD and UNECA. Before joining the United Nations, he was a Research Economist at the Islamic Development Bank (Saudi Arabia), Associate Professor of Economics at the United Arab Emirates University, Senior Lecturer at the University of Swaziland (Swaziland) and the University of Fort Hare (South Africa) and Assistant Professor of Economics, University of Gezira (Sudan). Elhiraika has a PhD in Economics from Glasgow University, UK (1991), an MA in economics from the University of Kent at Canterbury and several publications in internationally refereed journals as well as monographs and books.

The objectives of these Brown Bag seminars are to enhance debate on issues related to rural and agricultural development. Presentations include policy documents, final and intermediary research findings and discussion papers.



Renowned astronomer visits Mathematics Department

The Department of Mathematics and Applied Mathematics recently had the privilege of hosting the internationally renowned astronomer, Prof David Block, as a speaker. It proved to be a memorable occasion as anticipated. David Block has been featured on BBC television, is an explorer of the cosmos and is someone who encourages audiences around the world to “always look up, and never give up”! He is regularly interviewed on Radio 702, M-Net and other television stations. He has spoken at many conferences and has been interviewed in the United States, Europe and Australia.

The topic “Our universe: Accident or Design?” drew intense interest and Prof Block did not disappoint. He charmed, educated, entertained and wowed a packed audience. The presentation was both an intellectual and visual feast. Colour photographs showed planets, nebulae, stars and galaxies – including some of the most distant objects discerned in the universe. Professor Block probed the meaning of the immensity and complexity of the universe and explored the evidence for design.

One of the many appreciative responses says it all:

“I can say without hesitation that it was the most significant lecture I have ever attended – and I have heard many scholars at conferences in Europe and Britain. I appreciate the sheer magnitude of intellect, the synthesis of theories and philosophies spanning centuries, and the strength and honesty of reasoning displayed in your presentation.”

The morning was concluded in the luscious mathematics garden where guests could experience the hospitality of the Department and meet Prof Block in person.



Prof David Block



Staff members of the Faculty of Natural and Agricultural Sciences Learners explaining the different study opportunities and careers in science.



Learners at the Grade 9 Open Day attending the exhibitions of all the different departments in the Faculty of Natural and Agricultural Sciences.

Grade 9 Open Day benefits learners and teachers

Learners need to be exposed to the various possible future study and career options so that they will be able to make informed choices when they select their subjects for Grade 10. The Faculty of Natural and Agricultural Sciences is very aware of this reality and therefore hosted its third Grade 9 Open Day on 27 July this year.

More than 400 learners from 16 schools, including schools from Pretoria, Mamelodi, and Eersterust, and even as far as Bethlehem, attended this informative day.

The activities kicked off with the Dean of the Faculty, Prof Anton Ströh, welcoming the learners and teachers to the University. He emphasised the importance of choosing the right subjects in order to pursue a fulfilling career and expressed the hope that all learners present would become future Tukkies.

Ms Samantha Pretorius, a lecturer in the Department of Insurance and Actuarial Science, gave an overview of the different study programmes and the entry requirements for the respective degrees in the Faculty. Mr Petrus Lombard from the JuniorTukkie programme showed a DVD to the learners, explained how the programme works and discussed the benefits of being a JuniorTukkie.

Mr Mmatlou Kalaba from the Department of Agricultural Economics, Extension and Rural Development was the master of ceremonies and also gave an interesting talk on career possibilities in the agricultural and related fields. Prof Chris Theron, Head of the Physics Department, explained some interesting developments in the world of physics. In her enthusiastic presentation, Ms Immaculate Zinde from Potatoes South Africa also encouraged the learners to consider a career in the agricultural sector and highlighted the many scarce skills currently in this sector.

All the different departments of the Faculty of Natural and Agricultural Sciences exhibited, and learners had the opportunity to browse through the exhibitions and gather more in-depth knowledge of the different departments.

Running simultaneously with the learners' programme this year, was a workshop for Mathematics, Physical Sciences and Life Orientation teachers from the schools concerned.

The highlight of the day was the science show by members of Sci-Enza, the University's own science centre, where they amazed the learners with their interesting experiments.

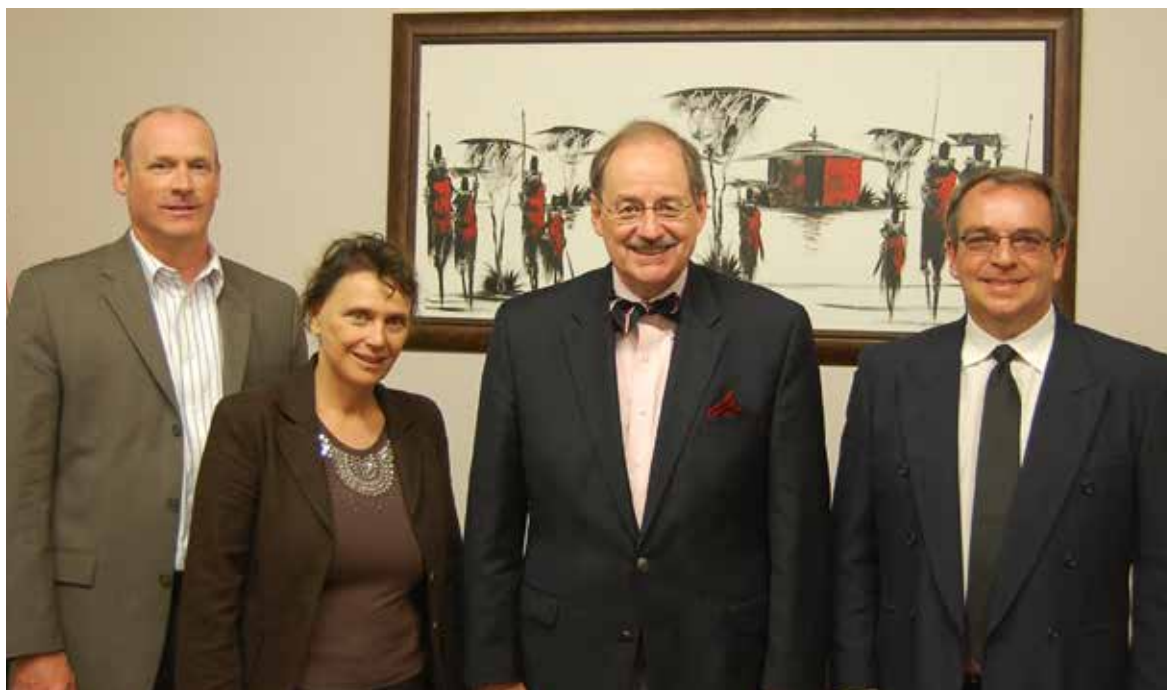
International expert speaks on ethical issues in water industry

Dr Jerome Delli Priscoli, Senior Adviser of the United States Army Corps of Engineers (USACE) at the Institute for Water Resources recently delivered an address at an open lecture hosted by the UP Water Institute. The lecture, entitled "Navigating Rough Waters – Ethical Issues in the Water Industry" was very topical and relevant.

Dr Priscoli is a senior adviser of the USACE at the Institute for Water Resources. He has designed and run social assessment, public participation and conflict resolution research and training programmes for 30 years. He is a skilled mediator and facilitator and works throughout the world. He serves on the Board of Governors and the Bureau of the World Water Council, the Inter-American Water Resources Network and works with and has helped found several other world associations, such as the International Association for Public Participation, the World Water Council and the Global Water Partnership. Dr Delli Priscoli has also been adviser to the World Bank on water policy and to all of the UN water-related agencies on water policy issues. He works closely with many of the water ministers throughout the

world and was an original member of the US delegation to the Middle East peace talks on water. He was also Co-Chairman of the DG of UNESCO's World Commission on Water and Freshwater Ethics. Dr Priscoli is the author of many articles and books, including *Water and Civilization*, and a new volume from Cambridge University Press, *Transforming Water Conflicts*. He is a commentator on media programmes and is the Editor in Chief of the peer-reviewed journal *Water Policy*.

He has played pivotal roles and facilitated many of the dialogues among diplomats and NGOs in each of the five world water forums and in most of the critical key water resources policy meetings over the last 15 years. He was on the international steering committee and the political committee of the WWF5 in Istanbul and has facilitated many US national water policy dialogues. The American Water Resources Association awarded him the Icko Iben award for achievement in cross-disciplinary communications in water. He holds degrees in economics and political science and a postdoctoral degree in theological studies from Tufts and Georgetown universities.



Mr John Griffith (Environment, Science and Technology Officer, US Embassy), Prof Rivka Kfir (Honoray Professor: UP Water Institute), Dr Jerome Delli Priscoli and Prof Hannes Rautenbach (Head of the Department of Geography, Geoinformatics and Meteorology and acting Head of the UP Water Institute).



Plant Pathology students visit Bayer Crop Science

Plant Pathology students on the Bayer Crop Science farm in Krugersdorp

Community Engagement

An excited group of undergraduate and postgraduate students from the Department of Plant Pathology had the opportunity to visit Bayer Crop Science in Krugersdorp earlier this year, where they attended informative presentations about the company, its origin, current projects and future prospects. Various demonstrations such as chemical compatibility tests, seed treatments, spraying techniques and field trials illustrated the importance of the research conducted on the premises.

Comments from students who attended the trip:

“The distinguishing and characteristic trait that separates Bayer from other companies is that they ask critical questions such as: How can they provide food to more people without damaging the environment? How they can prevent plant diseases? and How they can develop new materials to help us conserve resources?”

“Bayer has repositioned itself to provide better answers to all of these questions.” Quinton Volschenk

“The lecture was an eye-opener and gave me a better idea of how complex the developmental and testing processes actually are.” C.J. Smith

“On a personal note, it is refreshing and also motivating to see professionals in their work place so enthusiastic and elated with their jobs. The plant pathologist’s work is both challenging and time consuming, but at no point did the scientists seem to be deterred or negative toward the forthcoming challenges. Seeing this

strengthened my motivation to become a plant pathologist.” Christopher Slabbert

“The trip opened my eyes to a new field I never experienced. I am very glad that I am studying science. This is the type of work I want to do for the rest of my life.” Hyun-Sul Jung

“The excursion was informative and it was interesting to learn how plant pathology can be applied and practiced in a non-academic environment, especially for undergraduate students who have only been exposed to the academic side.” K.S. Botha

“It was a very interesting and enjoyable day. I never realised Bayer operated across such a wide variety of products. I surely did not

know they are the producers of Zam-Buk and Rennies. I had always only associated Bayer with agriculture. I have much more respect for chemicals now that I know how much work, money and time is involved in finding new chemicals for us as consumers. It was also comforting to know that a company as large as Bayer also has to fight the elements during trials, and not just us as students. All the people at Bayer were very friendly and willing to answer all our questions in detail. It was also very interesting to hear about all the opportunities in the industry and specifically their company. The opportunity the company creates in order to give students a chance to get some experience is highly appreciated and will definitely be kept in mind.” Susan du Raan



Plant Pathology students on the Bayer Crop Science farm in Krugersdorp

SA Actuaries Development Programme making strides

It is almost two decades into our democracy, and career options such as the actuarial profession still seem to be relatively unknown in the previously disadvantaged communities in South Africa. It was with this in mind that the South African Actuaries Development Programme (SAADP) invited top Mathematics and Science learners to a talk on the profession.

This talk was held at the University's Hatfield Campus on Saturday, 26 May 2012 and was attended by some 100 top learners from different schools from Pretoria.

The SAADP seeks to actively address the problem of the acute shortage of actuarial skills among the previously disadvantaged communities in South Africa. This Programme is being run at three universities in South Africa and

Since its inception in 2003, and working together with the universities, the SAADP has produced over 90 graduates. Eight have since fully qualified as actuaries and many others of these actuarial professionals will be qualifying shortly. At the University of Pretoria, this Programme has so far produced four graduates. One completed her BSc in 2009 and the other three in 2011. "The SAADP family is proud to announce that one of the three senior students, Fhatuwani Nemakhavhani, graduated cum laude," says Mrs Lehobo.

Talking about the UP Programme, Ms Nokwanda Mkhize, the SAADP Executive Director said: "We are very pleased with the strides that the Programme is making at UP. We also acknowledge that this has been an effort by all parties involved. The Faculty executives, the team in the Dean's



Learners attending the talk on the actuarial profession as a possible career

has been running at the UP Department of Insurance and Actuarial Science since 2009.

At the talk it was explained to the learners that they need to fulfil both the University's and SAADP's requirements to be considered for the Programme. One of the criteria is that they must be accepted by one of the participating universities. After a thorough selection process, the learners who are selected to participate in the Programme will be offered comprehensive university bursaries. They will also be exposed to academic and emotional support structures that will help them cope with their university studies.

Office and the staff from the Department of Insurance and Actuarial Science have all been very instrumental in making the SAADP the success it is to date."

The SAADP team is looking forward to making more positive contributions to the University and to welcoming some of these prospective Actuarial Science students to UP next year. For more information on the SAADP, please contact Mrs Lehobo on 012 420 6664.

Mathematics hosts second Teach to Reach workshop

The Department of Mathematics and Applied Mathematics hosted its second Teach to Reach Workshop during July this year.

Twelve speakers presented their take on different aspects of teaching. Speakers ranged from young to experienced, from quirky to more serious and the variety of approaches was enjoyed by all. It was especially remarkable how well the junior staff members acquitted themselves and how much others could learn from them.

The topics discussed at the workshop included: Student evaluations, Large group practices, Young academic experiences, SI Leader experiences, Technical aspects and practices in marking and handling of scripts as well as Work ethics.



Prof Jean Lubuma (HOD) and Prof Bharti Temkin

The workshop was an excellent demonstration of the commitment of the Department towards some of the strategic goals of the University within its strategic plan for 2025.

Guests from outside the department, Prof Wendy Kilfoil and Prof Bharti Temkin, expressed their appreciation for the initiative and commented on the remarkable coherence of such a diverse department. Prof Kilfoil said "I appreciate the mix of innovation and practical, day-to-day guidance."

Mathematics part of "Take a girl child to work" day



From left: Nicole Poneis and Resego Matshego (Pretoria High School for Girls), Megan Annandale (St Mary's Diocesan School for Girls) and Prof Lou Pretorius (Department of Mathematics and Applied Mathematics).

Three girls from neighbouring schools visited the Department of Mathematics and Applied Mathematics on the annual "Take a Girl Child to Work Day". The girls were given the opportunity to have hands-on experience of academic life at a university, discuss career options and have lunch with some members of the Department.

The annual Take a Girl Child to Work Day took place on Thursday 31 May 2012. The girls were introduced to several staff members as well as

to the Deputy Dean of Teaching and Learning, Prof Johann Engelbrecht. Mrs Ezanda Dreyer organised the event and acted as host for the day.

The academic activities proceeded with an exposition of career options by Madelein Basson, describing both the more standard options as well as exciting off-beat options. This talk was followed by discussions on options in specific areas of mathematics – Prof Roumen Anguelov

on Biological Application in Mathematics, Prof Izak Broere on research in Mathematics, Dr Rodwell Kufakunesu on Financial Mathematics and Ms Samatha Pretorius on Actuarial Mathematics. Prof Kerstin Jordaan enlightened the girls on study programmes and subject choices and Ms Ania Ostaszewicz gave students a taste of the campus and student life. The girls concluded a busy morning with a relaxed lunch in the company of staff members.