# 2011

University of Pretoria

Research Report

# RESEARCH



# 2011

University of Pretoria Research Report

#### Mission

The mission of the University of Pretoria is to be an internationally recognised South African teaching and research university and a member of the international community of scholarly institutions that:

- provides excellent education in a wide spectrum of academic disciplines;
- promotes scholarship through:
  - the creation, advancement, application, transmission and preservation of knowledge;
  - the stimulation of critical and independent thinking;
- creates flexible, lifelong learning opportunities;
- encourages academically rigorous and socially meaningful research, particularly in fields relevant to emerging economies;
- enables students to become well-rounded, creative people, responsible, productive citizens and future leaders by:
  - providing an excellent academic education;
  - developing their leadership abilities and potential to be world-class, innovative graduates with competitive skills;
  - instilling in them the importance of a sound value framework;
  - developing their ability to adapt to the rapidly changing environments of the information
  - encouraging them to participate in and excel in sport, cultural activities, and the arts;
- is locally relevant through:
  - its promotion of equity, access, equal opportunities, redress, transformation and diversity;
  - its contribution to the prosperity, competitiveness and quality of life in South Africa;
  - its responsiveness to the educational, cultural, economic, scientific, technological, industrial, health, environmental and social needs of the country;
  - its active and constructive involvement in community development and service;
  - its sensitivity to the demands of our time and its proactive contribution towards shaping the future;
- creates an intellectually stimulating and culturally vibrant, pleasant and safe environment in which its students and staff can flourish; and
- is committed to effective, efficient, caring and innovative approaches to teaching, research
  and community service, client-centred management and administration, and good
  governance.

## Research Report 2011

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## Message from the Vice-Chancellor and Principal

Research and the development of research capacity are defining features of the University of Pretoria's vision and mission. Therefore, it is pleasing to report that in 2011 the University continued to make a significant contribution to the national research output of South Africa. In addition to the large number of publications reflected in this report, an especially pleasing outcome is that over 200 doctoral degrees were awarded; the highest number for any single South African university.

In a developing country like South Africa, it is perhaps especially important that research activities at universities give focused attention to research training. The year 2011 showed continued growth in the enrolment and graduation of master's and doctoral students. Close to a third of the University's almost 45 000 contact students were postgraduates with approximately half of these were graduates of other universities, thus indicating that the University of Pretoria is a university of choice for postgraduate study. Creating an enabling environment for high-quality scholarship is of the utmost importance in the University's strategy. By the end of 2011, the University had completed a number of major infrastructure developments, including a new Engineering Complex. (Engineering is one of the areas in which the University of Pretoria enjoys national and international prominence.) A new Knowledge Commons and Library Centre, partially funded by a grant from the Carnegie Corporation, was also officially opened in 2011. Almost immediately after opening, it became a hub for the growing numbers of postgraduate students.

It is very pleasing to note that many of the University's academics and postgraduate students distinguished themselves in 2011 by winning several awards and accolades. Notable too, is that there was a marked increased in the number of researchers rated by the National Research Foundation (NRF) and the proportion of high-impact publications increased.

The achievements showcased in this report are due to the commitment and hard work of the University's staff and students and I wish to express my sincere appreciation for their efforts in ensuring that the University of Pretoria continues to be counted among South Africa's leading universities. On behalf of the entire University community, I also wish to thank Prof Robin Crewe, who was the Vice-Principal responsible for research and postgraduate studies for many years. Prof Crewe continues to provide outstanding leadership at the University as the Vice-Principal responsible for all faculties. Prof Stephanie Burton took office as Vice-Principal for Research and Postgraduate Education from April 2011. She has already demonstrated that she will make a marked contribution to the future success of the University.

Thank you too to the many donors, sponsors and agencies who fund the University's research through postgraduate scholarships, equipment and research grants. New large capital projects were funded in part by grants from the Department of Higher Education and Training and the Carnegie Corporation, and we are most grateful for these grants. Without additional support to complement the annual subsidy allocations from the Department of Higher Education and Training, the research outputs reflected in this report would not have been possible.

By the end of 2011, the University Council had approved the University's new long-term strategy, UP 2025, which will give increased impetus to ensuring that the University of Pretoria builds on its past achievements to make an even greater impact in the future.

Prof Cheryl de la Rey Vice-Chancellor and Principal



# 1.2

# Message from the Vice-Principal: Research and Post-graduate Education

In offering an overview of research at the University of Pretoria during 2011, this report demonstrates the achievements of the University's academic community and elucidates certain new developments. During 2011, the University continued to make a significant contribution to the total national research output and to improve the proportion of its research publications that are cited internationally.

The University's strategic plan, which has guided research since 2006, concluded at the end of 2011, and much attention was paid to the development of new strategic directions for research, which are aligned with the development of the broader academic plan that will take the University up to the year 2025. Renewed focus is being placed on the importance of research outputs in enhancing the international reputation of the University and on the need to expand its research productivity.

The new developments in research at UP are reflected in this report, which highlights, among other features, the University's progress in following the international trend of interdisciplinary research and addressing global challenges through the initiation of institutional and faculty research themes. These themes link multidisciplinary research groups through collaborative participation. The themes were developed on the basis of recognising and fostering excellence in research, and are led by recognised international leaders. They will contribute to the enhancement of the University's research reputation by providing an enabling environment for the growth of scholarship among academic staff, postdoctoral fellows and postgraduate students.

The University's research makes excellent, internationally recognised contributions in the fields of veterinary science, agricultural and biological sciences, engineering and social sciences (as reflected in international databases), and its institutional research themes are aligned with these strengths in the focus areas of animal and zoonotic diseases, energy, food and nutrition, and genomics. The faculty research themes are based on specific areas of expertise, and include the control of malaria, molecular medicine, and international law. The University's current research themes and the progress that has already been made are described in later sections of this report.

Research at the University of Pretoria encompasses a very broad range of disciplines across its nine faculties and one business school, and more than 60 research institutes, centres and units. The Deans' reports give accounts of the research highlights in each faculty, and selected research centres are featured to give a sample of the relevance and expertise of research at UP. The University continues to build and strengthen its relationships with South African industry through research collaborations and contracts, and the establishment of industry-funded research chairs with many major companies as industrial partners.

During 2011, the University bade farewell to the former Director of Research and Innovation Support, Mr Dhesigen Naidoo, and we thank him for his contribution. I would also like to thank the staff of the Department of Research and Innovation Support for the valuable work that is being done to support the research initiatives and developments illustrated in this report.

Prof Stephanie Burton Vice-Principal: Research and Postgraduate Education

# Research overview

The University of Pretoria's research performance for 2011 clearly indicated steady progress in research productivity and confirmed its standing in the top tier of South African research universities. The number of NRF-rated researchers at the University was the highest ever and the research outputs showed an upward trend. Additional highlights for 2011 include the establishment of the Institutional and Faculty Research Themes which advance inter- and intra-faculty multidisciplinary research programmes at the University. Industry partnerships have strengthened and so have the University's international collaborative research programmes. With the solid foundation set in the concluding year of its 2006–2011 strategic plan, the future growth of research and innovation at the University of Pretoria is promising.

In order of prominence, the University of Pretoria's most evident research strengths, as measured by the Thompson Reuters ISI Web of Science Index, are as follows:

- Agricultural and Biological Sciences
- · Medicine
- Engineering
- Biochemistry
- Genetics
- · Molecular Biology
- · Plant and Animal Sciences
- Environmental Science
- · Earth and Planetary Sciences
- Computer Sciences

In 2011, the largest number of research publications was produced in the fields of agriculture and related fields (17%), engineering (10%), health (15%), physical sciences (12%), and philosophy and theology (12%). Other areas in which the University performed extremely well were in veterinary science, engineering, computing and the social sciences.

The University of Pretoria's research outputs increased to 1187.46 units recorded in 2011. These units included 1087.93 units for publication in internationally and nationally accredited research journals, 23.63 units for books and chapters, and 75.90 units for published conference proceedings.

Table 1: Research output units earned per faculty for articles published in accredited journals

Faculty	2010	2011
Economic and Management Sciences		65.5
Education	41.07	43.95
Engineering, Built Environment and Information Technology	145.82	209.2
Health Sciences	153.96	153.97
Humanities	115.68	129.06
Law	69.83	77.74
Natural and Agricultural Sciences	295.55	299.22
Theology	108.75	111.55
Veterinary Science	83.74	83.79
Gordon Institute of Business Science	9.33	9.77
Support services and other departments	3.5	3.72
Total units	1 087.93	1 187.47

#### NRF ratings

The number of NRF-rated researchers at the University of Pretoria has surpassed the 300 mark and continued growth is foreseen in the number of rated researchers at the University in coming years.

Table 2: NRF-rated researchers of the University of Pretoria

YEAR	TOTAL
2010	283
2011	305

#### Patents and licences

The University remains committed to ensuring that research and innovation outcomes are converted into economically viable products and services or sustainable social outcomes, wherever possible. In addition to external markets, research at the University also focuses on developing technologies to complement the operations of the University, especially in its teaching and research programmes.

The number of invention disclosures for 2011 increased significantly with a total of 21 disclosures, a marked increase from nine in 2009 and 15 in 2010. Four new licensing agreements were concluded to commercialise technologies developed in the faculties of Natural and Agricultural Sciences, Engineering, Built Environment and Information Technology, and Veterinary Science. This bodes well for further success in the commercialisation of the University's research.

#### Funding for research

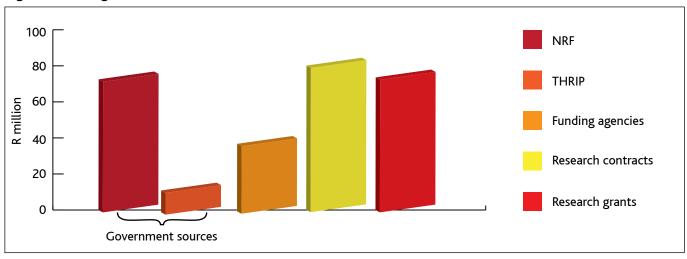
In 2011, the University's researchers were successful in obtaining approximately R387,2 million for research and development projects.

#### **External funding**

Approximately R287 million in research funding was sourced from external national and international sources and a breakdown of external funding is as follows:

- R88,1 million from government sources other than the Department of Higher Education and Training. This includes R75,5 million from the National Research Foundation (NRF) and R12,6 million from the Technology and Human Resources for Industry Programme (THRIP)
- R39 million from funding agencies
- · R83,3 million from research contracts
- · R76,6 million from research grants

Figure 1: Funding received from external sources



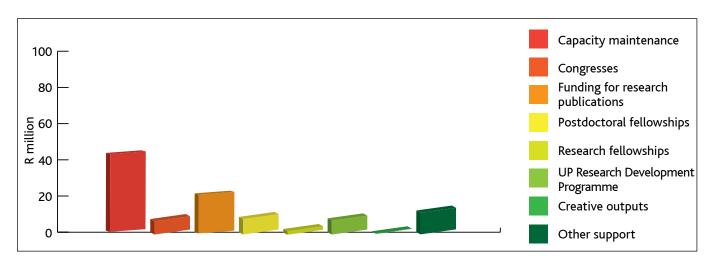
#### Internal funding

The University commits a considerable amount of its own funds to support young and established researchers, research infrastructure, and knowledge-sharing and networking forums.

The University provided internal funding to an amount of R82,2 million for the following:

- · Upgrading and maintenance of research capacity and equipment (R42.1 million)
- Congresses (R3.8 million)
- · Funding for research publications (R20,6 million)
- · Postdoctoral fellowships (R4,4 million)
- · Research fellowships (R1 million)
- The UP Research Development Programme (RDP) (R4 million)
- Creative outputs (R0,1 million)
- Other support (R6,2 million)

Figure 2: Funding received from internal sources



#### Postgraduates and postdoctoral fellows

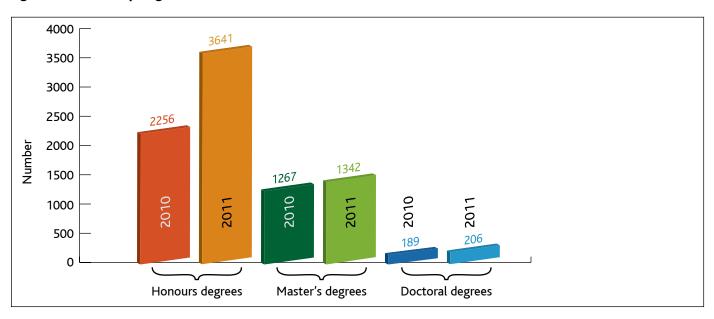
The University continues to play a significant role in the country in training postgraduate students at all levels. A total of 5 189 degrees were granted to postgraduates in 2011. These were as follows:

3 641 honours' graduates

1 342 master's graduates

206 doctoral graduates

Figure 3: Increase in postgraduate students



The postdoctoral cohort at the University of Pretoria increased by 45% in 2011 when compared to the number of fellows in the previous year. Of the 77 postdoctoral fellows hosted, 79% were from other countries. This important group of emerging researchers contributes significantly to the diversity and enrichment of research and will continue to increase at the University.

#### Internationalisation

Internationalisation activities feature prominently at the University and involve an array of instruments to support these activities. The instruments range from agreements for research collaborations, and staff and student exchanges, the enrolment of international students at undergraduate and postgraduate level, postdoctoral fellowships for international fellows and participation in international postgraduate programmes such as the European Union Erasmus Mundus Programme and the United Kingdom Commonwealth Scholarship Programme.

The greatest number of international postgraduate students in 2011 came from the rest of Africa, with countries in the Southern African Development Community (SADC) taking the lead with 1 108, followed by Northern Africa with 344 and Middle Africa with 248. Other regions with noteworthy numbers of students included Europe with 125, Asia with 77 and North America with 70.

The University's international collaborations, networks and partnerships have expanded and it has over 150 agreements with international universities around the globe. These agreements facilitate research collaborations, and staff and student exchanges. They also contribute to raising the University's international profile.

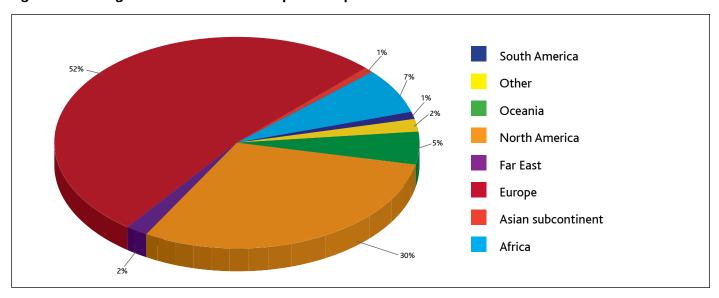


Figure 4: Percentage of international research partnerships on different continents

In terms of international research partnerships, the University of Pretoria had the most partnerships with institutions based in Europe (52%), followed by North America (30%) and Africa (7%). Research partnerships with other parts of the world were those with Oceania (2%), the Far East (2%), South America and the Asian subcontinent (1% each). Other regions comprised 5% of the international research collaborations.



## National and international awards received by researchers of the University of Pretoria during 2011







Prof Namrita Lall

Prof Fhumulani Mulaudzi

Prof Jolanda Roux

Researchers at the University have received a number of prestigious awards. This affirms the standing and contribution of UP researchers and students to science nationally and internationally.

- Three UP researchers distinguished themselves at the Women in Science Awards of the Department of Science and Technology (DST):
  - Prof Namrita Lall was awarded the DST Women in Science Award for 2011 in recognition of her research on bioprospecting from traditional knowledge on medicinal plants.
  - Prof Fhumulani Mulaudzi was a runner-up in the
    Distinguished Women in Science Award in Indigenous
    Knowledge Systems for her contribution to the
    advancement of indigenous knowledge systems in
    health care.
  - Prof Jolanda Roux won the Distinguished Young Women in Science Award in the Life, Natural and Engineering Sciences category for her research focusing on the health of trees, particularly diseases caused by fungi and their insect associates.

- Prof Jolanda Roux was also awarded the Commonwealth Forestry Association's Queen's Award for Forestry. Queen Elizabeth II endorses this award that highlights contributions to forestry in an innovative way.
- Prof Resia Pretorius was among several of Africa's top women scientists honoured at a ceremony to mark the founding of a new Pan-African University by receiving a Kwame Nkrumah Science Award. Her award was for research on the use of electron microscopy in studying inflammation in the human body.
- Prof Annie Joubert of the Department of Physiology was awarded the AG Oettlé Memorial Silver Medal by the Cancer Association of South Africa for her significant contribution to the fight against cancer in South Africa.

- Prof Thokozani Majozi was awarded the National Science and Technology Forum Award for Research and its Outputs for his research in the development and application of novel techniques in chemical process engineering related to freshwater use and wastewater generation.
- Prof Amanda Minnaar and Prof Dave Berger won the first and second prizes respectively at the European-South African Science and Technology Advancement Programme (ESASTAP) Awards for research in the field of food production and food security.
- The Advanced Sensor Networks Research Group in the Department of Electrical, Electronic and Computer Engineering won the 2011 Department of Trade and Industry (the dti) Award of the Technology and Human Resources for Industry Programme (THRIP) for Advanced Hi-Tech Research for the second consecutive year.
- Dr Joyce Mothabeng received an International Service Award from the World Confederation for Physical Therapy in Amsterdam in June 2011.
- Dr Stephan Geyer was awarded the Association of South African Social Work Education Institutions (ASASWEI) Award for the best Young Up and Coming Academic in Social Work in South Africa.
- Mr Mattheüs Theodor Loots, a graduate of the Department of Mathematical Statistics, won the Southern Africa Association for the Advancement of Science (S<sub>2</sub>A<sub>3</sub>) Award for his master's degree research.
- Mr Josua Goodman, a second-year student in the Department of Information Science, won the 2011 Sparky Awards for Best Live Action in an international video contest. This contest showcases students' call for open access and is organised by the Scholarly Publishing and Academic Resources Coalition (SPARC).

#### Chancellor's Award in the Research Category

The Chancellor's Award recognises exceptional achievement in the field of research aimed at the advancement of science and the associated promotion of interests of the University of Pretoria. This award for 2011 was presented to:

#### **Exceptional Academic Achievers**

This annual award is bestowed on senior academics who have already achieved the status of professor, are regarded highly by their peers and have consistently excelled in the areas of undergraduate and postgraduate teaching and learning, research, community service and administration over a period of time. This also includes current A-rated researchers of the National Research Foundation (NRF). In 2011 the following academics received this award:

- Prof Wlady Altermann Geodynamic processes in ore and basin formation
- Prof Patrick Erikson Sedimentology and basin analysis
- Prof Marion Meyer Phytochemistry
- · Prof Sue Nicolson Pollination biology
- Prof Danie Prinsloo African languages (Sepedi)
- Prof Sergei Rakitianski Quantum resonances in physics
- Prof Egmont Rohwer Chromatography and mass spectrometry
- Prof Clarke Scholtz Biology and conservation of insects
- Prof Gert Steyn New Testament studies (Theology)
- Prof Anton Ströh Mathematics
- Prof Braam van Wyk Botany

#### **Exceptional Young Researchers**

Young emerging researchers are important and are recognised for their research productivity and potential. This award is given to exceptional achievers in the field of research, as seen against the University's strategic goal of achieving academic excellence, international competition and local relevance. NRF P-rated researchers are automatically awarded Exceptional Young Researcher status. The exceptional young academics for 2011 are:

- Dr Brighton Dzikiti
- · Prof Zander Myburg
- · Prof Christian Pirk
- Prof Mathieu Rouget

#### Award of the Vice-Chancellor and Principal

These awards are given annually to the top achievers in each faculty. The recipients for 2011 were:

- · Ms Charnene Weller (Education)
- Mr Andrew Stuart Graham (Natural and Agricultural Sciences)
- · Mr Nikita Edwards (Engineering)
- Mr Justin William Taylor (Theology)
- Ms Danielle Elizabeth Aston (Economic and Management Sciences)
- Ms Sarah Jane McGibbon (Law)
- Mr Dawid Nicolaas Prinsloo (Health Sciences)
- · Ms Marinei Nel (Humanities)
- Ms Jeanné Botha (Veterinary Science)

#### **NRF-rated researchers**

The following researchers were rated or re-rated by the NRF in 2011:

- Prof John Annandale
- · Prof Lekan Ayo-Yusuf
- · Prof Jan Boeyens
- · Prof Juan Bornman
- Prof Daniel Bradlow
- · Prof Stephanie Burton
- Prof Elna Buys
- · Prof Adelia Carstens
- Dr Michael Chapwanya
- · Dr Serena Coetzee
- · Prof Teresa Coutinho
- Prof Marthie Ehlers
- · Prof Lourens Erasmus
- Prof Patrick Eriksson
- · Prof Walter Focke
- · Prof Erich Friedland
- Prof Robin Green
- Prof Anske Grobler
- Prof Stefan Gruner
- · Prof Tania Hanekom
- Prof Benda Hofmeyr
- Prof Jonathan Hyslop
- Prof Johan Joubert
- Prof Elsabé Kearsley
- Dr Magnus Killander

- · Prof Robert Kirberger
- Dr Darryn Knobel
- · Prof Lize Kriel
- · Dr Karina Landman
- Prof Andrew Leisewitz
- Prof Louis Linde
- Prof Braam Louw
- Dr Lindy McGaw
- Dr Ferdi Meyer
- Prof Josua Meyer
- Prof Robert Millar
- Prof Zander Myburg
- Prof Albert Neitz
- · Prof Louis Nel
- Prof Jan Nieuwenhuis
- Dr Patrice Ntumba
- · Prof Wimpie Odendaal
- · Dr Jane Olwoch
- Dr Marietjie Oosthuizen
- Prof Robert Pattinson
- · Prof Innocent Pikirayi
- · Prof Venitha Pillay
- · Prof Leon Pretorius
- · Prof Resia Pretorius
- · Dr Melvyn Quan
- · Prof Mamadou Sango
- · Dr Vanessa Scherman
- Prof Clarke Scholtz
- · Prof Hettie Schönfeldt
- Prof Emma Steenkamp
- Prof Gert Steyn
- · Prof Maryna Steyn
- · Prof Gerry Swan
- Prof Chris Theron
- Prof Jacques Theron
- · Prof Jan Harm van der Vyver
- Prof Saloshna Vandeyar
- Prof Esté van Marle-Köster
- Prof Louis van Rooy
- Prof Gretel van Rooyen
- Prof Estelle Venter
- Prof Marietjie Venter
- Prof Bart Vinck
- · Prof Maretha Visser
- Prof Edward Webb
- Prof Rusell West-Pavlov
- Dr Xudong Zhou



### Introduction

As a research-intensive university, the University of Pretoria believes that it can make a positive contribution to the economic and social development of the country. Its research agenda is focused on a number of carefully selected themes, on which proven capacity exists in the University, and which build on the work of excellent researchers and research leaders.

A process was therefore initiated to identify the unique research strengths of the institution and to support the development of strong multidisciplinary research groups, clustered around these identified strengths.

This process is developed around two tiers: Institutional Research Themes (IRTs) and Faculty Research Themes (FRTs):

- The IRTs are major research initiatives that involve a set of participating faculties.
- The FRTs involve the participation of researchers on a more limited scale by fewer faculties.

Both the IRTs and FRTs are designed to recognise and foster excellence in research and are led by acknowledged international leaders in their specific disciplines. Four IRTs and three FRTs have been identified so far. More are in the pipeline.

#### Institutional research themes

- Biotechnology and the Management of Animal and Zoonotic Diseases: Established to build and expand on the University's current strengths and research capacity in animal and zoonotic diseases in the faculties of Health Sciences, Veterinary Science, and Natural and Agricultural Sciences.
- Energy: Established to provide the best balance between the University's current research activities in the faculties of Engineering, Built Environment and Information Technology, and Natural and Agricultural Sciences, and the energy focus areas that are prioritised by government, with an initial focus on electrical energy.

- Food, Nutrition and Wellbeing: Established to address the emerging societal challenges related to food insecurity, nutrition deficiencies and hunger, especially in Africa, by coordinating research conducted in the faculties of Health Sciences, Veterinary Science, and Natural and Agricultural Sciences.
- Genomics: Established with a strong core capacity for genomics, bioinformatics and computational biology research that will be recognised as a centre of excellence to make an important contribution to the health sciences, veterinary science and other life sciences in South Africa, Africa and the rest of the world.

#### Faculty research themes

- Cellular and Molecular Medicine: Established to raise the level of excellence in research in the Faculty of Health Sciences.
- Centre for Sustainable Malaria Control: Established to promote collaborative research in the Faculty of Health Sciences on safer and sustainable malaria control and management.
- Institute for International and Comparative Law:
   Established to generate knowledge and develop research capacity at the highest level across African territorial, legal and language limits within the parameters of international and comparative law.

It is anticipated that these themes will add to the University's research reputation as they develop, while at the same time engendering a climate that promotes scholarship among academic staff and postdoctoral fellows, with the objective of producing more doctorates.

## Biotechnology and the Management of Animal and Zoonotic Diseases

The Biotechnology and the Management of Animal and Zoonotic Diseases IRT was established to build and expand on the University's current strengths and research capacity in animal and zoonotic diseases in the faculties of Health Sciences, Veterinary Science, and Natural and Agricultural Sciences

The development of a new generation of animal vaccines is a top biotechnology priority in South Africa, and the research aims of this IRT are focused on addressing questions and solving problems in the field of animal diseases and diseases that are transmitted from animals to humans (zoonoses).

These questions and problems are addressed by the development of improved diagnostic tools, vaccines and cutting-edge studies on the pathogen-vector-host interphases and associated epidemiological studies. A number of research programmes are involved in three different faculties.

The development of a new generation of animal vaccines is a top biotechnology priority in South Africa. Several recombinant vaccine candidates, either developed locally or produced by overseas collaborators, have been evaluated in animal trials. A topical high-impact programme is aimed at the control of dog rabies in the developing world.

Research strategies include the evaluation of different rabies vaccine candidates and a project using recombinant vaccines as immunocontraceptives in domestic dogs. Other important vaccine initiatives include cattle trials with novel anti-tick vaccine candidates, a recombinant canary pox vaccine against African horse sickness virus, a West Nile virus vaccine and a

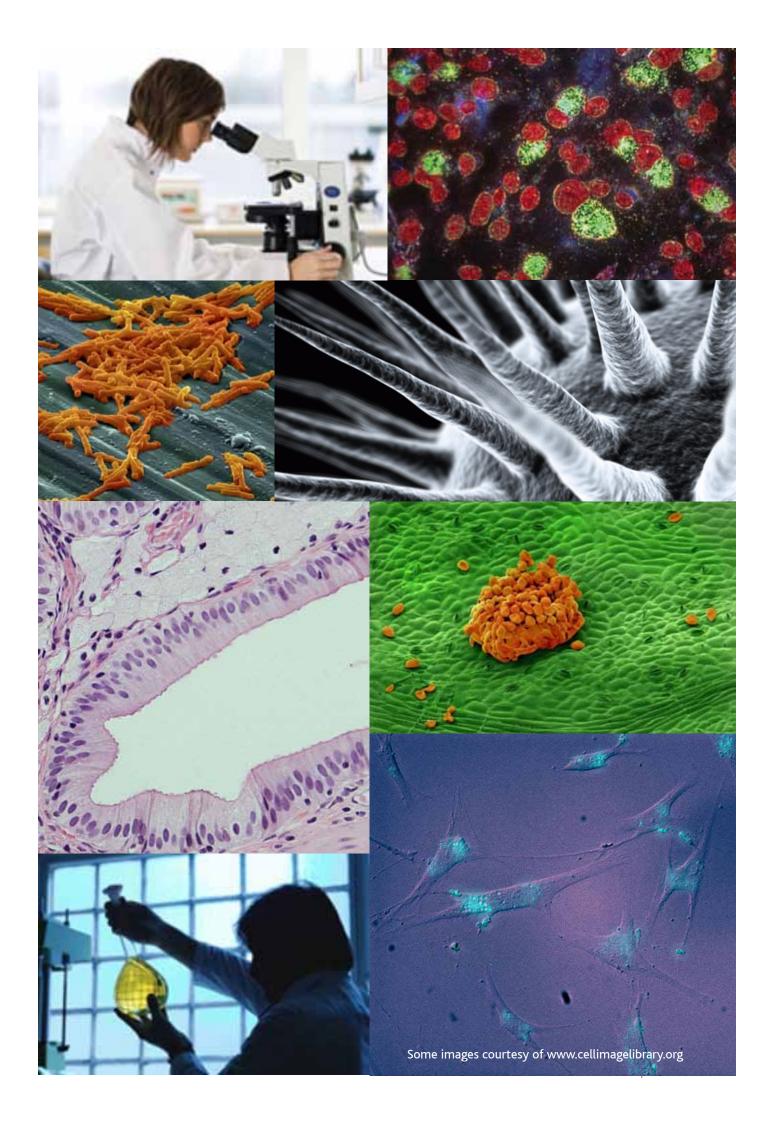
foot-and-mouth-disease vaccine based on a locally developed chimeric foot-and-mouth disease virus. These vaccine developments are strengthened by the progress made in the development of systems that allow the genetic manipulation of pathogens (reverse genetics). Recent progress made with a project to develop a reverse genetics system for African horse sickness virus is very promising. A rabies virus reverse genetics vaccinology strategy is also in progress.

An important range of new or updated tools for the diagnosis of different animal haemoparasites has been developed. Among these is a single test for identifying different Theileria species, which could have an important impact on the trade of animals. Further diagnostically associated highlights include the approval of the BSL-3 laboratory by the Department of Agriculture, Forestry and Fisheries to expand the range of animal and human zoonotic pathogens that can be dealt with in the Zoonoses Research Unit in the Faculty of Health Sciences.

#### **Prof Henk Huismans**

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## Energy

The Energy IRT (E\_IRT) was established to provide the best balance between the University's current research activities in the faculties of Engineering, Built Environment and Information Technology, and Natural and Agricultural Sciences.

The aim of this IRT is to establish energy as a key research theme, focusing on a number of subthemes relevant to South Africa's future energy security. The E\_IRT was established after a study by the University's Institute of Technological Innovation had found that the University of Pretoria was the major publisher of energy research in South Africa over the period 1997–2007.

The University thus embarked on establishing energy as a key research theme, focusing on a number of subthemes relevant to South Africa's future energy security, and government energy policies and strategies.

The main goal of the E\_IRT is to focus on research in the areas of electricity generation, transmission and distribution. The selected research subthemes include the following:

- Energy production, with the emphasis on clean coal, nuclear and renewable (solar and wind) energy
- Energy distribution (smart grids and energy storage)
- Energy optimisation (thermal, process and efficiency)
- Advanced materials, with an interest in unique material attributes
- Energy policy and economics, and the impact of energy technologies on society
- Sustainable environment

The initial portfolio of projects included the following:

 An assessment of various energy technologies in order to develop an integrated technology scenario model that can assist in the establishment of an integrated database and the selection of future research projects.

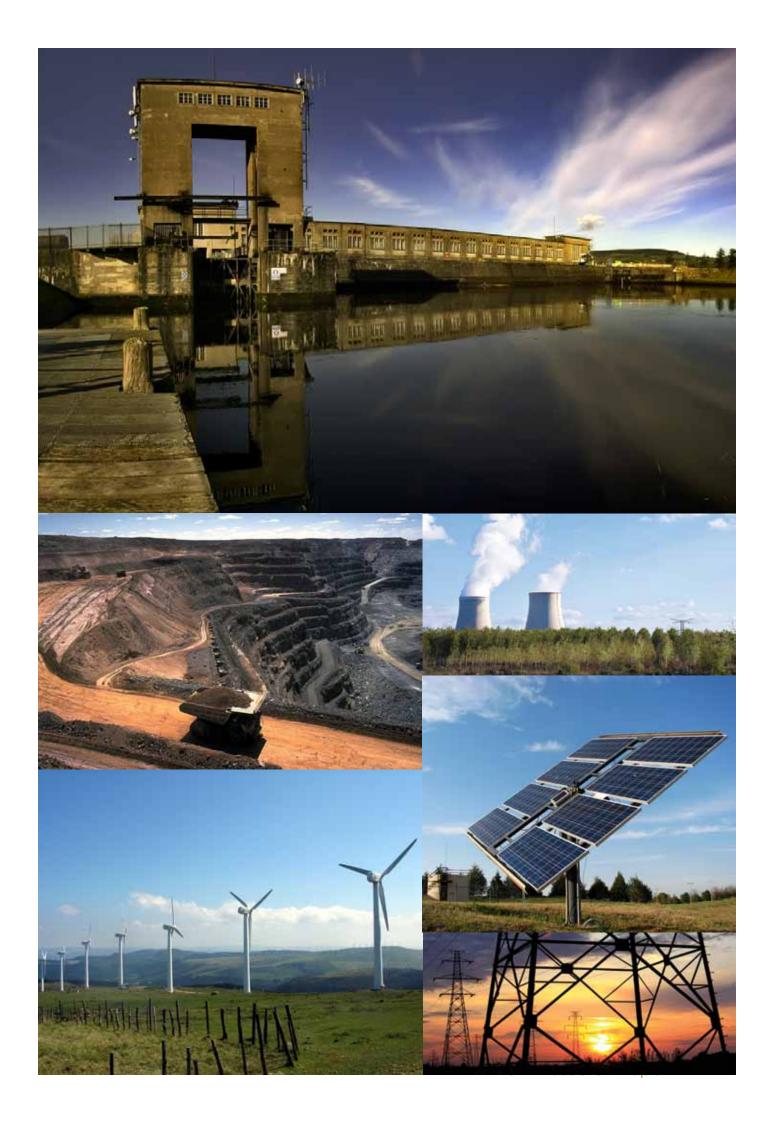
- The thermal optimisation of heat exchangers, the efficiency optimisation of various electro-mechanical systems, and chemical process integration for energy and water systems.
- The development of silicon-carbide tubes and tubemanufacturing technology for application in current and future high-temperature environments in light, watercooled nuclear reactors.
- Conducting research on the exact heat and gas-flow dynamics inside gasifiers, with the aim of achieving a better understanding of the chemical transition and formation reactions inside gasifiers. This forms part of multi-product low carbon footprint research.
- Focusing research on the integration of renewable energies into the existing electricity supply network in order to make a contribution to smart grid network stability and reliability.
- Research on renewable and clean energy, including projects in solar energy utilisation, graphene-based materials and biodiesel oxidation stability.
- Research on the use of glassy carbon (vitrious carbon/ polymeric carbon), focusing on the long-term containment of materials for nuclear waste.

Six different academic departments from the faculties of Engineering, Built Environment and Information Technology, and Natural and Agricultural Sciences collaborate on the E\_IRT research effort. Research collaborations with local organisations, as well as international companies and universities in the USA, Sweden, Germany, India, Brazil, Hungary and China, have already been established.

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# Food, Nutrition and Wellbeing

The Food, Nutrition and Wellbeing IRT was established to address the emerging societal challenges related to food insecurity, nutrition deficiencies and hunger, especially in Africa, by coordinating research conducted in the faculties of Health Sciences, Veterinary Science, and Natural and Agricultural Sciences.

This IRT is seen as a vehicle to create an Institute of Food, Nutrition and Wellbeing at the University of Pretoria to bring together all the postgraduate teaching and research expertise and activities in this field to ultimately develop a centre of excellence. The Institute will provide strategic leadership in a new area of global interest.

In addressing these challenges, the vision of the Institute will be to become the leading international centre of excellence in the area of transdisciplinary research and postgraduate training, aimed at finding innovative and comprehensive ways of addressing current constraints to attaining the Millennium Development Goals with regard to food, nutrition and wellbeing in sub-Saharan Africa by 2020.

The mission of the new Institute is to strategically position the University of Pretoria as an internationally recognised centre of excellence with a critical mass of researchers focusing on transdisciplinary research and postgraduate training that will respond to the needs of stakeholders. This will ultimately promote the long-term health and wellness of people, support sound policy-making with regard to food, nutrition and wellbeing and, together with strategic national, regional and international partners, significantly scale up capacity in this area.

This IRT establishes a unique and innovative programme that has so far not been addressed internationally, continentally or at UP. It explores current and complex research questions of global and African relevance through transdisciplinary enquiry that will generate new knowledge and insights to help reduce hunger and poverty in Africa. It brings together over 70 academic staff members employed in the various related areas, thus providing the largest pool of expertise globally.

The IRT will bring considerable visibility to the University's contribution to African and global research and opportunities for expanded and strengthened networks, partnerships and community engagement.

The key research themes to be investigated as part of this IRT are the following:

- Sustainable animal- and plant-based food production in a resource-constrained environment
- Food safety, biosecurity, public health and regulatory control
- · Functional biomolecules and functional foods
- · Facilitating behaviour change for health and wellbeing
- The food security and nutrition impacts of policies and programmes

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## Genomics

The Genomics IRT was established with a strong core capacity for genomics, bioinformatics and computational biology research that will be recognised as a centre of excellence to make an important contribution to the health sciences, veterinary science and other life sciences in South Africa and the rest of the world.

Genomics is a modern and rapidly evolving field of molecular biology. It focuses on research, development and innovation in the field of whole organisms (genomics) or entire communities (metagenomics). Genomics is based on two cutting-edge technologies: next-generation DNA sequencing and bioinformatics.

The IRT in Genomics was formally established in late 2011 under the interim leadership of Prof Henk Huismans. It has now acquired a full-time director. Prof Don Cowan, a former Director of the Institute for Microbial Biotechnology and Metagenomics at the University of the Western Cape, joined the University of Pretoria in May 2012. Prof Cowan is an internationally recognised and highly published researcher in the field of microbial ecology and metagenomics.

The Genomics IRT has a core membership of 22 academic staff members across three faculties: Natural and Agricultural Sciences, Health Sciences and Veterinary Science. It has a total of 52 research staff members. Projects in the IRT are subdivided into five research focus areas: bacterial, plant, fungal, animal and human genomics.

In the short time since its institution, the Genomics IRT has been very active. Seed funding of over R2.2 million has been allocated to projects, principally to support additional genome and transcriptome sequencing. IRT funds have contributed to the purchase of a state-of-the-art ion torrent DNA sequencer (capable of generating 10 million to 1 billion bases of highly accurate DNA sequence in less than two hours). Some student bursaries have already been allocated and a number of key

staff appointments are in the process of being made. The first IRT workshops are in the planning stage.

One very strong theme of the IRT projects is the study of pathogenic organisms, including genome sequencing of plant pathogens such as *Pantoea, Fusarium, Phytophthora* and *Cercospora*, animal pathogens such as *Theileria* and human pathogens such as the malarial parasite *Plasmodium*.

In a closely related project, the genome of the wasp Sirex, a vector for many tree pathogenic fungi, has been sequenced. In all cases, a detailed knowledge of the genome sequence will underpin future studies of pathogenesis and the development of anti-pathogenic strategies.

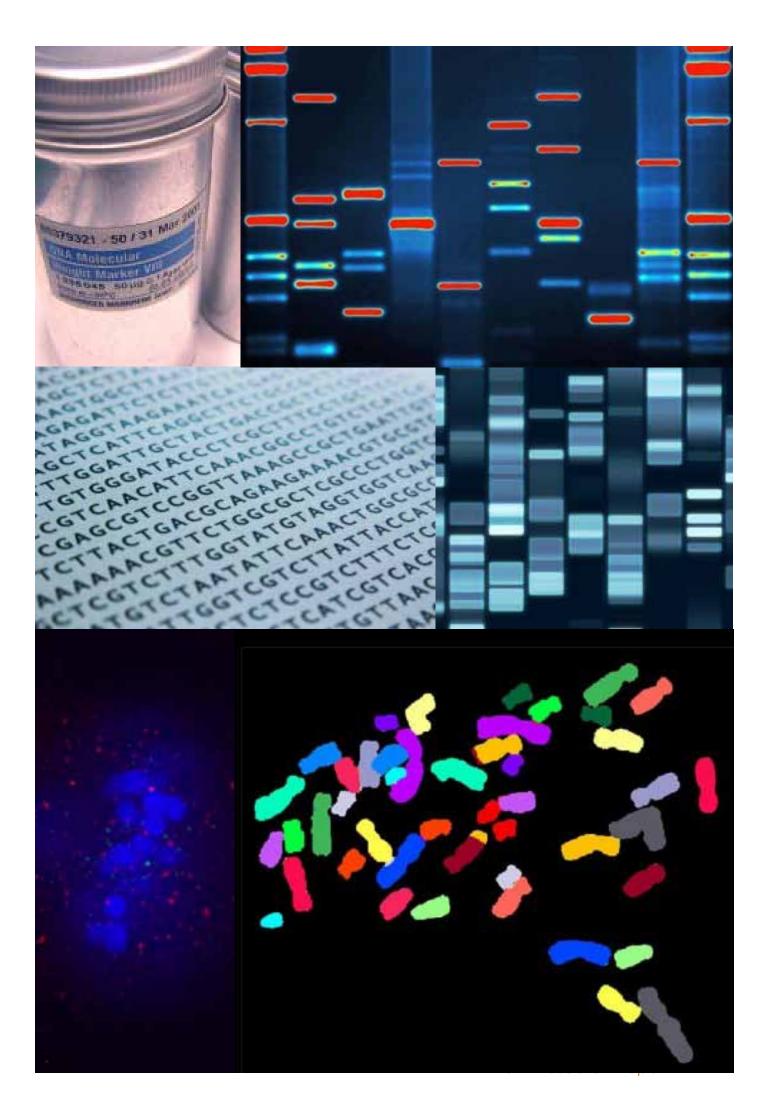
A second major theme is the genome and transcriptome sequencing of economically important trees such as eucalyptus and avocado to study wood (lignocellulosic biomass) formation, as well as biotic or abiotic stress responses. These studies are important milestones in the development of improved tree cultivars and for a fundamental understanding of growth and development in woody plants.

A third theme is directly relevant to human health. This entails the sequencing of the breast cancer exome (the coding portion of the genomic DNA) from local black African women, which will contribute to an understanding of both the genetic propensity to cancer and the factors that trigger the transformation of healthy cells to cancer cells.

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# Cellular and Molecular Medicine

The Cellular and Molecular Medicine FRT was established to raise the level of excellence of research in the Faculty of Health Sciences at the University of Pretoria.

The Institute for Cellular and Molecular Medicine (ICMM) was initiated at the University of Pretoria in 2008. It was developed into an FRT in 2011. The core component of the Institute is built on three scientific pillars: genomics/genetics, cell-based therapy and the neurosciences. Human tissue legislation and bio-entrepreneurship complete the core component.

In addition to the core component, which has a physical presence on the Prinshof Campus (in close proximity to the Faculty of Health Sciences and the Steve Biko Academic Hospital), the Institute has a virtual component, which includes departments from several other faculties at the University. These include Natural and Agricultural Sciences, Veterinary Science, Engineering, the Built Environment and Information Technology, Economic and Management Sciences, Law, Humanities, and Theology.

The Director of the Institute, Prof Michael Pepper, is a codirector of the Southern African Human Genome Programme, which has secured funding from the Department of Science and Technology (DST) for the sequencing of African genomes. Other highlights in the genomics/genetics field include the use of next-generation sequencing for human leucocyte antigen (HLA) genotyping, the validation of a novel diagnostic tool for leukemia, and the screening of a large cohort of South Africans for mutations in the CCR5 gene, which has been implicated in resistance to HIV.

The Cell-based Therapy Project has seen a rapid and highly productive expansion of work on human mesenchymal cells, the objective of which is to enter into clinical trials for a number of diseases in 2013. A multinational and multi-institutional project is underway to genetically modify human haematopoietic stem cells in order render them resistant to HIV. The ultimate objective is to transplant these cells into HIV-positive individuals in order to generate an HIV-resistant immune system. A study of the feasibility of establishing a public cord blood stem cell bank, funded by the Medical Research Council (MRC), is nearing completion.

The UP Neuroscience Day attracts colleagues from across the country, and has grown into an annual event with wide recognition.

The Institute presents the Certificate in Bio-entrepreneurship, which received funding from the Technology Innovation Agency (TIA) in 2011, resulting in greatly reduced registration fees and the opportunity to accommodate close to 70 participants divided between Pretoria and Cape Town. Sponsorship from the TIA has been renewed for 2012. This will see the inclusion of the Eastern Cape and KwaZulu-Natal in the programme.

Prof Michael Pepper

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# Centre for Sustainable Malaria Control

The Sustainable Malaria Control FRT was established to promote collaborative research in the Faculty of Health Sciences at the University of Pretoria on safer and sustainable malaria control and management.

The University of Pretoria Centre for Sustainable Malaria Control (CSMC) is a collaborative and transdisciplinary initiative that uniquely and innovatively integrates all aspects of malaria control: physical methods of vector control, biological malaria parasite and vector control, bioinformatics and drug discovery, toxicology and community health, integrated vector management, malaria case management, monitoring and evaluation, education, health promotion and policy.

The departments involved all have established research programmes with a focus on the elimination of malaria without causing human health risk. The Centre creates new opportunities for postgraduate students and guides policy-makers on this issue. The Centre is now represented on the Advisory Committee of the National Department of Health: Malaria.

The official launch of the FRT took place on 17 November 2011. The Centre was officially opened by the Vice-Chancellor and Principal, Prof Cheryl de la Rey, and the function was attended by Dr Yogan Pillay, Deputy Director-General of Strategic Health Programmes at the national Department of Health, in addition to other important guests from the World Health Organisation (WHO), government, academic and research institutions, industry and various other organisations.

The CSMC application for a South African Research Chairs Initiative (SARChI) Chair was successful in Phase I and received an invitation to submit a Phase II application. The proposed SARChI Chair in Sustainable Malaria Control is very well aligned on several levels with the national government's 10-year strategy. The Chair will function within the CSMC and will focus on blocking the transmission of malaria. A US National Institutes of Health (NIH) grant on indoor residual spraying (IRS) pesticides and neurodevelopment in South Africa was awarded to a team of researchers from UP and the University of California Berkeley.

During 2011, CSMC members and students published seven papers in high-impact journals, one patent, two technical reports and 21 congress presentations. Several master's and doctoral students graduated, growing the numbers of researchers and postgraduate students associated with the centre. Researchers from different departments and faculties have joined the CSMC, creating new opportunities and building research capacity. The University of Pretoria is enjoying wide support for this initiative and has become a key role-player in the fight against malaria.

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# Institute for International and Comparative Law

The International and Comparative Law FRT was established to generate knowledge and develop research capacity at the highest level across African territorial, legal and language limits within the parameters of international and comparative law.

The Institute for International and Comparative Law in Africa (ICLA) is a gateway to excellence regarding international and comparative law. As a research institute, it is unique to the continent.

Its vision is to develop African legal establishments to a level on a par with and in harmony with those in the rest of the world.

The ICLA is coordinating the African reporting for *Oxford Constitutions Online*. This authoritative database, which provides a constitutional analysis of more than 180 countries around the globe, is published by Oxford University Press in collaboration with the Max Planck Institute for Comparative Public Law and International Law, Heidelberg, Germany. Under the auspices of the ICLA, six African country reports were finalised during 2011.

The ICLA further provided research support to one of its codirectors, Prof Christof Heyns, in relation to his mandate as United Nations Special Rapporteur on extrajudicial, summary or arbitrary executions. In collaboration with the Institute of Air and Space Law, University of Cologne, Germany, the ICLA developed a specialised module in international air, space and telecommunications law. This module, which is the only one of its kind on the continent, is supported financially by the national Department of Trade and Industry.

In August 2011, the ICLA was involved in the organisation of two winter schools. The first was a two-week winter school and two-day conference on the interaction between international humanitarian law and human rights law in military operations. It was co-hosted by the ICLA and the International Law Centre of the Swedish National Defence College. It was directed towards (South African) members of the armed forces, the civil service and members of academia. A specialised module in this area is currently being conceptualised in order to introduce this in the master's programme in Public International Law in 2013. The second winter school was an introduction to the Pretoria Winter School for Doctoral Studies in Law and was directed at doctoral students in law and their supervisors.

The ICLA also contributed to the Faculty of Law's doctoral programme by obtaining funding from the Open Society Initiative for Southern Africa over a three-year period for three part-time doctoral positions in the area of comparative constitutional law.

The ICLA is co-directed by Prof Erika de Wet and Prof Christof Heyns.

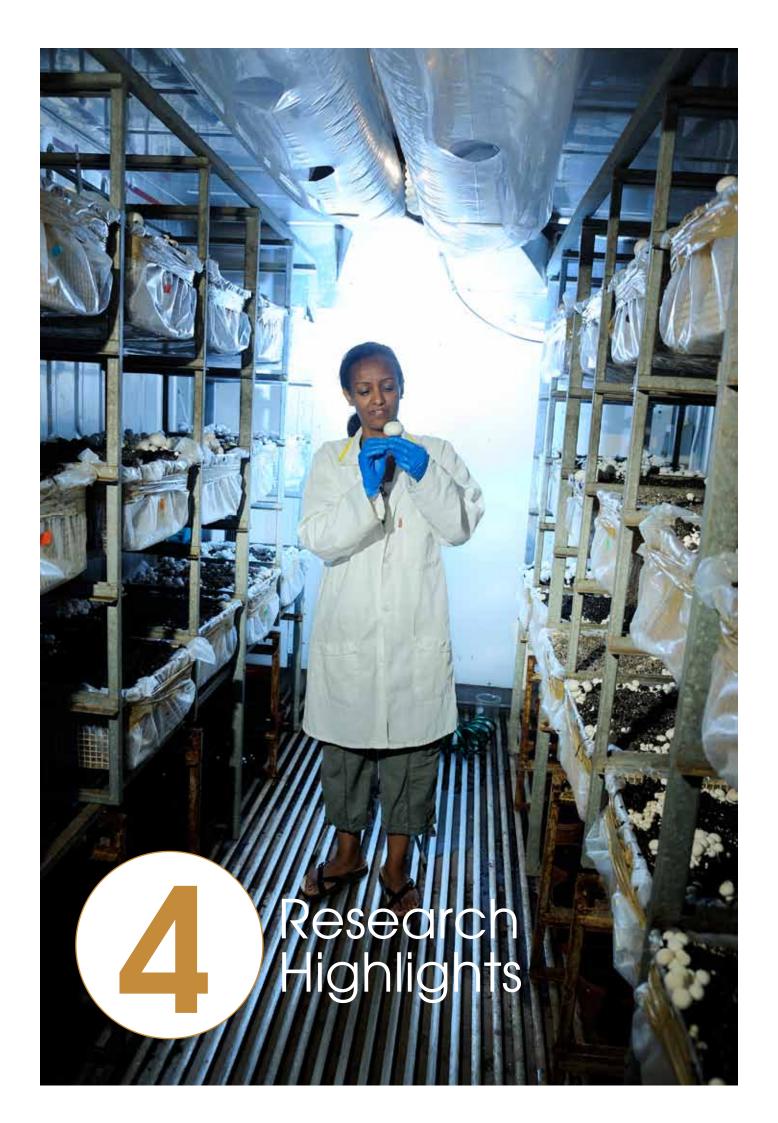
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January to December 2011 Prof Jan van Heerden Acting Dean



Prof Elsabe Loots Dean

# 4.1

# Economic and Management Sciences

Research engagement and publications are integral to the Faculty's vision to be an internationally recognised and locally relevant centre of excellence. The Faculty conducts research primarily of an applied nature, aligned with the needs of business, the public sector and the professions. Academic staff research expertise spans a number of areas, ranging from monetary economics and sustainable environments to industrial psychology and marketing. It also hosts a number of centres and institutes that provide leadership in their respective disciplines. During 2011, the Faculty had a number of noteworthy research achievements that contributed to the realisation of its vision.

Several academic staff members presented papers at international conferences around the globe and the continent. Attendance at these conferences not only showcases the expertise of the Faculty, but also resulted in fruitful collaborative research projects. The Department of Human Resource Management hosted a USA Fulbright research scholar, Prof Jenny Hoobler, of the University of Illinois at Chicago during the academic year. Prof Hoobler is collaborating with Prof Stella Nkomo on a research project on gender equity in South African corporations.

The African Tax Institute, in collaboration with the Lincoln Institute of Land Policy based in the USA, hosted a workshop

### Research entities

#### Institutes

· Southern African Tax Institute

#### Centres

- Centre for Communication and Reputation Management
- · Centre for Inclusive Banking
- Albert Luthuli Centre for Responsible Leadership
- · Investment and Trade Policy Centre

in South Africa. Ten research fellows from Cameroon, the Democratic Republic of the Congo, Egypt, Eritrea, Ethiopia, Kenya, Mozambique, Sierra Leone and Zambia presented case studies on property taxes in 18 African countries. In 2011, the Albert Luthuli Centre for Responsible Leadership embarked on two major research projects. The Leadership for Africa Research Project, funded by the Uongozi Institute of Tanzania, will investigate change leadership in several African countries. Corporate governance is the focus of a collaborative research project with the Harvard Business School that will examine the drivers and consequences of corporate governance in South Africa over the past 20 years.

Prof Ernie Heath of the Department of Tourism Management, in collaboration with the George Washington University in the USA, conducted research on the tourism potential of South Africa. Prof Yolanda Jordaan of the Department of Marketing Management is collaborating with the University of Angers in France on a study of consumer attitudes and behaviour towards social network advertising. The Investment and Trade Policy Centre has forged a productive collaborative relationship with the University of Applied Sciences in Berlin, Germany.

Academic staff members also continue to receive recognition for outstanding research achievements. Dr Ruthira Naraidoo, an associate professor in the Department of Economics, received the JJI Middleton Award from the Council of the Economic Society of South Africa for the best first article published. Prof Rangan Gupta of the Department of Economics, who is ranked 46th on the list of young economists in the world, became a founding member of the South African Young Academy of Science, launched in 2011.

The Faculty continues to provide leadership for discipline-based conferences and workshops. The School of Public Management and Administration hosted the 4th International Conference on Public Administration, which included over 40 competitive papers on the theme of leadership, governance and policy in the public sector. The Department of Economics and the South African Reserve Bank jointly hosted a workshop on monetary economics and macroeconomic modelling. The development of a South African Personality Inventory was the focus of a research workshop hosted by the Department of Human Resource Management, which brought together scholars and postgraduate students from around South Africa.

One of the strategies for increasing research productivity is obtaining external funding. The Department of Human Resource Management received a grant for its research project on the attraction, development and retention of academic talent for sustainability in South African higher education institutions. This multi-year project, in collaboration with the Vrije University of the Netherlands, is funded by the South African Netherlands Research Programme on Alternatives in Development (SANPAD).

The research output of the academic staff comprised 109 journal articles with an increasing percentage published in international journals. The number of NRF-rated researchers in the Faculty was 15 in 2011. During the year, eight doctoral students and 118 master's degree students graduated in the Faculty. Nineteen members of staff obtained either a master's degree or a doctorate. Several other staff members are currently enrolled for higher degrees.

The Faculty Research Committee initiated a number of interventions to support academic research engagement and productivity throughout the year. These interventions included research skills enhancement workshops and seminars. Plans were finalised for opening an Office for Research Support in 2012. The office will provide academic staff with a range of technical and informational services to support staff research agendas.

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### Faculty Research Output

### Taxation

### Chapters in books

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Prof Stella Nkomo



Prof Stella Nkomo is Head of the Department of Human Resource Management. Her work on race and gender, and managing diversity is recognised internationally. Her current research projects include a study of cultural values in leadership in South Africa and how multicultural women become authentic leaders. In 2008 she was selected as one of 100 distinguished global thought leaders from business, education and government to participate in the Society for Human Resource Management's Leadership Summit on Diversity and Inclusion, held in Washington DC.

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Ms Estelle de Beer



Ms Estelle de Beer is a member of the Department of Marketing and Communication Management. Her research interests lie in strategic communication management, stakeholder relationship management, corporate strategy, corporate governance and corporate reputation, and she is a founding member of the Centre for Communication and Reputation Management. She was part of the research team for the King III Report on Governance for South Africa, and still serves on the Compliance and Stakeholder Relationships Committee of the King Committee. She is currently working towards a PhD on the role of corporate communication in corporate governance, sustainability and corporate strategy.

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Mr Sam Koma



Mr Sam Koma is a member of the School of Public Management and Administration. He is a reputable expert, trainer and management consultant in public management and governance programmes, and has facilitated training to over 5 000 participants drawn from the public and private sectors. He specialises in local economic development, corporate governance, local government and public policy analysis. He has delivered various conference papers at both international and national conferences and his research articles have appeared in scientific journals based in South Africa and abroad. He was recently awarded a merit bursary by the NRF for the completion of his PhD.

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Prof Ronél Rensburg



Prof Ronél Rensburg is a member of the Department of Marketing and Communication Management and Director of the Centre for Communication and Reputation Management, an institute for integrated communication in southern Africa. The Centre is devoted to disseminating marketing and communication knowledge, regulation, research, consultation, training and mentoring. She is President of the Public Relations Institute of Southern Africa (PRISA), and has contributed significantly to many public relations organisations and institutes. She coordinates international exchange activities and collaboration initiatives for the Faculty, and is a board member of the Global Alliance for Public Relations and Communication Management.

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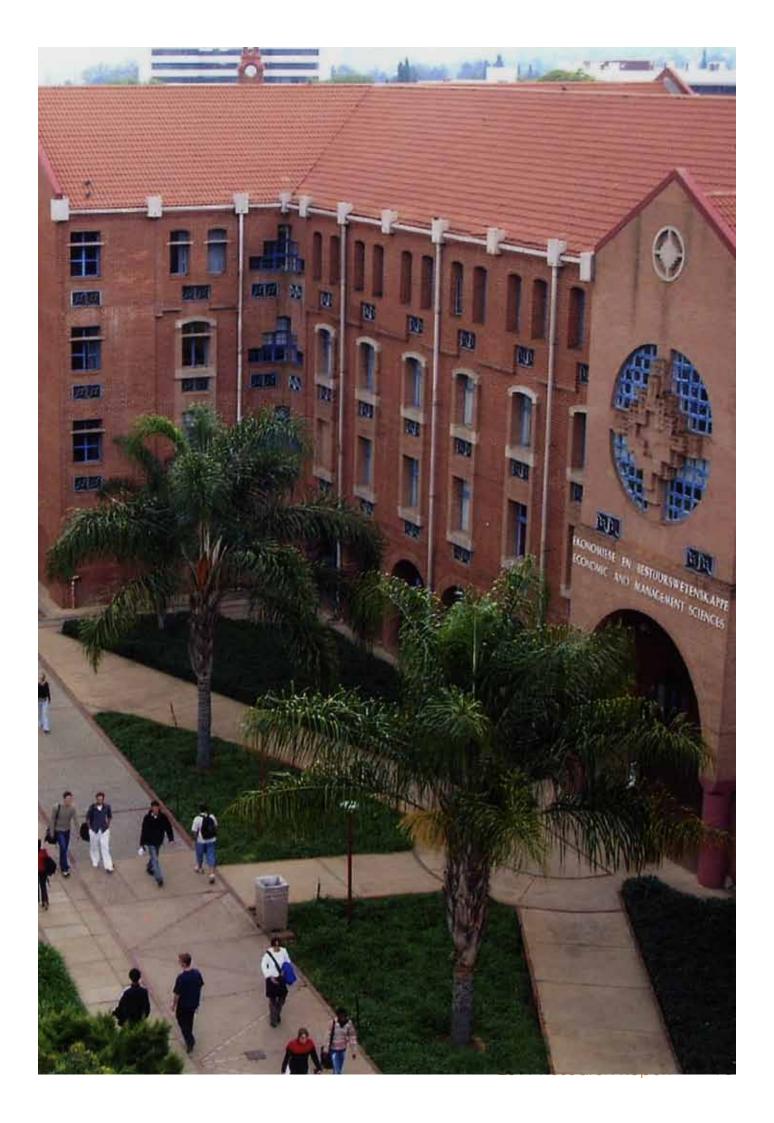
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Prof Irma Eloff Dean

## 42 Education

Some of the best educational researchers on the continent of Africa make the Faculty of Education at the University of Pretoria their home. Consequently, this Faculty is where you will find leading studies on effective schools, resilience, positive psychology, school governance, education law, academic writing interventions, mathematics education, early childhood education, life design, the literacy levels of South African children and life sciences education. The footprint of the Faculty's research extends well beyond South African borders, with regional studies in Botswana, Kenya, Zimbabwe and other African countries.

During 2011, the Faculty of Education increased its number of NRF-rated researchers, with an additional five researchers receiving NRF ratings. These were Prof Saloshna Vandeyar, Prof Venitha Pillay, Prof Jan Nieuwenhuis, Prof Adelia Carstens and Dr Vanessa Scherman. This was also a year of awards for researchers in the Faculty: Dr Carien Lubbe-De Beer won the award of the Education Association of South Africa (EASA) for Emerging Researcher and Prof Saloshna Vandeyar won the American Education Research Association (AERA), Division K (Teaching and Teacher Education) mid-career award.

### Research entities

#### Centres

- Joint Centre for Mathematics, Science and Technology Education (JCMSTE)
- Centre for Educational Law and Policy (CELP)
- Centre for Evaluation and Assessment in Education

#### Units

Unit for Educational Research on Aids

The Faculty launched new book publications and two new reading series in 2011. The *Early Childhood Reading Series* by Dr Ina Joubert, Dr Nkidi Phatudi and Annalie Botha is published by Oxford University Press. The *Spot On Reading Series* by Dr Nkidi Phatudi is written in Setswana and Sepedi and published by Heinemann. The books published by members of the Faculty included *Vuvuzela Afrikaans* by Dr Alta Engelbrecht and Dina Cloete, as well as the scholarly book *Hyphenated selves* by Prof Saloshna Vandeyar. Three instruments for the assessment of Mathematics, namely Study Orientation for Mathematics, the Basic Mathematics Questionnaire and the Mathematics Vocabulary, Primary, have been acquired by universities in Portugal and are being translated into Portuguese. These questionnaires were designed and standardised by Prof Kobus Maree.

The international ties of the Faculty were strengthened even further in 2011. Most prominently, Prof Johan Beckmann was appointed as Adjunct (Honorary) Professor to the National Training Centre for Secondary School Principals of the Chinese National Ministry of Education at East China Normal University. Prof Liesel Ebersöhn was invited as visiting scholar to the Edith Cowan University in Australia. She has also been nominated to a task team for worldwide research problems in education – working with Dr Carol D Lee from Northwestern University in Chicago and Michael Nettles, the Senior Vice-president of the Policy Evaluation and Research Centre. Dr Mia Abrie and Erik Eberlein were invited as visiting scholars to the North Eastern Normal University (NENU) in China. Prof Venitha Pillay was invited to collaborate on an international study on women academics in India, Brazil and South Africa. Prof Kobus Maree worked on a project on the development of a framework for the implementation of psychometric tests in the Ministry of Education in Botswana.

The Faculty of Education has long-term collaborative partnerships with various international institutions: Yale University (USA), the University of Durham (UK), the University of Dortmund (Germany), the University of Hamburg (Germany), the universities of Groningen and Twente (Netherlands), Boston College (USA), the University of Nebraska-Lincoln (USA), Antioch University (USA), Concordia University (Canada), Fordham University (USA), the University of Florence (Italy), Edith Cowan University (Australia), the Open University (UK), North Carolina State University (USA), Newcastle University (Australia), the University of Basel (Switzerland) and the University of Educado Mondlane (Mozambique). In 2011, Fulbright scholars from a variety of fields joined the Faculty of Education. Dr David Thomas (Mathematics Education) joined the Faculty for a one-year period. His work includes the improvement of the way in which Mathematics is taught by using technology. Three Fulbright scholars who focus on English and academic writing also joined the Faculty in 2011. Geordie Brackin from Vanderbilt University, Max Cuddy from Temple University and Muriel Bird from Fordham University spent time on the Groenkloof Campus, as well as the Mamelodi Campus, to support undergraduate students with academic writing. They were joined by Cheryl Logan, who worked in the Faculty of Education as a visiting English language fellow.

The Faculty is home to the editorial office of the ISI-listed academic journal, the *South African Journal of Psychology*, led by Prof Kobus Maree as editor in chief. The esteemed accredited journal, the *South African Journal of Education*, with Prof Liesel Ebersöhn as editor, is also housed in the Faculty of Education.

The Faculty of Education at the University of Pretoria is fully committed to growing the exceptional talent of young people and researchers in education. It is embracing the many challenges of educational research with a strong focus on educational effectiveness.

#### **Prof Irma Eloff**

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### Faculty Research Output

### Unit for Distance Education

### Journal articles

Aluko FR, Hendrikz J, Fraser WJ: 2011. Transactional distance theory and total quality management in open and distance learning. In **Africa Education Review**, 8(1), pp 115–132.

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In the list of research outputs, in all cases the heading "Papers published" refers to papers in refereed, published conference proceedings, and the heading "Journal articles" refers to articles published in accredited, peer-reviewed, refereed specialist journals.

De Villiers JJR: 2011. Student teachers' views: what is an interesting Life Sciences curriculum? In South African Journal of Education/Suid-Afrikaanse Tydskrif vir Opvoedkunde, 31(4), pp 535–545.

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Prof Saloshna Vandeyar



Prof Saloshna Vandeyar is a member of the Department of Humanities Education. Her specialist areas encompass education and diversity, teacher professionalism and assessment practices. She is particularly interested in the implications of teacher and student identities in constructing classrooms inclusive of racial, linguistic and ethnic identities and in promoting intercultural and social justice education. She received the Education Association of South Africa Research Medal 2011, and the National Science and Technology Forum Award in 2007 in the category Senior Black Researcher. One of her papers, published in an international journal, was nominated for the Joyce Cain Award in 2009.

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Prof Liesel Ebersöhn



Prof Liesel Ebersöhn is Director of the Unit for Education Research in Aids. Her research focuses on the psychosocial coping of vulnerable children from a positive psychology resilience stance, the asset-based approach, life skills and career psychology. She has published more than 50 peer-reviewed articles, supervised approximately 50 postgraduate students, and has delivered several invited presentations at international conferences. She is the South African representative and a Council member of the World Education Research Association, and is an NRF-rated researcher.

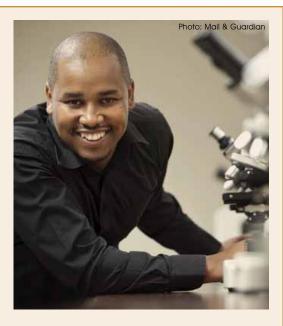
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Dr Lindelani Mnguni is a member of the Department of Science, Mathematics and Technology Education. His research interests include curriculum design and development related to HIV and Aids education, biology education, as well as visualisation and multimedia learning in biology. In his doctoral thesis, he explored the relationship between the Grade 11 Biology curriculum, HIV/Aids knowledge and behavioural preferences of students. He has presented papers at various international conferences. As a member of the European Research in Didactics of Biology, he has co-authored articles in three books published in Europe. He has also reviewed research papers for various accredited journals.

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### Early Childhood Education

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Prof Ronel Ferreira



Prof Ronel Ferreira is Head of the Department of Educational Psychology. Her current research focus area is psychosocial coping by vulnerable individuals and communities. She is involved in various research projects focusing on this area of interest, including a joint research project on the promotion of resilience among the children of mothers who are infected with HIV. She has authored and co-authored four books over the past four years, and is a member of the South African Academy for Science and Arts, the Psychological Society of South Africa and the Education Association of South Africa.



Prof Roelf Sandenbergh

# 4.3

### Engineering, Built Environment and Information Technology

Research is regarded as a primary driver of excellence and is an essential part of the activities of the Faculty of Engineering, Built Environment and Information Technology. It not only covers the spectrum of disciplines in which formal programmes are offered in its schools of Engineering, the Built Environment, Information Technology and the Graduate School of Technology Management, but is closely aligned with the strategic imperatives of government and industry.

The seven departments in the School of Engineering have active research groups that conduct research in a number of research focus areas that address issues of local and international relevance. In addition, there are a number of research centres and research chairs that are supported by industry, as well as the Carl and Emily Fuchs Institute for Microelectronics, which support the Faculty's research agenda.

The research focus areas of the Department of Chemical Engineering include process modelling and control, applied materials, environmental engineering, water utilisation, reaction engineering, biochemical engineering, sustainable process systems engineering and tribology. In the field of simulating chemical engineering processes, contributions were made on the optimisation of autogenous milling by optimising a set of operational parameters to yield significant savings. Lead and toxic metal-free detonators were developed for the mining industry, and research was conducted on the use of layered materials as benign functional additives as controlled release vehicles for insecticides.

The research focus areas of the Department of Civil Engineering include geotechnical engineering, water resources engineering, structural engineering and transportation engineering. The Chair in Railway Engineering is associated with the Department.

### Research entities

### Institutes

- · Institute of Applied Materials (IAM)
- · Carl and Emily Fuchs Institute for Microelectronics
- Industrial Metals and Minerals Research Institute, sponsored by ArcelorMittal

#### Centres

- · Advanced Computing Centre
- African Centre of Excellence in Information Ethics Society
- · Centre for Electromagnetism
- Centre for Telecommunications Engineering for the Information Society (CeTEIS)
- · Centre for New Energy Systems (CNES)
- · SAIW Centre for Welding Engineering
- Centre for Advanced Sensor Networks (CASN)
- · Northern Transportation Centre of Development

#### **Partnerships**

- INSiAVA partnership between UP and the SAIP Fund
- Energy Efficiency and Demand-side Management Commercialisation

The Department recently acquired a geotechnical centrifuge that will greatly enhance its geotechnical modelling capabilities. Contributions were made in research on collapsible soils, track deflection on heavy-haul railway lines, ground movements below certain railway lines, the quality of concrete slabs, heat evolution in foamed concrete, and a sensitivity analysis in earthquake engineering.

The Department of Electrical, Electronic and Computer Engineering has research focus areas in advanced sensor networks, bioengineering, control systems, electromagnetism, electronics and microelectronics, energy systems, industrial electronics and electric drives, intelligent systems, lighting and vision, power systems, broadband wireless multimedia communication, and signals and digital communications. In this Department, the Bioengineering Group conducted research on acoustic models of cochlear implants. The Broadband Wireless Multimedia Communication Group worked on transmission scheduling for wireless mesh networks. The Control Systems Group continued its work on the modelling, validation and control of an industrial fuel gas blending system. The Advanced Sensor Networks Group conducted research on wireless sensor and actor networks, dynamic connectivity in wireless underground sensor networks, and cooperative communication systems in underground tunnels. The Electromagnetism Group analysed and designed various types of antennae for high-technology applications. The Electronics and Microelectronics Group developed a variety of designs, including a switch-mode power amplifier and a wideband low-noise amplifier. The Energy Systems, and Efficiency and Demand-side Management Group conducted research on models and applications in viral dynamics, predictive control in power generation, and the energy-efficiency optimisation of belt conveyors. The Intelligent Systems Group developed statistical gear health analysis and conducted research on the detection of land-cover change, and developed systems for detecting new human settlements.

The Department of Industrial and Systems Engineering has research focus areas in resource optimisation, industry and functional area application, business engineering and enterprise architecture. Contributions were made on optimisation problems in transport, stochastic modelling towards inventory management and reliability modelling, and the optimisation of humanitarian logistics.

Research in the Department of Materials Science and Metallurgical Engineering was focused on physical metallurgy, welding and corrosion, minerals processing and hydrometallurgy, and pyrometallurgy and refractory materials. The establishment of a Chair in Pyrometallurgy promoted growth in the research activities related to high-temperature furnace technology, with a strong focus on sintering technology, refractory materials, waste material treatment and process optimisation. Minerals processing research

remains directed towards iron ore processing and waste treatment, with a developing focus area in coal processing. Research activities in physical metallurgy focused on microstructure development during processing, hot and cold working, and welding metallurgy.

The research focus areas in the Department of Mechanical and Aeronautical Engineering are centred around vibration monitoring and diagnostics, vibration measurement and analysis, structural dynamic design and analysis, computational solid mechanics, enhanced heat transfer, electronics cooling, micro-channel condensation, optimisation with constructal theory, off-road vehicle dynamics, tyres and modelling. In this Department, the Dynamic Systems Group consolidated its research thrust in vibration-based condition monitoring, and maintenance engineering and asset integrity management. New developments were focused on the use of discrepancy analysis and waveform reconstruction for applications such as these. The Thermofluids Research Group made contributions in the areas of convective heat transfer, design of heat exchangers using computational fluid dynamics and the principles of constructal theory. The Vehicle Dynamics Group contributed to improving the dynamics of off-road vehicles by using simulation and experimental validation.

The Department of Mining Engineering has research focus areas in rock engineering, safety, environmental engineering and explosives engineering. Contributions were made in rock engineering with the development of a new approach to simulate crush pillar behaviour in a tabular layout as typically used as support in gold, and more extensively, in platinum stopes. Safety-related research included a contribution on the potential of the use of incident reconstruction simulations to avoid mine incidents, since virtual reality education and training offers the advantage of exposing employees to different hazards in a safe environment, and to safely simulate the potential outcome of unsafe acts when exposed to these hazards and risks on a daily basis. Research in environmental engineering included a project on the utilisation (rather than release) of mining-induced methane gas into the atmosphere. To reduce its inherent danger and to mitigate its global warming impact, a carbon credit project under the clean development mechanism (CDM) of the Kyoto Protocol was also developed and implemented to capture and destroy methane in underground mines.

In the School for the Built Environment, research was conducted in three departments: Architecture, Construction Economics (including the Real Estate programme) and Town and Regional Planning.

The Department of Architecture has research focus areas in environmental potential, housing and urban environments, and heritage and cultural studies. Contributions were made on the origins of the southern African building regulations, recycling of the Thesen Island Boiler House as a hotel, the life and homes of Catharina of Paliacatte, stone cladding as artificial ruin for triggering nostalgia, the dialectic of ruin, the emergence of a Lowveld architectural style, and the importance of heritage plants and plant relics for historical places, and old gardens as a source of new ornamental plants.

The Department of Construction Economics conducts research in the following areas: procurement methods, social housing, land rights, facilities management, quantity surveying practice, resilient cities, real estate curricula, finance and maintenance, construction information, classification, specification, and project management, and building cost analysis. Contributions were made to the development of sustainable human settlements with an extensive interdisciplinary review of literature on the attributes of ecology, sustainability and implications for built environment research.

In real estate, a model was developed to determine the relationship between property share prices and underlying asset values, compare short-term fluctuations with company value, obtain driving forces of company growth and identify information that could be used to assist in property valuation. The variables that drive property demand were investigated using statistical fits of historical macroeconomic variables applied to a South African context to explain recent residential property activity. A risk management framework was developed and the importance of everyone in an organisation being involved in the management of risks was highlighted.

The Department of Town and Regional Planning has the following research focus areas: strategic development planning, sustainable settlement planning, design and maintenance, mining, planning law and sustainable human settlement, the creation of safe, responsive and enabling urban spaces, and planning methods and techniques. Contributions were made on the need for a balance between transformation and service provision in state infrastructure investment and development spending.

The School of Information Technology made research contributions in its departments of Computer Science, Information Science (including publishing and book history) and Informatics.

The research focus areas in the Department of Computer Science are computational intelligence, computer and information security, theoretical computer science, software engineering and computer science education. The Computational Intelligence Research Group developed new, biologically inspired optimisation algorithms. Models of the foraging behaviour of ants were used to develop a self-adapting behavioural particle swarm optimiser, where individual search behaviours self-adapt based on the local search environment. Models of the cemetery organisation behaviour and the division of labour behaviour observed in ant colonies have been used to develop new algorithms for distributed load balancing in computer clusters. A number of strategies have been developed to self-adapt control parameter values used in particle swarm optimisation, eliminating the need to manually tune problem-dependent parameters.

The research focus areas in the Department of Information Science are knowledge management, information processes, metacontext of information, and book and publishing studies. The Department is coordinating an ongoing interdisciplinary research project to innovate the curriculum for information literacy. This project has created a stimulus for research because of the new possibilities in the different fields of research, enhancing creativity, and developing a positive staff morale and intrinsic motivation.

Book history focused on the ability of adolescents with hearing loss in special schools to access and use academic material. The annual book publishing industry survey reports for 2009 and 2010, as well as the *Book Publishing Industry Annual Survey Broad Trends Report, 2008–2010,* were completed. Research on information behaviour in various contexts was continued, including librarian management.

The research focus areas in the Department of Informatics are information systems and organisation, information systems and education, and information and communication technology for sustainable development. Each focus area is associated with one or more International Federation for Information Processing (IFIP) working groups. A highlight in the information systems and organisation focus area was a project that focused on the development of a framework to be used in the design of financial trading applications in the South African investment banking environment.

Research in the Graduate School of Technology Management (GSTM) is focused on technology and innovation management, project management, maintenance and physical asset management, and systems and lifecycle management. In project management, contributions were made with the investigation of the state-of-the-art status of current project management approaches followed in South Africa with the aim of aiding in positioning South Africa to ensure that all possible revenue streams are obtained during the transition to a green economy. In technology and innovation, studies were done on human language technology, the performance of science parks and how they contribute to innovation outcomes in South Africa, and on technology roadmaps in the mining industry. In energy research, an assessment was done of the technological sustainability of biodiesel development in South Africa.

#### Prof Roelf Sandenbergh

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### Faculty Research Output

### **Architecture**

### Journal articles

- Laubscher J: 2011. Tracing the origins of the Southern African building regulations, with specific reference to the period between 1650 and *circa* 1740. In Acta Structilia: Journal for the Physical and Development Sciences/Tydskrif vir die Fisiese en Ontwikkelingswetenskappe, 18(2), pp 81–97.
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- De Bruyn TF: 2011. Stone cladding as artifical ruin for triggering nostalgia. **South African Journal of Art History**, 26(2), pp 45–54.
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- Middleton LT, Vosloo PT: 2011. Sources of new ornamental plants: the importance of heritage plants and plant relicts from historic places and old gardens. In **South African Journal of Art History**, 26(2), pp 55–67.
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### Papers published

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- Jekot BP: 2011. Conservation of Modernism in Africa assessing cultural resources and benefits when nogotiating criteria. In The Second International Conference on Conservation of Architecture, Urban Areas & Landscape: Heritage 2011. Conservation of Architecture, Urban Areas, Nature & Landscape: Towards a Sustainable Survival of Cultural Landscape, CSAAR Press, pp 357–368.

### Industrial and Systems Engineering

### Journal articles

Yadavalli VSS, Sivakumar B, Arivarignan G, Adetunji O: 2011. A multi-server perishable inventory system with negative customer. In **Computers & Industrial Engineering**, 61, pp 254–273.

In the list of research outputs, in all cases the heading "Papers published" refers to papers in refereed, published conference proceedings, and the heading "Journal articles" refers to articles published in accredited, peer-reviewed, refereed specialist journals.

Kapur PK, Yadavalli VSS, Khatri SK, Basirzadeh M: 2011. Enhancing software reliability of a complex software system architecture using artificial neural-networks ensemble. In International Journal of Reliability, Quality and Safety Engineering, 18(3), pp 271–284.

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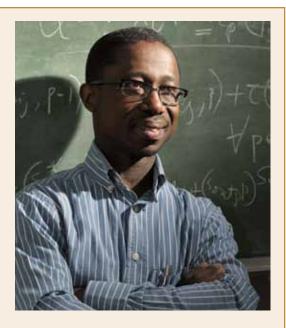
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Prof Thokozani Majozi



Prof Thokozani Majozi is a member of the Department of Chemical Engineering. He is the Vice-President of the Engineering Council of South Africa (ECSA). In 2011 he received the National Science and Technology Forum (NSTF) Category B Award for individual contribution to research over the last five to ten years. His research currently focuses on the heat integration of multipurpose batch chemical processes, wastewater minimisation in batch plants, water conservation through energy conservation, the development of a unified mass and heat integration framework for sustainable design, effective techniques for the scheduling of complex batch facilities and process integration as an optimisation tool in clean coal technology.

Janse Van Rensburg AC: 2011. Complexity management, a crystal ball for executives. In 1st International Conference on Industrial Engineering, Systems Engineering and Engineering Management for Sustainable Global Development – ISEM 2011 Conference Proceedings, Southern African Institute for Industrial Engineering, pp 19-1 – 20.

Grobler J, Engelbrecht AP, Kendall G, Yadavalli VSS: 2011. Investigating the impact of alternative evolutionary selection strategies on multi-method global optimization. In **2011 IEEE**Congress on Evolutionary Computation, IEEE, pp 1–8.

- Chandrasekhar P, Vaidyanathan VS, Yadavalli VSS: 2011. Inference procedures for bivariate exponential model of gumbel in queueing theory. In **Proceedings of the International Statistics Conference 2011**, Institute of Applied Statistics Sri Lanka, pp 14–26.
- Adetunji O, Yadavalli VSS: 2011. A lot-sizing for pull production environments. In **The 2nd International Conference on Industrial and Operations Management**, IEOM Forum, pp 15–20.
- Adetunji O, Adendorff K, Yadavalli VSS: 2011. Dynamic buffering of a capacity constrained resource via the theory of constraints. In **The 2nd International Conference on Industrial and Operations Management**, IEOM Forum, pp 13–20.
- De Vries M, Van der Merwe A, Kotze P, Gerber A: 2011. A method for identifying process reuse opportunities to enhance the operating model. In **The IEEE International conference on Industrial engineering and engineering management**, IEEE, p. 1005.
- Janse Van Rensburg AC: 2011. Principles for modelling business processes. In The IEEE International conference on Industrial engineering and engineering management, IEEE, p. 1710.

### Construction Fconomics

### Journal articles

- Maritz MJ: 2011. Doubts raised on the validity of construction and payment guarantees. In Acta Structilia: Journal for the Physical and Development Sciences/Tydskrif vir die Fisiese en Ontwikkelingswetenskappe, 18(1), pp 1–26.
- Joubert JCN, Cloete CE: 2011. Methodology to determine the value of a poultry farm. In **Agrekon**, 50(4), pp 45–74.
- Du Plessis C, Cole RJ: 2011. Motivating change: shifting the paradigm. In **Building Research and Information**, 39(5), pp 436–449.
- Maritz MJ, Du Rand R: 2011. Standard method of measurement for underground development works. In **Journal of Construction**, 4(1), pp 4–11.
- Cloete CE: 2011. The principles and practice of facilities maintenance in Botswana. In **Journal of Corporate Real Estate**, 29, pp 1–2.

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- Moje EK, Cloete CE, Hoffman DJ: 2011. Implementation of facilities management in shopping centres in Gaberone, Botswana. In 15th Pacific Association of Quantity Surveyors Congress, PAQS, pp 238–246.
- Du Plessis C: 2011. Complexity, Resilience, Regeneration: new directions for sustainable human settlements. In 4th SACQSP Conference: South African Council for the Quantity Surveying Profession, SACQSP, pp 27–29.
- Bekker MJ, Prinsloo HF: 2011. The influence of prescriptive clients on projects in the mining construction industry. In 7th cidb Post Graduate Conference on Construction Industry Development, cidb and Department of Construction Economics, pp 48–59.
- Jansen JJA, Callaghan P: 2011. Teaching in construction management: Learning by doing. In 7th cidb Post Graduate Conference on Construction Industry Development, cidb and Department of Construction Economics, pp 191–202.
- Jansen JJA, Cruywagen JHH: 2011. Decision-making criteria for the implementation of innovative building systems. In 7th cidb Post Graduate Conference on Construction Industry Development, cidb and Department of Construction Economics, pp 214–223.
- Boshoff DGB: 2011. The development approach to valuation: an acceptable method. In **7th cidb Post Graduate Conference on Construction Industry Development**, cidb and Department of Construction Economics, pp 232–240.
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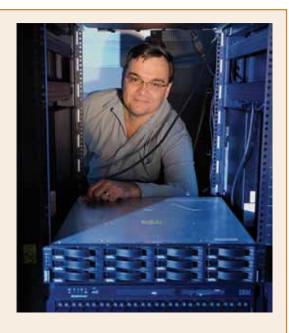
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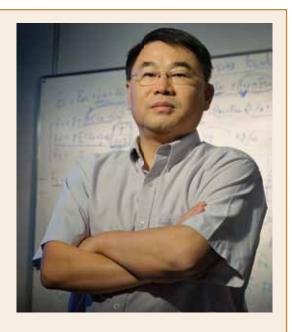
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Prof Xiaohua Xia is Director of the Centre of New Energy Systems and the National Hub for Energy Efficiency and Demand-side Management. He is a fellow of the Institute for Electronic and Electrical Engineers, a member of the Academy of Science of South Africa, a fellow of the South African Academy of Engineering, and has an A rating from the NRF. His research interests include non-linear feedback control, observer design, time-delay systems, hybrid systems, modelling and control of HIV/Aids, control and handling of heavy-haul trains and energy optimisation systems. He serves as the chair of the Technical Committee of Non-linear Systems of the International Federation of Automatic Control.

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# Town and Regional Planning

## Journal articles

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Prof Eric Buch Dean

# 4 Health Sciences

The Faculty of Health Sciences continues to strive towards merging clinical service delivery, health professions education and world-class research. The hallmark of the Faculty's research remains its focus on health, and the health care challenges facing South Africa and Africa, from laboratory-based, cutting-edge science to finding solutions to health care burdens. The Faculty's research is supported by a range of expert laboratories and has achieved a number of global discoveries, led by its Medical Research Council (MRC) research units, its research centres and its active participation in University-accredited research themes.

The Faculty is a partner in three institutional research themes, as well as two faculty research themes. The number of NRF-rated scientists in the Faculty has grown to 19.

The MRC Maternal and Infant Health Care Strategies Research Unit develops health care strategies at primary and secondary care levels to reduce mortality and morbidity in mothers and infants. The Unit is involved in the upscaling of emergency obstetric care to 25 health districts in South Africa. The Essential Steps in Managing Obstetric Emergencies Programme, that is being used in the Unit, was developed and tested in collaboration with the Liverpool School of Tropical Medicine, the national Department of Health, as well as the medical schools and professional bodies representing stakeholders such as obstetricians, midwives, paediatricians and anaesthetists. A

## Research entities

#### Institutes

· Institute for Cellular and Molecular Medicine

#### Centres

- Forensic Anthropology Research Centre (FARC)
- Comprehensive Physical Rehabilitation Centre
- UP Centre for Sustainable Malaria Control
- Applied Morphology Research Centre

#### Unite

- Maternal and Infant Health Care Strategies Research Unit
- · Unit for Inflammation and Immunity

major upscaling programme is being funded by the United Kingdom Department for International Development and the national Department of Health. The MRC Unit for Inflammation and Immunity undertakes research with clear clinical or translational objectives into acute and chronic inflammatory disorders of both infective (HIV/Aids, tuberculosis, severe pneumococcal diseases) and non-infective (bronchial asthma, rheumatoid arthritis, toxicity of heavy metals in both the environmental and occupational settings) origin, as well as cigarette smoking as a major risk factor for the development of respiratory infection and resistance to antibiotics, with several PhD candidates in the programme.

The UP Centre for Sustainable Malaria Control is pioneering research on a range of sustainable malaria control methods from the chemical to the biological at a transdisciplinary level. The Faculty, in collaboration with the University of California Berkeley, received a US National Institutes of Health (NIH) grant for five years to study the effect of pesticides for malaria control on the neurodevelopment of children. The Forensic Anthropology Research Centre is involved in the recovery and analysis of human remains from both forensic and archaeological contexts. Recent developments include research to better estimate time since death in human remains discovered in an advanced stage of decomposition, and detailed assessments of skeletal blunt and sharp force trauma. The Applied Morphology Research Centre focuses on the ultrastructure of platelets and fibrin networks in conditions related to inflammation, including cerebrovascular incidents, diabetes and smoking. Research collaborations include research with Harvard Medical School, the University of Queensland and the University of Manchester. The Comprehensive Physical Rehabilitation Centre undertakes multidisciplinary research involving physiotherapists, occupational therapists, sports medicine scientists, dieticians and others to understand and devise treatments for complex cases of disability. The Institute for Cellular and Molecular Medicine is working on cell-based therapies to achieve an HIV-resistant immune system, exploring the therapeutic potential of mesenchymal stem cells and building tissue engineering scaffolds. Funding has been awarded to the Southern African Human Genome Programme (of which the Institute is part) by the Department of Science and Technology (DST) for the sequencing of more than 20 full southern African human genomes. Substantial funding has also been obtained from the Technology Innovation Agency (TIA). The Faculty's other research interest groups reflect the diversity of its contribution to health knowledge and interventions. These include the novel use of nuclear medicine methodologies in Aids and tuberculosis, exploring fibrin network morphology in strokes and burn wounds, drug discovery research (including traditional African medicines) and the performance of an array of clinical trials (including affordable new cancer treatments).

The unique genetic characteristics of schizophrenia and mitochondrial diseases in South Africans have been recorded, and unique viral types of the human papillomavirus have been found in cervical cancer. The role of the mouth as a cellular reservoir for HIV persistence has been described, as has the immuno-histochemical profile of oral plasmablastic lymphoma and the identification of early molecular markers of malignancy in the mouth. A national dataset has been established to explore exposure and risk to oral health.

#### **Prof Eric Buch**

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# Faculty Research Output

## Anatomy

#### Journal articles

- Pretorius E, Oberholzer HM, Van der Spuy WJ, Swanepoel E, Soma P: 2011. Qualitative scanning electron microscopy analysis of fibrin networks and platelet abnormalities in diabetes. In **Blood Coagulation & Fibrinolysis**, 22(6), pp 463–467.
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## Research and technical/policy output

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## **Anatomical Pathology**

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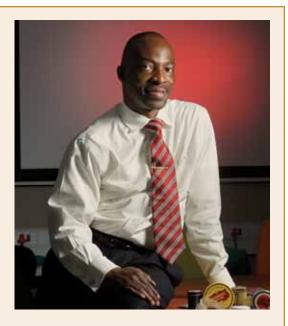
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Pretorius E, Taute H, Engelbrecht M, Swanepoel AC, Oberholzer

Prof Olalekan Ayo-Yusuf



Prof Olalekan Avo-Yusuf is a member of the Department of Community Dentistry. He is also a visiting scientist at the Centre for Global Tobacco Control at the Harvard School of Public Health in the United States. His comprehensive research on oral health promotion and tobacco has given him recognition as a leading expert in tobacco control and oral public health in South Africa and internationally. Prof Ayo-Yusuf is a member of the Scientific Group on Tobacco Regulation of the World Health Organisation, and he was nominated by the Minister of Health to represent South Africa on the steering committee of the Centre for Tobacco Control in Africa.

HM: 2011. Differences in fibrin fiber diameters in healthy individuals and thromboembolic ischemic stroke patients. In **Blood Coagulation & Fibrinolysis**, 22, pp 696–700.

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# Prof Resig Pretorius



Prof Resia Pretorius is Director of the Applied Morphology Research Centre in the Department of Physiology. She has been the number one publishing author in the Faculty of Health Sciences for the past nine years. She was among several of Africa's top women scientists who were honoured at a ceremony to mark the founding of a new Pan-African University by receiving a Kwame Nkrumah Science Award for her research on the use of electron microscopy in studying inflammation in the human body.

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Prof Maryna Steyn



Prof Maryna Steyn is a forensic anthropologist and heads the Forensic Anthropology Research Centre (FARC). Her research interests include skeletal remains from both forensic and archaeological contexts. She is currently working on a project to document and assess human remains of southern African origin, which had been exported to Europe and elsewhere in the world. Other interests include the assessment of sexual dimorphism in the skeleton, improving standards for the personal identification of decomposed remains, the application of techniques such as geometric morphometrics in skeletal assessment and palaeopathology. The FARC regularly assists the South African Police Service on decomposed or skeletonised remains found in forensic contexts.

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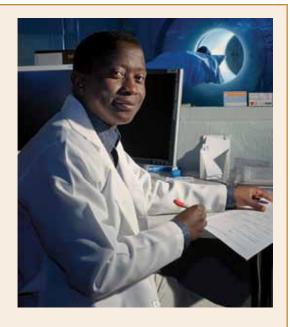
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Prof Mike Sathekge is Head of the Department of Nuclear Medicine. His research is focused on using imaging techniques to examine brain functions. The use of positron emission tomography (PET) allows non-invasive quantification of cerebral blood flow, metabolism, and receptor binding. The clinical application of PET includes the early diagnosis of brain metastasis, preoperative localisation of seizure foci in potential candidates for epilepsy surgery, and early and presymptomatic diagnosis of individuals at risk for neurodegenerative disorders. In neuropharmacology, scans provide information about the occupancy of the binding sites for a particular dosage to determine optimal drug-dosing regimens.

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Prof Marthie Ehlers



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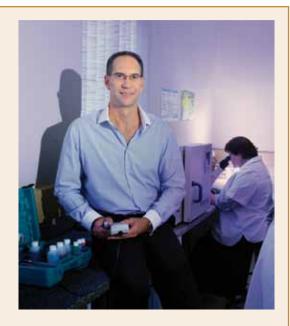
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Prof Tiaan de Jager is the Deputy Dean: Research and is a member of the School of Health Systems and Public Health. His research focus is on environmental endocrine-disrupting chemicals (including pesticides and industrial pollutants), toxicology and male reproductive health. His publications on the organochlorine pesticide DDT, used for malaria vector control, received international recognition and impacts on policy. He heads the University's new multidisciplinary initiative, the UP Centre for Sustainable Malaria Control, which will provide new research opportunities as it focuses on the elimination of malaria. He has been invited as plenary and guest speaker to several international scientific conferences.

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## Periodontics and Oral Medicine

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## Psychiatry

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Prof Marietjie Venter



Prof Marietjie Venter developed a research programme at the University of Pretoria on respiratory and vector-borne zoonotic viruses. She holds a joint appointment in the Zoonosis Research Unit in the Department of Medical Virology and as Co-director of the Centre for Respiratory Diseases and Meningitis in the National Institute for Communicable Diseases (a division of the National Health Laboratory Service). She is a member of the Global Influenza Surveillance Network, the International Infectious Disease Society, the International Society for Influenza and Other Respiratory Viruses, Arbozoonet of Europe, and the Infectious Disease Society of South Africa.

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## Division of Sports Medicine

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## Urology

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## **Nursing Science**

#### Journal articles

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June 2011 to April 2012 Prof Hennie Stander Acting Dean



Prof Norman Duncan Dean

# 4.5 Humanities

The recent Consensus Study on the State of the Humanities in South Africa (Jansen & Vale, 2011) posits that the central value of the humanities resides in the tradition of critical thought that has forever been a central aspect of its functioning, that is, the tradition of asking probing questions aimed at gaining penetrating "insight into the multiple challenges that face the human condition". In the South African context, the Consensus Study continues. The humanities critically contributes to "the understanding, analysis and attempts to resolve many of the most intractable social and economic challenges faced by the South African polity". Of course, as the Consensus Study also notes, another core value of the humanities is its capacity to "lift humankind out of the mundane world of the everyday".

Original and generative research, artistic productions, professional practice innovation and publications constitute some of the key vehicles for the aforementioned contributions of the humanities to society.

As one of the largest faculties of its kind in South Africa, the University of Pretoria's Faculty of Humanities continued the tradition of asking critical questions and seeking solutions to societal problems through its creative productions and research and publications outputs during 2011. Specifically, during the 2011 academic year, the Faculty produced 146 journal articles, 34 book chapters and nine books. These outputs represent not only a significant improvement on the Faculty's outputs for the preceding two years, but also attest to its commitment to contribute substantively to efforts to enliven the traditions and aspirations of the humanities in South Africa and globally.

Obviously, it is not only in terms of quantity that the Faculty's research outputs during the 2011 academic year can be

#### Research entities

#### Institutes

- · Institute for Sport Research
- Institute for Strategic and Political Affairs (ISPA)
- · Institute for Women's and Gender Studies

#### Centres

- Centre for Augmentative and Alternative Communication (CAAC)
- Centre for Early Intervention in Communication Pathology (CEICP)
- Centre for Research in the Politics of Language (CentRePol)
- Psychology @ Itsoseng

#### Units

· Cochlear Implant Unit

considered as having been significant; but also in terms of quality and range. Indeed, the Faculty's corpus of scholarly outputs for the reporting period was remarkably rich in its diversity, including various successful creative productions, as well as research related to health and wellbeing, the arts, debates in literary studies linked to issues of identity and other aspects of the human condition, and poverty. Importantly, many of these outputs had their locus not only in South Africa, but also in a range of other countries, including Australia, Brazil, Germany, India, Mozambique and the United Kingdom.

Specifically, the 2011 academic year saw the launch and/or publication of research on a range of health-related issues, including research on sports injuries (for example, by Dr Paola Wood of the Department of Biokinetics, Sport and Leisure Sciences), apraxia of speech and hearing loss identification among new-borns (by Prof Anita van der Merwe and Prof De Wet Swanepoel, respectively, both from the Department of Communication Pathology), as well as research on the influence of culture in the use of the Picture Communication Symbols Library with children with little or no functional speech (by Dr Shakila Dada of the Centre for Augmentative and Alternative Communication).

During 2011, various departments, as well as the Human Economy Programme in the Faculty, also produced a range of publications focusing on poverty and other forms of social inequality. These include the important research outputs on poverty and poverty reduction interventions by Prof Antoinette Lombard of the Department of Social Work and Criminology. The issues of poverty and social asymmetries also constituted one of the key foci of the Human Economy Programme's research endeavours. While still in the formative period of its establishment, the Human Economy Programme, under the leadership of Prof John Sharp and Prof Keith Hart, contributed significantly to research in the Faculty in 2011.

Two other notable contributions to the Faculty of Humanities' research outputs were the compelling studies by Molly Brown and A de Villiers of the Department of English on identity in the work of Chris Zithulele Mann and TS Eliot's increasing interest in religion, as reflected in his *The Hippopotamus*, respectively.

In Historical and Heritage Studies, Prof Johan Bergh and Prof Ian Phimister, in collaboration with Herman Giliomee, Extraordinary Professor of History at the University of Stellenbosch, continued their research on the Kruger papers, and Prof Alois Mlambo continued his research in the project, "The comparative history of political engagement in Western and African societies".

Here it should be noted that with an output of 27 publications, the Department of Historical and Heritage Studies had been singularly productive during 2011.

From the Department of Anthropology and Archaeology, two research initiatives among several that stood out during 2011 are Laurenco Pinto's site-specific study on rock art in the southern region of the Eastern Cape and Dr Fraser McNeill's ethnographic investigations into child antiretroviral workshops as ritualistic rites of passage.

As indicated above, during 2011, academics in the Faculty produced a total of nine books or volumes. These include Imaginary antipodes: Essays on contemporary Australian literature by Russell West-Pavlov of the Department of English, Dias, Da Gama en die Khoikhoin: Ontmoeting van kulture aan die suidpunt van Afrika by O Ferreira of the Department of Historical and Heritage Studies, and Community of insecurity: SADC's struggle for peace and security in Southern Africa by Prof Laurie Nathan of the Department of Political Sciences.

The 2011 academic year also witnessed the production of several noteworthy creative outputs, including the award-winning movement piece, As the Night Falls/Penumbra, choreographed by N Haskins, two CDs, namely Beethoven Tango and Shanghai Brunch, by Dr C du Plessis of the Department of Music, as well as the scenographic productions for Picasso and Molière by Prof H Hoffer of the Department of Drama.

Attesting to the depth and impact of scholarship in the Faculty, several departments and academics in the Faculty were the recipients of various awards and accolades during 2011, including the KykNet Ghoema Award for Best Instrumental CD in 2011 awarded to Dr C du Plessis for his CD, Shanghai Brunch, and the 2011 Standard Bank Ovation Award conferred on the Department of Drama for the production, As the Night Falls/Penumbra. In 2011, Prof David Medalie of the Department of English was also shortlisted for the Caine Prize for African Literature for his short story, The mistress's dog.

Of course, we acknowledge that while 2011 was a decidedly fruitful year for the Faculty, the year can only be considered truly productive if the outputs produced are used as the basis for even greater levels of outputs in the years to come.

#### **Prof Norman Duncan**

Dean: Humanities

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## Faculty Research Output

#### **Afrikaans**

#### Journal articles

- Bosman HJ: 2011. Die diagnostiese waarde van 'n Nederlandse woordeskattoets vir Afrikaanssprekende aanleerders. In LitNet Akademies, 8(3), pp 137–166.
- Botes N, Cochrane N: 2011. Generiese merkers in die kortverhaalsiklus: Deel 1:Teoretiese uitgangspunte. In **LitNet Akademies**, 8(2), pp 112–151.
- Botes N, Cochrane N: 2011. Generiese merkers in die kortverhaalsiklus: Deel 2: 'n Toepassing op *Die dag toe ek my hare losgemaak het* Van Willemien Brummer. In **LitNet Akademies**, 8(2), pp 152–187.
- Burger WD: 2011. 'n Verandering van vorm as die vorm van verandering: Antjie Krog se 'n Ander tongval. In Stilet: Tydskrif vir die Afrikaanse Letterkundevereniging, 23(1), pp 18–35.
- Van Niekerk J: 2011. Die leiersfigure Van Mandela en Moshoeshoe in *A Change of Tongue en Beggin to Be Black* deur Antjie Krog: 'n Voorlopige ondersoek. In **Stilet: Tydskrif vir die Afrikaanse Letterkundevereniging**, 23(1), pp 75–86.
- Zajas P:2011. Die etiek (al dan nie) Van niefiksie. Kantaantekeninge by Ryszard Kapuscinski, Frank Westerman en Antjie Krog. In Stilet: Tydskrif vir die Afrikaanse Letterkundevereniging, 23(1), pp 114–129.
- Zajas P: 2011. Around Kapuscinski non-fiction. Evaluating the discussion. In **Teksty Drugie**, (1/2), pp 265–278.
- Van Niekerk J: 2011. Verstedeliking, Suid-Afrikaanse letterkundes en die kultuurteks. In **Tydskrif vir Letterkunde**, 48(2), pp 50–70.
- Koch J, Zajas P: 2011. Uit de donkere dagen van voor *linguistic turn* oftewel wat J.M. Coetzee in de bekentenis van Willem Termeer zag en wat hij daarmee deed. In **Tydskrif vir Letterkunde**, 48(2), pp 93–111.
- Willemse HSS: 2011. Tydskrif vir Letterkunde 'n Aaneenlopende rekord van 75 jaar. In **Tydskrif vir Letterkunde**, 48(2), pp 5–12.
- Willemse HSS: 2011. S.V. Petersen se poësie van verwantskap. In **Tydskrif vir Nederlands en Afrikaans,** 17(2), pp 3–20.

#### Chapters in books

Webb VN: 2011. Standaardafrikaans: 'n vurk in die pad? 'n Taalpolitieke perspektief. In **Standaardtalen in beweging**, Stichting Neerlandistiek VU, pp 193–214.

## African Languages

#### Journal articles

- De Schryver G-M, Prinsloo DJ: 2011. Do dictionaries define on the level of their target users? a case study for Three Dutch Dictionaries. In **International Journal of Lexicography**, 24(1), pp 5–28.
- Taljard E, Nchabeleng MJ: 2011. Management and internal standardization of chemistry terminology: a Northern Sotho case study. In **Lexikos**, 21, pp 194–216.
- Prinsloo DJ: 2011. A critical analysis of the lemmatisation of nouns and verbs in isiZulu. In **Lexikos**, 21, pp 169–193.
- Faasz G, Prinsloo DJ: 2011. A computational implementation of the Northern Sotho infinitive. In **South African Journal of African Languages/Suid-Afrikaanse Tydskrif vir Afrikatale**, 31(2), pp 281–301.
- Prinsloo DJ, Heid U: 2011. A bilingual dictionary for a specific user group: supporting Setswana speakers in the production and reception of English. In South African Journal of African Languages/Suid-Afrikaanse Tydskrif vir Afrikatale, 31(1), pp 66–86.
- Taljard E, Prinsloo DJ, Fricke I: 2011. The use of LSP dictionaries in secondary schools a South African case study. In **South African Journal of African Languages/Suid-Afrikaanse Tydskrif vir Afrikatale**, 31(1), pp 87–109.
- Groenewald PS: 2011. Woordgroepvers. In South African Journal of African Languages/Suid-Afrikaanse Tydskrif vir Afrikatale, 31(1), pp 17–29.
- Mojalefa MJ: 2011. Ngwaga wa Mopedi: seka sa ngwaga wa merafe ye mengwe ya Bibele. In **Verbum et Ecclesia**, 32(1), pp 1–8.

In the list of research outputs, in all cases the heading "Papers published" refers to papers in refereed, published conference proceedings, and the heading "Journal articles" refers to articles published in accredited, peer-reviewed, refereed specialist journals.

#### Papers published

Prinsloo DJ, Heid U, Bothma TJD, Faasz G: 2011. Interactive, dynamic electronic dictionaries for text production. In Electronic lexicography in the 21st century: New applications for new users Proceedings of eLex 2011, 10-12 Nov, Trojina, Institute for Applied Slovene Studies, pp 215–220.

## **Ancient Languages**

#### Journal articles

Straeuli C: 2011. Why did the Thebans defeat the normally militarily superior Spartans at the Battle of Leuctra (371 BC)? In Akroterion: Journal for the Classics in South Africa/Tydskrif Vir Die Klassieke in Suid-Afrika, 56, pp 159–168.

Stander HF: 2011. Chrysostom on hunger and famine. In HTS Theological Studies/Teologiese Studies, 67(1), pp 1–7.

Sutton L: 2011. The rising of dawn — an investigation of the spatial and religious background of 'dawn' in Psalm 139:7-12. In Journal for Semitics/Tydskrif Vir Semitistiek, 20(2), pp 546–561.

Botha PJ: 2011. Poetry and Perlocution in Psalm 26. In Old Testament Essays (New Series): Journal of the Old Testament Society of South Africa, 24(1), pp 30–48.

Mondriaan ME: 2011. Who were the Kenites? In Old Testament Essays (New Series): Journal of the Old Testament Society of South Africa, 24(2), pp 414–430.

#### Chapters in books

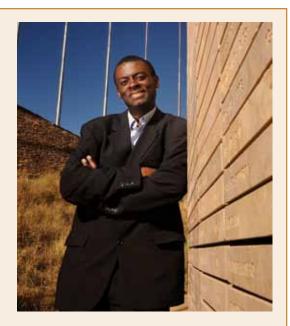
Botha PJ: 2011. Freedom to roam in a Wide Open Space. Psalm 31 Read in Conjunction with the History of David in the Books of Samuel and the Psalms. In Seitenblicke. Literarische und historische Studien zu Nebenfiguren im zweiten Samuelbuch, Academic Press Fribourg, pp 424–442.

# Anthropology and Archaeology

#### Journal articles

Trapido J: 2011. The Political Economy of Migration and reputation in Kinshasa. In Africa: Journal of the International African Institute, 81(2), pp 204–225.

Dr Thula Simpson



Dr Thula Simpson is a member of the Department of Historical and Heritage Studies. He joined the Department as a postdoctoral fellow and was appointed as a senior lecturer on a full-time basis in 2009. His research focuses on the history of the liberation struggle in southern Africa and he has published articles on this theme in a number of journals, including African Historical Review, African Studies, Journal of Southern African Studies, Social Dynamics and South African Historical Journal.

Pikirayi I, Chirikure S: 2011. Debating Great Zimbabwe. In Azania-Archaeological Research In Africa, 46(2), pp 221–231.

Ashley CZ, Bouakaze-Khan d: 2011. Conservation and Management of Archaeological Sites in Sub-Saharan Africa. In Conservation and management of archaeological sites, 13(2/3), pp 95–102.

Schoeman MH, Pikirayi I: 2011. Repatriating more than Mapungubwe human remains: archaeological material culture, a shared future and an artificially divided past. In **Journal of Contemporary African Studies**, 29(4), pp 389–403.

#### Books

McNeill FG: 2011. AIDS, Politics, and Music in South Africa. Cambridge University Press, pp 278.

Pikirayi I: 2011. Tradition, Archaeological Heritage Protection and communities in the Limpopo Province of South Africa. OSSREA Publications, pp 128.

#### Chapters in books

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McNeill FG, James D: 2011. Singing Songs of AIDS in Venda, South Africa: Performance, Pollution, and Ethnomusicology in a Neo-Liberal Setting. In **The Culture of AIDS in Africa**, Oxford University Press, pp 193–212.

#### Drama

#### Journal articles

Munro MMS: 2011. Lessac's structural NRG as an aid to Zulu performers' production of English vowels — a preliminary exploration. In Essay EarWitness, 23(6), pp 121–131.

## **English**

#### Journal articles

Brown MA: 2011. Light on shades: Complex constructions of identity in the poetry of Chris Mann. In **English Academy Review**, 28(1), pp 64–72.

De Villiers A R: 2011. A hunger for seriousness? T.S. Eliot's 'The Hippopotamus'. In **English Academy Review**, 28(2), pp 62–74.

Coetzee L: 2011. Empowering girls? The portrayal of Anne and George in Enid Blyton's *Famous Five* series. In **English Academy Review**, 28(1), pp 85–98.

Brown MA: 2011. The physics of responsibility: Alternate worlds and adolescent choices. In Mousaion: South African Journal of Information Studies, 28(2 (Spes)), pp 1–13.

Robson G: 2011. Negotiating a new cultural space: Aspects of fantasy in contempory South African youth literature, with specific reference to *Because Pula Means Rain* by Jenny Robson. In Mousaion: South African Journal of Information Studies, 28(2), pp 14–25.

Soldati-Kahimbaara KT: 2011. Johannesburg: City of Dreams or Dream City. In **TRANS Internet-Zeitschrift für Kulturwissenschaften**, 18(June), pp 5.

Wessels JA: 2011. Intertekstualiteit en modernistiese kompleksiteit in Henriette Grove se Linda Joubert-romans. In **Tydskrif vir Letterkunde**, 48(2), pp 32–49.

#### **Books**

West-Pavlov RB: 2011. Imaginary Antipodes: Essays on Contemporary Australian Literature and Culture. Universitatsverlag Winter (Winter University Press Heidelberg, Germany), pp 238.

#### Chapters in books

West-Pavlov RB: 2011. Intertextuality and the "Spatialization" of Reading Conradian Journeys in Dabydeen's *Disappearance*. In **Talking Words: New Essays on the Work of David Dabydeen**, University of the West Indies Press, pp 58–72.

#### Papers published

Green PM: 2011. The Role of the Media in a New Democracy. In Media, Politics and the Public, Axel and Margaret Ax: son Johnson Foundation, pp 149–158.

## Philosophy

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Rossouw GJ: 2011. The Sub-Sahara African survey of Business Ethics as field of teaching, training and research. In **African Journal of Business Ethics**, 5(2), pp 61–65.

Rossouw GJ: 2011. The state of Business Ethics as field of teaching, training and research in Sub-Saharan Africa. In African Journal of Business Ethics, 5(2), pp 96–102.

Rossouw GJ: 2011. Global business ethical perspectives on capitalism, finance and corporate responsibility: the impact of the global financial crisis of 2008. In **Asian Journal of Business Ethics**, 1(1), pp 63–72.

Siemens HW: 2011. The Problem of Law and Life in Nietzsche's Thought. In CR-The New Centennial Review, 10(3), pp 189–216.

Painter-Morland MJ: 2011. Rethinking Responsible Agency in Corporations: Perspectives from Deleuze and Guattari. In **Journal of Business Ethics**, 101(1), pp 83–95.

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- Wolff E: 2011. Responsibility and Technics in Levinas and Jonas Two strategies in response to the disorientation of ethics in the modern world. In **Philosophy Today**, May, pp 127–143.
- Hofmeyr AB: 2011. The culture and subjectivity of neo-liberal governmentality. In **Phronimon: Journal of the South African Society for Greek Philosophy and the Humanities**, 12(2), pp 19–42.
- Kistner U: 2011. The Exception and the Rule: Fictive, Real, Critical. In **Telos**, (157), pp 43–59.
- Kistner U: 2011. Under new management: the ambiguities of 'tranformation' in higher education. In **Transformation**Critical perspectives on Southern Africa, 77, pp 146–162.
- Wolff E: 2011. *Poiesis*. Oor maaksels en hul wêreld na aanleiding van Versfeld se *Pots and Poetry*. In **Tydskrif vir Letterkunde**, 48(1), pp 206–215.

#### Books

Wolff E: 2011. Political Responsibility for a Globalised World After levinas' Humanism. Transcript, pp 283.

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- Rossouw GJ: 2011. The ethics of corporate governance in global perspective. In **Corporate Governance and Business Ethics**, Springer, pp 327–341.
- Painter-Morland MJ: 2011. Systemic Leadership, Gender, Organization. In Leadership, Gender, and Organization, Springer, pp 139–165.

## Historical and Heritage Studies

#### Journal articles

- Simpson TW: 2011. Main Machinery: The ANC's Armed Underground in Johannesburg During the 1976 Soweto Uprising. In African Studies, 70(3), pp 415–436.
- Simpson TW: 2011. Military Combat Work: the Reconstitution of the ANC's Armed Underground, 1971-1976. In **African Studies**, 70(1), pp 103–122.

- Phimister I: 2011. Corporate Profit and Race in Central African Copper Mining, 1946-1958. In **Business History Review**, 85, pp 749–774.
- Bojé JG, Pretorius F: 2011. Kent gij dat volk: the Anglo-Boer War and Afrikaner identity in postmodern perspective. In **Historia**, 56(2), pp 59–72.
- Grobler JEH: 2011. The Retief Massacre of 6 February 1838 revisited. In **Historia**, 56(2), pp 113–132.
- Van der Merwe DM: 2011. Moulding *volksmoeders* or *volks* enemies? Female students at the University of Pretoria, 1920-1970. In **Historia**, 56(1), pp 77–100.
- Brownell FG: 2011. Flagging the "new" South Africa, 1910-2010. In **Historia**, 56(1), pp 42–62.
- Machaba TA: 2011. American press reportage on PW Botha's attempts at reforming apartheid, 1978-1989, with specific reference to the New York Times, Newsweek and Africa Report. In Journal for Contemporary History/Joernaal vir Eietydse Geskiedenis, 36(1), pp 75–97.
- Pretorius W, Pretorius F: 2011. Konsentrasiekampe vir swart vlugtelinge in die Heidelbergdistrik gedurende die Anglo-Boereoorlog. In Journal for Contemporary History/Joernaal vir Eietydse Geskiedenis, 36(2), pp 48–69.
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- Ferreira OJO: 2011. Neerslag van die Anglo-Boereoolog (1899-1902) in die Portugese geskiedskrywing. In **Journal of Contemporary History**, 36(2), pp 179–192.
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- Bojé JG, Pretorius F: 2011. Of Gold and Iron: Collaborators in the Winburg District. In South African Historical Journal/Suid-Afrikaanse Historiese Joernaal, 63(2), pp 277–294.
- Klein G: 2011. Publicising the African National Congress: *The Anti-Apartheid News*. In South African Historical Journal/Suid-Afrikaanse Historiese Joernaal, 63(3), pp 394–413.

Joubert A: 2011. Rain songs and the observance of the rain cult amongst the Lobedu people of Queen Modjadji. In **South African Journal of African Languages/Suid-Afrikaanse Tydskrif vir Afrikatale**, 31(1), pp 6–16.

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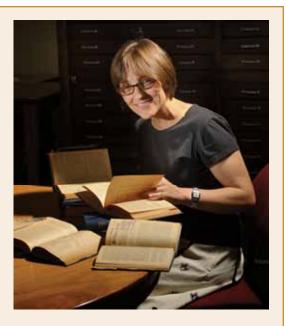
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Kriel L, Bodenstein M: 2011. Die Rolle der Frauen in deutschen Siedlergemeinschaften nach dem Endedes Kaiserreichs – "Zugeschriebene, abgelehnte und akzeptierte Identitäten" erforscht anhand von Printmedien und Erinnerungen. In Deutsche evangelische Kircheim kolonialen südlichen AfrikaDie Rolle der Auslandsarbeitvon den Anfängen bis in die 1920er Jahre, Harrassowitz Verlag, pp 323–348.

Phimister I: 2011. Proletarians in Paradise: The Historiography and Historical Sociology of White Miners on the Copperbelt. In Living the End of Empire, Brill, pp 141–160.

Pieterse J: 2011. Reading and Writing the Mpondo Revolts. In Rural Resistance in South Africa, Brill, pp 43–65.

Prof Lize Kriel



Prof Lize Kriel is a member of the Department of Historical and Heritage Studies. She joined the Department in 1998. For her doctoral research, she used reportage on a colonial conflict in the nineteenth-century Transvaal as a case study to interrogate the use of missionary sources as historical evidence. In her subsequent research, she continued to look into missionary diaries, correspondence and periodical publications, asking what meaning can be allocated to these texts in a colonial context, especially where ordinary women become more visible. Her current project is on an epistolary network facilitated by Lutheran deaconesses for a German-African community of Christian readers.

Pretorius F: 2011. Welcome not that welcome: The Relations between Foreign Volunteers and the Boers in the Anglo-Boer War of 1899-1902. In War Volunteering in Modern Times: From the French Revolution to the Second World War, Palgrave Macmillan, pp 122–149.

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## Communication Pathology

#### Journal articles

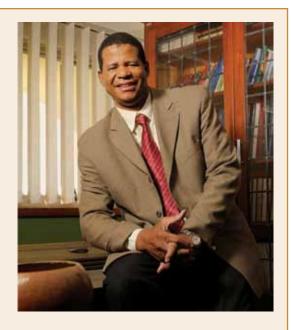
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- Kathard H, Ramma L, Pascoe M, Jordaan H, Moonsamy S, Wium AM, Du Plessis S, Pottas L, Khan NB: 2011. How can speechlanguage therapists and audiologists enhance language and literacy outcomes in South Africa? (And why we urgently need to). In South African Journal of Communication Disorders, 58(2), pp 59-71.
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## Dean's Office: Human **Economy Programme**

#### Journal articles

- Krige PFD: 2011. We are Running for a Living: Work, Leisure and Speculative Accumulation in an Underground Numbers Lottery in Johannesburg. In African Studies, 70(1), pp 3–24.
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Prof Jerry Mojalefa is Head of the Department of African Languages. He started his career as a teacher. He was later a radio announcer, translator and producer until he turned his interests to an academic career. He received the EM Ramaila literary prize for best author, as well as the Best Contribution in Teaching and Research Award from the Pan South African Language Board (PanSALB). He has acted as a referee for five national and international journals on literature and linguistics, and has published more than 20 books in Sepedi, Setswana and English, including novels, collections of short stories, poetry and essays.

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Prof De Wet Swanepoel is a member of the Department of Communication Pathology. He is a clinical research audiologist and his research and clinical interests include infant hearing loss and early detection and intervention systems, as well as telehealth in audiology and HIV/Aids-related audiovesibular pathophysiology. Among his research achievements are the evaluation of a novel approach to screening for hearing loss at immunisation visits for young infants as a viable alternative in developing contexts. He has received several awards and research grants for his work and has published numerous peer-reviewed articles.

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# Centre for Augmentative and Alternative Communication (CAAC)

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Prof Benda Hofmeyr



Prof Benda Hofmeyr is a member of the Department of Philosophy. She has served as a research fellow and guest lecturer to the Department of Philosophical Anthropology at the Radboud University Nijmegen. Her current research is focused on the conditions of possibility of ethical agency in Levinas and Kant. She has received numerous prestigious scholarships and awards, including an Exceptional Young Researcher's Award in 2010. She has published in a variety of fields, including contemporary continental, political and moral philosophy, as well as art and cultural production.

## Psychology

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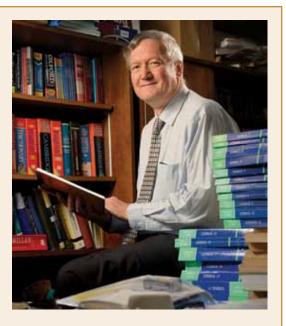
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Prof Danie Prinsloo



Prof Danie Prinsloo is a member of the Department of African Languages. He started his professional career as a junior lecturer in African Languages. His research focuses on Sepedi grammar and on corpusbased African language lexicography. He acted as a consultant for the Pan South African Language Board (PanSALB) to guide the eleven national lexicography units and was appointed as the Linguistic Manager for a multimillion rand text-processing project for the official African languages of South Africa for the Department of Arts and Culture. He received the PanSALB Award for the Effective Innovation of Technology to Promote Multilingualism in 2010.

## Sociology

#### Journal articles

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### Visual Arts

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January to October 2011 Prof Anton Kok Acting Dean



Prof André Boraine Dean

# 4.6 Law

The Faculty of Law is committed to playing a significant role in legal research in South Africa and in Africa. As a result of this commitment, various initiatives are continuously considered to improve – in volume and in quality – the Faculty's research outputs.

In 2011, 71 accredited journal publication units were produced. In addition, four academic books, 10 chapters in three book collections, and four conference proceedings were submitted to the Department of Education for accreditation purposes. Faculty members presented papers at 20 conferences with international status and eight at national conferences and/or seminars.

Innovative research was conducted on various important areas of the law and the following are some of the highlights: The Centre for Human Rights saw the publication of an important peer-reviewed book entitled *Prosecuting international crimes in Africa*, edited by two alumni of the LLM (Human Rights and Democratisation in Africa) degree programme.

Two researchers in the Department of Jurisprudence respectively published on the ethical and legal implications of post-mortem sperm retrieval for the purposes of artificial insemination, and the still highly relevant and important question of transformation, restoration and reconciliation in post-apartheid South Africa.

Interesting and relevant articles were published by members of the Department of Mercantile Law relating to proposals for tax reform in order to promote South Africa as a gateway for investment in Africa; the impact of labour law on aspects of the

#### Research entities

#### Institutes

Institute for International and Comparative Law in Africa

#### Centres

- Centre for Advanced Corporate and Insolvency Law
- · Centre for Medicine and Law
- · Centre for Sport and Entertainment Law
- · Centre for Child Law
- · Centre for Human Rights
- · Centre for Intellectual Property Law

#### Units

· International Development Law Unit

newly introduced business rescue procedure and company law in general; and deficiencies in the new Companies Act of 2008 regarding offers of securities to the public. A researcher in the Department of Private Law levelled stringent criticism in a journal publication and indicated that the Supreme Court of Appeal ignored crucial provisions of the Constitution, 1996, in holding that the Minister of Safety and Security cannot be held vicariously liable in delict for the rape of a young woman by an off-duty policeman.

Members of the Department of Public Law wrote and/or contributed to three interesting new books relating to politocracy, disability law in Africa and medical jurisprudence. Research was undertaken around the question of whether, in the light of its constitutional recognition, proving the existence of customary law should not be dealt with in the same fashion as common law – by way of judicial notice.

Prof Danny Bradlow, a member of the Centre for Human Rights (CHR) and the SARChI Professor of International Development Law and African Economic Relations, served as the lead researcher for a study on the incorporation of international standards into financial supervisory structures in Southern African Customs Union (SACU) member states. The International Development Law Unit (IDLU) was also launched as a research unit in the CHR.

Researchers identified poverty as a new research focus area for the Faculty and in 2011 took the first steps to establish this as a Faculty-wide research theme. The purpose of establishing this as a focus area is to consolidate and coordinate existing research on the topic so as to ensure more depth in research and generate more scholarly outputs and postgraduate students. This focus lends itself particularly well to collaboration with other faculties and disciplines.

The Faculty hosted a Winter School for postgraduate study and research, with the aim of developing not only generic research skills, but also substantive knowledge to enhance more conceptual research.

In 2011, three members of staff (one being an extraordinary professor) applied for and received NRF ratings. They were Prof Johan van der Vyver (A2), Prof Danny Bradlow (B1) and Dr Magnus Killander (Y2). Prof Steve Cornelius received the South African Academy of Arts and Science Prize for the best journal article in a law journal. Dr Elzette Muller received the Norton Rose Tax Award for the best doctoral thesis. Prof Piet Delport received the *Tydskrif vir Hedendaagse Romeins-Hollandse Reg* (THRHR) prize for the best short contribution to this law journal. Prof Christof Heyns was accepted as a Fulbright Visiting Fellow at Harvard Law School.

#### **Centre for Human Rights**

The Centre for Human Rights enjoys the status of an academic department and focuses its research on human rights law and the rule of law in Africa. The Centre's International Development Law Unit is headed by Prof Danny Bradlow. It is the mission of the Unit to conduct and promote policy-oriented legal research on international development law topics, with a particular emphasis on the needs of Africa in general and southern Africa in particular.

#### Centre for Child Law

Apart from its strong and ground-breaking focus on children's rights litigation, the Centre for Child Law conducts research on this important area of the law.

#### **Centre for Intellectual Property Law**

The Centre for Intellectual Property Law is located in the Department of Private Law. One of its aims is to promote and increase research in the area of intellectual property law. The Centre became fully operational in 2011 with the appointment of two extraordinary professors and the presentation of the first LLM modules in Intellectual Property Law, further strengthening this Centre. This was an important step in enhancing the Faculty's research capacity in this important area of the law.

#### Centre for Advanced Corporate and Insolvency Law

The Centre for Advanced Corporate and Insolvency Law provides a platform for researchers to work in both these areas of law since there is a strong link between certain aspects of these areas of commercial law. One of its research aims is to compile a comparative law book on the insolvency law systems in Africa.

#### **Centre for Sport and Entertainment Law**

The Centre for Sport and Entertainment Law was transferred to the Faculty of Law and it busies itself, among other activities, with research in these areas of the law.

#### Institute for International and Comparative Law in Africa

The Institute for International and Comparative Law in Africa (ICLA) is a research institute with the primary objective of enhancing the internationalisation and the growth of the research outputs and postgraduate focus of the Faculty, while promoting the role and the rule of law in Africa. It became fully operational in 2011, and it is envisaged that it will further strengthen the research capacity of the Faculty in relation to its focus on Africa by way of collaborative research and also an increase in accredited international publications.

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## Faculty Research Output

## Mercantile Law

#### Journal articles

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#### Research and technical/policy output

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## Centre for Human Rights

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Prof Anne Skelton



Prof Anne Skelton is the Director of the Centre for Child Law at the University of Pretoria. She has been fighting for the rights of children in South Africa for more than two decades and was instrumental in several landmark court cases involving children. This, together with her involvement in drafting legislation affecting children, makes her a leading figure in changing child law for the better. She was recently nominated as one of the three laureates of the prestigious 2012 World's Children's Prize, which recognises people who have done outstanding work for children whose rights have been violated.

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Prof Erika de Wet



Prof Erika de Wet is an extraordinary professor in the Department of Public Law. She is also a professor in International Constitutional Law at the University of Amsterdam in The Netherlands. In 2007, she received a fiveyear excellence grant from The Netherlands Organisation for Scientific Research for a research project on hierarchy in international law. Her publication, The Chapter VII powers of the United Nations Security Council, has, among others, been cited by the International Court of Justice, the European Court of Human Rights and the Supreme Court of the United Kingdom (2007). She is a member of the Advisory Committee on Issues of Public International Law of The Netherlands.

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Prof Christof Heyns



Prof Christof Heyns is the former dean of the Faculty of law and is currently serving as United Nations Special Rapporteur on extrajudicial, summary and arbitrary executions. His research focus is the legal principles that apply to the killing of people under circumstances that violate international law. His first thematic report will deal with crowd control, and more specifically the use of lethal force by the security forces during social demonstrations. He is currently co-writing a book on regional human rights systems.

## Public Law

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## Jurisprudence

#### Journal articles

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Prof Karin van Marle



Prof Karin van Marle is Head of the Department of Jurisprudence. Her main areas of interest are post-apartheid jurisprudence, critical legal theory, feminist theory (ethical feminism, ethics of care, violence, poverty and death), critical race theory, gender theory, postmodern legal theory, and law and literature. She is a member of the South African Association of Law Teachers and serves on the Editorial Board of Law and Critique and Feminist Legal Studies. She has published widely in national and international accredited journals and has acted as referee for national accredited journals, as well as for applications for NRF ratings.



Prof Anton Ströh

# 4.7

## Natural and Agricultural Sciences

Apart from establishing itself as one of the top international faculties of sciences, the Faculty strives to be the leading science faculty on the African continent, contributing significantly through its research and postgraduate students 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.

The Faculty is one of the most diverse science faculties in South Africa. According to the ISI Web of Knowledge field rankings, the Faculty is highly recognised internationally in the fields of agriculture, environment and ecology, as well as in the plant and animal sciences. In plant and animal sciences, the University produces by far the highest number of articles in South Africa and is listed under the top 60 universities worldwide in relation to the total number of outputs in this field. The Faculty also has significant expertise in the physical and mathematical sciences with strong connections to the mining and mineral industries, including Sasol and the Nuclear Energy Corporation of South Africa (NECSA).

The strong research ethos of the Faculty is emphasised by the fact that 127 of its scientists are formally recognised by the NRF's peer evaluation system for the high quality and impact of their research on the national and international front.

The new R100 million Plant Sciences Complex, which will enhance interdisciplinary and cross-disciplinary research collaboration, brings together departments and faculties that would not have interacted with one another in traditional paradigms. This new facility includes, among others, research laboratories that are dedicated to conducting work in fields such as plant diversity, ecology, biotechnology and medicinal plant science. One wing of the Complex houses the new Forestry Research Programme, which includes the South African Forestry Company (SAFCOL) Forestry Chair, as well as a suite of laboratories to accommodate the growing activities of the Forestry and Agricultural Biotechnology Institute (FABI).

#### Research entities

#### Institutes

- Institute of Applied Materials (IAM)
- · Institute for Food, Nutrition and Wellbeing
- Forestry and Agricultural Biotechnology Institute (FABI)
- · Mammal Research Institute
- UP Water Institute (UPWI)

#### Centres

- Aon-Benfield Natural Hazards Centre, Africa
- Centre for Geoinformation Sciences (CGIS)
- Joint Centre for Science, Mathematics and Technology Education
- Centre for Environmental Economics and Policy in Africa (CEEPA)
- Centre for Land-related, Regional and Development Policy
- · Centre for Wildlife Management
- African Centre for Gene Technologies (joint centre with the CSIR and University of the Witwatersrand)
- · Centre for Environmental Studies (CFES)

#### Units

- · Bioinformatics and Computational Biology Unit
- · Conservation Ecology Research Unit (CERU)
- · Unit for Advanced Studies

During 2011, the Faculty contributed significantly to the production of high-quality, internationally recognised research publications. The 319 Department of Higher Education and Training (DHET) units recorded constitute more than 20% of the total publication output of the University of Pretoria. Through the Faculty's research endeavours for 2011, 128 master's and 48 doctoral degrees were awarded.

Although it is not possible to mention all the special awards in recognition of the Faculty's scientists, it is appropriate to note the following outstanding achievements:

The Tree Protection Cooperative Programme (TPCP) of FABI won a Technology and Human Resources for Industry Programme (THRIP) Award in the category Human Resource Development — Quantity and Quality of Postgraduate Education. This award represents a very substantial vote of confidence not only in the TPCP, but also in its South African forestry industry partners. This award clearly recognises the commitment that the South African forestry industry makes, not only to research and development, but also to the education of young South Africans.

Two highly acclaimed female researchers in the Faculty were honoured with the prestigious South African Women in Science Awards of the Department of Science and Technology (DST). Prof Namrita Lall of the Department of Plant Science received the Distinguished Woman Scientist Award for her outstanding scientific contribution to advancing science and building the knowledge base in the field of indigenous knowledge systems. Prof Jolanda Roux of FABI was the recipient of the Distinguished Young Woman Scientist Award (under the age of 40) for her outstanding contribution to advancing science and building the knowledge base in the Life, Natural and Engineering Sciences category. The Commonwealth Forestry Association also bestowed the Queen's Award on Prof Roux for her contribution to forestry.

Prof Sospeter Muhongo, honorary professor in the Department of Geology, was awarded the Ordre des Palmes Académiques by the French government. Originally established in 1808 by the Emperor Napoleon as a way of rewarding academics in the newly secularised university system, the Ordre des Palmes Académiques was conferred to honour eminent members of the University of Paris. Prof Muhongo was the Director of the Regional Office for Africa of the International Council for Science (ICSU), based at the NRF in Pretoria.

Prof Jean Lubuma was inducted as Fellow of the African Academy of Sciences (AAS) in 2011. Prof Lubuma was also awarded with the prestigious South African Mathematical Society (SAMS) Award for Research Distinction.

Prof Bernard Slippers (FABI and the Department of Genetics) was awarded the 2011 African Union's Academy of Sciences for the Developing World (TWAS) Young Scientists' National Award. Another feather in his cap was his election as the co-chair of the Global Young Academy (GYA), an international, independent, science-based institution that aims for excellence and impact. Prof Slippers and 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) are also two of three UP staff members to be elected as founding members of the South African Young Academy of Science (SAYAS).

Prof Casper Schutte, an honorary professor and a member of the Unit for Advanced Studies in the Department of Chemistry, was honoured with two prestigious medals for his scientific contributions in the field of chemistry. Prof Schutte was awarded the Gold Medal of the South African Chemical Institute (SACI), which is given to a person whose scientific contributions in the field of chemistry or chemical technology are judged to be of outstanding merit. The Southern Africa Association for the Advancement of Science (S<sub>2</sub>A<sub>2</sub>) also bestowed the South Africa Gold Medal on Prof Schutte for his exceptional contribution to the advancement of science.

Acknowledging the doyen of Precambrian, and especially Archaean palaeobiology and palaeontology, and his ground-breaking work on the origin, evolution and habitats of life on the early Earth, Prof James William Schopf was awarded the degree Doctor Scientiae (honoris causa) during the April graduation ceremonies. Prof Schopf developed many of the globally applied techniques and several important scientific indices, which have become accepted standards in the evaluation of the fossil content of ancient rocks.

Prof Nigel Bennett was appointed as a visiting professor in the Department of Zoology at the King Saud University in Riyadh, Saudi Arabia. Prof Bennett currently holds the Austin Roberts Chair of African Mammalogy and the SARChl Chair of Mammal Behavioural Ecology and Physiology at UP. During his recent visit, Prof Bennett received a gold medal of partnership from the Vice- Rector of Graduate Studies and Research at the University, Prof Ali S Al-Ghamdi.

Being people-centred, the Faculty continuously seeks for opportunities to recruit and appoint highly recognised researchers to either strengthen its existing research teams or to introduce new and relevant research foci in the Faculty.

Prof Robert (Bob) Millar was appointed as the Director of the Mammal Research Institute (MRI) in the Faculty from 1 April 2011. He has been the Director of the prestigious MRC Human Reproductive Sciences Unit at the University of Edinburgh, UK, for the past 12 years.

Two researchers have been appointed in the new SARCHI Chair in the Faculty. Prof Pavel Selyshchev will head the Chair in Complex Systems in the Department of Physics and Prof Subhabrata Chakraborti will head the Chair in Nonparametric, Robust Statistical Inference and Statistical Process Control in the Department of Statistics.

The African Centre for Gene Technologies (ACGT) partner institution appointed Dr John Becker as the new manager of the Centre. Dr Becker took over from Dr Jane Morris, who announced her retirement as the Centre's Director last year after serving in the position since the inception of the ACGT.

New DNA sequencing technologies developed over the past five years are now allowing scientists to simultaneously determine the sequence of all expressed genes in a developing tissue and determine the expression level of each gene, yielding unprecedented insights into the genetic control of growth and development of *Eucalyptus* tree species and hybrids (commonly known as gum trees). Over the past two years, the research team of Prof Zander Myburg of the Department of Genetics set out to decipher the DNA sequence of the entire catalogue of genes expressed during the growth and development of eucalypt trees. PhD students Eshchar Mizrachi and Martin Ranik sampled different woody and leaf tissues from a commercially grown eucalypt tree genotype of Sappi and used a new ultra-high throughput technology to generate more than four billion bases of expressed DNA sequences. In collaboration with Prof Fourie Joubert and PhD student Charles Hefer in the Bioinformatics and Computational Biology Unit at UP, they assembled these sequences into a transcriptome catalogue of 18 894 expressed genes. Prof Myburg's research team is now using the transcriptome sequence and profiles to identify candidate genes involved in the genetic control of wood development and cellulose production in trees.

Research led by Dr Justin Boyles of the Department of Zoology and Entomology suggests that pest control services provided by insect-eating bats in the USA are likely to save the American agricultural industry at least \$3 billion a year. The research was published in the April issue of *Science* magazine. The goal of the study was a universal one: to convince people that bats are worth saving. A total of 45 species of bats are found in the USA, while southern Africa – a much smaller area – is the habitat of up to 60 species. The value of the pest control services to agriculture provided by bats in the USA alone ranges from a low of \$3.7 billion to a high of \$53 billion a year, as estimated by the study. Bats eat tremendous quantities of flying pest insects, so the loss of bats is likely to have long-term effects on agricultural and ecological systems. Consequently, not only is the conservation of bats important for the wellbeing of ecosystems, but it is also in the best interest of national and international economies. This issue is of particular importance because bat populations are at risk as a result of the emerging disease of white-nose syndrome.

A \$4.475 million grant from the Bill and Melinda Gates Foundation to the Department of Agricultural Economics, Extension and Rural Development (LEVLO) will allow UP to build long-term expertise in agricultural economics alongside partner universities in Africa. An important outcome of the grant is to allow LEVLO and its partner African universities to offer more areas of specialisation, to deepen research foci, and to leverage the expertise for developing similar capacities in three other countries in the region.

Prof Gretel van Rooyen (Department of Plant Science), and Ms Yvette Naudé and Prof Egmont Rohwer (both from the Department of Chemistry) are investigating their new theory of a geochemical origin of "fairy circles" in the Namibian desert areas. This work was published in the *Journal of Arid Environments*, 2011. *National Geographic Wild* has commissioned Tigress Productions from Bristol in the UK to make a documentary on "fairy circles" as part of its *Wild Case Files 2* series. The documentary on the theories of the origin of the mysterious "fairy circles" will debut during 2012.

The first ever comprehensive dictionary of names for southern African trees was launched during Arbour Week 2011, which is celebrated across the world. Prof Braam van Wyk of the Department of Plant Science is one of the authors of the book.

An expert on seismic hazards, Prof Andrzej Kijko, Director of the Aon-Benfield Natural Hazard Centre, is one of the senior authors associated with the *Encyclopaedia of Solid Earth Geophysics*, Volume 1 (1st edition). The encyclopaedia, which was edited by Prof Harsh Gupta, consists of two volumes with 220 articles by leading experts and aims to serve as a collection of concise and detailed reference topics of solid earth geophysics. Prof Kijko was invited by the editor of the encyclopaedia to provide a contribution to the category on seismic hazards.

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## Faculty Research Output

## **Biochemistry**

#### Journal articles

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Prof Jolanda Roux won the Distinguished Young Women in Science Award in the Life, Natural and Engineering Sciences category for her research focusing on the health of trees, particularly diseases caused by fungi and their insect associates. Her research interests focus strongly on fungi and bacteria that result in the disease and death of their woody hosts. She is a professor in the Department of Microbiology and Plant Pathology, a member of the Management Committee of FABI and Manager of field and extension services of the Tree Protection Cooperative Programme (TPCP). She has published more than 100 papers on her research and has successfully supervised six PhD and 14 MSc students.

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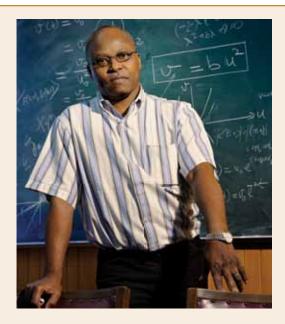
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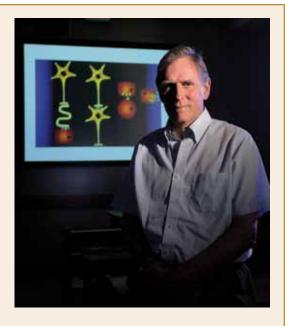
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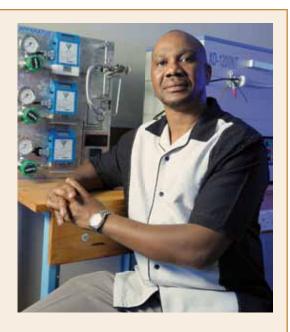
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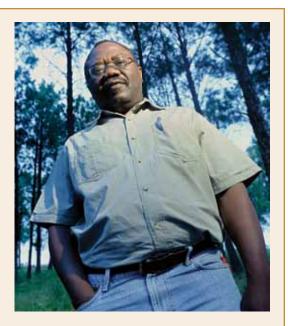
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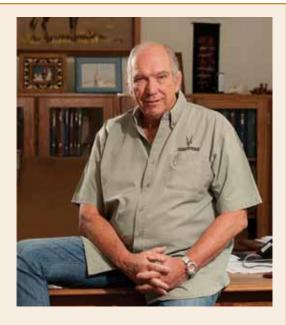
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Prof Johan Buitendag Dean

# 4.8 Theology

The Faculty has a strong research culture with an inquiry-led and research-intensive approach. All the Faculty's personnel are active research staff, and with the exception of only one member, all academic staff members have at least one doctoral degree. The publication units in accredited journals for full-time personnel increased from 6.4 in 2010 to 7.7 in 2011. Of the 145.5 publication units published in accredited theological journals, almost 65% appeared in ISI Web of Science journals. Currently, seven people who are connected to the Faculty as staff members, emeriti or extraordinary professors hold NRF ratings. These are Prof Johannes van Oort (A), Prof Gert Steyn (B), Prof Dirk Human (C), Prof Jurie le Roux (C), Prof Hennie Pieterse (C), Prof Andries van Aarde (C) and Prof Cas Wepener (Y).

Research and postgraduate studies form the two pillars of strength in the Faculty. In 2011, there was an increase in the number of research postgraduate degrees conferred by the Faculty since 2008. There was also a growth in the percentage of both master's and doctoral graduates in relation to the total postgraduate enrolments. To extend its research network, the Faculty continued to pursue international collaborations and cooperation alliances.

A variety of research themes link to UP's goal to strengthen the University's impact on economic and social development. This includes, inter alia, the role of the church and religion in poverty, apartheid, social cohesion and reconciliation, HIV/AIDS, personal

### Research entities

#### Institutes

- Institute for Missiology and Ecumenical Research (IMER)
- NOVA Institute for Research and Development for the Prevention of Poverty

#### Centres

- Centre for Contextual Ministry
- Centre for Public Theology

trauma and child abuse, gender, power and sexuality, violence, as well as theology, culture and society. Both theological journals *HTS Theological Studies* and *Verbum et Ecclesia* contributed to aspects of transformation.

In the different academic departments, various research activities have taken place. In Church History and Church Polity, Prof Graham Duncan, in collaboration with P Denis (University of KwaZulu-Natal), published a book on the history of the Federal Theological Seminary of Southern Africa. In Practical Theology, Prof Hennie Pieterse analysed sermons on Matthew 25:31–46 in eight South African provinces. Prof Julian Müller focused on personal trauma and adult spirituality, religious identity and the interplay between rural, urban and virtual worlds, forgiveness, reconciliation, restitution and social cohesion, while Prof Cas Wepener investigated religious rituals and social capital formation, as well as worship in a network culture. Prof Yolanda Dreyer explored gender, power, sexuality and pastoral engagement and Prof Maake Masango undertook a book project on pastoral care and violence. Prof Johann Meylahn focused on practical philosophical theology, culture and society.

Quantitatively and qualitatively, it was a good year for lecturers in the Department of Dogmatics and Christian Ethics, with 16 articles published in accredited journals, and 10 contributions at international and national conferences. Prof Johan Buitendag published two articles and three chapters in books. Prof Danie Veldsman completed a contribution to the Festschrift of the Dutch scholar Bram van de Beek on his understanding of the theology-science dialogue. Dr Vuyani Vellum is doing research that is funded by the Research Development Programme (RDP) at Thabo Mbeki Village, focusing on identifying the life-giving resources in squalid conditions of poverty and informal settlement.

In a New Testament project, entitled "NTW Fokus", the Department hosted an international conference on mission and ethics, and collaborated with the Scriptorium Bible Focus Centre in a seminar on the theme *Christians and their bibles*. Prof Gert Steyn worked on the Old Testament quotations in the New Testament, Prof Ernest van Eck focused on the parables, while Prof Kobus Kok did research on the topic of mission and ethics. Dr Elijah Mahlangu concentrated on the reading of the Bible in Africa, and Prof McGlory Speckman did research on the biblical hermeneutics of development.

Two international congresses with the themes *Deuteronomy, Theology and Ethics*, and *Psalms and Suffering* were presented by the Department of Old Testament Studies. The ProPent and ProPsalms seminars are two international flagships for biblical exegesis at UP and are organised in collaboration with the Ludwig Maximilian University in Munich, Germany. Prof Alphonso Groenewald is writing an international commentary on the Book of Isaiah, Prof Piet Venter examined research themes on Second Temple literature, while Dr Sias Meyer focuses his research emphasis on Pentateuch studies.

In the Department of Religion and Missiology, Prof Nelus Niemandt published on the relationship between mission and power, and on the "legacy" of David Bosch. Prof Thias Kgatla worked on themes like the South African Council of Churches, unity in the Dutch Reformed family, as well as on African independent churches, while Dr Jaco Beyers conducted research on the origin of religion from the insights gathered at a new archaeological discovery in Turkey. Prof Attie van Niekerk was project leader of a South Africa-Netherlands Research Programme on Alternatives in Development (SANPAD) project, which resulted in a book, *The People's Power Project*, with Paul Hebinck of Wageningen of the Netherlands.

#### Prof Johan Buitendag

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### Faculty Research Output

### Systematic Theology and Christian Ethics

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- Veldsman DP: 2011. Transcendence: What on earth are we talking about? In **Acta Theologica**, 14, pp 128–140.
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# Science of Religion and Missiology

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- Smith TJ: 2011. A dialigue about the South African "here and now" with the legacies of the early church fathers as interlocutors. In NGTT: Ned Geref Teologiese Tydskrif, 52 (3/4), pp 489–496.
- Kgatla ST: 2011. On a bumpy road: historical survey of (unity) talks between the Dutch Reformed Church in Africa and the Dutch Reformed Church before 1994. In Studia Historiae Ecclesiasticae: Journal of the Church History Society of Southern Africa, 37(2), pp 207–224.
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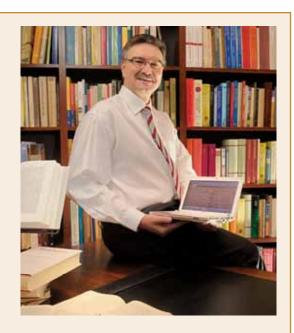
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Prof Gert Steyn



Prof Gert Steyn is Head of Department for New Testament Studies, and currently serves as president of the New Testament Society of South Africa (NTSSA). He is a member of the Studiorum Novi Testamenti Societas (by invitation only), as well as executive and founding member of the Association for the Study of the Septuagint in South Africa. He has edited five books, authored more than 50 publications and contributed more than 20 chapters in books.

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Prof Yolanda Dreyer is the leader of a project on gender, power, sexuality and pastoral engagement. This research is a book project with the working title of Marriage, sexuality, gays and pastoral engagement. Themes include whether the Bible is good news for human sexuality, de-centre-ing sexual difference, the sanctity of marriage and its mythological origins, forms and models, prejudice, homophobia, heteronormativity, a root of hegemony and internalised homophobia, and an inclusive pastoral theological perspective. She delivered a guest lecture at the Otterbein University, Westerville, Ohio, USA in May 2011 and delivered the keynote address at the International Academy for Practical Theology in Amsterdam in June 2011.

# Reformed Theological College

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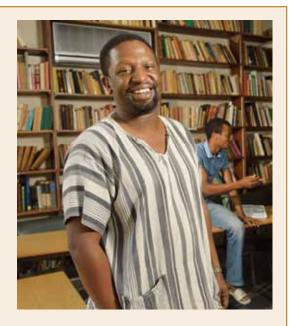
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Prof Vuyani Vellen



Prof Vuyani Vellen is the Director of the Centre for Public Theology. He recently coedited the book *Prophet from the south*. This book celebrates the work of Allan Boesak as one of the eminent theologians in South Africa and the world. He has participated in a number of international conferences in which he also presented papers. In 2012 he was part of the conference that deliberated on the theme of a new financial and economic architecture in Saõ Paulo, Brazil, within the auspices of the World Council of Churches, the Council for World Mission and the World Communion of Reformed Churches.

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Prof Graham Duncan



Prof Graham Duncan is Head of the Department of Church History and Church Polity. He has published 40 articles in accredited journals in the fields of church history, church polity and missiology. He has also published three books. He was born and raised in the Church of Scotland and was ordained a minister of the Bantu Presbyterian Church of South Africa in 1978. He served as a minister in the Reformed Presbyterian Church in Southern Africa in 1998 and 1999, and since then as a minister in the Uniting Presbyterian Church in Southern Africa. He was Moderator of the Presbytery of Tshwane from 2010 to 2012.



Prof Gerry Swan Dean

# 49 Veterinary Science

The research output of the Faculty again showed steady growth over the past year as measured by the subsidy units earned from the Department of Higher Education and Training for publications, which increased from 81.6 in 2010 to 82.8. The number of NRF-rated staff members also increased to 23 in 2011, representing an increase of 53% over the past three years. The Faculty of Veterinary Science has five departments, all of which contribute to the Faculty's research programme.

In the Department of Veterinary Tropical Diseases, considerable progress was made in developing diagnostics for tuberculosis in wildlife. An interferon gamma assay developed and optimised for rhinoceros showed high specificity when tested in the Kruger National Park. A similar lion-specific assay developed in collaboration with the University of Utrecht will be validated as a diagnostic test during 2012 and 2013. A study conducted in Swaziland revealed a high incidence of bovine tuberculosis and a

### Research entities

#### Centres

- · Centre of Veterinary Wildlife Studies
- Equine Research Centre (ERC)

high genetic diversity among isolates of *Mycobacterium bovis*, partially ascribed to the cattle trade in South Africa. The mechanical and transstadial transmission of lumpy skin disease virus by *Rhipicephalus appendiculatus* and *Amblyomma hebraeum* ticks were demonstrated for the first time, solving an old problem. It also established the capability of a European bluetongue virus serotype 8 strain to infect goat foetuses through the transplacental route.

The Department of Paraclinical Sciences actively pursued diagnostic investigations of disease outbreaks in wildlife throughout South Africa, inter alia, by building capacity in immunohistochemistry, a useful tool for the identification of target tissues or cells for infectious disease agents, and by developing cell culture systems for a variety of studies in order to reduce the number of animals required for experiments. Food safety is an important focus of the department, especially maximising the market access to safe food for underprivileged consumers. As aquatic animals respond with great sensitivity to changes in their environment, the Department is using the Nile crocodile and the sharptooth catfish as bio-indicators to assess water pollution that can severely affect the production of food from animal origin. South Africa has a huge diversity of plants, including poisonous plants affecting livestock. Both well-known and lesser known poisonings were investigated. The Phytomedicine Programme investigated the use of medicinal plants as treatment options for microbial and parasitic infections.

The Department of Production Animal Studies had a productive year, contributing 35 journal articles and a number of other outputs. Health aspects of food-producing animals were the dominant theme, with research ranging from traditional farm animals through to more exotic species, such as abalone. Epidemiology also featured strongly, enabling quantitative studies of animal disease, diagnostics and parasite control strategies, as well as transboundary disease control and zoonoses. Animal reproduction is another focus area, which includes reproductive monitoring, uterine immunology and reproductive interventions in domestic and game species. The ecology and adaptive physiology of the giraffe was the focus of three papers.

In the Department of Companion Animal Clinical Studies, four papers in the spirocercosis focus area on malignant transformation and diagnostic methods in spirocercosis were published in eminent international journals under the guidance of Prof Eran Dvir, who recently completed his PhD on the subject. Two papers published by the Babesiosis Study Group explored the serial haematological changes and the breed and gender predisposition in babesiosis – another strong research focus area of the Department. Dr Brighton Dzikiti published three papers on intravenous anaesthesia in goats in international journals and was awarded an Exceptional Young Researcher Award by the University. The Wildlife Study Group made great contributions to this newly developing field and published on muscle fibre types and the ultrasonographic appearance of the female reproductive tract in the African lion and on the detection of papillomavirus in African antelope and Cape mountain zebra.

Studies on the anatomy of ratite birds form one of the main research focus areas in the Department of Anatomy and Physiology. The incidence of sperm defects in these commercially important birds are investigated, as well as the comparative structure of the gonadally active and inactive testis and epididymis, and the role of the various epithelial cells of the epididymis. Small ruminant research includes the role of pheromones on offspring recognition through studies of the vomeronasal organ, as well as the identification of protozoa in their digestive tracts. The anatomy and diagnostic imaging of selected zoo animals is a new focus area. The mechanism of action of agents with anti-cancer and anti-angiogenic properties, as well as aspects of gastroenterology, cardiovascular physiology, medicinal plant extracts, angiogenesis and nanomedicine are studied in the Physiology section.

#### **Prof Gerry Swan**

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### Faculty Research Output

### Veterinary Anatomy and Physiology

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Dr Lindy McGaw



Dr Lindy McGaw is the deputy leader of the Phytomedicine Programme in the Department of Paraclinical Sciences. Her research involves biological activity and toxicity studies of South African plants and the active compounds that have been isolated from them. Current interests focus on antimycobacterial, cytotoxic and genotoxic effects of indigenous plants. Her research also concentrates on mechanisms of action, the use of plants in animal health, and the immune modulatory activity of plant preparations.

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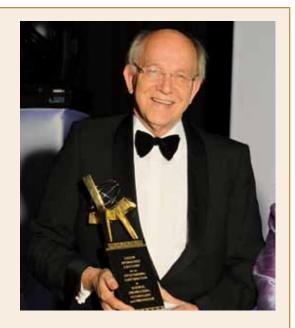
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Dr Cindy Harper



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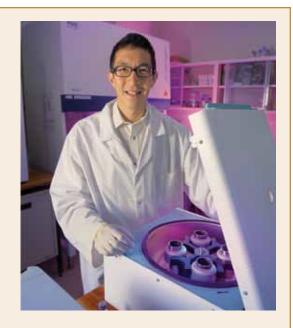
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Prof Nick Binedell Director

# 4.10 Gordon Institute of Business Science (GIBS)

The Gordon Institute of Business Science (GIBS) is rooted in the South African and African business communities and has been steadily increasing its research output since it was founded in 2000. In addition to the supervision of more than 200 MBA research reports in 2011, the Institute's staff members produced 16 journal articles (of which four were published internationally), and presented three papers at international conferences, including papers at the Academy of Management and Academy of International Management.

GIBS is in the fortunate position of having direct access to high-level managers and professionals in most of South Africa's top companies and multinationals operating in Africa. This ensures that research themes are clearly rooted in the South African experience and GIBS's strategic focus on dynamic markets. Examples of this emphasis are reflected in five of the articles that focus on emerging markets. The second clear theme that is reflected in much of the research is GIBS's orientation as a general management business school, reflecting the cross-functional nature of general management and business leadership.

In maintaining its international ranking as one of the top 50 business schools in the world (as reflected in the rankings of the *Financial Times* of London) GIBS's staff members are encouraged to aim for publication in journals that are jointly listed on the influential list of the Association of Business Schools, those that are acknowledged in the *Financial Times* of London's ranking, as well as the list of the Department of Higher Education and Training.

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# Research Output

### Graduate School of Management

### Journal articles

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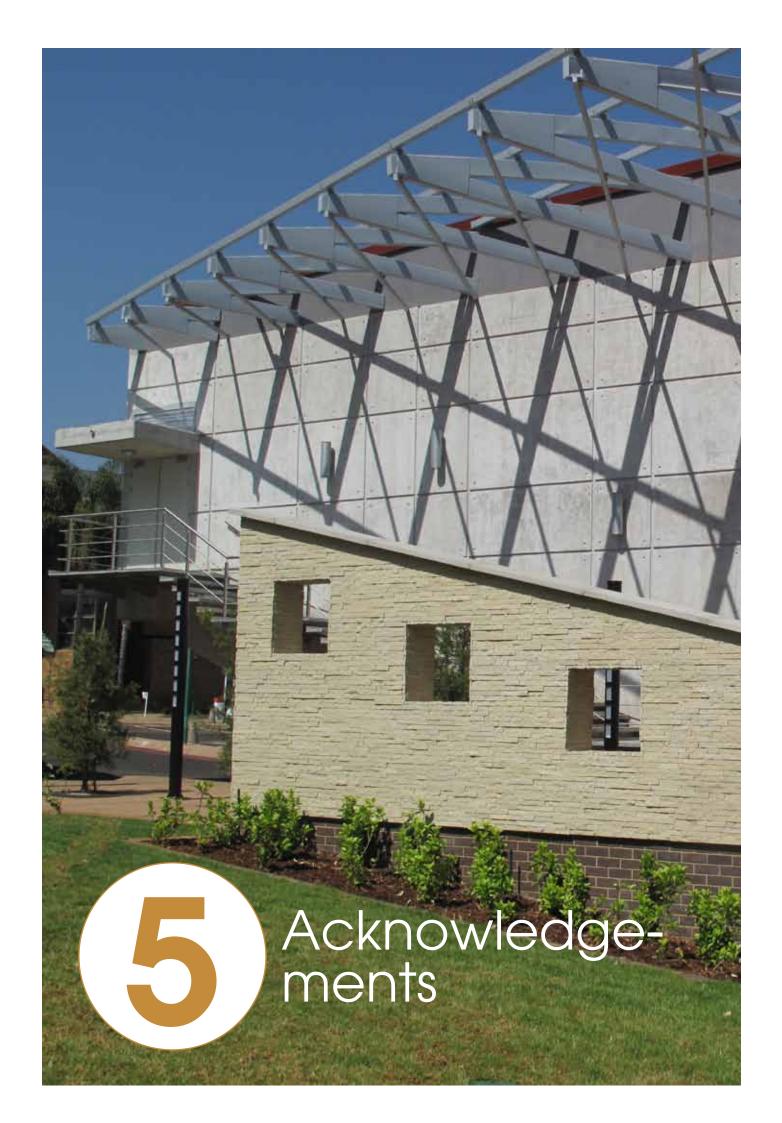
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In the list of research outputs, in all cases the heading "Papers published" refers to papers in refereed, published conference proceedings, and the heading "Journal articles" refers to articles published in accredited, peer-reviewed, refereed specialist journals.



### Acknowledgements

The University of Pretoria acknowledges the work of its researchers at different levels, as well as the efforts of various research teams in consolidating research at the University. The Department of Research and Innovation Support enjoys the cooperation it has with the various faculties, the Gordon Institute of Business Science and individual staff members, and is confident that this partnership will continue and yield an even greater research output. The University's Research Report 2011 is the product of the concerted effort of everyone involved.

A special word of thanks is due to the following individuals and entities, in particular:

- The deans of the University's nine faculties and the Director of its business school for stimulating an environment that is conducive to research.
- The chairpersons of the respective research committees for facilitating the various research structures in order to nurture research and the University's research agenda at faculty level.
- The individual researchers, who continue to perform research at the University of Pretoria and to publish their research findings in various media.
- The University's data capturers for ensuring that the many research articles, research awards and other achievements are recorded in the different departments for presentation in the Research Report.
- The University Library for the purposeful supplementation of the research information that has been captured.
- The staff of the Department of Research and Innovation Support for lending themselves to support research and innovation at the University and for coordinating the processes that led to the production of data on research at UP.
- The finance team for performing the accounting function and ensuring the reconciliation of research funds.

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- Prof Stephanie Burton
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