



# RESEARCH REPORT

2016



UNIVERSITY OF  
KWAZULU-NATAL<sup>TM</sup>  
INYUVESI  
YAKWAZULU-NATALI

INSPIRING GREATNESS





# Research Report 2016

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# VICE-CHANCELLOR AND PRINCIPAL

**Dr Albert van Jaarsveld**

**High Quality Research Vital for UKZN's  
Thirst for Excellence**

**The high profile research-led status of the University of KwaZulu-Natal (UKZN) enables its students to drink from a bubbling spring of fresh ideas rather than flounder in a pool of stagnant academic waters, says Vice-Chancellor and Principal, Dr Albert van Jaarsveld.**



Presenting his views on a wide range of issues pertinent to UKZN's research endeavours, van Jaarsveld was adamant teaching and learning did not suffer because of the emphasis on research – rather they were enhanced because of it.

"I think students get more value out of attending a university as well as a more up to date experience when they are taught by academics at the cutting edge of their disciplines and who are actively involved in research in those areas.

"That is one of the main reasons why we promote research so strongly," he said.

UKZN – which is strengthening its research outcomes through evolving cutting-edge research flagships – has identified four focus areas aligned to national priorities and institutional strategic objectives and capacity.

Van Jaarsveld said the flagships were: Social Cohesion – Addressing Inequality and Promoting Nation Building; African Health – Saving Lives; Big Data and Informatics – Computing Solutions, and African Cities of the Future – Most Liveable Cities.

"The flagships are globally relevant and equally responsive in areas we believe are critical to supporting our vision as a notable centre of African Scholarship in the country, on the continent and as a global player."

He said the research environment was extremely competitive. "I can get on to my laptop now and check the profile of every researcher in this University. In fact, I can get access to the profile of any researcher across the country and throughout the world.

"The research status of academics is totally transparent and easily available for all to access – that places extreme pressure on academics and their endeavours.

"You get people who excel at teaching and universities must create space for such individuals, but my experience is that on average the better researchers are also the better teachers by virtue of being on top of their discipline and knowing exactly what is going on.

"And we want academics who are good teachers and good researchers because they give the Institution the best value at the end of the day," said van Jaarsveld.

"The first part of the process of driving the research-led process at UKZN was to try and increase participation in research at whatever level. That strategy is complete and now more than 80% of our academics are involved in research. That is very good for any university.

"The next hurdle is to get academics to step up in terms of the quality of the work they produce. To help accomplish this, our incentive system is being changed to not only reward participation but also benefit those who produce excellent, high impact work."

This search for excellence has meant that most lecturers at UKZN today are required to have a PhD.

Van Jaarsveld said high impact research made a difference in society and changed the current understanding and perceptions about the world, influencing the research work of others. UKZN had enjoyed some success in this area with its studies of HIV and AIDS, astrophysics, cosmology, quantum computing, microbial resistance, food security, the humanities, the performing arts and maritime and ocean economics, among others.

"If a vaccine to prevent AIDS was discovered that would really be high impact stuff!"

In the area of being an open university engaging closely with industry he felt although a lot had been achieved, there was room for considerable improvement.

"I would like UKZN to have stronger links with private sector partners to ensure the research we do is closely aligned with the development of the economy in KwaZulu-Natal – it is vital that we play that catalytic role."

On the issue of the research flagships, van Jaarsveld said it had been decided to differentiate the Institution in the market place by identifying a limited number of research areas or flagships which had the necessary societal impact, and academic intrigue which could be used as a banner for what UKZN stood for. "The idea is to develop a critical mass of researchers and infrastructure within those areas to ensure the University attracts the best talent in the world to the extent that those students, staff or researchers working in those fields would feel they were missing out if they didn't come to UKZN."

Van Jaarsveld says the University is proud of having a relatively high number of young researchers and also of the fact that the majority of researchers and general staff are women!

"A key focus is to grow and develop young African researchers and we have done well in that area. The challenge now is to mature those folk into fully fledged professors to carry UKZN into the future.

"I want UKZN to be the most prominent research university across the African continent, excelling in producing African solutions for African problems.

"I take great pleasure in presenting UKZN's Research Report for 2016."





A portrait of Professor Deresh Ramjugernath, Deputy Vice-Chancellor for Research at the University of KwaZulu-Natal. He is a middle-aged man with dark hair, wearing a dark suit jacket over a light blue striped shirt. He is positioned in the foreground, looking directly at the camera. The background features a modern building with a glass facade and a curved walkway. In the lower right corner, there is an inset image of a welder in a blue protective suit and helmet, working on a metal structure, with bright sparks flying from the welding point. The overall image has a green gradient overlay on the right side.

# DEPUTY VICE- CHANCELLOR: RESEARCH

Professor Deresh Ramjugernath

UKZN Gearing Up for Impactful Research



## The University of KwaZulu-Natal (UKZN) is gearing up to concentrate its research work on projects which are impactful, implementable and drive economic growth and social upliftment.

**A**nd to encourage such high-profile investigations, it will offer its academics a wide range of incentives to motivate them and drive the required research behaviour.

That is the thrust of the message for the 2016 UKZN Research Report from newly-appointed Deputy Vice-Chancellor: Research, Professor Deresh Ramjugernath.

"We have done exceptionally well as a University in that we have had year-on-year increases in our research outputs, but the problem is that in the past there wasn't sufficient emphasis on quality and the impact of the research," said Ramjugernath.

"We have been able to build our research base over the years with about 80% of our academics and researchers now research active – that is a significant number. And on top of that, 55% of academics have doctorates so now we need to take it to the next level in terms of the quality of our work. And I am more than confident we will. What we are saying is that yes we have these large numbers of research outputs but what distinguishes really good universities from all the rest is that in addition to quantity, quality research is being done, producing significant socio-economic impacts. That is the transition we now want to take as an institution.

"In terms of impact, there is no way our large quantity of research will make up for the quality shortfall (when compared to leading global research universities) – something special is needed."

Ramjugernath says academics and researchers should have more input into general policy development in South Africa which is currently driven by politicians with very little of it based on research evidence. "It is in that area where I think we have a significant role to play."

What he wants to see is UKZN being recognised nationally and internationally as a university that is assisting in addressing the challenges (sustainable development goals) faced in South Africa and globally. With the National Development Plan in mind, the University should help move the country forward towards a knowledge-based economy, playing a very impactful role in areas such as economic growth, service delivery, and employment creation.

"As academics we must not just do research on issues, we must devise implementable solutions for the problems and challenges."

He said there was no doubt a solid basic research base was required to achieve that, but there had to be a transition into more applied and implementable studies, through transdisciplinary research.

"The National Development Plan and Department of Science and Technology strategy plans are asking for research that is a lot more applied and implementable and relevant to help drive economic growth and social upliftment in South Africa. That's what we really want to focus on now as an institution and have already taken positive steps in that direction. If you look at some of the institutes we have on campus, such as CAPRISA and the Africa Health Research Institute, they are already doing that."

Ramjugernath said over the next few years UKZN would introduce incentive schemes to drive new research behaviour at the Institution. One of the reasons why the University produced such a large quantity of research in the past was because of the incentives that were in place to drive output. "In future we'll be giving researchers incentives to encourage them to concentrate on quality, impactful work.

"For example, the Top 30 Researchers' selection is currently based solely on journal outputs, but we want to see other categories such as books and book chapters, peer-reviewed conference papers, students graduated and citations also contributing to the choice criteria.

"When we announced the top performing researchers for 2016 we also added categories which recognised highly cited researchers, the top young researchers and the top student researchers. We want to recognise all significant contributors and also provide incentives to get on the lists."

In the past the University didn't have strong enough partnerships with industry and the private sector. "So we have started having discussions with a variety of industries and partners, the most recent being with Transnet. We honestly believe we can help Transnet meet its mandate for improving rail infrastructure, their rolling stock, and efficiencies in moving goods around South Africa and Africa," said Ramjugernath.

"We aim to build many more partnerships to allow us to work closely with government, the private sector, industry and society at large to move South Africa towards that knowledge-based economy which is where we should be."



# UKZN RESEARCH OFFICE

## DEAN OF RESEARCH – Professor Urmilla Bob

### Special Effort Made to Support Young Researchers

**A concerted effort was made in 2016 to provide support for and motivate emerging and young researchers at the University of KwaZulu-Natal (UKZN), says the Dean of Research, Professor Urmilla Bob.**

Into her fourth year as Dean, effervescent Bob is energised by the development and progress she has seen in the young scientists who she feels have embraced the new approach of direct support they have received from a variety of institutional activities and funding.

“Especially exciting for me and the team was our first three-day engagement in this new interaction plan,” said Bob. “To see the young researchers arrive at first anxious, concerned and unsure about what lay ahead and whether they could really trust us but then eventually embrace us and the informative course, was very rewarding.

“Down the line I have come into contact with some of them on the campuses and they are excited to share their research achievements and successes with me. It is a very good feeling – far better than dealing with all the admin work that comes across my desk,” she says with a wide grin.

The new approach devised by Bob in partnership with the Human Resources Division, College Deans of Research and the Research Office includes research induction workshops to ensure the young scientists are trained to understand the research environment and what is required of them to become successful researchers within the context of being an academic at UKZN.

Four induction workshops were held during the year and continued into 2017.

“We cover a wide range of aspects in the workshops including grant writing – how to leverage your own research resources, and understanding the policies of the research portfolios with a specific focus on

protocol because no-one at UKZN can do research without ethical clearance,” said Bob.

“We also deal with how to become research productive, the process of graduating students, publishing research findings, and positioning oneself to get a rating from the National Research Foundation (NRF) to be a scientist.”

“So what we are trying to inculcate very early on is a visionary approach to planning life as a researcher – we are confident that will reap huge benefits for the participants,” said Bob.

To complement the research induction series there were targeted interventions, such as a three-day research planning workshop during which participants went through a process where they put together a one-year plan outlining what they hoped to achieve in the months ahead and to identify the types of resources, mentoring, and coaching they needed.

They were also asked to formulate a five-year plan for themselves where the emphasis to some degree was on investigating promotion possibilities.

“We give them a host of tips and solid advice on how to get what they need to be successful,” said Bob.

“So they are always looking forward and begin to understand what they need to do, how to manage their time and basically manage their careers through a series of projects with a start date and an end date – that is how you become productive.

“We find that once they know they have the tools and understand they have the support in who to go to, they are much more confident.”

The Research Office is the administrative centre of research activities at UKZN and includes the Publications, Grants and Awards, Ethics, and Finance and Contracts Clusters.

The Four Deans of Research in the Colleges are: Professor Harold Ngalawa, College of Law and Management Studies (CLM); Professor Kevin Kirkman, College of Agriculture, Engineering and Science (CAES); Professor Moses Chimbari, College of Health Sciences (CHS), and Professor Pholoho Morojele, College of Humanities (COH).

The following are some of the highlights from the Colleges:







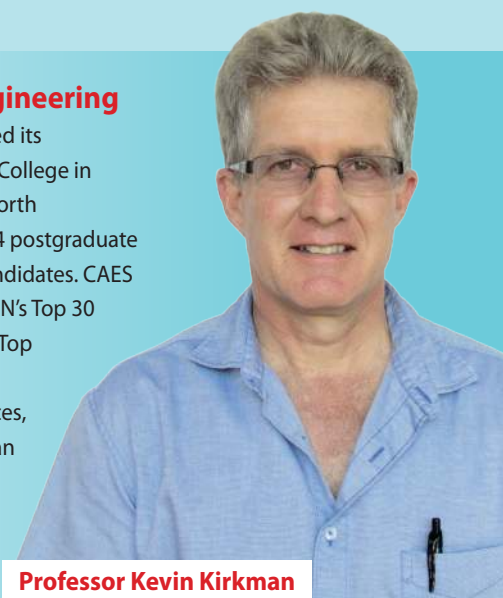
**Professor Harold Ngalawa**

**College of Law and Management Studies (CLMS)** graduated a total of 48 PhDs – the highest in its history and double the 2015 number. A total of 324 candidates were awarded master’s degrees – 70 being research masters, compared to the total of 216 in 2015, while 15 staff members obtained doctorates.

Research productivity figures show an increase of almost 19% over the previous year – 18 074 PUs compared with 15 102. Five academics were on the Top 30 Published Researchers’ list and nine received either C2 or C3 NRF ratings while the ratings of several others were renewed.

### **College of Agriculture, Engineering and Science (CAES)**

maintained its longstanding position as the leading College in research production with bursaries worth R3, 04 million supporting a total of 74 postgraduate students – 53 masters and 21 PhD candidates. CAES researchers dominated the list of UKZN’s Top 30 Published Researchers with six in the Top 10 and 14 in the Top 30. An honorary researcher in the School of Life Sciences, Professor Craig Packer, was awarded an A2 rating by the NRF, increasing the number of A-rated scientists in the College to three.



**Professor Kevin Kirkman**



**Professor Moses Chimbari**

### **College of Health Sciences (CHS)**

launched its Young Researchers Competitive Grants Initiative targeting academics who obtained their PhD qualifications less than five years ago, promoting a culture of grant writing and seeding interdisciplinary flagship projects. Seven awards were made to collaborative groups including at least two Schools in the College. CHS increased its research productivity but was also recognised for contributing at a global level. A key development was the finalisation of Wellcome Trust funding for the newly-formed Africa Health Research Institute.

**College of Humanities (COH)** had eight of its academics – including two women – on the list of the Top 30 Published Researchers. Professor Deevia Bhana received a B-rating from the NRF which was significant. The College signed four new MoUs, including one with the Council for the Development of Social Science Research (CODESRIA) and another with the Bergen University-based Programme for Poverty Research (CROP) which resulted in funding from an international donor to finance a research project on Poverty and Sustainable Development Studies. An MoU with the Development Studies University in Ghana paved the way for co-operation with that institution.



**Professor Pholoho Morojele**

#### **The following were among achievements in 2016:**

Grants and contracts worth R294 301 545 were administered and processed by the Research Office.

The total amount of the NRF Grant was R102 685 953. The College of Agriculture, Engineering and Science received R59 256 143; the College of Health Sciences R15 439 428; the College of Humanities R17 486 437, the College of Law and Management Studies R1 447 094, and the Research Office R9 056 850.

A total of 599 applications for NRF grants were made of which 364 were granted.

The total grant award from the Medical Research Council was R5 873 972. The College of Humanities received R500 000; the College of Agriculture, Engineering and Science R578 000, and the College of Health Sciences R4 795 972.

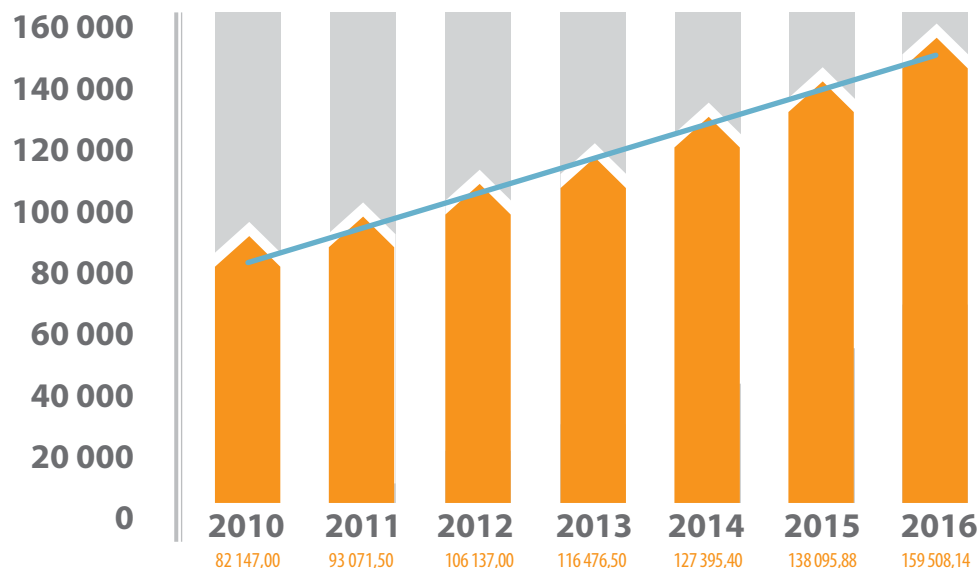
The Publications Cluster screened 4 346 items including 2 358 journal articles; 223 books and chapters in books; 160 conference proceedings, 1 511 masters and doctoral graduates and 48 staff with PhDs.

Four ethical committees process ethical applications – they are the Animal Research Ethics Committee (AREC); the Biomedical Research Ethics Committee (BREC), the Human and Social Sciences Research Ethics Committee (HSSREC), and the Institutional Biosafety Committee (IBC). The AREC reviewed 116 applications, BREC 664, HSSREC 2 137 and IBC 8.





## PRODUCTIVITY BEFORE DHET NOTIFICATION FOR 2016



The yearly increase in Productivity Units (PUs) was 13.3%, 14.0%, 9.7%, 9.4%, 8.4% and 15.5% respectively from 2010 to 2016. Overall, the increase in the number of PUs attained by UKZN research increased by 94.2% over the 7 years period, from 82 147 in 2010 to 159 508,14 in 2016 (11 September 2017).

### HOW ARE PUS CALCULATED?

CATEGORY	CURRENT PRODUCTIVITY UNITS
WHOLE BOOK	120-600
PATENT	80
JOURNAL ARTICLE	60
GRADUATED DOCTORAL STUDENT	60
STAFF GRADUATED WITH DOCTORAL DEGREE	60
CREATIVE CONTRIBUTION (INTERNATIONAL)	50
BOOK EDITORIAL	30
CHAPTER IN BOOK	60
CREATIVE CONTRIBUTION (LOCAL)	15
GRADUATED FULL DISSERTATION MASTERS STUDENTS	16
REFEREED CONFERENCE PROCEEDINGS	10
JOURNAL EDITORIAL	8
GRADUATED COURSEWORK MASTERS STUDENTS	8
NRF RATING	60-100

### NUMBER OF PRODUCTIVITY OUTPUTS PROCESSED IN 2016

ITEM	NUMBER
NUMBER OF JOURNAL ARTICLES SUBMITTED TO DHET	2 358
NUMBER OF WHOLE BOOKS SUBMITTED TO DHET	22
NUMBER OF BOOK CHAPTERS SUBMITTED TO DHET	201
NUMBER OF CONFERENCE PROCEEDINGS CONTRIBUTIONS SUBMITTED TO DHET	160
NUMBER OF JOURNAL EDITORIALS	23
NUMBER OF BOOK EDITORIALS	3
NUMBER OF PATENTS GRANTED	5
NUMBER OF INTERNATIONAL CREATIVE CONTRIBUTIONS	4
NUMBER OF LOCAL CREATIVE CONTRIBUTIONS	11
NUMBER OF STAFF GRADUATED WITH DOCTORAL DEGREE	48
NUMBER OF PUBLISHING RESEARCH STAFF (IN DHET CATEGORIES)	1 290
NUMBER OF AFRICAN RESEARCHERS	265
NUMBER OF FEMALE RESEARCHERS	645
NUMBER OF DOCTORAL DEGREES AWARDED	337
NUMBER OF MASTERS DEGREES AWARDED	1 174
NUMBER OF PROLIFIC RESEARCHERS	151
NUMBER OF EMERGING RESEARCHERS	91
NUMBER OF NRF-RATED RESEARCHERS	314
NUMBER OF NRF A-RATED RESEARCHERS	8
NUMBER OF NRF (100) AWARDED	5
NUMBER OF NRF (60) AWARDED	36
NUMBER OF SARCHI CHAIRS	15 (with 1 being vacant)

265 NUMBER OF  
AFRICAN  
RESEARCHERS

4  
RESEARCH  
FLAGSHIPS

**Social Cohesion** – Addressing Inequality and Promoting Nation Building

**African Health** – Saving Lives

**Big Data Informatics** – Computing Solutions

**African City of the Future** – Most Liveable Cities

2 358

NUMBER OF JOURNAL ARTICLES  
SUBMITTED TO DHET

22

NUMBER OF  
**WHOLE BOOKS**  
SUBMITTED TO DHET



201

NUMBER OF  
**BOOK CHAPTERS**  
SUBMITTED TO DHET



645 NUMBER OF  
**FEMALE**  
**RESEARCHERS**



23 NUMBER OF  
**JOURNAL**  
**EDITORIALS**

160

NUMBER OF  
**CONFERENCE**  
**PROCEEDINGS**  
CONTRIBUTIONS SUBMITTED TO DHET

**R201** MILLION  
FROM THE  
NRF

NEARLY  
**R294** MILLION  
FOR NGO RESEARCH  
GRANTS & CONTRACTS

**1 763.25**  
PUBLICATION UNITS

**347**  
POSTDOCTORAL  
SCHOLARS | FELLOWS

NRF FUNDING  
INCREASED BY  
**22%**  
COMPARED TO 2015

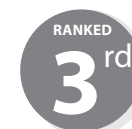




Evolutionary Biology  
 Gravitating Systems  
 Systems Biology of HIV/AIDS  
 Quantum Information Processing and Communication  
 Fluorine Process Engineering and Separations Technology  
 Indigenous Health Care Systems Research  
 Economic Development  
 Applied Poverty Reduction Assessment  
 Land Use Planning and Management  
 Rural Agronomy and Development  
 Gender and Childhood Sexuality: Violence, Inequalities and Schooling  
 Proteolysis in Homeostasis, Health and Disease  
 Ecosystem Health and Biodiversity in KZN and the Eastern Cape  
 Antibiotic Resistance and One Health  
 Indigenous Knowledge Systems



TOP UNIVERSITY FOR STUDYING  
PHYSICAL SCIENCE  
& ENGINEERING



**TOP UNIVERSITY  
IN SOUTH AFRICA**  
BY URAP



**1 174**  
MASTERS  
DEGREES  
AWARDED



**337**  
DOCTORAL  
DEGREES  
AWARDED



**48** NUMBER  
OF STAFF  
GRADUATED WITH  
DOCTORAL DEGREES



**151**  
NUMBER OF  
PROLIFIC  
RESEARCHERS



**91**  
EMERGING  
RESEARCHERS



**314**  
NRF-RATED  
RESEARCHERS



**8**  
NRF A-RATED  
RESEARCHERS

**2<sup>nd</sup>**

MOST PRODUCTIVE  
UNIVERSITY IN SA

**4<sup>th</sup>**

IN TERMS OF  
WEIGHTED  
RESEARCH OUTPUTS

# Research Centres

**UKZN boasts various Research Centres where investigative and interdisciplinary work is done in diverse fields. Researchers and scientists at these Centres are at the forefront of cutting-edge work which has seen UKZN establish itself as an internationally respected research-led university. The Centres include:**

## Centre for the AIDS Programme of Research in South Africa (CAPRISA)

The main goal of CAPRISA is to undertake globally relevant and locally responsive research that contributes to understanding HIV pathogenesis, prevention and epidemiology as well as the links between Tuberculosis and AIDS care.

CAPRISA was created in 2001 and formally established in 2002 under the NIH-funded Comprehensive International Programme of Research on AIDS (CIPRA) by five partner institutions: UKZN, University of Cape Town, University of Western Cape, National Institute for Communicable Diseases, and Columbia University in New York.

CAPRISA, which has made numerous breakthroughs in HIV and AIDS research, is also a designated UNAIDS Collaborating Centre for HIV Prevention Research.

## DST-NRF Centre of Excellence in HIV Prevention

The DST-NRF Centre of Excellence in HIV Prevention is co-hosted by CAPRISA and UKZN.

The main goal of the Centre is to undertake research aimed at understanding and ameliorating the high risk of HIV in women, especially young women, in South Africa and also to generate knowledge that contributes to the development of new HIV prevention technologies such as microbicides and vaccines.

The Centre's research activities cover a range of disciplines, including public health/epidemiology, basic laboratory science, clinical studies and implementation science.

## Africa Health Research Institute

The Africa Health Research Institute is committed to working towards the elimination of HIV and TB. It combines the renowned Africa Centre for Population Health's detailed population data from over 100 000 participants, with the KwaZulu-Natal Research Institute for TB-HIV (K-RITH)'s basic science, experimental medicine and world-class laboratory facilities.

The Institute aims to link clinical and laboratory-based studies with social science, health systems research and population studies to make fundamental discoveries about these killer diseases as well as demonstrating how best to reduce sickness and death.

It endeavours to bring together leading researchers from different fields, use cutting-edge science to improve people's health and help train the next generation of African scientists.

## Africa Centre for Crop Improvement

The Centre trains African plant breeders in eastern and southern Africa to breed better crops using conventional and molecular breeding tools. It is involved in a wide range of multidisciplinary research projects that include forestry, engineering, genetics, microbiology, entomology, engineering, economics, biochemistry, horticultural science, crop science, botany, chemistry and animal science.

Students undertake academic studies for one year on the Pietermaritzburg campus before returning to their home countries to conduct three years of field research breeding African food security crops, primarily using conventional





plant breeding methods in the environments in which the new crop cultivars will be grown by small-scale farmers.

The focus of the PhD theses is on the applied breeding of key food crops such as sorghum, cassava and cowpeas for increased disease and drought tolerance, and improved yields and quality, with the aim of improving food security in some 14 African countries.

### Health Economics and HIV and AIDS Research Division (HEARD)

The Health Economics and HIV and AIDS Research Division (HEARD) has been at the coalface of the national and international struggle against HIV/AIDS for almost 20 years.

The applied social science centre works in an interface between policy and research around the issue of health in Africa, conducting a wide range of investigations into the macro-economic implications of HIV and AIDS including health systems challenges, the cost of treatment and care. It also does research into malaria and Tuberculosis.

### Centre for Socio-Legal Studies

UKZN's Centre for Socio-Legal Studies has spent the past 30 years taking Law to the people so that they can use it in their everyday lives.

It has also developed the definitive manual on Street Law to provide legal education for trade unions.

### Centre for Communication, Media and Society

The Centre offers a range of postgraduate degrees in Culture, Communication and Media Studies.

Staff are internationally recognised scholars and postgraduate research reflects the Centre's interdisciplinary and international research culture, which draws on media studies, television studies, film studies, cultural studies, history, and health communication.

The Centre has a focus on independent thinking, creative approaches to problem solving, as well as analytical and presentation skills. Graduates typically find employment in a wide range of professions, including non-government or community-based organisations, the film industry, TV and radio broadcasting, marketing and market research, journalism and community development.

### Astrophysics and Cosmology Research Unit

The Astrophysics and Cosmology Research Unit (ACRU) is a key driver of astronomy and cosmology research with an international reputation.

The Unit's goals include contributing to the knowledge economy of South Africa by producing high-impact research in astrophysics and cosmology, and building local skills and capacity by training high calibre PhD graduates.

Another key objective is to create a greater awareness of astronomy in South Africa through public talks, school visits, participation in science exhibitions and the use of social media.





# Multidisciplinary Research at UKZN

## – a Rich Smorgasbord of Knowledge

Professor Hassan Kaya

The importance of adopting a multidisciplinary approach in academia is embedded at UKZN with the research connection between apparently disparate thematic areas now fully recognised and actively promoted.

While there are challenges to the approach, it allows for blended methodologies, student orientation, teamwork and a willingness to learn and step out of comfort zones to seize new opportunities. It is generally agreed that interconnectedness provides new ways of thinking about established fields and breaking down silos in academia.

Using the Centre in Indigenous Knowledge Systems as an example and extending the focus into other UKZN centres, the impact of Multidisciplinary Research at the University is outlined below:

Studying and working in the German city of Berlin some years ago, the Director of UKZN's DST/NRF Centre in Indigenous Knowledge Systems (CIKS), Professor Hassan Kaya, was spoiled for choice when suppertime arrived.

"In just one little street you would find up to 20 restaurants offering cuisine from almost every corner of the world," said Kaya. "So, even though you were living in a German city, you could eat in Vietnam on Monday, in Mexico on Tuesday or from an Ethiopian or Italian restaurant on Wednesday and so on.

"I believe the same kind of thinking should be applied when it comes to knowledge production and multidisciplinary research.

"Why confine your diet to one restaurant, or one academic silo, when there is so much variety and taste to enrich our knowledge?" he asked.

"I find that being exposed to the ideas and thinking of researchers from other disciplines always makes things so much richer – and it helps you realise that people don't always look at issues in the same way," said Kaya.

Situated on UKZN's Westville campus, CIKS is in many ways a 'virtual centre' based on a hub and spoke model.

The spokes radiate outward from UKZN to four other partner universities – North-West University (NWU), the University of Limpopo (UL), the University of South Africa (UNISA) and the University of Venda (UNIVEN) – while UKZN serves as the hub, with its main responsibility being to facilitate and co-ordinate institutional collaboration in Indigenous Knowledge Systems (IKS) research and postgraduate training.

Its function includes sharing existing resources for research and capacity building through networking and partnerships across a wide range of disciplines such as agriculture, ecology, social sciences, medical chemistry, traditional medicine and indigenous languages.

"There are so many people doing research in the area of IKS, but they don't always know each other so we are helping to map them and to connect



them,” said Kaya. “We are also networking by organising conferences, workshops and seminars for postgraduate students, scholars and IKS knowledge-holders from across the continent.”

During the IKS BRICS conference in Durban in 2016, CIKS worked closely with the BRICS Think Tank, the eThekweni Municipality and the Department of International Relations and Cooperation (DIRCO) on issues related to food security, environmental governance and climate change adaptation.

The Centre also hosted a Colloquium on Womanhood from Diverse Cultures and Religious Backgrounds in 2016 as part of South Africa’s Triple Heritage Initiative (Africa, Europe and Asia).

“Indigenous knowledge is not unique to Africa,” he said. “Every continent and cultural community has its own indigenous knowledge systems and one of the issues we explored at the Colloquium was: ‘What does it mean to be a woman?’ This drew on the perspectives of Zulu, Hindu, Muslim and Christian women.”

Because KwaZulu-Natal is predominantly rural, Kaya said CIKS worked closely with traditional leaders on issues such as food security and place-based cultural tourism.

“Often people think only about wild animals when it comes to tourism in Africa, but there are so many unique cultural aspects which need to be integrated into the tourism industry,” said Kaya. “The African philosophy of *Ubuntu* recognises the symbiotic relationship between humans and other forms of life. The concept of tourism is currently changing because visitors also want to know about the history and cultural relationships between the local people, the game reserves and the animals around them. This includes the historic and cultural animal totems.

“The cultures and traditions of animal totems are common throughout Africa. For instance, among the Bakgatla Ba Kgafela people of South Africa’s North-West Province, the vervet monkey is a totem, while in other cultural communities, the totem is the elephant. So these animals become almost sacred.

“In Uganda, more than 100 plant and animal species are considered totems among the Batooro (omuziro), Banyoro and Baganda (omuzilo) tribes. This used to be a form of indigenous conservation of natural resources yet in the modern era you often find people destroying a whole tree because muthi collection has become so commercialised.”

To address this, Kaya said, “CIKS organises workshops with traditional leaders and healers from across South Africa and from as far afield as Rwanda to collect and document knowledge on sustainable muthi harvesting methods. Most of our young people from urban areas do not know about this knowledge.”

Kaya said the Centre also placed a lot of emphasis on the importance of protecting and promoting indigenous languages.

“Language is a tool of communication. People tend to understand things much better when they are communicating

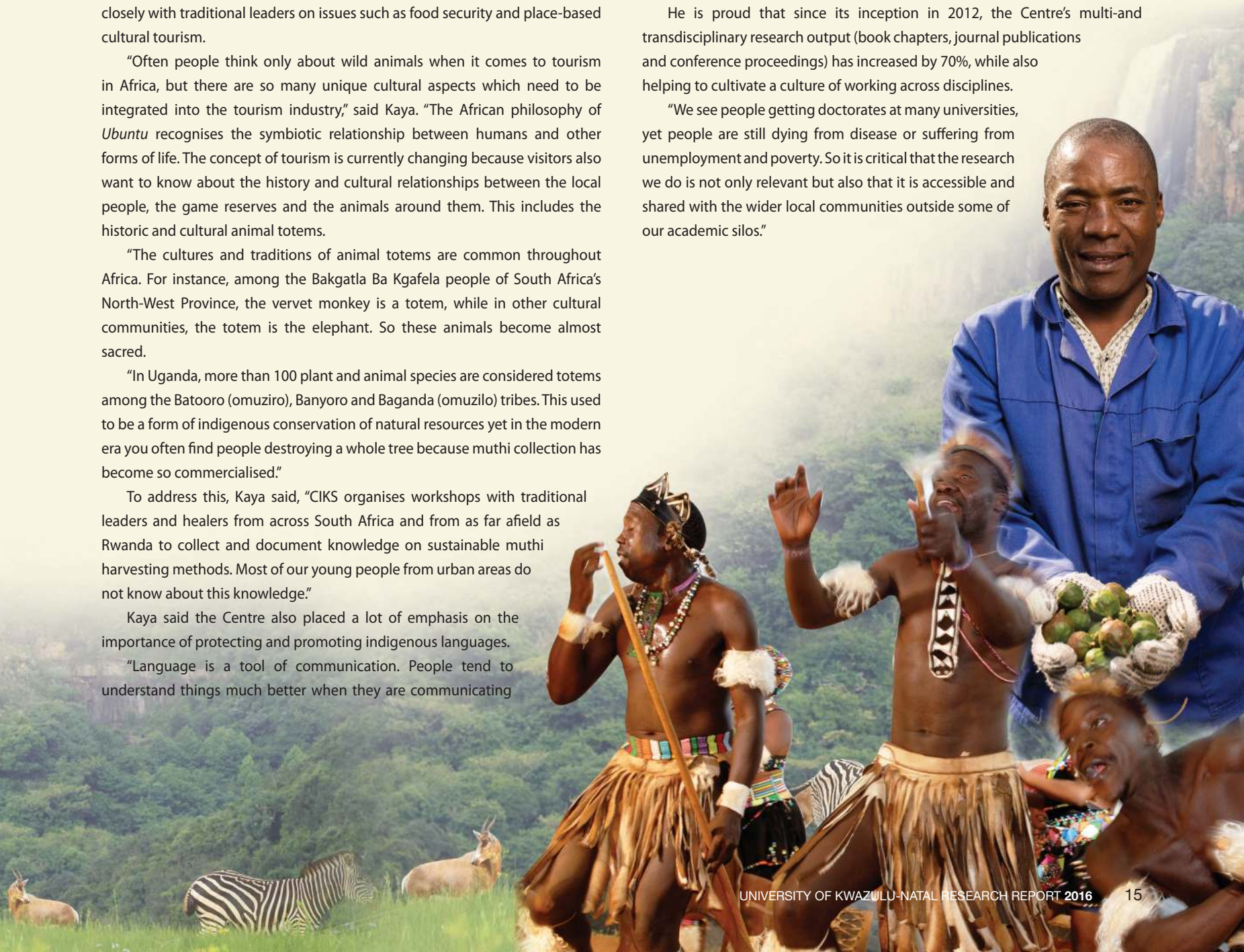
in their mother tongues. If you go to Germany or Russia to study, you have to learn to speak their language – but in Africa our languages have become marginalised, so when we host traditional healers at the Centre we ensure that all our meetings are conducted in isiZulu.”

He also notes that up to 80% of people in South Africa still make use of traditional medicine, presenting opportunities for healers to work with the modern pharmaceutical industry to share, complement and integrate knowledge systems. For instance, in order to bring the laboratory work into the community, UKZN researchers and postgraduate students from the pharmaceutical sciences in collaboration with the CIKS work with KwaZulu-Natal traditional herbalists to affirm the local indigenous knowledge through laboratory research.

“Western knowledge has become dominant while indigenous knowledge systems have become marginalised and are often seen as being inferior. We are not saying that Western knowledge has no value – but rather that IKS can help enrich modern science and technology.”

He is proud that since its inception in 2012, the Centre’s multi-and transdisciplinary research output (book chapters, journal publications and conference proceedings) has increased by 70%, while also helping to cultivate a culture of working across disciplines.

“We see people getting doctorates at many universities, yet people are still dying from disease or suffering from unemployment and poverty. So it is critical that the research we do is not only relevant but also that it is accessible and shared with the wider local communities outside some of our academic silos.”





# Profile on Black Women Professors

## PROFESSOR BETTY MUBANGIZI

**When Professor Betty Mubangizi was awarded a full professorship at the University of KwaZulu-Natal (UKZN) at the beginning 2016, she was filled with pride at finally achieving one of her most important life goals but also with a feeling of self-actualisation, which was “almost indescribable”.**

“I had applied for a full professorship in 2014 but did not get the appointment. According to feedback I received, I had failed to submit a satisfactory teaching portfolio of evidence,” said Mubangizi. “So, I focused on the weaknesses and completed what was outstanding and applied again at the end of 2015. When I heard I was successful, the first person I phoned was my mother as she was the one person who could really appreciate how far I had come.”

Mubangizi, UKZN’s Dean of Teaching and Learning in the College of Law and Management Studies, is also a National Research Foundation (NRF)-rated researcher.

“A naturalised South African, she was born and raised in rural Uganda at an ‘uncomfortable’ time. “It was in the era of military coups, dictators and despots – a frightening time. As young people though, we knew, if we were educated we could leave and seek employment elsewhere. A good education was a way to get out,” she said.

Mubangizi’s academic qualifications include a BSc in Agriculture from Uganda’s Makerere University (1987), a Postgraduate Diploma in Tertiary Education through the University of South Africa (1991), an MSc in Agricultural (Rural) Development at the University of London and a Doctorate in Public Administration from UKZN in 2005.

She has a host of publications, in the form of journal articles, book chapters, conference proceedings and editorials, to her name. She is also editor of the *African Journal of Governance and Development* as well as the *Loyola Journal of Social Sciences; African Chapter*.

Mubangizi has previously served as UKZN’s Dean of the School of Built Environment; associate professor at the School of Management, IT and Governance; academic assistant to the Dean of Research, and senior lecturer in the School of Public Administration and Development Management.

Praising UKZN’s research policies for their support of women in academia, Mubangizi

says she got a Thuthuka Grant from the NRF to further her research after completing her doctorate. “That really gave me a push and helped me grow my career as an academic,” she said.

Mubangizi’s research is influenced by her strong views on social justice and her publications generally focus on public service delivery processes and sustainable livelihoods for the rural and peri-urban citizenry.

The mother-of-three said the legacy she wants to build is one of access to Higher Education for youngsters from deep rural areas and in particular for those from the lower quintile schools. “I am passionate about building our Foundation Programme, which is a bridging programme to mainstream programmes of the University. It helps students assimilate from an academic and social point of view. I also want to see stronger and effective tutoring programmes for these students and to see our progression rules less rigid. I really believe we can do that without compromising the quality of our programmes.”

She says there are too many junior academics in the system battling to progress to more senior positions. “I would like to encourage a mentorship programme for such academics as I am worried that their sense of frustration could see them leave academia.”

Her passion for youngsters educated in rural areas is largely based on her own life story. “My mother was a qualified teacher but chose to stay in rural Uganda. She very much ascribes to the traditional African values. But I wanted more,” said Mubangizi.

Having met her husband, John, during her first year at Makerere University in Uganda, the couple moved to South Africa in 1987 and taught in the Transkei, a territory which at that time was designated as a “homeland” under South Africa’s apartheid regime.

The homeland experience, however, was just another stepping-stone in the young woman’s desire to continue climbing the ladder of academia and to build on her passion for the improvement of education and public services for people who live in remote rural areas.

After some years as a lecturer at the then Lumko College of Education and a stint as a project co-ordinator for a rural NGO in the Eastern Cape, Mubangizi arrived in Durban in 2000 where her career at UKZN first began and has now flourished.

“I have climbed the ranks and now there is no rung on the ladder beyond this. That sense of self-actualisation at having achieved the title of full Professor is just wonderful. But I can’t stop now. I still want to generate, disseminate and impart knowledge.”





## PROFESSOR RELEBOHILE MOLETSANE

**At the heart of Professor Relebohile Moletsane's research is a burning desire to make a difference to the lives of as many young people as possible, in particular teenage girls living in rural areas of KwaZulu-Natal.**

**"**I don't want to do research just for the sake of it, I want to do work that is really impactful. I want to be remembered not just as an academic or a professor but also as someone who contributed to real change," said Moletsane.

Moletsane, who became a professor in 2010, is the J.L. Dube Chair in Rural Education and the Acting Director of the Centre for Critical Research on Race and Identity (ccri) at UKZN.

Throughout her academic career she has involved herself in important research linked to the education of young girls and in 2016 she started work on a project to investigate sexual violence against girls in rural communities.

Moletsane is also working on a Department of Higher Education and Training assignment – the Education and Emancipation Project – to investigate how poor, Black and women students struggle to access Higher Education, and when they do, often find it difficult to succeed and how they could be supported in this.

The findings of the study will soon be forwarded to the Ministry of Higher Education and Training, and then presented to participating universities. "The research has raised more questions so we have to come up with some quick medium and long-term solutions," she said.

Moletsane is also heading up a mentorship programme to assist pregnant teenagers reintegrate into schools once their babies are born. "There is no support system to help these girls get back to school so we have employed mentors, who have been through the same experience, to assist them in the process. We do practical things such as help them register their babies' births at the Department of Home Affairs, give advice on how to manage child-care and then relationship counselling."

It is clear that while Moletsane views each project as being vitally linked to the empowerment and emancipation of young women, her study on the rape of schoolgirls in rural villages impacts her deeply.

"I get depressed when I hear young women of school-going age say: 'Sexual violence is going to happen to me whether I like it or not'.

"While I can come home to my lovely flat in Durban and leave all that behind me, those young girls have to carry on living there. If they get raped, the punishment for the perpetrator is usually not serious either. He might have to give the girls' parents a goat! That goat can't do anything to help the girl, now can it? The girls tell me they feel like they are nothing, without value."

Moletsane said it was necessary to address the issue with boys and young men in rural communities as well as their families and, of course, the leaders of the communities. "At the very least, I would like to see findings of our research result in these girls being able to walk around their communities without fear."



# FOUR NEW RESEARCH FLAGSHIPS

## Aim to Put UKZN at the Cutting-Edge

**A**s part of the strategy to become a truly world-class and cutting-edge research institution, the University of KwaZulu-Natal (UKZN) is gearing up to establish four new Research Flagships to harness the collective strength and wisdom from several diverse disciplines.

Rather than working separately in isolated knowledge silos, the aim is to fuse and bring together researchers into four new Flagships that generate high impact research solutions which are globally recognised.

The new strategy is driven by Deputy Vice-Chancellor: Research, Professor Deresh Ramjugernath, who is determined to attract and retain the best students and staff at UKZN, while also creating new international partnerships

that help to differentiate UKZN as a globally-recognised centre of knowledge and innovation.

UKZN will retain its core mandate, but Ramjugernath says investment in the four Flagships will also spur entrepreneurship (including social entrepreneurship), create new commercial opportunities and develop a critical mass of expertise and infrastructure.

“We would like to partner with a range of institutions – from day one – to find solutions, and also build strategic partnerships with international institutions in terms of the quality of graduates we produce.”

The four new Research Flagships for 2017-2021 are:





## 1. Social Cohesion – Addressing Inequality and Promoting Nation Building

South Africa, still quite young as an integrated and free society, has inherited a massive burden of inequality from the apartheid era, says Ramjugernath.

“We have a remarkable Constitution, which entrenches equality and opportunity for all and there has also been an incredible transition of reconciliation and development led by Nelson Mandela, yet there remains a legacy of unequal access to resources and opportunity for personal or community development,” he said.

Inequality was at the heart of increasing crime levels but he believes solutions can emerge from a situation of extremes, helping to inform problem solving for the entire world.

This research Flagship would focus on the factors that sustain inequality of opportunity by building capabilities, removing barriers, and redressing the wrongs of the past – with an emphasis on the poorest and most marginalised communities.

“The focus is on human development which is sustainable, while retaining linkages to the natural resources on which communities often depend,” said Ramjugernath.

“The approach will be to find tailored solutions that address the quality of life and aspirations in these communities – including water, energy, agriculture, natural resource access, land tenure, health and social services.

“We expect these to collectively translate into a better quality of life, better education and the capacity to work productively. This will be achieved in an environmentally sustainable manner. It will also build on successes and contribute to increased social cohesion, social inclusion, social justice, social capital, and social mobility.”

But the challenges faced in transforming societies could not be based on perspectives drawn from separate disciplines. They would require interdisciplinary and transdisciplinary approaches that brought together teams from various areas such as food production, natural resources use, water, food security, land-use planning and management, and to link these with expertise in social services, poverty alleviation, health, and education.

## 2. African Health – Saving Lives

UKZN is already a global leader in some areas of medical research, such as HIV and AIDS, and tuberculosis, so this research Flagship offers an opportunity to build on existing strengths, while expanding to a focused set of high impact health research studies.

It will focus on the top five causes of death in South Africa.

Ramjugernath says according to the latest report on mortality and causes of death in South Africa in 2015, the top five conditions that contribute to the largest proportion of deaths in the country are:

(1) Tuberculosis, (2) diabetes, (3) hypertension, stroke and heart disease, (4) HIV and AIDS, and (5) lung infections, such as influenza and pneumonia.

He said the Flagship project would bring together researchers from across UKZN to identify potential high impact studies and to provide these with institutional support and linkages. For each of the top five causes of death, a community of researchers across disciplines would be brought together to enhance the prospects of success.

## 3. Big Data and Informatics – Computing Solutions

UKZN is also a global leader in some areas of mathematics, physical and biological sciences and engineering, ranging from astronomy to bioinformatics and from quantum information processing to Big Data analytics.

Common to these areas, says Ramjugernath, is the use of the most advanced classical and quantum computational techniques for generating innovative, competitive and productive solutions.

“This Research Flagship offers UKZN the opportunity to build on existing strengths to expand to a focused set of high impact research and development studies relevant to the promotion of the 4th Industrial Revolution in Africa.

“The convergence of cyber-physical systems, the Internet of Things and the Internet of Systems are impacting on most scientific disciplines, economies, and industries.

“UKZN aims to become a pioneer at the intersection of classical and quantum information processing for Big Data analytics in South Africa. Capturing and processing of Big Data is also central to the scientific and technological achievements of the Flagship,” he said.

“UKZN wants to lead in the science, underpinning the disruptive digital technologies and techniques of the 4th Industrial Revolution.”

The convergence of digital technologies with breakthroughs in the physical and biological sciences, says Ramjugernath, will contribute to deliver increasingly sophisticated products and services and have a positive impact on economic development across Africa. “Just one potential example involves mimicking what is done in the plant world, to convert light into energy.”

## 4. African City of the Future – Most Liveable Cities

According to UN-Habitat, Africa is urbanising at a rate of 4% every year. This means that African cities will grow faster than other parts of the world over the next two decades.

Ramjugernath says this rapid rise in population in African cities presents a range of major socio-economic challenges, yet paradoxically there are also opportunities to catalyse structural transformation, if managed properly.

Some of the many challenges which needed to be addressed included congestion, infrastructure (water, housing, sanitation, and energy), food security, pollution, unemployment, service delivery, crime, violence, and lawlessness, child and women vulnerability, health issues and the environment.

“These challenges provide an opportunity for all disciplines in the University to come together to work in an interdisciplinary, multi-disciplinary and synergistic fashion to find solutions which are unique and indigenous to Africa.

“The African City of the Future project will include concepts such as smart cities, aerotropolis centres, autonomous vehicles, urban agriculture, as well as the ‘ocean economy’ for cities along the coast.

“This Flagship will bring together researchers from across UKZN to work closely with municipalities, and provincial and national governments to find sustainable solutions to rapid urbanisation and the vision of developing African cities which are on par, or better, than leading global cities, in terms of liveability,” he added.



## Focus on **INDUSTRY AND** **UKZN PARTNERSHIPS**

**Innovation geared to improve the lives of ordinary South Africans and protect the environment was at the heart of two of the projects approved for research in 2016 by UKZN's Innovation and Technology Transfer Unit, InQubate.**

**T**he two projects – funded by the Technology Innovation Agency (TIA)\* – were (1) Improved insulin production and purification to develop a cheaper and greener process for the purification of human insulin, and (2) Fabrication of nanocellulose structured film for application in flexible energy storage and electronic devices to develop new, greener, economical and environmentally safer film for use in communication devices, mobile phones, lasers, and radio frequency transmitters.

A third research project which received funding from the TIA was the Power Line Inspection Robot to enhance automation of the existing robot for cable line inspection.

It was the second round of TIA funding for the Power Line Inspection Robot. TIA had initially funded the development of a successful pre-production prototype and saw merit in investing a further R456 000. The mobile robot serves to improve current inspection methods of power lines in terms of inspection detail, cost and safety.

The Insulin project was awarded R500 000, and once completed, will see a home-grown method rivalling that which is used by international pharmaceutical companies. This will serve to lower the economic impact of diabetes, the incidence of which is currently on the rise in South Africa.

The Nanocellulose Structured Film project was also awarded R500 000 and will have far-reaching impact both on an industrial scale as well as on South Africa's technology pool in material synthesis and application. The renewable technology will create value addition in the pulp industry (e.g. Sappi Ltd) for production of nanocellulose and recycling of waste paper and in the coal industry to produce graphite and ultimately increase export of locally engineered materials for electronic device production.

Two advanced manufacturing projects successfully developed prototypes in 2016 – Professor Riaan Stopforth's Advanced Prosthetics Project, and the development of a prototype for Optical Quantum Entanglement Sources by Professor Francesco Petruccione's Centre for Quantum Technology.

The prosthetics project involves the development of a low cost modular advanced dexterous electromyography-controlled prosthetic hand. Prototypes were tested by individuals in communities whose members would otherwise not have been able to afford commercially available prosthetic hands.

The high quality, high efficiency photon-on-demand Optical Quantum Entanglement Sources project is expected to revolutionise current methods of data encryption with wide applications in the financial and military sectors. It will also be used by researchers for further scientific research and microscopy.

\* The Technology Innovation Agency (TIA) is a national public entity formed to help bridge the gap between research and development at Higher Education Institutions and commercialisation. UKZN benefits directly from the TIA's initiatives through their Seed Fund Programme which currently funds research by a number of academics at the University.



# Vice-Chancellor's Research Awards for 2016

## DR MATT HILTON

**Astrophysicist Dr Matt Hilton, co-recipient of the Vice-Chancellor's Research Award for 2016, says astronomy asks and answers some of "the biggest questions".**

**"E**very day I get to use my imagination...I have always been interested in science."

Hilton (36) is originally from the United Kingdom where he studied Physics and Astronomy (MPhys) at the University of Sheffield in England before obtaining a PhD in Astrophysics from the Liverpool John Moores University.

He was a postdoctoral research fellow at UKZN from 2007 to 2010 and in 2012 joined the University as a lecturer.

The focus of his research is on astrophysics, in particular observational cosmology and clusters of galaxies.

"The main impact of astronomy is its cultural value," said Hilton. "As astronomers, we use telescopes to explore the universe and try to figure out where the planets, stars, and galaxies came from. People have always looked at the night sky and wondered about what is out there."

"While astronomical research doesn't have much direct economic impact, the students we train in astronomy go on to make an impact in a variety of fields."

"Also, some of the technology developed in the course of astronomical research makes its way into people's everyday lives. One example being the CCD detectors used in digital cameras."

Hilton says he is excited to be using the South African MeerKAT radio telescope to study clusters at radio wavelengths, and the Simons Observatory in Chile to build on his work in the Atacama Cosmology Telescope project probing how the universe began, what it is made of, and how it evolved to its current state.



## ASSOCIATE PROFESSOR REITZE RODSETH

**Award-winning Honorary Associate Professor in Anaesthesia Reitze Rodseth wants to play a major role in reducing surgical complications.**

**"F**or someone to go through surgery that is painful and expensive and then for them not to receive the expected benefit is tragic," said Rodseth. "The desire to improve our patients' outcomes is what drives our research team. Our hope is that we will make it more likely that patients find that life after surgery is better."

Forty-year-old Rodseth, who trained as a doctor and then specialised in anaesthesia and intensive care, holds a PhD in Anaesthesia from UKZN and is currently rated C2 by the National Research Foundation.

He explains that surgery puts significant strain on the bodies of patients and those with underlying heart and brain problems often suffer heart attacks or strokes.

"Our research aims to identify these high-risk patients before they have surgery so we can intervene to reduce the risk."

"Knowing who is high risk also allows us to carefully follow those patients after surgery so we can identify individuals who do have a complication, a process that has been difficult and cumbersome in the past."

Rodseth says the team's research has focused on using a hormone called BNP (B-type Natriuretic Peptide), released from the heart when under strain, to identify at-risk patients.

"By doing a simple blood test we can now determine which patients need support."

"Initially we started out focussing on heart attacks and strokes within our own institutions but our research programme has developed to the point where we are working with large numbers of research teams across South Africa, within Africa, and internationally, trying to reduce all types of complications that occur during surgery."

Teamwork is essential to any research, he says.

"I have benefited greatly from inspirational mentors, colleagues and leaders – my desire is to emulate these individuals by training up a group of high-quality clinical researchers who have vision, ability and the ethos to play a major role in finding answers to the big questions we still face in perioperative medicine."

Rodseth says he is "greatly honoured" to receive the Vice-Chancellor's Research Award and thanked "those who had the vision to prepare the ground before me; those who have walked alongside me; and my lovely wife, Miranda, and my son, Joshua".



# Women in Science Awards

## PROFESSOR QUARRAISHA ABDOOL KARIM

UKZN AIDS Researcher Named as the 2016 L'Oréal-UNESCO For Women in Science Laureate for Africa and the Arab States



**UKZN's Professor Quarraisha Abdool Karim was among five leading women scientists across five world regions and 15 promising young researchers who were honoured at the 18th edition of the L'Oréal-UNESCO For Women in Science Ceremony at the Maison de la Mutualité in Paris.**

In front of an audience which included Nobel Laureates, previous recipients of L'Oréal-UNESCO Laureate Awards, and some of the brightest scientific minds globally, Abdool Karim received the L'Oréal-UNESCO Women in Science award for Africa and the Arab States region.

According to the international jury, the award was in recognition of her 'remarkable contribution to the prevention and treatment of HIV and associated infections and greatly improving the quality of life of women in Africa.'

Abdool Karim was the co-Principal Investigator of the landmark CAPRISA 004 tenofovir gel trial which provided proof-of-concept that an antiretroviral microbicide can safely prevent HIV infections with consistent use of the product. The study was named by the journal *Science* as one of the Top 10 scientific breakthroughs in 2010. The study also provided the first evidence that an antiretroviral microbicide can prevent the risk of acquiring HSV-2 infection.

Her scientific and research contributions in understanding the evolving HIV epidemic span over 25 years and have made a profound impact on HIV treatment and prevention policies at a global level.

Nominated by more than 2 600 leading scientists, 2016's five L'Oréal-UNESCO laureates were selected by an independent and international jury of 13 prominent scientists in the international scientific community. A statement from the organisation said: 'The Jury has

recognised the tenacity, the creativity and the intelligence of the five eminent women scientists who bring their transformative sciences to change the world. Each scientist has had a unique career path combining exceptional talent, a deep commitment to her profession and remarkable courage in a field still largely dominated by men.'

The President of the Jury, Nobel Laureate Professor Elizabeth H. Blackburn, is the first woman to hold this position in the history of the awards. She was the 2008 L'Oréal-UNESCO For Women in Science Laureate and the 2009 joint winner of the Nobel Prize in Physiology or Medicine. Blackburn congratulated the winners and said: '2016's laureates bring an extraordinary vision and immediate solutions to major human health issues... all their careers are exceptional, their discoveries truly new and they epitomise top-level research.'

The awards were presented by Irina Bokova, Director General of UNESCO and Jean-Paul Agon, Chairman and CEO of L'Oréal and Chairman of the L'Oréal Foundation who also officially launched the *Manifesto For Women in Science* [www.forwomeninscience.com](http://www.forwomeninscience.com) to draw attention to the under-representation of women in the sciences.

An advocate for social justice of adolescent girls and young women in Africa, Abdool Karim said she was deeply honoured and privileged to be recognised as a L'Oréal-UNESCO laureate. 'I hope that this award inspires young women in Africa and the Middle East to pursue careers in science and technology as the world needs more women in science. Our region needs more scientists addressing the many challenges that face us locally including ways to prevent HIV infection in adolescent girls and young women who continue to bear a disproportionate burden of HIV infection in the region.'

◀ Professor Quarraisha Abdool Karim with her award at the 18th edition of the L'Oréal-UNESCO for Women in Science awards ceremony held in Paris.





## PROFESSOR CRISTINA TROIS

UKZN Engineering Dean Runner-Up in 2016 DST Women in Science Awards

**Dean and Head of UKZN's School of Engineering, Professor Cristina Trois, was the first runner-up in the Department of Science and Technology's (DST) Annual Women in Science Awards (WISA), in the Distinguished Women in Science category.**

**T**he awards recognise and reward excellence, and profile notable female scientists in South Africa as models for younger generations.

The theme for WISA 2016 is Women's Empowerment and its link to sustainable development.

The awards were presented as part of the DST's celebration of Women's Month, with Trois nominated for the Distinguished SA Women in Science Award.

'I am honoured to have been a finalist among so many incredible women,' said Trois.

As a female professor and the first woman Dean of Engineering at UKZN, Trois is acutely aware of the role she plays as an example to young women in Science and Engineering. Through her nomination, she hopes to further establish the 'Engineering is a Girl Thing' programme to attract more young women into Engineering and Science.

Said Trois: 'Featuring as a runner-up for such a prestigious award is not only a personal recognition, but also highlights the transdisciplinary nature of Environmental Engineering, positioning engineers as equal contributors to the advancement of knowledge as scientists.'

Trois, originally from Sardinia, has been at UKZN for 20 years and is renowned in her field of Environmental Engineering, with specialised focus on Waste Management and Water/Wastewater Engineering and Treatment.

She has consistently made breakthroughs in her male-dominated field, and is lauded by colleagues for her efficiency, compassion, patience, cheerfulness and ability to motivate staff and deftly resolve conflicts.

A milestone for Trois was her creation, together with two colleagues, of the multidisciplinary Centre for Research in Environmental, Coastal and Hydrological Engineering (CRECHE) in 2001. She also established a state-of-the-art analytical laboratory for Environmental Engineering research.

Trois prioritises research, scholarship, research-exchange programmes and accelerating young engineers and scientists practice/research. She is a C2 NRF-rated researcher with numerous publications to her name, and is an editor and reviewer for numerous journals and institutions.

She takes her expertise beyond the classroom and laboratory, being recognised for breakthrough contributions to waste science, resource recovery and energy from waste, in particular her development of the innovative "cellular method" of land-filling currently adopted in Durban's landfill sites. She contributed to the first leachate treatment plant in South Africa, and to the first African, World Bank-funded landfill-gas-to-electricity project, whereby the city of Durban produces 10MW of electricity from waste. She is also working on the upcoming multi-national research endeavour: the Hub for the African City of the Future.

Trois develops academic course work, and also currently supervises 20 postgraduate students and researchers. So far she has graduated 45 postgraduate students in total. She regularly receives awards for research and academic excellence at UKZN, and participates in groups and organisations such as engineering councils, royal societies, waste management institutes, and the United Nations. Internationally she has collaborators in Italy, Britain, India, Germany, France and Switzerland.

The successful development of a dynamic multidisciplinary research group, the establishment of scholarship programmes, the creation of a centre of excellence, the on-going opportunities to scientifically collaborate at national and international level with experts of great calibre are a clear reflection of Trois's ability to stimulate, initiate and supervise research with passion and dedication.

*Professor Cristina Trois was the first runner up in the 2016 DST Women in Science Awards in the Distinguished Women in Science category.*



## South African Research Chairs Initiative (SARChI)



# Agronomy and Rural Development

PROFESSOR PARAMU MAFONGOYA

**B**etween 60% and 70% of the population in southern Africa live in rural areas and almost 60% of these people are farmers whose fragile livelihoods depend on a variety of climate-sensitive factors.

This is according to UKZN's Professor Paramu Mafongoya who notes that the situation for these folk is complicated by the degradation of natural resources, declining soil fertility and rampant deforestation.

"There is also a high level of poverty in rural areas, food insecurity and malnutrition," said Mafongoya.

Another problem is the 'yield gap', where the discrepancy between crop yields at research stations and those in farmers' fields is widening.

"For example, maize yield at research stations is around five to 10 tonnes a hectare whereas rural farmer yields can be as low as one to two tonnes a hectare."

This yield gap can become a poverty trap which is why Mafongoya believes that agriculture should provide a pro-poor strategy for food security, poverty reduction, sustainable income, employment and balanced nutritious diets.

The main focus of the Chair's research is to develop technologies which address yield-reducing factors such as soil fertility and land degradation. It also concentrates on pests and diseases; water stress and crop yield; improved germplasm; farmer livelihood strategies and access to markets.

Mafongoya said pests could cause heavy yield losses of between 10% and 80% at the pre-harvest and post-harvest stage. An increase in extreme weather events, temperature rise and elevated carbon dioxide levels can also magnify

pest pressure on agricultural systems through range expansion of existing pests and invasions by new pests.

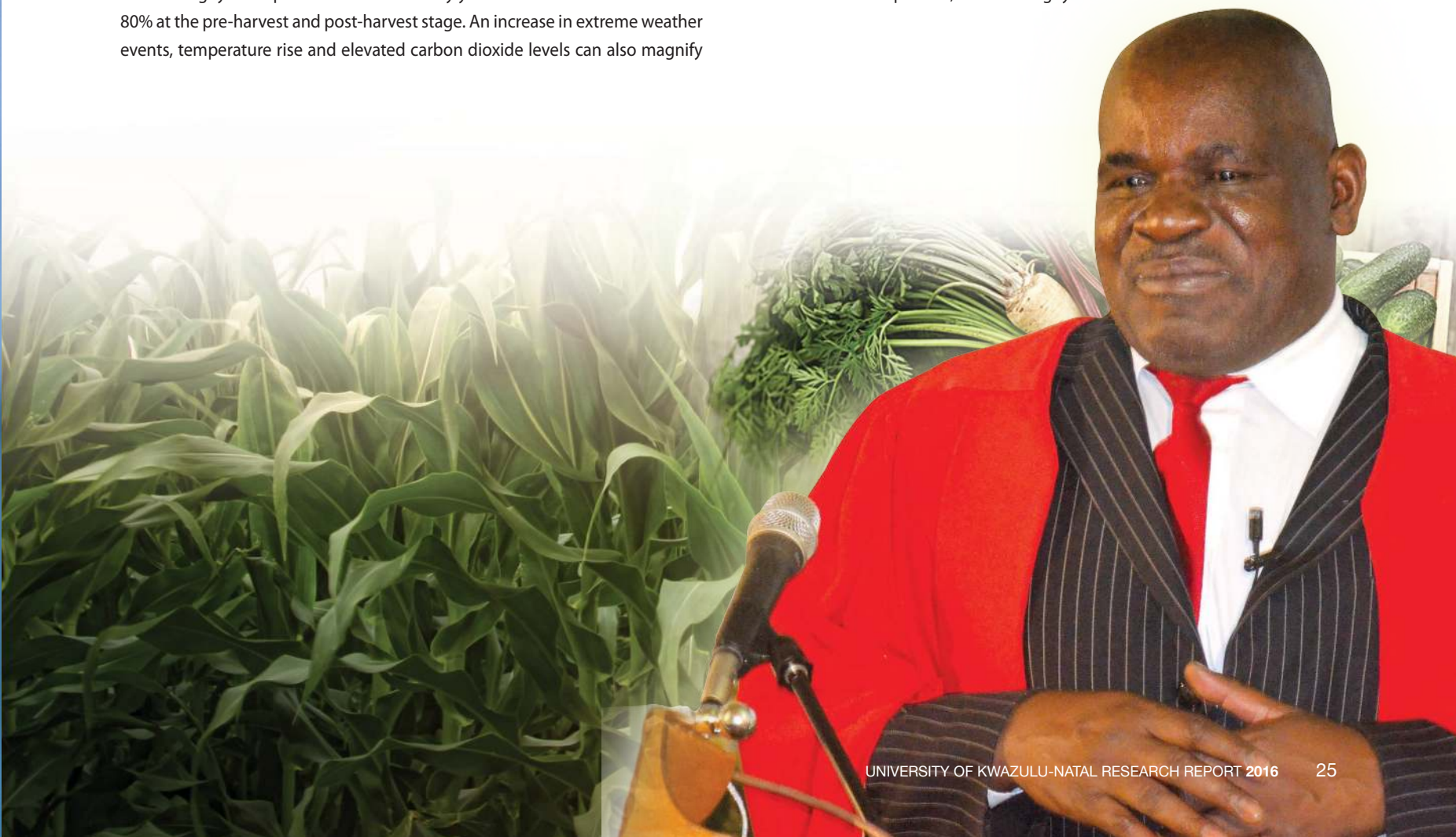
"Other climate-related concerns include an acceleration of pest development, leading to more pest cycles per season, the disruption of the synchronisation of pests and beneficial insects that increase risks of pest outbreaks. Today's minor pests could become primary pests."

Mafongoya said many students in the programme had conducted studies on new and emerging pests in Zimbabwe and South Africa. These studies indicated the progression of minor pests to major pests in both countries.

Some of these minor pests were bagrada bug, armoured ground cricket and red spider mite in vegetable production. Other emerging pests include white flies, aphids, thrips and diamondback moth in vegetables.

"The new pests found in both countries were fall armyworm on maize and *Tuta absoluta* (tomato leaf miner) on tomato crops. These two new pests cause extensive economic losses, with limited control measures.

"Pest risk maps were produced in both South Africa and Zimbabwe. These risks maps are critical for policy makers and will be used as early warning tools to predict potential areas of pest distribution. This will allow farmers and policy makers to develop disaster prevention measures on pests and avoid huge losses on cultivated crops which would have massive economic, food security and income consequences," said Mafongoya.



# Antibiotic Resistance and One Health

## PROFESSOR SABIHA ESSACK

Since their introduction into clinical practice in the 1930s and 1940s, antibiotics have revolutionised health care by dramatically decreasing sickness and death from bacterial infections in humans and animals\*.

Antibiotics have saved innumerable lives and made possible major surgery, organ transplantation, treatment of pre-term babies, and cancer chemotherapy\*. They have also advanced food security and food safety.

"However, infectious diseases remain the leading cause of death globally, increasingly as a result of antibiotic resistance (ABR)," said Professor Sabiha Essack.

In September 2016, the United Nations General Assembly signed the Political Declaration on Antimicrobial Resistance (AMR) which, Essack says, requires all member states to develop National Action Plans to prevent or contain AMR using the One Health Approach.

South Africa is a signatory to this political declaration that encompasses human, animal and environmental health.

"Antibiotic resistance (ABR) is a direct consequence of the selection pressure from warranted and indiscriminate antibiotic use in humans, animals and the environment, requiring a One Health approach towards its understanding and containment."

Essack said the high HIV and AIDS burden and other risk factors for communicable diseases in South Africa resulted in a high incidence of infectious diseases, engendering extensive antibiotic use and subsequent resistance. Nearly two-thirds of the antimicrobials sold for use in animals were used in growth promotion.

"Although the burden of ABR is not quantified, available evidence indicates that it is escalating in humans, animals and the environment."

Essack says UKZN's SARCHI Chair in Antibiotic Resistance and One Health supports these national and international initiatives by mapping the fluidity of antibiotic-resistant bacterial clones, antibiotic-resistance genes and their associated mobile genetic elements (MGEs) within and between the human, animal and environmental health sectors.

During 2016 the Chair was involved in several research projects including:

- ▶ A study on multi-drug resistant *Pseudomonas aeruginosa* from a private hospital in Durban that pointed to sub-optimal infection prevention and control and dwindling antibiotic treatment options for *P. aeruginosa* at the hospital
- ▶ A study on multi-drug resistant *Acinetobacter baumannii* from the private sector in Durban, which suggested inter-hospital transfer of certain isolates
- ▶ A study on methicillin-resistant *Staphylococcus aureus* (MRSA) from 22 private health care centres in Durban. Essack says as far as they are aware this was the first study reporting on tetracycline co-resistance in clinical MRSA in the private health sector in South Africa

Meanwhile, one PhD and six masters students graduated in 2016, and the Chair hosted postgraduate students from Mozambique, Ghana and Cameroon – expanding the reach into Africa.

### Footnotes:

- \* Davies J, Davies D. (2010). Origins and Evolution of Antibiotic Resistance. *Microbiology and Molecular Biology Reviews*. 74 (3): 417-433.
- \* Laxminarayan R, Duse A, Wattal C, et al. (2013). Antibiotic Resistance – the Need for Global Solutions. *Lancet*. 13: 1057-1098.

▼ Professor Sabiha Essack with some of her students.





# Applied Poverty Reduction Assessment

PROFESSOR SARAH BRACKING

To help relieve poverty and inequality in South Africa the Programme to Support Pro-Poor Policy Development (PSPPD) was launched in the country in 2007 by the Presidency, in co-operation with the European Union, and is still underway today.

The programme promotes the use of research and other evidence in policy interventions to address poverty and inequality challenges and to foster the exchange of knowledge among policy-makers and researchers.

UKZN's Professor Sarah Bracking said three PSPPD projects she worked on in 2016 were among her research highlights for the year:

- ▶ Climate Change Adaptation and Poverty Reduction (including green micro-enterprises) which she investigated in partnership with research colleagues Dr Mvuselelo Ngcoya and Ms Kathleen Diga
- ▶ Early Childhood Development Centres – a new area-based approach for improved and up-scaled services for the urban poor in Umlazi, Durban, working in association with the Project Preparation Trust (PPT) and Training and Resources for Early Childhood Education (TREE)
- ▶ Analysis of data gained from a 2014 survey of manufacturing firms in the Greater Durban area. The survey demonstrated the dynamic picture in manufacturing sectors such as clothing and textiles, agro-processing and metal work and enabled researchers to understand changes in employment levels within manufacturing firms. Bracking worked on this project with UKZN academics and principal researchers Dr Glen Robbins and Dr Myriam Velia

▼ Together here are (from left) UKZN's Professor Sarah Bracking; former eThekweni Municipality Mayor, Mr James Nxumalo; Climate Scientist at the eThekweni Municipality, Ms Zama Khuzwayo, and Director: Earth Systems Science at the Department of Science and Technology, Mr Leluma Matoane.

Analysis of the Early Childhood Development Centres in Amaoti, Umlazi, showed 56 unregistered creches where young children do not receive any assistance from the Municipality, despite their extreme poverty. Working with PPT and TREE, the SARCHI Chair advocated for registration and administrative inclusion, infrastructural upgrades, and greater income and food assistance for the families.

"In the area of climate change adaption and poverty reduction we are also completing a protocol on how to measure the value for money of co-benefit interventions with stakeholder engagements in eThekweni and at a national level with the Department of Planning, Monitoring and Evaluation (DPME) in the Presidency," said Bracking. "The good news is that activities designed to adapt communities to climate change are also good at creating jobs and providing incomes and resources for poor people." However, Bracking cautioned that "there is still a lot more to be done to prevent fatalities in freak weather events".

"In another project, we continued measuring the impact of government interventions to alleviate poverty in the housing sector, developed from a survey of the relationship between income levels and receipt of RDP housing in Jozini in northern KwaZulu-Natal, completed under the leadership of Dr Sithembiso Myeni, a senior lecturer in the School of Built Environment and Development where the Chair is housed."

Bracking said one of her postdoctoral students Dr Celestine Mayombe was working with the eThekweni Municipality on a project to assess the value of adult learning interventions, while her six doctoral students were busy with valuable research projects under the Chair.

Bracking published a book in 2016 through Routledge titled: *The Financialisation of Power in Africa: How Financiers Rule Africa*, which she says was the culmination of four years' work on the offshore economy, globalisation, financialisation and the limits to democratic space for poverty reduction.



# Chemistry of Indigenous Medicinal Plants

PROFESSOR FANIE VAN HEERDEN

**H**umanity has relied on medicinal plants and herbs from prehistoric times to treat and cure disease and injuries. Thousands of years later – in a modern laboratory on UKZN's Pietermaritzburg campus – Professor Fanie van Heerden and her students are still busy investigating and learning about the medicinal properties of Africa's rich variety of wild plants.

While van Heerden's main research focus is on the usefulness of these plants in treating human diseases such as malaria, Tuberculosis, diabetes and cancer, the Chair is also exploring a new avenue of research by identifying plant compounds that can be used to combat insect pests that attack wheat and other crops.

For example, van Heerden and Dr Maria Cawood of the University of the Free State recently identified chemical extracts from the Agapanthus plant that appear to have the potential to protect wheat plants from aphids and other pathogens.

"The Research Chair provides an excellent basis for interdisciplinary research. My collaborators are botanists, zoologists, physiologists and indigenous knowledge specialists," she said.

Van Heerden is also busy establishing a library of compounds from South African plants and a number of compounds have been obtained and stored to begin the project.

"We are aiming to set up both a physical and electronic database," said van Heerden. "In the physical database, we store about 20mg of the pure compound in a glass vial in a freezer. Most compounds should be stable under these conditions and, therefore, retain their activity. In the electronic database, we assemble the information that we have on the compounds, including their spectroscopic data."

How are plants selected for further investigation?

"We have three criteria. First, the plant material needs to be readily available – and for this we rely heavily on the UKZN Botanical Garden in Pietermaritzburg which has an excellent collection of indigenous plants. Then we rely on literature reports on plant use but we are also in contact with traditional healers for information and will in future expand this collaboration. Thirdly, it is well known from the literature that some plant families contain a much higher incidence of biologically active compounds than others – so we try to work in larger families which are known for their active compounds."

The Chair also collaborated with Dr B J Taiwo of the Obafemi Awolowo University in an investigation of Nigerian medicinal plants which have the potential to combat cancer, and with Ms M Mohamed of Makerere University to identify compounds with antimalarial activity from medicinal plants in Uganda.

Closer to home, van Heerden is involved in a separate project with UKZN botanist and top researcher Professor Johannes van Staden to see whether plant compounds from Erythrina (Coral trees) can combat malarial parasites.

In another collaboration, the Chair and Dr Barry Taylor have investigated the reasons why some bird species develop injuries on their legs.

"Dr Taylor has observed that some birds have a black residue on their feet during certain times of the year, mostly during the drier seasons," said van Heerden. "He had an idea that they might get it from an alien weed, Lantana camara, and collected some of the resin from bird feet and we have analysed it by LC-MS (liquid chromatography – mass spectrometry) and compared it with the analysis of plant material. We have been able to prove that the black residue on the feet of the birds is from the Lantana plants and an article on this work is currently under review for publication."

▼ Professor Fanie van Heerden with some of her students (from left) Mr Odwa Gonyela (PhD), Mr Sbonelo Hlengwa (MSc), Ms Ntamsie Dube (PhD), Ms Nontokoza Duma (National Research Foundation intern), Ms Nomandla Ngcoya (PhD), Mr Prince Moyo (MSc), Ms Grace Obi (PhD) and Ms Busisiwe Danca (MSc).





# Ecosystem Health and Biodiversity in KwaZulu-Natal and the Eastern Cape

PROFESSOR COLLEEN DOWNS

**M**ankind has been changing the shape of the world for many thousands of years. This process has accelerated so much over the last 200 years, however, that several scholars now think that human influences are significant enough to constitute a new geological era – the Anthropocene.

The name Anthropocene is a combination of the ancient Greek words: human (anthropos) and new (cene/kainos).

“Globally, the effects of anthropogenic (human-induced) land use change are impacting on biological diversity. Nowhere is the guardianship of South Africa’s rich biodiversity more pressing than along the eastern seaboard of KwaZulu-Natal and Eastern Cape,” said Professor Colleen Downs, under whose leadership the Chair is conducting long term research into several key conservation initiatives, especially relating to terrestrial vertebrates.

“Studying the health of these ecological systems is therefore a prime imperative. We are gathering knowledge that not only improves our understanding about the persistence of land-based animals and their environment but also helps us to determine how we should care for and manage an ever-changing environment.”

As a result, some of her postgraduate students have been involved in various pretty wild and adrenalin-charged research projects such as catching fully-grown Nile crocodiles and fixing plastic marker tags to their powerful tails or catching eagles to fit transmitters to monitor their movements.

During 2016, her students were involved in a wide variety of research projects on reptiles, birds and mammals, including a study on the role of fruit-eating birds and bats in the dispersal of alien plant species.

They have also been researching the diets of genet, woolly necked storks, and crowned eagles in built-up areas, and the potential impacts of wind turbines on vultures.

Some of this research in urban areas is due to feature soon in a BBC television series.

Though the Chair receives around R250 000 for running expenses, it also needs to raise additional funds for research.

“In particular, transmitters to track animal and bird movements are expensive (R1 0000-R2 0000 a transmitter) but they give amazing data,” said Downs. “So we are most grateful for any support. If money is paid to the UKZN Foundation a tax certificate is issued and no deductions are made so we get all the monies for research. We need more funds for transmitters for various species, including hippos as these are ecosystem engineers and despite being an iconic African species there has been relatively little ecological work done on them.”

▼ Professor Colleen Downs with students and community members during research work around Lake St Lucia.





# Economic Development

## PROFESSOR PRANITHA MAHARAJ

**P**rofessor Pranitha Maharaj is based at UKZN's School of Built Environment and Development Studies where she took over the position of Interim SARCHI Chair – Economic Development in 2016.

The purpose of the Chair is to promote and undertake research on economic development.

"A major focus of the Chair is on access to household resources by race and gender, the economics and demographics of family/childcare responsibilities in South Africa, marriage patterns, household composition and socio-economic status," said Maharaj.

The Chair has developed strong and original research competency in the field of economic development with a specific focus on family dynamics in contemporary South Africa.

"The focus of the research has been inter-disciplinary and it has drawn elements from both development studies and demography," she said.

In 2016, the Chair put the spotlight on the development of young African

scholars and this was reflected in the large number of students graduating under Maharaj's supervision as well as the variety of joint publications she had with postgraduate students in peer-reviewed journals.

She also used her position as a Chair to nurture a research community of young researchers, both national and international, who work with large datasets in South Africa to investigate questions related to development, health, social policy and the family. She was able to bring together senior and more junior researchers (including doctoral students) from South Africa and abroad, for a writing workshop that she hopes will ultimately result in a book. The workshop was a critical and constructive forum for researchers to present current work, and the opportunity to build social and human capital among researchers who work on related areas.

Maharaj holds a doctorate in Epidemiology and Population Health from the London School of Hygiene and Tropical Medicine in the United Kingdom.





# Evolutionary Biology

## PROFESSOR STEVEN JOHNSON

**P**rofessor Steven Johnson has always aimed high – so high, that he is determined to develop the leading research group for plant pollination research in the world.

“We are arguably already the strongest pollination research group in the world, at least in terms of publications, but I would like to strengthen this position by investing further in key analytical equipment, by ensuring that postgraduate students in the group get the best possible training and also by attracting excellent postdocs and sabbatical visitors who introduce new skills to the group,” said Johnson.

“My aim is not simply for students to finish their degrees but to make sure that their work is excellent enough to be published in international journals and that they have the skills to perform independent high-end research work in academic and industry environments.”

This year, students from his research laboratory continued to obtain good research positions in South Africa and other parts of the world, including France, Germany and Switzerland. One of his MSc students, Ms Simangele Msweli, was awarded a Mandela-Rhodes scholarship.

Based at the School of Life Sciences on the Pietermaritzburg campus, one of the key focus areas of the Chair is the crucial issue of pollination – studying the role of the birds and the bees in maintaining plant diversity and food production in many agricultural settings.

Johnson also co-authored a book on floral mimicry which was published by Oxford University Press in 2016, exploring the fascinating world of “floral fraudulence”.

Internationally significant research breakthroughs in 2016 included the publication of an article in *Current Biology* showing that *Ceropegia* flowers mimic the volatile emissions of wounded honey bees and thereby attract fly pollinators. Another paper was published in *Functional Ecology* showing that some orchids mimic the pollen food sources of bees.

The Chair hopes to develop projects that will identify the chemical cues used by the insect pollinators of plants such as cycads, orchids and figs.

“We also have a growing reputation for applied work, and many of the recent graduates from our lab have studied applied issues ranging from breeding eucalypt trees for forestry, reproductive biology of biofuel plants, and solving pollination deficits in deciduous fruit trees.”

► Professor Steven Johnson was in the Chinese Himalayas, where he has various collaborative projects with scientists, mainly in the field of chemical ecology.

▼ Out in the field, MSc students Mr Sachin Doarsamy and Ms Nokulunga Goqo use plastic bags to exclude insects from flowers during pollination research.



# Gender and Childhood Sexuality: Violence, Inequalities and Schooling

PROFESSOR DEEVIA BHANA

**S**ex remains a taboo subject in many homes and in schools, even though young people are exposed to and show interest in sexuality. Children are also exposed to sexually explicit material via online social media.

Professor Deevia Bhana believes that rather than trying to wish away awkward questions on sexuality, parents, families and teachers need to recognise that young people have sexual interests.

"They need to be supported with facts about sexual pleasures, rather than avoiding sex education or simply addressing sex as a negative aspect of life."

Bhana says the Chair's function is to bring together a cohort of researchers, academics and postgraduate students to build a comprehensive knowledge base around children and young people's investment in gender and sexuality.

Such a focus remains critical in light of the vulnerability of children and young people to poor sexual health outcomes, unwanted teenage pregnancy, gender and sexual inequalities, homophobia, violence and the disproportionate vulnerability of girls to HIV.

"If we are to improve school-based interventions that can help protect boys and girls from reproducing familiar gendered narratives (based on male domination and violence), we need to start early and work from young people's own points of view about what matters to them with regard to sex, sexuality, gender equality, health and education," said Bhana.

"This work is really important as we have almost daily media reports of gender and sexual violence in and around schools, with girls remaining vulnerable to male peers and male teachers. We have such a long way to go before we can ensure gender equality and safety at school, as promised in the National Development Plan 2030. My research runs alongside this development plan for a better life for children and young people in this country."

This year, Bhana and her students have examined hegemonic constructions of masculinity among younger primary school children.

"We focused on how the term 'gay' is already embedded within inequality and subordination, often leading to harassment and violence against effeminate boys," she said.

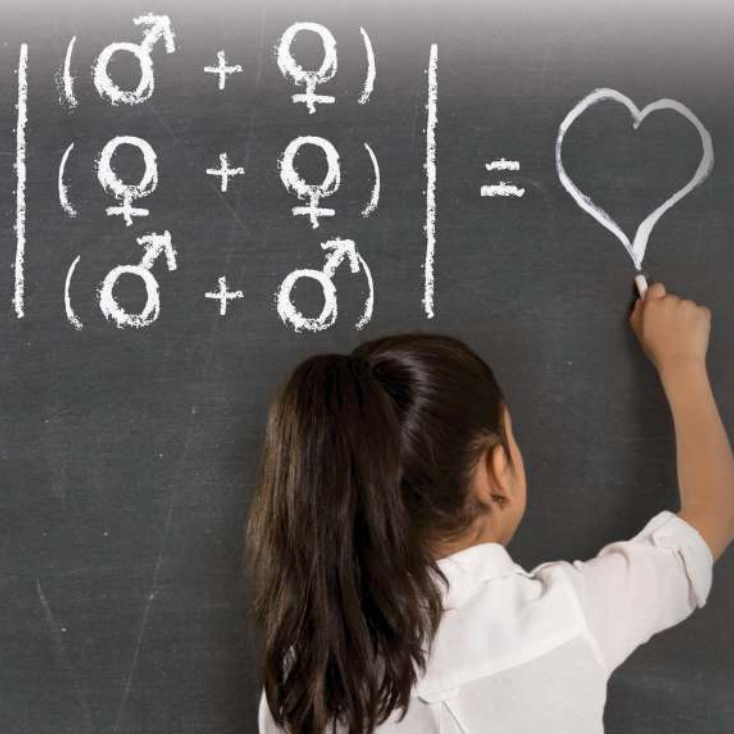
"Secondly, we have conducted research with teenage mothers and fathers and addressed in particular the burden that older women bear in caring for children when their daughters (who are mothers) return to school.

"Thirdly, we have addressed the diversity of teenage sexual cultures among different groups of South Africans in rural and urban settings, showing how romance and notions of love are intertwined with gender inequalities, girls' subordinate status and vulnerability to HIV.

"We have also given attention to sexually explicit online material and how young people consume and invest in online social media, and pornographic sites in learning about sex and sexuality."

Bhana also believes that issues around homosexuality or same-sex relations need to be considered from the early years.

"We cannot have a Constitution that is based on equality of sexual orientation while children are learning that 'gay' is subordinate."





# Gravitating Systems

## PROFESSOR SUNIL MAHARAJ

**M**ost 'Earthlings' are familiar with the story of the apple which fell on Sir Isaac Newton's head, but Professor Sunil Maharaj and his research colleagues are studying much larger gravitational fields deep in outer space!

The Chair's primary research interests are in cosmology and relativistic astrophysics in the context of general relativity and modified theories of gravity.

"This involves the analysis of the nonlinear Einstein field equations in general relativity and the Einstein-Gauss-Bonnet system of partial differential equations for higher order curvature corrections," Maharaj said.

In cosmology, the focus of study is on inhomogeneous cosmological models, and the relationship between symmetries and the spacetime geometry. In astrophysics, the main thrust is the modelling of superdense stars and radiating stars in strong gravitational fields.

"Our models provide a theoretical basis for physical features observed in astronomical objects," said Maharaj. "We are attempting to build a deeper understanding, in general relativity, of the underlying physics for such structures. We aim to obtain a complete model for the behaviour of the gravitational force in strong fields and to indicate how this can be used to model stars and galaxies."

In 2016, the Chair's research focus involved finding and analysing models with a specified barotropic equation of state.

"The new solutions found have helped to understand the dynamics of black holes and the gravitational collapse of dense stars," said Maharaj.

His group also collaborated with researchers at Ulyanovsk University in

in Russia and the Jamia Millia Islamia in India. "Our research on developing physically acceptable stellar models in relativistic astrophysics is ongoing. A number of new exact solutions to the uncharged Einstein and the charged Einstein-Maxwell system have been generated and related to existing models. These solutions have been connected to observed astronomical objects by studying their masses and radii," said Maharaj.

"In this way we are obtaining a clearer understanding of the behaviour of strong gravitational fields. In future work we will be imposing a polytropic equation of state, relating the pressure to the energy density, on the models found. This does create further complexity but is more astrophysically important," he said.

During 2016, Maharaj was invited to deliver a plenary talk at the 11th AIMS Conference on Dynamical Systems, Differential Equations and Applications in Orlando in the United States.

Academic and research staff including Maharaj, Professor Subharthi Ray, Dr Riven Narain, and Dr Sudan Hansraj; and postdoctoral fellows Dr Pedro Make Takisa, Dr Sifiso Ngubelanga, and Dr Gezahegn Abebe, as well as doctoral students Mr Byron Brassel, Mr Addial Manjonjo, and Mr Didier Kileba Matondo made presentations at the 21st Conference of the International Society on General Relativity and Gravitation in New York.

Meanwhile, Maharaj, Ray, postdoctoral fellow Dr Ajey Tiwari, and Brassel were invited speakers at the 5th Ulyanovsk International School-Seminar in Ulyanovsk, Russia. titled: Problems of Theoretical and Observational Cosmology.

▼ At Columbia University in New York for the 2016 Conference of the International Society for General Relativity and Gravitation are (from left) Postdoctoral Fellow from the Congo Dr Pedro Mafa Takisa, UKZN's Dr Sudan Hansraj, PhD student Mr Byron Brassel, Professor Sunil Maharaj and a Postdoctoral Fellow from Ethiopia, Dr Gezahegn Abebe.





# Indigenous Health Care Systems

## PROFESSOR EXNEVIA GOMO

**F**or most Africans, traditional medicine remains the first source of health care. This is partly because it is more accessible, is part of indigenous peoples' lives and is also considered less expensive and safer, says Professor Exnevia Gomo.

"The World Health Organization guidelines on the institutionalisation of African traditional medicines call on countries to develop policies and a legal framework, such as the National Traditional Medicine Policy, the Traditional Health Practitioners Bill, the Code of Ethics for Traditional Health Practitioners and other related legislation," said Gomo.

Once put in place, this legislation and policy would go a long way to fast-tracking the advancement of traditional medicine and also improve its recognition.

Gomo notes that government and other organisations are investing effort and resources to integrate traditional health care within the national health care system.

"These efforts need evidence to inform the interventions and our research aims to provide evidence for policy implementation and programming."

Gomo said estimates suggest there are nearly 300 000 traditional healers in South Africa, while the value of traditional medicine in the Durban muthi markets alone has been estimated at around R170 million annually.

And whereas the national doctor-to-patient ratio in the formal health care sector is about 1:17 000, the ratio in the traditional health sector is about 1:700 – 1 200 (2003 estimates).

Gomo said the Chair aims to:

- ▶ Generate evidence to strengthen strategies for genuine engagement and trust between traditional health practitioners, modern health practitioners and researchers
- ▶ Improve the evidence base for safety, efficacy and quality of traditional medicines and to strengthen the infrastructure and human resource capacity for traditional medicine research
- ▶ Generate evidence to inform integration of traditional medicine into the National Health Care System and also facilitate the documentation and protection of indigenous health knowledge

During 2016, the Chair supervised several PhD, masters and honours students in a range of studies concerned with traditional health and muthi – including a focus on the treatment of cancer, diabetes and wound-healing (tissue regeneration).

"We have data from a safety/efficacy study on diabetes that has impressive results. *In-vitro* and animal safety studies also show that the muthi (*uthuli lwezichwe*) which is used to treat diabetes by a traditional healer in Durban is safe at doses used by the healer. *In-vitro* efficacy studies show the traditional medicine extract has effects on glucose uptake comparable to metformin and insulin," he said.

Another project on indigenous training has generated information that could assist in developing an accredited training programme by traditional healers. Proposals submitted for ethical review include studies on patient medical record-keeping by traditional healers, disclosure of the use of traditional medicine by patients attending primary health care, and perceptions of the UKZN Nursing Discipline and students about the introduction of African Traditional Medicine in their curriculum.

These projects aim to provide the much needed scientific evidence to facilitate the institutionalisation of traditional medicine.





# Land Use Planning and Management

## PROFESSOR MATHIEU ROUGET

**A**t a time when the footprint of humanity is expanding rapidly across the natural landscape of South Africa, sound land use planning policies can help to secure a better balance between the protection of nature and continued development.

Because the responsibility for planning and regulation of land use often lies at local government level, municipal planners are potentially critical role-players for conserving the country's biological diversity, says Professor Mathieu Rouget.

"One such planning project was the Durban Research Action Partnership (D'RAP), a joint initiative between the eThekweni Municipality and UKZN. The partnership was initiated by the head of Health Sciences at UKZN, Professor Rob Slotow, and the head of the Environmental Planning and Climate Protection Department of eThekweni Municipality, Dr Debra Roberts," said Rouget.

The partnership aims to generate knowledge and help municipal managers make biodiversity and conservation decisions, and also build capacity by supporting student research.

Overall, the Chair was involved in a diverse array of projects related to land use planning and management. This involved collaboration with several disciplines across the University, with the Chair investing strongly in training young South Africans.

Rouget said some of the research included investigations to gain a better understanding of the importance of ecosystem services for human well-being and the need for people to take better care of ecosystems.

For example, masters student Ms Kholosa Magudu studied river water quality in urban areas and the range of ecosystem services provided by healthy river systems, such as reducing soil erosion. The results of her study indicated that water quality improves after passing through landscapes that have been restored.

Other examples included work by PhD student Mr Lutendo Mugwedi who helped to research the potential benefits of ecological restoration at a

degraded site at Buffelsdraai outside Durban, and Masters student Ms Ashrenee Govender who studied new methods of identifying several insect species and their potential role in monitoring the success of ecological habitat restoration at Buffelsdraai.

Meanwhile, another masters student Mr Sizwe Hlatshwayo was involved in a study at Buffelsdraai to develop models for estimating the above ground biomass (AGB) in naturally growing forests, which is critical for climate change modelling.

In separate projects, other students studied the role of grasslands in storing and sequestering carbon and other greenhouse gasses, and the distribution and spread of invasive alien plants.

Rouget and the current Interim SARCHI Chair – Land Use and Planning, Professor Onesimo Mutanga, and some of their students joined forces and published research articles during 2016, including:

- ▶ *Mapping Alien and Indigenous Vegetation in the KwaZulu-Natal Sandstone Sourveld Using Remotely Sensed Data*. Bothalia, 46(2). Nine pages. J Odindi, O Mutanga, M Rouget, and N Hlanguza (2016)
- ▶ *Assessing Habitat Fragmentation of the KwaZulu-Natal Sandstone Sourveld, a Threatened Ecosystem*. Bothalia, 46(2). Ten pages. R Naicker, M Rouget, and O Mutanga (2016)
- ▶ *A Spatial and Temporal Assessment of Fire Regimes on Different Vegetation Types Using MODIS Burnt Area Products*. Bothalia, 46(2). Nine pages. NL Buthelezi, O Mutanga, M Rouget, and M Sibanda. (2016).





# Systems Biology of HIV/AIDS

## PROFESSOR THUMBI NDUNG'U

**H**IV/AIDS is the major global health challenge facing Africa today and ultimately the solution to this crisis will require developing a safe and effective vaccine or a cure for those people already infected.

The spread of HIV globally, and in sub-Saharan Africa in particular, has also led to the re-emergence of Mycobacterium Tuberculosis infections, with co-infections now quite common.

"Our laboratory focuses on virology and immunology research related to understanding the mechanisms of immune control in HIV and TB infections and how effective immune responses can be harnessed for vaccine development, or immune-based cure strategies," said Professor Thumbi Ndung'u.

Ndung'u is the Scientific Director of the HIV Pathogenesis Programme (HPP) at the Doris Duke Medical Research Institute at UKZN and also holds the Victor Daitz Chair in HIV/TB Research.

"We have developed well-pedigreed cohorts of persons with acute and chronic HIV infection, in order to define factors associated with control of infection," said Ndung'u.

"Most of the patients are also latently or actively coinfected with tuberculosis. Our studies have elucidated some mechanisms of viral control and suggested pathways that may be required for successful immunisation."

Ndung'u remains optimistic that a functional cure for HIV is not as far-fetched as once thought.

"Over the past several years, we have continued to identify people with acute HIV infection and put them on antiretroviral therapy immediately. We

hope to soon begin intervention studies to see whether we can achieve a functional cure (long-term remission without antiretroviral therapy) in these individuals.

"Whether a functional cure is possible in these persons is unclear but certainly remains a very important research question," he said.

"Recently we have also shown that acute phase CD8+ T cell responses largely fail to drive viral escape and that there is a high transmission of immune escape variants in a high prevalence setting such as Durban. This then compromises immunogenicity and is associated with faster disease progression."

Ndung'u says in chronic HIV infection, the mechanisms of immune control remain incompletely understood and this is a significant hindrance to vaccine development and immune-based therapies.

A key emphasis of the Chair is on capacity building for biomedical research in Africa by providing quality training programmes for young and emerging researchers.

Among his recent achievements are:

- ▶ Appointed Adjunct Professor of Immunology and Infectious Diseases, Harvard T.H. Chan School of Public Health in the United States in January 2016
- ▶ Appointed Honorary Professor, University College London in September 2016
- ▶ Elected as a member of the Academy of Science of South Africa (ASSAf) in October 2016. Election to membership of the Academy is an honour reserved for the country's most outstanding scholars

▼ Professor Thumbi Ndung'u (centre) with members of his research team Dr Bongiwé Goodness Ndlovu (PhD, Immunology), left, and Dr Ikanyeng Dolly Seipone (PhD, Virology).





# NATIONAL RESEARCH FOUNDATION A-RATED RESEARCHERS



Professor Quarraisha Abdool Karim



Professor Fernando Albericio



Professor Michael Chapman



Professor Rob Gous



Professor Steve Johnson



Professor Craig Packer



Professor Linda Richter

# NRF-rated Researchers

## A-Rated Researchers

TITLE	SURNAME	FIRST NAME	SCHOOL
Professor	Abdool Karim	Quarraisha	CAPRISA
Professor	Albericio	Fernando	Chemistry and Physics
Professor	Chapman	Michael JF	Arts
Professor	Gous	Robert M	Agricultural, Earth and Environmental Sciences
Professor	Grosset	Jacques HE	Health Sciences
Professor	Johnson	Steven Dene	Life Sciences
Professor	Packer	Craig	Chemistry and Physics
Professor	Richter	Linda M	Applied Human Sciences

## College of Agriculture, Engineering and Science

TITLE	SURNAME	FIRST NAME	SCHOOL
Professor	Adali	Sarp	Engineering
Professor	Afullo	Tomas JO	Engineering
Professor	Ajibade	Peter Adewale	Chemistry and Physics
Dr	Akerman	Matthew	Chemistry and Physics
Professor	Albericio	Fernando	Chemistry and Physics
Dr	Aremu	Adeyemi	Life Sciences
Professor	Ariatti	Mario	Life Sciences
Professor	Baboolal	Dharmanand	Mathematics, Statistics and Computer Science
Professor	Bala	Muhammad	Chemistry and Physics
Professor	Banasiak	Jacek	Mathematics, Statistics and Computer Science
Professor	Bau	Sheng	Mathematics, Statistics and Computer Science
Professor	Beckett	Richard Peter	Life Sciences
Dr	Bertling	Isa	Agricultural, Earth and Environmental Sciences
Professor	Bezuidenhout	Carel Nicolaas	Engineering
Professor	Bharuth-Ram	Krishanlal	Chemistry and Physics
Professor	Bob	Urmilla	Agricultural, Earth and Environmental Sciences
Professor	Bright	Glen	Engineering
Dr	Brown	Mark	Life Sciences
Dr	Bytebier	Benny LG	Life Sciences
Dr	Carrasco	Nicola	Life Sciences
Professor	Carsky	Milan	Engineering
Dr	Chenia	Hafizah Yousuf	Life Sciences
Dr	Chetty	Naven	Chemistry and Physics
Dr	Chiang	Hsin Cynthia	Mathematics, Statistics, and Computer Science
Professor	Chimonyo	Michael	Agricultural, Earth and Environmental Sciences
Professor	Coetzer	Theresa Helen	Life Sciences
Professor	Coombes	Philip Hugh	Chemistry and Physics
Professor	Derera	John	Agricultural, Earth and Environmental Sciences



## College of Agriculture, Engineering and Science

TITLE	SURNAME	FIRST NAME	SCHOOL
Professor	Downs	Colleen Thelma	Life Sciences
Dr	Egoh	Benice Nchine	Land Use Planning and Management
Professor	Finnie	Jeffrey Franklin	Life Sciences
Professor	Ford	Tony,A	Chemistry and Physics
Professor	Friedrich	Holger Bernhard	Chemistry and Physics
Dr	Glassom	David	Life Sciences
Professor	Goldring	Dean James Philip	Life Sciences
Dr	Goswami	Rituparno	Mathematics, Statistics and Computer Science
Professor	Gous	Robert M	Agricultural, Earth and Environmental Sciences
Professor	Govender	Saneshan	Engineering
Professor	Govinder	Keshlan Sathasiva	Mathematics, Statistics and Computer Science
Dr	Green	Andrew Noel	Agricultural, Earth and Environmental Sciences
Professor	Green	Jannette Maryann	Agricultural, Earth and Environmental Sciences
Dr	Griffiths	Megan E	Life Sciences
Dr	Gubba	Augustine	Plant Pathology
Dr	Gueguim Kana	GK Evariste Bosco	Life Sciences
Dr	Hansraj	Sudan	Mathematics, Statistics and Computer Science
Dr	Harinarain	Nishani	Engineering
Professor	Hart	Robert Clynton	Life Sciences
Professor	Haupt	Theodore Conrad	Engineering
Professor	Hellberg	Manfred Armin	Chemistry and Physics
Professor (Emeritus)	Hey	John Douglas	Chemistry and Physics
Professor	Hill	Travor	Agricultural, Earth and Environmental Sciences
Dr	Hilton	Matthew James	Mathematics, Statistics and Computer Science
Professor	Hughes	Jeffrey Charles	Agricultural, Earth and Environmental Sciences
Dr	Islam	M Shahidul	Life Sciences
Dr	Jachowski	David	Agricultural, Earth and Environmental Sciences
Professor	Jaganyi	Deogratius	Chemistry and Physics
Professor	Jewitt	Graham Paul Wyndham	Engineering
Professor	Johnson	Steven Dene	School of Life Sciences
Professor	Jonnalagadda	Sreekantha Babu	Chemistry and Physics
Dr	Juergens	Andreas	Life Sciences
Professor	Kirkman	Kevin	Life Sciences
Professor	Konrad	Thomas	Chemistry and Physics
Professor	Laing	Mark Delmege	Agricultural, Earth and Environmental Sciences
Professor	Leach	Peter	Mathematics, Statistics and Computer Science
Dr	Light	Marnie E	Life Sciences
Professor	Lin	Johnson	Life Sciences
Dr	Lokhat	David	Engineering
Professor	Lovegrove	Barry Gordon	Life Sciences
Dr	Ma	Yin-Zhe	Chemistry and Physics
Dr	Macdonald	Angus	Life Sciences
Professor	Mace	Richard Lester	Chemistry and Physics
Dr	Maguire	Glenn	Chemistry and Physics
Dr	Magwaza	Lembe	Agricultural, Earth and Environmental Sciences
Professor	Maharaj	Brijlall	Agricultural, Earth and Environmental Sciences

## College of Agriculture, Engineering and Science

TITLE	SURNAME	FIRST NAME	SCHOOL
Professor	Maharaj	Sunil	Mathematics, Statistics and Computer Science
Professor	Martincigh	Bice	Chemistry and Physics
Professor	Massamba	Fortune	Mathematics, Statistics and Computer Science
Dr	Matthews	Alan	Chemistry and Physics
Professor	Meikap	Bhim Charan	Engineering
Dr	Misra	Saumitra Kumar	Agricultural, Earth and Environmental Sciences
Professor	Modi	Albert Thembinkosi	Agricultural, Earth and Environmental Sciences
Professor	Mola	Genene Tessema	Chemistry and Physics
Professor	Moodley	Kavilan	Mathematics, Statistics and Computer Science
Professor	Motsa	Sandile Sydney	Mathematics, Statistics and Computer Science
Dr	Moyo	Thomas	Chemistry and Physics
Dr	Msomi	Justice Zakhele	Chemistry and Physics
Professor	Muchaonyerwa	Pardon	Agricultural, Earth and Environmental Sciences
Dr	Mudhara	Maxwell	Agricultural, Earth and Environmental Sciences
Professor	Mukaratirwa	Samson	Life Sciences
Professor	Mukwembi	Simon	Mathematics, Statistics and Computer Science
Professor	Munro	Orde Quentin	Chemistry and Physics
Professor	Mutanga	Onesimo	Agricultural, Earth and Environmental Sciences
Professor	Naidoo	Gonasageran	Life Sciences
Dr	Naidoo	Yogasphree	Life Sciences
Dr	Niesler	Carola Ulrike	Life Sciences
Professor	Nyamori	Vincent Onserio	Chemistry and Physics
Professor	Ojo	Joseph	Engineering
Dr	Ojwach	Otieno Stephen	Chemistry and Physics
Professor	Olaniran	Ademola Olufolahan	Life Sciences
Professor	Ortmann	Gerald Friedel	Agricultural, Earth and Environmental Sciences
Dr	Owaga	Bernard Omond	Chemistry and Physics
Professor	Packer	Craig	Chemistry and Physics
Professor	Pammenter	Norman William	Life Sciences
Professor	Pegram	Geoffrey Guy Sinclair	Engineering
Dr	Pellicane	Giuseppe	Chemistry and Physics
Professor	Petrucione	Francesco	Chemistry and Physics
Professor	Pillay	Nelishia	Mathematics, Statistics and Computer Science
Professor	Pillay	Balakrishna	Life Sciences
Professor	Proches	Serban	Agricultural, Earth and Environmental Sciences
Professor	Ramjugernath	Deresh	Engineering
Professor	Rawatlal	Randhir	Engineering
Professor	Ray	Subharthi	Mathematics, Statistics and Computer Science
Dr	Robertson-Andersson	Debrah V	Life Sciences
Professor	Robinson	Ross Stuart	Chemistry and Physics
Professor	Rodrigues	Bernardo Gabriel	Mathematics, Statistics and Computer Science
Professor	Rouget	Mathieu Jean Francois	Agricultural, Earth and Environmental Sciences
Professor	Savage	Michael John	Agricultural, Earth and Environmental Sciences
Dr	Scharler	Ursula Michaela	Life Sciences
Professor	Schmidt	Stefan	Life Sciences
Dr	Schoeman	Corrie	Life Sciences



## College of Agriculture, Engineering and Science

TITLE	SURNAME	FIRST NAME	SCHOOL
Professor	Scogings	Peter	Life Sciences
Professor	Seebregts	Christopher	Mathematics, Statistics and Computer Science
Dr	Sergi	Alessandro	Chemistry and Physics
Professor	Shimelis	Hussein	Agricultural, Earth and Environmental Sciences
Dr	Shrader	Adrian Morgan	Life Sciences
Dr	Shuttleworth	Adam	Life Sciences
Professor	Sibanda	Precious	Mathematics, Statistics and Computer Science
Professor	Sievers	Leroy Jonathan	Chemistry and Physics
Dr	Sinayskiy	Ilya	Chemistry and Physics
Dr	Singh	Nisha	Life Sciences
Dr	Singh	Moganavelli	Life Sciences
Dr	Sithole	Bruce	Engineering
Dr	Siwela	Mthulisi	Agricultural, Earth and Environmental Sciences
Professor	Slotow	Robert Hugh	Life Sciences
Dr	Smit	Arbertus Jacobus	Life Sciences
Professor	Smithers	Jeffrey Colin	Engineering
Professor	Stark	Annegret	Engineering
Dr	Stirk	Wendy A	Life Sciences
Dr	Stone	Robert Douglas	Life Sciences
Professor	Stopforth	Riaan	Engineering
Professor	Stretch	Derek Dewey	Engineering
Professor	Tame	Mark	Chemistry and Physics
Professor	Tapamo	Jules-Raymond	Engineering
Dr	Tesfay	Samson	Agricultural, Earth and Environmental Sciences
Professor	Thandar	Ahmed Suleman	Life Sciences
Professor	Trois	Cristina	Engineering
Dr	van der Niet	Timotheus	Life Sciences
Professor	van Heerden	Fanie Retief	Chemistry and Physics
Professor	van Staden	Johannes	Life Sciences
Professor	Van Zyl	Werner Ewald	Chemistry and Physics
Dr	Vanak	Abi Tamim	Life Sciences
Dr	Varzinczak	Ivan J	Mathematics, Statistics and Computer Science
Professor	Venkataraman	Sivakumar	Chemistry and Physics
Professor	Viriri	Serestina	Mathematics, Statistics and Computer Science
Dr	Warburton	Michele Lynn	Agricultural, Earth and Environmental Sciences
Professor	Ward	David M	Life Sciences
Professor	Watt	Maria Paula Mousaco	Life Sciences
Dr	Willows-Munro	Sandi	Life Sciences
Professor	Workneh	Tilahun Seyoum	Engineering
Professor	Xu	Hongjun	Engineering
Professor	Zegeye	Edilegnaw Wale	Agricultural, Earth and Environmental Sciences
Professor	Zewotir	Temesgen	Mathematics, Statistics and Computer Science
Dr	Zunckel	Caroline L	Chemistry and Physics

College of Health Sciences			
TITLE	SURNAME	FIRST NAME	SCHOOL
Dr	Abbai	Nathlee	Clinical Medicine
Professor	Abdool Karim	Quarraisha	CAPRISA
Dr	Adeniyi	Adebayo	Health Sciences
Professor	Arvidsson	Per	Health Sciences
Dr	Azu	Onyemaechi Okpara	Clinical Anatomy/Laboratory Medicine & Medical Sciences
Professor	Bhimma	Rajendra	Clinical Medicine
Dr	Bland	Ruth Margaret	Africa Centre for Health and Population Studies
Dr	Bodenstein	Johannes	Pharmacology
Professor	Brysiewicz	Petra	Nursing and Public Health
Dr	Clarke	Damian Luiz	Clinical Medicine
Professor	Chuturgoon	Anil	Health Sciences
Professor	Coutsoudis	Anna	Clinical Medicine
Professor	Das	Gobardhan D	Laboratory Medicine and Medical Sciences
Dr	Dlova	Ncoza	Dermatology
Professor	Essack	Sabiha, Y	Health Sciences
Dr	Gordon	Michelle	HIV Pathogenesis Programme
Professor	Govender	Thavendran	Health Sciences
Professor	Grosset	Jacques HE	Health Sciences
Dr	Herbst	Abraham Jacobus	Africa Centre for Health and Population Studies
Professor	Hickner	Robert	Health Sciences
Dr	Honarparvar	Bahareh	Pharmacology
Dr	Karpoormath	Rajshekhar	Pharmacology
Professor	Kruger	Hendrik Gerhardus	Health Sciences
Dr	Kvalsvig	Jane Dene	Nursing and Public Health
Dr	Mabandla	Musa Vuyisile	Laboratory Medicine and Medical Sciences
Professor	Mackraj	Irene	Laboratory Medicine and Medical Sciences
Professor	Madiba	Thandinkosi Enos	Clinical Medicine
Dr	Mann	Jaclyn Wright	Laboratory Medicine and Medical Sciences
Professor	McKune	Andrew James	Health Sciences
Professor	Mody	Girish M	Clinical Medicine
Professor	Moodley	Jagidesa	Clinical Medicine
Professor	Moodley	Dhayendre	Clinical Medicine
Dr	Mosam	Anisa	Clinical Medicine
Dr	Moshabela	Mosa M	Nursing and Public Health
Professor	Naicker	Thajasvarie kisten	Laboratory Medicine and Medical Science
Professor	Naidoo	Kovin	Optometry
Professor	Naidoo	Rajen N	Clinical Medicine
Professor	Ndung'u	Peter Thumbi	Laboratory Medicine and Medical Sciences
Professor	Newell	Marie Louise	Africa Centre for Health and Population Studies
Professor	Oduntan	Olalekan Alabi	Health Sciences
Professor	Pillay	Deenan	Africa Centre for Health and Population studies
Dr	Pillay	Manormoney (Cookie)	Laboratory Medicine and Medical Sciences
Dr	Rochat	Tamsen Jean	Africa Centre for Health and Population Studies
Dr	Rodseth	Reitze Nils	Anaesthetics
Professor	Satyapal	Kapil Sewsaran	Laboratory Medicine and Medical Sciences



College of Health Sciences			
TITLE	SURNAME	FIRST NAME	SCHOOL
Professor	Singh	Jerome	CAPRISA
Professor	Soliman	Mohmoud Elsayed	Health Sciences
Professor	Suleman	Fatima	Health Sciences
Professor	Tanser	Frank Courteney	Africa Centre for Health and Population Studies
Professor	Taylor	Myra	Nursing and Public Health
Dr	Thobakgale-Tshabalala	Christina Fanesa	Laboratory Medicine and Medical Sciences

College of Humanities			
TITLE	SURNAME	FIRST NAME	SCHOOL
Dr	Akintola	Olagoke	Applied Human Sciences
Professor	Alant	Jacob Willem	Arts
Professor	Bansilal	Sarah	Mathematics Education
Dr	Bate	Stuart	Religion, Philosophy and Classics
Dr	Bertram	Carol Anne	Education
Professor	Bhana	Deevia	Education
Professor	Bhana	Arvin	Applied Human Sciences
Professor	Bond	Patrick JP	Built Environment and Development Studies
Professor	Bracking	Sarah Louise	Built Environment and Development Studies
Professor	Buthelezi	M Thabisile	Education
Dr	Casale	Daniela Maria	Built Environment and Development Studies
Professor	Chapman	Michael JF	Arts
Professor	Chikoko	Vitallis	Education
Professor	Collier	John D	Religion, Philosophy and Classics
Professor	Collings	Steven John	Applied Human Sciences
Professor	Coullie	Judith E	Arts
Professor	De Meyer	Bernard Albert Marcel Sylvain	Arts
Professor	De Villiers	Michael David	Education
Professor	Deacon	Roger A	Education
Dr	Dempster	Edith	Education
Professor	Denis	Philippe Marie Berthe Raoul	Religion, Philosophy and Classics
Professor	Dimitriu	Ileana	Arts
Professor	Draper	Jonathan Alfred	Religion, Philosophy and Classics
Professor	Durrheim	Kevin Locksley	Applied Human Sciences
Professor	Ebrahim	Mohsin AF	Religion, Philosophy and Classics
Dr	Efthimiadis-Keith	Helen	Religion, Philosophy and Classics
Professor	Freund	William Mark	Social Sciences
Dr	Gopal	Nirmala	Applied Human Sciences
Dr	Govender	Desmond Wesley	Education
Professor	Green	Michael M	Arts
Professor	Haddad	Beverley Gail	Religion, Philosophy and Classics
Professor	Hilton	John Laurence	Religion, Philosophy and Classics
Professor	Hiralal	Kalpana	History
Professor	Hlongwa	Nobuhle	Arts
Professor	Hugo	Wayne	Education

## College of Humanities

TITLE	SURNAME	FIRST NAME	SCHOOL
Dr	Keith-van Wyk	Helen	Religion, Philosophy and Classics
Professor	Khan	Sultan	Social Sciences
Professor	Koopman	Adrian	Humanities
Professor	Leeb-Du Toit	Juliette C	Arts
Professor	Lenta	Patrick Joseph Peter	Religion, Philosophy and Classics
Professor	Maharaj	Pranitha	Built Environment and Development Studies
Professor	Maistry	Suriamurthe Moonsamy	Education
Professor	Malaba	Mbongeni	Arts
Professor	Mare	Paul Ggerhardus	Built Environment and Development Studies
Professor	Marschall	Sabine	Social Sciences
Dr	Matolino	Bernard	Religion, Philosophy and Classics
Professor	McCracken	Donal Patrick	Applied Human Sciences
Professor	Moletsane	Relebohile	Education
Professor	Muthukrishna	Anbanithi	Education
Professor	Mutula	Stephen M	Social Sciences
Professor	Nadar	Sarjini	Religion, Philosophy and Classics
Dr	Naidu	Uma Maheshevari	Social Sciences
Dr	Narsiah	Inbersagran	Social Sciences
Professor	Parle	Julie	Social Sciences
Professor	Penumala	Pratap Kumar	Religion, Philosophy and Classics
Professor	Petersen	Inge	Applied Human Sciences
Dr	Pillay	Guruvasagie (Daisy)	Education
Dr	Pithouse-Morgan	Kathleen Jane	Education
Professor	Potgieter	Cheryl A	Applied Human Sciences
Professor	Ramathan	Prevanand/Labby	Education
Dr	Raniga	Tanusha	Applied Human Sciences
Professor	Richter	Linda M	Applied Human Sciences
Professor	Samuel	Micheal	Education
Professor	Scott	Dianne M	Built Environment and Development Studies
Dr	Singh	Shakila	Education
Professor	Singh	Shanta	Applied Human Sciences
Professor	Sooryamoorthy	Radhamany	Social Sciences
Professor	Spurrett	David	Philosophy, Religion and Classics
Professor	Stiebel	Eelyn Alexandra Lindy	Arts
Professor	Stilwell	Christine	Social Sciences
Professor	Stobie	Cheryl	Arts
Professor	Teer-Tomaselli	Ruth Elizabeth	Applied Human Sciences
Professor	Tomaselli	Keyan Gray	Applied Human Sciences
Professor	Turner	Noleen Sheila	Arts
Professor	Vahed	Goolam Hoosen Mohamed	Social Sciences
Dr	van Laren	Linda	Education
Professor	West	Gerald O	Religion, Philosophy and Classics
Professor	Xaba	Thokozani Timothy	Built Environment and Development Studies
Professor	Zeller	Jochen Klaus	Arts



College of Law and Management Studies			
TITLE	SURNAME	FIRST NAME	SCHOOL
Professor	Brijball Parumasur	Sanjana	Management, Information Technology and Governance
Dr	Casale	Marisa Angela Judy	Health Economics and HIV and AIDS Research Division
Professor	Devenish	George	Law
Dr	George	Gavin	Accounting, Economics and Finance
Dr	Govender	Irene	Information Systems and Technology
Dr	Hanass-Hancock	Jill	Health Economics and HIV and AIDS Research Division
Professor	Harris	Geoffrey Thomas	Accounting, Economics and Finance
Professor	Hocor	Shaun Vaughn	Law
Professor	Kidd	Michael Antony	Law
Professor	McQuoid-Mason	David Jan	Law
Professor	Mubangizi	John Cantius	Law
Professor	Mubangizi	Betty Claire	Management, Information Technology and Governance
Professor	Naude	Micheline Juliana Alberta	Management, Information Technology and Governance
Professor	Reddy	Purshotta-Masivanar	Management, Information Technology and Governance
Dr	Ruggunan	Shaun Denvor	Management, Information Technology and Governance
Professor	Stainbank	Lesley June	Accounting, Economics and Finance
Professor	van den Bergh	Hendrina	Law
Dr	van Niekerk	Brett	Management, Information Technology and Governance
Professor	Whiteside	Alan Walter	HEARD
Professor	Williams	Robert C	Law



## ESTABLISHED RESEARCHERS



# 2016 Top Researcher at UKZN

## PROFESSOR SREEKANTHA JONNALAGADDA

**P**hysical chemist Professor Sreekantha Jonnalagadda is no stranger to UKZN's Top Researchers' list having featured in the Top 30 for the past decade and despite now being named as the Top Published Researcher for 2016 he remains modest.

"I now realise how difficult it is to be number one but I have a great team as well as my students and of course my wife, who are all behind me and have contributed immensely to my success," says Jonnalagadda. "In fact, it is the joy and happiness my students derive from their achievements which really motivate me.

"Working at an academic institution, my prime aim is to impart skills and human resource development. Over the years I have trained a number of MSc and PhD students, who now hold good positions in society and industry."

Jonnalagadda says some of his team's studies involve green chemistry, using green principles, which attempt to reduce the environmental impact of the chemical enterprise by developing a technology base that is inherently non-toxic to living things and the environment.

His academic career and his ambitions are rooted in his "third world" personal experience, having been born in India and holding academic posts in both Kenya and Zimbabwe before taking up a position as Professor of Chemistry at UKZN in 1995 and later, departmental head from January 2010 until December 2012.

To date, he has authored or co-authored more than 290 publications in peer-reviewed journals and books.

Amid international acclaim, he recently completed a three-year project with the South Africa-India Research Initiative and is a Fellow of the African Academy of Sciences, UKZN and the South African Chemical Institute.

Currently rated C2 by the National Research Foundation, his specific research interests are in the fields of nonlinear dynamics in chemical reactions, kinetic simulations, catalysis and water chemistry – all inspired by "the vision and contributions of the intellectuals of ancient times".

"My research in developing varied heterogeneous catalyst materials has positively contributed to two specific fields.

"One is in the design of multicomponent reactions for the synthesis of a variety of heterocyclic organic derivatives under moderate and green conditions in excellent yields.

"The other field in which we have contributed is the treatment of highly toxic non-biodegradable organic pollutants and refractory compounds in water systems using advanced oxidation processes. "This involves the use of novel recyclable heterogeneous materials as catalysts or photo catalysts and ozone aeration or visible light as the driving force."

What he aims to achieve through this is the development of cost-effective recyclable catalysts – advanced oxidation processes to eradicate toxic organics and microbial contamination in ponds, streams and rivers – which could facilitate 'low technology' safe drinkable water for rural communities.

In collaborative projects, his team has worked with biochemistry and microbiology researchers as well as testing the activity of various novel compounds which show promise for new anti-cancer and anti-bacterial drug development.





# Top Published Woman Researcher

## PROFESSOR COLLEEN DOWNS

Whether the subject is crowned eagles and how they manage to survive and thrive in the suburbs, the conflict between vervet monkeys and people, or raising money for tracking collars for hippos, UKZN Professor Colleen Downs's passion is discovering how animals continue to survive in the environments they live in.

Downs, who is UKZN's Top Published Woman Researcher for 2016, said: "Our students look particularly at changing land use and how animals persist in areas that range from protected regions, to farm land and urban areas. Some students are doing urban work, others are involved in research in protected zones while another lot are looking across a gradient."

Over the past decade Downs has been consistently recognised for being among the University's most published researchers. She was the Top Woman Researcher from 2009 to 2012 and again in 2014 and 2015.

A variety of research is done at UKZN's School of Life Sciences, headed by Downs and her team. "Sometimes I get criticised because our research is so broad – we investigate terrestrial vertebrates which include reptiles, birds and mammals."

While award-winning Downs has spent most of her professional career teaching, in 2016 she was awarded the National Research Foundation's SARChI Research Chair in Ecosystem Health and Biodiversity in KwaZulu-Natal and the Eastern Cape, which has allowed her to focus more on research. "I do still teach third-year and honours students and I am supervising 25 postgraduate students at the moment, but being a Tier 2 Chair means I spend quite a lot of my time raising money for the projects as we receive relatively little for running expenses," she said.

Downs is currently looking to raise funds for a venture in a Zululand reserve. "We have a student working on hippos in the Ndumo Game Reserve. Hippos are such ecosystem engineers – the way they live in water and on land – and in this drought period they had to go much further to graze so it was

really a pity we didn't have transmitters fitted on some of them."

Downs, her students and her administrative team are renowned for their prolific research programme and in 2016 it was no different. "It is never about starting a brand new project at the beginning or end of the year but developing and building on existing work to continue improving our understanding of the bigger picture," she said.

In 2016 the subjects of her published research ranged from herps to birds and mammals. Her work included the study of the conflict between caracals and farmers over land space use, how the crested guinea fowl responds to change of land use, predation of the nests of Nile crocodiles in the World Heritage Site of Lake St Lucia, and the seasonal diet of black-backed jackals on farmlands in the KwaZulu-Natal Midlands. More than 27 research papers were published by Downs and her students based on their various studies.

And now, in an exciting development, the British Broadcasting Corporation (BBC) has expressed interest in filming work done by the students on the success of the hadeda ibis, woolly necked storks, the large spotted genet and crowned eagles in adapting to and thriving in urban areas in a follow up to their *Planet Earth* urban documentary.

"Another important aspect of our research is how it has assisted municipalities and communities in managing their environments for persistence of wildlife, and in particular, letting homeowners know they have 'something special' living in their backyards," said Downs.

Many of the vertebrate species that exploit urban environments are able to do so as they can rely on human food or refuse. Citing a study on vervet monkeys at the KwaZulu-Natal North Coast's Simbithi Housing Estate, Downs said the research offered practical management recommendations to ensure residents and animals could live in harmony. "The survival of many of the scavengers in our urban environments is due to easily accessible refuse. A simple recommendation then would be to suggest monkey-proof refuse bins for example, or to educate people on the dangers of feeding the monkeys."

She said her department worked closely with the eThekweni Metro, which she described as one of the leading local authorities in the country in its attitude to including bio-diversity in its development and management.

The cherry on top for Downs, however, is the achievement of her students. "I am always so chuffed when students get their PhDs and there was a whole bunch of them who graduated this year which was really pleasing. It is also great seeing them develop as experts in their particular fields and publish their research in international peer-reviewed journals."

There is still a lot of research to be done, especially with changing land use in KwaZulu-Natal and the Eastern Cape, and Downs and her students hope to make an important contribution in getting data to understand the ecosystems and persistence of wildlife there.

"There is still so much I want to do, including raising funds to fit transmitters on various species to determine their movements and use of the environment. One of these species is hippos in Ndumo as that reserve is special, and particularly as it was originally set aside for their protection," she said.





# Top 30 Published Researchers

NO.	TITLE	FIRSTNAME	SURNAME	COLLEGE
1	Professor	Sreekantha Babu	Jonnalagadda	Agriculture, Engineering and Science
2	Professor	Johannes	Van Staden	Agriculture, Engineering and Science
3	Professor	Colleen Thelma	Downs	Agriculture, Engineering and Science
4	Professor	Holger Bernhard	Friedrich	Agriculture, Engineering and Science
5	Professor	Deresh	Ramjugernath	Agriculture, Engineering and Science
6	Professor	Mahmoud Elsayed Soliman	Soliman	Health Sciences
7	Professor	Hussein	Shimelis	Agriculture, Engineering and Science
8	Professor	Onesimo	Mutanga	Agriculture, Engineering and Science
9	Professor	Amir Hossein	Mohammadi	Agriculture, Engineering and Science
10	Professor	Christopher John	Ballantine	Humanities
11	Professor	Anil Amichund	Chuturgoon	Health Sciences
12	Professor	Mark Delmege	Laing	Agriculture, Engineering and Science
13	Dr	Muhammad Ehsanul	Hoque	Law and Management Studies
14	Professor	Benn Kurt Daniel	Sartorius	Health Sciences
15	Professor	Thavendran	Govender	Health Sciences
16	Professor	Precious	Sibanda	Agriculture, Engineering and Science
17	Professor	Colleen Michelle	Aldous	Health Sciences
18	Professor	Freddie Liswaniso	Inambao	Agriculture, Engineering and Science
19	Dr	Vimolan	Mudaly	Humanities
20	Professor	Albert Thembinkosi	Modi	Agriculture, Engineering and Science
21	Professor	Neil Anthony	Koorbanally	Agriculture, Engineering and Science
22	Professor	Deevia	Bhana	Humanities
23	Professor	Jules Raymond	Tapamo	Agriculture, Engineering and Science
24	Professor	Sandile Sydney	Motsa	Agriculture, Engineering and Science
25	Professor	Hassan Omari	Kaya	DVC (Research)
26	Professor	Ziska	Fields	Law and Management Studies
27	Professor	Krishna Kistan	Govender	Law and Management Studies
28	Professor	Uma Mahesvari	Naidu	Humanities
29	Professor	Francesco	Petruccione	Agriculture, Engineering and Science
30	Professor	Damtew	Teferra	DVC (Teaching and Learning)



# Top 10 Young Published Researchers

- Under the Age of 40

NO.	TITLE	SURNAME	FIRST NAME	COLLEGE	SCHOOL
1	Dr	Hoque	Muhammad Ehsanul	Law and Management Studies	Graduate School of Business and Leadership
2	Professor	Sartorius	Benn Kurt Daniel	Health Sciences	Nursing and Public Health
3	Professor	Govender	Thavendran	Health Sciences	Health Sciences
4	Professor	Ojwach	Stephen Otieno	Agriculture, Engineering and Science	Chemistry and Physics
5	Professor	Naidoo	Prathieka	Agriculture, Engineering and Science	Engineering
6	Professor	Srivastava	Viranjay Mohan	Agriculture, Engineering and Science	Engineering
7	Professor	Green	Andrew Noel	Agriculture, Engineering and Science	Agricultural, Earth and Environmental Sciences
8	Professor	Naicker	Tricia	Health Sciences	Health Sciences
9	Dr	Naidoo	Sershen	Agriculture, Engineering and Science	Life Sciences
10	Dr	Akerman	Matthew Piers	Agriculture, Engineering and Science	Chemistry and Physics



## DR MUHAMMED HOQUE

**D**r Muhammed Hoque, who is No 1 on the list of UKZN's Top 10 Researchers under the age of 40 for 2016, says research is his passion.

And his record proves this, having been named as one of the top researchers in various categories at UKZN for the past four years.

Now 38 years old, academia is in his blood having graduated with a Master of Science degree from UKZN and then doing his Doctorate in Medical Science at the University of Antwerp in Belgium.

Hoque joined UKZN in February 2013 and has more than 12 years of teaching experience covering business statistics, managerial statistics, and medical statistics.

He is presently senior lecturer, Academic Leader: Higher Degrees and Research in the Graduate School of Business and Leadership within the College of Law and Management Studies.

"My main research area relates to women's health issues and public health. I have started working on health leadership, occupational health issues, unemployment as well as entrepreneurship," he said.

"Research is my passion. It helps to identify and investigate new ideas and to solve problems. The areas of my research are important for South Africa. If decision-makers base their decisions on some of our results, I believe there would be a significant improvement in the country, socially and economically," said Hoque.

His research is diverse – some of the papers he contributed to during 2016 examined awareness and attitudes towards Employee Wellness Programmes, leadership practices in retail banking, factors influencing HIV-positive mothers to use the flash-heat process of heating breast milk, and factors influencing the recommendation of the Human Papillomavirus vaccine (to combat cervical cancer) by South African doctors working in tertiary hospitals.

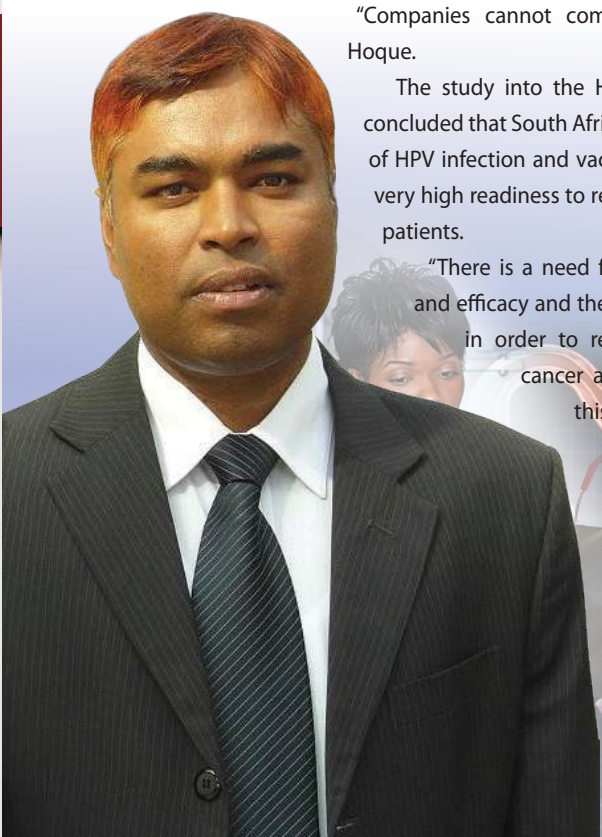
In the area of wellness programmes, his research found communication and confidentiality to be problems and suggested mechanisms be put in place to counteract these.

"Companies cannot compromise on this issue," said Hoque.

The study into the Human Papillomavirus vaccine concluded that South African doctors' overall knowledge of HPV infection and vaccines was poor, but there was very high readiness to recommend the vaccine to their patients.

"There is a need for health education on safety and efficacy and the best time for HPV vaccination in order to reduce the burden of cervical cancer and to enhance the benefit of this preventative tool," the study recommended.

Looking ahead, Hoque says he hopes to do more international collaborative research "which is lacking at present".



## PROFESSOR BENN SARTORIUS

**P**rofessor Benn Sartorius, one of UKZN's Top Young Researchers for 2016, is a biostatistician doing research into the burden of disease and associated risk factors – in South Africa and globally – to help guide policy.

Sartorius (39) joined UKZN in 2013 as an Associate Professor in the School of Nursing and Public Health with BSc, masters and PhD degrees to his name. (He was promoted to full research professor in October 2017).

Sartorius says while doing his master's degree, he became fascinated by the dynamics of disease burden at population level, especially at smaller spatial scales and identification of disease hotspots in space and time.

"There was a lack of reliable and relevant data for policy guidance, particularly in the resource-constrained settings of sub-Saharan Africa where there is high inequality.

"I saw a need to leverage available data to produce the most likely estimates of disease burden and risk factors at national and subnational scales to assist policy makers regarding 'best buys' and who to target," said Sartorius.

He says the unpacking of disease burden and risk factors at smaller geographic scales allows identification of high risk populations requiring more targeted intervention and resource allocation.

"This directly benefits these high risk groups in terms of reduced morbidity/mortality and, from an economic perspective, it has been shown that tailored interventions in very high risk populations – especially with regard to communicable diseases such as HIV – can often be more effective than more generalised, blanket coverage-type approaches which dilute limited resources."

The aim is to reduce inequality, he says.

Going forward, Sartorius said there would be an increased focus on the burden of disease in aging HIV populations – which is very high in KwaZulu-Natal.

"My research will also focus more on the burden of cancer in this group as well as risk factors such as growing obesity and resultant non-communicable conditions including hypertension and Type II diabetes."





## PROFESSOR THAVI GOVENDER

The entire world is looking for ways to target superbugs – and UKZN is on track and already has one patent under its belt.

So says Professor Thavi Govender, the Director of the Catalysis and Peptide Research Unit, which is home to a team of highly talented researchers.

He describes himself as a “general scientist”. The unit has about 40 postgraduate students, all working in different disciplines but with a common goal – drug discovery targeting drug-resistant bacteria.

“The biggest problem is superbugs that express carbapenemases and the most dangerous are those that have metallo beta lactamases,” he said.

A carbapenemase is a mechanism of resistance used by bacteria to defend themselves against many antibiotics, even those at the “last line” in the fight against infection.

Metallo beta lactamases are enzymes that make bacteria resistant to even the drugs developed to treat an antibiotic resistant infection. The mortality rate is high.

While scientists around the world are suffering sleepless nights, Govender says there is currently no answer to this class of superbug.

“But our group has recently patented the most promising agent to date and are working on a contract with a large pharmaceutical company. Such an invention will save many lives as well as put South Africa on the map of drug discovery,” said Govender.

Going forward, he says, the team will continue developing new compounds and hopes to finalise the lease of the patent to the company.

## PROFESSOR STEPHEN OJWACH

Professor Stephen Ojwach has achieved his long-held aspiration of being an academic and ultimately a university professor with established research expertise!

Named as one of UKZN’s Top 10 Young Researchers for 2016, Ojwach has an impressive academic pedigree – a BSc (Honours) from the University of Nairobi in Kenya; an MSc in Inorganic Chemistry from the University of the Western Cape, and a PhD in Inorganic Chemistry from the University of Johannesburg.

He is currently an associate professor, Inorganic Chemistry, and Discipline Academic Leader in the Chemistry and Physics Department on UKZN’s Pietermaritzburg campus.

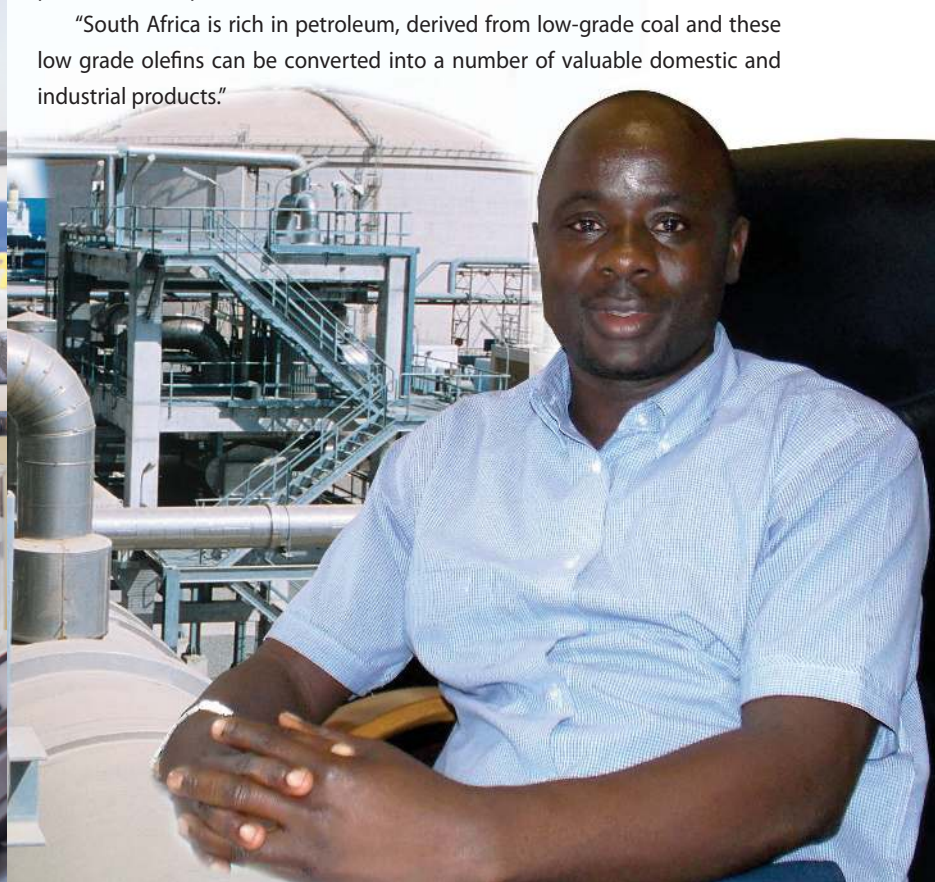
To date, he has co-authored more than 50 publications in international peer-reviewed journals and currently boasts an impressive h-index of 15. (The h-index is an author-level metric designed to measure the productivity and citation impact of the publications of a scientist. The index is based on the set of the scientist’s most cited papers and the number of citations they have received in other publications).

Ojwach says his research has had a significant impact, especially on his undergraduate and postgraduate students. “Through my love and passion for science and research, I have been able to pass on these attributes to my students and a number are now following in my path of aspiring to be established academics.

“My goal is always to aim higher,” he said. “I endeavour to establish myself as a distinguished scholar/researcher with both national and international standing in my field of expertise.”

Ojwach’s area of specialisation is in transition metal complexes and their role as catalysts for various organic transformations. This involves the conversion of petrochemical-based raw materials into valuable industrial and domestic products, such as fuel, lubricants, detergents, fragrances, food additives and pharmaceutical products.

“South Africa is rich in petroleum, derived from low-grade coal and these low grade olefins can be converted into a number of valuable domestic and industrial products.”





## PROFESSOR PRATHIEKA NAIDOO

**P**rofessor Prathieka Naidoo is quick to point out that her success is the result of teamwork and passing on skills and knowledge.

The 39-year-old chemical engineer, who is the Senior Researcher in the Thermodynamics Research Unit at UKZN's School of Engineering, is most proud of the fact that she has been involved in the supervision of 37 postgraduate and research students over the past few years.

"Eleven of these have been women and we currently have six registered female postgraduate students. I believe it is important to increase the number of female students doing postgraduate studies, especially in the fields of science, technology, engineering and mathematics," said Naidoo.

And while research studies and skills are important, she says her role goes further than that.

"I believe we need to instil other attributes for personal growth and development. Graduates may possess the necessary technical skills but in order to be successful in their careers, confidence and good interpersonal and communication skills are essential.

"Many of our students have had the opportunity to travel abroad, present at conferences and attend workshops as well as performing part of their experiments in leading international research laboratories – this has had a profound impact on their outlook and careers."

The team's research focuses on chemical thermodynamics/separation studies – information necessary for the design and optimisation of chemical engineering processes.

This involves high/low pressure-temperature phase equilibrium studies, distillation studies, gas hydrate separation, essential oil extraction and purification, and equipment development for the measurement of thermo-physical properties.

Naidoo consults on a variety of research related studies for local, national and international chemical industries.

"My contribution within the large research team is in managing projects involving experimental and theoretical high/low pressure, high/low temperature phase equilibria studies; vapour-liquid; liquid-liquid and vapour-liquid-liquid studies, including design and simulation of these processes.

"Some of these investigations focus on the screening of different solvents (novel solvents) to effect the separation of chemicals, carbon capture technologies, H<sub>2</sub>S removal, industrial waste water treatment, and the treatment of sludge."

Naidoo says she has obtained funding to purchase new equipment to extend the experimental capabilities of the unit.

"With an impressive range of specialised equipment – a lot of it designed and commissioned in our technical workshop – we are able to offer training to undergraduate students and collaborate with local universities in training and supervising their students."

The team – which comprises academics, researchers, and postdoctoral and postgraduate students – works with the chemical industry to overcome challenges through consulting on chemical separation problems, process design and optimisation.

She says the team also collaborates with many local and international researchers "so we can expand our range of applications and extend the range of competencies within the group.

"The experience the team has gained through this has also helped shape and develop our undergraduate teaching curriculum.

"Many well-established researchers have also provided much needed tips on supervision styles and mentoring. I have tried to implement these good practices in my supervision and mentoring of students and young researchers," added Naidoo.





## PROFESSOR VIRANJAY SRIVASTAVA

**T**ransistors are the building blocks of electronic systems.

Once relatively large and cumbersome – think of the ‘brick’ cell phones of the past – through research technology and development, they have ‘shrunk’, making our devices smaller and giving them longer battery life.

This is Electronics Engineer Professor Viranjay Srivastava’s world.

As far back as 2006, Srivastava completed his master’s degree in the area of VSLI (Very Large Scale Integration) design which is essentially the ‘shrinking’ of electronic components.

Now 36 years old – and with 14 years of research experience at local and international universities – he has been attached to UKZN’s Electronic Engineering Faculty since 2013.

The ‘smaller the better,’ is the mantra of his research group which focuses on microelectronics and nanotechnology.

“Our research includes a smart antenna and metamaterials with various applications in communication technology.

“We are involved in VSLI design, RF design, and CAD with a particular emphasis on lower-power design, chip design, antenna design, free space optics and wireless communication systems,” he said.

The wider research groups look at areas such as the cylindrical antenna, coded MIMO free space optics communication techniques, along with radio network performance monitoring and optimisation.

Using a field test data approach,

interference avoidance techniques (in cognitive radio systems) and performance analysis of dense small-cells are being used to advance research into new device and communication technologies.

The team’s work has focussed on MOSFET (Metal Oxide Field Effect Transistor) development.

Srivastava says he started out looking at the basics of the Double-Gate (DG) MOSFET and extended it to the Cylindrical Surrounding Double-Gate (CSDG) MOSFET.

The latter, he says, is suitable for cellular telephone technology and will, in future, enable the development of even smaller devices with enhanced features and good signal strength.

“We are also planning to work towards the reduction of radiation emission from mobile handsets,” he said.

“Each researcher in my group has contributed to extend this work and its application in a variety of scientific areas, including communication devices and technologies.

“We have also established networks with international researchers at various universities.

“We share knowledge so we can get a better understanding of design aspects and modelling. All our design and research is economical because of software simulation and prototype modelling and analysis.”

Srivastava is proud of his team.

“We have three postdoctorates, nine doctorates and there are six masters researchers, all of whom have contributed to more than 100 scientific articles, published in various international journals.”





## PROFESSOR ANDREW GREEN

Science is just so awesome, says Professor Andrew Green.

The 38-year-old marine geologist – believed to be the only one in academia in South Africa – was drawn to his field of study ‘on a whim’ through his love in high school for a punk rock band, Bad Religion!

The group’s front man was a geologist doing his PhD at Cornell University in New York in the United States and the lyrics of one of their songs contained geological terms.

“My initial leanings were towards a Bachelor of Arts in English and Psychology...but I was influenced by those lyrics and instead signed up for science and it’s one of the best decisions I have ever made,” said Green, who has a BSc degree in Geology and Physical Geography and an MSc in Environmental Science and Marine Geology, both from UKZN.

His attraction for marine geology stems from his love of the sea.

“I have enjoyed countless happy hours submerged in oceans around the world. In fact, I have surfed in every single ocean apart from the Arctic.”

For his doctorate he researched the geological and geomorphological habitat of the southern African coelacanth – the first such study of its kind.

Now an Associate Professor of Geology and Sedimentology in UKZN’s School of Agricultural, Earth and Environmental Sciences, his present passion is researching the shape and structure of the seafloor and coasts around the world.

“I use sonar and seismic tools to understand how seafloor and coastal environments are formed and, in particular, what driving forces are involved. This has led to me acquiring a keen interest in sea level changes – not only how they act to produce various deposit features on the seafloor, but also the physical act of reconstructing those that occurred in the past.”

He says his research has many applications “though I believe that people should just do research regardless of the application as science is just so damn awesome!

“My research aids in planning for rising sea levels and the ensuing coastal management that are already beginning to affect society. This, of course, has major economic implications. The techniques I employ have been used in successful projects with De Beers examining the distribution and control of diamonds on the seafloor.

“UKZN is the only university actively engaged in marine geology with a large enough resource base and technical capacity to make the programme viable.

“I have provided more than 15 MSc and PhD students and countless honours students with an opportunity to develop their skill sets in an emerging blue economy.”

His skills are scarce and he is proud to have passed them on.

It’s a long way from 2010 when he had a single MSc student, no prospects of funding and “nothing but ambitions to fill”.

Going forward, Green says he wants to carry on doing what he loves: Researching the ocean, developing a centre of excellence at UKZN and, in his down time, “continuing to enjoy my life with my wife, dog and friends, a cold beer in one hand, some waves in the distance and a smile on my face”.



## PROFESSOR TRICIA NAICKER

Professor Tricia Naicker is very comfortable wearing her green laboratory coat. She should be.

At just 32, she is the youngest Associate Professor in UKZN's College of Health Sciences knowing that all those hours 'in the lab' have paid off.

Apart from making the University's Top 10 Young Researchers list for 2016, she was recently announced as the second runner-up for the Distinguished Young Woman Researcher Award in the natural and engineering sciences category in the National Women in Science Awards.

Presently a principal investigator at the Catalysis and Peptide Research Unit, she is also the academic leader of the Pharmaceutical Sciences Discipline.

She is a scientist through and through.

Asked what inspires her, she says: "The joy that comes with controlling atoms at a molecular level. There are moments in the lab when I think, hey, I am the only person holding this molecule right now!"

Her research has focussed on drug/antibiotic resistance.

Scientific reports say resistance occurs when bacteria change in some way that reduces or eliminates the effectiveness of drugs, chemicals, or other agents designed to cure or prevent

infections. The bacteria survive and continue to multiply causing more harm.

The World Health Organization (WHO) recently published its first ever list of the deadliest superbugs that threaten human health, labelled the "dirty dozen" by the *Science Alert* journal.

WHO says antibiotic resistance costs about 700 000 lives each year and if the phenomenon can't be halted, experts predict that the number could grow to 10 million deaths annually by 2050.

This is what Naicker and her team are up against.

"My research focuses on method development in organic synthesis of biologically important intermediates (drugs) within the field of antibacterials.

"Some of my team's research findings have led to a patent of new molecules targeting drug-resistant bacterial infections.

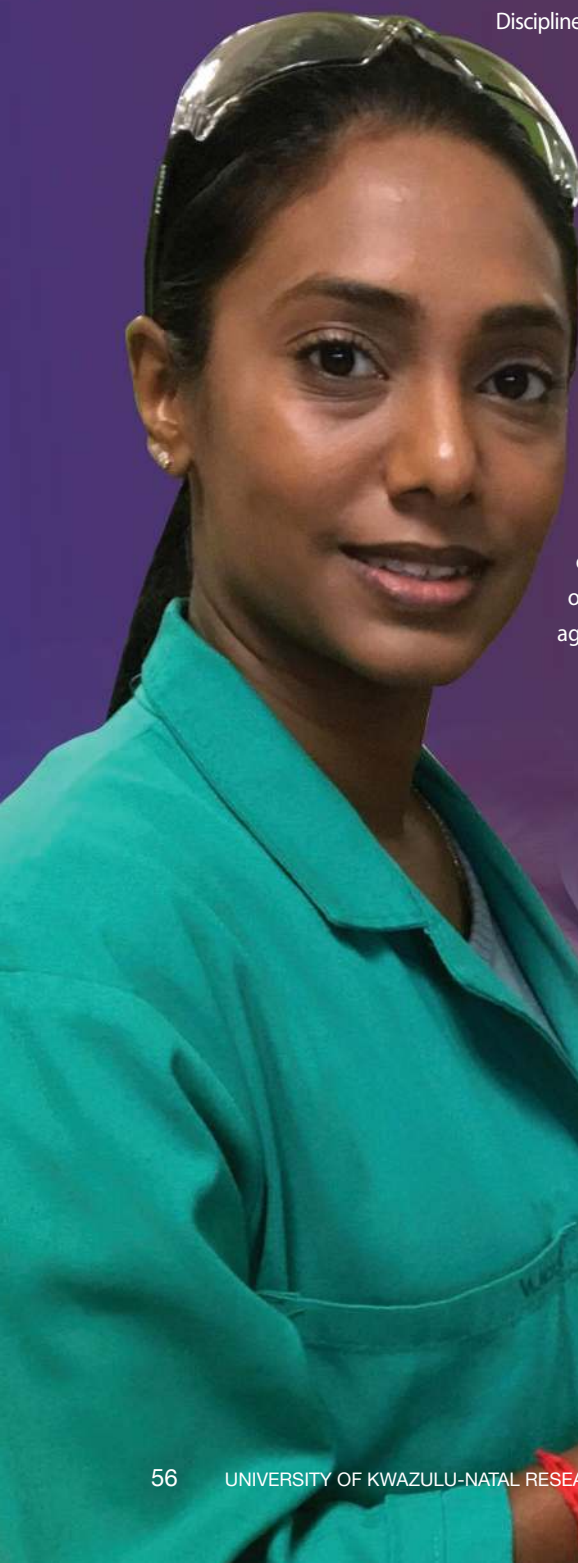
"These resistant strains of bacteria are a severe global epidemic but it is amplified in South Africa because of other communicable diseases," said Naicker.

"I believe this research will allow our country to be at the forefront of antibiotic drug discovery.

"My vision is to apply my expertise in organic synthesis to establish a multi-disciplinary research initiative to address antibiotic resistance within the realm of drug discovery."

While she has a PhD in Pharmaceutical Science and international postdoctorate status, she said her appointment at the Catalysis and Peptide Research Unit had really kick-started her research career.

"It has allowed me to access superior facilities and equipment. More importantly, the research professors have offered me a platform to easily perform research and have supported me with scientific mentorship and guidance."





## DR MATTHEW AKERMAN

It is often assumed that cancer is not an 'African' disease but the exact opposite is true, says UKZN senior lecturer, Dr Matthew Akerman.

"Africa has similar numbers of cancer cases per capita as countries such as the United States and the United Kingdom for example but sadly a much higher mortality rate. The two major contributors are typically the late diagnosis of the disease and the current cost of chemotherapeutics."

This is where Akerman (32) and his team step in. Medicinal chemistry – which encompasses radiochemistry – is their passion and, Akerman says, South Africa is one of very few countries globally to have nuclear research facilities available.

"We work closely with the South African Nuclear Energy Corporation (NECSA). Its research facilities are so unique and we hope to develop drugs which rely on the radioisotopes produced there."

Akerman did his PhD on the synthesis of gold-based anti-cancer agents. "My supervisor Professor Orde Munro is an expert in this field and fostered my love for medicinal chemistry. It is a fascinating field. All my research is underpinned by a love of understanding of how structure and function are intertwined."

He explains that metals have a rich diversity of physicochemical properties which can extend the application of compounds beyond only treatment of disease and into diagnosis and other areas.

"Our current research aims to exploit the favourable decay properties of radioactive isotope Cu-64 to track the biodistribution of novel metallodrugs which have been shown to be effective in controlling the proliferation of tumour cells *in-vitro*."

"The copper complexes that are currently under development have been appended with cell targeting groups which should serve to increase the uptake of complexes in neoplastic versus healthy tissue."

Akerman says the project – a collaboration between the University and

NECSA – covers two important aspects in the treatment of cancer patients: earlier detection and effective treatment of various cancers.

His second area of interest is X-ray crystallography and structural chemistry which aims to provide a better understanding of the efficacy of a drug, based on its structure.

"The project has the potential to benefit both Africa and the rest of the world."

"By developing novel imaging agents which could improve the detection rate of tumours and allow for earlier detection, it is likely the mortality rate could be improved."

"And if these drugs could be based on a relatively inexpensive metal – such as copper – it stands to reason that the final drugs could be made more readily available in low-income countries."

"The need to develop novel anti-cancer drugs is more pressing than ever."

He says there is also an associated resistance in secondary tumours after treatment with many of the currently available therapies.

"The proposed metal chelates have a relatively unique mechanism of action which may serve to overcome the issue of drug resistance and reduce mortality rates of patients with secondary cancers for whom death rates are currently relatively high."

The cherry on the top, Akerman says, is that the project has put "considerable human capital" in a field classified as a scarce skill.

"This articulates well with the 10-year innovation plan of South Africa which seeks a transition from a resource-dominated to a knowledge-based economy."

▼ Dr Matthew Akerman with some of his students.



# Top Five **Most Cited Researchers**

## PROFESSOR KOVIN NAIDOO

Optometrist Professor Kavin Naidoo is no stranger to activism. A student leader and political detainee in the apartheid era, Naidoo decided after democracy in 1994 to change tack and focus his attention on fighting another 'war' – the inequalities in eye care and the socio-economic impact of uncorrected short and far-sightedness (refractive error) in developing countries.

So began his long relationship with Professor Brien Holden, founder of the Brien Holden Vision Institute in Australia.

At that time, Naidoo says, studies showed that only 20% of people in the developing world who needed spectacles actually got them.

"Many were blind or vision impaired because they could not get access to a simple pair of spectacles...and bodies such as the World Health Organization were not doing enough about this."

Research – to influence advocacy – became critical and results "provided us with the ammo to push for change" and raise the profile of refractive errors, their contribution to blindness and vision impairment.

"Thereafter we went on to quantify associated productivity loss. Our papers were the first to provide these numbers and have become widely quoted.

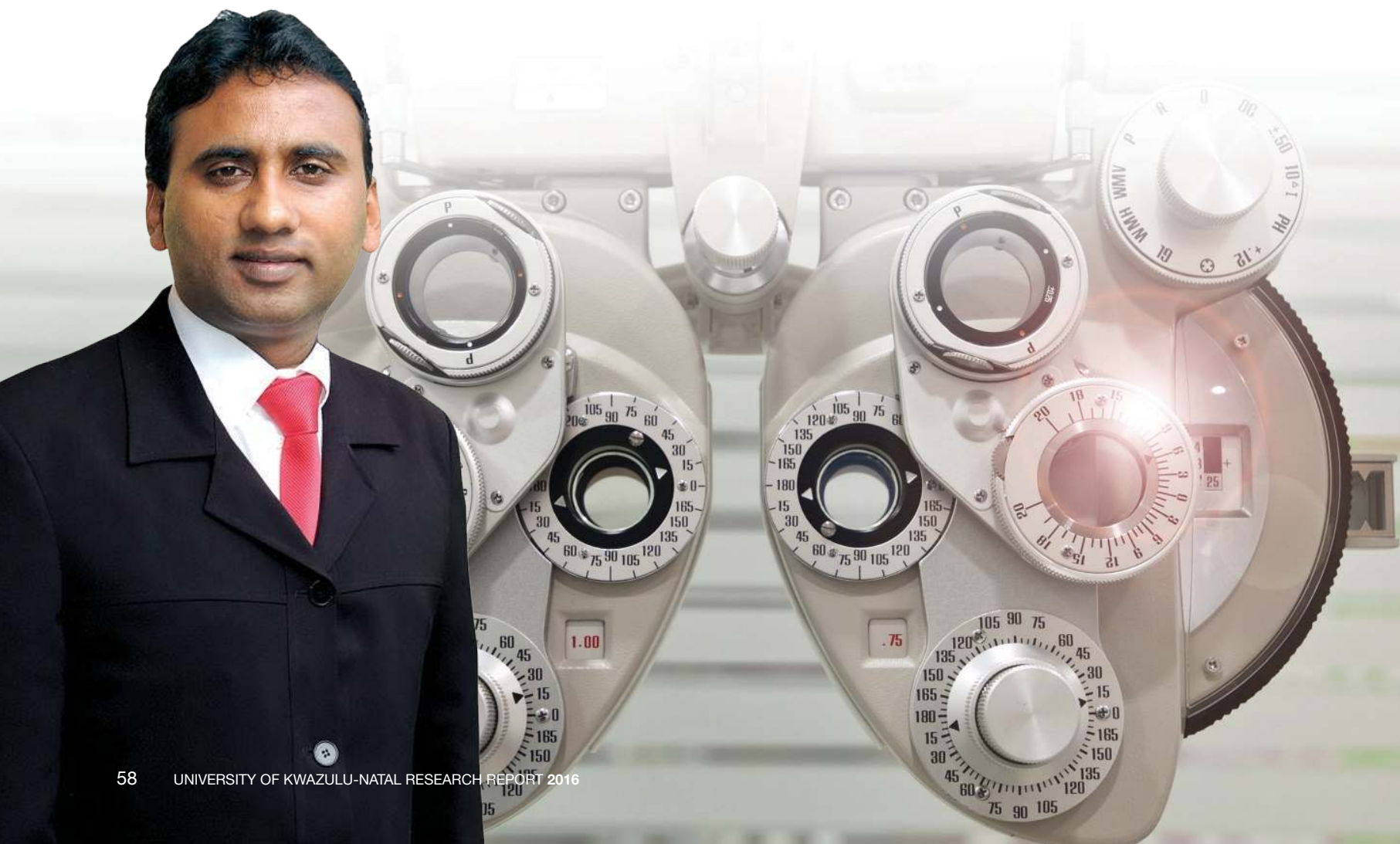
"More recently we conducted a study on the impact of the lack of spectacles on productivity in the clothing industry. We hope to push employers to provide eye care for their employees as this is in their economic interests," said Naidoo.

Also part of the Global Burden of Disease Studies and active in the Vision Loss Expert Group, the professor of Optometry at UKZN remains seconded to the Brien Holden Vision Institute. The organisation recently published a paper showing that given current trends, by the year 2050 half of the world's population will be short-sighted and 20% will have "high myopia" predisposing them to glaucoma, cataracts and retinal damage which can cause irreversible blindness and vision impairment.

"Fortunately, researchers at the Institute have developed a contact lens that slows this progression down."

He says his research highlights the dire need for eye care services and interventions.

"Addressing vision impairment allows adults to be fully productive and earn a living, while it enables children to learn effectively, and society in general to enjoy a better quality of life. Vision should not be an additional hurdle in the continuum of poverty."





## DR CYNTHIA CHIANG

**D**r Cynthia Chiang has @physicschick as her online domain user name.

And that she is.

The 36-year-old remembers always wanting to know about the natural world and now she helps build instruments which shed light “on the mysteries of the universe”.

“I have been addicted to puzzles, tinkering and exploring for as long as I can remember. I am so fortunate to have found a career that allows me to continue doing these things every day.

“As Isidor Isaac Rabi is quoted as saying: ‘Physicists are the Peter Pans of the human race...they never grow up and they keep their curiosity.’”

As an ‘observational cosmologist’ her job is to build telescopes to learn about the origins, evolution and structure of the universe.

She gained her academic qualifications at Princeton University in the United States, the California Institute of Technology and the University of Illinois, and also spent a year at the South Pole as a “winterover” scientist.

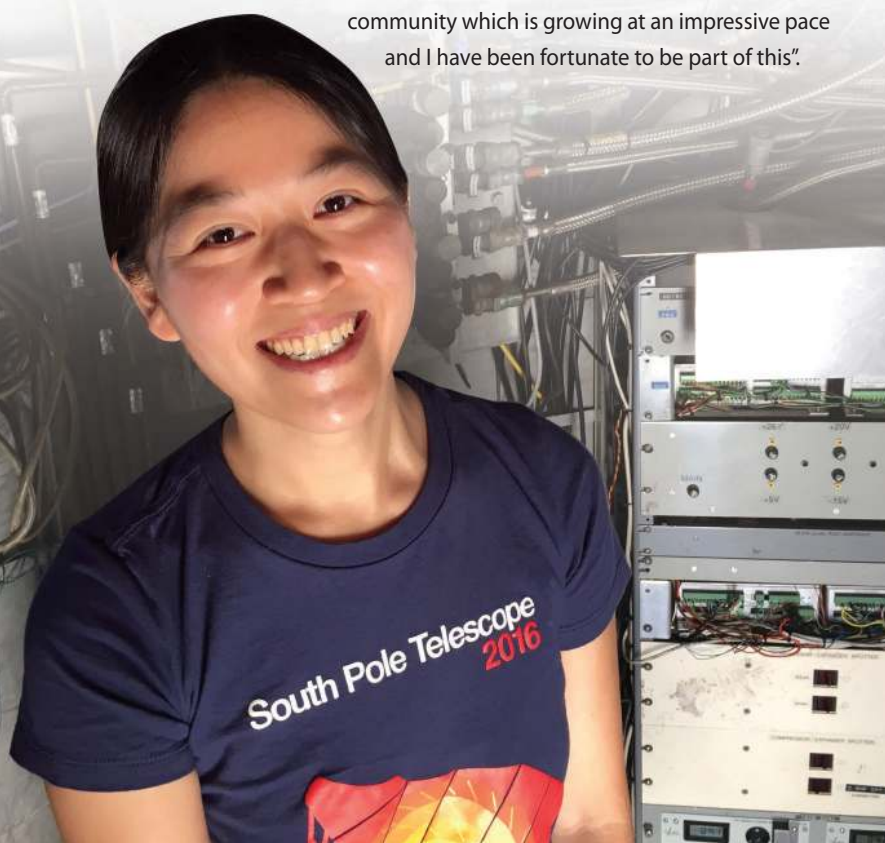
Chiang, who joined UKZN as a senior lecturer in 2013 working in the Astrophysics and Cosmology Group, says at a fundamental level, cosmology addresses ‘big questions’ that have existed for as long as humans themselves, such as: How did the universe begin? What is it made of? What is its fate?

“By building instruments to answer these questions in a precise, quantitative manner, we are aiming to satisfy humanity’s most profound curiosity,” said Chiang.

“At a practical level research in cosmology has tremendous spinoff potential. One of the classic examples is general relativity: this theory is highly abstract and complex, and if anyone had asked Einstein, ‘what is your work good for?’, he probably would have shrugged.

“Fast forward to the present day, and general relativity is one of the essential ingredients that makes GPS work. It is difficult to predict the impact of fundamental research, but I believe it is absolutely essential for long-term progress.”

She says, “South Africa has a flourishing radio astronomy community which is growing at an impressive pace and I have been fortunate to be part of this”.



## PROFESSOR AMIR H MOHAMMADI

**P**rofessor Amir H. Mohammadi has a variety of academic qualifications from the Université Paris XIII (Sorbonne Paris Cité) and the École Nationale Supérieure des Mines de Paris – both in France; the Heriot-Watt University in the United Kingdom, and Iran’s University of Tehran which is known for pioneering research.

Mohammadi, who has been associated with UKZN since 2010, focuses his research on Chemical Engineering, in particular Thermodynamics, Gas Hydrates and Petroleum Engineering.

His international acclaim is evident from having been a visiting professor at the University of Calgary and Université Laval, both in Canada; an adjunct lecturer at École Nationale Supérieure des Mines de Nantes in France, and having been awarded a Certificate of Excellence for Accreditation to supervise research from Université Paris XIII (Sorbonne Paris Cité) in France. He also received an award from the Institute of Materials, Minerals & Mining (IOMMM) (the Scottish section, United Kingdom), while closer to home, he was the recipient of an Outstanding Research Award from UKZN.

Mohammadi is a Top 0.01% Researcher according to the Essential Science Indicator released in 2014 by ISI Thomson Reuters which is recognised as the ISI’s International Top Scientists List.

He has authored or co-authored more than 400 peer-reviewed papers in international journals.



## PROFESSOR DERESH RAMJUGERNATH

**C**hemical Engineer Professor Deresh Ramjugernath is a busy man. He is the University's Deputy Vice-Chancellor: Research, he heads up a large team as the DST/NRF South African Research Chair for Fluorine Process Engineering and Separation Technology, and is the co-Director of UKZN's Thermodynamics Research Unit.

And now he has been named on UKZN's Top Five Most Cited Researchers list for 2016!

"There is always this notion that you cannot do applied research and be cited. But it can be done if the research is relevant," says Ramjugernath.

A professor at the age of 31, he believes science and technology are key to unlocking the true potential of South Africa.

The 'fluorochemical expansion initiative' is a prime example of this. "South Africa is blessed with mineral wealth. Calcium fluoride is the starting material for all fluorochemicals which are used to manufacture just about everything used in daily life today such as television sets, cellphones and toothpaste."

He says historically South Africa mined calcium fluoride – which has a value of about R1 a kilogram – exported the 'raw' mineral ore and then imported back the 'high-value' finished goods.

Ramjugernath and his team of postgraduate students and researchers have been working to reverse this and to take advantage of what was a missed economic-boosting opportunity.

"We aim to develop a sector in the South African market to produce the high-value products.

"Our aim is to create an industry earning between R10 billion to R15 billion a year...we haven't quite met that yet but I believe it is a couple of billion rands already."

Ramjugernath is a great believer in teamwork and says his punishing schedule is made easier by his team.

"I realised early on that one person cannot make a change. I had to develop the next generation. I have put effort into training people and they, in turn, train others. The team was built up that way. It's like a pyramid."

On top of that, he has a world-class laboratory filled with equipment which was mainly designed and built in-house.

"Equipment is expensive and I decided that if I wanted to do good science, I needed the infrastructure to do it. Now, I believe, we have one of the best laboratories in the world in our research field."



## PROFESSOR FRANK TANSER

**P**rofessor Frank Tanser (46) is an internationally recognised researcher... and so he should be!

A Professor of Epidemiology in the College of Health Sciences at UKZN, Tanser has published more than 140 papers in high-ranking international journals and his research has been cited more than 10 000 times.

He has been the recipient of numerous scientific grants and raised more than R550 million in external research funding to date.

Tanser was a founder member of UKZN's Africa Centre for Population Health (now the Africa Health Research Institute), and was responsible for building Africa's first comprehensive population-based geographical information system at the Centre. The resulting work has since achieved international recognition for its major insights into the epidemiology of HIV in a hyperendemic rural African context.

Attached to UKZN since 1998, he holds master's degrees from the Imperial College London and Rhodes University in Grahamstown and a doctorate from UKZN. He also holds an honorary professorship at University College London (UCL).

Tanser has served as a consultant and advisor to several high-profile organisations including Columbia University's Mailman School of Public Health in the United States, USAID, the Futures Group International and UNAIDS. He currently serves on the editorial board of *The Lancet HIV* and is a member of the International Scientific and Technical Advisory Committee to the Executive Director of UNAIDS.

His research has focused mainly on understanding the space-time evolution of infectious disease epidemics. He and his team have developed novel ways of harnessing spatial information from communities to measure the population-level impacts of various interventions.

"Our research has provided a nuanced understanding of the evolving and dynamic nature of the HIV epidemic and its key drivers and informed the development of HIV prevention and treatment efforts in southern Africa," he said.

The "Tanser Team" is also ahead of its time. While research results were not expected until 2016, the team achieved a major scientific breakthrough three years before, when their research (published in the prestigious journal *Science*) showed that high coverage of antiretroviral therapy was associated with population-level declines in the risk of acquiring HIV. It was the first proof of the HIV treatment-as-prevention hypothesis in a rural African context. To date this work has been cited more than 500 times and has been recognised by UNAIDS as 'extremely important'.

Looking to the future, he said that he and his team were particularly interested in developing and testing HIV interventions which target the most vulnerable population groups such as young women, highly mobile individuals and persons living in communities characterised by high rates of new HIV infections.





# Prolific Researchers

## Research Portfolio

TITLE	SURNAME	FIRST NAME	SCHOOL
Professor	Bob	Urmilla	Research
Professor	Kaya	Hassan Omari	UKZN: INQUBATE
Professor	Ramjugernath	Deresh	Research

## College of Agriculture, Engineering and Science

TITLE	SURNAME	FIRST NAME	SCHOOL
Dr	Adewumi	Aderemi Oluyinka	Mathematics, Statistics and Computer Science
Dr	Akerman	Matthew Piers	Chemistry and Physics
Professor	Albericio	Fernando	Chemistry and Physics
Dr	Baiyegunhi	Lloyd James Segun	Agricultural, Earth and Environmental Sciences
Professor	Beckedahl	Heinrich Reinhard	Agricultural, Earth and Environmental Sciences
Dr	Chaplot	Vincent	Agricultural, Earth and Environmental Sciences
Professor	Chimonyo	Michael	Agricultural, Earth and Environmental Sciences
Professor	Domanska-Zelazna	Urszula Maria	Engineering
Professor	Downs	Colleen Thelma	Life Sciences
Professor	Friedrich	Holger Bernhard	Chemistry and Physics
Dr	Gebreslasie	Michael Teweldemedhin	Agricultural, Earth and Environmental Sciences
Professor	Goldblatt	Peter	Life Sciences
Professor	Gous	Robert Mervyn	Agricultural, Earth and Environmental Sciences
Professor	Govinder	Keshlan Sathasiva	Mathematics, Statistics and Computer Science
Professor	Green	Andrew	Agricultural, Earth and Environmental Sciences
Professor	Gueguim Kana	Evariste Bosco	Life Sciences
Dr	Herbert	David Guy	Life Sciences
Professor	Inambao	Freddie Liswaniso	Engineering
Professor	Islam	Shahidul	Life Sciences
Professor	Jaganyi	Deogratius	Chemistry and Physics
Professor	Jonnalagadda	Sreekantha Babu	Chemistry and Physics
Professor	Koorbanally	Neil Anthony	Chemistry and Physics
Professor	Laing	Mark Delmege	Agricultural, Earth and Environmental Sciences
Professor	Mafongoya	Paramu	Agricultural, Earth and Environmental Sciences
Dr	Maguire	Glenn Eamonn Mitchel	Chemistry and Physics
Professor	Maharaj	Sunil Dutt	Mathematics, Statistics and Computer Science
Dr	Manning	John Charles	Life Sciences
Professor	Martincigh	Bice Susan	Chemistry and Physics
Professor	Modi	Albert Thembinkosi	Agricultural, Earth and Environmental Sciences
Professor	Mohammadi	Amir Hossein	Engineering
Professor	Mola	Genene Tessema	Chemistry and Physics
Dr	Moodley	Roshila	Chemistry and Physics
Dr	Moodley	Brenda	Chemistry and Physics
Professor	Motsa	Sandile Sydney	Mathematics, Statistics and Computer Science
Dr	Mudhara	Maxwell	Agricultural, Earth and Environmental Sciences
Professor	Mukaratirwa	Samson	Life Sciences
Professor	Mutanga	Onisimo	Agricultural, Earth and Environmental Sciences

### College of Agriculture, Engineering and Science

TITLE	SURNAME	FIRST NAME	SCHOOL
Dr	Naidoo	Paramespri	Engineering
Dr	Naidoo	Sershen	Life Sciences
Professor	Naidoo	Gonasageran	Life Sciences
Professor	Nyamori	Vincent Onserio	Chemistry and Physics
Professor	Ojwach	Stephen Otieno	Chemistry and Physics
Professor	Ortmann	Gerald Friedel	Agricultural, Earth and Environmental Sciences
Dr	Owaga	Bernard Omondi	Chemistry and Physics
Professor	Petrucione	Francesco	Chemistry and Physics
Professor	Proches	Mihai Serban	Agricultural, Earth and Environmental Sciences
Professor	Rouget	Mathieu Jean Francois	Agricultural, Earth and Environmental Sciences
Professor	Scharler	Ursula	Life Sciences
Professor	Schoeman	Marthinus Cornelius	Life Sciences
Professor	Shimelis	Hussein	Agricultural, Earth and Environmental Sciences
Dr	Shrader	Adrian Morgan	Life Sciences
Professor	Sibanda	Precious	Mathematics, Statistics and Computer Science
Dr	Sibiya	Julia	Agricultural, Earth and Environmental Sciences
Professor	Singh	Moganavelli	Life Sciences
Dr	Singh	Sooboo	Chemistry and Physics
Professor	Srivastava	Viranjay Mohan	Engineering
Professor	Tapamo	Jules Raymond	Engineering
Professor	Van Staden	Johannes	Life Sciences
Professor	Viriri	Serestina	Mathematics, Statistics and Computer Science
Professor	Workneh	Tilahun Seyoum	Engineering
Professor	Xu	Hongjun	Engineering
Professor	Zegeye	Edilegnaw Wale	Agricultural, Earth and Environmental Sciences
Professor	Zewotir	Temesgen Tenaw	Mathematics, Statistics and Computer Science

### College of Health Sciences

TITLE	SURNAME	FIRST NAME	SCHOOL
Professor	Aldous	Colleen Michelle	Clinical Medicine
Dr	Chetty	Verusia	Health Sciences
Professor	Chimbari	Moses John	College Admin Office
Professor	Chuturgoon	Anil Amichund	Laboratory Medicine and Medical Sciences
Professor	Clarke	Damian Luiz	Clinical Medicine
Professor	Coutsoudis	Anna	Nursing and Public Health
Dr	Durand	Miranda	Clinical Medicine
Professor	Essack	Sabiha Yusuf	Health Sciences
Dr	Ferreira	Nando	Clinical Medicine
Dr	Gopalan	Pragasen Dean	Clinical Medicine
Professor	Govender	Thavendran	Health Sciences
Professor	Govender	Thirumala	Health Sciences
Dr	Govender	Pragashnie	Health Sciences
Dr	Hansraj	Rekha	Health Sciences
Dr	Hardcastle	Timothy Craig	Clinical Medicine
Dr	Karpoormath	Rajshekhar	Health Sciences
Professor	Kruger	Hendrik Gerhardus	Health Sciences



College of Health Sciences			
TITLE	SURNAME	FIRST NAME	SCHOOL
Professor	Mabandla	Musa Vuyisile	Laboratory Medicine and Medical Sciences
Dr	Mahomed	Ozaye Haroon	Nursing and Public Health
Dr	Marais	Leonard Charles	Clinical Medicine
Dr	Mashige	Khathutshelo Percy	Health Sciences
Professor	Moodley	Jagidesa	Clinical Medicine
Professor	Naicker	Tricia	Health Sciences
Professor	Naidoo	Kovin Shunmugam	Health Sciences
Dr	Naidoo	Mergan	Nursing and Public Health
Professor	Naidoo	Nithiseelan Rajen	Nursing and Public Health
Dr	Naidoo	Panjasaram	Health Sciences
Professor	Ncama	Busisiwe Purity	Nursing and Public Health
Dr	Owira	Peter Mark Oroma	Health Sciences
Professor	Petersen	Inge	Nursing and Public Health
Professor	Pillay	Anthony Lingum	Nursing and Public Health
Professor	Rodseth	Reitze Nils	Clinical Medicine
Dr	Ross	Andrew John	Nursing and Public Health
Professor	Sartorius	Benn Kurt Daniel	Nursing and Public Health
Professor	Sebitloane	Hannah Motshedisi	Clinical Medicine
Dr	Singaram	Saraswathi (Veena)	Clinical Medicine
Professor	Singh	Bhugwan	Clinical Medicine
Dr	Skelton	Adam Arnold	Health Sciences
Professor	Slotow	Robert Hugh	College Admin Office
Professor	Soliman	Mahmoud Elsayed Soliman	Health Sciences
Professor	Tsoka-Gwegweni	Joyce Mahlako	Nursing and Public Health
Dr	Van Wyk	Jacqueline Marina	Clinical Medicine

College of Law and Management Studies			
TITLE	SURNAME	FIRST NAME	SCHOOL
Professor	Brijball Parumasur	Sanjana	Management, Information Technology and Governance
Mrs	Doorasamy	Mishelle	Accounting, Economics and Finance
Professor	Fields	Ziska	Management, Information Technology and Governance
Professor	Govender	Krishna Kistan	Management, Information Technology and Governance
Dr	Govender	Pathmavathie	Management, Information Technology and Governance
Professor	Hocter	Shannon Vaughn	Law
Dr	Hoque	Muhammad Ehsanul	Graduate School of Business and Leadership
Professor	Mcquoid-Mason	David Jan	Law
Professor	Migiro	Stephen Oseko	Graduate School of Business and Leadership
Professor	Mubangizi	Betty Claire	Management, Information Technology and Governance
Dr	Muller	Colette Lynn	Accounting, Economics and Finance
Dr	Naidoo	Vannie	Management, Information Technology and Governance
Professor	Ngalawa	Harold Phellix Emmanuel	Accounting, Economics and Finance
Professor	Phiri	Maxwell Agabu	Management, Information Technology and Governance
Dr	Ruggunan	Shaun Denvor	Management, Information Technology and Governance
Ms	Strode	Ann Elaine	Law
Professor	Wissink	Henry Frank	Management, Information Technology and Governance
Professor	Zaal	Frederick Noel	Law

College of Humanities			
TITLE	SURNAME	FIRST NAME	SCHOOL
Professor	Balcomb	Anthony Oswald	Religion, Philosophy and Classics
Professor	Ballantine	Christopher John	Arts
Professor	Bhana	Deevia	Education
Professor	Collings	Steven John	Applied Human Sciences
Professor	De Meyer	Bernard Albert Marcel Sylvain	Arts
Professor	Decock	Paul Bernard	Religion, Philosophy and Classics
Professor	Denis	Philippe Marie Berthe Raoul	Religion, Philosophy and Classics
Dr	Govender	Nadaraj	Education
Professor	Hoskins	Ruth Geraldine Melonie	Social Sciences
Dr	John	Vaughn Mitchell	Education
Dr	Meissner	Richard	Social Sciences
Professor	Meyer-Weitz	Anna	Applied Human Sciences
Professor	Mkhize	Nhlanhla Jerome	Applied Human Sciences
Dr	Moyo	Herbert	Religion, Philosophy and Classics
Dr	Mudaly	Vimolan	Education
Dr	Mudaly	Ronicka	Education
Professor	Mutula	Stephen	Social Sciences
Professor	Naidu	Uma Mahesvari	Social Sciences
Professor	Ojong	Vivian Besem	Social Sciences
Professor	Sooryamoorthy	Radhamany	Social Sciences
Professor	Spurrett	David Jon	Religion, Philosophy and Classics
Professor	Stiebel	Evelyn Alexandra	Arts
Professor	Stobie	Cheryl	Arts
Professor	Teferra	Damtew	Education
Professor	West	Gerald Oakley	Religion, Philosophy and Classics



# EMERGING RESEARCHERS

## Top 10 Published Students

POSITION	SURNAME	FIRST NAME	COLLEGE	SCHOOL
1	Mabhaudhi	Tafadzwanashe	Agriculture, Engineering and Science	Agricultural, Earth and Environmental Sciences
2	Maddila	Surya Narayana	Agriculture, Engineering and Science	Chemistry and Physics
3	Chisa	Ken Dennis	Humanities	Religion, Philosophy and Classics
4	Wilkinson	Robyn Duncan	Humanities	Applied Human Sciences
5	Kutu	Adebayo Augustine	Law and Management Studies	Accounting, Economics and Finance
6	Ureke	Osweiled	Humanities	Applied Human Sciences
7	Eba	Patrick Michael	Law and Management Studies	Law
8	Esala	Nathan Adam	Humanities	Religion, Philosophy and Classics
9	Ebhota	Williams	Agriculture, Engineering and Science	Engineering
10	Kamari	Arash	Agriculture, Engineering and Science	Engineering



## Dr Tafadzwanashe Mabhaudhi

School of Agricultural, Earth and Environmental Sciences

**D**r Tafadzwanashe Mabhaudhi is looking into the future, helping small-scale farmers prepare for the possibility of more frequent floods, fires and rising temperatures in a region considered to be at high risk of climate change.

What will be the best crops to grow? How much water will be needed?

The Pietermaritzburg-based crop scientist and research fellow – who published 11 papers in 2016 – is driven by a passion for research and development, mentoring young scientists and working with communities and agricultural policy makers.

His focus includes better seed technology and irrigation methods and the relationship between water and plants. He is investigating the best use of indigenous cereal and legume food crops in rural areas and hopes to develop farming methods that are easy to use and relevant to community needs.

"I am currently working on the uMngeni Resilience Project, which is a climate change project funded by the Adaptation Fund. We are working with the South African National Biodiversity Institute and uMgungundlovu District Municipality at three sites to help farmers adapt to climate change impacts.

"We are also developing an early-warning system for farmers in Swayimane in the KwaZulu-Natal Midlands, which will help them make decisions on planting, managing their crop, and warnings on hazards such as lightning. This is exciting and is changing lives in the communities where we are working."



## Dr Surya Narayana Maddila

School of Chemistry and Physics

**D**r Surya Maddila has been researching new methods of "green chemistry" and the complex interaction between chemicals and catalysts.

In an era of increasing concern about the hazards of chemical products and processes, green chemistry is a field of research that emphasises the need to eliminate or reduce the use of hazardous substances that can harm human health and the broader environment. It also examines the better use of chemicals, their reuse and the disposal of hazardous substances.

During 2016 Maddila wrote or co-authored 11 articles focused mainly on green chemistry, heterocyclic synthesis and heterogeneous catalysis.

His work also involves a branch of chemistry dealing with the synthesis, properties and applications of heterocyclic compounds and developing better chemical catalysts.

Catalysts can, for example, cause a chemical reaction to happen at a faster rate or at a lower temperature than would be possible without the catalyst.

Maddila said he helped to synthesize more than 51 novel heterocyclic molecules and to research catalysts that can be reused more than six times. He has also researched compounds that could play a role as anti-cancer agents in Medical Chemistry.





## Dr Ken Dennis Chisa

School of Social Sciences

**T**he global information conveyor belt is a powerful and hungry creature. Its wheels seem to never stop turning.

Dr Ken Chisa is concerned about the impact this may have on women and marginalised rural communities, as well as about how to safeguard the ownership of indigenous cultural knowledge.

Chisa, an Honorary Research Fellow at the School of Social Sciences (Information Studies Programme) on UKZN's Pietermaritzburg campus, published four journal articles in 2016, mostly exploring the legal, ethical and cultural challenges associated with information technology and the digitisation of indigenous cultural knowledge.

"My published studies show that the digitisation of indigenous knowledge in South Africa can contribute significantly towards the development of critical, evidential heritage resources for scholarly research."

Chisa, also Head of Library and Information Services at the Seth Mokitimi Methodist Seminary, says: "The studies also clearly showed that digitisation of indigenous knowledge is more than just about collecting and aggregating indigenous materials on the internet. It also concerns recognising the tenuous relationship between oral and literate traditions, the legacy of colonial/apartheid disempowerment and the emergent reassertion of indigenous rights and identities."

He feels it is important to understand the relationship between the political, legal and social disadvantages experienced by marginalised groups, especially in rural areas, and their place in the globalised information society.



## Ms Robyn Wilkinson

School of Applied Human Sciences

**M**s Robyn Wilkinson believes strongly in the power of words and literature – and their potential to influence human behaviour for the better.

She published two articles in 2016 after completing her Master's degree in English Studies on UKZN's Pietermaritzburg campus.

Both articles were based on novels that she studied during her Honours year in a course on African Literature.

"The words we use have profound links to the way that we think, and the way we behave. Literature has the power to challenge and change the way people talk about things and think about things, which, in turn, has the power to change the way things are in the world."

Wilkinson, now a writer at Creamer Media's *Engineering News and Mining Weekly*, says: "The power of literature should not be underestimated for producing compassionate, empathetic, engaged human beings who will challenge a range of social injustices that have very material implications."

One of her articles explored the use of a child narrator in bringing to light corruption of leaders of religious and political institutions in Zimbabwe, while the second explored the dangers of prejudice against the background of the xenophobic attacks in South Africa.



## Mr Augustine Adebayo Kutu

School of Accounting, Economics and Finance

**W**hat makes currency exchange rates go up and down like a yoyo? This is one of the questions occupying the mind of Mr Augustine Adebayo Kutu, a researcher in the School of Accounting, Economics and Finance on UKZN's Westville campus.

Kutu wrote or contributed to eight articles published in 2016 on monetary economics, macroeconomics and econometrics.

Using a model he developed for his PhD thesis, he was involved in a groundbreaking study that examines the impact of money flows and monetary policy on the industrial output of the five BRICS nations.

Kutu has also modelled exchange rate fluctuations in South Africa, looking at the influence of rising and falling oil prices, global interest rate fluctuations and other factors on the volatility of the Rand against the US Dollar.

He believes the research findings could help the government to avoid some of this volatility when it formulates economic and exchange rate policies.

Kutu is currently working on a new project. "This new study aims to analyse the interdependence of the financial sector on the industrial sector and the industrial sector on the household sector, for meeting the consumption needs of the people and boosting investment," he said.



## Dr Oswelled Ureke

School of Applied Human Sciences

**F**ilm-lover Dr Oswelled Ureke has focused his research lens on mobile journalism, cellphilms and issues of state interference and editorial control in the media.

The former Chief Reporter of the now defunct *Daily Mirror* newspaper in Zimbabwe, published four articles and a book review in 2016 while studying at the Centre for Communication, Media and Society (CCMS) on the Howard College campus.

One of his articles explored the events leading up to the closure of the Zimbabwe Mirror Newspapers Group in 2007. It narrates how the state in Zimbabwe, through its intelligence arm, the Central Intelligence Organisation (CIO), covertly took over the privately owned newspaper stable, leading to the organisation's demise.

"The paper on 'Mirrorgate' could be very important in attempting to understand media and state interference in Zimbabwe, which has been a subject of interest for a long time," said Ureke.

He has also researched dance-hall music, new media and cellphilms – films made using cell phones – and was also involved in the Durban International Film Festival as a reviews co-ordinator for the festival's media desk.

Ureke has lectured media students at Midlands State University in Zimbabwe and is now a postdoctoral fellow at the University of Johannesburg.





## Dr Patrick Michael Eba

School of Law

**D**r Patrick Eba, currently a Senior Human Rights and Law Adviser at the Joint United Nations Programme on HIV/AIDS (UNAIDS) in Geneva, Switzerland, was a PhD student from January 2014 to April 2017 at the School of Law on UKZN's Pietermaritzburg campus.

Eba's research focuses on legal and human rights issues relating to health, with a particular focus on HIV.

"I interrogate the content of health and HIV-related legislation and discuss how these laws can either advance or hinder access to health services," said Eba.

In 2016, he published three articles focused on HIV, human rights and law – including one in *The Lancet*, the world's leading peer-reviewed medical journal with one of the highest impact factors. All three articles were also presented at the 21st International AIDS Conference in Durban.

In one of his articles, *Towards Smarter Laws*, he analysed the content of the 27 HIV-specific laws adopted in sub-Saharan Africa from July, 2014.

In a second article titled: *The HIV and AIDS Tribunal of Kenya*, he provided the first-ever comprehensive analysis of the composition, mandate, procedures, practice, and cases of the HIV Tribunal of Kenya – the only HIV-specific statutory body in the world with the mandate to adjudicate cases involving violations of HIV-related human rights.

"This article was based on a combination of desk research as well as interviews with key informants in Kenya, including judges, civil society organisations, lawyers and representatives of people living with HIV," said Eba.

His third article: *HIV, Prisoners and Human Rights* – co-authored with a group of leading human rights and public health experts – shed light on how punitive laws, policies and practices contribute to the global burden of HIV, TB and hepatitis in prisons.

"The article shows that these laws and practices as well as the denial of health services in prisons constitute human rights violations and it calls for urgent reform in criminal law, policing practices, and justice systems to reduce imprisonment as well as in the organisation and management of prisons and their health services."

Eba says his article on the HIV Tribunal of Kenya received a great deal of attention in that country and is now used as a key reference for civil society, lawyers and researchers interested in the work of the HIV Tribunal.

"Furthermore, a year following the publication of the study, one of its key recommendations to publicise the decisions and rulings of the HIV Tribunal was addressed through the release of the compendium of cases of the Tribunal.

"The studies have also been used by the African Commission on Human and Peoples' Rights as background materials and reference documents for its study on HIV and human rights to be published at the end of 2017," said Eba.

*Dr Patrick Eba at his PhD graduation with his father, Dr Eba Manlan Etienne.*



## The Reverend Nathan Adam Esala

School of Religion, Philosophy and Classics

**O**ver many hundreds of years, the full Bible has been translated into more than 600 languages and the New Testament into more than 1 400 languages.

Translating one language to another can be a tricky affair but there are further potential pitfalls when discussions on Biblical texts involve complex power relations and cultural dimensions.

The Reverend Nathan Esala, a North American translator currently based at the Biblical Studies Department on UKZN's Pietermaritzburg campus, has focused much of his previous research on translation in post-colonial Ghana.

He published two articles in 2016, one dealing with Contextual Bible Study among the Biko (f/c) community of northern Ghana, and another comparing Contextual Bible Study and Skopos theory, including power relations between scholars and communities. "One of the difficulties I am addressing is: How can different groups of people – age, class and gender – take part in the processes of translating Bible texts?"

While it remains important to carefully translate the source text, he also believes special attention has to be paid to the varying needs of particular communities, including providing 'safe spaces' for discussion during bible studies among the most marginalised groups in a society.



## Dr Williams Ebhota

School of Engineering

**R**ural people in many parts of Africa remain isolated from the national grid that lights up the bigger cities and industrial complexes.

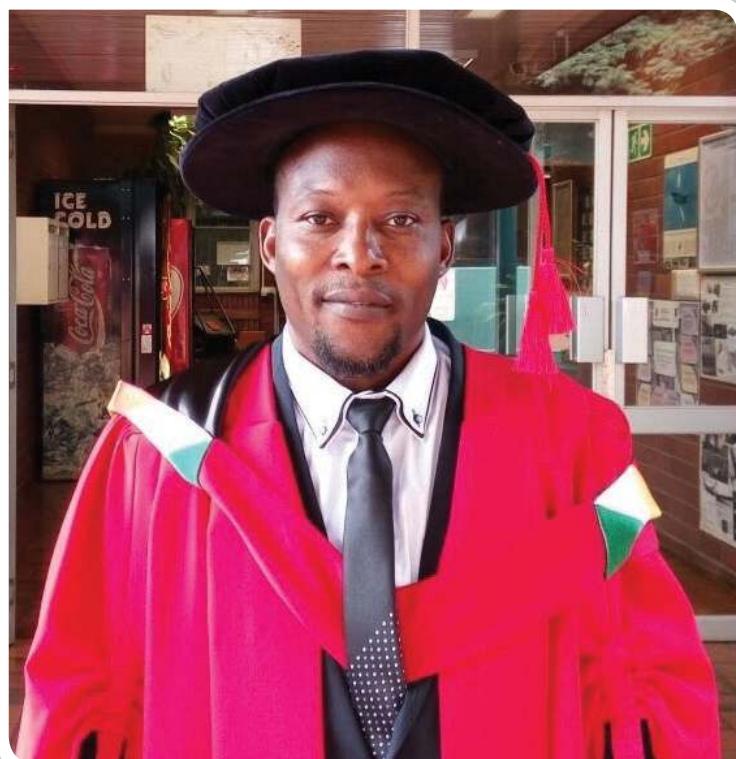
Dr Williams Ebhota of the Department of Mechanical Engineering on the Howard College campus is hoping to change this scenario by harnessing the power of moving water.

During 2016 he wrote seven articles in international journals and two peer-reviewed conference papers, largely focused on renewable energy systems via small-scale hydropower.

Ebhota's research has focused on advanced mechanical engineering design and manufacture, material engineering and renewable energy – all with the aim of promoting home-grown domestic energy accessibility, technology and manufacturing in sub-Saharan Africa.

He is helping to analyse the energy needs of the region, some of the limiting factors and ways to develop domestic technologies that include a simplified small hydropower (SHP) design.

Specifically, his research includes the development of a small hydropower Pelton turbine bucket fabrication system, using aluminium alloys and composites produced by centrifugal casting techniques. "This involves the design and manufacturing of an intricate permanent mould for centrifugal casting of the Pelton turbine bucket and material characterisation. This particular aspect of my work was unique and novel. Such production systems are usually used for circular parts, not for parts with a complex shape, such as the Pelton bucket," he said.



## Dr Arash Kamari

School of Engineering

**P**etroleum engineer Dr Arash Kamari spends much of his time looking at what is underground to find more efficient ways to extract buried deposits of oil and gas.

Working as a PhD student under the supervision of Professor Deresh Ramjugernath in the Chemical Engineering Department on UKZN's Howard College campus, his research covered petroleum engineering, the experimental study of gas hydrate and the modelling of petroleum reservoir fluids.

Kamari, who published eight articles and received nearly 140 citations during 2016, is now a postdoctoral fellow at the Kansas State University (KSU). Before joining the KSU, Kamari also spent one year as a postdoctoral research scholar at the Texas Tech University in the United States.

At UKZN he developed a number of new equations, predictive models, and empirically derived correlations for the prediction of different reservoir fluids properties and the parameters involved in the efficiency of Enhanced Oil Recovery (EOR) methods.

"These new methods were validated by comparing them against the literature methods. The new equations I developed could be properly employed in the software related to oil and gas industries," said Kamari.

He believes the newly developed equations and predictive models are easy to use, reliable and accurate, and can help oil and gas companies produce more oil at lower costs.





# Emerging Researchers

## College of Agriculture, Engineering and Science

TITLE	SURNAME	FIRST NAME	SCHOOL
Dr	Akerman	Matthew Piers	Chemistry and Physics
Ms	Batidzirai	Jesca Mercy	Mathematics, Statistics and Computer Science
Dr	Booyesen	Irvin Noel	Chemistry and Physics
Dr	Carrasco	Nicola Kim	Life Sciences
Professor	Chetty	Naven	Chemistry and Physics
Dr	Chiang	Hsin Cynthia	Mathematics, Statistics and Computer Science
Dr	Chivenge	Pauline Paidamoyo	Agricultural, Earth and Environmental Sciences
Dr	Di Minin	Enrico	College Administration Office
Dr	Eloka-Eboka	Andrew Chukwudum	Mathematics, Statistics and Computer Science
Dr	Finch	Jemma May	Agricultural, Earth and Environmental Sciences
Professor	Green	Andrew Noel	Agricultural, Earth and Environmental Sciences
Dr	Harinarain	Nishani	Engineering
Dr	Hilton	Matthew James	Mathematics, Statistics and Computer Science
Dr	Jauzac	Mathilde Marie Francoise	Mathematics, Statistics and Computer Science
Dr	Jeena	Vineet	Chemistry and Physics
Dr	Joshi	Shailesh Vinanay	Life Sciences
Dr	Kolanisi	Unathi	Agricultural, Earth and Environmental Sciences
Dr	Kumarasamy	Muthukrishnavellaisamy	Engineering
Dr	Lokhat	David	Engineering
Mr	Lottering	Romano Trent	Agricultural, Earth and Environmental Sciences
Dr	Ma	Yin-Zhe	Chemistry and Physics
Mr	Maggs	Jade Quinton	Life Sciences
Dr	Magwaza	Lembe Samukelo	Agricultural, Earth and Environmental Sciences
Mrs	Munien	Suveshnee	Agricultural, Earth and Environmental Sciences
Dr	Naidoo	Paramespri	Engineering
Dr	Naidoo	Sershen	Life Sciences
Dr	Nakhooda	Muhammad	Life Sciences
Dr	Narain	Rivendra Basanth	Mathematics, Statistics and Computer Science
Dr	Nelson	Wayne Michael	Engineering
Professor	Ojwach	Stephen Otieno	Chemistry and Physics
Dr	Quazi	Tahmid Al-Mumit	Engineering
Dr	Ramdhani	Syd	Life Sciences
Dr	Ryan	Sadie	Life Sciences
Dr	Shuttleworth	Adam	Life Sciences
Dr	Sinayskiy	Ilya	Chemistry and Physics
Dr	Singh	Parvesh	Chemistry and Physics
Professor	Srivastava	Viranjay Mohan	Engineering
Dr	Stopforth	Riaan	Engineering
Dr	Tchoukouegno Ngnotchouye	Jean Medard	Mathematics, Statistics and Computer Science
Dr	Tramontin	Vittorio	Engineering
Ms	Veale	Kirsty Lynn	Engineering
Dr	Vosloo	Dalene	Life Sciences
Dr	Willows-Munro	Sandi	Life Sciences
Dr	Zishiri	Oliver Tendayi	Life Sciences

### College of Health Sciences

TITLE	SURNAME	FIRST NAME	SCHOOL
Dr	Allorto	Nikki Leigh	Clinical Medicine
Dr	Bangalee	Varsha	Health Sciences
Dr	Bruce	John Lambert	Clinical Medicine
Dr	Chetty	Verusia	Health Sciences
Dr	Durand	Miranda	Clinical Medicine
Dr	Ferreira	Nando	Clinical Medicine
Dr	Goodier	Matthew David Meriton	Clinical Medicine
Dr	Govender	Pragashnie	Health Sciences
Dr	Laing	Grant Llewellyn	Clinical Medicine
Dr	Mashamba-Thompson	Tivani Phosa	Nursing and Public Health
Dr	Mckinnon	Lyle	Laboratory Medicine and Medical Sciences
Dr	Moshabela	Matlagolo Mosa	Nursing and Public Health
Professor	Naicker	Tricia	Health Sciences
Dr	Naidoo	Rowena	Health Sciences
Ms	Naidoo	Deshini	Health Sciences
Dr	Ngcobo	Mlungisi	Nursing and Public Health
Dr	Ormsbee	Michael	Health Sciences
Dr	Pillay	Pathmavathie	Laboratory Medicine and Medical Sciences
Miss	Rampersad	Nishanee	Health Sciences
Professor	Rodseth	Reitze Nils	Clinical Medicine
Professor	Sartorius	Benn Kurt Daniel	Nursing and Public Health
Dr	Skelton	Adam Arnold	Health Sciences

### College of Humanities

TITLE	SURNAME	FIRST NAME	SCHOOL
Dr	Maposa	Marshall Tamuka	Education
Dr	Mkhize	Gabisile Promise	Social Sciences
Dr	Molefe	Motsamai	Religion, Philosophy and Classics
Mr	Mpungose	Cedric Bheki	Education
Mr	Okem	Andrew Emmanuel	Social Sciences
Ms	Seepamore	Boitumelo Khothatso	Applied Human Sciences
Ms	Sidloyi	Sinethemba Siyakholwa	Social Sciences

### College of Law and Management Studies

TITLE	SURNAME	FIRST NAME	SCHOOL
Miss	Behari	Asheelia	Law
Mrs	Beharry-Ramraj	Andrisha	Management, Information Technology and Governance
Dr	Chasomeris	Mihalis Georgiou	Graduate School of Business and Leadership
Mr	Chikandiwa	Christopher Tarisayi	Graduate School of Business and Leadership
Mrs	Doorasamy	Mishelle	Accounting, Economics and Finance
Mr	Gevers	Christopher Carl	Law
Mrs	Holness	Willene Audri	Law
Dr	Hoque	Muhammad Ehsanul	Graduate School of Business and Leadership
Mr	Khumalo	Khulekani	Law
Dr	Muller	Colette Lynn	Accounting, Economics and Finance
Mr	Nzimande	Ntokozo Patrick	Accounting, Economics and Finance
Mr	Phungula	Simphiwe Peaceful	Law
Dr	Pillay	Surendran Subrayan	Accounting, Economics and Finance
Dr	Proches	Cecile Naomi	Graduate School of Business and Leadership
Dr	Ruggunan	Shaun Denvor	Management, Information Technology and Governance
Dr	Sibanda	Mabutho	Accounting, Economics and Finance
Mr	Subramanien	Darren Cavell	Law
Mr	Swales	Lee Jay Edwin	Law



# Doctoral Graduates

College of Agriculture, Engineering and Science				
SURNAME	FIRST NAME	SCHOOL	QUALIFICATION	THESIS TITLE
Adebisi	Abimbola Augustine	Chemistry and Physics	Doctor of Philosophy (Science)	Ruthenium (II) and -(III) Compounds with Biologically Relevant N-Donor Heterocyclic Chelators: Synthesis, Structural Elucidations, Electrochemistry, ESR and Radical Scavenging Studies
Awolola	Gbonjubola Victoria	Chemistry and Physics	Doctor of Philosophy (Science)	Phytochemical Analyses and Biological Activities of Four South African <i>Ficus</i> Species (Moraceae)
Babae	Saeideh	Engineering	Doctor of Philosophy in Engineering	Hydrate Phase Equilibrium Studies for Xe, Ar, Kr, and CF <sub>4</sub> in the Presence of TBAB Aqueous Solutions
Bahaa-el-din	Laila	Life Sciences	Doctor of Philosophy (Science)	Ecology and Conservation of the African Golden Cat <i>Caracal aurata</i>
Balcha	Fekadu Gurmu	Agri, Earth and Env Sc	Doctor of Philosophy (Science)	Breeding of Sweetpotato for Improvement of Root Dry Matter and $\beta$ -Carotene Contents in Ethiopia
Bejaichund	Mayshree	Engineering	Doctor of Philosophy in Engineering	Seismic Sources, Seismotectonics and Earthquake Recurrence for the KZN Coastal Regions
Betaw	Hirut Getinet	Agri, Earth and Env Sc	Doctor of Philosophy (Science)	Genetic Analyses of Drought Tolerance and Resistance to Late Blight Among Potato Genotypes
Biggs	Chara	Agri, Earth and Env Sc	Doctor of Philosophy (Science)	A Randomised Double Blind Placebo Controlled Trial to Determine the Effect of Soluble Dietary Fibre on Disease Progression and Body Composition of HIV Positive ARV Naïve Adults Attending a Wellness Clinic in KwaZulu-Natal, South Africa
Bowd	Rebecca	Agri, Earth and Env Sc	Doctor of Philosophy (Science)	Risk, Resilience and Social-Ecological Systems in Natural Resource-Based Development in South Africa
Brijmohan	Yarish	Engineering	Doctor of Philosophy in Engineering	3D Modelling, Segmentation, Quantification and Visualisation of Cardiovascular Magnetic Resonance Images
Buthelezi	Nokubekezela Makhosi	Life Sciences	Doctor of Philosophy (Science)	Investigations into the Incidence and Ecology of <i>Bilobata subsecivella</i> (Zeller) (Lepidoptera: Gelechiidae), a New Pest of Groundnut in South Africa
Butler	Louwrens Johannes	Engineering	Doctor of Philosophy in Engineering	Manufacturing Planning and Operations Optimisation for Mass Customisation Manufacturing Using Computational Intelligence
Chetty	Nevendra Krishniah	Engineering	Doctor of Philosophy in Engineering	DC Corona Electroporation
Chimonyo	Vimbayi Grace Petrova	Agri, Earth and Env Sc	Doctor of Philosophy (Science)	Quantifying Productivity and Water Use of Sorghum Intercrop Systems
Chinheya	Cleopas Chenai	Agri, Earth and Env Sc	Doctor of Philosophy (Science)	Use of <i>Trichoderma</i> and <i>Bacillus</i> Isolates as Seed Treatments Against a Root Knot Nematode, <i>Meloidogyne javanica</i> (Chitwood)
Clulow	Alistair David	Agri, Earth and Env Sc	Doctor of Philosophy (Science)	Quantification of the Water-Use Dynamics of the Dominant Plant Communities of the Eastern Shores in the Isimangaliso Wetland Park for Improved Water Resource Management
Coetzer	Willem Gabriël	Life Sciences	Doctor of Philosophy (Science)	Systematics and Phylogeography of the Cape Parrot ( <i>Poicephalus robustus</i> )
Cwele	Thandanani	Chemistry and Physics	Doctor of Philosophy (Science)	Total and Preferential CO Oxidation Over Solid – Solution and Supported Gold Catalysts
Davrajh	Shaniel	Engineering	Doctor of Philosophy in Engineering	Optimal Allocation of Reconfigurable Inspection Resources for Minimisation of the Cost of Quality Metric for Factories of the Future
Desta	Ermias Abate	Agri, Earth and Env Sc	Doctor of Philosophy (Science)	Pre-Breeding of Tef [ <i>Eragrostis tef</i> (Zucc.) Trotter] for Tolerance to Aluminium Toxicity
Dlamini	Nkosinathi Bongumusa	Chemistry and Physics	Doctor of Philosophy (Science)	Numerical Simulation of Quantum Spins in a Dissipative Environment
Duba	Chuene Thama	Maths, Stats and Comp Sc	Doctor of Philosophy (Science)	Wind-Wave Interactions, Density Stratification and Double Diffusive Convection in Rotating Flows

### College of Agriculture, Engineering and Science

SURNAME	FIRST NAME	SCHOOL	QUALIFICATION	THESIS TITLE
Dube	Timothy	Agri, Earth and Env Sc	Doctor of Philosophy (Science)	Optical Remote Sensing of Aboveground Forest Biomass and Carbon Stocks in Resource-Constrained African Environments
Dukhi	Veresha	Chemistry and Physics	Doctor of Philosophy (Science)	Chemical Factors that Contribute to Ageing and Failure of Insulation Materials in Liquid-filled Transformers
Faloye	Funmilayo Dorcas	Life Sciences	Doctor of Philosophy (Science)	Optimisation of Biohydrogen Production Inoculum Development via Hybrid Pretreatment Techniques – Semi Pilot Scale Production Assessment on Agro-Waste (Potato Peels)
Frank	Reevin Robert	Engineering	Doctor of Philosophy in Engineering	Assessment of Sustainable Approaches to Improve Waste Degradation, Landfill Gas Production and Leachate Bionitrification in Bioreactor Landfills.
Gakuba	Emmanuel	Chemistry and Physics	Doctor of Philosophy (Science)	Analysis and Monitoring of Persistent Organic Pollutants in the Umgeni River, KwaZulu-Natal, South Africa
Ganguly	Apratim	Maths, Stats and Comp Sc	Doctor of Philosophy (Science)	Gravity Theories, Black Holes and Compact Objects
Gericke	Ockert Jacobus	Engineering	Doctor of Philosophy in Engineering	Estimation of Catchment Response Time in Medium to Large catchments in South Africa
Grech	Nigel Mark	Agri, Earth and Env Sc	Doctor of Philosophy (Science)	Studies on Guava Wilt Disease
Gumede	Phiwayinkosi Richmond	Agri, Earth and Env Sc	Doctor of Philosophy (Science)	The Respiratory Health Effects Associated with Particulate Matter Exposure in Children Residing near a Landfill Site: A Case Study of eThekweni Municipality
Habyarimana	Faustin	Maths, Stats and Comp Sc	Doctor of Philosophy (Science)	Measuring Poverty and Child Malnutrition with their Determinants from Household Survey Data
Hadebe	Sandile Thamsanqa	Agri, Earth and Env Sc	Doctor of Philosophy (Science)	Water Use of Selected Sorghum ( <i>Sorghum bicolor</i> L. Moench) Genotypes
Hannweg	Karin Fiona	Agri, Earth and Env Sc	Doctor of Philosophy (Science)	Induced Polyploidy as a Tool for the Development of Novel South African Indigenous Crops
Hashemi	Hamed	Engineering	Doctor of Philosophy in Engineering	Application of Gas Hydrates in Cold Storage Technology: Experimental Study and Thermodynamic Modeling
Hendry	Gillian Margaret	Maths, Stats and Comp Sc	Doctor of Philosophy (Science)	The Management of Missing Categorical Data: Comparison of Multiple Imputation and Subset Correspondence Analysis
Hitayezu	Patrick	Agri, Earth and Env Sc	Doctor of Philosophy (Science)	Climate Change Perceptions, Crop Diversification and Land Use Change Among Small-Scale Farmers in the Midlands Region of KwaZulu-Natal, South Africa: Behavioural and Microeconomics Analyses
Hoyer	Lauren	Agri, Earth and Env Sc	Doctor of Philosophy (Science)	Rock Fabric of Karoo Dolerite Sills along the KwaZulu-Natal North Coast, South Africa: Implications for the Magma Source
Ilani-Kashkouli	Poorandokht	Engineering	Doctor of Philosophy in Engineering	Thermodynamic Studies on CO <sup>2</sup> Capture through Gas Hydrate Formation Technology
Jiri	Obert	Agri, Earth and Env Sc	Doctor of Philosophy (Science)	Climate Change and Variability Impacts on Crop Production in the Low Potential Smallholder Farming Regions of Zimbabwe
Kaniki Tumba	Armel	Engineering	Doctor of Philosophy in Engineering	Application of Gas Hydrates to the Separation of Close-Boiling Components in Petroleum Streams
Kelly	Thavamoney	Engineering	Doctor of Philosophy in Engineering	An Investigation into the Reduction of Greenhouse Gases Associated with the Disposal of Municipal Solid Waste for the Development of an Institutional Framework in Developing Countries
Keru	Godfrey Kamitha	Chemistry and Physics	Doctor of Philosophy (Science)	Baron and Nitrogen-doped Carbon Nanotubes, Synthesis, Characterization and Application in Solar Cells
Knowles	Kenda Leigh	Maths, Stats and Comp Sc	Doctor of Philosophy (Science)	Observational Probes of Merging Galaxy Clusters
Koetle	Motselisi Jane	Life Sciences	Doctor of Philosophy (Science)	Organogenesis and Genetic Transformation in <i>Dierama erectum</i> Hilliard
Kubheka	Bongani Petros	Agri, Earth and Env Sc	Doctor of Philosophy (Science)	Integrating Microdosing of Fertilizers with Biological Control Agents for Maize Production in the Eastern Cape, South Africa



College of Agriculture, Engineering and Science				
SURNAME	FIRST NAME	SCHOOL	QUALIFICATION	THESIS TITLE
Lawal	Isiaka Ayobamidele	Chemistry and Physics	Doctor of Philosophy (Science)	Studies of Ionic Liquid Modified Materials for Adsorption of Organic Pollutants from Aqueous Media
Makanda	Gilbert	Maths, Stats and Comp Sc	Doctor of Philosophy (Science)	Numerical Study of Convective Fluid Flow in Porous and Non-Porous Media
Malinzi	Joseph	Maths, Stats and Comp Sc	Doctor of Philosophy (Science)	Mathematical Modelling of Cancer Treatments and the Role of the Immune System Response to Tumor Invasion
Mapayi	Temitope	Maths, Stats and Comp Sc	Doctor of Philosophy (Science)	Detection and Characterisation of Vessels in Retinal Images
Marambanyika	Thomas	Agri, Earth and Env Sc	Doctor of Philosophy (Science)	An Analysis of the Impacts of Human Activities and Management Strategies on Wetland Processes in Southern Zimbabwe
Masere	Tirivashe Phillip	Agri, Earth and Env Sc	Doctor of Philosophy (Science)	An Evaluation of the Role of Extension in Technology Adoption by Small-Scale Resource-Constrained Farmers: A Case of Lower Gweru Communal Area, Zimbabwe
Mbela	Kalengay	Chemistry and Physics	Doctor of Philosophy (Science)	Synthesis and magnetic properties of Sn, Mn, Mg doped Cr <sub>1.8-x</sub> Fe <sub>x</sub> O <sub>3</sub> nano Oxides
McPherson	Shane Cameron	Life Sciences	Doctor of Philosophy (Science)	Urban Ecology of the Crowned Eagle ( <i>Stephanoaetus coronatus</i> ) in KwaZulu-Natal, South Africa
Megnidio-Tchoukouegno	Mireille Merlise	Chemistry and Physics	Doctor of Philosophy (Science)	Computational & Experimental Study of Thin Films of Polymers Blends
Mfuamba Mulumba	Jean-Pierre	Chemistry and Physics	Doctor of Philosophy (Science)	Analytic Comparison of Tropospheric Ozone Climatology over Southern Africa using Retrieved Remote Sensing and Ground Based Measurement Data for the Period 1991-2010
Mgobhozi	Sivuyile Wiseman	Maths, Stats and Comp Sc	Doctor of Philosophy (Science)	Combined Impulse Control and Optimal Stopping in Insurance and Interest Rate Theory
Mkenyeleye	Maombi Daud	Maths, Stats and Comp Sc	Doctor of Philosophy (Science)	Investigation of Gravitational Collapse of Generalized Vaidya Spacetimes
Mkhize	Zimbili	Chemistry and Physics	Doctor of Philosophy (Science)	Structure and Synthesis of Bioactive Natural Products
Mlipha	Mandla	Agri, Earth and Env Sc	Doctor of Philosophy (Science)	Sustainable Agriculture Among Subsistence Farmers in Swaziland: A Study of Adoption and Practice of Conservation Agriculture at Shewula
Mofokeng	Maletsema Alina	Agri, Earth and Env Sc	Doctor of Philosophy (Science)	Diversity Analysis of South African Sorghum Genotypes Using Agronomic Traits, SSR Markers and Protein Content and Amino Acid Composition
Mohamed	Ziyaad	Chemistry and Physics	Doctor of Philosophy (Science)	Final stage CO removal by oxidation or hydrogenation using supported PGM catalysts for fuel cell applications.
Mohammed	Aminu	Life Sciences	Doctor of Philosophy (Science)	Antioxidative and Antidiabetic Effects of Some African Medicinal Plants
Mohammed	Muna Balla Elshareef	Maths, Stats and Comp Sc	Doctor of Philosophy (Science)	Statistical Methods to Evaluate Disease Outcome Diagnostic Accuracy of Multiple Biomarkers with Application to HIV and TB Research
Mokhele	Tholang Alfred	Agri, Earth and Env Sc	Doctor of Philosophy (Science)	Development of Census Output Areas in South Africa
Mongi	Rose John	Agri, Earth and Env Sc	Doctor of Philosophy (Science)	Breeding for Resistance Against Angular Leaf Spot Disease of Common Bean in the Southern Highlands of Tanzania
Moodley	Kodylan	Maths, Stats and Comp Sc	Doctor of Philosophy (Science)	Defeasible Reasoning for Description Logic Ontologies
Moodley	Thrineshen	Chemistry and Physics	Doctor of Philosophy (Science)	The Synthesis and Characterisation of Coumarinyl Chalcone Hybrids and their Antibacterial Activity
Mosisi	Moleka Pange	Agri, Earth and Env Sc	Doctor of Philosophy (Science)	Chiefdom Development Plan: Implications for Food Security in Swaziland
Mpendulo	Conference Thando	Agri, Earth and Env Sc	Doctor of Philosophy (Science)	Influence of Water Stress on Intake, Growth Performance and Nutritional Status of Nguni Goats
Mshengu	Bongiwe Pridesworth	Chemistry and Physics	Doctor of Philosophy (Science)	Chemical Constituents from <i>Elytropappus rhinocerotis</i> and <i>Rhoicissus tridentata</i> : Structural and Activity Studies

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SURNAME	FIRST NAME	SCHOOL	QUALIFICATION	THESIS TITLE
Mulbah	Quaqua Sumo	Agri, Earth and Env Sc	Doctor of Philosophy (Science)	Integrating Genetic Resistance with Biocontrol against Rice Blast and Drought
Mupenzi	Mutimura	Agri, Earth and Env Sc	Doctor of Philosophy (Science)	<i>Evaluation of Ecological Benefits of Brachiaria Grasses in Integrated Crop-Livestock Production System in Rwanda</i>
Murugani	Vongai Gillian	Agri, Earth and Env Sc	Doctor of Philosophy (Science)	Women Empowerment in Agriculture: Agency & Institutions for Improved Market Access and Household Food Security in Limpopo Province
Musila	Ruth Nzisa	Agri, Earth and Env Sc	Doctor of Philosophy (Science)	Genetic Analysis for Drought Tolerance and Yield Stability in Interspecific and <i>Oryza sativa</i> L. Rice Germplasm
Mutema	Macdex	Agri, Earth and Env Sc	Doctor of Philosophy (Science)	Water, Sediment, Organic Carbon and Nutrient Fluxes from Headwaters to River Basin: Main Factors of Control in Thukela River, South Africa
Mvubu	Nontobeko Eunice	Life Sciences	Doctor of Philosophy (Science)	Clinical Strains of <i>Mycobacterium Tuberculosis</i> Induce Strain-specific Patterns of Cytokine Production, Gene Expression and Pathway Changes in Pulmonary Alveolar Epithelial Cells
Mzozoyana	Vuyisa	Chemistry and Physics	Doctor of Philosophy (Science)	Synthesis of Fluorinated Benzophenones and Phenylcoumarins
Naicker	Dunesha	Chemistry and Physics	Doctor of Philosophy (Science)	The Application of 'PNP' Aminodiphosphine Complexes in the Oxidation of n-octane and Styrene
Naidoo	Samantha	Life Sciences	Doctor of Philosophy (Science)	The Effect of Wastewater Treatment Works on Foraging Ecology, Haematology, Detoxification Organs and Reproduction in an Urban Adapter, the Banana Bat ( <i>Neoromicia nana</i> )
Naidoo	Krishnaveni	Life Sciences	Doctor of Philosophy (Science)	The Effects of Petroleum Hydrocarbon Contamination on Selected Intertidal Macrophytes and Meiofauna
Negash	Asnake Worku	Maths, Stats and Comp Sc	Doctor of Philosophy (Science)	Application of Mixed Model and Spatial Analysis Methods in Multi-Environmental and Agricultural Field Trials
Ngailo	Stephan Eliuth	Agri, Earth and Env Sc	Doctor of Philosophy (Science)	Breeding Sweetpotato for Improved Yield and Related Traits and Resistance to Sweetpotato Virus Disease (SPVD) in Eastern Tanzania
Nongqwenga	Nqaba	Agri, Earth and Env Sc	Doctor of Philosophy (Science)	Evaluation of Extraction Based Fertilizer Recommendation
Nyamato	George Simba	Chemistry and Physics	Doctor of Philosophy (Science)	Nitrogen-Donor Late Transition Metal Complexes as Ethylene Oligomerization Catalysts
Nyete	Abraham Mutunga	Engineering	Doctor of Philosophy in Engineering	A Flexible Statistical Framework for the Characterisation and Modelling of Noise in Powerline Communication Channels
Obaga	Emmanuel Omboga	Chemistry and Physics	Doctor of Philosophy (Science)	Simulating Thermal Fluctuations in Soft Matter Models
Odunitan-Wayas	Feyisayo Adeola	Agri, Earth and Env Sc	Doctor of Philosophy (Science)	Utilisation of Provitamin A Biofortified Maize in Ovambo Chickens to Improve Food and Nutrition Security
Ogweno	Aloice Omondi	Chemistry and Physics	Doctor of Philosophy (Science)	Nitrogen and Phosphine-Donor Ruthenium(II/III) and Palladium(II) Complexes: Synthesis and Catalytic Hydrogenation of Ketones, Alkenes and Alkynes
Oseghe	Ekemena Oghehovoh	Chemistry and Physics	Doctor of Philosophy (Science)	Studies on the Photodegradation of Selected Organic Pollutants using Heterogenous Catalysts
Osman Abdelaziz	Nadir Shams Eldin	Chemistry and Physics	Doctor of Philosophy (Science)	Synthesis, Structural and Magnetic Characterization Spinel Nanoparticle Ferrites with Applications for Electrochemical Sensors
Oyetade	Oluwaseun Akinwale	Chemistry and Physics	Doctor of Philosophy (Science)	Adsorption of Selected Pollutants from Aqueous Solutions onto Modified Multiwalled Carbon Nanotubes
Padayachee	Jared	Engineering	Doctor of Philosophy in Engineering	The Development of Methods for the Design and Evolution of Reconfigurable Cellular Manufacturing Systems
Pawar	Sunayna Sachin	Chemistry and Physics	Doctor of Philosophy (Science)	Synthesis and Biological Studies of Novel Pyranochromene Derivatives
Phepa	Patrick Biyason	Maths, Stats and Comp Sc	Doctor of Philosophy (Science)	Using Epidemiological Mathematical Models to Understand the Transmission Dynamics of Bovine Tuberculosis in Buffalo and Cattle Populations



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SURNAME	FIRST NAME	SCHOOL	QUALIFICATION	THESIS TITLE
Phiri	Nathan	Agri, Earth and Env Sc	Doctor of Philosophy (Science)	Genetic Analysis of Common Bean ( <i>Phaseolus vulgaris</i> L.) Genotypes for Tolerance to Drought and Heat Stress in Zambia
Pringle	Justin James	Engineering	Doctor of Philosophy in Engineering	On Weather and Waves: Applications to Coastal Engineering
Qwabe	Lindelani Qalukubona	Chemistry and Physics	Doctor of Philosophy (Science)	CO Oxidation in a Hydrogen Rich Feed – Stream for Use in Fuel Cells
Ralph	Taryn Marietta Cecilia	Life Sciences	Doctor of Philosophy (Science)	Aspects of the Molecular Systematics, Taxonomy and Population Genetics of Otomops (Chiroptera: Molossidae) in Africa and Madagascar
Rukundo	Placide	Agri, Earth and Env Sc	Doctor of Philosophy (Science)	Breeding of Sweetpotato ( <i>Ipomoea batatas</i> (L.) Lam.) for Drought Tolerance and High Dry Matter Content in Rwanda
Scholtz	Rheinhardt	Life Sciences	Doctor of Philosophy (Science)	A Spatio-temporal Analysis of Woody Vegetation Structure within a Semi-arid Savanna: Insights to Environmental Drivers, Distribution and Dynamics
Selier	Sarah-Anne Jeanetta	Life Sciences	Doctor of Philosophy (Science)	The Challenges and Opportunities in Conserving Wide-ranging Cross Border Species: A Case Study of the Greater Mapungubwe Transfrontier Conservation Area Elephant Population
Semina	Iuliia	Chemistry and Physics	Doctor of Philosophy (Science)	Stochastic Schrodinger Equations Approach to Open Quantum Systems
Sharaunga	Stanley	Agri, Earth and Env Sc	Doctor of Philosophy (Science)	The Significance of Women Empowerment in Improving Rural Livelihood Outcomes: The Case of Irrigating and Dry-Land Women Farmers in Msinga, South Africa
Shimaponda	Nzooa Munkwangu	Life Sciences	Doctor of Philosophy (Science)	Socio-Economic and Eco-Environmental Determinants of Malaria in Four Malaria Endemic Provinces of Zambia
Sinyolo	Sikhulumile	Agri, Earth and Env Sc	Doctor of Philosophy (Science)	The Impact of Social Grants on Rural Households' Incentives to Farm, Market Participation and Farm Entrepreneurship: Evidence from KwaZulu-Natal, South Africa
Siti	Willy Mukwanga	Engineering	Doctor of Philosophy in Engineering	Optimal Energy Control of a Grid Connected Solar-Wind based Electric Power Plant
Strachan	Kate Leigh	Agri, Earth and Env Sc	Doctor of Philosophy (Science)	Intertidal Salt-Marsh Foraminifera as Sea-Level Indicators: Lessons from the South African Coastline
Tella	Toluwani Adebayo Jedidiah	Life Sciences	Doctor of Philosophy (Science)	Investigation of Anti-diabetic Properties of <i>Psidium guajava</i> Leaf in Streptozotocin Induced Diabetic Rats
Tembo	Batiseba	Agri, Earth and Env Sc	Doctor of Philosophy (Science)	Breeding Investigations and Validation of Molecular Markers Linked with Spot Blotch Disease Resistance in Wheat ( <i>riticum aestivum</i> L.) Germplasm for the Rain-Fed Conditions of Zambia
van Deventer	Heidi	Agri, Earth and Env Sc	Doctor of Philosophy (Science)	Remote Sensing of Wetland Tree Species in the iSimangaliso Wetland Park, KwaZulu-Natal, South Africa
Walker	Nicholas Lee	Life Sciences	Doctor of Philosophy (Science)	Extracellular Matrix Factors Influence Myoblast Activation, Differentiation and Fusion
Warner	Jonathan Kirk	Life Sciences	Doctor of Philosophy (Science)	Morphometrics, Ectotoxicology and Stable Isotope Ecology of Nile Crocodiles ( <i>Crocodylus niloticus</i> ) in KwaZulu-Natal, South Africa
Widdows	Craig David	Life Sciences	Doctor of Philosophy (Science)	The Ecology of Large-Spotted Genets within an Urban Landscape
Williams-Wynn	Mark Duncan	Engineering	Doctor of Philosophy in Engineering	Applications of Fluorocarbons for Supercritical Extraction in the Petroleum Industry
Woldetsadik	Berhanu Aragie	Chemistry and Physics	Doctor of Philosophy (Science)	Statistical Mechanical Models for Electron Hopping in a Semiconductor Layer
Zaake	Tamukedde Benon	Engineering	Doctor of Philosophy in Engineering	Development and Application of Decision Support Systems for Improved Planning and Operation of Large Dams along the White Nile
Zulu	Xolelwa Cecilia	Chemistry and Physics	Doctor of Philosophy (Science)	Heterogenisation of Selective Homogeneous Ethylene Oligomerisation Catalysts

College of Health Sciences				
SURNAME	FIRST NAME	SCHOOL	QUALIFICATION	THESIS TITLE
Achema	Godwin	Nursing and Public Health	Doctor of Philosophy in Nursing	A grounded theory analysis of the philosophy of care for children with HIV/AIDS in Nigeria
Adebiyi	Oluwafeyisetan Olubolade	Health Sciences	Doctor of Philosophy (Health Sciences)	The antioxidant effect of Naringin in modifying the components of the NRTI – induced mitochondrial dysfunction
Adebiyi	Olubunmi Adeniyi	Health Sciences	Doctor of Philosophy (Health Sciences)	The putative role of Naringin in the modification of oxidative stress in diabetic cardiomyopathy
Ajith	Anushka	Lab Med and Medical Sc	Doctor of Philosophy (Medicine)	The role of peripheral natural killer cells in immune compromised pre-eclamptic and normotensive pregnant Black South Africans
Ally	Fazila	Lab Med and Medical Sc	Doctor of Philosophy (Health Sciences)	A morphological and morphometric analysis of the development of the calcaneus, talus and first metatarsal bone in KwaZulu-Natal population group: Newborn to early adulthood
Chetty	Verusia	Health Sciences	Doctor of Philosophy (Health Sciences)	Development of a model of care for rehabilitation of people living with HIV in a semi-rural setting in KwaZulu-Natal, South Africa
Dlamini	Nonhlanhla	Lab Med and Medical Sc	Doctor of Philosophy (Medicine)	An investigation of African Traditional Medicines used in the treatment of Kaposi's sarcoma (an AIDS defining cancer)
Dookie	Sunitha	Health Sciences	Doctor of Philosophy (Health Sciences)	A critical analysis of the impact of primary health care philosophy on district oral health services in KwaZulu-Natal
Dookie	Navisha	Lab Med and Medical Sc	Doctor of Philosophy (Medicine)	Antibiotic resistance in Mycobacterium tuberculosis: The role of genetic mutations in resistance conferring genes and efflux transporters
Dube	Faith Nana	Nurs and Public Health	Doctor of Philosophy in Nursing	The outcomes of implementating the South African Department of Health (DoH) mental health clinical guidelines for the management of psychiatric patients at Primary Health Care Clinics
Dukhi	Natisha	Lab Med and Medical Sc	Doctor of Philosophy (Medicine)	Burden of malnutrition in children aged 0-59 months in iLembe district, KwaZulu-Natal
Ferreira	Nando	Clinical Medicine	Doctor of Philosophy (Medicine)	The outcome of tibial non-unions using a revised definition, classification system and management strategy
Gounden	Shivona	Lab Med and Medical Sc	Doctor of Philosophy (Health Sciences)	Hyperglycaemic-induced regulation of SIRT3 and downstream antioxidant profile
Govender	Pragashnie	Health Sciences	Doctor of Philosophy (Health Sciences)	A clinical algorithm for the assessment of hypotonia in children under five years
Gunda	Resign	Lab Med and Medical Sc	Doctor of Philosophy (Medicine)	Mixed infection from soil transmitted Helminths and Schistosomes in disadvantaged communities in KwaZulu-Natal (KZN), South Africa
Gwetu	Thando Patience	Lab Med and Medical Sc	Doctor of Philosophy (Medicine)	Anaemia and its relation to intellectual, cognitive and growth impairment in children from KwaZulu-Natal, South Africa
Hamid	Shaista	Clinical Medicine	Doctor of Philosophy (Medicine)	Investigating the role of fortigenic factors in enhancing academic success and coping mechanisms in Health Science students
Hazemba	Alice Ngoma	Nurs and Public Health	Doctor of Philosophy in Nursing	Infant feeding and HIV: choices and decisions outcomes on prevention of mother to child transmission; a qualitative inquiry of experiences of HIV positive mothers
Jeena	Prakash Mohan	Clinical Medicine	Doctor of Philosophy (Medicine)	The impact and management of viral infections in the lungs of HIV infected and uninfected children
Koofhethile	Catherine Kegakilwe	Lab Med and Medical Sc	Doctor of Philosophy (Medicine)	Protective HLA class I alleles: Investigation of viral control and lack of control in chronic HIV-1 subtype C infection
Korb	Vanessa Claire	Lab Med and Medical Sc	Doctor of Philosophy (Health Sciences)	An investigation into TB/HIV manipulation of the T-cell immune response
Kumar	Santosh	Lab Med and Medical Sc	Doctor of Philosophy (Medicine)	Improving the efficacy of bacillus calmette guerin vaccine by concomitant inhibition of T regulatory and T helper 2 cells
Kyei	Samuel	Health Sciences	Doctor of Philosophy (Health Sciences)	Ocular-anti-inflammatory, anti-cataract, hypotensive effect and safety assessment of aqueous extracts of heliotropium indicum and stem juice of hypselodelphys violacea in rodents



College of Health Sciences				
SURNAME	FIRST NAME	SCHOOL	QUALIFICATION	THESIS TITLE
Macherera	Margaret	Lab Med and Medical Sc	Doctor of Philosophy (Medicine)	Indigenous knowledge systems on malaria in Gwanda district, Zimbabwe
Maharaj	Niren Ray	Lab Med and Medical Sc	Doctor of Philosophy (Health Sciences)	An investigation into the clinical, biochemical, immunological and epigenetic factors in Black South African women with preeclampsia and HIV
Mahomed	Ozayr Haroon	Lab Med and Medical Sc	Doctor of Philosophy (Medicine)	The impact and sustainability of an integrated chronic disease management model at primary care level in South Africa
Manyangadze	Tawanda	Lab Med and Medical Sc	Doctor of Philosophy (Medicine)	Spatial and temporal modelling of Schistosomiasis transmission at micro-scale in Southern Africa: A case of Ndumo area in uMkhanyakude health district in KwaZulu-Natal, South Africa
Marais	Leonard Charles	Clinical Medicine	Doctor of Philosophy (Medicine)	An integrated approach to adult chronic osteomyelitis
Mazorodze	James Hove	Lab Med and Medical Sc	Doctor of Philosophy (Medicine)	Reprogrammed host energy metabolism during Mycobacterium tuberculosis infection: Mechanistic insights
Mhlongo	Ndumiso Nhlakanipho	Health Sciences	Doctor of Philosophy (Health Sciences)	Insight into glycosidases using bioinformatics and molecular modeling tools
Moodley	Yoshan	Clinical Medicine	Doctor of Philosophy (Medicine)	Perioperative studies of hypertension
Moodley	Kogilambal	Lab Med and Medical Sc	Doctor of Philosophy (Health Sciences)	The biological effects of Tulbaghia violacea in a salt-sensitive, hypertensive and diabetic rat model
Mpofana	Thabisile	Lab Med and Medical Sc	Doctor of Philosophy (Health Sciences)	The effects of caffeine on a maternally separated Parkinson rat model
Mulol	Helen Margaret Alison	Clinical Medicine	Doctor of Philosophy (Medicine)	A longitudinal study of breast milk intake volumes in African infants in a typical urban disadvantaged South African community
Nagiah	Savana	Lab Med and Medical Sc	Doctor of Philosophy (Health Sciences)	A biochemical assessment of stress response following acute and prolonged exposure to antiretroviral drugs (nucleoside reverse transcriptase inhibitors) in vitro
Naidoo	Kogieleum	Lab Med and Medical Sc	Doctor of Philosophy (Medicine)	Challenges in the integration of TB and HIV care: Evidence for improving patient management and health care policy
Naidoo	Charissa Camille	Lab Med and Medical Sc	Doctor of Philosophy (Medicine)	Fitness of multi- and extensively drug-resistant Mycobacterium tuberculosis clinical strains
Ngcapu	Sinaye	Lab Med and Medical Sc	Doctor of Philosophy (Medicine)	Impact of injectable hormone contraceptives on the innate immune environment in the genital tract in women at high risk for HIV infection
Ngwale	Matthews	Health Sciences	Doctor of Philosophy (Health Sciences)	The development of a predictive model on the factors affecting survival times and AIDS related events in HIV/AIDS patients on HAART in rural and urban Southern Malawi
Nloto	Manimbulu	Health Sciences	Doctor of Philosophy (Health Sciences)	An investigation into Traditional, complementary and alternative medicines utilisation and health outcomes amongst HIV/AIDS patients attending public health facilities in different communities of KwaZulu-Natal
Onkoba	Wycliffe Nyamongo	Lab Med and Medical Sc	Doctor of Philosophy (Medicine)	Host immune responses to Plasmodium berghei ANKA and trichinella Zimbabweensis infection in BALB/c mice
Osei Sekyere	John	Health Sciences	Doctor of Philosophy (Health Sciences)	Phenotypic and genotypic characterisation of carbapenemases from carbapenem resistant enterobacteriaceae (CREs) isolated from the private health sector in Durban, South Africa
Padayatchi	Nesri	Lab Med and Medical Sc	Doctor of Philosophy (Medicine)	Factors influencing treatment outcomes in multi and extensively drug resistant tuberculosis [M(X)DR-TB] patients co-infected with HIV in KwaZulu-Natal
Paruk	Saeeda	Clinical Medicine	Doctor of Philosophy (Medicine)	Risk factors for adolescent onset psychosis in KwaZulu-Natal, South Africa
Phili	Rogério	Lab Med and Medical Sc	Doctor of Philosophy (Medicine)	A pilot study to assess the feasibility and acceptability of introducing medical male circumcision in public sector health facility users in KwaZulu-Natal as part of a comprehensive HIV risk reduction package

### College of Health Sciences

SURNAME	FIRST NAME	SCHOOL	QUALIFICATION	THESIS TITLE
Pillay	Pavitra	Lab Med and Medical Sc	Doctor of Philosophy (Medicine)	Female Genital Schistosomiasis (FGS) as risk factor for squamous cell atypia in an epidemiological longitudinal cohort of young women in KwaZulu-Natal
Qulu	Lihle	Lab Med and Medical Sc	Doctor of Philosophy (Health Sciences)	Exposure to early life stressors enhances the prevalence of febrile seizures in young rats
Ramkaran	Prithiksha	Lab Med and Medical Sc	Doctor of Philosophy (Health Sciences)	Genetic and microRNA polymorphisms in young South African Indians with coronary artery disease
Rasheed	Saifaldeen Hassan Hassab Alrasol	Health Sciences	Doctor of Philosophy (Health Sciences)	Prevalence of visual impairment and development of a child eye care plan in South Darfur State of Sudan
Reddy	Moganavelli	Health Sciences	Doctor of Philosophy (Health Sciences)	A model of care for integrated school oral health promotion within the health promoting schools initiative in KwaZulu-Natal
Schaan	Michelle Marian	Lab Med and Medical Sc	Doctor of Philosophy (Medicine)	HIV Positive and Pregnant: contributing factors and outcomes
Shaikh	Mahamad Hanif Sikander	Health Sciences	Doctor of Philosophy (Health Sciences)	A novel class of carbazole, indole and benzimidazole derivatives as potential enoyl-acp reductase (inhb) inhibitors of mycobacterium tuberculosis or other pathogenic microorganism, design, synthesis and biological evaluation
Shobo	Adeola Obafemi	Health Sciences	Doctor of Philosophy (Health Sciences)	Mass spectrometric investigations on antiretroviral drug activities
Singh	Urisha	Lab Med and Medical Sc	Doctor of Philosophy (Medicine)	Acquired and transmitted drug resistance in HIV-1 subtype C: Implications of novel mutations on replication capacity, cleavage and drug susceptibility
Sobia	Parveen	Lab Med and Medical Sc	Doctor of Philosophy (Medicine)	TlyA has an essential virulence role in Mycobacterium tuberculosis pathogenesis
Sookan	Takshita	Health Sciences	Doctor of Philosophy (Health Sciences)	Effects of combined resistance training and whey protein intake on body composition, immunity and chronic disease risk in HIV infected individuals receiving antiretroviral therapy
Tiloke	Charlette	Lab Med and Medical Sc	Doctor of Philosophy (Health Sciences)	The antiproliferative and apoptosis inducing effects of Moringa oleifera aqueous leaf extract and its synthesised gold nanoparticles – modulation of oncogenes and tumor suppressor genes in human cancer cell lines
Wajuihian	Samuel Otabor	Health Sciences	Doctor of Philosophy (Health Sciences)	Towards the development of strategies to address near vision anomalies in Black high school children in South Africa
Yota	Bereket Yakob	Lab Med and Medical Sc	Doctor of Philosophy (Medicine)	Provided-initiated HIV testing and counseling services accessibility, feasibility, acceptance, effectiveness and future implications in Ethiopia

### College of Humanities

SURNAME	FIRST NAME	SCHOOL	QUALIFICATION	THESIS TITLE
Abbas	Kabiru Dahiru	Social Sciences	Doctor of Philosophy (Human Sciences)	Knowledge management strategies and practices in Nigerian Agricultural Research Institutes
Affiku	Monday Engom	Rel, Phil and Classics	Doctor of Philosophy (Human Sciences)	A pastoral critique of the Evangelical Reformed Church of Christ (ERCC) methods of bereavement counselling: Retrieving the Eggon indigenous concepts of bereavement management
Agbomeji	Ayinde Mojeed Oladele	Education	Doctor of Philosophy (Education)	A Socio-cultural Perspective to Education Retention in Multicultural Contexts of Rural Secondary Schools in Lagos State, Nigeria: Exploring Inviting Classroom Pedagogies
Akpan	Louis Okon	Education	Doctor of Philosophy (Education)	An investigation into the history of nomadic education policies in Nigeria, 1986-2009
Alabi	Adefunke Olanike	Social Sciences	Doctor of Philosophy (Human Sciences)	Adoption and use of electronic instructional media among academics in selected universities in South West Nigeria
Alfers	Laura Corrigan	Built Env and Dev Stud	Doctor of Philosophy (Human Sciences)	Workers, Citizens, and Health Policy: A Gendered Political and Economic History of Social Citizenship in ex-British Colonies, with a Focus on Ghana and India



College of Humanities				
SURNAME	FIRST NAME	SCHOOL	QUALIFICATION	THESIS TITLE
Amla	Fahrial	Applied Human Sc	Doctor of Philosophy (Human Sciences)	The psychological strengths of Muslim women as leaders in the workplace
Ani	Ndubuisi Christian	Social Sciences	Doctor of Philosophy (Human Sciences)	African solutions to African problems: Assessing the African Union's application of endogenous conflict resolution approaches
Anwar	Thamina	Rel, Phil and Classics	Doctor of Philosophy (Human Sciences)	Islamic Gift Economy: Awqaf (Endowment) A Vehicle for Social Entrepreneurship in Muslim Minority Countries (A case study of Australia, New Zealand and South Africa)
Arzul	Jean Philippe	Applied Human Sc	Doctor of Philosophy (Human Sciences)	Factors in Treatment-refractory Obsessive Compulsive Disorder
Babatunji	Foluso Olugbenga	Rel, Phil & Classics	Doctor of Philosophy (Human Sciences)	The effect of semitic primal religion on Israelite religion: A pattern for a contextual biblical interpretation in Nigerian Christianity
Bangalu	Ezekiel Arfo	Education	Doctor of Philosophy (Education)	A comparative analysis of Technical and Vocational Education and Training Policy in selected African countries
Bayeni	Sibusiso Douglas	Education	Doctor of Philosophy (Education)	Examining school principals' mediation in policy implementation process: A case study of six secondary schools
Bharath	Pranitha	Education	Doctor of Philosophy (Education)	An investigation of progression in historical thinking in South African history textbooks
Bhoola	Sheetal	Social Sciences	Doctor of Philosophy (Human Sciences)	Towards Developing a Culinary Tourism Destination: A Case Study of the Durban Region
Brooke-Sumner	Carolyn Ashleigh	Applied Human Sc	Doctor of Philosophy (Human Sciences)	Psychological Rehabilitation for Schizophrenia: Developing a Community-Based Approach to Promote Recovery in Dr Kenneth Kaunda District, North West Province
Budaloo	Vishamlal Ramtahal	Education	Doctor of Philosophy (Education)	The use of visual reasoning by successful mathematics teachers: A case study
Buthelezi	Zanele Gladness	Education	Doctor of Philosophy (Education)	At the policy-practice interface: Exploring Technical Vocational Education and Training lecturers' Post-Apartheid reform experiences
Bydawell	Moya May	Social Sciences	Doctor of Philosophy (Human Sciences)	Out of step but stepping up? Following a group of students negotiating university and beyond
Chibambo	Lucy Thokozile	Rel, Phil and Classics	Doctor of Philosophy (Human Sciences)	Pastoral care for bereaved elderly women in the context of HIV and AIDS: A case study of Dzenza Congregation Women's Guild members of the Church of Central Africa Presbyterian (CCAP) Lilongwe – Malawi
Chikoko	Rita	Education	Doctor of Philosophy (Education)	Emerging professional teacher identity of Early Childhood Development/Foundation phase pre-service teachers: An interplay of dispositions
Chipila	Rajabu Adamu	Arts	Doctor of Philosophy (Human Sciences)	Tanzanian University Students' Motivation for Studying Kiswahili as an Academic Subject
Chirume	Clever	Applied Human Sc	Doctor of Philosophy (Human Sciences)	Spectrum Management in the Global Age: Negotiating Zimbabwe's Transition from Analogue to Digital Broadcasting
Chitsulo	Takuze Saul Gedeon	Rel, Phil and Classics	Doctor of Philosophy (Human Sciences)	Internal and external imperial dynamics in Habakkuk: A contextual study of the Book of Habakkuk from a Malawi socio-economic and political viewpoint
Cowden	Richard Gregory	Applied Human Sc	Doctor of Philosophy (Human Sciences)	Mental Toughness among Competitive South African Tennis Players: The Role of Resilience, Self-Awareness, and Stress
Dawood	Quraisha	Social Sciences	Doctor of Philosophy (Human Sciences)	An Emerging Profession: Investigating the Development of Mechatronics Engineers in South Africa
Dlamini	Phindile Dorothy	Arts	Doctor of Philosophy (Human Sciences)	Lost in translation? An exploration of conceptual integrity in the translation of graded readers from English into IsiZulu
Dlamini	Siphetfo Nicholas Bonginkosi	Social Sciences	Doctor of Philosophy (Human Sciences)	The theory and application of consociational democracy in South Africa: A case study of KwaZulu-Natal
Dube	Zanele Heavy-Girl Winnie	Education	Doctor of Philosophy (Education)	Curriculum decision-making in the selection of new subjects in schools: A qualitative study of the adoption of Tourism as an elective in selected KwaZulu-Natal High Schools

College of Humanities				
SURNAME	FIRST NAME	SCHOOL	QUALIFICATION	THESIS TITLE
Ezekiel	Lesmore Gibson	Rel, Phil and Classics	Doctor of Philosophy (Human Sciences)	A missiological critique of the World Council of Churches' notion of just peace: Its implication and contextual relevance for overcoming violence and peacebuilding in the multi-religious community of Jos, Nigeria
Fagbadebo	Omololu Michael	Social Sciences	Doctor of Philosophy (Human Sciences)	Exploring the Politics of Impeachment in Nigeria's Presidential System: Insights from Selected States in the Fourth Republic, 1999-2007
Goddard	Allen James	Rel, Phil and Classics	Doctor of Philosophy (Human Sciences)	Invitations to prophetic integrity in the Evangelical spirituality of the Students' Christian Association discipleship tradition: 1965-1979
Hadebe	Sakhile	Social Sciences	Doctor of Philosophy (Human Sciences)	South Africa's Post-Apartheid foreign policy towards Southern Africa, 1994-2014: Partner or hegemon?
Hamusokwe	Basil Nchimunya	Applied Human Sc	Doctor of Philosophy (Human Sciences)	The Sustainability of a Free Press in Zambia's Third Republic: A case of the <i>Zambia Daily Mail</i> and <i>The Post</i> Newspapers
Hangulu	Lydia	Applied Human Sc	Doctor of Philosophy (Human Sciences)	Policy and Practice of Health Care Waste Management in Home and Community-based Care in Durban Metropolis, South Africa
Haselau	Catherine Mary	Applied Human Sc	Doctor of Philosophy (Human Sciences)	Marriage in contemporary Zulu society: Implications for couple counselling
Hoosen	Fatema Ahmed	Rel, Phil & Classics	Doctor of Philosophy (Human Sciences)	The Practice of Female Circumcision in African and Muslim Societies in Africa
Husselmann	Karel Francois	Applied Human Sc	Doctor of Philosophy (Human Sciences)	Policy Knowledge and Bureaucratic Management Perceptions Towards Effective and Efficient Fuel Usage in the South African Police Services
Idoniboye-Obu	Sakiemi Abbey	Social Sciences	Doctor of Philosophy (Human Sciences)	Corruption in Higher Education in Nigeria: Prevalence, structures, and patterns among students of Higher Education Institutions in Nigeria
Isike	Efe Mary	Built Env and Dev Stud	Doctor of Philosophy (Human Sciences)	Ties that Bind: A Network Analysis of Relationships Between Nigerian Migrants and South Africans in Umhlathuze
Iwata	John Jackson	Social Sciences	Doctor of Philosophy (Human Sciences)	Management of indigenous human health knowledge in Tanzania
Jiboku	Peace Akudo	Social Sciences	Doctor of Philosophy (Human Sciences)	The quest for African economic integration: An assessment of NEPAD's African Peer Review Mechanism
Kanguha	Ephraim Mudave	Social Sciences	Doctor of Philosophy (Human Sciences)	Information literacy learning experiences of fourth-year Psychology students in Kenyan universities
Kasirye	Stella Nagitta	Rel, Phil and Classics	Doctor of Philosophy (Human Sciences)	Beyond compassion towards just engagement: Exploring the moral exclusion of people living with HIV in local church contexts in Chitipa District of Malawi
Kehdinga	George Fomunyam	Education	Doctor of Philosophy (Education)	Content and ideology in Literature modules taught in a Cameroonian University
Khuzwayo	Qaphelisani Obed	Education	Doctor of Philosophy (Education)	Exploring what sustainable school-community partnership entails: A case study of four rural primary schools in Ndwedwe
Kiarie	Geoge Kuria	Rel, Phil and Classics	Doctor of Philosophy (Human Sciences)	An inculturative critique of Holy Communion symbols within the Anglican Community of the Diocese of Thika Kenya
Kilemba	Lucas Matata	Social Sciences	Doctor of Philosophy (Human Sciences)	The role of academic libraries in supporting distance education in Kenya
Kolawole	Ibukun Olorunisola	Social Sciences	Doctor of Philosophy (Human Sciences)	Labour Reforms and their Impacts on Employment Security in Shell Petroleum Development Company in Nigeria
Kolawole	Priscilla Ayooluwa	Social Sciences	Doctor of Philosophy (Human Sciences)	Use of Web 2.0 technologies for teaching and learning in selected federal universities in Southwest Nigeria
Konkol	Brian Edward	Rel, Phil and Classics	Doctor of Philosophy (Human Sciences)	From anaesthetic to advocacy through mission as accompaniment: Towards a more effective response from the Evangelical Lutheran Church in America's Global Mission to mechanistic dehumanization
Krishnannair	Anilkumar	Education	Doctor of Philosophy (Education)	An Exploration of the Design and Development of a Semi-integrated Curriculum for a Mathematical Literacy Course offered in a B.Ed Programme at a South African University



College of Humanities				
SURNAME	FIRST NAME	SCHOOL	QUALIFICATION	THESIS TITLE
Lentoor	Antonio	Applied Human Sc	Doctor of Philosophy (Human Sciences)	The Relationship Between Psychosocial Factors and Poor Neurocognitive and Socio-Emotional Development in Children Perinatally Infected with HIV in South Africa
Lesia	Lelokoana Eric	Social Sciences	Doctor of Philosophy (Human Sciences)	Policy Formulation in the Ministry of Development Planning in the Government of Lesotho
Mabuluki	Kangwa	Rel, Phil & Classics	Doctor of Philosophy (Human Sciences)	The role of the churches in educating people for the development of democracy: The case of the United Church of Zambia
Madukasi	Francis Chuks	Rel, Phil and Classics	Doctor of Philosophy (Human Sciences)	An Igbo idiophone of indigenous religious sacred sound among the Aguleri people of Anambra State, Nigeria
Magidimisha	Hangwelani Hope	Built Env & Dev Stud	Doctor of Philosophy (Human Sciences)	Spatial Inequalities and Service Delivery: The Case of Vhembe District Municipality in Limpopo Province in South Africa
Maimane	Ketlalemang Clement	Arts	Doctor of Philosophy (Human Sciences)	Confluences of Lithoko, Religious and Traditional Beliefs and Western Poetry in Modern Sesotho Poetry (MSP); An Intertextual Perspective
Makhathini	Bheka Adolphus	Education	Doctor of Philosophy (Education)	Trampoline trajectories: A dialectical analysis of the correlation between the teaching of reading and the learner-academic performance in a South African rural primary school
Makoe	Sebueng Aloysia	Arts	Doctor of Philosophy (Human Sciences)	Textual Analysis and Interpretation of the Metaphorical Expressions of the Sesotho Catholic Church Hymnbook, Lifela TSA Bakriste
Manyatsi	David Mkhumbuzi	Education	Doctor of Philosophy (Education)	The teaching of sustainable development in geography in an environment of curriculum responsiveness: The case of the Lubombo region of Swaziland
Manyerere	Juliana James	Social Sciences	Doctor of Philosophy (Human Sciences)	Information behaviour of rural women involved in Small and Medium Enterprise (SMEs) in Chamwino and Manyoni District of Central Tanzania
Martin	Melanie Yvette	Education	Doctor of Philosophy (Education)	Performing social justice in South African education: How teachers negotiate the complexity of teaching in an unequal world
Masebo	Wilfred Gilbert Burton	Built Env and Dev Stud	Doctor of Philosophy (Human Sciences)	Circular labour migration networks and HIV and AIDS in Malawi
Mbokazi	Sandile Sam	Education	Doctor of Philosophy (Education)	The Role of Traditional Leaders in School Governance: Learning from two communities in KwaZulu-Natal
McArthur	Brian Walter	Education	Doctor of Philosophy (Education)	Information Systems Research Methodology Curricula
Mchunu	Bongani Sibusiso	Education	Doctor of Philosophy (Education)	Examining the use of Systems Thinking Approach to School Development: A case study of Five Schools in the Umgungundlovu District
McNamee	Lakshini Sandhya	Education	Doctor of Philosophy (Education)	Learning processes and identity construction of newly qualified doctors: a narrative study
Mkhabela	Nokuphiwa Delisile	Education	Doctor of Philosophy (Education)	Exploring foundation phase teachers' use of instructional strategies to teach data handling
Mkhize	Sazelo Michael	Applied Human Sc	Doctor of Philosophy (Human Sciences)	A cross-sectional study of traditional police culture themes amongst experienced SAPS officials
Mkhize	Zamambo Valentine	Social Sciences	Doctor of Philosophy (Human Sciences)	Polygyny and Gender: The Gendered Narratives of Adults who were Raised in Polygenous Families
Mkhize	Msizi Vitalis	Education	Doctor of Philosophy (Education)	The influence of attitudes towards mathematics on learning accounting amongst pre-service accounting teachers
Moodley	Subeshini	Arts	Doctor of Philosophy (Human Sciences)	Narrative possibilities in a postcolonial context: Exploring self-reflexive film as a critical articulation of the stories of South African Hindu women
Mosala-Bryant	Nthabiseng Nteboheng	Social Sciences	Doctor of Philosophy (Human Sciences)	Knowledge sharing in public service: A case study of the KwaZulu-Natal Provincial Human Resource Development Forum
Moshood	Abdul-Wasi Babatunde	Social Sciences	Doctor of Philosophy (Human Sciences)	Amnesty as a mechanism for conflict resolution: A study of the Niger Delta conflict in Nigeria

College of Humanities				
SURNAME	FIRST NAME	SCHOOL	QUALIFICATION	THESIS TITLE
Motshetshane	Albert Stephen	Rel, Phil and Classics	Doctor of Philosophy (Human Sciences)	Culture and conflict in Pentecostalism: From Nicholas Bhengu and Edgar Pettenger, to the International Assemblies of God (1917-1964)
Moyo	Lois Rudo	Rel, Phil and Classics	Doctor of Philosophy (Human Sciences)	Faith and resilience in child or youth-headed households in KwaZulu-Natal, South Africa
Mpofu	Buhle	Rel, Phil and Classics	Doctor of Philosophy (Human Sciences)	When the people move, the Church moves: A critical exploration of the interface between migration and theology through a Missiological study of selected congregations within the Uniting Presbyterian Church of Southern Africa in Johannesburg
Muchaonyerwa	Ndakasharwa	Social Sciences	Doctor of Philosophy (Human Sciences)	Knowledge sharing strategies in university libraries in KwaZulu-Natal Province of South Africa
Muhammed	Sanni Morufu	Social Sciences	Doctor of Philosophy (Human Sciences)	Policy Pathways for Eco-innovation in the Manufacturing Sector of Nigeria
Muna	Wilson Kamau	Social Sciences	Doctor of Philosophy (Human Sciences)	Fiscal decentralisation in Kenya: An analysis of the implementation of the Constituency Development Fund in the Naivasha and Gatanga constituencies
Muribwathoho	Henry Nkhanedzeni	Education	Doctor of Philosophy (Education)	The state of psychological services in secondary schools: Experiences of principals, school counsellors, educators and learners
Murray	Amy Jo	Applied Human Sc	Doctor of Philosophy (Human Sciences)	Maintaining inequality through 'being silent about': A dyadic daily diary study establishing the presence of absence in domestic labour relationships
Mutsiwa	Andrew	Applied Human Sc	Doctor of Philosophy (Human Sciences)	Precedent, Policy and Possibility: A Victimological Orientation Towards the Protection of Traditional Knowledge in Africa
Naguran	Lerisa Ansuya	Arts	Doctor of Philosophy (Human Sciences)	Theatre for Social Capital: A case study of Mangaliso' Child and Youth Care Centre, Durban KwaZulu-Natal
Naidoo	Paulette Tasnim Denise	Applied Human Sc	Doctor of Philosophy (Human Sciences)	The Psychologist as 'Student Counsellor': An Interpretative Phenomenological Analysis of professional identity in the South African student counselling context
Narain	Anil Pravesh	Education	Doctor of Philosophy (Education)	The role of management and leadership in addressing learner discipline: A case of three secondary schools in the Pinetown Education District
Ndlazi	Nokwethemba Jubilee	Education	Doctor of Philosophy (Education)	First-Year Engineering students' concept development of integral calculus at a South African University of Technology
Ndumbaro	Faraja	Social Sciences	Doctor of Philosophy (Human Sciences)	Collaborative Information Behaviour (CIB) of undergraduates in selected universities in Tanzania
Ngcobo	Nokukhanya Yvonne	Education	Doctor of Philosophy (Education)	Adolescent readers? Response to gender representation in isiZulu texts dealing with HIV and AIDS: A case study in a secondary school in KwaZulu-Natal Province
Ngcobo	Sikhulekile General	Education	Doctor of Philosophy (Education)	Exploring the role of principal-cum teachers in a multi-grade school context: Evidence from five principals in one district of KwaZulu-Natal
Ngonyama	Thulile Lillian	Applied Human Sc	Doctor of Philosophy (Human Sciences)	Skills and challenges and employment of foreign nationals in KwaZulu-Natal Higher Education institutions
Ngqila	Kholekile Hazel	Social Sciences	Doctor of Philosophy (Human Sciences)	An Investigation of Methods used by the Southern Nguni in Healing Ukuhanjwa Illness
Ngubane	Mlungisi	Social Sciences	Doctor of Philosophy (Human Sciences)	A Comparative Analysis: Contestation of Two Systems of Political Representation: Isiphakanyiswa and Ngcolosi Traditional Communities
Nyarko	Jacob	Applied Human Sc	Doctor of Philosophy (Human Sciences)	Media Independence in Ghana: The Case of the Fourth Republic
Okem	Andrew Emmanuel	Social Sciences	Doctor of Philosophy (Human Sciences)	The implementation of Cooperative Policy: Perceptions from cooperatives in the uMgungundlovu District Municipality (KwaZulu-Natal, South Africa)



College of Humanities				
SURNAME	FIRST NAME	SCHOOL	QUALIFICATION	THESIS TITLE
Omopupa	Kamal Tunde	Social Sciences	Doctor of Philosophy (Human Sciences)	Information behaviour of medical faculty in the tertiary health institutions in Kwara State Nigeria
Onen	Margaret Aber	Social Sciences	Doctor of Philosophy (Human Sciences)	Information literacy integration strategies into the curriculum of senior secondary schools in Botswana
Onor	Kester Chukwuma	Social Sciences	Doctor of Philosophy (Human Sciences)	United States Africa Command and human security in Africa
Palm	Selina Hazel	Rel, Phil & Classics	Doctor of Philosophy (Human Sciences)	Reimagining the human? The role of the churches in building a liberatory human rights culture in South Africa today
Penning	Susan Louise	Applied Human Sc	Doctor of Philosophy (Human Sciences)	Traumatic re-enactment of childhood and adolescent trauma: A complex development trauma perspective in a non-clinical sample of South African school-going adolescents
Pillay	Devika	Education	Doctor of Philosophy (Education)	In search of a sustainability marketing curriculum: A critical exploration.
Pillay	Sivanandani	Education	Doctor of Philosophy (Education)	Leading successfully against the odds in highly functional disadvantaged schools
Pitcher	Sandra Jane	Arts	Doctor of Philosophy (Human Sciences)	Deviant doodling: Contextualising the discourses of Zapiro in a socially responsible press
Pitikoe	Selloane Florence	Education	Doctor of Philosophy (Education)	Male herders in Lesotho: Life history, identities and educational ambitions
Pokol	Benjamin Junnang	Rel, Phil and Classics	Doctor of Philosophy (Human Sciences)	Peace-building in Nigeria: A missio-political critique of the Church of Christ in Nations (COCIN)'s relationship with the Plateau State within the context of violent conflicts in Jos, Nigeria (2001-2010)
Preethlall	Prithum	Education	Doctor of Philosophy (Education)	The relationship between Life Sciences Teachers' knowledge and beliefs about Science Education and the Teaching and Learning of investigative practical work
Ramdan	Shamitha	Education	Doctor of Philosophy (Education)	Exploring literacy practices: A case study of a Peri-Urban Primary School in the Pinetown District; KwaZulu-Natal
Rees	Athanasia	Applied Human Sc	Doctor of Philosophy (Human Sciences)	Eat your Heart Out: A narrative approach to understanding anorexia nervosa
Robinson	Carin	Rel, Phil and Classics	Doctor of Philosophy (Human Sciences)	Against a Priori Knowledge of Non-Trivial Truths
Scholtz	Roger John	Rel, Phil and Classics	Doctor of Philosophy (Human Sciences)	"Now my eyes have seen you": Re-visioning Job's wife in the Book of Job
Sevnarayan	Kershnee	Education	Doctor of Philosophy (Education)	Pedagogic practices and discourse communities: A case study of English Literary Studies and English Education at the University of the Witwatersrand
Sewchurran	Anusharani	Arts	Doctor of Philosophy (Human Sciences)	Dissonant discourses: an exploration of the political economy of mobile telephony in South Africa
Singh	Vanessa	Education	Doctor of Philosophy (Education)	Pedagogical practices of lecturers in Pharmacy Education
Svosve	Evangelista	Education	Doctor of Philosophy (Education)	Examining the remote rural Early Childhood Development schools' responses to the challenges of resource demand in Zimbabwe: A multiple site case study
Thabane	Botsoa Sophia	Applied Human Sc	Doctor of Philosophy (Human Sciences)	Psychosocial, Religious and Traditional Framework for Intervention in Addressing Challenges Faced by Adoptive Families in Developing Countries: The Case of Lesotho
Weihs	Martin Erich	Applied Human Sc	Doctor of Philosophy (Human Sciences)	The Influence of the Lottery Incentives on WorkPlace HIV Testing in the Automotive Industry in the Nelson Mandela Bay Municipality
Winters	Yvonne Elizabeth	Arts	Doctor of Philosophy (Human Sciences)	A social and cultural theoretical appraisal and contextualisation of the visual and symbolic language of beadwork and dress from southern KwaZulu-Natal

College of Law and Management Studies				
SURNAME	FIRST NAME	SCHOOL	QUALIFICATION	THESIS TITLE
Abdulla	Mohamed Irshad	Man, Info Tech and Gov	Doctor of Philosophy (Management Studies)	Challenges of Government-to-Government e-Government: A Case Study of KwaZulu-Natal Department of Transport
Abe	Ethel Ndidiamaka	Man, Info Tech and Gov	Doctor of Philosophy (Management Studies)	The connection between work-life balance (WLB) and a sense of coherence (SOC) at a municipality in the South African Public Sector
Abe	Isaac Idowu	Grad School of Bus and Leadership	Doctor of Philosophy (Management Studies)	The linkage between individual interpersonal relationships and work performance in the South African retail sector
Akbar	Khalida	Man, Info Tech and Gov	Doctor of Philosophy (Management Studies)	A Phenomenological study of the employment experiences of persons affected by Acquired Brain Injuries (ABI's) in South Africa
Amolo	John	Grad School of Bus and Leadership	Doctor of Philosophy (Management Studies)	Institutional and learning impact on student entrepreneurial inclination at University of KwaZulu-Natal
Brannan	Craig Alexander	Grad School of Bus and Leadership	Doctor of Philosophy (Management Studies)	Shame within the Family of origin as a dominant scheme to developing effective therapeutic thinkers as servant leadership in the workplace
Chivasa	Norman	Acc, Economics and Fin	Doctor of Philosophy (Management Studies)	Peacebuilding among Shona communities in transition in Zimbabwe: A Participatory Action Research
Derera	Evelyn	Man, Info Tech and Gov	Doctor of Philosophy (Management Studies)	Women's Economic Empowerment and Entrepreneurship in Agriculture: A Case of Mashonaland West Province in Zimbabwe
Dzuke	Abel	Man, Info Tech and Gov	Doctor of Philosophy (Management Studies)	Public Procurement: Panacea or Fallacy – A Case of Public Service Delivery in Zimbabwe
Farisani	Dorothy Mmakgwale	Law	Doctor of Philosophy (Law)	A Comparative Study of Corporate Criminal Liability – Advancing an argument for the Reform of Corporate Criminal Liability in South Africa by introducing a new offence of corporate homicide
Hlongwane	Nkululeko Terrence	Grad School of Bus and Leadership	Doctor of Business Administration	Municipal Distress: Towards a Municipal infrastructure and Finance Model
Jere	Ntabeni	Man, Info Tech and Gov	Doctor of Philosophy (Management Studies)	The Role of Information and Communications Technology in Improving Food Security in KwaZulu-Natal
Majola	Brian Kwazi	Man, Info Tech and Gov	Doctor of Philosophy (Management Studies)	Women's Representation and Participation in the Era of Decentralisation
Makasi	Africa	Man, Info Tech and Gov	Doctor of Philosophy (Management Studies)	Globalisation and Marketing Strategy Implications: A Case Study of Zimbabwe's Clothing and Textile Sector
Martins	Busiwana Winnie	Man, Info Tech and Gov	Doctor of Administration	Access to Justice: The Role of Community-Based Paralegals in Community Restorative Justice in Rural KwaZulu-Natal
Masuku	Trust	Man, Info Tech and Gov	Doctor of Philosophy (Management Studies)	Toilet-Care Product Brand Switching Behaviour: A Case Study of Consumers of Cosmo City, Gauteng Province, South Africa
Mnculwane	Vikinduku Victor	Man, Info Tech and Gov	Doctor of Administration	A Phenomenological Investigation into the Use of Incentives to Solicit Community Participation in Heritage Policy Implementation in Post 1994 South Africa
Moodley	Kenneth	Grad School of Bus and Leadership	Doctor of Business Administration	A system dynamics model to explore the impact of S&OP process within an FMCG organisation
Moshikaro	Asaph Mongwegela	Man, Info Tech and Gov	Doctor of Administration	The Association of Political Will with Performance of Selected Municipalities in South Africa
Mouton	Johleen	Man, Info Tech and Gov	Doctor of Administration	Learner Support in Open Distance Learning at UNISA, KwaZulu-Natal: A Developmental State Perspective
Mpungose	Bongumenzi Emmanuel	Man, Info Tech and Gov	Doctor of Public Administration	Exploring Public Policy implementation in a decentralised state: The case of the Language Policy implementation in KwaZulu-Natal
Mubango	Phineas	Man, Info Tech and Gov	Doctor of Philosophy (Management Studies)	Business to Business Dimensions of Relationship Marketing in the South African Cement Manufacturing Industry
Mudzana	Taurayi	Man, Info Tech and Gov	Doctor of Philosophy (Management Studies)	Business Intelligence Information Systems Success: A South African Study
Mukonoweshuro	Jeskinus Ziwenge	Grad School of Bus and Leadership	Doctor of Business Administration	Exploring the role of an Integrated Servant leadership and Emotional Intelligence Skills Programme in enhancing Leadership Performance in Zimbabwe's Commercial Banking Sector



College of Law and Management Studies				
SURNAME	FIRST NAME	SCHOOL	QUALIFICATION	THESIS TITLE
Mushi	Restituta Thadeus	Man, Info Tech and Gov	Doctor of Philosophy (Management Studies)	The Role of Information and Communication Technologies (ICTs) in Achieving the Millennium Development Goals (MDGs) in Tanzania from the Perspective of the Education and Health Ministries
Musyoka	Jason Muthama	Grad School of Bus and Leadership	Doctor of Philosophy (Management Studies)	Perspectives on emerging wealth distribution in South Africa's Previously Disadvantaged Households: A systems Thinking Approach
Ngqele	Sandile Wiseman	Man, Info Tech and Gov	Doctor of Administration	Integrated Development Planning as means to facilitate public participation in George Municipality
Ntuli	Mbuyiseni Goodlife	Grad School of Bus and Leadership	Doctor of Business Administration	An analysis of systemic thinking in decision-making processes in the Municipalities within the Province of KwaZulu-Natal
Nyide	Celani John	Grad School of Bus and Leadership	Doctor of Business Administration	A critical evaluation of the environmental management accounting (EMA) tools used by the 3-5 star hotels in KwaZulu-Natal
Omar	Fayzel Errol	Grad School of Bus and Leadership	Doctor of Business Administration	Maximising retail bank branch profitability through world-class customer service: a comparative study (Nedbank retail case study)
Oodith	Pravina Devpersadh	Man, Info Tech and Gov	Doctor of Philosophy (Management Studies)	Bottom of the Pyramid: Opportunity and Feasibility Analysis and Strategy Formulation
Parbanath	Steven	Man, Info Tech and Gov	Doctor of Philosophy (Management Studies)	Computer-based Productivity Estimation of Academic staff using the Fuzzy Analytic Hierarchy Process and Fuzzy TOPSIS method
Patrick	Harold	Man, Info Tech and Gov	Doctor of Philosophy (Management Studies)	Security Information flow in the Public Sector: KZN Health and Education
Peté	Stephen Allister	Law	Doctor of Philosophy (Law)	Penal Discourse and Imprisonment in South Africa: An Examination of the Evolving Discourse Surrounding Imprisonment in South Africa, from the Colonial Period to the Post-Apartheid Era, and its effects on the Human Rights of Prisoners
Rampersad	Dhanesh	Grad School of Bus and Leadership	Doctor of Business Administration	Analysis of Global Competitiveness in the light motor vehicle component industry of South Africa
Singh	Nikita	Grad School of Bus and Leadership	Doctor of Philosophy (Management Studies)	A Systems Dynamics Perspective of the Non-Profit Organization's Quest for Sustainability: A Case Study
Singh	Annette	Law	Doctor of Philosophy (Law)	The impact of the Constitution on Transforming the Process of Statutory Interpretation and the Law in South Africa
Sivnarain	Ranesh	Man, Info Tech and Gov	Doctor of Philosophy (Management Studies)	Employee Fraud and Prevention Strategies at Universities in KwaZulu-Natal
Soni	Sanjay Shantilal	Man, Info Tech and Gov	Doctor of Philosophy (Management Studies)	Service Quality, Student Satisfaction and Brand Equity: A Case Study of Select South African Universities
Sugudhav-Sewpersadh	Prenisha	Law	Doctor of Philosophy (Law)	Corruption and the Law: An Evaluation of the Legislative Framework for Combating Public Procurement Corruption in South Africa
Van Der Westhuizen	Thea	Grad School of Bus and Leadership	Doctor of Philosophy (Management Studies)	Developing individual entrepreneurial orientation: A systemic approach through the lens of Theory U
Veerasamy	Dayaneethie	Man, Info Tech and Gov	Doctor of Philosophy (Management Studies)	The Influence of e-Communications on Relationship Marketing: A Case of the Mobile Telecommunications Industry in KwaZulu-Natal
Zondi	Sakhile Isaac	Man, Info Tech and Gov	Doctor of Administration	Public Participation and Service Delivery with Particular Reference to ILembe District Municipality

# University of KwaZulu-Natal Library

**W**hile many people are overloaded with a barrage of information on a daily basis in our technology-driven world, a key foundation of a successful university is 24/7 access to information that builds real knowledge.

As the Library Director at the University of KwaZulu-Natal (UKZN) Ms Joyce Myeza so aptly puts it: "A library is at the heart of any academic institution. The main purpose of our library is to serve its community of students and academics while keeping abreast of national and international innovation."

And with the increase in the variety of online services at the library, 41 000 students used the facility in 2016 which is a dramatic increase over previous years, according to Myeza.

"In 2016 we had 235 426 Libguides standard viewers – in other words those who viewed Libguides from their laptops, iPads and personal computers. More than 23 000 accessed Libguides from their mobile devices giving us a total of almost 300 000 viewers for the year."

There was also an increase in the use of the institutional repository, known as Research Space, which is the online home to theses and dissertations with more than two million searches of which 82 000 were from the various library databases.

Myeza said the increased use of online access was a clear indication of the success of research support at UKZN.

Myeza, who was a Fulbright Scholar at Simmons College in the United States, said her position as Director of the Library was not only her dream job, it gave her great opportunities to build relationships with people who were in positions to help with innovation and creative ideas. "My number one priority is to improve the services offered by the library for students and academics at UKZN."

Her aim is to be known as a 'servant leader' who leads by example – clearly

a value in line with the essence of any library as it is there to serve those working hard to better themselves and their careers through education.

As such, the innovative reconfiguration of the library is well underway with the aim being to repurpose the space to accommodate new ways in which today's students prefer to work. "Nowadays students opt for social seating and being able to work in space that promotes collaboration, such as discussion. We are also creating quiet spaces and larger research commons for postgraduate students, either by extending the existing facilities or relocating them to other areas of our libraries," she said.

Further adaptations to the UKZN Library to keep it relevant and up-to-date with the modern-day students include improving signage and the branding of the library; updating and upgrading the technology in the libraries by installing more power points; points to charge cell phones and laptops, and more computers and interactive technology.

"We are also in the process of relocating and moving the print collection off campus to remote storage areas to free up space for social and collaborative study. We want to assess the print collections as well and then only keep those collections that are regularly used in line with our e-strategy on site," Myeza said.

The 32 subject librarians, including the principal librarians at each of the four Colleges at the University, are an indication of the valuable research support provided which include creating researcher profiles to assist researchers track their work progress regarding the number of citations, while also raising the international profile of UKZN researchers through the use of the Scopus database.

Trials which involved having librarians specialising in specific disciplines have proved hugely successful and there are plans to introduce such specialists from next year. The trials were carried out at the School of Engineering, the Graduate School of Business and Leadership, and the School of Medicine.

"The feedback we have received has been really positive," said Myeza.

Another new feature trialled in 2016 and ready for rollout in 2018 is librarians becoming well versed in the masters programme with the idea being to provide them with in-depth training on library databases, bibliographic tools and the library iCatalogue.

Myeza is particularly proud of the Indigenous Knowledge Systems database which she says is unique to UKZN. "There has always been a challenge getting material on Indigenous Knowledge Systems. It is a fairly new area in the University which we are very happy with."







# InQubate

**U**KZN InQubate is a bit like a mother hen which sits patiently on her clutch of eggs to keep them warm and bring them to a successful hatching. However, with InQubate, the 'eggs' are innovative ideas which it nurtures, develops and helps protect, said the unit's Director, Ms Suvina Singh.

InQubate is attached to the UKZN Research Office and is responsible for four strategic areas of operation: intellectual property management; commercialising intellectual property arising from the University's research; consultancy and student entrepreneurship.

"This year, InQubate continued its efforts to protect intellectual property stemming from academic research, resulting in it assessing nine new invention disclosures, out of which four provisional patent applications were filed," said Singh.

In 2016, the unit was also awarded four patents and one registered functional design. These were:

- ▶ A Chinese patent for the 'Insulin Patch'
- ▶ Two United States patents: one for "Gold Complexes" for cancer treatment, and the other for a 'Real-time Evaporation Station'
- ▶ A European Patent for 'The Production of Hexafluoropropylene Oxide'
- ▶ A functional design for 'A device for estimating the in vitro digestibility of animal feeds'

"UKZN InQubate also sourced more than R2.2 million for the advancement of its commercialisation efforts by nurturing strong relationships with the Technology Innovation Agency (TIA) and the KwaZulu-Natal Department of Economic Development, Tourism, and Environmental Affairs (EDTEA).

TIA awarded UKZN InQubate funding of R995 000 for two projects," said Singh.

The first project, the Africhino Quasi-Computer, seeks to develop an open-source, cost-effective and tailor-made computing solution. Singh said this portable system, which will be able to perform several physics experiments simultaneously, would serve as an excellent teaching tool for IT science. It would also be applicable to the electronics industry, military, and government.

The second project, an Aquaculture Feed Enhancement development, aims to create feed to enhance abalone and fish growth size using high-throughput biochemistry and metabolomics.

EDTEA's Technology Transfer Fund awarded UKZN's prized Cable Line Inspection Robot project R897 000 to test the robot's capabilities on live lines, and R350 000 for a new project involving the design and development of high efficiency copper cage induction motors for automotive drives.

"InQubate also continued to search for opportunities to allow UKZN academics and staff to leverage their expertise by consulting to industry and government," said Singh. "This gives staff the opportunity to enhance their academic knowledge, develop their research profile and provide real-world solutions for commercial and societal benefit. Through its consultancy portfolio, InQubate seeks to contribute to building the University's third income stream for the benefit of the broader university community."

InQubate also submitted a proposal to EDTEA for UKZN to create a training institute – the first of its kind in Africa – to assist in the development of an Aerotropolis close to Durban's King Shaka International Airport.

"EDTEA awarded UKZN this key and strategic contract worth just over R9.8 million, taking the University one step closer to realising this vision and putting Africa on the map," she said. "The year also saw InQubate start its work on student entrepreneurship, responding to a rapidly growing need from the UKZN student body to equip them with skills to enter the 'real world', help boost the country's economy and curb unemployment rates."

Singh said InQubate had drafted a framework student entrepreneurship policy to guide the University and students in endeavours to form student start-ups, provide mentorship and coaching, and basic entrepreneurial skills.



# UKZN Press



UKZN Press turned its sights on something new in 2016 – the commissioning of student textbooks – with *Asifunde isiZulu* being published early in 2017.

Written by isiZulu lecturers Mrs Anne Shimwell, Ms Gugulethu Mkhize, Mrs Mary Hammond-Gordon, Mrs Roshnie Gokool and Mrs Tholakele Ngcobo, it is a basic grammar book

which UKZN Press Director Ms Debra Primo says is aimed at both University staff and students who are required to take a basic course in isiZulu.

The usual focus of the UKZN Press – a team of six who do commissioning and editorial work, typesetting and design, marketing, and stock management – is to publish scholarly and academic works, mainly in the humanities and social sciences fields.

“Texts are selected on the basis of their contributions to ongoing scholarship and the advancement of knowledge, and in particular African scholarship,” said Primo.

“UKZN Press prides itself in its excellent standard of editing, production and general care in preparing its manuscripts for publication, in support of and in service to its authors.”

Primo says while the books are high-level scholarly works, they have broad relevance because they examine and tell the stories, challenges and triumphs of all South Africans. Ethnographies and social histories are particularly important.

“In 2016 UKZN Press, under a Memorandum of Understanding between the University and the Mazisi Kunene Foundation, undertook the republication of the late South African Poet’s Emperor Shaka the Great and the first-ever publication of its original isiZulu version, *Unodumehlezi Kamenzi*. Both titles appeared early in 2017,” she said.

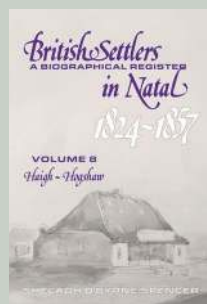
In total 17 titles were published during the year. They are:

- ▶ *Breathing Spaces: Environmental Portraits of Durban's Industrial South* by Marijke du Toit and Jenny Gordon
- ▶ *British Settlers in Natal. V8 (1824-1857): A Biographical Register Volume 8* Haigh–Hogshaw by Shelagh Spencer
- ▶ *Consumption, Media and the Global South: Aspiration Contested* by Mehita Iqani (Co-published with Springer)
- ▶ *Diaspora and Identity in South African Fiction* by J U Jacobs
- ▶ *Gender and Multiculturalism: North South Perspectives* by Amanda Gouws and Daiva Stasiulis (editors) (Co-published with Taylor & Francis)
- ▶ *Green in Black-and-White Times: Conversations with Douglas Livingstone* by Michael Chapman
- ▶ *Glossary of Architectural Terms of Southern Africa* by Franco Frescura and Joyce Myeza
- ▶ *Umoya Wembongi: Collected Poems (1922–1935)* by John Solilo: (edited and translated by John Opland and Peter Mtuze)
- ▶ *Iimbali Zamanyange: Historical Poems* by DLP Yali-Manisi (edited and translated by John Opland and Pamela Maseko)
- ▶ *Ordered Estates: Welfare, Power and Maternalism on Zimbabwe's (Once White) Highveld* by Andrew Hartnack (Co-published with African Books Collective, Zimbabwe)
- ▶ *Peace Agreements and Durable Peace in Africa* by Grace Maina and Erik Melander (editors)
- ▶ *Power Politics in Zimbabwe* by Michael Bratton (Co-published with Lynne Rienner Publishers)
- ▶ *Protest Nation: The Right to Protest in South Africa* by Jane Duncan
- ▶ *Writing Home: Lewis Nkosi on South African Writing* by Michael Chapman and Lindy Stiebel (editors)
- ▶ *Inhlamvu Yelanga* by Mandla Maphumulo (editor)
- ▶ *Tribing and Untribing the Archive Volume 1* by Nessa Leibhammer and Carolyn Hamilton
- ▶ *Tribing and Untribing the Archive Volume 2* by Nessa Leibhammer and Carolyn Hamilton

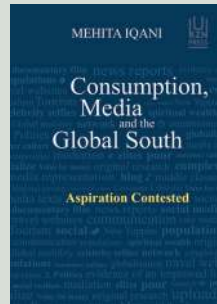




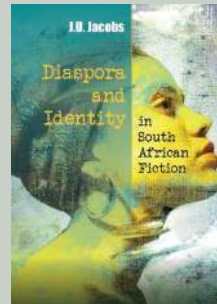
978 1 86914 279 7  
**Breathing Spaces: Environmental Portraits of South Durban**  
 Du Toit, Marijke and Gordon, Jenny



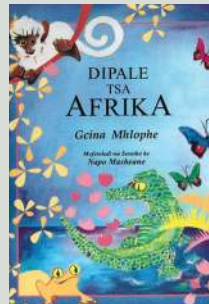
978 1 86914 307 7  
**British Settlers in Natal 1824-1857: A Biographical Register Volume 8**  
 Haigh-Hogshaw Spencer, Shelagh O'Byrne



978 1 86914 326 8  
**Consumption, Media and the Global South: Aspiration Contested**  
 Iqani, Mehita



978 1 86914 301 5  
**Diaspora and Identity in South African Fiction**  
 Jacobs, J. U.



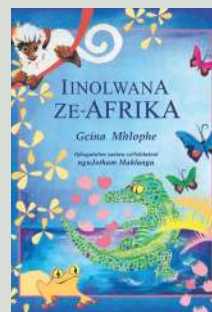
978 1 86914 297 1  
**Dipale Tsa Afrika: Sesotho edition of Stories of Africa**  
 Mhlophe, Gcina and translated by Masheane, Napo



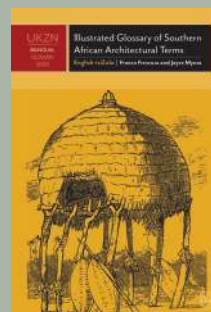
978 1 86914 330 5  
**Gender and Multiculturalism: North-South Perspectives**  
 Gouws, Amanda and Stasiulis, Daiva (eds.)



978 1 86914 319 0  
**Green in Black and White Times: Conversations with Douglas Livingstone**  
 Chapman, Michael



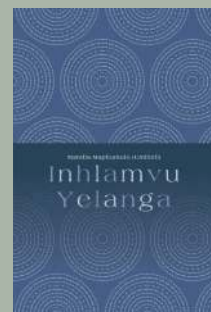
978 1 86914 296 4  
**Iinolwana ze-Afrika: isiNdebele edition of Stories of Africa**  
 Mhlophe, Gcina and translated by Mahlangu, Jotham



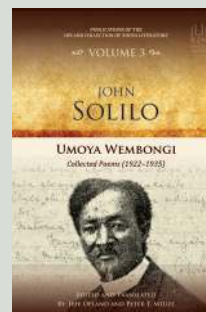
978 1 86914 349 7  
**Illustrated Glossary of Southern African Architectural Terms**  
 Frescura, Franco and Myeza, Joyce



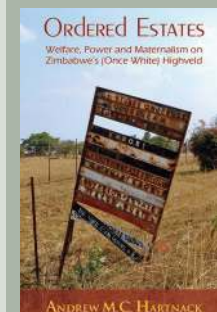
978 1 86914 299 5  
**Imilingo Yeenolwana Zethu: isiNdebele edition of Our Story Magic**  
 Mhlophe, Gcina and translated by Mahlangu, Jotham



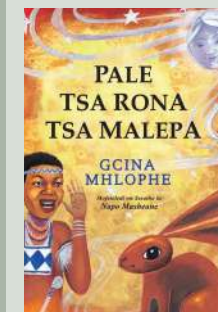
978 1 86914 327 5  
**Inhlamvu Yelanga**  
 Maphumulo, Mandla (ed.)



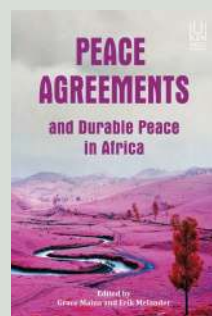
978 1 86914 312 1  
**John Solilo, Umoya wembongi: Collected poems (1922-1935)**  
 Solilo, John (Opland, Jeff & Mtuze, Peter T. eds & tr.)



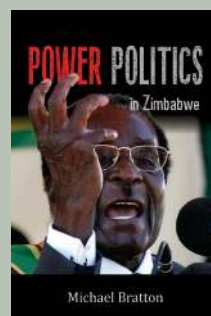
978 1 86914 325 1  
**Ordered Estates: Welfare, Power and Maternalism on Zimbabwe's (Once White) Highveld**  
 Hartnack, Andrew M.C.



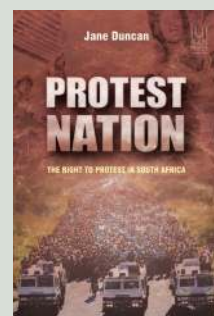
978 1 86914 300 8  
**Pale Tsa Rona Tsa Malepa: Sesotho edition of Our Story Magic**  
 Mhlophe, Gcina and translated by Masheane, Napo



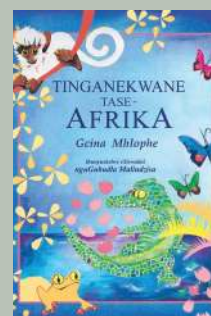
978 1 86914 306 0  
**Peace Agreements and Durable Peace in Africa**  
 Melander, Erik and Maina, Grace (eds.)



978 1 86914 311 4  
**Power Politics in Zimbabwe**  
 Bratton, Michael



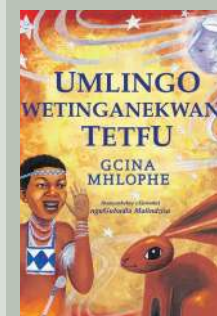
978 1 86914 323 7  
**Protest Nation: The Right to Protest in South Africa**  
 Duncan, Jane



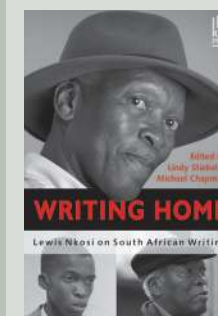
978 1 86914 295 7  
**TinganeKwane tase-Afrika: Siswati edition of Stories of Africa**  
 Mhlophe, Gcina and translated by Gubudla, Malindzisa



978 1 86914 339 8  
**Tribing and Untribing the Archive: Set (Volumes 1 and 2)**  
 Hamilton, Carolyn and Leibhammer, Nessa (eds.)



978 1 86914 298 8  
**Umlingo WetinganeKwane TETFU: Siswati edition of Our Story Magic**  
 Mhlophe, Gcina and translated by Gubudla, Malindzisa



978 1 86914 309 1  
**Writing Home: Lewis Nkosi on South African Writing**  
 Stiebel, Lindy and Chapman, Michael (eds)

# Focus on Grantmanship

## Professor David Dorrell



**P**rofessor of Electrical Machines and HVDC David Dorrell urges his fellow researchers to “step out their comfort zones”.

Also Director of the Eskom Centre of Excellence on HVDC and FACTS as well as a top UKZN Grant Holder for 2016, Dorrell says researchers need to find time to write proposals and carry them forward.

“Collaborations need to be found for much of this work. After moving from Australia in 2015, I have actually found it

easier to find research funding here – it is available and people need to apply,” he said.

One of his grants, the Eskom EPPEI 2 grant, is for the running of the Eskom Specialisation Centre on UKZN’s Westville campus.

“I am director of the Centre and we are engaged in doing research and training in electrical power engineering. We have several laboratories: a high

voltage laboratory, an overhead line vibration centre, a smart grids training laboratory and others. The grant is worth about R20 million over five years.”

He also secured funding of R350 000 from the KwaZulu-Natal Department of Economic Development, Tourism and Environmental Affairs to investigate an axial flux induction motor for application in electric and hybrid cars.

Meanwhile, a grant of R650 000 from the National Research Foundation is for a project probing brushless, doubly-fed reluctance machines for electric vehicle applications.

“This is a follow on from a project I had in Australia and involves collaboration with Professor Bob Betz of the University of Newcastle in New South Wales in Australia, and Professor Andy Knight of the University of Calgary in Canada,” said Dorrell.

A further grant of R350 000 is from the Newton Fund, via the Royal Academy of Engineering in the United Kingdom, for developing new courses on power electronics.

“I am the lead on that project. It is with the University of Bristol and the Durban University of Technology (DUT) and involves about R750 000,” he added.

## Dr Gavin George

College of Law and Management Studies



**D**r Gavin George, a senior researcher at UKZN’s Health Economics and HIV and AIDS Research Division (HEARD), secured a grant of over R3 million from the International Organisation for Migration (IOM) to fund research related to curbing the prevalence and incidence of tuberculosis (TB).

The HIV and TB integrated biological behavioural study for migrant mine workers project forms part of an IOM programme which seeks to improve the

standards of the physical, mental and social well-being of migrants, George explains.

“This is achieved by responding to the health needs of migrants as well as the public health needs of host and source communities.

“The aim of the research component of this programme is to strengthen the understanding of migrant health and promote it as a research agenda,” said George.

The programme includes an advocacy component “to create a supportive policy environment for responding to migrant health challenges and public health needs of the communities they live and work in”.

The IOM expects the study to inform the implementation of the 2012 SADC Declaration on Tuberculosis (TB) in the Mining Sector which seeks to promote regional co-operation on curbing the prevalence and incidence of TB.

In his 17 years at HEARD, George has undertaken a number of projects in the field of health systems strengthening – specifically HIV and AIDS – on economic, psycho-social and behavioural issues on behalf of development agencies, governments, international funders and big business.

“The opportunity to work at HEARD presented itself while I was a postgraduate student. One of my very first research experiences was working with incarcerated men at Westville Prison in Durban. The objective of the study was to try and understand HIV transmission dynamics among incarcerated populations. It was pretty daunting as a fledgling researcher having to work in a prison environment as my first assignment...but the experience was enriching and it fuelled my interest in research.”

He said whilst publishing numerous manuscripts and obtaining substantial grant funding was “great for an academic”, his real motivation was to bring about positive meaningful change to communities.

His advice for other researchers hoping to obtain grants is to seek out ‘collaborative opportunities’ with local and international partners and academics. It is these partnerships which allow a multidisciplinary approach to tackling significant challenges and which have added tremendous value to his own research.



## Ms Zodwa Masinga

**M**s Zodwa Masinga, Co-ordinator at the Department of Science and Technology (DST)-Indigenous Knowledge Systems (IKS) Documentation Centre at UKZN, is responsible for documenting indigenous knowledge in local communities within the eThekweni Municipality region through audio visuals and questionnaires.

Masinga says the research – made possible by an annual grant of R500 000 from the DST – focusses on traditional medicines and indigenous foods.

“This involves documenting indigenous farming practices, preparation and preservation. My interest in indigenous knowledge is based on my own rural background and my passion to see its contribution to sustainable community livelihood,” she said.

“The Centre has a huge capacity-building impact in rural communities because it provides training on intellectual property issues.

“This allows knowledge holders and practitioners to have control over their

knowledge which could otherwise be exploited by outsiders.”

Masinga said the centre gives local communities, especially the knowledge holders and practitioners, a platform to share ideas and challenges by organising meetings.

“Communities receive guidance on how they can turn their local knowledge into economically sustainable and viable business enterprises.

“The centre has also produced a community directory which contributes to knowledge mapping of specific communities involved in the project,” Masinga said.

She says the key to any funded project is to have a clear proposal. “This includes budget requirements for the proposal, timelines, and outputs. It is important that the project meets its deliverables.”



## Professor Paulus Zulu

**T**he Director of UKZN’s Maurice Webb Race Relations Unit, social scientist Professor Paulus Zulu, says the Unit has been self-funding since its inception in 2003.

The reason for this, says Zulu, is because it has become a ‘brand’ – so much so that his fund-raising efforts are relatively painless. “We have never filled in a tender form, we have never touted for work. By and large people come to us because we are held in high regard.”

While Zulu himself is a household name – both as an author and a political commentator – he takes little credit for himself. “I am grateful to a special person in my life – Professor Lawrence Schlemmer (a former University of Natal academic and activist), who was not only responsible for the Unit becoming part of the then Centre for Applied Social Sciences at the former University of Natal but also gave me excellent training.”

Detailing some of the history leading up to the establishment of the Unit, Zulu said Maurice Webb was a British expatriate who came to South Africa in the late 1800s becoming involved in the sugar industry in Natal and was a member of the Institute of Race Relations. When he died, his will stipulated that a Chair of race relations be established at a Southern African university.

“Because Webb had been in Natal, there was a belief that the Chair should come to Durban. But at the time, National Party leader Owen Horwood was the Principal of the University of Natal and he would have nothing of it and the then University of Southern Rhodesia took up the offer,” said Zulu.

It was only when Rhodesia became Zimbabwe in 1980, and through the efforts of Schlemmer, that the Unit came to what many believed was its rightful home – the University of Natal. Initially there was enough money to pay for the basics but there was a need to launch specific income-earning projects so that money could be kept in reserve to enable the Unit to expand and train new researchers. “I am grateful to Professor Schlemmer because he had a national reputation as an academic researcher. He took me along with him and his contacts became my contacts.”

In 2003, the Unit received its first grant to train 10 research interns from the National Development Agency over a three-year period. “We used the opportunity to generate more funding through research projects, the first

being an impact assessment of HIV and AIDS programmes in the Department of Health. That sky-rocketed us,” said Zulu.

The next source was the KwaZulu-Natal Department of Co-operative Governance and Traditional Affairs, which tasked the Unit to handle a project to investigate the payment of taxes in traditional areas. That led to the Unit becoming involved in training *Amakhosi* in leadership and good governance, a project which has brought in steady revenue.

The other regular income has come from training government officials in Monitoring and Evaluation.

In 2012, Zulu secured funding from the Department of Higher Education to train 12 masters graduates in research skills and the Unit has also been involved in two huge studies on the impact of HIV and AIDS.

In 2013, the Unit received funding from the EDTP SETA as a Research Chair of Monitoring and Evaluation, a four-year appointment and in 2016 it was awarded grants to conduct a probe into the RDP housing allocation, and also to undertake an evaluation of the impact of teacher training enhancement programmes in KwaZulu-Natal. The Unit has eight academics, four research assistants and two administrators.

At 76, Zulu is far from ‘retired’ and when asked about projects and grant funding, he has the facts and figures at his fingertips.

He is a mentor to 110 doctoral students who have scholarships from the National Institute for Humanities and Social Sciences. And he still plays second league tennis!

At times, during his career he has been offered other jobs ‘with fancy cars and double the salary’ but he always turned them down. “At one stage I was approached to take up the position of vice-chancellor at UKZN. I said no. I don’t mind putting my ideas in public but I don’t want to be a public personality. And when I eventually retire – maybe when I am 80 – I might just come here (the Unit) and sit and write.”



## Professor Thumbi Ndung'u

**K**enyan-born Professor Thumbi Ndung'u raised more than R53 million in 2016 for research into HIV vaccines and finding a cure for the disease.

Ndung'u is the Victor Daitz Chair in HIV/TB Research at UKZN, Scientific Director of the HIV Pathogenesis Programme and an investigator at the Africa Health Research Institute.

He and his team are involved in several research projects which focus on immune control mechanisms of HIV and tuberculosis with the ultimate goal being to develop or inform a vaccine or immune-based prophylactic or cure strategies against these major infectious diseases.

Ndung'u says to be successful in obtaining grants it is necessary to address an important problem and come up with an innovative strategy on how to handle the issue.

"The proposal needs to be specific, focused and feasible. The researcher must also have a track record in terms of publications or experience obtaining grants but there are usually grants available at every stage of one's career.

"My advice to academics seeking grants is to keep exploring opportunities, work with mentors and team members with experience and dedication, and never give up," said Ndung'u.

He attributes his success to his focus on HIV which he describes as "the greatest public health problem of our generation".

"I am privileged to be working towards finding solutions to this problem and helping grow African biomedical capacity to do research using the tools of science to solve Africa's problems.

"I work in translational research – which means I can directly impact people's lives – but at the same time keep an eye on trying to develop new innovative ways, such as a vaccine or a cure, that would transform sub-Saharan Africa for the better if successful," said Ndung'u.

"A vaccine or cure would improve health, longevity and, of course, the economic well-being of all those affected. I am optimistic that such a goal is achievable if the field continues to work together.

"I am also proud that through my work and training initiatives, I am helping build the next generation of African scientific leaders."

He said one of the largest projects – which received funding of R38 million from Gilead Sciences – involves treating women with early HIV infection and exploring strategies of HIV cure.

"We hope to learn a lot about the virus that infects these women, the immune responses they make and where the virus hides preventing us finding a cure. Research is unpredictable so we don't know how long it will take."

Ndung'u says he decided to follow science as a career "through a rather convoluted and somewhat accidental process.

"I was always inspired by incredibly insightful and generous mentors who I have been blessed to have at every stage of my career.

"They are too many to mention but working with colleagues who love their work, are passionate about the transformative power of science and are generous enough to share ideas and help me along the way, has been invaluable.

"My colleagues and students have also been part of my wonderful journey. They make me look forward to going to work every day because they believe in teamwork and what we are trying to accomplish," said Ndung'u.

"Most of all, I have an incredibly supportive family who make things fun and full of laughter. They remind me every day not to take life too seriously and to learn to live with the joys and disappointments of life in science."





# Top Grantholders

Research Office				
PRINCIPAL INVESTIGATOR	PROJECT TITLE	FUNDER	AMOUNT AWARDED	TOTAL GRANT VALUE
Ms Masinga, Zodwa	Collection, recordal and documentation of indigenous knowledge	Department of Science and Technology	500 000,00	
College of Law and Management Studies				
PRINCIPAL INVESTIGATOR	PROJECT TITLE	FUNDER	AMOUNT AWARDED	TOTAL GRANT VALUE
Dr George, Gavin	HIV and TB integrated biological and behavioural study for migrant mine worker communities of origin in Swaziland	International Organization for Migration	3 620 097,55	3 696 597,55
College of Humanities				
PRINCIPAL INVESTIGATOR	PROJECT TITLE	FUNDER	AMOUNT AWARDED	TOTAL GRANT VALUE
Prof Zulu, Paulus	Extension of Maurice Webb Race Relations Unit Research Chair	Education, Training and Development Practices Sector Education and Training Authority	6 558 000,00	12 126 113,00
Prof Zulu, Paulus	Investigating irregularities in the allocation of RDP houses in KwaZulu-Natal	KwaZulu-Natal Provincial Department of Human Settlements	3 752 150,00	
Prof Zulu, Paulus	The evaluation of the impact of teacher training/ enhancement programmes in KwaZulu-Natal	Educational Training and Development Practices Sector Education and Training Authority (EDTP SETA)	1 815 963,00	
College of Agriculture, Engineering and Science				
PRINCIPAL INVESTIGATOR	PROJECT TITLE	FUNDER	AMOUNT AWARDED	TOTAL GRANT VALUE
Prof Dorrel, David	Eskom Power Plan Engineering Institute (Phase 2): Enabling and Funding Agreement	Eskom Holdings, Soc Ltd	20 000 000,00	46 607 000,00
Prof Dorrel, David	Eskom Power Plant Engineering Institute Phase 2 Consortium Participation Agreement	Eskom Ltd	25 000 000,00	
Prof Dorrel, David	Funding Agreement between KwaZulu-Natal Department of Economic Development, Tourism and Environmental Affairs and University of KwaZulu-Natal: KwaZulu-Natal technology transfer initiatives	KwaZulu-Natal Department of Economic Development, Tourism and Environmental Affairs	1 607 000,00	
College of Health Sciences				
PRINCIPAL INVESTIGATOR	PROJECT TITLE	FUNDER	AMOUNT AWARDED	TOTAL GRANT VALUE
Prof Ndung'u, Thumbi	Females rising through education, support and health (FRESH study)	Gilead Sciences, Inc – USA	38 628 500,00	57 300 560,62
Prof Ndung'u, Thumbi	Mechanisms of HIV disease and limitation and cure revealed in paediatric infection	University of Oxford	6 161 480,00	
Prof Ndung'u, Thumbi	Pathogenesis of Clade C HIV infection	Massachusetts General Hospital	4 761 814,70	
Prof Ndung'u, Thumbi	Development of broadly neutralising antibodies in HIV infection and following immunisation	Massachusetts General Hospital, USA	2 971 380,00	
Prof Ndung'u, Thumbi	Immune responses in lymphoid tissues of HIV positive individuals	Massachusetts General Hospital	2 168 953,71	
Prof Ndung'u, Thumbi	Anti-retroviral treatment and risk of preterm delivery in a rural high HIV prevalence area	University of Southampton, United Kingdom	1 067 133,50	
Prof Ndung'u, Thumbi	Establishment of cohorts to support studies of HIV antigens and immune responses required for the control of HIV	International AIDS Vaccination Initiative (IAVI), USA	818 936,71	
Prof Ndung'u, Thumbi	T and B cell mechanisms of HIV control: Implications for vaccine design	Massachusetts General Hospital – USA	390 770,00	
Prof Ndung'u, Thumbi	Pediatric and adolescent HIV-transition care	Massachusetts General Hospital	286 592,00	
Prof Ndung'u, Thumbi	HPP Laboratory Infrastructure Development funds	Aurum Institute, NPC	45 000,00	

# Research Grants and Contracts 2016

1 JANUARY 2016 TO 31 DECEMBER 2016

College of Agriculture, Engineering and Science			
PRINCIPAL INVESTIGATOR	PROJECT TITLE	FUNDER	AMOUNT AWARDED
Dorrell, David	Eskom Power Plant Engineering Institute Phase 2 Consortium Participation Agreement	Eskom Ltd	25 000 000,00
Dorrel, David	Eskom Power Plan Engineering Institute (Phase 2): Enabling and Funding Agreement	Eskom Holdings, Soc Ltd	20 000 000,00
Velukoskanova, Konstantina	Standard methods for the analysis of faecal sludge	Bill & Melinda Gates Foundation	8 179 990,00
Toucher (Warburton), Michele	Modelling of water flows with change in land management in selected river catchments	Water Research Commission	6 000 000,00
Laing, Mark	Integrated control of liver flukes of cattle using botanical extracts and biocontrol agents	MILK SA	3 862 500,00
Mwambi, Henry	Sub-Saharan Africa Advances Training Programme for Leadership and Excellence in Biostatistics	WITS Health Consortium	3 437 917,00
Stringel, Santiago	Characterisation of faecal material behaviour during drying	Bill & Melinda Gates Foundation	3 368 900,00
Buckley, Christopher	Omni Ingestor (OI) Workshops – Dealing with trash	Bill & Melinda Gates Foundation	3 066 106,07
Downs, Colleen	Memorandum of Agreement regarding the joint research programme between the University of KwaZulu-Natal and eThekweni Municipality in the area of biodiversity conservation and management in the face of global change	eThekweni Municipality	3 000 000,00
Mudhara, Maxwell	Assessment of the effectiveness of policies and strategies for governance of smallholder irrigation farming in KwaZulu-Natal Province, South Africa	Water Research Commission	3 000 000,00
Rouget, Mathieu	eThekweni Municipality's Strategic Environmental Assessment	eThekweni Municipality	3 000 000,00
Loggia, Claudia	Newton Advanced Fellowship to support career training and collaboration and establish a long-term research link with UK institutions	The Royal Society, United Kingdom	2 640 271,02
Loggia, Claudia	Collaboration Agreement between University of Westminster and UKZN for the Newton Advanced Fellowship for Dr Claudia Loggia	University of Westminster, United Kingdom	2 551 774,25
Ramjugernath, Deresh	FEI Research and Development	Pelchem (Pty) Ltd	2 487 832,00
Buckley, Christopher	Viscous heating demonstration for helminth deactivation	University of Missouri – Kansas City, USA	2 285 104,65
Stopforth, Riaan	Unmanned Arial Vehicle inspection robotic system	Council for Scientific and Industrial Research	2 000 000,00
Clark, David	Further development and assessment of an integrated resources accounting methodology for South Africa	Water Research Commission	1 800 000,00
Dorrell, David	Funding Agreement between KwaZulu-Natal Department of Economic Development, Tourism and Environmental Affairs and University of KwaZulu-Natal: KwaZulu-Natal technology transfer initiatives	KwaZulu-Natal Department of Economic Development, Tourism and Environmental Affairs	1 607 000,00
Hill, Trevor	Assessing the impact of erosion and sediment yield from different land uses in farming and forestry systems and their effect on water resources in selected catchments of South Africa	Water Research Commission	1 500 000,00
Toucher (Warburton), Michele	Seamless forecasting for rainfall and temperature for adaptation of farming practices to climate variability	The University of Cape Town	1 291 654,99



College of Agriculture, Engineering and Science			
PRINCIPAL INVESTIGATOR	PROJECT TITLE	FUNDER	AMOUNT AWARDED
Stuart-Hill, Sabine	Strengthened capacity of North Darfur institutions to support, scale up and replicate successful approaches to catchment management	United Nations Environment Programme	1 119 670,00
Kirkman, Kevin	Adaptation to climate change impacts in mixed crop-livestock production systems in southern Africa	Council for Scientific and Industrial Research	900 000,00
Buckley, Christopher	Assessment of Dewats constructed wetlands	Water Research Commission	834 500,00
Laing, Mark	Investigating alternative methods such as bacteriophages and bacteriocins to control mastitis organisms	MILK SA	737 855,00
Smithers, Jeffrey	Development and updating of design norms for soil and water conservation structures in the sugar industry.	South African Sugarcane Research Institute	675 566,97
Santiago, Septien	Drying and pasteurisation of faecal sludge using solar thermal energy	Water Research Commission	657 000,00
Chitja, Joyce	A baseline study in Alfred Nzo and Harry Gwala for the Masisizane Agribusiness Development Flagship Initiative	Masisizane Fund (NPC)	650 000,00
Zengeni, Rebecca	Evaluating the potential of vermicomposting farmyard waste for use as an organic amendment in maize and tomato production	Organisation for Women in Science for the Development World, Italy	624 626,02
Olkers, Terence	Phase 2 Research on biological control of fireweed ( <i>Sececio madagascariensis</i> )	Commonwealth Scientific and Industrial Research Organisation (CSIRO) – Australia	620 000,00
Rouget, Mathieu	Biological invasions – Postdoctoral Fellowship	South African National Biodiversity Institute	600 000,00
Albericio, Fernando	Aji phase applications: Clarify the Oxidation Mechanism of the Oxyma Method	Ajinomoto Co. Inc., Japan	520 563,42
Schoeman, Cornelius	Emerging viruses in Africa: Molecular identification and characterisation of rodent-, shrew-, and bat-borne hantaviruses and assessment of their public health potential	Charite – Universitätsmedizin Berlin, Germany	505 116,00
Bemont, Clinton	A lifter-rotator tool for the assembly of the ATLAS NSW upgrade	European Organisation for Nuclear Research (CERN)	419 360,00
Magwaza, Lembe Samukelo	Non-destructive prediction and monitoring of postharvest rind quality of citrus fruit using Vis/NIR spectroscopy	Citrus Research International, South Africa	394 888,00
Moodley, Mathew	Temporal and spatial in situ optical emission spectroscopy of carbon nanotubes nucleation dynamics	Council for Scientific and Industrial Research	353 900,00
Pammenter, Norman	Implications of chemical composition of different types of greywater for seed germination and growth of crops	Water Research Commission	345 000,00
Friedrich, Holger	Development of a fundamental understanding of the reaction mechanism of paraffin dehydrocyclisation (C6-C10)	Sasol Technology (Pty) Ltd	330 000,00
Olaniran, Ademola	Treatment and reuse potential of urine and faecal fractions from urine diversion dehydrating toilets in eThekweni Municipality	Water Research Commission	328 000,00
Rawatlal, Randhir	Kinetic studies in methane oxidation	Johnson Matthey Research (Pty) Ltd	300 000,00
Eloka-Eboka, Andrew	Exploring the effectiveness of pith-fibre fractions separation: Sugarcane bagasse briquetting	Sugar Milling Research Institute NPC	273 600,00
Green, Andrew	NEARCONTROL: Nearshore geological control on coastal morphodynamics: monitoring and modelling in high-resolution	University of Ulster, Ireland	271 271,73
Lockat, David	Enhanced slurry phase Fischer-Tropsch synthesis: Application of nanocatalysts and ultrasonic irradiation in a loop reactor	Sasol South Africa (Pty) Ltd	268 850,00
Brouckhaert, Christopher	WEST modelling platform to model anaerobic digestion	University of Cape Town	246 000,00

College of Agriculture, Engineering and Science			
PRINCIPAL INVESTIGATOR	PROJECT TITLE	FUNDER	AMOUNT AWARDED
Friedrich, Elena	A comparative life cycle assessment for the provision of potable water from alternative sources (sea water, wastewater and mining water) in South Africa	Water Research Commission	200 000,00
Modi, Albert	Developing a research agenda for promoting underutilised, indigenous and traditional crops in South Africa	Water Research Commission	200 000,00
Venkataraman, Sivakumar	Development of Durban LIDAR system for aerosol and temperature measurements in the neutral	Council for Scientific and Industrial Research	190 000,00
Shrader, Adrian	Investigating private landowners' willingness to manage and protect oribi antelope	University of Florida Board of Trustees, USA	179 170,00
Coetzer, Theresa	Material Transfer Agreement: Provision of antigens to develop assays to detect African Animal Trypanosomials (AAT)	Global Alliance for Livestock Veterinary Medicine (GALVmed), United Kingdom	173 676,20
Buckley, Christopher	Performance of Dewats constructed wetlands	Water Research Commission	160 000,00
Modi, Albert	Determining water use of indigenous grain and legume food crops	Water Research Commission	160 000,00
Tame, Mark	National Laser Centre Rental Pool Programme 2016: Quantum optical metamaterials	Council for Scientific and Industrial Research	147 000,00
Kyobo, Kwassakey	Biological control of soybean rust	Protein Research Foundation	140 000,00
Finch, Jemma	Regional archives for integrated investigations in marine and terrestrial deposits	University of Bremen, Germany	137 045,00
Petruccione, Francesco	Experimental quantum information processing and communication	Council for Scientific and Industrial Research	132 000,00
Sithole, Bruce	Calcium lignosulphonate leaching study	Lignotech South Africa	115 140,00
Jewitt, Graham	Investing in ecological infrastructure to enhance water security in the Umgeni River catchment	Ground Truth Biodiversity	112 760,00
Martincigh, Bice	Photochemistry of sunscreen absorbers	Council for Scientific and Industrial Research	109 000,00
Laing, Mark	Soybean elite cultivar trial 2016/17	Protein Research Foundation, South Africa	60 192,00
Brouckhaert, Christopher	Memorandum of Agreement regarding the development of research capacity and conduct of research into bioremediation at Merebank	Lanxess (Pty) Ltd	48 000,00
Naidoo, Paramespri	Bleaching studies	Unilever South Africa (Pty) Ltd	25 875,00
			<b>R114 344 675,32</b>



College of Health Sciences			
PRINCIPAL INVESTIGATOR	PROJECT TITLE	FUNDER	AMOUNT AWARDED
Ndung'u, Thumbi	Females rising through education, support and health (FRESH study)	Gilead Sciences, Inc – USA	38 628 500,00
Pillay, Deenan	HAYA Research Unit – Healthy adolescents and young adults	London School of Hygiene and Tropical Medicine, United Kingdom	19 853 931,51
Pillay, Deenan	Early treated perinatally HIV-infected individuals: Improving children's actual life (EPIICAL)	Fondazione PENTA-ONLUS, Italy	13 744 761,25
Burns, Jonathan	Developing research innovation, localisation and leadership in South Africa (DRILL)	National Institutes of Health, USA	10 395 293,11
Ndung'u, Thumbi	Mechanisms of HIV disease and limitation and cure revealed in paediatric infection	University of Oxford	6 161 480,00
Horwood, Christiane	KwaZulu-Natal initiative for breastfeeding support (KIBS)	ELMA Foundation, Cayman Islands	4 840 000,00
Ndung'u, Thumbi	Pathogenesis of Clade C HIV infection	Massachusetts General Hospital	4 761 814,70
Chimbari, Moses	Social, environmental and climate change impacts of vector-borne diseases in arid areas of Southern Africa	World Health Organization, Malaysia	4 594 800,00
Pillay, Deenan	A cluster randomised trial comparing the impact of immediate versus South Africa recommendations guided antiretroviral initiation on HIV incidence: The ANRS 12249 (Treatment as Prevention) trial in Hlabisa sub-district, KwaZulu-Natal, South Africa	International Initiative for Imp USAact Evaluation (3ie)	4 153 660,97
Moosa, Yunus	Resistance testing versus adherence support for management of patients with virologic failure on first-line antiretroviral therapy in sub-Saharan Africa	Massachusetts General Hospital, USA	3 685 150,00
Moosa, Yunus	Antiretroviral drug resistance in KwaZulu-Natal	Brighams and Women's Hospital, Inc. USA	3 510 790,00
Wyke, Sally	Health through faith: Can faith-based organisations support weight management and reduce the risk of NCD's in South Africa?	UK MRC	3 063 536,77
Pillay, Deenan	Partnership with PEPFAR to reduce HIV incidence among adolescent girls and young women (Impact Evaluation)	London School of Hygiene and Tropical Medicine, United Kingdom	3 008 092,20
Ndung'u, Thumbi	Development of broadly neutralising antibodies in HIV infection and following immunisation	Massachusetts General Hospital, USA	2 971 380,00
Naidoo, Nithiseelan (Rajen)	Assessment of human health in the Highveld Priority Area	Council for Scientific and Industrial Research	2 941 542,00
Pillay, Basil	Can forgiveness be strengthened in West and South Africa	Virginia Commonwealth University, USA	2 843 240,19
Coutsoudis, Anna	Randomised, controlled trial testing the effect of cotrimoxazole prophylaxis on morbidity and mortality outcomes in breastfed, HIV-exposed uninfected infants	Family Larsson Rosenquist Foundation, Switzerland	2 290 470,00
Pillay, Deenan	Determined, resilient, empowered, AIDS-free, mentored and safe (DREAMS) initiative support in Umkhanyakude district	Family Health International, USA	2 273 686,00
Ndung'u, Thumbi	Immune responses in lymphoid tissues of HIV positive individuals	Massachusetts General Hospital	2 168 953,71
Horwood, Christiane	Improvement of integrated maternal, child health and nutrition services in KwaZulu-Natal	United Nations Children's Fund	1 241 588,00
de Oliveira, Tulio	The CAPRISA regional centre for advanced clinical management	Centre for the AIDS Programme of Research in South Africa	1 156 800,00
Wyke, Sally	Health through Faith: Can faith-based organisations support weight management and reduce the risk of non-communicable diseases in South Africa?	University of Glasgow, United Kingdom	1 075 590,00
Moodley, Pravikrishnen	Transmission of HIV-associated Extreme Drug Resistant TB in Africa	Emory University, USA	1 071 226,28
Ndung'u, Thumbi	Anti-retroviral treatment and risk of preterm delivery in a rural high HIV prevalence area	University of Southampton, United Kingdom	1 067 133,50

College of Health Sciences			
PRINCIPAL INVESTIGATOR	PROJECT TITLE	FUNDER	AMOUNT AWARDED
Madiba, Thandinkosi	Addendum to Funding Agreement	South African Medical Research Council	1 000 000,00
Mlisana, Koleka	Impact of HIV, antiretroviral therapy and TB genotype on survival of Multi-Drug Resistant TB	Emory University, USA	973 704,16
Mlisana, Koleka	A phase 3 randomised, open-label trial assessing the safety and efficacy of bedaquiline plus pretomanid plus linezolid in subjects with pulmonary infection of either extensively drug-resistant Tuberculosis, or treatment intolerant/non-responsive multi-drug resistant tuberculosis	The Global Alliance for TB Drug Development, INC. USA	925 276,00
Ndung'u, Thumbi	Establishment of cohorts to support studies of HIV antigens and immune responses required for the control of HIV	International AIDS Vaccination Initiative (IAVI), USA	818 936,71
Gaede, Bernhard	South African University-based technical assistance aimed at improving the quality of HIV/AIDS related services in South Africa	Stellenbosch University	792 850,00
Slotow, Robert	Intergovernmental Panel on Climate Change Co-chair: Prof Rob Slotow	Intergovernmental Panel on Climate Change, Switzerland	791 696,70
Moshabela, Mosa	Optimising health systems to improve delivery of decentralised care to patients with drug resistant tuberculosis	University of Cape Town	656 192,00
Pillay, Seelan	Efficacy of a short focused sepsis training program in improving knowledge, attitude and behaviour change in frontline health care providers in rural KwaZulu-Natal	Discovery Foundation	500 000,00
Govender, Thavendran	Seeding Labs Program Agreement	Seeding Labs, USA	492 932,58
Moodley, Indrhasen	TBS12-0001-OC: Upscaling and optimisation of GR active	University of Pretoria	441 408,00
Montegue, Carl	Addendum to existing Centre of Excellence in HIV Prevention agreement	Centre for the AIDS Programme of Research in South Africa (CAPRISA)	420 000,00
Ndung'u, Thumbi	T and B cell mechanisms of HIV control: Implications for vaccine design	Massachusetts General Hospital – USA	390 770,00
Slotow, Robert	The Amarula Elephant Research Programme	The Amarula Trust, South Africa	379 000,00
Motala, Ayesha	Durban Diabetes Study	University of Cambridge, Wellcome Trust Sanger Institute	303 079,97
Ndung'u, Thumbi	Pediatric and adolescent HIV-transition care	Massachusetts General Hospital	286 592,00
Tsoka-Gwegweni, Joyce	Implementation of an integrated control programme for malaria and NTD's for refugees living in South African urban areas	World Health Organization, Regional Office for Africa	207 813,00
Petersen, Inge	Co-morbid affective disorders, HIV/AIDS and long term health	Kings College London, United Kingdom	151 026,00
Mashamba-Thompson, Tivani	Evaluating the accessibility and utility of HIV-related point of care diagnostics for maternal health in rural South Africa	African Population and Health Research Center, Inc., Kenya	130 339,03
Ndung'u, Thumbi	HPP Laboratory Infrastructure Development funds	Aurum Institute, NPC	45 000,00
Rodseth, Reitze	A multi-centre, randomised trial comparing total hips arthroplasty and hemi-arthroplasty on revision surgery and quality of life in patients with displaced femoral neck fractures	McMaster University, Canada	9 978,81
			<b>R151 220 015,15</b>

College of Law and Management Studies			
PRINCIPAL INVESTIGATOR	PROJECT TITLE	FUNDER	AMOUNT AWARDED
George, Gavin	HIV and TB integrated biological and behavioural study for migrant mine worker communities of origin in Swaziland	International Organization for Migration	3 620 097,55
Govender, Kaymarlin	A randomised controlled trial to evaluate adding self-administered oral HIV testing as a choice in clinic and non-clinic settings to increase HIV testing uptake among truck drivers in Kenya	Research Foundation of CUNY, USA	493 702,66
George, Gavin	BCMM1 and BCMM2 Buffalo city HIV/AIDS prevention project A1203	Oxford Policy Management Limited	76 500,00
			<b>R4 190 300,21</b>



College of Humanities			
PRINCIPAL INVESTIGATOR	PROJECT TITLE	FUNDER	AMOUNT AWARDED
Zulu, Paulus	Extension of Maurice Webb Race Relations Unit Research Chair	Education, Training and Development Practices Sector Education and Training Authority	6 558 000,00
Zulu, Paulus	Investigating irregularities in the allocation of RDP houses in KwaZulu-Natal	KwaZulu-Natal Provincial Department of Human Settlements	3 752 150,00
Moletsane, Relebohile	Intersections of rurality and gender in relation to violence against girls and young women: An urgent matter in relation to health inequalities in South Africa and Sweden	South African Medical Research Council	3 000 000,00
Petersen, Inge	Task sharing for integration of mental health within HIV services in South Africa	University of Wawhington, USA	2 023 930,00
Zulu, Paulus	The evaluation of the impact of teacher training/enhancement programmes in KwaZulu-Natal	Educational Training and Development Practices Sector Education and Training Authority (EDTP SETA)	1 815 963,00
West, Gerald	Ujamma general, body and earth theology	ICCO Foundation, Netherlands	1 624 920,00
Wassenaar, Douglas	CHVI team in social and behavioural research on HIV vaccines	University of Toronto, Canada	1 186 140,00
West, Gerald	Pedagogy and praxis: Enabling social transformation through prophetic	Fastenopher, Switzerland	1 142 590,00
Ndlovu, Joram	The impact of Community Based Tourism projects in KZN	Department of Tourism	854 912,50
Maart, Rozena	Race, space and city in India and South Africa	National Institute for the Humanities and Social Sciences	540 000,00
Moletsane, Relebohile	Education and emancipation: A critical, intervention-orientated investigation of obstacles and opportunities within the Higher-Education and Training sector in South Africa	Human Sciences Research Council	250 000,00
Bracking, Sarah	Informal early childhood development centres	Project Preparation Trust of KwaZulu-Natal	241 620,00
Petersen, Inge	Co-morbid affective disorders, HIV/AIDS and long-term health	Kings College London, United Kingdom	159 812,24
Gopal, Nirmala	Old diasporas, new identities: South African Indians between home and homeland	National Institutes for Humanities and Social Sciences	150 000,00
Harley, Anne	Building and theorising the trade school concept in South Africa	Centre for Education Policy Development	115 000,00
Mtapuri, Oliver	Institutionalising the Rural Innovation Assessment Toolbox (RIAT) in Ugu District Municipality	Human Sciences Research Council	61 560,00
Mtapuri, Oliver	Institutionalising the Rural Innovation Assessment Toolbox (RIAT) in uMzinyathi District Municipality	Human Sciences Research Council	61 560,00
Gumbi, Patrick	African language literacy and development project	University of Cape Town	20 060,00
			<b>R23 558 217,74</b>

Research Office			
PRINCIPAL INVESTIGATOR	PROJECT TITLE	FUNDER	AMOUNT AWARDED
Masinga, Zodwa	Collection, recordal and documentation of indigenous knowledge	Department of Science and Technology	500 000,00
Bob, Urmilla	Enhancing postgraduate environments	Vrije Universiteit Amsterdam, The Netherlands	298 128,23
Bob, Urmilla	Post-Graduate capacity building and support programme (2016-2017)	eThekweni Municipality	190 209,00
			<b>R988 337,23</b>

# Statutory Income from the NRF

	COLLEGE					TOTAL
	Agriculture, Engineering and Science	Health Sciences	Humanities	Law and Management Studies	Research Office	
African Coelecanth Ecosystem Programme	309 643,00					309 643,00
Astronomy Sub-Agency Funding Programme	200 000,00					200 000,00
Blue Skies Research Programme	1 930 971,32					1 930 971,32
Competitive Programme for Rated Researchers	9 859 412,43	3 631 974,89	2 076 771,04	185 283,25		15 753 441,61
SA National Antarctic Programme	185 227,47					185 227,47
Competitive Programme for Unrated Researchers	1 839 952,45	899 385,71	710 867,20		493 634,17	3 943 839,53
Education Research in South Africa	234 789,40	321 173,23	1 067 096,17			1 623 058,80
Global Change Grand Challenge	320 000,00					320 000,00
Human Capital Development for Multiwave-Length Astronomy	405 581,59					405 581,59
Incentive Funding for Rated Researchers	5 641 927,02	1 162 161,78	2 335 756,45	415 814,29	135 343,64	9 691 003,18
Indigenous Knowledge Systems and Centre of Excellence	593 664,77	234 000,00			8 000 000,00	8 827 664,77
Special Transformation Awards		20 485,42			427 872,28	448 357,70
Knowledge Interchange and Collaborations	1 246 894,02	306 433,31	254 032,11	169 985,91		1 977 345,35
Foundational Biodiversity Information Programme	303 260,50					303 260,50
National Equipment Programme/National Nanotechnology Programme	4 825 000,00	1 213 000,00				6 038 000,00
NRF – European Research Council Partnership	86 259,00					86 259,00
South African Research Chairs Initiatives	23 095 127,49	6 338 680,34	6 550 165,99			35 983 973,82
Research Equipment Programme	128 865,00	209 300,00				338 165,00
Sabbatical Grant to Complete Doctoral Degrees		6 472,08	1 324 420,88	537 027,54		1 867 920,50
Thuthuka	2 750 818,55	580 556,07	424 649,17	130 569,50		3 886 593,29
International Science and Technology Agreements	3 355 704,60	280 346,43	1 497 674,52			5 133 725,55
Knowledge Fields Development Grant			44 338,17			44 338,17
Human and Social Dynamics in Development			369 880,00			369 880,00
IRG South Africa/Tunisia/Taiwan/India/Sweden Research Co-operation Programme	320 094,28	145 000,00	264 180,00			729 274,28
IRG – UK/South Africa Researcher Links Grants for Travel and Hosting of Scientific Events	60 000,00		183 605,57			243 605,57
Research Development Grants for Y-Rated Researchers		90 459,23				90 459,23
DST Grant for NASSP	800 000,00					800 000,00
DST-NRF Fellowships for Early Career Researchers from the UK	275 000,00					275 000,00
DST-NRF Conference Fund				8 413,80		8 413,80
ESRC/NRF Collaborative Research: Urban Transformation in SA			383 000,00			383 000,00
IEPD Flagship	487 950,85					487 950,85
<b>TOTAL</b>	<b>R59 256 143,74</b>	<b>R15 439 428,49</b>	<b>R17 486 437,27</b>	<b>R1 447 094,29</b>	<b>R9 056 850,09</b>	<b>R102 685 953,88</b>



# UKZN Research Office



***Back row from left:*** Mr Helgaard Holtzhausen, Mr Eric Sithole, Mr Mandisi Ntuli, Mr Malesela Matlawe, Mr Mlungisi Duma and Mr Wilondja Muzumbukilwa.

***Middle row from left:*** Professor Deresh Ramjugernath, Mrs Nontobeko Magwaza, Mrs Vanitha Govender, Mrs Kershnie Dharamdev, Ms Lindelwa Ncwane, Mrs Nolubabalo Nobongoza, Ms Michelle Premjit, Ms Duduzile Dlamini, Mr Siyanda Mabutho, Mr Mlungisi Zondi and Professor Urmilla Bob.

***Seated from left:*** Ms Celeste Manuel, Mrs Pravini Pillay, Mrs Noluthando Mngadi, Mrs Patricia Ngwenya, Mrs Joly Lutakwa and Mrs Mariette Snyman.



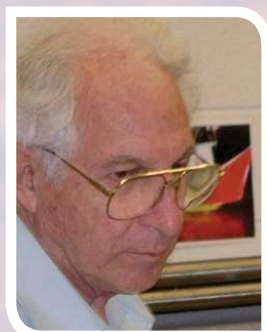
# REST IN PEACE

*"And when the stream that overflows has passed, a consciousness remains upon the silent shore of memory; images and precious thoughts that shall not be and cannot be destroyed."*

– William Wordsworth



**Professor Emeritus Peter Allan** joined the University of KwaZulu-Natal, Pietermaritzburg, in 1952 as a lecturer in Horticulture and was promoted to senior lecturer in 1960. Allan was the Chair of Horticultural Science from 1970 through to his official retirement in 1990 when he became an emeritus professor and honorary research associate. He took a particular interest in the horticultural section at UKZN's Ukulinga Research Farm and became internationally known for his dedicated research in applied horticultural science. Among awards he received were Fellow of the SA Society for Crop Production; Honorary Member and later Honorary Life President of the Southern African Society for Horticultural Sciences, and Honorary member of the SA Macadamia Growers Association.



**Professor Jeff Bindon** was part of the University for the past 47 years, joining as a senior lecturer in Thermodynamics and Turbomachinery and going on to do research on hydrogen combustion and turbomachinery in particular. The area in which he really excelled was engineering education aimed at raising the awareness of young people to the possibilities of a career in the field of engineering. Bindon worked tirelessly at producing and distributing kits of various types, the most popular one being that of his unique steam car. Thousands of the cars have been built in South Africa and overseas during the past 22 years. In 2005, the South African Institution of Mechanical Engineering recognised his contribution and he received a special award for his efforts in promoting Engineering among young people.



**John Robert Landrey Milton** joined the University of Natal's School of Law as a lecturer on the Pietermaritzburg campus in 1965 and remained at the School until his retirement in 2001. Milton's landmark publication was the *South African Criminal Law and Procedure Volume III: Statutory Offences*, originally published in 1971 and followed by several later editions. He also updated Volume II – originally written by Mr Peter Hunt – which dealt with Common Law crimes. At the time of his retirement *Principles of Criminal Law*, which he co-authored with Jonathan Burchell was one of the leading texts in South Africa on the subject. Milton was a founder member of the Environmental Law Association in the early 1990s and editor of the *South African Journal of Environmental Law and Policy*, in addition to his editorial role on the *South African Criminal Justice Journal*. A celebration of his life was held in the John Milton Moot Court on UKZN Pietermaritzburg campus.





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