



UNIVERSITY OF CAPE TOWN  
IYUNIVESITHI YASEKAPA • UNIVERSITEIT VAN KAAPSTAD

UNIVERSITY OF CAPE TOWN

RESEARCH &  
INNOVATION  
HIGHLIGHTS  
2017-18



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# 2017-18 IN NUMBERS

## UNIVERSITY OF CAPE TOWN (UCT) WORLD UNIVERSITY RANKINGS

### 1st in Africa

200th  
IN THE WORLD  
QS 2019

156th  
IN THE WORLD  
THE 2019

113th  
IN THE WORLD  
US NEWS 2018  
BEST GLOBAL  
UNIVERSITIES

223rd  
IN THE WORLD  
CWUR  
2018-19

### BRICS RANKINGS

THE 2018 emerging  
economies 9th  
19th QS 2018  
BRICS

## SUBJECT RANKINGS

TOP 5  
Ornithology  
3rd IN THE WORLD  
CWUR 2017

Area studies  
4th IN THE WORLD  
CWUR 2017

TOP 20  
Development studies  
11th IN THE WORLD  
QS 2018

Archaeology  
14th IN THE WORLD  
URAP 2017-18

Anthropology  
19th IN THE WORLD  
URAP 2017-18

TOP 50  
Sports-related subjects  
37th IN THE WORLD  
QS 2018

Geography  
49th IN THE WORLD  
QS 2018

TOP 100  
Clinical, pre-clinical and health  
1st IN AFRICA  
70th IN THE WORLD  
THE 2017-18

- Immunology
- Microbiology
- Social sciences and public health
- Clinical medicine

US NEWS 2018  
BEST GLOBAL  
UNIVERSITIES

TOP 100  
Human movement and sports science  
62nd IN THE WORLD  
URAP 2017-18

Marine sciences and technology  
77th IN THE WORLD  
URAP 2017-18

Studies in human society  
86th IN THE WORLD  
URAP 2017-18

- TOP 100
- Anatomy and physiology
  - Anthropology
  - Archaeology
  - Architecture and built environment
  - Education
  - English language and literature
  - Law
  - Theology, divinity and religious studies
- QS 2018

### KEY TERMS

**THE** Times Higher Education  
**QS** Quacquarelli Symonds  
**CWUR** Center for World University Rankings  
**BRICS** Brazil, Russia, India, China and South Africa  
**URAP** University Ranking by Academic Performance

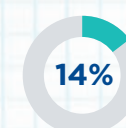
## RESEARCH PERFORMANCE INDICATORS

TOTAL  
RESEARCH  
PUBLICATIONS



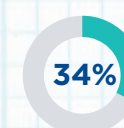
2017

3 240



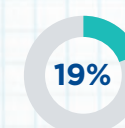
### NRF-RATED RESEARCHERS

The National Research Foundation allocates ratings based on a researcher's recent research outputs and impact, as perceived by international peer reviewers. Nationally, UCT has more NRF-rated researchers (14%) than any other university in South Africa.



### A-RATED RESEARCHERS

A-rated researchers are international leaders in their field. Just over a third of the country's A-rated researchers are at UCT.



### SARCHI CHAIRS

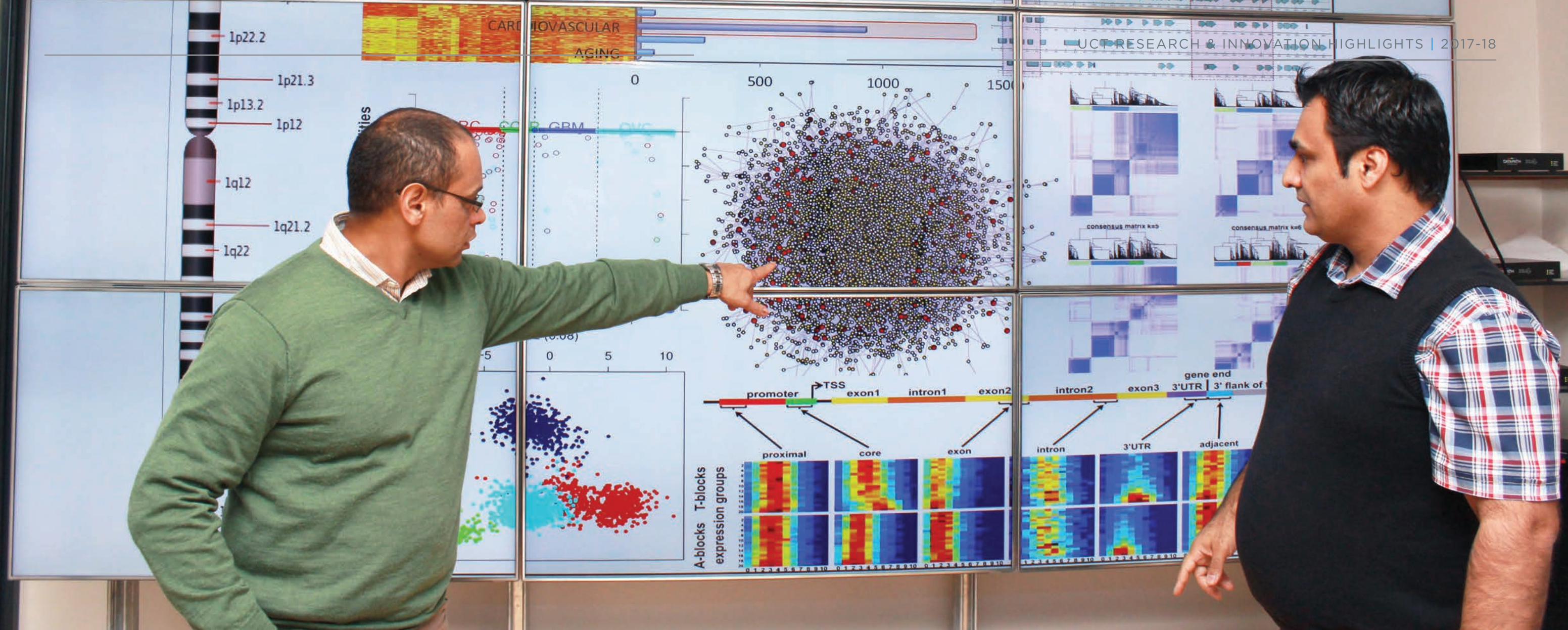
Department of Science and Technology/National Research Foundation South African Research Chairs are designed to strengthen the ability of the country's universities to produce high-quality research, innovation and students. Almost one-fifth of the country's SARCHI Chairs have been awarded to UCT.



**INCOME**  
**R1.6 BILLION**  
external research  
income in 2017

In 2017, UCT received the highest number of direct awards and most funding from the US National Institutes of Health (NIH) compared to any other higher education institution outside the US.





## 2017 Contract research

2 363  
research  
contracts  
signed

RESEARCH  
CONTRACT  
VALUE  
R1.4 bn



VALUE OF  
FOREIGN  
RESEARCH  
CONTRACTS  
SIGNED  
R998 m



VALUE  
OF LOCAL  
RESEARCH  
CONTRACTS  
SIGNED  
R389 m

## IP protection

INVENTION  
DISCLOSURES  
**41**



PATENT APPLICATIONS  
FILED  
**72**



PATENTS  
GRANTED  
**16**



## Innovation

LICENSE INCOME  
R1.8 m

MATERIALS TRANSFER  
AGREEMENTS  
(OUTBOUND)  
73

LICENCE  
AGREEMENTS  
(OUTBOUND)  
37\*

Total income  
from intellectual  
property (IP)  
**R3.6 m**

Sale of IP  
**R1.7 m**

SPIN-OFF  
COMPANIES  
**4**



INVENTION  
DISCLOSURES



76%  
male

24%  
female



**CLICK HERE  
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in *Innovation*  
at UCT 2018



\*Includes option and assignment agreements





## 01 Prof Reddy to lead International Science Council

Renowned mathematician Professor Daya Reddy has been elected as the first president of the newly formed International Science Council (ISC).

The ISC is a global organisation that represents more than 180 scientific bodies and is the only non-governmental global entity representing both the natural and social sciences. The council will develop an impact-oriented agenda focusing on science for policy and policy for science, with a mind to enabling international research coordination to contribute more effectively to major global issues.

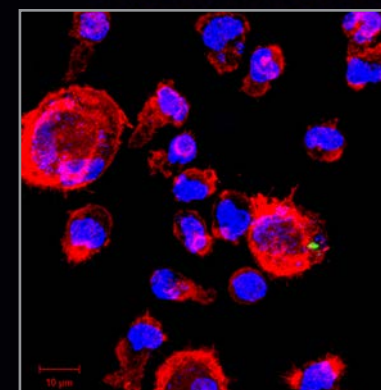
Reddy, who is a professor of applied mathematics at UCT and holds the Department of Science and Technology/National Research Foundation South African Research Chair (SARChI) in Computational Mechanics, was elected at the ISC's founding general assembly. He will serve in the position for three years.



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## 02 Problem of antibiotic resistance under unprecedented scrutiny by new unit

The recently established Centre for the Study of Antimicrobial Resistance (CAMRA) at UCT is an extraordinary development in the internationally urgent study of antimicrobial resistance among multidrug-resistant pathogens. Funded by the South African Medical Research Council, the centre will be directed by UCT Professor of Respiratory Medicine Keertan Dheda.



CAMRA is the first South African unit dedicated to studying the origin, development and fundamental drivers of antimicrobial resistance and multidrug-resistant pathogens. The centre will combine the efforts of several multidisciplinary national and international authorities in the fields of tuberculosis and antimicrobial resistance.



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## 03 NSTF award for Harald Winkler

Professor Harald Winkler of the Energy Research Centre in the Faculty of Engineering & the Built Environment has won the NSTF-South32 Special Annual Theme Award: Sustainable Energy for All.

Over the past 10 years, Winkler's research has contributed information needed to reduce energy poverty while at the same time making a just transition to a low-carbon energy economy. His work focuses on energy and the environment, particularly

climate change and the economics of mitigation in the context of sustainable development, with a strong emphasis on poverty and development.



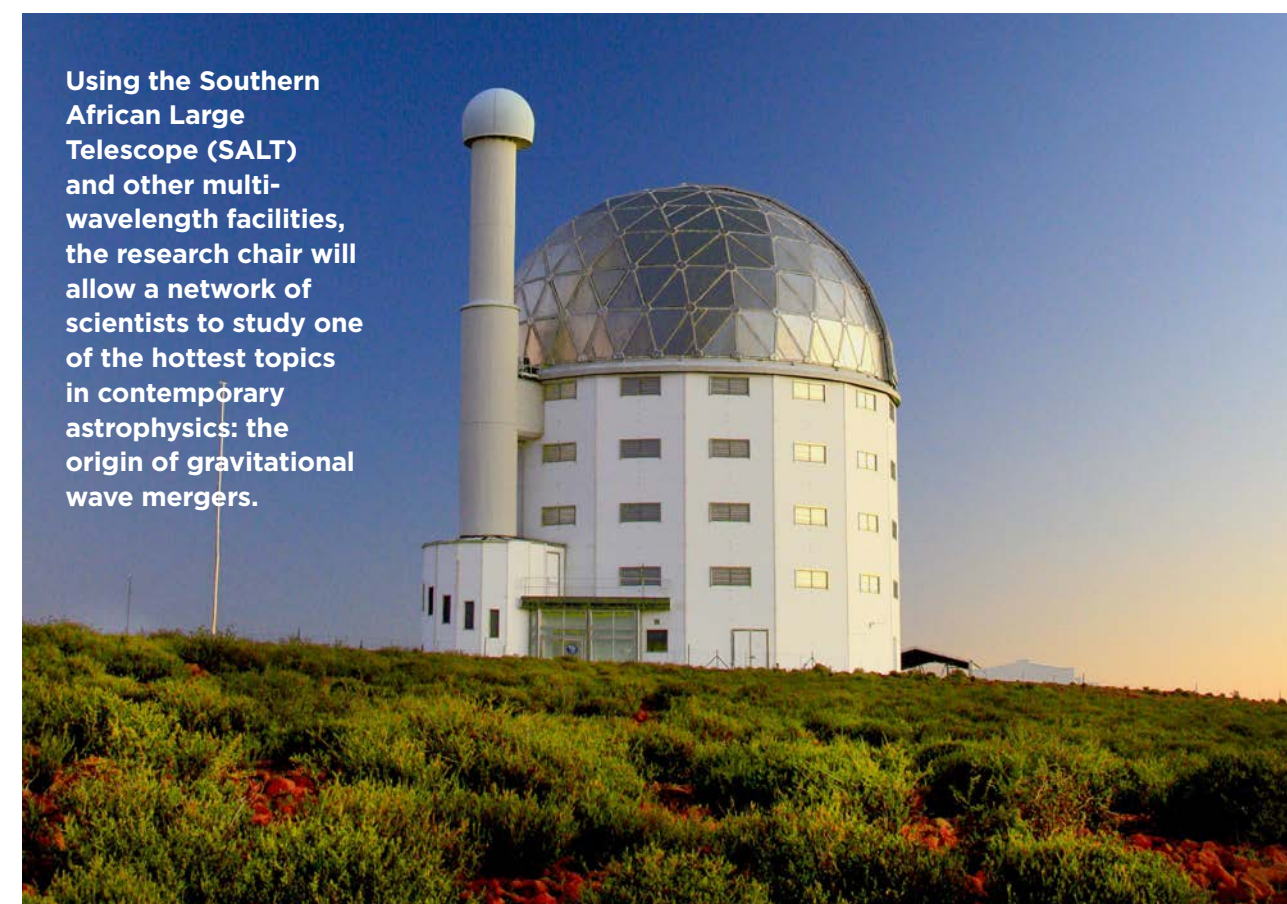
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## 04 New cohort of SARChI chairs

Designed to strengthen the ability of the country's universities to produce high-quality research, innovation and students, the DST/NRF SARChI brings new research leadership capacity into public universities, while retaining those that are already there. During the past year, UCT welcomed five new chairs, taking its current count of chairs awarded to 42.

Using the Southern African Large Telescope (SALT) and other multi-wavelength facilities, the research chair will allow a network of scientists to study one of the hottest topics in contemporary astrophysics: the origin of gravitational wave mergers.



### PAUL GROOT: ADDRESSING THE BIGGEST QUESTIONS IN ASTROPHYSICS

The new SARChI Chair in Fast Transients and Gravitational Waves Counterparts, awarded to UCT and Professor Paul Groot of Radboud University, offers the chance for

scientists from a variety of southern African research facilities to study some of the most pressing questions in contemporary astrophysics.



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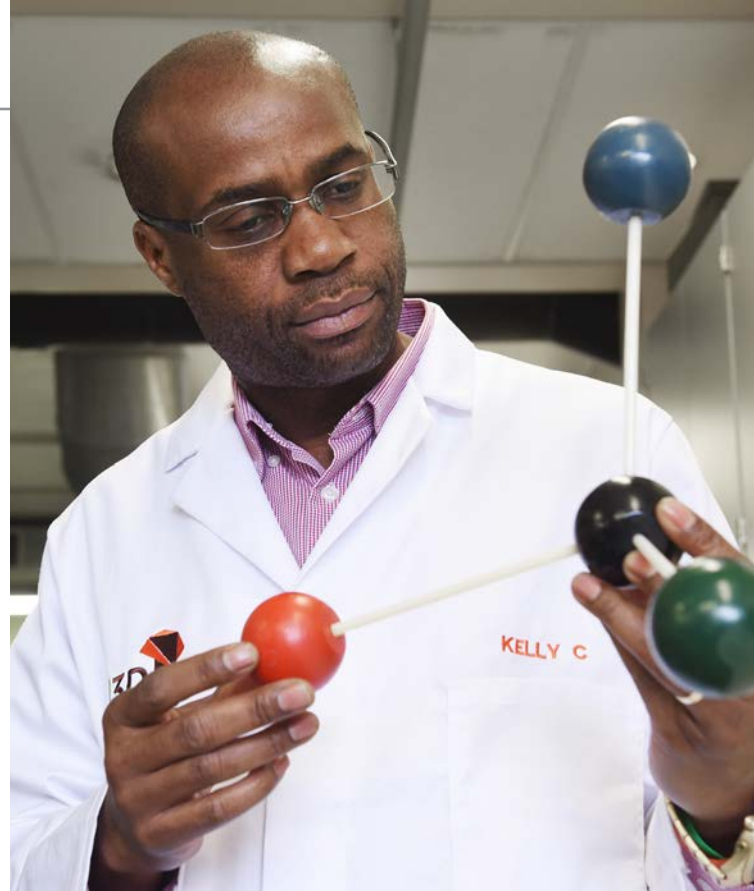


### KELLY CHIBALE: “WE’RE WORKING TOGETHER TO ELIMINATE MALARIA IN SOUTH AFRICA BY 2020.”

Professor Kelly Chibale, who holds the SARCHI Chair in Drug Discovery and heads up UCT’s Drug Discovery and Development Centre (H3D), will be joining forces with four other research institutions around South Africa in a Community of Practice dedicated to developing new malaria intervention strategies.



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### CAROLINE NCUBE: INTELLECTUAL PROPERTY TO IMPROVE LIVES

Professor Ncube has been awarded the new SARCHI Chair in Intellectual Property, Innovation and Development. This is well-deserved acknowledgement

of Ncube’s contribution to the field of intellectual property law and her focus on the promotion of public interest and innovation.



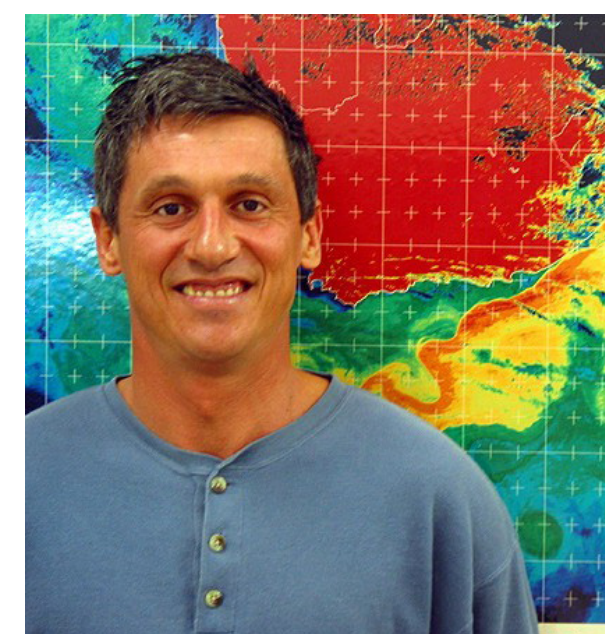
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### INES MEYER: DECENT WORK A DRIVER FOR SUSTAINABLE LIVES

The new SARCHI Chair in Creation of Decent Work and Sustainable Livelihood has been awarded to organisational psychologist Associate Professor Ines Meyer. Her work takes a ‘humanomics’ view of a living wage in society.



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### MATHIEU ROUAULT: WHAT OCEAN AND ATMOSPHERE MODELLING CAN TELL US ABOUT CLIMATE AND WEATHER

According to the new holder of the SARCHI Chair in Ocean-Atmosphere Modelling, Professor Mathieu Rouault, studying patterns of how the ocean and atmosphere interact not only improves weather forecasting but can help us to better predict and ameliorate the social impact of climate events.



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## 05 Funding from Chan Zuckerberg Initiative for research to map all cells in the human body

UCT has been awarded a grant for the work of Professor Musa Mhlana in the Chan Zuckerberg Initiative's first open request for applications in support of the Human Cell Atlas community.

Mhlana, based at UCT's Institute for Infectious Disease & Molecular Medicine (IDM), is among 38 recipients being recommended for funding by the Chan Zuckerberg Initiative as part of its Human Cell Atlas project. Of the grantees, nine – including the Mhlana

Lab – are outside the United States. Mhlana's research will contribute to a global initiative to map all the cells in a human body.

The funding is being made possible in part by a grant from the Chan Zuckerberg Initiative donor-advised

fund, an advised fund of the Silicon Valley Community Foundation. Dr Mhlana's co-principal investigator in the grant is Dr Macha Nikolski of the University of Bordeaux.

The Chan Zuckerberg Initiative is a philanthropic organisation established by Facebook founder Mark Zuckerberg and his wife Dr Priscilla Chan, a paediatrician and philanthropist, in 2015. The organisation's current focus is supporting science, through biomedical research, and education, through personalised learning. One of its first research projects is the Human Cell Atlas, an international collaboration to map and characterise all of the cells in the human body. This is the project through which Mhlana was awarded.

The Human Cell Atlas will study and document the types, numbers, locations, relationships and molecular parts of every human cell. This information will allow us to better understand how healthy cells work and what goes wrong when they aren't healthy.

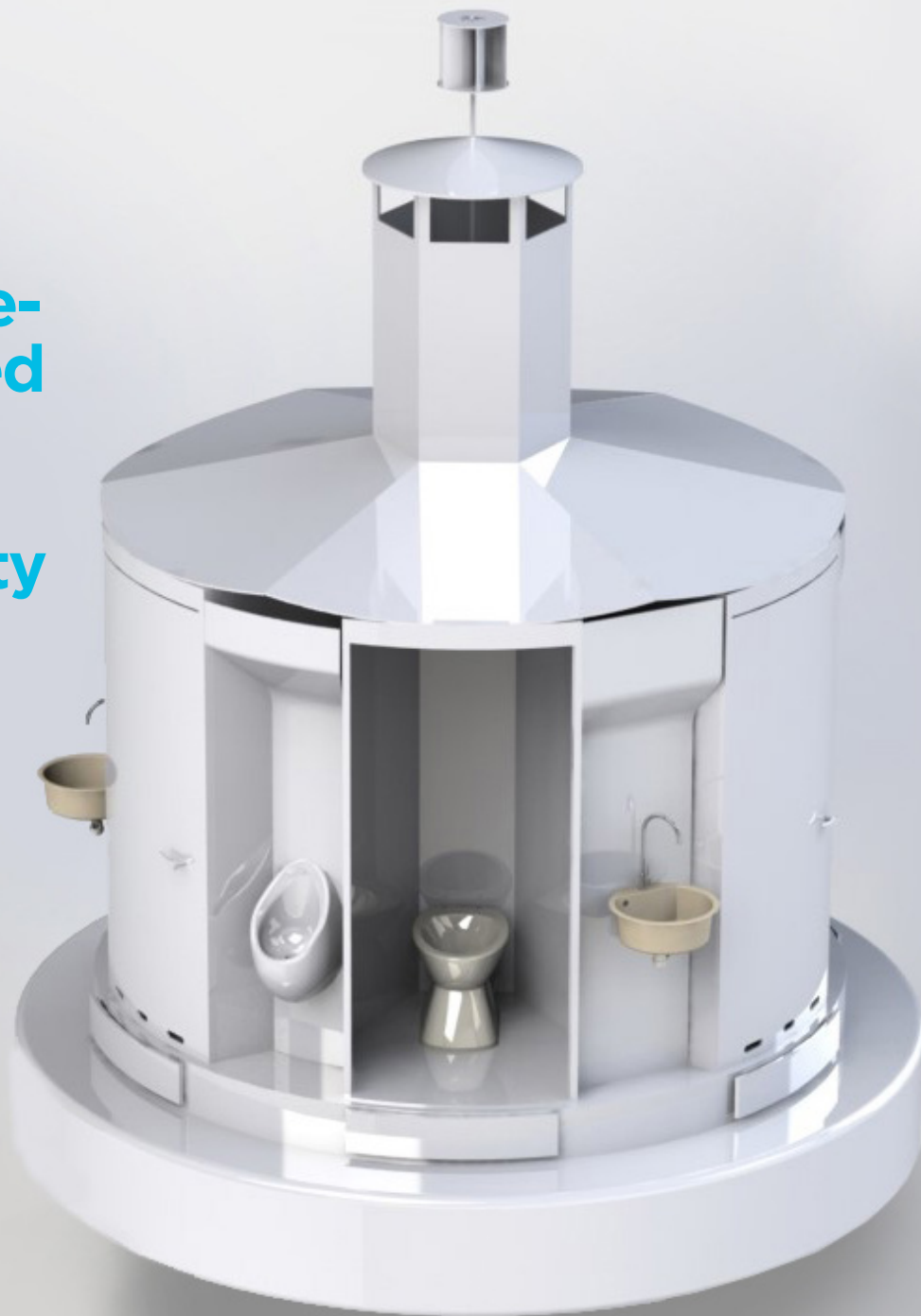
"The Human Cell Atlas is not only going to revolutionise the way we see human biology, but it's also going to revolutionise medicine," says Mhlana, who was among nearly 500 applicants of whom about 8% were recommended for funding.

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## 06 Value-added toilet hub wins global sustainability award

Dr Dyllon Randall and his team scooped a global sustainability prize at UNLEASH 2018 with their SaniHive prototype – a self-sustaining toilet hub that recovers value from waste. The innovation has huge potential in urban slums.



SaniHive – a modular, fully integrated toilet design – is inspired by the structure of honeycomb and maximises space in urban slums. It took the laurels for the United Nations Sustainable Development Goal 6: Clean Water and Sanitation,

as well as the Global Scalability Potential award, beating the 995 other contestants and 169 other solutions.



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## 07 Top research prize for Prof Mark Solms

Professor Mark Solms has been awarded the prestigious Harry Oppenheimer Fellowship Award, considered to be the pre-eminent research prize on the African continent.

Harry Oppenheimer Fellowship awardees are leading scholars with sustained records of outstanding research and intellectual achievement. Twenty individuals have received the prize thus far, eight of whom have been from UCT. Solms is the first psychologist among them.

The award includes a prize of R1.5 million, which will be used to finance the third phase of Solms's ongoing research project looking at the interaction between brain mechanisms and the psychology of depression.



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## 08 Groundbreaking Neuroscience Centre

Work has begun on the new Neuroscience Centre: an interdisciplinary research and clinical space to study and treat mental and neurological disorders in South Africa.



The centre will be the physical home of the newly established UCT Neuroscience Institute, as well as the Groote Schuur Hospital Clinical Neuroscience Centre, where researchers and clinicians will work together to treat the brain and nervous system disorders that burden South Africa.

With both the vice-chancellor at the time, Dr Max Price, and Professor Mamokgethi Phakeng, vice-chancellor designate, in attendance at the

breaking-ground ceremony, it seemed both a celebration of the achievements of the past and a sign of hope for the future.

“Breaking ground signals a beginning, not of the work, but of renewed hope, of renewed energy for the work that you have been doing and the work that is still to come,” said Phakeng.



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## 09 Two prestigious awards for Heather Zar

Professor Heather Zar is the 2017 recipient of the Alan Pifer Award – a prize presented annually by UCT’s vice-chancellor in recognition of outstanding socially responsive research. This recognition comes hot on the heels of another honour: being named the 2018 L’Oreal-UNESCO For Women in Science Laureate for Africa and the Arab States.



### ALAN PIFER AWARD

Zar, chair of the Department of Paediatrics and Child Health and director of the Medical Research Council Unit on Child and Adolescent Health, has gained a reputation for rising above the challenges posed by a lack of resources to create new strategies to address key childhood illnesses. Over the past 20 years, she has helped improve and save the lives of thousands of children through research and innovation in child health.

It is therefore fitting that she has been recognised with the Alan Pifer Award, which underpins UCT’s commitment to producing a body of work that contributes to the advancement of South Africa’s disadvantaged people.

“One of the contributions one wants to make as an academic is helping to improve the lives of people who need it most,” says Zar.



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### FOR WOMEN IN SCIENCE LAUREATE

In recognition of her wide-ranging contributions to child health, as well as her role in shaping international policy, Zar has been announced as the 2018 L’Oreal-UNESCO For Women in Science Laureate for Africa and the Arab States. The prestigious award is given annually to five women scientists worldwide, one from each continent.

Respiratory illnesses, such as pneumonia, tuberculosis and asthma, are leading causes of mortality and debilitating illness in children worldwide – but especially in Africa. These illnesses are also a serious complication in HIV-infected children. Zar has devoted much of her working life to finding ways to tackle these conditions and to developing capacity in Africa in this field.



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# 10 Two new African centres of excellence

UCT has launched two new centres of excellence under the banner of the African Research Universities Alliance (ARUA): the African Centre of Excellence for Inequalities Research (ACEIR), led by UCT's Poverty and Inequality Initiative (PII), and the ARUA Centre of Excellence in Climate and Development, led by UCT's African Climate and Development Initiative (ACDI).

## ADVANCING AFRICA'S INEQUALITIES AGENDA

ACEIR seeks to consolidate and magnify the efforts of African universities as they relate to poverty and inequalities research, with a mind to informing policy and advancing civil society action.

Although housed at UCT, under the direction of Professor Murray Leibbrandt, the centre will be made up of three nodes across the African continent. This lateral organisation

reflects the way the centre plans to work: as partners seeking to advance the African perspective on inequality.

UCT will host the southern African node, drawing on the expertise of DataFirst to constitute ACEIR's data centre. The two other local hubs will be at the University of Ghana and the University of Nairobi.



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## NEW STATUS FOR AFRICAN CLIMATE INITIATIVE

The ACDI has taken a step up, graduating from a Vice-Chancellor's Strategic Initiative to an established UCT institute at the end of 2017.

Launched in 2011, the ACDI was one of four Vice-Chancellor's Strategic Initiatives established by Dr Max Price soon after he took the helm at UCT in 2008.

The institute conducts interdisciplinary, innovative research across a wide range of disciplines to inform its teachings. One of the highlights in the new institute's short history has been the launch of its flagship interdisciplinary programme, the master's in climate change and sustainable development.

The award of institute status was an incredible achievement in such a short space of time, said then Vice-Chancellor

Designate Mamokgethi Phakeng at the launch of the ACDI as an institute.



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## CLIMATE RISK EXPERT WINS PIERS SELLERS PRIZE

Professor Mark New, director of the African Climate and Development Initiative (ACDI), and holder of the AXA Research Fund Chair in African Climate Risk, has been recognised for his world-leading climate research. This lifelong contribution award was presented in the form of the Piers Sellers Prize for a cutting-edge contribution to solution-focused climate research.



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## 11 UCT performs in 2018 subject rankings

UCT has been ranked among the top 50 universities in the world for three subjects in the 2018 QS World University Rankings by Subject: development studies, geography and sport. A further eight subjects are in the top 100.

UCT remains one of the top places in the world to research and learn about development studies according to the latest Quacquarelli Symonds (QS) subject rankings, having moved down just one position to 11th place.

In 37th place, sports-related subjects at UCT are ranked in the top 50 for the first time, tied with the National University of Singapore. This is a jump up from last year (the field was first included in the rankings in 2017) when UCT was in the 51-100 range.

Geography at UCT remains in the top 50 in the world, in 49th place, equal with the University of East Anglia.

UCT has a total of 11 subjects in the top 100. The other eight are agriculture, anatomy, anthropology, archaeology, architecture, English, law and social policy.

The QS World University Rankings by Subject ranks 48 subjects in five broad subject areas: arts and humanities, engineering and technology, life sciences and medicine, natural sciences, and social sciences and management. UCT's performance has improved in all of these five areas, with life sciences and medicine jumping into the top 100 in 88th position.

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## 12 Five recipients of the 2017 Claude Leon Merit Award

The Claude Leon Merit Award recognises exceptional work by early career researchers in the natural sciences, medical sciences and engineering. Five UCT academics were recognised for their scholarly work in the most recent year.



### SAHAL YACOOB: TO THE HEART OF MATTER

Particle physicist Dr Sahal Yacoob is one of five UCT researchers who received Claude Leon Merit Awards in 2017. The award will support his research on the Higgs boson – the elusive particle that gives matter mass – and the mysterious “top quark”, the giant among all observed elementary particles.

A senior lecturer in the Department of Physics, Yacoob has always been enthralled by the building blocks of

the universe and how these underpin the basic laws of nature – and life as we know it.

“A long time ago, scientists thought they had a handle on this with atoms (made up of protons, neutrons and electrons), which they thought were the ‘Lego blocks’ used to make up the universe,” he says. Now we know that protons and neutrons have an internal structure.



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### JOSEPH RAIMONDO: WHY DO BRAINS SEIZE?

Dr Joseph Raimondo has always been fascinated with the brain, and from a young age he endeavoured to understand how it works. As one of five UCT researchers to receive a 2017 Claude Leon Merit Award, his work has now been given a helping hand.

“I started my academic career studying medicine at UCT. This allowed me to understand first-hand many of the health challenges faced by my fellow South Africans,” he says.

“The brain depends on the coordinated activity of multiple computational units – brain cells – for its operation,” Raimondo explains. Cellular neuroscience is focused on how these single cells contribute to brain function and dysfunction.



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### KATYE ALTIERI: WINDFALL HELPS TRAIN UNDERGRADS IN AIR SAMPLING

Atmospheric chemist Dr Katye Altieri will use her Claude Leon Merit Award to teach undergraduates in oceanography and atmospheric science the rudiments of conducting air-quality analyses. It’s something she’s always wanted to do for undergraduates.

Altieri’s research interests are climate and biogeochemistry in the marine atmosphere. Her focus includes surface ocean–lower atmosphere nitrogen cycling, the impact of air pollution on the ocean, and the chemical composition and climate impact of organic aerosols – suspensions of particles dispersed in air or other gases.



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### ADENIYI ISAFIADÉ: CREATIVITY KEY TO ENSURING ENERGY SUPPLY

Associate Professor Adeniyi Isafiade has made strides in ensuring that the networks bringing us crucial resources, such as energy and water, are as efficient, cost-effective and environmentally friendly as possible. But it was for his attempts at integrating renewable energy into these networks that Isafiade was honoured with a 2017 Claude Leon Award.

“... the recognition is very important for an early career researcher, not only in the aspect of the financial reward that enhances further research, but also in the aspect of the recognition, which is highly motivating in pushing an early career researcher to be more productive,” he says.



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### SARAH FAWCETT: NITROGEN POLLUTION IN FALSE BAY

Despite a wealth of research on False Bay, little is known about the chemical make-up of its water, how this varies seasonally and how its vigorous circulation prevents stagnation. But a new study on nitrogen pollution in the country's biggest natural bay by Assistant Professor Sarah Fawcett – one of five UCT researchers who received Claude Leon Merit Awards in 2017 – hopes to change that.

The study aims to identify the sources of nitrogen pollution to the bay, evaluate how far offshore the pollution can persist and, through a dedicated monitoring programme, understand what happens to it once it enters the water. Fawcett hopes the study will support a long-term monitoring plan for the bay.



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## 13 Excellence and impact

To build a globally competitive science system in South Africa, the National Research Foundation's (NRF) rating system benchmarks the quality of our researchers against the best in the world. In the most recent rating cycle, UCT received two new A ratings and two new P ratings – two of the most respected categories.

### P RATINGS

The NRF's P rating is given to young researchers who are likely to become future international leaders in their field based on exceptional potential demonstrated in their early career research.

### Associate Professor Alistair Price

has been awarded a P rating for his ongoing research on the intersections between private law, public law and human rights. He is fascinated by the ways the private law of obligations could be influenced – even improved or undermined – by fundamental rights and other public-law ideas.

“Over the past half-century, many legal systems have seen private and public legal ideas starting to interact in novel ways,” says Price. “For example, the South African Constitution states – quite radically – that human rights may apply not only to the state (like Parliament or police), but also potentially to private parties (like employers, landlords, and landowners).” He adds that this raises a wide array of practically important and theoretically challenging questions.

“My work examines these sorts of questions and attempts to answer them, often by contrasting South Africa's approach with those attempted elsewhere.”



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**Oceanographer Dr Sarah Fawcett's** undergraduate degree at Harvard University was followed by a PhD and a postdoctoral fellowship at Princeton University. Since joining UCT's oceanography department two years ago, Fawcett has delved into understanding the role of the ocean's chemistry in climate – today and in the past – and in structuring marine ecosystems.

As Fawcett explains, you can't think about marine chemistry and its impact on climate without looking at the vast southernmost waters of the global ocean. "We're very lucky here in South Africa to have incredible access to the Southern Ocean with, for instance, the R/V *SA Agulhas II* – the government's ice-breaking research ship – being able to head there multiple times a year," she says.

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## A RATINGS

Researchers who hold an A rating are recognised internationally as leading scholars in their field based on their consistently produced, high-quality research outputs with a measurable impact.

**Professor Keertan Dheda**, head of the Division of Pulmonology at UCT, focuses on the design and evaluation of user-friendly diagnostic tools and interventions for drug-sensitive and -resistant tuberculosis (TB).

Dheda recently led a multicentric study – in four countries and involving over 2 500 patients – to evaluate a new user-friendly urine-based diagnostic test (urine LAM). This was the first controlled study to evaluate the benefit of the LAM test in reducing mortality and the findings underpinned the World Health Organization's guidelines regarding its global rollout.

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**Professor Kelly Chibale**, as director of UCT's Drug Discovery and Development Centre (H3D), conducts research with a focus on drug discovery for communicable parasitic and bacterial diseases, such as malaria and tuberculosis.

Using a variety of approaches to clarify how new drugs work, Chibale and his laboratory have contributed fundamental scientific knowledge. Among their achievements, Chibale

and his team identified the enzyme of the human malaria parasite that is the target for MMV048, an antimalarial clinical drug candidate. MMV048 marks the first time that an international drug development effort led by Africa has taken a small molecule from screening through to human clinical trials.

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## 14 MeerKAT Award for UCT Chair of Astronomy

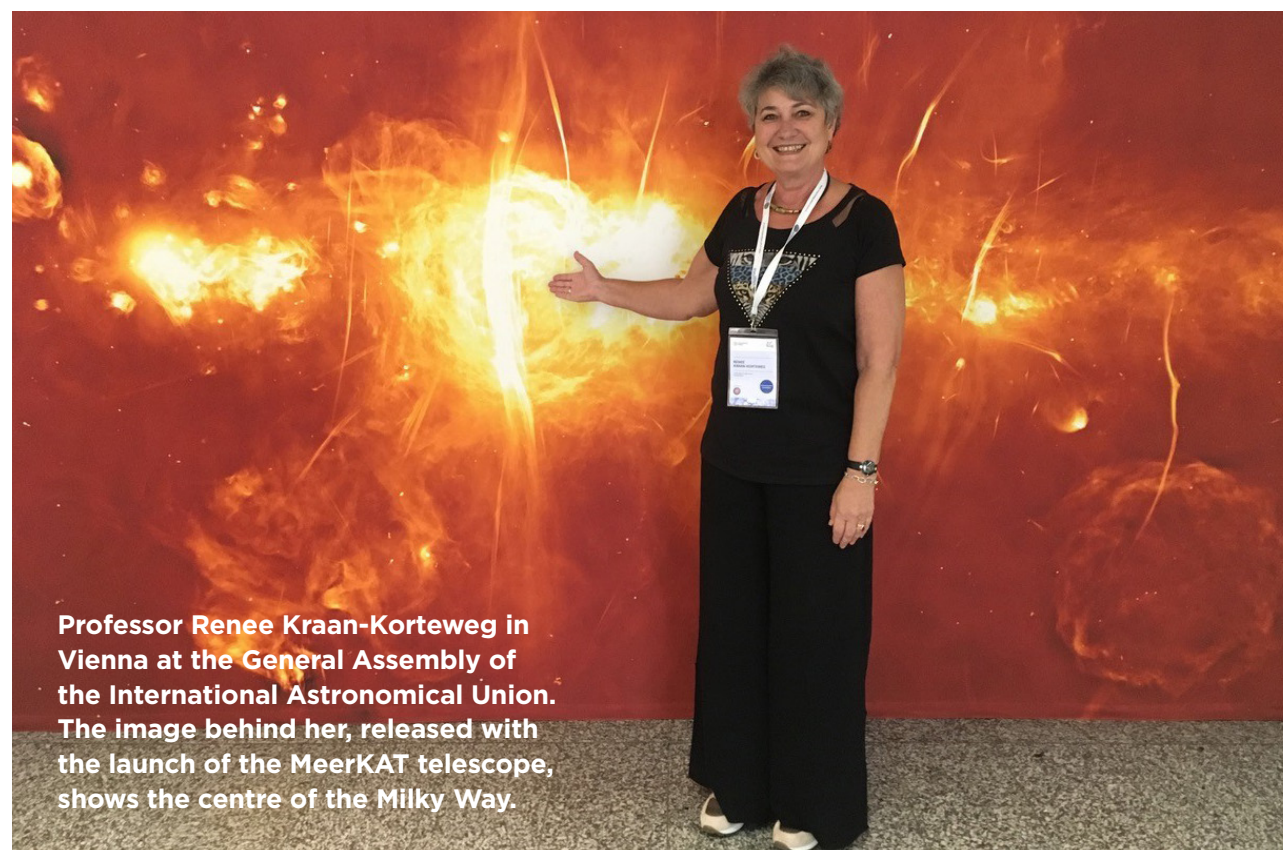
Chair of Astronomy Professor Renee Kraan-Korteweg flew the flag with distinction for UCT when she won the Minister's Special Award in the field of astronomy at the South African Women in Science Awards 2018 hosted by the Department of Science and Technology.

The Minister's Special Award in the field of astronomy, the Commemorative MeerKAT Award, went to Kraan-Korteweg in recognition of her "outstanding contribution to building South Africa's scientific and research knowledge base in advancing the field of astronomy".

Kraan-Korteweg pioneered radio astronomy in the Western Cape when

she took up the chair to head UCT's astronomy department in 2005. In 2006, she was behind the launch of an astronomy major, and she says she immediately offered the first radio astronomy research projects to young South African postgraduate students.

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**Professor Renee Kraan-Korteweg in Vienna at the General Assembly of the International Astronomical Union. The image behind her, released with the launch of the MeerKAT telescope, shows the centre of the Milky Way.**

## 15 Introducing ZivaHub: Open Data UCT

Following the official launch of ZivaHub during October 2017, UCT Libraries is the first academic library in the country to have a fully functioning open-access institutional data repository available to its research community.



Powered by Figshare for Institutions, ZivaHub is an online platform where researchers can upload the processed data that either directly supports their research or that constitutes a research output. ZivaHub allows researchers and UCT to make research data findable, accessible, interoperable and reusable.

The move was motivated, in part, by the university's 2015-2020 Strategic Plan, where UCT made a commitment to ensure that its research is visible and discoverable.

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## 16 UCT start-up awarded for breakthrough heart valve

A team of dedicated heart surgeons, clinicians and medical engineers at Strait Access Technologies (SAT) – a UCT start-up company – has perfected a heart valve that will save millions of lives.

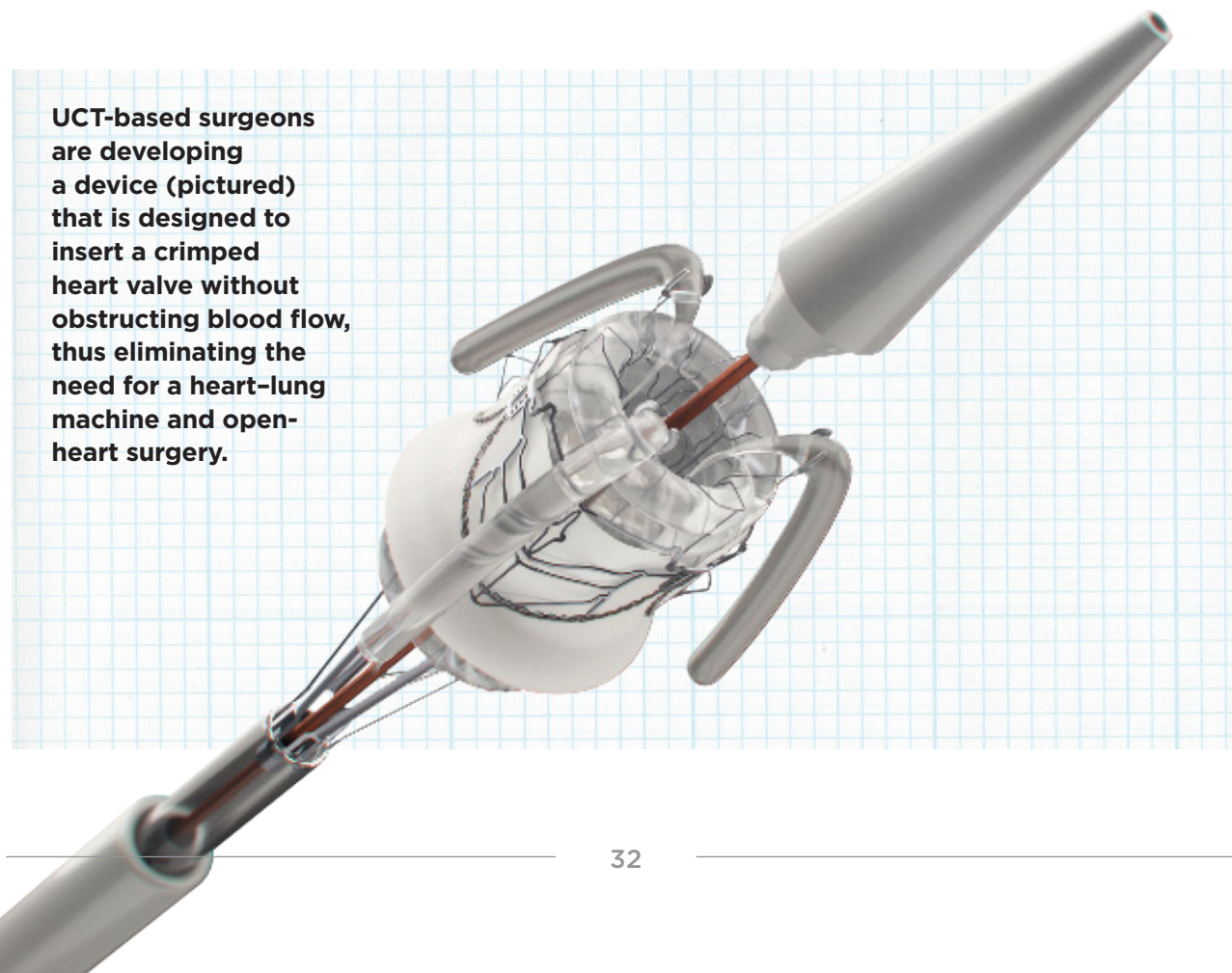
Rheumatic heart disease is the damage caused to heart valves after an episode of rheumatic fever. For millions of patients, the disease destroys their valves to a point where only replacement with an artificial one can save their lives.

The SAT valve – which was designed with developing nations in mind – allows doctors to repair or replace diseased heart valves at under-resourced hospitals without the need for open-heart surgery.

The idea was first conceived 10 years ago, and for the past six years, a team of about 30 engineers, technologists and surgeons have been developing the valve and the procedure for its placement. SAT has since received two prestigious global awards for innovation in cardiac surgery, which were handed over at a recent meeting of the European Association of Cardio-Thoracic Surgery in Vienna.



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**UCT-based surgeons are developing a device (pictured) that is designed to insert a crimped heart valve without obstructing blood flow, thus eliminating the need for a heart-lung machine and open-heart surgery.**

## 17 Sudesh Sivarasu: the prolific inventor serving humanity through innovation

Dr Sudesh Sivarasu, senior lecturer in the Division of Biomedical Engineering, was awarded the 2017 Deputy Vice-Chancellor's Award for Achievement in Innovation for his achievements in the field of biomedical engineering and his contributions to fostering collaborative innovation at UCT, as well as nationally and internationally.



Sivarasu has contributed invaluable inventions and innovations to the research community and – more importantly for him – to the everyday lives of people. He also founded the Medical Devices Lab and the Orthopaedic Biomechanics Lab at the Faculty of Health Sciences, and it was these achievements that were highlighted at UCT's 2017 Innovation Evening where Sivarasu was honoured.

The devices Sivarasu has invented have applications ranging from stroke rehabilitation through to orthopaedic surgery, asthma therapy and children's medicine. His name is associated with 19 patents and patent applications and seven inventions at UCT.



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## 18 IDIA research cloud

The MeerKAT telescope, the first phase of the Square Kilometre Array in South Africa, will allow astronomers to better understand the universe. But before that's possible, we need to solve the accompanying big data challenge. The IDIA research cloud – launched during July 2018 – is the first step towards that goal.

The Inter-university Institute for Data Intensive Astronomy's research cloud is tailored to process data on the scale expected from MeerKAT. Beyond just the storage for the raw data, the cloud computing facility allows researchers to use their own tools to process data on unprecedented scales.

Scientists use computer algorithms to build analysis pipelines, turning data into images, and to analyse and visualise the data to create new knowledge. On the IDIA research cloud, they can deploy pipelines and analytics, and run special programs to visualise and explore the data from MeerKAT.



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FROM LEFT TO RIGHT: Peter Dunsby, Lucy Gilson, Graeme Meintjes, Mamokgethi Phakeng, Bruce Hewitson, Michael Lambert, Max Price, Malcolm Collins, Chuma Himonga, Chris Reason. ABSENT FOR THE PHOTO/ CEREMONY Crick Lund, Karen Barnes and Peter Ryan.

### THE NEW UCT FELLOWS FOR 2017 ARE:

**Professor Bruce Hewitson**, Department of Environmental and Geographical Science  
**Professor Chris Reason**, Department of Oceanography  
**Professor Chuma Himonga**, Department of Private Law  
**Professor Crick Lund**, Department of Psychiatry and Mental Health  
**Professor Graeme Meintjes**, Institute of Infectious Disease and Molecular Medicine  
**Professor Karen Barnes**, Division of Clinical Pharmacology  
**Professor Lucy Gilson**, School of Public Health and Family Medicine  
**Professor Malcolm Collins**, Department of Human Biology  
**Professor Michael Lambert**, Department of Human Biology  
**Professor Peter Dunsby**, Department of Mathematics and Applied Mathematics  
**Professor Peter Ryan**, Percy FitzPatrick Institute of African Ornithology.

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## 19 UCT's new Fellows

Eleven new Fellows were inducted into UCT's prestigious College of Fellows at a ceremony and dinner held during October 2017.

In her welcome address, Professor Mamokgethi Phakeng, then deputy vice-chancellor for research and internationalisation, said that the evening was intended to "recognise academic staff whose distinguished work deserves special recognition".

Commenting on the "bumper crop" of Fellows this year, then

Vice-Chancellor Dr Max Price said, "These were not contested at all ... for every candidate the question was asked: 'How come we didn't appoint them before?'"

Phakeng thanked the new Fellows "for the work you do because it's the work that you do that gives us a good name. It's the work that you do that

makes people look at us. It's the work that you do that makes the world say that we are number one in Africa."

*"It's the work that you do that makes the world say that we are number one in Africa."*



# 20 Six Young Researcher Awards

The annual College of Fellows' Young Researcher Awards honour the significant, independent contributions of six young UCT researchers to their respective fields.

The selection committee for the awards consists of current UCT Fellows, nominated by the UCT College of Fellows, who represent a broad range of academic disciplines, and is chaired by the deputy vice-chancellor for research and internationalisation.

**AWARDED DURING OCTOBER 2017, THIS YEAR'S RECIPIENTS WERE:**

**Dr Alvaro de la Cruz-Dombriz**,  
Department of Mathematics and  
Applied Mathematics

**Dr Amit Mishra**, Department of  
Electrical Engineering (in absentia)  
**Dr Juana Sanchez-Ortega**,  
Department of Mathematics and  
Applied Mathematics  
**Dr Ross Hofmeyr**, Department  
of Anaesthesia  
**Dr Shannon Morreira**, Education  
Development Unit  
**Dr Sudesh Sivasasu**, Department  
of Human Biology.



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FROM LEFT TO RIGHT: Sudesh Sivasasu, Mamokgethi Phakeng,  
Alvaro de la Cruz-Dombriz, Max Price, Juana Sanchez-Ortega,  
Shannon Morreira, Ross Hofmeyr

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featuring stories from across the university.