



Research Dashboard

Research

excellence is measured in a variety of ways. From research funding in the form of research contracts and grants to the numbers of postdoctoral students and NRF-rated researchers, UCT continuously benchmarks itself against a range of national and international indicators to ensure it remains a leading research institution.

Research funding is often used as a measure of the quality of research produced by an institution. In 2011, the number of national and international research grants and contracts awarded to UCT continued its upward trend, with an increase of R121 million reflected in 2011 research income compared to the previous year. In the national arena, UCT continues to be the largest recipient of NRF research grant funding. One of the funding areas in which UCT increased its income from the NRF was through the Incentive Funding for Rated Researchers Programme, highlighting the importance of achieving NRF rating, with its direct link to funding. The income received for freestanding scholarships and postdoctoral fellowships is also indicative of the calibre of students registered at UCT for postgraduate and postdoctoral training.

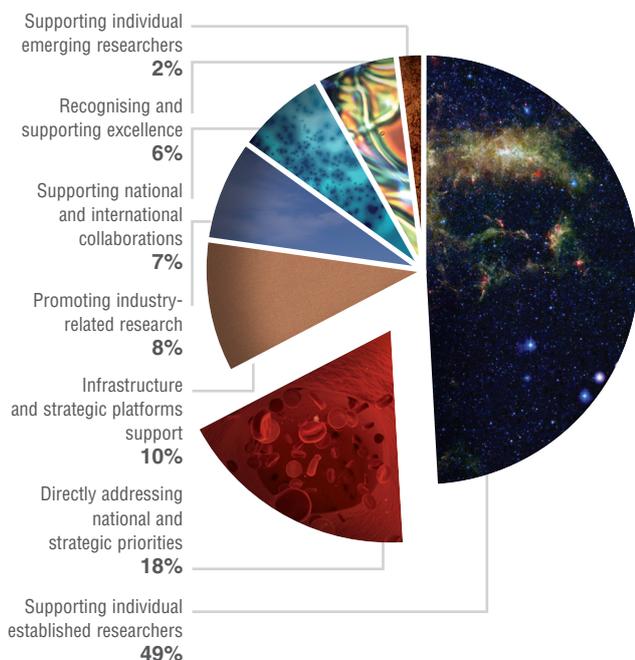


Figure 1 NRF funding awarded to UCT (inclusive of 2010 carry-forwards) in 2011 by funding purpose

RESEARCH FUNDING

National agency funding through research grants

At the end of 2011, UCT had a total of 491 recipients of NRF grants across a variety of funding categories, holding 848 grants with a cumulative value in excess of R224 million (see **Figure 1** for grant breakdown by funding purpose). This total can be favourably compared to the previous year's 399 grant recipients holding 749 grants with a cumulative value of more than R213 million. NRF funding to UCT was mainly allocated from the following programmes (other than the South African Research Chairs Initiative (SARChI) and the Centres of Excellence):

■ Incentive Funding for Rated Researchers Programme

The purpose of this programme is to provide funding to researchers as a reward for their research track record. Researchers with a valid NRF rating are eligible to apply for incentive funding. In total, 302 rated researchers at UCT received incentive funding grants in 2011, with a total value of R16,442,051. This compares favourably with the previous year's 267 rated researchers holding grants with a cumulative value of R15,564,182.

■ Technology and Human Resources for Industry Programme (THRIP)

THRIP is managed by the NRF on behalf of the Department of Trade and Industry (DTI). It is a partnership programme that leverages industry funding with the provision of matching government funding for innovative research and development in South Africa. Direct funding from THRIP for 2011 increased to R17,827,833 as compared to the previous year's R13,140,305.

■ International Science Liaison (ISL)

UCT researchers continue to take advantage of the funding opportunities provided by the NRF's International Science Liaison programme that aims to forge and maintain strategic and intellectual alliances between individuals, institutions and organisations in research communities nationally and internationally, in order to enhance South Africa's international competitiveness. In 2011, UCT's ISL grants had a value in excess of R16,442,205, as compared to the previous year's total of R26,433,340. The substantial drop in funding can be attributed to the NRF posting fewer calls for applications in both 2010 and 2011.

UCT professor wins L'Oréal-UNESCO Award in Life Sciences

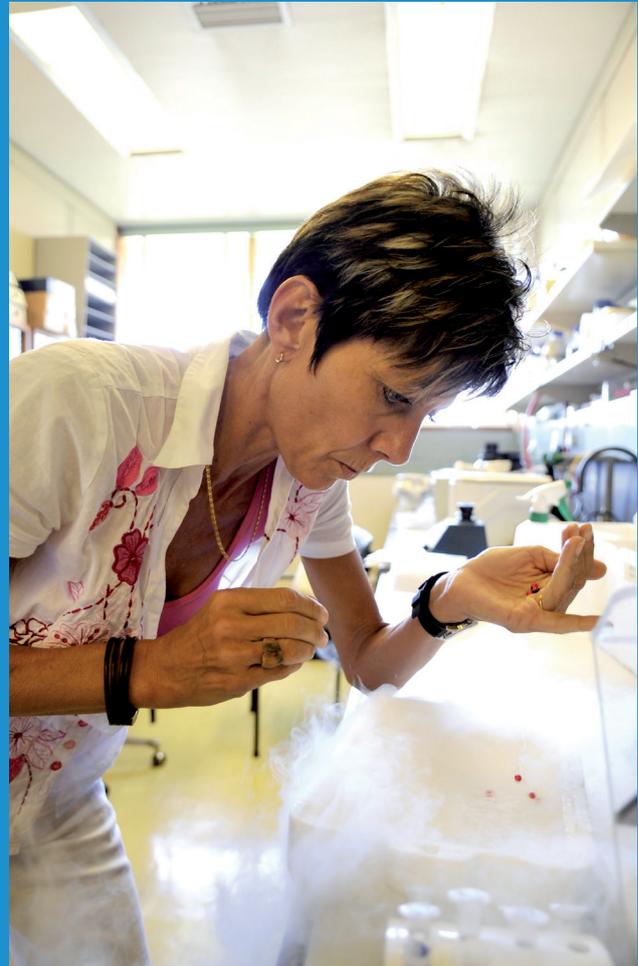
Plant physiologist, Professor Jill Farrant, holder of a Harry Oppenheimer Memorial Trust Fellowship Award as well as the South African Distinguished Women in Science Award, has added another feather to her cap: the 2012 L'Oréal-UNESCO Award in Life Sciences (Africa and Arab States), which was awarded in late 2011.

L'Oréal, a producer of beauty products, sponsors the US\$100,000 award singling out women whose research can have a major impact on society.

An international network of nearly 1 000 scientists nominates the candidates that form part of the L'Oréal-UNESCO Women in Science Programme. The five laureates, representing five world regions, are then selected by an independent, international jury presided over by medicine Nobel Prize laureate Professor Günter Blobel.

Professor Farrant, who holds a UCT research chair in the molecular physiology of plants, is renowned for her multi-angled work on desiccation-tolerant plants, which are able to withstand prolonged drought or water loss but will spring to life once water arrives.

The potential outcome of her work, the production of drought-tolerant crops, with the aim of addressing food security needs in Africa, will become ever more important as climate change and the resulting increasing droughts impact on agriculture.



UCT continues to monitor these trends for institutional planning purposes. The Emerging Researcher Programme (see page 170) is an example of the university's strategic intervention to complement the gaps in current NRF funding.

UCT receives funding from the Medical Research Council in the form of research grants (such as career awards, training fellowships, and development awards), self-initiated research grants (for individual projects), and research unit funding, as well as for student scholarships and bursaries as described on page 22. In 2011, 27 new awards were made, valued at R14,753,395.

Funding through research contracts

The number of research contracts approved in 2011 increased by 29 percent over the previous year, and was valued at R722 million. These contracts vary from short-term contracts of under R10,000 to multi-year contracts with multi-million-rand budgets involving both local and foreign funders.

There was a dramatic increase in the value of contracts with South African government departments, public enterprises, and statutory bodies (R133 million from R51 million in 2010). Similarly, the value of contracts entered

SA Government	Public Entities and Statutory Bodies	SA Non-profit	SA Science Councils	SA Industry	Foreign Government	Foreign Non-profit	Foreign Industry
R92,264,869	R40,801,316	R56,806,953	R19,621,475	R73,978,095	R186,263,313	R188,595,455	R63,823,181

Table 1 Total value of research contracts in 2011

into with local industry has increased to R74 million from R59 million in 2010. In this regard, the contributions of the Sasol Group, Anglo Group, Eskom Group and Rustenburg Platinum Mines are particularly significant.

More than 60 percent of research contracts were signed with international partners from 32 countries in 2011. Key sources of foreign funding include the USA (R224 million), United Kingdom (R101,5 million) and The Netherlands (R30,87 million).

The USA's National Institutes of Health was the most prominent funder of contract research, and contracts to the value of R92,4 million were, directly or indirectly – through collaboration with USA universities – entered into in 2011. Other major USA funders were the Bill and Melinda Gates Foundation, whose contribution was R55,7 million, and the Aeras Global TB Vaccine Foundation's contribution of R40,56 million.

The Department for International Development (DFID) was the major United Kingdom contributor and contracts to the value of R65,9 million were, directly or indirectly – through collaboration with UK universities – entered into during this period. R31,2 million of European Commission funds were accessed directly or through collaboration with various UK and European universities. Contracts to the value of R25 million were entered into with the European and Developing Countries Clinical Trials Partnership (EDCTP), an organisation that operates from The Netherlands. Funding from Canada included the Grant Challenge Canada (R7,4 million) and the International Development Research Centre (R4,9 million).

POSTGRADUATE STUDENTS AND FUNDING

Postgraduate students

Postgraduate students play an important role in the research activities of the university. They are funded through various sources, with the strongest support coming from departmental scholarships at UCT and the National Research Foundation. Further support comes from UCT-sourced funds, income from UCT's investments, and donations to the university from generous and valued sponsors.

In 2011, the Postgraduate Funding Office administered 6 843 applications from 6 016 postgraduate students registered for honours, master's and doctoral degrees at UCT. Of these, 4 074 awards, totaling R135,381,878, were offered to 2 269 students, and R9,000,000 in external awards was paid directly into individual students' fee accounts.

Sources of funding

■ **UCT Departmental Scholarships** are derived from grants fund-raised by academics in specific departments or units, from external partners and/or sponsors.

■ **The National Research Foundation** continues to be a significant funder of postgraduate students at UCT, either through block grants allocated to the university or by applications made directly to the NRF. In 2011, 1 080 bursaries and scholarships were awarded to postgraduate students, which were valued at R46,624,230.

■ **The Medical Research Council** provides financial support to master's and doctoral students who are studying in areas of the health sciences. In 2011, 11 bursaries and scholarships were awarded to postgraduate students, with a total value of R580,000.

■ **The UCT Research Associateships**, sourced from UCT funds, provide prestigious awards to reward the research excellence of master's and doctoral students, while recognising the work of their supervisor(s). In 2011, 22 master's and doctoral awards were made, to the value of R900,000, to fund research in the following fields: economics, actuarial science, electrical engineering, neurosurgery, human biology, human genetics, medical biochemistry, public health and family medicine, social anthropology, philosophy, English languages and literature, drama, commercial law, international and criminal law, private law, chemistry, mathematics and applied mathematics, physics, and astronomy.

■ **The 2011 UCT Conference Travel Grants** enabled 17 master's and 62 doctoral students to travel locally and internationally to present papers at conferences. These grants amounted to the value of R104,344 for local travel expenses and R623,665 for international costs.

■ **UCT Scholarships for International Travel** attract significant numbers of applications from master's and doctoral students who wish to undertake research

Professor Underhill receives top award



Professor Underhill (right), seen here with Professor Wieland Gevers (centre) and PhD student Alecia Nickless, who represented the ADU at the awards ceremony. Ms Nickless, a statistician, is working on carbon flux modelling, which aims to investigate what is happening to the carbon dioxide in the atmosphere.

Emeritus Professor Les Underhill has been awarded the prestigious Harry Oppenheimer Fellowship Award for 2011. The award encourages and acknowledges excellence in scholarship in all its forms and is regarded as the top award for research on the African continent.

The honour comes with some special memories for Professor Underhill, who was capped by Mr Oppenheimer when he graduated with his PhD in mathematical statistics in 1973.

Having moved from his roots in mathematical statistics into a new discipline known as statistical ecology, Professor Underhill is now director of UCT's internationally acclaimed Animal Demography Unit (ADU).

The monetary side of the Oppenheimer award will go towards setting up early warning systems for biodiversity in South Africa and to contribute towards the development of a toolkit for biodiversity monitoring.

Through his work, Professor Underhill has also made the ADU a sought-after destination for young researchers.

"His inter-disciplinary approach and huge enthusiasm for his work has enabled him to attract a very large number of highly talented master's and PhD students," noted Professor Danie Visser, Deputy Vice-Chancellor responsible for research. "This makes him one of the heroes in our quest to produce the next generation of scientists."

collaboration with, and visits to, internationally recognised institutions. Successful candidates may spend two to ten months at an approved institution. In 2011, UCT supported 18 master's and doctoral students to travel to the institutions indicated on page 24. The total value of these awards was R1,107,800. They are made possible by bequests, and funds to support them are sourced from income derived from investments.

■ **The UCT International and Refugee Students' Scholarships** provide support to a number of international students who have been offered a place to study at UCT. In 2011, 92 international and 23 refugee students were awarded scholarships valued at R2,448,090 and R1,026,740 respectively. These funds were sourced from internal funds, income from investments, and with the support of the Sigrid Rausing Trust. Funding for

international students at UCT has increased significantly in recent years. In 2011, international students received 28,5 percent of the total funding provided to postgraduate students at UCT. **Table 6** and **Figure 2** illustrate the sources of funds for international student support, as well as the breakdown of students from the Southern African Development Community (SADC), other countries in Africa, and the rest of the world.

■ Through the **UCT Doctoral Package Project**, 20 awards were made in 2010, valued at R1,000,000. Of these, five awards were renewed in 2011.

■ In 2011, seven students received scholarships valued at R475,000 through the **UCT/Council for Scientific and Industrial Research (CSIR) Scholarship Programme**. This programme provides high-value scholarships to honours, master's and doctoral students whose areas of study fall within the CSIR's priorities. The contributions by each partner are set to increase in 2012, thereby enabling a corresponding increase in the number of students funded, and a significant increase in the value of awards.

In addition to the above, the university offers awards sourced from the donations of generous sponsors. The foremost sponsored funding programmes for 2011 are the following:

■ Through the **Carnegie Foundation's** grant of \$2,500,000 for postgraduate training and postdoctoral research programmes, the Next Generation of Academics Programme was rolled out in 2011. This intervention seeks

to advance scholarship and to improve the retention of African academics. The three selected areas of research are economics, civil engineering, and infectious diseases. Full-cost awards were made to 36 doctoral students and seven postdoctoral research fellows in 2011.

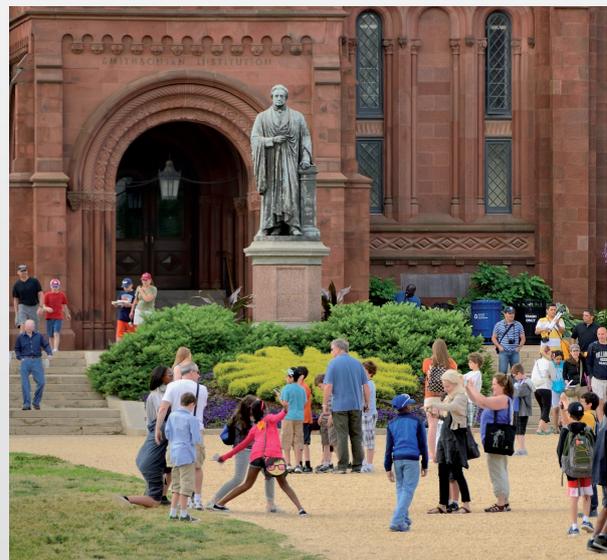
■ The **Claude Leon Foundation** provides support to both honours students and postdoctoral research fellows. The honours programme supported 15 financially needy students and provided 19 merit awards, valued at R400,000, in 2011. These entry-level scholarships are vital, as they enable the university to attract and retain students with the potential for higher degrees.

■ The generous **David and Elaine Potter Fellowships**, that commenced in 2004, provide full-cost support to excellent master's and doctoral students who intend to contribute to civil society in South Africa by leveraging their educational advantage in any discipline. Each student is required to plan and organise one seminar per degree. To date, 67 students have been supported and in 2011, 17 awards were made (including continuing students), valued at R1,995,000. Areas of study ranged across faculties and included economics, language and literature, philosophy, psychology, social anthropology, mathematics, oceanography, chemistry, chemical engineering, immunology, human genetics, medical virology, and neurosciences.

■ **The Harry Crossley Foundation** supports a research fellowship programme that provides full-cost fellowships to South African students who register for full-time study

INSTITUTIONS VISITED DURING 2011 BY MASTER'S AND DOCTORAL STUDENTS, AS A RESULT OF SUPPORT FROM UCT SCHOLARSHIPS FOR INTERNATIONAL TRAVEL

- University of Nairobi, Kenya
- Eindhoven University of Technology, The Netherlands
- Radboud University Nijmegen, The Netherlands
- University of Birmingham, United Kingdom
- Uppsala University, Sweden
- Oxford University, United Kingdom
- Consiglio Nazionale della Ricerche, Italy
- Michigan State University, United States of America
- Harvard University, United States of America
- Indian Institute of Technology, India
- Mississippi State University, United States of America
- Albany Law School, United States of America
- Harvard Medical School, United States of America
- Plymouth Marine Laboratory at the National Oceanography Centre, United Kingdom
- Centro de Investigaciones sobre Desertificación, Spain
- Institute de Recherche pour le Développement, France



Professor Chibale honoured for drug discovery and development work at H3-D

UCT's Alan Pifer Award 2011 has been awarded to Professor Kelly Chibale for his work on drug discovery in Africa.

Professor Chibale is the director of UCT's Drug Discovery & Development Centre H3-D and his research focuses on potential drugs for diseases such as malaria and tuberculosis.

The award stipulates that the recipient must have contributed to the advancement and welfare of the disadvantaged. According to the adjudicators, Professor Chibale's research has more than fulfilled this criterion. The H3-D is a project which assists African scientists in gaining the skills and capacity to develop pre-clinical drug candidates, with a focus on the diseases afflicting sub-Saharan Africa. The H3-D's new, unique model of drug discovery also attracts scientists from the UK and USA to work at UCT.

Professor Chibale is the 19th recipient of the award, named after the late philanthropist, erstwhile president of long-term UCT benefactor the Carnegie Corporation of New York, and founding chairperson of the UCT Fund.



in any research-related degree, with the exception of students whose studies are in the areas of politics or religion. The fellowships are granted on the basis of academic merit and financial need, to students proceeding to honours, master's and doctoral degrees. In 2011, 19 students received Harry Crossley Research Fellowships (including continuing students), valued at R1,349,000.

The Harry Crossley Foundation is one of UCT's most generous and long-standing donors. In addition to the fellowship programme, the foundation provides support to postgraduate students in the form of need-based bursaries, a postdoctoral fellowship, funds for research in health sciences, and an annual grant for the supply and maintenance of equipment in the Postgraduate Centre.

■ **The UCT/Woolworths Fellowship Programme** supports master's and doctoral students whose research is in the areas of environmental issues and probiotics. In 2011, seven students received renewal of their fellowships for a further year, valued at R620,000. No new awards were made in the interest of conserving the invested funds.

■ **The AW Mellon Foundation** provides a wide range of grants in support of research, teaching, and students at UCT. In 2010, the AW Mellon Cross-faculty Fellowship Programme was launched following a US\$800,000 grant from the foundation. These full-cost awards include allowances for research running costs, conference travel, and provide support to master's and doctoral students registered in specific areas of study in humanities, law and commerce. In 2010, 21 awards were made to the value of R2,100,000. In 2011, 20 awards (including renewals) were made to doctoral students, and 11 awards (including renewals) to master's students, valued at R2,069,000. The grant has accrued interest that will enable a third cohort of students to be supported in 2012.

■ In 2011, the **Department of Higher Education and Training** made National Student Financial Aid Scheme (NSFAS) loans available to postgraduate students. Although UCT was allocated R2,000,000, the late roll-out process meant that UCT was only able to make use of a small portion of these funds. Indications are that the balance of funding will be rolled over for use in 2012. See **Table 2**, where the NSFAS loans are recorded under State.

Degree	Awards	Departmental funds		Donations	Investments	MRC	NRF	State	Total
Honours	Awards	168	70	154	61		312	6	771
	Value	R2,256,000	R1,986,700	R2,731,238	R589,538		R7,035,000	R106,335	R14,704,811
Master's	Awards	576	580	143	245	6	459	3	2012
	Value	R6,994,361	R25,235,492	R3,733,102	R3,612,098	R310,000	R19,362,972	R50,810	R59,298,835
Doctoral	Awards	314	430	141	92	5	309		1 291
	Value	5,319,955	R21,442,225	R10,999,650	R3,120,144	R270,000	R20,226,258		R61,378,232
Total awards		1 058	1 080	438	398	11	1 080	9	4 074
Total value		R14,570,316	R48,664,417	R17,463,990	R7,321,780	R580,000	R46,624,230	R157,145	R135,381,878

Table 2 Total awards made to postgraduate students in 2011 by source of funds

Degree	Awards	Faculty						Total
		Engineering & the Built Environment	Commerce	Health Sciences	Humanities	Law	Science	
Honours	Awards	2	4	9	13		42	70
	Value	R20,000	R90,000	R195,000	R194,100		R1,487,600	R1,986,700
Master's	Awards	232	21	98	50	12	167	580
	Value	R9,706,617	R1,001,183	R6,348,776	R1,446,946	R305,380	R6,426,590	R25,235,492
Doctoral	Awards	85	32	94	34	12	173	430
	Value	R4,622,614	R1,246,465	R5,066,829	R1,630,547	R506,670	R8,369,100	R21,442,225
Total awards		319	57	201	97	24	382	1 080
Total value		R14,349,231	R2 337,648	R11,610,605	R3,271,593	R812,050	R16,283,290	R48,664,417

Table 3 UCT departmental scholarships awarded to postgraduate students in 2011

Degree	Awards	Faculty						Total
		Engineering & the Built Environment	Commerce	Health Sciences	Humanities	Law	Science	
Honours	Awards	28	13	37	147		87	312
	Value	R635,000	R260,000	R780,000	R2,795,000		R2,565,000	R7,035,000
Master's	Awards	77	14	81	105	11	171	459
	Value	R3,483,000	R610,000	R3,426,391	R4,180,000	R475,000	R7,188,581	R19,362,972
Doctoral	Awards	22	6	72	66	6	137	309
	Value	R1,494,000	R420,000	R5,107,570	R3,935,000	R420,000	R8,849,688	R20,226,258
Total awards		127	33	190	318	17	395	1 080
Total value		R5,612,000	R1,290,000	R9,313,961	R10,910,000	R895,000	R18,603,269	R46,624,230

Table 4 National Research Foundation bursaries and scholarships awarded to postgraduate students in 2011

NRF and NSTF-BHP Billiton awards for UCT Head of Medicine

Professor Bongani Mayosi, Head of the Department of Medicine at Groote Schuur Hospital and UCT, received two major national accolades relating to his work in building, managing, and leading capacity development at UCT.

After receiving the 2011 NRF Transformation of the Science Cohort Award, which recognises an individual who, according to the organisation, “has played an outstanding role in addressing the challenges of getting more women and black scientists to advance world-class research performance”, he was also named the winner of the 2011/2012 NSTF-BHP Billiton Award for his contribution to science, engineering, technology, and innovation through management and related activities over the last decade. The NRF’s Transformation of the Science Cohort Award was introduced in 2007. It is focused on transforming the science cohort to be more representative of South African demographics.

With both awards, Professor Mayosi was hailed for his scholarly work, as well as for his contributions to mentorship. His achievements include the establishment of research capacity-building programmes and the development of healthcare policy.



Faculty	Field of study	Destination
Commerce	Business Administration; Information Systems	United Arab Emirates; Nigeria; United States of America
Engineering & the Built Environment	Chemical Engineering; Civil Engineering; Electrical Engineering	Germany; Canada; United States of America; Hong Kong, China; Turkey
Health Sciences	Biomedical Engineering; Cell Biology; Clinical Science and Immunology; Exercise Science; Human Genetics; Medical Biochemistry; Medical Virology; Medicine; Physiology; Psychiatry	KwaZulu Natal, South Africa; Johannesburg, South Africa; Zimbabwe; United States of America; France; Canada; Belgium; Turkey; Austria; Switzerland; Italy; United Kingdom
Humanities	Drama; English Language and Literature; Environmental and Geographical Studies; Film Studies; Higher Education Studies; Linguistics; Psychological Research; Psychology; Social Anthropology	Grahamstown, South Africa; Johannesburg, South Africa; France; Wales; United States of America; Canada; Turkey; United Kingdom
Law	Criminology; Public Law	Durban, South Africa; Australia; United Kingdom
Science	Applied Mathematics; Archaeology; Botany; Chemistry; Computer Science; Environmental and Geographical Science; Mathematical Statistics; Mathematics; Molecular and Cell Biology; Physical Oceanography; Physics; Zoology	Gauteng, South Africa; Port Elizabeth, South Africa; Spain; Canada; United States of America; Brazil; United Kingdom; Greece; China; Switzerland; Argentina; Kenya; Namibia; India; Mexico

Table 5 Conference travel destinations of postgraduate students in 2011

Source	Awards	Non-SADC	International	SADC	Unknown*	Total
UCT	Number	45	23	69	7	144
	Value	R1,233,548	R 463,780	R1,738,055	R193,000	R3,628,383
Departmental funds	Number	137	70	212	27	446
	Value	R7,395,593	R4,234,135	R9,378,562	R1,552,935	R22,561,225
Donations	Number	32	7	60	10	109
	Value	R2,613,154	R256,308	R2,593,645	R363,800	R5,826,907
Investments	Number	14	14	29	7	64
	Value	R709,529	R288,600	R555,610	R96,000	R1,649,739
NRF	Number	25	12	51	14	102
	Value	R1,390,295	R728,033	R2,664,365	R800,000	R5,582,693
Total	Number	253	126	421	65	865
	Value	R13,342,119	R5,970,856	R16,930,237	R3,005,735	R39,248,947

*This denotes information provided by international students whose countries do not appear on UCT's database

Table 6 Summary of awards made to international and African students in 2011



As demonstrated in **Figure 2**, of all international and African students who had applied for funding, 41% of awards made were to students from the SADC region. The highest monetary value is allocated to departmental scholarships.

Figure 2 Percentage of international, African, and SADC students receiving awards in 2011

NSTF-BHP BILLITON 2011/12 FINALISTS

Contribution to research and its outcomes over a lifetime

- Professor John Field
- Professor Ed Rybicki

Contributions to SETI through management and related activities

- Professor Kevin Naidoo

TW Kambule NRF awards: Emerging researchers

- Dr William Horowitz
- Associate Professor Brenda Morrow
- Dr Thomas Scriba

Research leading to innovation by a team/ individual through a corporate organisation

- Crystallization and Precipitation Research Unit – Team Leader: Alison Lewis
- In Situ XRD Cell – Team Leader: Professor Michael Claeys
- Lung Infection and Immunity Unit – Team Leader: Professor Keertan Dheda
- UCT Maxillofacial Surgery Unit – Team Leader: Dr Rushdi Hendricks

*Winners are profiled on the next page

UCT researchers scoop top honours at the **NSTF-BHP Billiton 2011/12 awards**

Three of UCT's researchers and two affiliated research projects were honoured at the 2011/2012 NSTF-BHP Billiton awards in a cross-section of categories – and scooped five of the 12 awards made.

Professor Heather Zar (pictured top right), Dr Amanda Weltman (top left), and Professor Bongani Mayosi (below with Minister Naledi Pandor) were all individual winners, while the Namaqualand Restoration Initiative (NRI) and CapeRay, a UCT spin-off company, received awards for Research leading to Innovation.

Professor Heather Zar, Head of Paediatrics and Child Health at UCT and the Red Cross Children's Hospital, was awarded the TW Kambule NRF-sponsored Outstanding Senior Researchers Award. Her research on respiratory illnesses such as pneumonia and tuberculosis in children infected with HIV and those suffering from asthma, has set new diagnostic standards, helps prevent infection and optimises treatment, improving child health around the world.

Dr Amanda Weltman, senior lecturer at the UCT Astronomy, Cosmology and Gravity Centre, received the TW Kambule NRF-sponsored Distinguished Young Researcher Award for significant contributions to theoretical cosmology. Dr Weltman developed the chameleon mechanism theory, which points to dark energy as the explanation for the accelerating expansion of the universe. This will soon be more closely studied at the MeerKAT and Square Kilometer radio telescope projects.

Professor Bongani Mayosi, Head of the Department of Medicine at Groote Schuur Hospital and UCT, was recognised for his contribution to science, engineering, technology and innovation through management and related activities over the last decade. Professor Mayosi works with a multi-modal framework that trains medical researchers and gets them involved in the policy process that then translates into implementable programmes. These first three Ps (people, policy, programmes) then enable the fourth P: progress. His research focuses on heart disease, the biggest cause of death in South Africans after HIV/AIDS and TB.

The Namaqualand Restoration Initiative (NRI), a project that seeks to restore landscapes degraded by mining activities into biodiverse ecosystems on the



Namaqualand coastline, was recognised for creating work opportunities for communities where mining companies have closed down. The project is headed up by ecologist Dr Peter Carrick, a research associate in the Department of Botany. Apart from long-term ecological restoration, the initiative's other aspects are training and monitoring. The NRI is engaging industry to enable the model's practices and expenses to be integrated into mining businesses.

And lastly, CapeRay, a company that came out of the work of Kit Vaughan, emeritus professor of biomedical engineering at UCT, received an award for its work in developing the PantoScanner. Through innovative technology, the device combines the best aspects of x-rays and ultrasound by overlaying the two types of images with the option of a 3D image to enhance the early detection of breast cancer.

The NSTF-BHP Billiton awards honour outstanding contributions to science, engineering, technology, and innovation (SETI) and are the only national awards that address areas beyond pure research, such as management, communication and research for innovation.



POSTDOCTORAL RESEARCH FELLOWS (PDRFS)

Postdoctoral researchers are academics in training, and many of them will relieve the dwindling numbers of academics and researchers in South Africa and on the African continent. The number of postdoctoral research fellows who register for up to five years at UCT has increased steadily since 2002, and the university hopes to accelerate this growth in the next five-year period.

In 2011, 252 registered postdoctoral research fellows received funding valued at R44,280,326. The majority of PDRF registrations are in the faculties of Science and Health Sciences. Support provided to PDRFs is not confined to the administration of the sector, but includes monitoring of quality of life and other issues.

Forty-four PDRFs were awarded travel grants in 2011 to the value of R510,299, to attend a range of local and international conferences (Table 9). Such provision enables PDRFs to collaborate widely and encourages publication of their work.

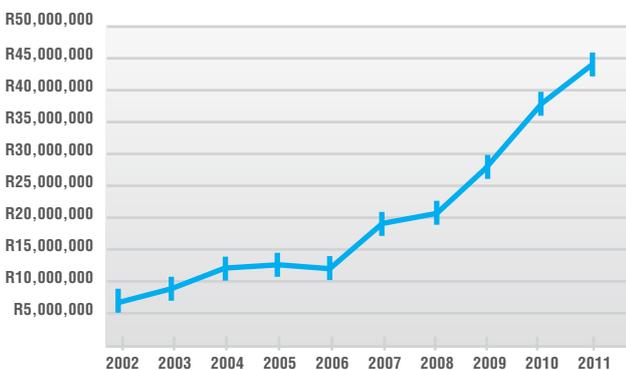


Figure 3 Value of postdoctoral fellowships, 2002 to 2011

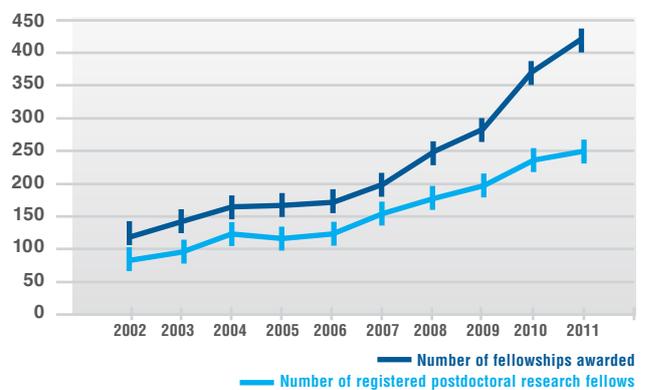


Figure 4 Growth in postdoctoral research fellows at UCT, 2002 to 2011

Some PDRFs are registered at UCT but receive external support that is not administered by this office. 252 PDRFs are recorded as being registered, but only 246 of these received UCT administered fellowships. More than one fellowship can be made to the same PDRF.

Faculty	Number of registered PDRFs	Number of fellowships awarded	Value
Commerce	7	11	R1,287,674
Engineering & the Built Environment	13	21	R1,835,467
Health Sciences	92	169	R18,365,167
Humanities	20	39	R3,012,276
Law	2	3	R452,000
Science	118	178	R19,327,742
Total	252	421	R44,280,326

Table 7 Postdoctoral research fellowships, per faculty in 2011

Source of funds	Number of fellowships made	Value
UCT funds	71	R4,184,049
Departmental fellowships	204	R25,006,006
Donations	16	R1,942,500
Medical Research Council	2	R280,000
National Research Foundation	128	R12,867,771
Total	421	R44,280,326

Table 8 Postdoctoral research fellowships by source of funds in 2011



Faculty	Field of study	Destination
Commerce	Commerce – general	Spain
Engineering & the Built Environment	Chemical Engineering; Mechanical Engineering	Scotland; Spain
Health Sciences	Medical Biochemistry; Psychiatry; Public Health; Clinical Science and Immunology; Infectious Diseases and Immunology; Pharmacology	Italy; Monaco; England; Scotland; Netherlands; Australia; South Africa; United States of America
Humanities	Psychology; Religious Studies; Historical Studies; English Language and Literature	Switzerland; United States of America; France; England; South Africa
Law	Public Law	United States of America
Science	Chemistry; Environmental and Geographical Science; Molecular and Cell Biology; Zoology; Botany; Astronomy; Physics	Spain; Austria; South Africa; United States of America; England; Australia; Mexico; Argentina; Italy; Kenya

Table 9 Fields of study and travel destinations of PDRFs in 2011

NATIONAL RESEARCH FOUNDATION (NRF) EVALUATION AND RATING

The performance of UCT’s researchers through the internationally benchmarked process of peer-evaluation and rating is carried out by the NRF and is based primarily on the quality of their recent research outputs. The number of NRF-rated researchers at UCT grew from 336 in 2010 to 379 in 2011.

Ratings are awarded in five categories, targeting researchers with an established track record (categories A, B, and C) or those who show promise of becoming established within a few years (categories P and Y).

Two new A-ratings were awarded during the 2011 application cycle to Professor Ed Rybicki, of the Department of Molecular and Cell Biology, and Professor Heather Zar, Head of the Department of Paediatrics and Child Health. A-ratings are awarded to “researchers who

are recognised by their peers as leading international scholars in their field for the high quality and impact of their recent research outputs.”

Both professors George Ekama and Hans-Peter Kunzi retained their A-ratings in 2011. Professor Ekama, of the Department of Civil Engineering, is an internationally renowned expert in wastewater treatment. Professor Kunzi, of the Department of Mathematics and Applied Mathematics, is one of UCT’s most influential mathematicians and has been the leader of the Topology and Category Theory Research Group since 2001.

P-ratings honour young scholars who demonstrate the potential to become future leaders in their respective fields. Three P-ratings were awarded to UCT researchers in 2011, of four awards made nationally. These went to Dr David Braun and Dr Shadreck Chirikure of the Department of Archaeology, and Dr Amanda Weltman from the Department of Mathematics and Applied Mathematics.

Celebrating our new A- and P-rated researchers

■ **Professor Ed Rybicki:** a UCT inventor engaged in the full spectrum of the innovation chain

Professor Rybicki's impressive credentials include his 25-year career in plant virology and plant biotechnology and, since 1997, in vaccinology. His research on transgenic resistance to viruses in plants, begun by him and Professor Jennifer Thomson in the 1980s, culminated in 2007 in his laboratory engineering transgenic resistance to maize streak disease into maize. This is a development that is potentially of enormous economic benefit to small-scale farmers throughout Africa and the rest of the world.

However, Professor Rybicki's greatest advances in the past decade have been in the field of plant-made vaccines. This aspect of his work involved mainly the investigation of human papillomavirus vaccines made in insect cells and in plants, but also similarly-made HIV vaccines. It has also included work on the diversity of, and vaccines for, the parrot-infecting beak-and-feather-disease virus. His research group has been very successful in the study of the diversity of maize streak virus and its relatives.

This recent work has firmly established his laboratory as a world-rated centre for biopharming, or the use of plants for the production of high-value pharmaceuticals such as vaccines, as well as the leading centre in the world for the study of the economically-important pathogen that is maize streak virus. It has also paved the way for his group to have the largest molecular biotechnology-related patent portfolio in South Africa, and to have the second largest patent portfolio at the University of Cape Town. This, as well as the more than 60 peer-reviewed papers in international journals during the rating period, undoubtedly tipped the balance to allow him to achieve an A-rating.

"He has made a huge contribution to research in the amazing notion of using plants as production systems for vaccine antigens, and he has established one of the best laboratories in the world for this purpose," says Deputy Vice-Chancellor Professor Danie Visser. "On top of this,



he is a shining example of someone engaged in the full spectrum of the innovation chain. With 44 patents, he is also one of the three top UCT inventors."

■ Professor Heather Zar: The breath of life for Africa's children

Professor Zar has led the development of a strong translational clinical research programme that is focused on respiratory illnesses that cause most morbidity and mortality in African children and globally. A strong focus has been on pneumonia – the major killer of children under five years of age – to evolve new strategies for diagnosis, prevention and treatment, including those for HIV-infected children. Tuberculosis (TB), a relatively neglected, important cause of childhood illness, has been another focus, particularly developing better ways to diagnose and prevent childhood TB. Asthma is the most common chronic illness in African children – her research has included delineating the epidemiology of childhood asthma and developing a low-cost system for therapy. Such research has contributed to changing global practice and to improving child health through better diagnostic, preventative and management strategies.

Most recently, Professor Zar was awarded funding from the Bill and Melinda Gates Foundation for the Drakenstein Child Lung Health Study – a birth cohort study that aims to investigate the causes and risk factors for pneumonia and the long-term impact on child lung health. This is a unique study that will investigate the effects of a broad range of risk factors (nutritional, environmental, psychosocial, microbiological, maternal, genetic, and immunological) on child health. The funding provides the core for many sub-studies and for much development of research capacity.

In undertaking such research, Professor Zar has also been able to develop much-needed capacity in child health, through the growth of a productive paediatric clinical research unit at Red Cross Children's Hospital (a new, expanded unit is soon to be built), development of several satellite clinical research sites at other health facilities, such as community-based clinics, and training of several PhD and master's degree students.

“Professor Zar's work is not only of enormous scientific importance but also, and perhaps more significantly, it improves the lives of many thousands of children”, according to Deputy Vice-Chancellor, Professor Danie Visser.

In recognition of her research contributions, Professor Zar has received several awards and holds many leadership positions in international and national organisations including President of the Pan African Thoracic Society and President of the South African Thoracic Society. Recently, she was given a special award at the International Congress of Paediatric Pulmonology for “outstanding leadership and distinguished service to children with the greatest need”.



■ **Dr David Braun:** Researching the origins of technology



Archaeologist Dr Braun's research interests centre on the basic question of how our earliest ancestors made a living using stone artifacts to gain access to resources. He studies the ways in which biological and cultural evolutionary forces have shaped our past. Much of his research is focused in Eastern Africa (Kenya and Ethiopia), although he also directs excavations in the Western Cape, at a site called Elandsfontein. His research includes using inter-disciplinary methods of accessing information about our deep ancestry (1–3 million years ago).

In recent years, Dr Braun's research team has uncovered evidence of changes in human bipedalism (in the form of preserved ancient footprints), as well as very early evidence of human access to aquatic resources. In addition, Dr Braun has worked with colleagues from the Max Planck Institute for Evolutionary Anthropology in Leipzig, Germany, to capture three-dimensional models of stone artefacts. Dr Braun actively collaborates with colleagues on the geochemical and engineering properties of stone used by ancient humans to make artefacts. This research involves new excavations and discoveries and it is driven by a central theme of how and why behaviours vary through time and space. In particular, Dr Braun is interested in how this variation reflects the selective pressures on human evolution.

■ **Dr Shadreck Chirikure:** Digging beneath the surface of Africa's pre-colonial heritage

Dr Chirikure's research focuses on technological and social issues associated with pre-colonial mining and metal-working, as well as heritage management in Africa. His research therefore deals with the interface between the hard sciences and the humanities. At the heart of it is the desire to understand indigenous mining and metal-working technologies used in pre-colonial sub-Saharan Africa.

The main focus here has been on reconstructing the technology and anthropology of these processes, highlighting the point that academic reconstructions cannot be divorced from their social contexts. As such, in the early twentieth century, when social evolutionism still held sway, Africa's technological pursuits were not highly regarded. In fact, technologies such as mining and metal-working were homogenised across the entire sub-continent.



In recent years, Dr Chirikure has contributed to exploring the variability in pre-colonial techniques of mining and methods of extractive metallurgy. The main outcome of the research is that sub-Saharan mining and metal-working was context-specific and full of local experimentation. These technologies were embedded in society. They strongly coalesced with other factors such as trade to stimulate the rise and florescence of urban centres such as Great Zimbabwe, Jenne Jenno, and Buganda. The metals were exported to Persia, India, China, and Indonesia thereby promoting early forms of global integration. The data from this research have been used for sustainably managing and protecting pre-colonial mining and metal-working heritage and the social contexts in which they were practiced.

■ Dr Amanda Weltman: Shining a new light on dark energy

Dr Weltman's research deals with the bridging of string theory, cosmology and gravity, with the goal of using the cosmos as a testing ground for fundamental physics. She is best-known for proposing chameleon particles to explain dark energy. The chameleon mechanism allows a particle to change its behaviour depending on the environment and thus makes the theory very testable in an array of environments. This theory is one of the hottest new topics in contemporary theoretical cosmology.



While making up the largest component of the energy budget in our universe, dark energy is the least understood ingredient of cosmology today, so this work is an opportunity for South Africa to contribute at the cutting edge of this field. Dr Weltman's theory may be testable at the MeerKAT and the Square Kilometre Array, as well as through direct detection experiments on Earth. She has recently turned her attention to ways to test the theory via astrophysical sources, incorporating the possibility of a chameleon helioscope – turning to the sun to shed light on this dark particle.

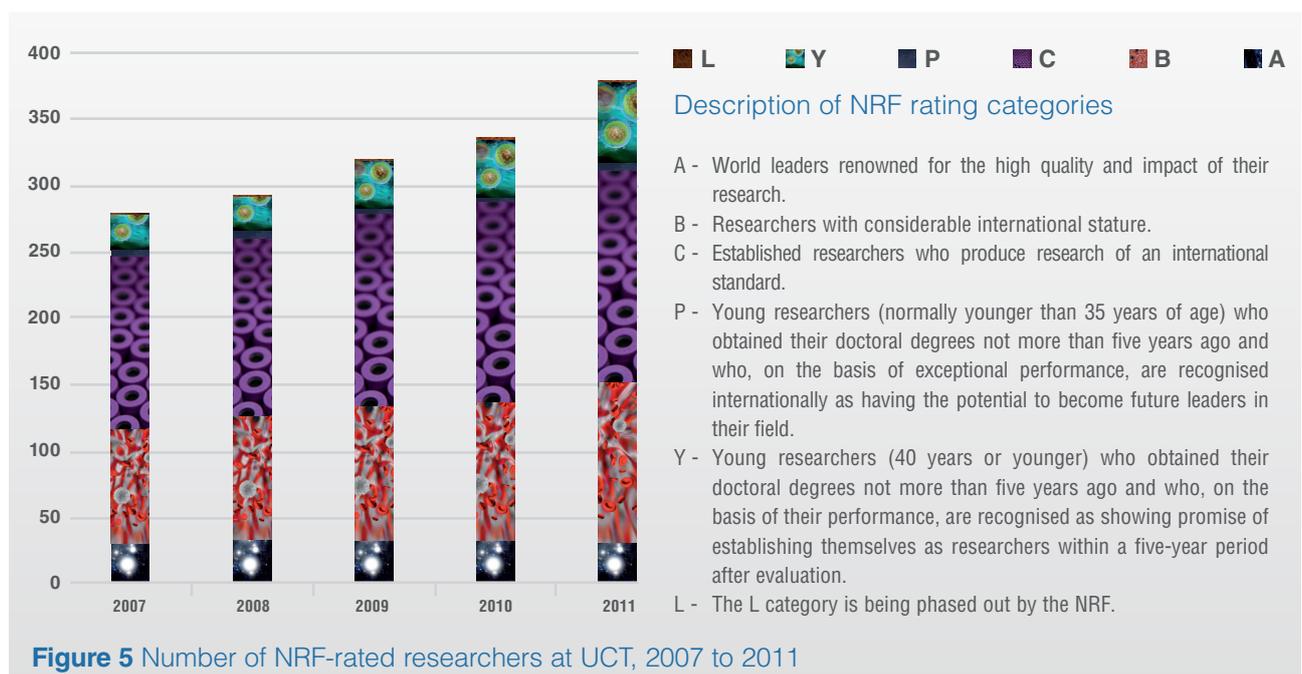


Figure 5 Number of NRF-rated researchers at UCT, 2007 to 2011

NRF-rated researchers at UCT during 2011

Newly rated researchers from the 2011 application cycle are listed in bold text.

Abiodun, B
 Abratt, RPA
 Abratt, VR
 Ackermann, RR
 Adhikari, M
 Alexander, MG
 Alexeeva, N
 Altwegg, R
 Ansorge, IJ
 Archer, A
 Archibald, M
Ardington, CS
 Armitage, NP
 Badri, M
Baets, W
Bagraim, J
 Barashenkov, IV
Barnard-Naude, J
 Barnes, K
 Barr, GDI
 Bassett, B
 Bateman, E
 Baum, R
 Beighton, PH
Benjamin, P
 Bennett, TW
 Beushausen, H
 Bezuidenhout, D
 Bhorat, HI
 Bickford-Smith, JV
 Biekpe, N
 Blackburn, JM
 Blake, EH
Blumenthal, M
 Bolton, JJ
 Bond, WJ
Boonzaier, F
 Bordy, E
 Bosch, AN
 Bosch, T
 Bourne, SA
 Bowen, PA
 Branch, GM
 Brattka, V
Braun, D
Breier, M
 Britton, DT
 Brombacher, FH
 Bronner, GN
 Brown, ITJ
 Brundrit, J
 Bruyns, PV
 Buffler, A
 Burch, V

Burchell, J
 Burgers, W
 Burman, SB
 Butterworth, DS
 Cairn, MR
 Cameron, R
 Case, J
 Chan, A
Chege, G
 Chibale, K
 Chidester, DS
Chigona, WMG
 Chinsamy-Turan, A
Chirikure, S
 Chirwa, D
 Chung Kim Yuen, S
 Claeys, MC
Clarkson, C
 Clarkson, CP
 Cleymans, JWA
 Cochrane, JR
Cohen, B
 Collins, M
 Colvin, CJ
 Combrinck, MI
 Compton, JS
 Comrie, CM
 Cooper, BL
Coovadia, IC
 Corder, HM
 Cornille, J-L
 Coyne, VE
 Cramer, MD
 Crankshaw, O
 Cumming, G
 Dalvie, MA
 Dandara, C
 Davidowitz, B
 Davids, L
 de Blok, E
 de Gruchy, JW
 de Jager, G
 de Jager, K
 de Vos, P
 Deglon, DA
 Denny, LA
 Deumert, A
 Dheda, K
 Distiller, N
 Dominguez, CA
 Douglas, TS
 Draper, C
 Driver, KA
 Dunsby, PKS

Dutton, Y
 Ebobisse, F
 Egan, TJ
 Ekama, GA
 Ellis, GFR
Everson, V
 Fagan, A
 Farrant, JM
 Fearick, RW
 Feast, M
 February, EC
Feris, L
 Fraser, DM
 Gäde, G
 Gain, J
 Gammon, DW
 Gaunt, CT
 Gillson, L
 Gilson, L
 Glazewski, JI
 Gobodo-Madikizela, P
 Godby, M
 Goedecke, JH
 Gray, C
 Greenberg, LJHL
 Griffiths, CL
 Guo, R
 Haerting, M
 Haines, LM
 Hamann, R
 Hapgood, J
Hardman, JC
 Harris, C
 Harris, MC
 Harrison, STL
 Hart, M
 Hattingh, A
 Haupt, A
 Hedderson, TAJ
 Hellaby, CW
 Herman, R
Hewett, ML
 Hewitson, BC
 Himonga, C
 Hoadley, U
 Hockey, PAR
 Hoffman, MT
Horowitz, WA
Horsnell, WGC
Howells, FM
 Hunter, R
 Ianovsky, A
 Illing, N
 Inggs, SC

Ingle, R
 Jackson, GE
 Jacobs, DS
 Jacobs, M
 Janelidze, G
 Jawitz, J
 Jeebhay, M
 Jelsma, J
 Kalula, ER
 Kaminer, D
 Kaplan, D
 Kew, MC
 Khumalo, N
 Kidson, S
 Klak, C
 Klatzow, PJL
 Klump, HH
 Knutsen, RD
 Koelble, TA
 Kohn, T
Kolbe-Alexander, T
 Kraan-Korteweg, RC
 Krige, JEJ
 Kritzinger, PS
 Kruger, T
 Kunzi, H-P A
 Kuttel, M
Kyobe, ME
 Lambert, EV
 Lambert, MI
Lamberts, RP
 Lang, CI
 Lang, DM
 Langdon, G
 Langerman, FS
 Le Roex, AP
 Leaner, V
 Lecour, S
 Leibbrandt, M
 Levitt, N
 Lewis, AE
 London, L
 Louw, J
 Low, I
 Lubbe, S
 Lucas, M
 Luiz, J
 Maartens, G
 Mall, AS
 Marais, AD
 Marais, P
 Marco, H
 Marsden, G
 Martin, D

Mattes, RB
 Mayosi, BN
McBride, V
 McIntyre, D
 Meadows, ME
 Meintjes, EM
 Meissner, P
 Mendelsohn, R
 Mesthrie, R
 Meyers, PR
 Micklesfield, L
 Midgley, JJ
Mishra, AK
 Mizrahi, V
 Mlambo, C
 Moller, KP
 Moloney, CL
 Morrell, R
 Morris, AG
 Morrow, B
 Mostert, H
 Moultrie, T
Mowla, S
 Moyo, P
 Muasya, M
Mulder, N
 Muller, JP
 Murugan, J
 Naidoo, KJ
 Naidoo, R
 Nassimbeni, LR
 Nassimbeni, MC
 Naude, T
 Ng'ambi, D
 Noakes, TD
 Novitzky, N
 Nurick, GN
 Nyamjoh, F
 O'Connor, CT
Oelgeschläger, T
 Ojuka, E
 Oldfield, SE
 Opie, LH
 O'Riain, MJ
 O'Ryan, C
 Parker, MI
 Parkington, JE
 Parnell, SM
 Pascoe, M
Pellicer-Gallardo, M
 Penn, N
 Perez, SM
 Peshier, A
 Petersen, J



Dr Rob Ingle of the Department of Molecular and Cell Biology received a UCT College of Fellows award in 2011 for outstanding scholarly work by a young academic. His research investigates the interactions between plants and their environment, particularly the molecular mechanisms that help them cope with stresses imposed either by other organisms or by chemical/physical factors.

Picker, MD
Pillay, D
 Pillay, P
 Pirie, G
Pototsky, A
 Potter, P
Prince, S
 Prinsloo, MH
 Raju, J
 Ramon, G
 Ramutsindela, MF
 Rawatlal, R
 Rayner, BL
 Reason, C
 Reddy, BD
 Reid, SJ
Reid, SJY
 Richardson, SH
 Rodgers, AL
 Rogers, J
 Ross, DA
 Ross, F
 Rossi, M

Roth, R
 Rouault, M
 Russell, VA
 Ryan, PG
 Rybicki, EP
 Salazar, Ph-J
Sales, K
 Saunders, CC
Schurch, MPE
 Schwikkard, PJ
Scott, H
Scriba, T
 Sealy, JC
 Segal, H
 Sewchurran, K
 Sewell, BT
 Seymour, L
 Shaikh, S
 Shain, M
Shannon, L
 Shay, S
 Shearing, C
 Shepherd, D

Shillington, FA
 Simmons, RE
 Sliwa-Hahnle, K
 Smith, G
 Solms, ML
 Soudien, C
 Spakowski, H
Spottiswoode, B
 Stein, D
 Stewart, TJ
 Steyn, M
 Sturrock, E
 Suleman, H
Swart, S
 Tapson, JC
 Tayob, AI
 Thiart, C
 Thomson, JA
 Tredoux, CG
 Tupper, G
 Turok, I
 Uliana, EO
 Underhill, LG

Van As, AB
 van Belle, J-P
 van der Heyden, K
 van der Merwe, CN
 Van der Merwe, NJ
 van der Schijff, J
 Van der Spuy, ZM
 Van Sittert, L
 Van Steen, EWJ
 Van Walbeek, C
 Varsani, A
 Vaughan, CL
Venter, G
 Verboom, GA
 Visser, DP
 von Blottnitz, H
Vougalter, V
 Waldron, HN
 Ward, C
 Wardle, D
 Warner, B
 Warner, D
 Watson, VJ

Weltman, A
West, A
 Wheaton, S
 Whitelock, PA
 Williamson, A-L
 Williamson, C
 Winkler, H
Wood, EAS
 Wood, R
 Woolard, ID
 Worden, NA
 Woudt, PA
 Wynberg, R
 Younge, JGF
 Zar, HJ
 Ziervogel, G
 Zingoni, A

DST/NRF SARCHI CHAIRS AT UCT

- Animal Evolution and Systematics – Professor David Jacobs
- Applied Proteomics and Chemical Biology – Professor Jonathan Blackburn
- Archive and Public Culture – Professor Carolyn Hamilton
- Astrophysics and Space Science – Professor Erwin de Bok (until December 2011)/ Dr Tom Jarrett (from 2012)
- Bioprocess Engineering – Professor Susan Harrison
- Brain Imaging – Associate Professor Ernesta Meintjes
- Cancer Biology – Professor Iqbal Parker
- Catalysis – (to be filled)
- Climate Change – Professor Bruce Hewitson
- Clinical Neurosciences Research – Associate Professor Marc Combrinck
- Computational Mechanics – Professor Daya Reddy
- Customary Law – Professor Chuma Himonga
- Drug Discovery – Professor Kelly Chibale
- Economic Growth, Poverty and Inequality: Exploring the Interactions for South Africa – Professor Haroon Borat
- Health and Wealth in South Africa – Professor Diane McIntyre
- Immunology of Infectious Diseases in Africa – Professor Frank Brombacher
- Infection and Immunity of Poverty-related Diseases – Professor Keertan Dheda
- Islam, African Publics and Religious Values – Professor Abdulkader Tayob
- Land Reform and Democracy in South Africa – Professor Lungisile Ntsebeza
- Marine Ecology and Fisheries – Professor Astrid Jarre
- Migration, Language, and Social Change – Professor Rajend Mesthrie
- Minerals Beneficiation – Professor J-P Franzidis
- Modelling of the Coupled Ocean-land-atmosphere Phenomena Related to Climate – Professor George Philander
- Multi-wavelength Astronomy at UCT – Professor Claude Carignan
- Poverty and Inequality Research – Professor Murray Leibbrandt
- Scientific Computing – Professor Kevin J. Naidoo
- Security and Justice – Professor Clifford Shearing
- Urban Policy – Professor Edgar Pieterse
- Vaccinology – Professor Anna-Lise Williamson

Each of these Chairs is profiled in the relevant feature articles later in this report.

SOUTH AFRICAN RESEARCH CHAIRS INITIATIVE

With an investment value in excess of R1,1 billion since its inception in 2005, the Department of Science and Technology's South African Research Chairs Initiative (SARCHI) was designed to strengthen the country's universities to produce high quality research and innovation output, and through this, increase the quality of the training of postgraduate students, thereby contributing more directly to growing the knowledge economy in South Africa. The SARCHI Programme is managed by the National Research Foundation.

In response to a new call for Research Chairs in 2011, UCT submitted 41 applications in strategic research areas identified by the university, and were awarded four Research Chairs out of 60 allocated nationally, in the following areas:¹

- Stable Isotopes in Archaeology and Palaeoenvironmental Studies;
- Environmental and Social Dimensions of the Bio-Economy;

- Reaction Engineering;
- Industrial Computational Fluid Dynamics.

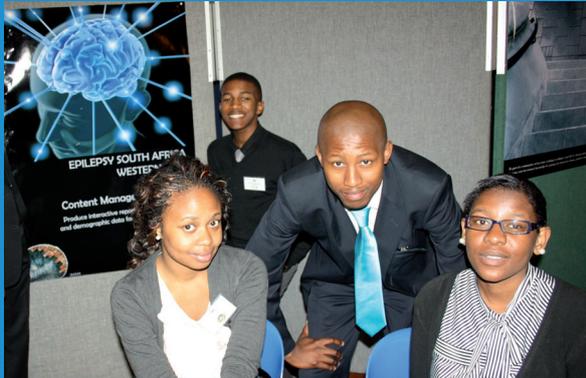
In this particular round, special consideration had been given to the universities of technology, rural-based institutions, and those that had not previously participated in the programme. Following the award of the 60 new Research Chairs, 21 universities will be hosting Research Chairs, compared to the previous 16. UCT is currently home to 29 SARCHI Chairs, of the 154 awarded so far. Of the 29, one is a Strategic Award to the c*change Centre of Excellence. A process is currently under way to recruit a suitable candidate to take up this position.

UCT SIGNATURE THEMES FOR RESEARCH

UCT's Signature Theme Policy provides a framework for multi-, inter-, and also trans-disciplinary research to be undertaken on an inter-departmental and inter-faculty basis. Selected to drive research in a strategic manner,

¹ Although the outcomes of the 2011 submissions only became known – and are to be finalised – in 2012, the outcome is added in the interest of giving all the information that is available at the time of producing this report.

UCT's Knowledge Co-op



Left: A student team showcasing their information management system. Right: Barbara Schmid (left) and students handing over the first student dissertation to the NGO that requested it.

There is a growing commitment at UCT to make its resources available for public utilisation and benefit. Its Knowledge Co-op facility is one of many ways of achieving this. In this case, the initiative for collaboration comes from outside the university, as groups approach the co-op with suggestions to address issues and problems they are facing.

The co-op then attempts to match these to academic departments, in order to identify suitable partners; it then mediates between the community partner and academics to jointly develop a project. Students – who will be supervised by academic staff – or academics themselves may take on the projects to conduct research or give practical support to community groups. In this way, the projects provide topics for tasks students need to complete in order to qualify, such as a dissertation. In each case, the work that they undertake will fit the needs of the community partner as well as those of the university – and aim to deliver a product to both parties.

Since the start of the pilot project in August 2010, some 85 suggestions for projects have been submitted to the UCT Knowledge Co-op. They came from 39 groups, ranging from the City of Cape Town, research-savvy NGOs, and small community-based groups. A total of 22 academics and 30 students have been or are currently involved in co-op projects.

There are twelve projects currently under way and include:

- A student investigating how best to help patients adhere to HIV treatment;
- Students offering computer training and advice to community groups;

- Staff advising a municipal department on changing its library into a modern electronic knowledge management centre; and
- A student exploring alternative energy sources for pumping water in a rural municipality.

Seven projects have been completed to date; among them:

- Assisting in the development of an electronic database to manage client and activity data;
- Research into a building material and design for a low-cost pre-school fence that will not be stolen;
- Research on exit strategies for sex workers and documenting support strategies for their self-help groups; and
- Collection of data to advocate for the need for a footbridge and the risks of an open canal.

As project manager, Barbara Schmid is responsible for developing relationships with potential partners in the community, sourcing topics for collaboration from them, finding matching expertise within UCT to address topics, and brokering the process of each project up to the final product. With support from the steering committee, she oversees strategic aspects of the facility, such as raising awareness of the co-op, both in the community and the university, developing guidelines for good practice in community-university collaborations, and finding sustainable funding sources.



For more details see <http://www.knowledgeco-op.uct.ac.za>.

the signature themes are grounded in existing areas of internationally recognised excellence, while being aligned to institutional, regional, and national priorities.

Signature themes have come about in two ways: the first five signature themes were established at UCT in 2007, through a highly competitive process driven by the URC. These themes, which have now all evolved into fully-fledged research entities, are African Cities, Brain and Behaviour, Drug Discovery, Marine Research, and Minerals to Metals. More recently, the Vice-Chancellor's commitment to establishing a platform for climate research led to the adoption of climate research as a focus area in UCT's current strategic plan, and to the recognition of the African Climate and Development Initiative (ACDI) as the sixth signature theme. It is anticipated that others are likely to follow.

All signature themes produce more than the sum of their component parts. In accordance with their signature theme status, they are able to demonstrate the impact of world-class research on their immediate environment, and also more broadly on the global South. Evidence that this excellence is permeating into teaching and the curriculum takes time to accrue, but it remains high on the agenda.

NATIONAL CENTRES OF EXCELLENCE AND COMPETENCE CENTRES

Two of South Africa's nine national Centres of Excellence (CoEs) are fully hosted at UCT (Birds as Keys to Biodiversity, located in the Percy FitzPatrick Institute for African Ornithology and c*change, the Centre for Catalysis, in the Department of Chemical Engineering).

UCT also has particularly close ties to ACCESS (the Applied Centre for Climate and Earth Systems), which is hosted at the CSIR, and of which Professor George

Philander of the Department of Oceanography is the Research Director.

In 2011, UCT became a co-host for the Centre for Biomedical TB Research (CBTBR), initially located at the universities of Stellenbosch and Witwatersrand prior to its director, Professor Valerie Mizrahi, being appointed as Director of UCT's Institute of Infectious Disease and Molecular Medicine.

In addition to the CoEs, the Department of Chemical Engineering has been co-hosting the Hydrogen Catalysis Competence Centre with Mintek since 2007.

UNIVERSITY RESEARCH COMMITTEE-ACCREDITED RESEARCH GROUPINGS

At the end of 2011, there were 69 URC-accredited research groupings at UCT. These are profiled later in this report.

Since 2009, research groupings, which have been found through the review process to be socially engaged and to have international stature, have been deemed eligible for URC funding support that is ring-fenced for this purpose. Resources have been made available for postdoctoral fellowships, and the second round of five awards has been made through a competitive bidding process.

The groupings that were awarded one postdoctoral fellowship each during 2011 were:

- African Centre for Cities (EBE): Dr Jenny Mbaye;
- Brain and Behaviour Initiative (Health Sciences): Dr Peter Bos;
- Centre for Social Science Research (Humanities): Dr E Gummerson;
- UCT Drug Discovery & Development Centre (Science): Dr G Mugumbate;
- UCT/MRC Receptor Biology Research Unit (Health Sciences): Dr Aron Abera.