

Science Matters

Science Faculty Newsletter



Message from the Dean



Welcome to this second edition of "**Science Matters**", our biannual, Faculty newsletter that attempts to highlight in an informal way many of the successes and activities in our Faculty.

When immersed in the on-going demands of doing our academic, technical and administrative business, it is easy to feel that not much happens across the Faculty from day-to-day. Moreover, as we approach the end of the year, with the added pressures of exam

marking and marks processing on us, it is easy to forget past achievements. However, if one does cast one's mind back over the semester, it is truly remarkable and indeed impressive to see how much does take place, both daily and collectively over the period of the semester.

In this edition of Science Matters we reflect and highlight some of the many achievements by our staff and students over the past six months. The response to our Marketing Manager's call for articles and interesting stories has once again been overwhelming and I am grateful for the enthusiastic support from so many.

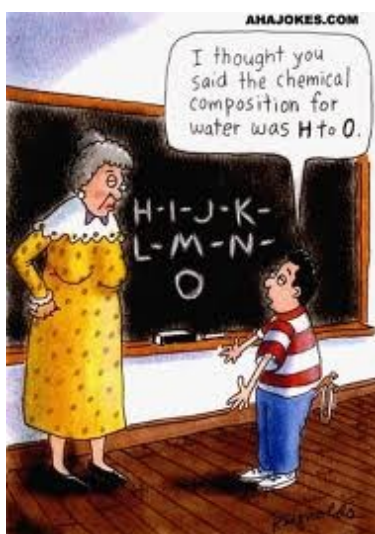
Science Matters showcases wonderful examples of the exciting research that has taken place in

the Faculty, awards that have been won both for research and teaching, the stellar performances of many of our students in national and international competitions, of achievements outside the academic arena, and new teaching and social responsiveness initiatives that have been embarked upon.

We are reminded of the new staff who have joined the Faculty, and those who are sadly retiring, often with decades of service to the Faculty.

Enjoy this edition of Science Matters and, once the pressure of year end processes are over, I wish you all an enjoyable and safe festive season.

Anton le Roex



I would tell a science joke... but all the good ones argon!



"Sure it's beautiful, but I can't help thinking about all that interstellar dust out there."

NRF Recognises exceptional work of UCT Researchers

The NRF recognised the exceptional work of three UCT researchers, two of them from the Science Faculty, naming them for Special Category Awards, at a ceremony, in Cape Town, on 13th September 2012.

Professor Anusuya Chinsamy-Turan (Department of Zoology) received the Transformation of Science Cohort Award for her achievements as a palaeobiologist.

Professor Kelly Chibale (Department of Chemistry) was named the NRF's Champion of Research and Capacity Development at Higher Educational Institutions in South Africa. (Kelly made international headlines recently when his H3-D at UCT identified a chemical compound that has the potential to provide a single dose cure for malaria)

Excellent Teacher Shines

At the 2012 National Excellence in Teaching and Learning Awards, awarded by the Council on Higher Education (CHE) and the Higher Education Learning & Teaching Association of Southern Africa (HELTASA), a professional association primarily for educators in the tertiary sector, **Professor Gary Marsden** of the Computer Science Department was named as one of only five academics in South Africa to receive an excellence award. He was commended for his innovative teaching and learning philosophy, which is aligned with his teaching and assessment methods. In particular he was praised for his "rigorous, robust and diverse" teaching and for his outcomes-based approach, which encourages students "to think like computer scientists" from first-year level.



The committee noted his interest in ICT for development in Africa and the way in which he has effected positive change, making a meaningful impact, working in collaborative environments.

Future Strength of UCT Recognised in P-ratings

The future research strength of UCT was recognised in receiving 3 out of 4 new P-ratings—made to young researchers who are considered likely to become future international leaders in their fields—were made to 3 staff members of the Science Faculty. They are:

Dr David Braun and **Dr Shadreck Chirikure** from the Department of Archaeology and **Dr Amanda Weltman** of the Department of Mathematics and Applied Mathematics.

A-ratings to Science Researchers

The NRF awarded two new A-ratings to UCT staff, one of which was awarded to **Professor Ed Rybicki** from the Department of Molecular and Cell Biology.

Professor Hans-Pieter Kunzi from the Department of Mathematics and Applied Mathematics also had his A-rating reconfirmed.

Astronomy HOD finds her place on International Astronomical Union



Prof Kraan-Korteweg, the chair of Astronomy and head of the Astronomy Department at UCT, has been elected Vice-President of the Executive Committee of the International Astronomical Union (IAU) at the 2012 General Assembly of the IAU in Beijing.

The Astronomy Department and Faculty are absolutely delighted that Prof Kraan-Korteweg has been elected to this position. Prof Kraan-Korteweg is the third member of the Astronomy Department to have been elected Vice-President of the Executive Committee of the IAU, with this post having been held previously by Honorary Prof Michael Feast (1979-1985) and Emeritus Distinguished Prof Brian Warner (2003-2009).

Our Science Stars:

Dr Gregory Smith from the Chemistry Department, won the Raikes Medal, awarded “to a person, under the age of 40 on 31 December proceeding the year of the award, whose original chemical research shows outstanding promise, as judged by the person’s publications in reputable journals. It is further stipulated that the research shall have been performed in South Africa.”



Special recognition for Prof Mino Caira from the National University of Córdoba (UNC), Argentina: Prof Caira recently spent a 3 month period of research leave at UNC, which ended on a high note with his receipt of an award in late September. In April 2012, the Executive Committee of the Faculty of Chemical Sciences at the National University of Córdoba had passed a resolution to award him the title of **Distinguished Visitor** (**‘Visitante Distinguido’**). This award was presented by the Dean, Prof M Strumia, at a ceremony on 20 September, at which Prof Caira presented a lecture entitled “When South meets South: Argentina/South Africa collaboration on pharmaceutical and agrochemical applications of cyclodextrin technology”. The award recognized his sustained research collaboration as principal investigator in bilateral NRF-sponsored projects with counterparts Profs E Buján and R Hoyos de Rossi in the Department of Organic Chemistry, as well as long-term collaborations with colleagues in the Department of Pharmacy and other scientists at UNC.

A Record 9th win for Computer Stars

South African Regional of the ACM International Collegiate Programming Contest (ICPC)

On Saturday 20th October, the 14th SA Regional of the International Collegiate Programming Contest took place at universities around the country. The ICPC is a worldwide event sponsored by IBM, in which teams of 3 compete to solve programming problems as fast as possible. Each team is given only one computer and 5 hours, requiring excellent teamwork and strategy.

The UCT team, “Insane Coders Pestering Computers” consisting of Graham Manuell, Gwylim Ashely and Kosie van der Merwe (all 3rd year Computer Science students) took top spot—as they have for 9 out of the last 10 years! The simplest problem required them to check whether given numbers were divisible by perfect squares, while others dealt with graph theory, noughts and crosses, geometry, statistics, string processing and number theory.

Their prize is entry into the extremely challenging world finals in St Petersburg in Russia in 2013, where over 100 of the best teams from around the world will compete. They will be accompanied by UCT coach and site director Bruce Merry, a post-doctoral research fellow in the Computer Science Department and a veteran of previous world finals.

Pictured here are the winning team from left to right: Graham Manuell, Gwylim Ashley, Kosie van der Merwe and Bruce Merry.



SCIENCE FACULTY EXCELLS

Dawood Hattas from Botany has been working on plant chemical defences (specifically the plant compound known as tannin) for his PhD and this work won him the best poster presentation award at the annual conference of the Grassland Society of Southern Africa.



Dale Taylor from Physics has been awarded a WiPiSA DST Grant from a proposal sent to the SA Institute of Physics. She plans to inspire female physics students at UCT to consider careers in physics in South Africa,

Ulrich Mannl, a NanoScience Centre student, won an award for the most outstanding poster presentation at the 2012 International Conference on Flexible and Printed Electronics, held in Tokyo.

The Operations Research Society of SA (ORSSA) recently awarded **Dr Ian Durbach** from the Department of Statistical Science, the Tom Rozwadowski medal for the best published paper in operations research.

Emeritus Professor Theodor Stewart of the Department of Statistical Science received the Category 1 ORSSA recognition award for his service to the profession over a long period of time.

Big Win for Science Postgrad Soccer Stars



A Science Faculty Postgraduate team entered the annual Four-a-side mini Soccer Tournament. The team “Natural Selection” was one of 12 teams from faculties across campus.

They made a convincing performance in the group stages, averaging about 5 goals per match and getting through to the semi-finals. In the semis, they drew 4 all, forcing a “Golden Goal” where they scored the winning goal to make it to the finals.

The final was hard, but given their evolutionary advantage, “Natural Selection” adapted better to their environment and clinched the victory! The floating trophy (above) will be doing the rounds through the departments represented, namely Chemistry, MCB, Astronomy and Mathematics!



Chemistry PhD Achievement “Against All Odds”, receives award from National Youth Development Agency

Chemistry PhD student **Peter Malatji** brought great honour to the Department of Chemistry by winning a South African Youth Award for academic excellence, at a gala event organised by the National Youth Development Agency.

The theme of the awards was “Against All Odds” - to showcase exceptional work and contributions that young people are making in their communities and the world, telling inspiring stories of youth who have achieved extra ordinary merits, despite the odds.

Peter runs a chemistry project in six high schools in Mpumalanga, mentoring rural learners in science and engineering.



UCT Fellows’ Young Researcher Award

Will Horowitz from the Physics Department and **Ake Fagereng** from Geological Sciences received the 2012 UCT Fellows’ Young Researcher Award at the annual fellows dinner. These awards are given in recognition of outstanding scholarly work by a young academic.



Dr Will Horowitz



Dr Ake Fagereng

Ake Fagereng was also awarded the prestigious Claude Leon Merit Award for young lecturers—in recognition of meritorious scholarly work and to support his demonstrated ability to make a significant contribution to his research field.

Science Faculty sweeps prizes at SA Society for Atmospheric Sciences

At the South African Society for Atmospheric Sciences, hosted in Cape Town in September, most of the prizes went to Science Faculty staff and students:

Dr Neil Hart from Oceanography won the prize for best talk "Who's the Boss?"

Arlindo Menque from CSAG at EGS won the prize for best poster on "How well do the Regional Climate Models Stimulate the Southern African Droughts?"

Dr **Bjorn Backeberg** and **Chris Reason** from Oceanography won the Stanley Jackson awards for best 2011 peer-review paper on "A connection between the South Equatorial Current north of Madagascar and Mozambique Channel Eddies

Dr Mathieu Rouault from oceanography was re-elected SASAS president and Professor Bruce Hewitson from EGS was elected to council.

Congratulations to winners of the 2012 SA Statistical Association Postgraduate Competition

- 1st prize: Darren Williams
 - 2nd prize: Opeoluwa Oyedele
 - 3rd prize: Tinashe Chatora
- UCT excelled by winning all 3 top prizes!!

Computer Science students prove their mettle in Nokia Windows Hackathon

Six students from the Department of Computer Science attended the Nokia Windows Phone Hackathon and **Thabo Ndlovu** (3rd year) took first place while **Henk van Jaarsveld** took second place. Apparently so many UCT students met the application development challenge that Nokia had to re-stock up on Windows Phone prizes!!

Financial Mail ranks UCT Statisticians as best financial analysts in South Africa

The Statistical Sciences department members received several accolades at the annual Financial Mail analysts' rankings of South African financial research. In this assessment the 556 SA financial analysts are rated across 40 research sectors by a confidential questionnaire poll of SA brokerage firms' domestic institutional clients. **Chris Holdsworth** (PhD student) and **Professor Graham Barr** were jointly rated: 1st in the categories Quantitative Analysis & Innovative Research and 3rd in category Risk Management. Professor Dave Bradfield was rated 1st in the category of Risk Management and 5th in the categories of Quantitative Analysis & Innovative Research.



Prof Graham Barr



Chris Holdsworth



Prof Dave Bradfield

Chemistry students scoop poster prizes:

It's been a bumper year for Chemistry postgraduate students: six of them won prizes for their poster presentations at four different conferences.

- *At the 12th Frank Warren Conference* in Bloemfontein, April, 2012:
Best poster: Taigh Anderson
3rd poster prize: Shankari Nair
- *International Symposium on Bioorganometallic Chemistry*, Toronto, May 2012:
Best poster: Preshendren Govender
- *Structural Chemistry Indaba7*, Skukuza, September 2012:
Best poster: Gift Mehlana
- *H3D Symposium – New paradigms in drug discovery*, Cape Town, October 2012:
Best posters (there were 3, all rated "first"): Melvin Ambele and Gillian de Villiers

STAFF NEWS

FAREWELL TO STAFF

Eva Abrahams, the Student Development Advisor, left the Faculty in October.



Leon van Heerden who worked in the Physics Electronics Workshop for 34 years, retired at the end of September. Thousands of students have used, and still use kit built by Leon in the Physics teaching labs.

WELCOME TO NEW STAFF

Phil Janney, started in the Department of Geology as a senior lecturer in Petrology and Analytical Geochemistry.



Thelma Jenneker, started in October as the Senior Secretary in the Department of Computer Science.



Geoff Nitschke started in May in the Department of Computer Science as a Senior Lecturer.

Kerryn Gray started in the Department of Geological Sciences as Chief Scientific Officer in July.

Professor Tom Jarrett, took the SARChI Chair in Astrophysics and Space Science in the Department of Astronomy in June.



NEW HEAD OF DEPARTMENT

Professor Anusuya Chinsamy-Turan has been appointed as the new Head of Department of the Department of Biological Sciences—the newly merged Departments of Botany and Zoology.



CONGRATULATIONS

Congratulations to the following members of the Department of Chemistry for long service:

- Gianpiero Benincasa—25 years
- Carol Stanley—25 years
- Andre de Jager—15 years



Speedy footwork..

Claire le Manach, a postdoctoral fellow in Kelly Chibale's group in the Chemistry Department, was the 10th woman overall in the Gun run, with a time of 1 hour 34 minutes. Keep up that speed Claire!!



MCB Soccer Tournament

This annual event is organised by post-graduate students and involves most of the post-grads as well as some brave staff members! The aim of the event is to bring together students from all of the different research labs for some fun and exercise in a social environment.

Participants were randomly placed in teams and the "league" event took place on Friday afternoons over 3 weeks and apparently competition was friendly but fierce!

(Ed Note: How about an inter-departmental challenge???)



Faculty Staff in the pink for Pink Awareness Month



WHAT'S NEW: Research Bytes

Seals use selfish rules to stay off the shark menu

A recent publication by UCT graduate Alta De Vos and her supervisor Justin O'Riain reveals how seals use simple movement rules when in groups to reduce their chances of being predated upon by white sharks. Despite much theoretical work, predictions on how animals move to reduce their predation risk have seldom been tested in natural systems. By filming groups of swimming seals from a helicopter the researchers were able to quantify and then test a range of well developed theoretical models for which empirical analyses have proven difficult to obtain. Their results revealed that seals traversing high predation risk areas use simple movement rules, rather than complex averaging rules and in so doing manage to reduce their individual risks of being predated. When whole groups of seals use simple movement rules this results in the formation of compact groups as predicted by the selfish herd hypothesis.

Of course the same applies to people swimming in the ocean - stay closer to your neighbours than others and you will have a reduced chance of being attacked. Unfortunately if everyone follows this same simple rule then the result is tightly knit group of bathers all jostling for position within the group and there is not a lot of recreation in that. Fortunately for us, humans are more of a side dish and not 'on the shark menu' and hence we can relax the movement rules in our pursuit of fun.



Seals being fitted with transmitters to assist with their tracking as they move to and from Seal island, False Bay



Hype about the Higgs Boson Lecture by Dr Andrew Hamilton

Dr Andrew Hamilton from the Department of Physics, presented a lecture entitled, "The Higgs Boson: What's all the hype about?" And it is apparent that there is a great deal of hype about this, as this public lecture drew over 900 people to attend. The talk had to be repeated and have a live streaming digital recording made as a result of the huge demand to participate in this lecture.

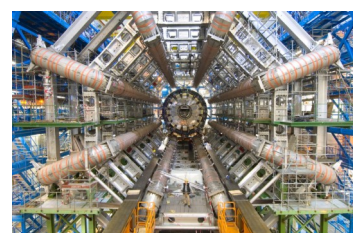
Public interest in physics spiked after the European Centre for Nuclear Research (CERN)'s announcement on July 4 2012 that it had detected a particle that looked and behaved like the mythical Higgs Boson particle that scientists have spent decades searching for. Dr Hamilton's public lecture on 6 September went some way to shedding light on that momentous moment in scientific history, why it is such a big deal and why the Higgs Boson is an important part of our current understanding of the laws of nature and what this means for our understanding of the universe.



Large Hadron Collider, Switzerland



Dr Andrew Hamilton



The ATLAS Detector

Restoration Ecology experiment on Devil's Peak encourages collaboration

by Dr Pippin Anderson, Department of Environmental and Geographical Science

An exciting new restoration ecology project co-ordinated by Dr Pippin Anderson of the Department of Environmental and Geographical Science, is generating a great deal of interest and collaboration between SANPARKS, SAEON, KEW and the City of Cape Town.



Seed collection workshop training in the field

With its proximity to the City of Cape Town and fertile shale soils, the Peninsula Shale Renosterveld would have been one of the first vegetation types transformed for agricultural purposes by early European settlers. Over the last three hundred years this vegetation type has been dramatically altered through human activity. 77% of this endemic vegetation type has now been lost to urban expansion and agriculture. The little remaining area is degraded primarily due to incorrect burning regimes, alien invasion and fragmentation. This project, which started in 2011, is funded by the Table Mountain Fund of WWF.

Work underway includes a phytosociological survey of the vegetation of the remnant patch on Devil's Peak, seedbank trials to establish the existing seedbank in situ in the different vegetation states, and a detailed historical narrative of the site. "By understanding its use through time we might gain insights to the drivers of change in this system and in turn use these to inform restoration work" says Dr Anderson. MSc student Oliver Cowan's work on this confirms a long history of exploitation, and a weed dominated seedbank, but there is hope in some good extant vegetation, with an associated seedbank, that if managed correctly with appropriate fire intervals and intensity, should ensure at least the persistence of this remnant.

New Polar Research Ship by Associate Professor Mike Lucas

After nearly 35 years of service, South Africa's well-travelled but aging polar research and supply vessel, *SA Agulhas*, was retired in April 2011. It has been replaced by *SA Agulhas II*, a vastly more modern, larger and more powerful R1 billion state-of-the-art polar supply and research vessel. Several UCT academics, **Associate Professor Mike Lucas** (EGS), **Associate Professor John Compton** (Geology), **Drs. Isabelle Ansoorge, Howard Waldron & Mathieu Rouault** (Oceanography) were on the committee that helped choose which ship tender was accepted and then advised about the science capability required and what on-board facilities were needed.



SA Agulhas II is world-class, so how can such a ship and her price-tag be justified? South Africa occupies an almost unique geographical position as one of the three major 'gateways' to Antarctica, along with South America and Australia/ New Zealand, and through the South African National Antarctic Programme (SANAP) provides logistical support for oceanographic research and weather observations in the Southern Ocean, particularly in the context of marine living resources and climate change. The *SA Agulhas II* will serve as a mobile scientific research laboratory for oceanographic and biological research, while continuing its predecessor's role of deploying and collecting weather buoys as part of an international collaborative effort to provide a national and global weather prediction service.

The capability of *SA Agulhas II* is far superior to its predecessor. It is capable of a maximum speed of 18 knots, can stay at sea for 90 days and has considerably better ice-breaking capability than the old ship. As a floating science platform, the ship is almost unmatched, with eight permanent laboratories and six portable and fully serviced container laboratories that can be secured beneath the heli-deck.



It is clear that the *SA Agulhas II* will maintain South Africa's leadership position over the next 20 to 30 years as a global player in Antarctica and the Southern Ocean. In doing so, it will provide a platform to educate and train the next generation of national and international polar research scientists.

Taking on Cape Town's waterways: paddling for change

by Dr Kevin Winter, Department of Environmental and Geographical Science



Cape Town's waterways are cleaner and more navigable than they were in 2011, a group of intrepid paddlers concluded after undertaking the 3rd annual Peninsula Paddle in June 2012. A core group of approximately 23 enthusiastic paddlers, aged between 14 and 70, led by route pioneers **Dr Kevin Winter** and Alisair Lee, set off at dawn from Muizenberg, on the Indian Ocean, on canoes, kayaks and stand-up paddle boards. They navigated through a labyrinth of vleis, canals and rivers to Woodstock Beach, on the shores of the Atlantic Ocean, before entering the Milnerton Lagoon nine and a half hours later. The 27km route meanders through nature reserves, light industrial areas, recreational areas, residential estates and marinas.

The colourful annual event seeks to raise awareness about the importance of the many waterways connecting the city's 3.7 million residents, in a spirit of goodwill and celebration, under the theme 'Take back the City's waterways'. Learners from 4 Lavender Hill schools participated in events highlighting the importance of wetlands, waterways and recreational spaces in this area of natural beauty and local heritage, currently threatened by development.



Water samples taken at Princess Vlei and Zandvlei by Dr Kevin Winter, lead researcher in Urban Water Management at UCT, showed improvement in quality on last year's results. Says Winter: "As citizens, we are all connected to these waterways and the quality of these waterways affects not only the environmental health of our city, but also the opportunities they offer. We look forward to being able to remove protective safety masks (worn along certain stretches of the route) and paddling in waters that do not pose a health risk."

The spirit of the event was overwhelmingly positive, festive and educational. Even paddlers who experienced challenges, such as a punctured inflatable boat, retained their sense of humour to the very end.

National Astrophysics and Space Science Programme turns 10! An amazing time for Astronomy in South Africa!

By Professor Peter Dunsby, Department of Astronomy

The National Astrophysics and Space Science programme, an honours and masters degree programme run by a consortium of nine South African Universities and three National Facilities and hosted by the Department of Astronomy at UCT, with the aim of attracting previously disadvantaged South Africans to the field of astronomy, is celebrating its 10th birthday in 2012.

South Africa has a history of excellence in astronomy and its geographical position, modern infrastructure, good climate and its recent successful bid to host a significant portion of the Square Kilometre Array (SKA), ensure that Southern Africa is strategically placed to play a major role in astronomy of the 21st century. The southern African region is well endowed with space research facilities, including three major new developments – the 10-m class Southern African Large Telescope (SALT), the Karoo Array Telescope (MeerKAT) - a prototype and technology tester for the SKA and the High Energy Stereoscopic System (HESS) in Namibia.

Professor Peter Dunsby says, "Our goal is to provide students with the skills, knowledge and inspiration to embark upon a PhD in astrophysics or space science within South Africa or abroad, or to enter and contribute to the South Africa work force". NASSP is utilizing this to build an international network of African astronomers.

Working towards these goals, NASSP has graduated 123 students (50 from outside of South Africa) with Honours degrees and 75 (38 from outside South Africa) with Masters degrees, in the last 8 years. 21 of the Masters graduates have gone on to complete doctoral degrees at both local and international institutions. More than half of the students completing PhDs after the NASSP programme have taken up postdoctoral and permanent academic positions in South Africa, elsewhere in Africa, or at leading institutions around the world. They form the nucleus of research groups who will be users of SALT and SKA, as well as participants in the broader space science activities in Southern Africa.

1st Frontiers in Scientific Computing

The Scientific Computing Research Unit hosted the 1st Frontiers in Scientific Computing Symposium, 1-2 October 2012, V&A Waterfront, Cape Town.

Leading experts from abroad and home highlighted the role that computers play in education, research and industry. The impact of scientific computing in the diverse fields of space science, chemistry, medicine and environmental science led to animated discussions amongst the 70 registered participants.

Several speakers expounded on the use of computational models in scientific research pointing to the central role that it plays in their disciplines. Local scientists like A/ Prof. Michelle Kuttel (Computer Science) highlighted the role that computational methods have been playing in the SKA project while Prof. Bruce Hewitson (Environmental and Geographical Sciences) showed how climate modeling was critical to resolving pressing environmental policy questions. Bioinformatics loomed

large with speakers from UWC, Harvard and UCT presenting their cutting edge research in the field. Chemistry was well represented with highly cited American academic Prof. Henry Schaefer (Univ. of Georgia) leading the charge on the use of quantum methods in hydrogen fuel designs. SCRU's Prof. Kevin Naidoo brought the connection between chemistry and biology together with his lecture on the rational design of pharmaceuticals.

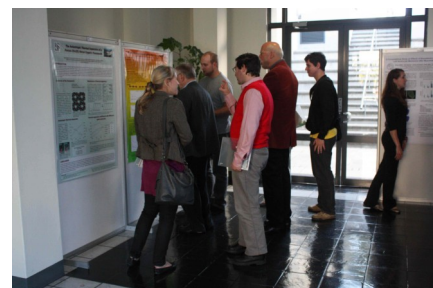
Research was not the only topic for discussion-teaching methods were also on the platter. Dr. Jurgen Schnitker, a leading American education software designer, from California, described the value of computer experiments in advancing understanding. He noted that apart from the ancillary function computer experiments play in American undergraduate and high school classrooms they may take on the role that physical experiments play in places where expensive laboratory equipment is lacking. This is of particular interest to developing countries like South Africa, where

learners are confronted daily with poorly equipped laboratories.

The stellar group of leading computational scientists from universities such as Harvard, Stanford and Cornell joined South African physicists, engineers, chemists and biologists (many of them from UCT as well as UWC and University of Stellenbosch) in a fun conference dinner surrounded by sharks and tuna in the predator exhibit at the Two Oceans Aquarium.



Prof KJ Naidoo Welcome Address



Poster Session

MCB Post Graduate Research Day

The postgraduate students from MCB organised a postgraduate research day with a mini-conference, plenary lectures by selected staff or visiting academics, followed by post graduate student oral presentations. Honours students submitted scientific posters, which were on display. In the run-up to the research day, two writing competitions were held. Students could submit articles on any subject of their choice in the broad categories of Popular Science article or Developing Scientist article. The popular article had to be on a topic of general public interest, written in a clear style, without use of jargon. The idea behind the developing writer articles was that they were intended to give students a platform on which to begin putting together research ideas for a formal journal article.

Awards for oral presentations went to:

1. Lovemore Kunorozva
2. Ailsa Davidson
3. Tshabuse Freedom

Awards for Scientific Posters went to:

1. Richard Atkinson
2. Margaretha de Waal
3. Steven Bing

Best Popular Article went to Mandy Mason for her article on "The e-learning curve".

Best Developing Writer went to Tyron McCrindle with his article on "Plant innate immunity".

Baboons pay heavy pathogen price for their close association with humans on the Peninsula

by Associate Professor Justin O’Riain—Department of Zoology

Two articles published this year suggest that the physical overlap between baboons and humans on the Cape Peninsula may have serious health consequences for both parties. Associate Professor Justin O’Riain who heads up the Baboon research at UCT said that of the 27 baboons that were captured and sampled in 2011 more than 30% tested positive for human diseases including Hepatitis A and two Herpes viruses (Drewe et al. 2012, Emerging Infectious Diseases). Even more surprising was the discovery by O’Riain’s PhD graduate Dr Ravasi and colleagues Professor Nicci Iling and Faeza Davids that the Peninsula baboons are host to two distinct genotypes of the common gut parasite - the whipworm (*Trichuris*) that is estimated to infect over 600 million people worldwide. Together these examples of cross transmission from humans to baboons and the risk they pose to reinfection of people has provided conservation authorities with a strong platform for ensuring management policies that reduce the spatial overlap of humans and baboons both locally and elsewhere in Africa.



Dr Julian Drewe and Dr Hamish Currie process a baboon captured by UCT researcher Associate Prof Justin O’Riain as part of a study on pathogens in Peninsula baboons



Baboon eating yoghurt. Close physical overlap of humans and baboons in addition to sharing food from the same container may have resulted in baboons acquiring human pathogens

Astronomy and Statistics Association with UCT Astronomer at the helm

Bruce Bassett, from the Department of Astronomy has been appointed Vice President at large for the International Astrostatistics Association, which aims to bring together statisticians and astronomers. Modern astronomy and cosmology involve huge amounts of data and making sense of this requires statistical applications, so there is a natural synergy between these two disciplines. The Square Kilometer Array (SKA) which South Africa has won the lion’s share of, will generate about an exabyte of data every day (about the same storage as a million of today’s PC’s.) By comparison, estimates are that in 1999 the sum total of all human-generated information was only about 12 exabytes. Bassett says, “Clearly no human will be able to process this vast amount of data and only by developing new statistical and computation techniques will we be able to extract the deep new truths that lie hidden inside”.

Bruce Bassett also recently gave a TED Global Talent Search talk on “The Cosmic Quest of Humanity’s Place in the Universe” The talk looked at how we view ourselves and our place in the universe and highlighted how recent cosmological discoveries would seem to challenge the widely accepted Copernican principle that neither humanity nor Earth occupy a special place in the Universe.

This engaging talk with popular public appeal, can be watched on:

<http://talentsearch.ted.com/video/Bruce-Bassett-The-cosmic-quest;TEDJohannesburg>



Bruce Bassett giving a TED Global Talent Search Talk on The Cosmic Quest for Humanity’s Place in the Universe

SCIENCE FACULTY OUTREACH

Phenomenal Physics—inspires and excites learners

300 Grade 11 learners from schools across the Peninsula, stormed the RW James building and enjoyed an afternoon of phenomenal physics.

The Physics Department staff who offer this annual event always present an action-packed and stimulating afternoon of physics in action, to excite, inspire and capture the imagination of the learners. The aim is to show learners the underlying presence of physics principles in our everyday lives, that physics is an exciting and relevant academic pursuit and to showcase UCT as a cutting edge place to study Physics.



Never too young or too old to come to UCT. By Andrea Plos, Department of Zoology



From 8 to 50 years old, learners and teachers have had tailored science outreach programs designed to fit the science enrichment. During the second half of the year, the Zoology Department organized and hosted, in collaboration with various partners, but in particular Marine Research Institute and Save Our Seas, a wide range of Outreach activities that have seen 400 learners and 100 teachers being thrilled by science.

The aim of the outreach is to illustrate the vital importance of science and the possibility of careers in the Biological Sciences.

The learners discovered some weird and wonderful creatures, had a few myths about sharks dispelled, marvelled at life on a tropical island and got up close with starfish, rock lobsters and a host of rock pool creatures! Any qualms with creatures slimy, spiny and spongy were quelled at the touch tanks. Aquaculture became understandable and fun, and there was no squeamishness to be found at the snoek dissection where the weird world of parasites was revealed. A highlight was definitely getting some of the boys into full snorkeling gear and ready to dance in front of their peers, as well as a few priceless facial expressions when the boys were confronted with a spiny rock lobster! The department's researchers and senior students got to show off the fruit of their studies and the learners were exposed to our environment and animal kingdom, at the same time demystifying science, and opening their eyes to the possibility of studying Science at the University of Cape Town.