June 2013 Faculty of Science University of Cape Town Vol. 2 Issue 1

Science Matters

Science Faculty Newsletter

Message from the Dean

Welcome to the 2013 first semester edition of "Science Matters". As usual the first six months of the year have been extremely busy with the academic enterprise, but this has not stopped many from achieving individual and collective successes. The recent completion of mid-year examinations, and associated marking, allow one to reflect on the many activities that took place during this past semester. The arrival of our 2013 intake of first-time entering undergraduates in early February marked the start of the new academic year, and the new degree structure where all first year students entered the mainstream degree programme. The efficient management of the registration processes for both new and returning students by the Faculty Office and Student Advisors, coupled with a strongly revised Orientation Programme implemented by the Assistant Dean, ensured that the year got off to a good start. The pioneering 'six week' series of tests similarly ran very smoothly and the first 'Extended Degree Programme' class was constituted in early April. I look forward to seeing the progress of this important group of students as the year, and coming years, unfold.

The following pages capture many of the highlights of the first semester, and include academic, social and community based activities. Individual staff are recognised by prestigious national and international awards, and students from a number of departments are recognised for their successes in international and national competitions. New staff who joined the Faculty are welcomed and respects are paid to Phil Hockey, well regarded Director of the PercyFitzpatrick Institute of African Ornithology, who passed away earlier in the year. Intrepid groups of students describe their experiences negotiating two major South African river courses – the Kei and the !Gariep. Further south, staff and students give accounts of the unique experiences of working on the 'ice continent' of Antarctica. In addition to the many academic endeavours, staff and students put considerable effort into outreach activities, with very successful events being held at The Settlers High School and UCT Open Day, where the excitement and engagement of pupils with displays and Faculty staff and students are well captured in pictures.

Enjoy this edition of "Science Matters".

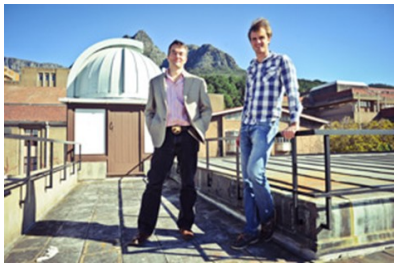
Anton le Roex

Professor William Bond, the Harry Bolus Professor of Botany from the Department of Botany, was recently elected as a foreign Associate of the National Academy of Science in the USA, in recognition of his distinguished and continuing achievements in original research. Professor Bond is only the third South African ever to receive this honour and we congratulate him on this prestigious award—one of the highest that a scientist can achieve.

UCT Astronomers take the lead on SKA

Associate Professor Patrick Woudt, from the Department of Astronomy is co-author on the first scientific paper based on the observations performed with South Africa's new KAT-7 telescope. Cape Town is currently the hot spot with regard to radio astronomy and UCT is becoming a hub for astronomical and astrophysics research in Africa.

Engineering alumnus Dr Richard Armstrong, a Square Kilometre Array SA Fellow at UCT is the first author on this paper, which Woudt co-authored.



Professor Patrick Woudt and Dr Richard Armstrong

Our Science Stars:

Botanist are the Ultimate Champs!

PhD student Rob Skelton and Honours student Tom Morris, both botanists in the Department of Biological Sciences, flew the South African flag when they were selected as part of the 19-man squad to play for the South African National team, the "Mambas" at the Ultimate world championship in Japan.

Ultimate is like the Frisbee World Cup – where the goal is to move a plastic disc up a hockey sized field by passing to players on your team.

Their team finished 12th, 3 places above their opening seeding of 15th!

Also in the team were Science alumni Nick Zaloumis (MSc in Botany), John Heydinger (MSc in Zoology) and Jon Aronson (BSc in Zoology & Botany).

At the same time Rob Skelton also claimed the Australian Journal of Botany's Best Student Paper of 2012 award. The paper was co-authored with Professor Jeremy Midgley and Associate Professor Mike Cramer and came out of his MSc research on the response of fynbos to long term and short-term variability in environmental drivers. He is also interested in determining how these drivers vary between different functional types and in utilising this knowledge to predict how future climate change is likely to affect future fynbos communities.

The Mamba's Ultimate team

Rob in action

Pop Idols for Scientists: UCT Science Faculty students grabs limelight in SA and Internationally.

John Woodland, an MSc student in the department of Chemistry , together with Michelle Knights from the Department of Mathematics & Applied Maths, were finalists in the International FameLab competition that ran in South Africa for the first time this year. They both won a cash prize and a trip to Grahamstown to compete at the SciFest, where he came second and won a further cash prize. John said, "It is imperative that we get people interested in, and inspired by, science in South Africa. We live in a scientific age. Everyone ought to be familiar with basic scientific ideas and ought to think critically about the world and the information we are fed. FameLab seems to be an excellent way to get involved with scientific communication and to improve my own abilities so that I might help to make that difference". During the elimination rounds, John spoke about malaria and the ways in which the scientific community is working together to understand and eradicate the disease.

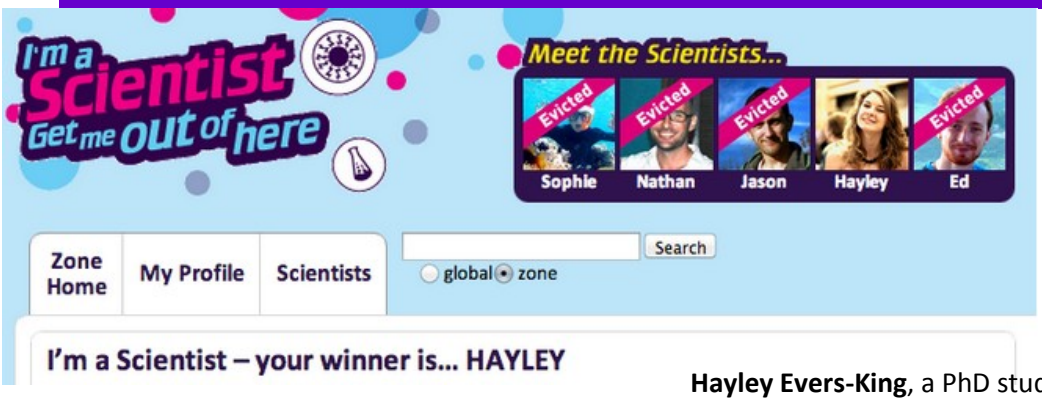
John said that Famelab provided a wonderful platform to meet and interact with a group of like-minded young scientists, who are passionate about communication, as well as giving them an opportunity to refine their science communication skills through master classes and the training they received.

Michelle Knights, a PhD student in Cosmology and Astrophysics at UCT, winner of South Africa's first ever FameLab competition, represented South Africa at the FameLab International Semi-Finals and talked about the use of pulsars to demonstrate gravitational waves, postulated by Einstein, and one of the areas which will be studied by the SKA project currently under development in South Africa. Michelle earned herself a place in the International final.

FameLab is an international speaking competition, which encourages dialogue between science and the public. It creates opportunities for young scientists to communicate their work in accessible three-minute presentations, fostering greater public understanding of scientific concepts and their implications in our lives.

Talks in the semi-finals ranged from virology to quantum physics to neuroscience and geology. Each speaker skilfully wove science into their compelling stories and was judged on the content, the clarity and the charisma of their presentations.

Knights' success in the competition provides a tremendous opportunity for South Africa to share its science on an international platform.



I'm a scientist, get me out of here!" is an online outreach programme bringing science to schools in the UK. This initiative gives students an opportunity to interact with scientists online : in forums and fast paced live-chats. The students then vote for their favourite scientists, who win a grant towards a science communication project.

Hayley Evers-King, a PhD student in the Department of Oceanography was voted winner of her zone after a busy two weeks of interaction with high school learners. Hayley commented that the range of questions asked was astounding—from the origins of the universe, to human evolution and the philosophy of the scientific method. She was encouraged by interest in her own work (satellite observation of red tides) and said that taking part taught her how to phrase answers to complex questions in simple ways. Check out http://imascientist.org.uk/ for more info.

World IT breakthrough by Professor David Britton & Associate Professor Margit Härting

A Cape Town technology company has rocked the international technology world with the unveiling of the first new type of transistor in 65 years. The invention is called the "current switching transistor" by is inventors PST Sensors. PST Sensor chief technology officer **Professor David Britton**, professor in UCT's Department of Physics and NanoScience Innovation Centre, describes the transistor as a major breakthrough. Electronic devices, such as computers, often need millions of transistors—semiconductor devices used to amplify and switch electronic signals needed to perform calculations for the function of electronics. **Margit Harting**, Department of Physics and PST Sensors chief strategy officer and director of research and development in the NanoSciences Innovation Centre, explains that the new switch transistor does the work of several transistors, freeing up space and potentially increasing the output of the device and improving power management.

Professor David Britton

The innovation has also been hailed for its potential to open up a new field on the use of transistors.

Britton described the reaction at the European exhibition as "gobsmacked". "You could have heard a pin drop. I believe the audience was in shock and disbelief because of the implications to transistor technology, the simplicity of it, and why it had never been done before," he said.

Associate Professor Margit Härting

Science Student wins internship in Europe

Sizwe Ndlovu, from the Department of Computer Science will be living a dream when he takes up an internship in Europe, a prize won at the International Business Game. The competition hosted by Pernod Ricard International, targets final year and post graduate students. Teams of three had to create a digital marketing strategy for one of the company's brands, Absolute Vodka. Sizwe and fellow UCT students Thembeka Setlogile and Tetlanyo Lekalake represented South Africa at the finals in Paris where they competed against the world's top marketing students. "The competition was a life changing experience" said Ndlovu. "We were challenged to produce work at an international standard." The three UCT students were joint winners with students from Russia. They will take up their internships in January 2014 after finishing their studies at UCT.

Thembeka Selogile, Sizwe Ndlovu and Tetlanyo Lekalake

Science Faculty Travellers

Students take on epic 480km hike along Kei River

Five UCT students are about to embark on an epic 480km hike along the Kei River, hoping to document the river from source to sea, while undertaking socio-logical and economic research on people living on opposite sides of the river. They plan to undertake water quality tests in the hopes of devising better ways to manage the precious resource.
Brandon Finn, from the Department of Environmental and Geographical Science is one of the adventurers and Daniel Poultney is another. The group will use GPS technology to plot the sites of 200 water samples they collect during the hike and GPS co-ordinates will record the exact location of each sample taken. Professor Adam West from the Department of Biological Sciences will test the samples.

The group describes the trip as being 'multi-layered': conducting water research along the way, raising money for The Eluphindweni Community Crop Project and documenting the divide between rural villagers on the one side of the river and farmers on the other side.

The 3 UCT staff/ students, PhD student James Puttick, recent MSc graduate Sam Jack and Ian Durbach, a statistical Science Lecturer made this epic journey—the first mega-transect of South Africa's longest waterway which forms the border with Namibia and provides critical water for irrigation and hydro-electric power.

Being back on campus the trio commented that there are "too many people and cars" here and loads of data which will take months to process!

The expedition was supported by UCT's Plant Conservation Unit, the Mazda Wildlife Vehicle Fund, and the National Research Foundation's South African Environmental Observation Network (SAEON). The UCT trio also collected ornithological data from a host of sightings: Goliath Heron and Giant Kingfisher, and some 500 African Fish Eagle sightings. They also returned with a treasure chest of photographs.

With little paddling experience before they set out (Jack had done some river guiding "years ago"), the journey was not without minor mishaps, the result of beguilingly-named rapids (Sjambok, Gamkab, Rollercoaster, Rocky Horror). But they met disaster only once, at a weir upstream of Orania, where Jack and Puttick's kayaks both sustained tail damage. As luck would have it, a local manufacturer of plastic water tanks sorted out the problem in his workshop and put the two back on the water. It was not the first or last time local hospitality helped them on their way. Paddling from the cooler highlands of Lesotho, temperatures soared to over 40°C at Augrabies, where their blog entry was headed: Hot Like Vindaloo. But the riverscape dictated the pace, and the simple life inventive (though Spartan) cuisine.

First full eco-census of !Gariep

Researchers are wrapping up the first full-length ecological census of the vegetation and ecosystems of the !Gariep - also known as the Orange River - South Africa's longest waterway.

Three kayaks passed under the border control bridge linking Alexander Bay to Oranjemund 61 days and 2 125km after embarking on this epic journey from Qacha's Nek in Lesotho, slightly downstream from the source of the !Gariep River - or the Senqu, as it's known

Geologists take on Antarctica

***The team**: Anthony Hall, Ake Fagereng, Teboho Sebetlela, David Mc Gibbon, Sukey Thomas, Johann Diener*

A team of geologists from UCT was part of the 2012-2013 SANAE takeover expedition to Antarctica. The group comprised Ake Fagereng and Johann Diener, with David McGibbon, Sukey Thomas and Teboho Sebetlela as research students and Anthony Hall as field guide. They departed Cape Town on the 6th of December aboard the Agulhas II, with the aim of investigating deep crustal processes exposed in the Maud Belt.

After two weeks on the Agulhas, they were flown by helicopter to Vesleskarvet, site of the fourth South African base (SANAE IV). Shortly after their arrival at the base, one of the helicopters was damaged, resulting in them not being able to get to either of their intended field sites, as both are on the other side of the crevasse-ridden Jutulstraumen Glacier. While they waited for the helicopter to be fixed, they spent a week at Grunehogna, about 60 km south of SANAE IV, which was close enough to reach by skidoo. Here they mapped an area where various intrusions of dolerite and red granite disrupt otherwise flat-lying ± 1000 Ma sediments

Two weeks later, with the helicopters repaired, they flew to Nupskapa.

Mapping granite intrusions at Grunehogna

Antarctic experiences: by Sukey Thomas

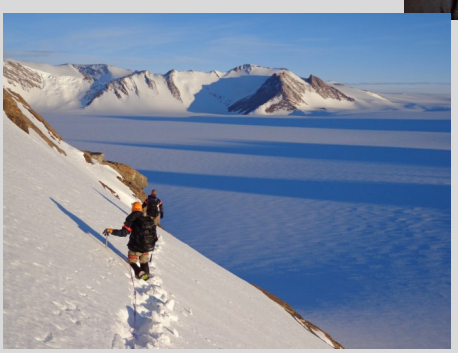
Fieldwork in Antarctica is unique in many ways and requires a large amount of preparation and careful planning, as the weather can often confine you to your tent for days on end. Fortunately, we were very lucky and lost hardly any field time to weather. This was mainly because the area around Sverdrupfjella is informally called the 'Banana Belt' because of its temperate weather. We often needed little more than thermals while it was sunny, but the temperature would quickly plummet to -25ºC or lower if it was windy, overcast or the sun dipped below the mountain.

Camping at Nupskapa

Because we had to fly to our field areas, we did not have skidoos to get around, and had to walk or ski to where we wanted to be, which was a learning experience for most of us. All the big and clumsy clothing, boots and gloves meant that climbing, taking notes and using a compass or camera was tricky at times. The constant bright glare off the snow meant that any tiny piece of exposed skin – such as the underside of your nose – had to be covered with sunscreen or would quickly begin to peel. Getting to outcrops often involved clambering up steep ridges or into windscoops using ropes, harnesses and ice axes

The vast amounts of snow and ice were quite novel for most of us, and living in a giant fridge definitely had its ups and downs. Keeping meat frozen was not a problem, but tinned tuna, cheese, moisturizing cream and toothpaste are not much fun when frozen. Similarly, making a cup of coffee took the best part of an hour, and we also had to make sure that beers were sufficiently warmed up or they would turn into a slushy fountain of foam when you opened them.

Warming up the beers



The silence in Antarctica is profound. Coupled with endlessly receding views of vast white plains and steep jagged mountains, it is one of the most beautiful and eerie places in the world.

Adventure to Antarctica—alongside Sir Ranulph Fiennes by Emma Bone, PhD student in Department of Oceanography

Traditional Bikini shoot!

Emma Bone, a PhD student in the Department of Oceanography, made a shift from Cell Biology and working with tissue culture to exploring the wild Southern Ocean, focussing on phytoplankton photophysiology. Emma explains that, "nutrient availability and various physical forcing mechanism greatly influence the Southern Ocean's participation in the global carbon cycle. Understanding these influences will help us ensure the Southern Ocean continues to act as a sink for anthropogenic carbon dioxide and not a source, which is vital in terms of global warming".

The SA Agulhas set sail with four scientists contracted by the CSIR, to sample the Southern Ocean and collect summer data sets. Their departure was spectacular—with cannon blasts and a brass-band, because Sir Ranulph Fiennes and his team were also heading south on the same polar vessel. On their first afternoon on board, engine trouble struck and engineers and mechanics spent 12 hours scrambling around while everyone pondered whether they would have to turn back or not! Finally however, they fixed the broken clutch and our team started sampling the ocean every four hours, measuring conductivity, temperature, depth, dissolved oxygen levels and chlorophyll, absorbance and pigments.


Crown Bay Iceberg

Our destination was Crown Bay, where Sir Ranulph's Coldest Journey team, were also alighting. The pristine bay was breathtaking—a white wonderland filled with curious crabeater seals, cheeky Adelie penguins and sunsets that merged into sunrises turning the sky a brilliant pink every evening at midnight. We milled around the bay for two weeks, offloading only when the pack-ice and dense floes allowed. Approximately 100 tonnes of equipment and supplies were offloaded, including two Caterpillar trucks and three caboose containers. During these two weeks we were only allowed off the Agulhas on two occasions as the Captain was nervous about letting more people than necessary onto the shelf, as conditions have been known to turn very quickly. We were granted permission to leave on condition that we did not wander too far and stayed away from the flagged crevasses. We walked up a nearby hill, made snowmen and snow-angels and had snow fights. A few days later, the Captain gave the go ahead for all of the crew and cadets to go ashore. I honoured the traditional bikini-shoot requirements and stripped down alongside the majestic Agulhas. A few hours after we safely re-boarded we observed a large chunk of the shelf crumbling into the sea—an indicator of why the Captain had been anxious about letting people go ashore unnecessarily.

Being confined to the ship for three weeks with the same people and the same food, takes the meaning of 'cabin fever' to a whole new level. Our brief excursion rejuvenated us to face the next few weeks of seasonal vegetables (baked beans and creamed corn) and exploding salt-water toilets!

Our final night in Crown Bay involved song and dance and a five-course farewell meal with speeches by the Captain, Dr Mike Stroud and Sir Ranulph Fiennes. The following morning we said goodbye to the six man Ice Team who were dwarfed by the enormity of the vast continent that lay behind them and the sheer magnitude of their task that lay ahead. Hopefully they will arrive safely in Mc Murdo Bay next summer! As for the rest of us, our trip home took 10 days—this maiden voyage to Antarctica has been the highlight of my life so far!!


The Roaring Fourties

Offloading at Crown Bay


Icebergs in Crown Bay

Social Media and Communicating Science… by Morgan John Brand

In the age of the internet, social media tools offer a powerful way for scientists to boost their professional profile and acts as a public voice for science. The use of online tools and cutting edge technology is growing among scientists, but their adoption and acceptance remains limited across the wider research community.

Starting in mid 2012, a group of students from the Marine Research Institute (Ma-Re), took on the task of testing various forms of social media as a tool to promote interdisciplinary connections. This involved the creation of the Ma -Re Student network, which consisted of a Facebook group, Twitter account and an open blog. The group's main goal was to provide a link between postgraduate students from various disciplines, all within the broader marine arena and promote a collaborative future in Marine Research by connecting students in cyberspace through Social Media networks.

A Facebook group was created (MA-RE UCT Students) that currently has 140 members, generating at least one post per day. The main objective of using Facebook was to create a forum that would allow like-minded people to share journal articles, advertise their thoughts and scientific opinions, post updates from conferences and meetings and circulate information about professional opportunities and upcoming events.

Twitter has helped busy academics keep up with new research development and is able to also broaden a scientist's impact in the research world. Tweeting from conferences by discussing cutting-edge research developments can introduce other scientists to valuable content and consequently provide networking opportunities for users who actively post during meetings. Twitter is also a useful tool in building an international presence to promote notable student achievements.

The final tool that has been chosen to aid the mission is an online Blog which is available on the Ma-Re website (http://ma-re.uct.ac.za/blog/) Communicating science can be one of the most challenging tasks for a novice writer and developing a skill set to write effectively can be challenging. Students are encouraged to write about their experiences in a popular style in order to acquire the necessary skills to develop confidence in writing.

As social media continues to evolve and grow, the benefits become more apparent. MA-RE UCT Students Facebook group has produced a range of interesting posts such as scientific journal articles, everyday thoughts, outreach opportunities, job listings and relevant funding opportunities. The Blog has generated 11 articles by six authors . Facebook, Twitter and the blog have been successful in developing a student network with active posts, which is a step towards a more collaborative future.

Future of Chemistry is in their hands...

Banothile Makhubela

Each year hundreds of the best and brightest researchers gather in Lindau, Germany, for the Nobel Laureate Meeting. Here, the newest generation of scientists mingle with Nobel Prize winners and discusses their work and ideas. The 2013 meeting is dedicated to chemistry and will involve young researchers from 78 different countries.

Banothile Makhubela, a Postdoctoral research fellow in the Department of Chemistry, whose field of work is organometallic chemistry with applications in catalysis, medicine and nanomaterials, has been selected to attend the meeting of Nobel Laureates.

When asked what she hopes to gain from attending the Lindau meeting, Banothile, replied, "It's rare that a researcher gets to ask questions directly of a Nobel laureate, and I am honoured to be one of those offered this opportunity to listen to laureates' personal stories as well as to ask questions about their research careers and about the environments and contexts that turned them into pioneers. I am also attending the meeting to gain specific scientific insights and network as well as to seek inspiration and encouragement to push scientific boundaries as a young scientist."

STAFF NEWS

WELCOME TO NEW STAFF

Department of Statistical Sciences:

- Bjorn Stray—Lecturer
- Sebnem Er—Lecturer
- Andreas Altwegg—Associate Professor
- Neil Watson—Lecturer

Department of Chemistry:

- Christopher Barnett—Research Officer
- Takalani Theka—Scientific Officer

Department of Molecular and Cell Biology

- Bronwyn Arendze-Bailey—Senior Scientific Officer

Department of Physics

- Clint Sadler—Chief Technical Officer

Department of Computer Science

- Gonasegran Chetty—System Administrator

Department of Mathematics & Applied Maths

- Mariola Kirova—Lecturer
- Thomas van Heerden—Lecturer
- Gisela Mc Bride—Senior Secretary

FAREWELL TO STAFF

By Professor Susan Bourne

The Chemistry Department bade farewell to **Malcolm McLean.** Malcolm had been a member of the department since his appointment as a departmental assistant in 2004. Hard work, a willingness to learn new skills and an eye for the jobs that needed doing led to his appointment a year later as a technical officer, a post he held for the next seven years. Malcolm's post was to provide technical assistance in the first year teaching laboratories, but he soon became indispensable in all areas of the department. His expertise and endless energy were greatly appreciated, along with his willingness to be involved in all aspects of department operations, even to the point of working evenings and weekends when maintenance or outreach functions required this. He continued to learn new skills, notably by assisting the scientific glassblower until he was able to provide a backup service when the glassblower was away on leave. This proved worth the effort when the University of Stellenbosch appointed him as its scientific glassblower from January 2013.

CONGRATULATIONS

Sophie, daughter to **Kerryn Grey**, Chief Scientific Officer in the Department of Geological Sciences, arrived on 7th May 2013

Squash Champion

Shirley Whitmore & Johnathan Williams

Shirley Whitmore from the Department of Geological Sciences showed her mettle by being runner up in the annual UCT Squash Championships. 16 players from across UCT entered and two Pools were created. Shirley made it to the finals where she was pipped at the post by Johnathan Williams. Well done Shirley! **Professor Mark New** was among the top eight players

In Memoriam

Professor Phil Hockey, Director of the Percy FitzPatrick Institute of African Ornithology died on 24 January 2013, a huge loss to the faculty. Professor Hockey was instrumental in elevating the PFIAO to one of the top three ornithology institutes in the world. His academic standing was impeccable and he was much loved by those whom he taught, supervised or lectured. He left an invaluable resource with his work as co-author of the best-selling regional field guide, *Sasol Birds of Southern Africa*, and as editor-in-chief of the seventh edition of *Roberts – Birds of Southern Africa*.

Most of Professor Hockey's research focused on coastal and estuarine bird ecology. He led research expeditions to Chile, the Canary Island, Mauritius, the Seychelles, Kenya, Madagascar, the Arabian Gulf and Namibia. His research included the ecology of bird movement and migration, as well as avian life history evolution, with the aim of analysing and predicting avian responses to climate change, as well as promoting appropriate conservation strategies.

Born in England in 1956, he obtained his BSc honours degree in Ecological Science at Edinburgh University in 1977. Shortly after he moved to South Africa and joined the Percy FitzPatrick Institute in 1979. He obtained his PhD from UCT in 1983 for a study of the ecology of the African Black Oystercatcher.

Students to attend summer student programme in Switzerland

Two students from the Department of Physics: **Chilufya Mwewa** and **Claire Antel** will be attending the CERN summer student program to be held in Geneva in June to August this year. The CERN Summer Student Programme offers undergraduate students of physics, computing and engineering a unique opportunity to join in the day-to-day work of research teams participating in experiments at CERN in Geneva, Switzerland. Beyond the outstanding first-class scientific value of their stay, the selected students will find working in a multidisciplinary and multicultural environment an extremely enriching personal experience. It is a once-in-a-lifetime opportunity to make valuable and long-lasting contacts with other students and scientists from all over Europe.

In addition to the work in the experimental teams, Summer Students attend a series of lectures specially prepared for them. Several scientists from around the world share their knowledge about a wide range of topics in the fields of theoretical and experimental particle physics and computing. Visits to the accelerators and experimental areas are also part of the programme, as well as discussion sessions, workshops and a poster session. Students are required to prepare a short report on their work at CERN which should be submitted at the end of their stay.

Science Faculty Research Awards by Professor Nicci Illing

Three members of the Science Faculty received awards at the annual Science Faculty Research Awards Ceremony on 22 May 2013, which celebrated outstanding papers published in the period 2009-2013, which report on research led by UCT scientists.

Professor Ed Rybicki from the Department of Molecular and Cell Biology received an award for his paper titled, "Plant produced vaccines: promise and reality", published in *Drug Discovery Today* in 2009, which has already been cited 61 times. Ed's expertise in this field is confirmed with the publication in 2010 of a second review, "Plant-made vaccines for humans and animals" in *Plant Biotechnology Journal*, which has received 51 citations.

The Department of Biological Sciences boasts two awards. **Dr Tony Verboom** received an award in the lecturer/senior lecturer category for his first authorship on a paper titled, "Origin and diversification of the Greater Cape flora: Ancient species repository, hot-bed of recent radiation, or both?" which was published in *Molecular Phylogenetics and Evolution* in 2009 and has already been cited 45 times. Tony's top papers in this period under review, also include "The importance of nutritional regulation of plant water flux" published in *Oecologia* in 2009, co-authored with Associate Professor Michael Cramer, with 41 citations.

A special award for research staff who are not GOB-funded was given to **Dr Lynne Shannon,** who is based at the Marine Research Institute. Lynne has published a suite of papers including first authorship on a 2009 paper titled, "Exploring the dynamics of ecological indicators using food web models fitted to time series of abundance and catch data", in *Ecological Indicators* and cited 23 times. She has also co-authored several high profile papers, including two in *Science* in 2011. (Global Seabird Response to Forage Fish Depletion– One-Third for the Birds and Impacts of Fishing Low-Trophic Level Species on Marine Ecosystems) which have been cited 32 and 25 times respectively.

The awards were concluded with a superb overview lecture by Chris Clarkson (recipient of the 2012 Faculty Research Award), on the big questions in cosmology today, which really got everyone thinking! The event was rounded off with a feast of biryani and beer as a final celebration of research excellence in the Faculty.

Prof Nicci Illing with Dr Lynne Shannon, Dr Tony Verboom Professors Anton Le Roex and Ed Rybicki

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Health and Safety in the Faculty of Science

Profile of a Health and Safety Representative by Hannah Kroon

Health and Safety (H&S) affects all of us. And even though each department has H&S representatives, H&S in the workplace is the responsibility of each and every one of us! Faculty H&S representatives are appointed by the Dean of Science and form part of the Faculty H&S committee.

The aim of this article, and many that will follow, is to create an awareness of H&S matters in your workplace. We dedicate our efforts to implement best practices in your environment in order to minimize risk of hazards that may lead to short or long term injury or illness. As a safety representative I take part responsibility of honouring the basic requirements of every work place within the context of the Occupational, Safety and Health Act (OSHA) of 1993. The general H&S matters that relates to all of us is physical risk, the immediate environment we work in and our status with respect to safe practices. On a quarterly basis, we report on the condition of our buildings, especially where maintenance or the lack thereof pose a hazard to staff or students. It is for this reason that the UCT properties and service also form part of our committee. Standard UCT inspection templates, or safety check lists tailored to a specific environment or department are developed and maintained by us. These inspections are a preventative measure and a basic requirement. This is why each of us need to take ownership of H&S matters in our departments by being aware of our environment. In a typical general report the H&S representative would ascertain the status of the following;

1. Building structure, in particular damp walls or ceilings due to water leaks.
2. Clean, clear floors, non-slippery and in good condition.
3. Sufficient lighting and electrical safety.
4. Isles are free from obstructions, especially emergency exits.
5. Emergency equipment (fire and first aid).
6. Signage
7. Mandatory maintenance occurs in a safe manner.

Depending on which department you work in, additional questions related to chemical hazards, biological hazards, radiation etc. will be relevant. We hope to address these specialized risks and raise awareness in future communications within the Faculty of Science.

I'll say it again – we are all responsible for H&S in the workplace! If you notice something out of place, report the matter to the appropriate departmental representative (if you do not know who that is, ask your HoD). If you see bad behaviour, correct it! Be sensible! Be safe!

Safe Greetings, **Hannah Kroon**

Write Science….. An opportunity for postgraduate student or postdocs to engage in different forms of scientific writing and research dissemination…

Do you want to

- Increase your confidence in writing in the sciences?
- Understand the academic publishing process better?
- Know more about communicating science to various audiences?
- Know how to be visible as a scientist (online and in person)?

When and where:
Online (through Vula) 15 July—23 August
Contact: 24, 25th July; 1st, 6th and 16th August on upper campus

If so, then sign up for Write Science, a course that will focus on scientific writing for academic purposes and look at presentation of results, popular science writing and scientific research identity.

How to apply: Full details: www.col.uct.ac.za

Research Bytes

Major boost for biological control of black wattle

by John Hoffman, Department of Biological Sciences

Black wattle is rated as one of South Africa's most prolific invasive weeds, having colonised almost every province within the country, where it dominates the landscape and has negative impacts on biodiversity, agriculture and water resources. All of this could change with the sight of black wattle trees heavily laden with seed pods becoming a thing of the past, as a tiny insect starts to take command, thanks to a collaborative research project between the Agricultural Research council and the Biological Sciences Department at UCT.

The insect is a minute gall fly (midge) native to Australia, which was introduced into South Africa as a biological control agent of black wattle a number of years ago. By 2006 a population of the midge was established in Stellenbosch, where it has become abundant and has spread to other sites in the Western Cape. Because its natural dispersal is relatively slow, the midge has been manually distributed to numerous sites in Mpumalanga, Kwa-Zulu Natal and the Western and Easter Cape provinces since 2010.

The adult midges are only 2mm long, do not feed and only live for about five days during late spring. Females lay their eggs within the open flower clusters of black wattle where the newly-hatched larvae feed on the florets causing the stigma to form gall tissue which encloses the midge larvae and prevents pod development.

At the sites where the midges are well established, seed production has declined dramatically and in some cases has virtually ceased, with only large bunches of galls evident on the trees, where seed pods once hung in abundance. Although this reduction in seeding will not cause an immediate decline in the density of existing thickets of black wattle, it will curb the invasiveness and rate of spread of the plants and thereby prevent the problem from escalating further.

Dasineura rubiformis—gall fly

Seed pods hanging in abundance

Mandibular remains support taxonomic validity of Australopithecus sediba

Lauren Schroeder and Professor Rebecca Ackermann

Close examination of the lower jawbone and teeth of the hominin species Australopithecus sediba proves conclusively that it is uniquely different from a closely related species, Australopithecus africanus, according to a paper authored by a scientific team that includes two UCT researchers. Australopithecus sediba is a hominin species, described in 2010, whose fossil remains were originally found at a site near Johannesburg, and dated to 1.98 milion years ago.

Rebecca Ackermann, associate professor in the Department of Archaeology, and her PhD student, **Lauren Schroeder**, looked specifically at growth within this species, comparing this to other living and extinct species. They demonstrated that the growth trajectory from a juvenile to an adult form was unlike that of any other hominin species known, though it does share features with older australopiths, as well as later specimens referred to as Homo erectus. Combined with additional analyses of size and shape variation, this research supports the unique, possibly transitional, appearance of Australopithecus sediba.

Chemistry Equity Development Programme celebrates 12 years of successful support for Postgraduate students

The Department of Chemistry hosted a celebration of the Equity Development programme, which has been running in the Department for the last 12 years. The initiative was started by former head of department, Professor John Moss, who recognised the need to overcome financial obstacles for disadvantaged students and allow them to pursue postgraduate studies and thereby meet the university's transformation goals. The Chemistry EDP was made possible through funding by the Atlantic Philanthropies , the Nuffield Foundation and the Leverhulme Trust.

At the function, the Department of Chemistry welcomed back some of their 50 graduates, who celebrated with some of the students currently on the programme. All 3 lecturers appointed on this programme now have permanent academic positions in the Chemistry Department, namely **Dr Greg Smith**, **Dr Clive Oliver** and **Dr Subelia Botha**.

Some notable achievements from this group are Dr Seannette Wilson, who won a Women in Science Award, Dr Greg Smith who won a SACI Raikes Medal for achievements in research and Thobela Bixa, who was voted one of the M&G's top 200 young professionals in South Africa.

Dr Emma Hager, one of the EDP graduates, spoke about how the programme had afforded her valuable opportunities to continue her studies, to travel to conferences and to do research, which she could not have done without being on the programme. She now works at Vital as a research chemist.

Dr Emma Hager

The Group of Equity Development Graduates

Maths Competition Buzz

More than 7000 participants from 164 schools participated in UCT's annual Mathematics Competition, despite the torrential rainstorms of the evening. According to **Professor John Webb**, from the Department of Mathematics & Applied Mathematics, the aim of the event is to promote interest in mathematics and the problems presenting in the competition are carefully chosen for their mathematical content, significance, interest value and usefulness in the classroom as enrichment material.

The questions start off easy, get mildly difficult and the last few are intentionally tough, with only a few contestants managing to crack them, and it is rare for a contestant to score full marks. Pupils write as individuals or as pairs in 70 venues across UCT Campus.

OUTREACH IN THE FACULTY

Science Day—Settlers High School

Science Day 2013 was held at The Settlers High in Belville—our first venture out into the Northern suburbs. Approximately 400 learners from 8 schools in the area enjoyed engaging with the interactive stands hosted by our departments and also enjoyed getting their hands dirty at workshops ranging from "Death on the Black Pearl—using Science to solve crimes", to "Hands-on astronomy" where the pupils made telescopes; "Life under the microscope" where they examined sea creatures and DNA DIY where they were 'forensic scientists'!

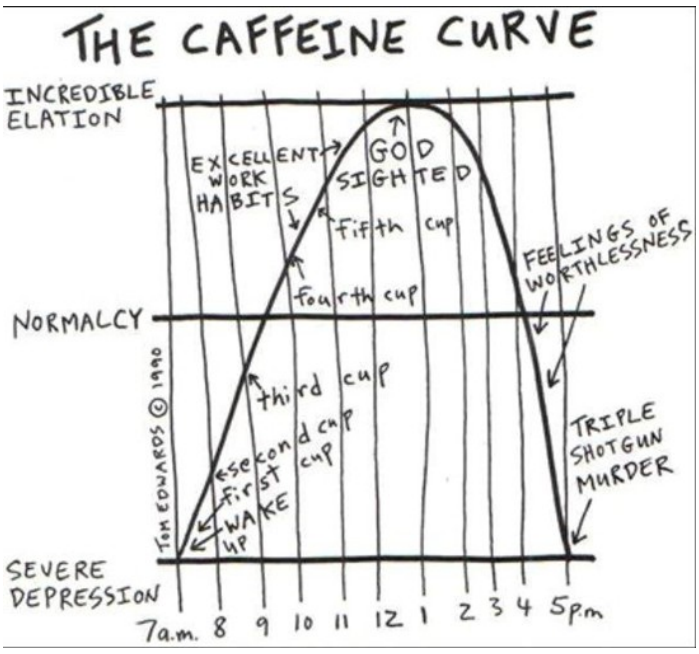
Open Day

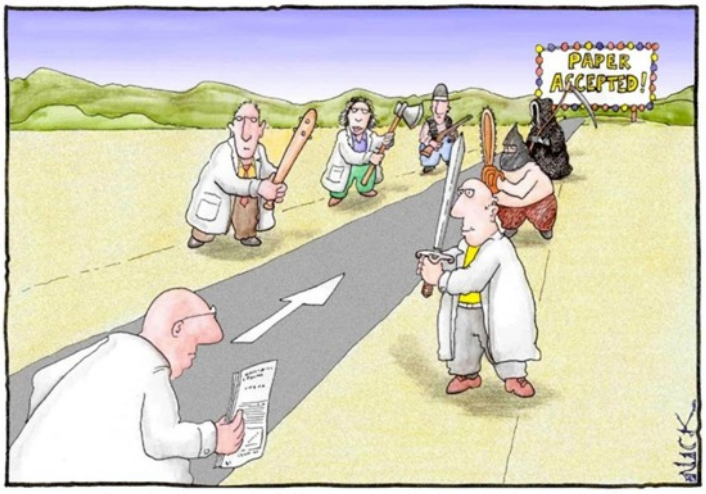
Science was definitely one of the popular "hot spots" and a major draw-card of Open Day 2013. The Faculty of Science took over Jameson Hall for the day and was flooded by eager students, their parents and families. The 12 Departments did a sterling job of interesting and exciting learners about career paths and options in Science, by showcasing the many and varied programmes we offer. The talks by the Dean were packed with not even standing room! We hope this means we will harvest some of the best students from in and around Cape Town, to join our faculty in the future...

Test Room with a View...

1st year engineering students were unfortunately too engrossed in their evening Physics test (25 April) to appreciate the (somewhat refracted) view which the Physics Department enjoys over the Cape Flats to the Hottentots Holland Mountains. (Photo by **Gregor Leigh**, Department of Physics)

Last Laugh.....





Most scientists regarded the new streamlined peer-review process as "quite an improvement."