



Innovation at UCT

2013

Celebrating our Innovation Stars

2012 proved to be a busy year with significant activity around: innovation fund-raising to support commercialisation of UCT intellectual property; start-up company formation; and the conclusion of significant licensing and option agreements. This brochure provides a brief update on UCT's innovation activities and is one of the many ways in which we try to acknowledge and **celebrate our stars**, our inventors, innovators, patent holders, spin-off companies, etc.

Fundraising towards the R10 million needed to create a self-sustaining **UCT Evergreen Fund** started in earnest. The fund will support innovation projects requiring R0.5m to R1.5m to transform them into more fundable prospects. A booklet was produced that outlines the fund's objectives (www.rcips.uct.ac.za/fundinnov/evergreenfund/) and encouragingly donations have started coming in, building on the R2 million nucleus arising from a donation by Richard

Sonnenburg. This Fund will indeed provide opportunities to take commercialisation at UCT to the next level.

2012 saw an increase in the number of **applications for funding being made to the Technology Innovation Agency (TIA)** for technology development. The applications were spurred on by an award to Strait Access Technologies (Pty) Ltd (SAT) at the beginning of 2012 - the first technology development award from TIA to a UCT affiliated entity in about three years. SAT, in which UCT holds equity, is developing heart valves and deployment devices to address the considerable need in African youth due to the ravages of rheumatic fever. Another first was the investment made by Bidvest Ltd in SAT in lieu of equity.

A positive end to the year was TIA's Exco approval for support of a Spirulina Algal project proposal emanating from the Centre for Bioprocess Engineering Research (CeBER). The termsheets are being worked through and it is hoped this will lead to the formation of a spin-off company early in 2013.

RCIPS's activities will also be greatly enhanced following the award of **funding by the National IP Management Office (NIPMO)**. This will provide much needed human resources, enabling, in the short-term, the strategic review of sectors of the IP portfolio and key "innovation hotspots" / research groups within UCT.

The **first In-Situ X-Ray Diffraction Cell** developed by Prof Michael Claeys and his PhD student Nico Fischer (Chemical Engineering) was sold. This cell allows the structure of materials, especially catalysts, to be investigated at high temperatures and pressures, in the presence of gas flow. This useful research tool is anticipated to create significant demand and 2013 has already seen the second international sale and a local expression of interest. The cells will be manufactured by the spin-off company that is being incubated within the Department of Chemical Engineering, which also manufactures catalyst test units. **1**

>> 2012 Dashboard

| | | |
|---|---|--|
| Research Contracts Signed 1218 2011: 1360 | Research Contract Value R682.0m 2011: R 722 m | Total Research Income R887.78m 2011: R 841 m |
| Value Foreign Research Contracts Signed R431.0m 2011: R 439 m | Value Local Research Contracts Signed R251.0m 2011: R 283 m | Publications 1314.40* 2010: 1253.03 *2011 |
| Invention Disclosures 36 2011: 36 | Patent Applications Filed 56 2011: 68 | Patents Granted 26 2011: 29 [2012: also 19 assigned] |
| License Agreements (Outbound) 9 2011: 13 | Materials Transfer Agreements (Outbound) 9 2011: 22 | Spin-Out Companies 1 2011: 3 |
| License Income R0.989m 2011: R 0.559 m | Profit UCT Incubated Companies R0.363m 2011: R 1.166 m | Total Income from IP R1.698m 2011: R 1.724 m |

>> Highlights of New Provisional Patent Applications Filed in 2012

Dr George Vicatos' (Department of Mechanical Engineering), a serial inventor very active in the field of prosthetics, most recent invention is a **knee prosthesis**, which will be used to surgically replace a damaged or non-functional knee joint in patients who are typically cancer victims. This invention will be commercialised through a UCT spin-out company Attri Orthopaedics (Pty) Ltd. The manufacturing of prototypes requires the development and manufacturing of a relatively expensive tool and **UCT Pre-Seed "Concept" Funding** has been granted to co-invest with Attri Orthopaedics to have it manufactured. Although an expensive hurdle at the prototyping stage, it will also be used for commercial production.

Professor Michael Claeys' (Department of Chemical Engineering) latest filing, a novel **compression fitting**, is primarily a new component of the **In-situ X-Ray Diffraction Cell** (as mentioned in the introduction), but it may also be used in other applications that have yet to be identified. The fitting is especially for sealing connectors onto small diameter tubes such as the fragile glass capillaries used in the XRD cell. As the fitting only requires finger-tightening

to seal effectively, it greatly improves the user experience, reducing the time taken to interchange tubes and preventing breakage – previous fittings needed a tool to secure them and torque often resulted in the capillaries shattering.



Another invention in a relatively new area was filed on behalf of inventors **Yasheen Brijlal** (Department of Electrical Engineering), **Dr Lester John** and **Dr Sudesh Siravasu** (both Department of Human Biology). Dubbed the **"hand-exoskeleton"**, this device aids handwriting rehabilitation of stroke patients. A functioning prototype capable of providing a rehabilitative mode of operation to prove this concept has already

been built. It features five actuated degrees-of-freedom on the thumb, index and middle fingers allowing a tripod handwriting grip. The hand exoskeleton fits over the wearer's hand and guides the movement as they trace an image on a computer tablet with a stylus, enabling coordination to be re-learned.



This was a busy year for **Dr Anwar Jardine** of the Department of Chemistry too, being an inventor on two filings. Building on the 'platform' created by an earlier patent filing on a chitosan-derived backbone, he invented a solid support for

argentation chromatography comprising a chitosan polymer with a linker provided on at least some of the amino groups. This technology facilitates separation of saturated fatty acids from unsaturated fatty acids derived from marine or plant origin. Unsaturated fatty acids or fractions enriched with unsaturated fatty acids have great nutritional value, for example DHA and EPA (omega-3 or 6 fatty acids). Saturated fatty acids on the other hand have cosmetic value or serve as better feedstock for biodiesel.



Dr Jardine also worked with **Professor Muazzam Jacobs** (Department of Clinical Laboratory Sciences) on modified anti-psychotic drugs that are **phenothiazine derivatives**. Phenothiazine has a wide range of biological activities, but they are usually used as neuroleptic drugs. These neuroleptic attributes limit the use of these drugs in diseases such as tuberculosis as they may induce undesirable central nervous system (CNS) side effects at a mycobactericidal dose.

The new modified phenothiazine derivatives invented exhibit no or minimal undesirable CNS side effects.

This sub-class of phenothiazines therefore constitute a new chemical entity with favorable attributes as a **potential antitubercular drug**. Their ability to act on multiple biological targets, improves their profile as drugs, making them less prone to resistance acquisition – ideal for potential applications against drug sensitive and resistant forms of *Mycobacterium tuberculosis*, the microorganism responsible for TB infection. Following the successful outcome of the **UCT "Explorer" PreSeed Fund** supported project that conducted preliminary screening of lead molecules for efficacy, a larger award made by the **UCT "Concept" PreSeed Fund** is now supporting a preliminary animal trial.



Malaria is prevalent in many developing countries, with approximately 40% of the world's population living in countries where the disease is endemic; approximately 247 million people suffer from the disease every year. A **novel class of potent anti-malarial agents** in the form of aminopyrazine derivatives has been developed by **Professor Kelly Chibale** and **Yassir Younis** (both from the Department of Chemistry) together with external collaborators.

Successful candidates from this class will potentially be useful for both treatment and prophylaxis of malaria. The aminopyrazine class of compounds show activity against various stages in the life-cycle of the malaria parasite and have the potential to block the transmission of the malaria parasite from person to person via the mosquito. This follows on the recently announced "single dose malaria cure" breakthrough made by the H-3D Drug Discovery Centre (H-3D) and its collaborators. The aminopyrazines are potential back up compounds to this potential cure.

Medicines for Malaria Venture (MMV), a non-profit foundation created to discover, develop and deliver new, affordable antimalarial drugs, is the lead on this patent application and will in conjunction with the H-3D seek to develop the lead molecules and ultimately bring them to market if proven safe and effective in clinical trials.

Four further provisional patents were filed for **Profs Margit Harting and David Britton** (NanoSciences Innovation Centre, Physics Department) relating to **novel temperature sensors and transistor components** that utilise the printed silicon electronics technology that they invented. This IP has been assigned to the UCT spin-off PST Sensors (Pty) Ltd in which the inventors and UCT hold equity. **i**

>> Overview of UCT's IP Portfolio

The UCT's active IP Portfolio now comprises about:

- 149 patent applications (that are at various stages of application and prosecution, i.e. provisional, PCT and un-granted national phase)
- 152 active granted patents
- 95 different inventions

Annual UCT Patent Portfolio Statistics

| | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 |
|--|------|------|------|------|------|------|------|
| Disclosures | 7 | 9 | 31 | 25 | 31 | 36 | 36 |
| Total Patent Applications Filed – all stages | 23 | 50 | 64 | 46 | 57 | 68 | 56 |
| National Phase Patents Granted (incl. European validation) | 6 | 3 | 10 | 47 | 36 | 29 | 26* |
| Application Details | | | | | | | |
| Provisional | 4 | 5 | 27 | 9 | 15 | 14 | 13 |
| PCT | 9 | 3 | 3 | 20 | 8 | 9 | 8 |
| National (including Divisionals, excluding Regional) | 6 | 36 | 28 | 10 | 29 | 38 | 31 |
| Regional | 4 | 6 | 6 | 6 | 5 | 7 | 4 |

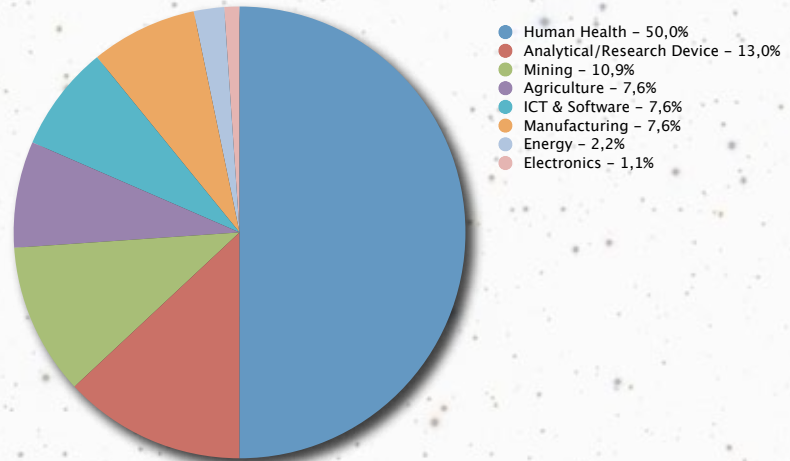
* A further 19 patents were granted/validated patents in the portfolio were assigned to the spin-off company PST Sensors, in 2012.

Although generally there have almost been equal numbers of invention disclosures from Engineering and Built Environment, Science and Health Sciences, a sector analysis (see relevant pie charts) of the UCT portfolio indicates that half of the UCT patents/ patent applications fall into the human health sector. Adding animal health IP, which is currently counted under 'agriculture' to this and it is clear that the broader 'health' category forms the core of UCT's current portfolio. Animal health products include probiotics, vaccines and pharmaceuticals.

The human health portfolio consists mainly, and in essentially equal proportions, of medical devices and pharmaceutical drugs or biologics. Interestingly of the 10 UCT spin-offs, 50% are in the health sector and essentially all relate to medical devices. This is mainly due to the shorter time to market for medical devices, therefore translating well into spin-off company opportunities.

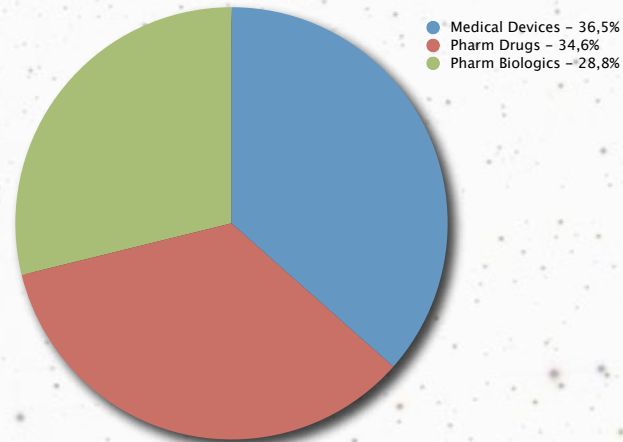
Other larger sectors are analytical/ research equipment (devices) and mining-related (processes, waste management and remediation and process monitoring).

Fig. 1: UCT Patents per Technology Sector



(A large portfolio of electronics patents was assigned to spin-off PST Sensors (Pty) Ltd)

Fig. 2: UCT Patents in Health Technology Sector



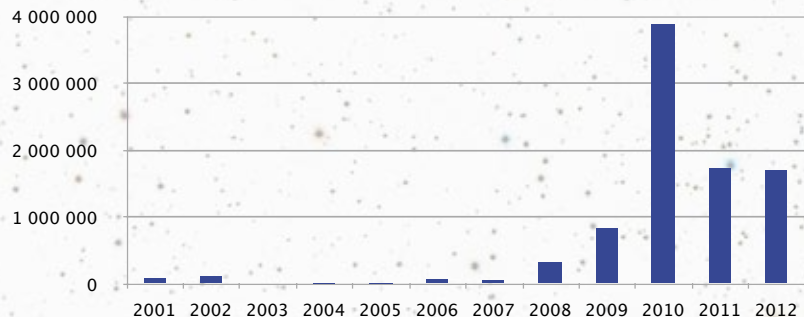
>> Technology Commercialisation

Over the last ten years RCIPS was involved in the establishment of ten new spin-out companies, 80% of which are still in business, and has concluded 65 technology licensing transactions. UCT currently holds equity in three of the spin-out companies. Cumulative commercialisation revenue for the period is ca R8.8m.

Figure 3 shows UCT's revenue derived from commercialisation of IP since RCIPS was established to manage the UCT IP Portfolio. The total commercialisation revenue in 2012 was R1.698m, which is in the same order as in 2011. Analysing the data indicates that income through licensing and sale of IP has nearly doubled year on year, but that the profits generated by our incubation entity, ACME Engineering, was much lower than in 2011.

A total of 9 license, assignment and option agreements were signed in 2012.

Figure 3: Total Annual IP Commercialisation Revenue



Distribution of Revenue

Income over this period was allocated/divided in accordance with the 2004 or 2011 IP Policies, and in one case in terms of contractual agreement that provided for different benefit sharing arrangement to the IP Policy in place at the time.

The current IP policy is structured so that as the revenue from a particular IP Right increases, funds begin to flow beyond the original research group to departmental and faculty levels. At this stage no IP governed by the 2011 Policy

has generated revenue that allows an apportionment to a faculty, or towards the Evergreen Fund (which supports innovation activities); the latter only begins to receive a portion once revenue has exceeded R 5m.

Distribution of IP Licensing Revenue

| YEAR | Licensing Income (R) | Inventors (R) | Research Groups (R) | Department (R) | Faculty (R) | Central Fund (R) | Evergreen Fund (R) | Patent Expenses (R) | Allocation Pending (R) |
|--------------|-------------------------|------------------|------------------------|-------------------|----------------|---------------------|-----------------------|------------------------|---------------------------|
| 2001 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2002 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2003 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2004 | 13,905 | 6,952 | 6,953 | 0.00 | 0 | 0 | 0 | 0 | 0 |
| 2005 | 1,728 | 864 | 864 | 0.00 | 0 | 0 | 0 | 0 | 0 |
| 2006 | 70,058 | 35,029 | 35,029 | 0.00 | 0 | 0 | 0 | 0 | 0 |
| 2007 | 49,815 | 24,907 | 16,537 | 8,370 | 0 | 0 | 0 | 0 | 0 |
| 2008 | 170,346 | 11,625 | 41,000 | 7,720 | 0 | 0 | 0 | 110,000 | 0 |
| 2009 | 77,311 | 43,565 | 0 | 11,383 | 0 | 0 | 0 | 22,362 | 0 |
| 2010 | 3,531,989 | 879,966 | 435,291 | 7,733 | 0 | 885,960 | 0 | 531,037 | 792,000 |
| 2011 | 558,545 | 10,302 | 4,755 | 5,546 | 0 | 0 | 0 | 179,053 | 358,887 |
| 2012 | 986,010 | 219,366 | 315,972 | 7,733 | 0 | 54,845 | 0 | 377,675 | 10,417 |
| TOTAL | 5,459,706 | 1,232,580 | 856,402 | 48,487 | 0 | 940,805 | 0 | 1,220,127 | 1,161,304 |

Spin-Off Companies


The most recent **spin-out, Tuluntulu (Pty) Ltd**, was formed in 2012 to commercialise IP from a TIA-funded consortium led by the CSIR to which UCT had contributed IP. Adaptive Real-Time Internet Streaming Technology (ARTIST) uses algorithms to adjust quality to available bandwidth to ensure viewing continuity.

Potential applications are diverse - from entertainment (sports events, community TV) to education (schooling, adult education, farming,

health and rural community healthcare worker training). It fills a very specific niche though: one-to-many (users/viewers), live, internet-based, broadcasting that is available on mobile devices. The UCT IP was developed by a team of researchers in the Department of Electrical Engineering headed by Assoc. Prof Mqhele Dlodlo, Prof. Gerhard de Jager and Dr Guy-Alain Lusilao Zodi.

Of the ten spin-off companies, UCT currently holds equity in: CapeRay Medical (Pty) Ltd, Strait Access Technologies Holdings (Pty)

Ltd (formerly Southern Access Technologies (Pty) Ltd) and PST Sensors (Pty) Ltd.

It is estimated that the equity in these companies is worth approximately R14.1m. Valuations are often based on the last round of investment, or the number of granted patents that are held in the company's portfolio where external fundraising has not yet occurred. Benefit to UCT and IP Creators will be derived through dividends that may be declared and the disposal of the equity on exiting the companies.. 

>> NSTF BHP Billiton Awards for Innovation

UCT's innovations featured strongly at the 2012 NSTF BHP Billiton Awards. Two of the three awards in the innovation category were won by UCT spin-offs and UCT was associated with six of the nine finalists in the category.



Spin-off company **CapeRay Medical Pty (Ltd)** won the category for "an outstanding contribution to SETI through Research leading to Innovation in a Small, Medium or Micro-Enterprise (SMME)" for their *PantoScanner*, which enhances clinicians' ability to diagnose breast cancer. Dr Peter Carrick, through **NRI (Nurture Restore Innovate)** won the

category for "outstanding contribution to SETI through Research leading to Innovation in an NGO or CBO or NPO Organisation". Read the full article in this brochure for more details regarding this inspiring initiative that has been established around environmental restoration post diamond mining in Namaqualand.









CapeRay has just secured its second round of funding to take the *PantoScanner* through the next regulatory steps towards successful commercialisation. One in eight South African women will be diagnosed with breast cancer during her lifetime. If the diagnosis is made early enough, her breast cancer is 95% curable. However, mammographic screening is not widely available. Furthermore, X-rays perform poorly in dense breasts so early stage cancers remain undetected. CapeRay has developed

an innovative system for breast cancer diagnosis. The *PantoScanner* combines digital X-rays and ultrasound images in a patented device, producing a breakthrough technology platform. Further information on CapeRay and the *PantoScanner* can be found at: www.caperay.com.

The other finalists included: **Crystallization and Precipitation Research Unit** (Team leader: Prof Alison Lewis, Chemical Engineering), **In Situ XRD Cell** (Team Leader: Prof Michael Claeys, Chemical Engineering), **Lung infection and Immunity Unit**, (Team Leader: Professor Keertan Dheda, Department of Medicine) and **Henricks-Vicatos Maxillofacial Distractor** (Team Leader: Dr Rushdi Hendricks, Specialist Maxillofacial Surgeon & Dept Mechanical Engineering). All of these teams have intellectual property that has been protected through patenting and are making strong headway with commercialisation. **i**



>> UCT Spin-out Companies

| Year | | Company | Core Focus | UCT Equity | Active |
|------|---|--|---|------------|--------|
| 2012 |  | Tuluntulu (Pty) Ltd | One-to-many (users / viewers) live, continuous broadcast to mobile devices | No | ✓ |
| 2011 |  | Antrum Biotech (Pty) Ltd | Extrapulmonary TB diagnostic test - rapid, bedside testing | No | ✓ |
| 2011 | | Seraptix CC | Biosensor / diagnostic | No | ✓ |
| 2011 |  | PST Sensors (Pty) Ltd | Printed silicon electronics - e.g. thermistor temperature sensors. | Yes | ✓ |
| 2010 |  | Southern Access Technologies (Pty) Ltd | Heart valve and deployment devices for insertion of heart valves / repair, transapically | Yes | ✓ |
| 2009 |  | CapeRay Medical (Pty) Ltd | Low dose x-ray coupled with ultrasound for breast cancer detection. | Yes | ✓ |
| 2007 |  | Nurture Restore Innovate | Environmental restoration of arid zones, initially in the Namaqualand post diamond mining | No | ✓ |
| 2006 |  | Hot Platinum (Pty) Ltd | Induction furnace and casting equipment for jewellers / dentists | No | ✓ |
| 2006 |  | Cape Carotene (Pty) Ltd | Feed additive for aquaculture (astaxanthin) | No | ✗ |
| 2004 |  | Cell Life | e-Health technology development company | No | ✓ |
| 2004 | | Isiqu Orthopedics (Pty) Ltd | Design & manufacture bone & joint implants | No | ✗ |

>> AfriTox™ Poisons Information System

The Red Cross Children's Hospital Poisons Information Centre will in early 2013 launch their re-developed 30-year old poisons information system on a new Internet-enabled platform with mobile device accessibility. In the process, it has been rebranded "AfriTox", with RCIPS assisting with the domain name and trade mark registrations as well as new end-user agreements. AfriTox is the most frequently licensed intellectual property in UCT's IP portfolio.



The development of the Poisons Information System, now AfriTox, began in 1981 when Prof H de V Heese of the UCT Department of Paediatrics and Child Health started a research project to see if it was possible to make all the information necessary for treating a poisoning accessible on a computer. The system has been used in the Emergency Room at the Red Cross Children's Hospital since 1984 and distributed to other hospitals since 1987.

In 1986, Dr JGL Strauss, the Chief Medical Superintendent of Red Cross Children's Hospital, showed Dr JC Stegmann of the Provincial Department of Health the Poisons Information System. They agreed that it was too valuable a resource to be lost when the research project ended and, after negotiations with Prof Heese, the Red Cross Children's Hospital Poisons Information Centre was set up and staffed to continuously update the information. It was agreed that the intellectual property rights belong to UCT and that public sector users would access the system free of charge.

The database containing information on more than 40,000 potential poisons and their treatment is particularly suited to South Africa. Although it deals with chemicals, medicines and other potential poisons which are encountered worldwide, it has a unique focus on local South African product names, plants, and poisonous animals and includes photographs to help in identification. This local information is not available from sources in first-world countries, but is essential for treating poisoning in southern Africa. It is therefore the only source of information about the contents of local commercial products. This is especially important for treating children, who account for 60-70% of poison exposures, and unlike adults, are exposed to a huge variety of household substances.



AfriTox underpins the provision of poisons information at over 30 centres throughout South Africa. It is not only used at the Red Cross Poisons Telephone Service, but also at both the other South African poison information centres, at Bloemfontein and Tygerberg. It is also used in Botswana, Zimbabwe, Mozambique, Kenya and Nigeria.

Over the years, the PIC has worked in conjunction with manufacturers who divulge their product formulations under confidentiality agreement. Levels of key toxins are made available to medical practitioners via the database in a format that whilst giving them the necessary accuracy to direct treatment, prevents the formulations from being reverse engineered by obscuring non-essential ingredient information. The system has been upgraded as new software became available, but distributing updates to treatment centres, by mailing CDs, has always been cumbersome.

The Children's Hospital Trust has therefore raised R 3.2 million in charitable donations to allow the Microsoft partner company Airborne Consulting (AC) to develop the new platform. AC undertook the assignment philanthropically at below market rates. The project has made two versions of AfriTox available.

Firstly, a downloadable version, installable on a PC, updated whenever the web is accessed. This is ideal for hospital emergency units and ICUs, which need continuous access to the data but have poor or intermittent web access. A web-based version provides continuous online access to AfriTox from a desktop, laptop or smartphone. This version is available to a medical practitioner via an individual subscription. For complex cases, more than 600 treatment protocols are displayed for the practitioner to follow stepwise on the computer screen; the treatment may progress over several hours. This is more useful and accurate than writing down a treatment protocol by hand, during a phone call to a Poisons Centre.

than writing down a treatment protocol by hand, during a phone call to a Poisons Centre.

A free public access website (www.afritox.co.za) lists substances and products that are not toxic, allowing people to judge what exposures are unlikely to cause poisoning, reducing unnecessary consultations, hospital admissions, treatment which may involve some risk, and saving the public and the Department of Health money.

Doctors wanting to subscribe to AfriTox's service can contact the Poisons Information centre at poisonsinformation@uct.ac.za or call 021 658 5308. 

40 yrs

Red Cross Children's Hospital has operated a poisons emergency service for both doctors and the public.

5,000

Calls received per annum.

50%

Calls from doctors versus calls from public.

66.7%

Relate to children.

500

Children admitted to Red Cross Children's Hospital per annum, after exposure to poison.

>> Nurture Restore Innovate

Following diamond mining on South Africa's West Coast, the Namaqualand Restoration Initiative of Nurture Restore Innovate (NRI) focuses on the restoration of the Succulent Karoo Biome (SCB), the world's only arid biodiversity hotspot. Since its establishment in 2007 by Dr Peter Carrick of UCT's Plant Conservation Unit, more than 500 hectares have been restored, new skills have been provided to 120 people and 30 permanent jobs created (nuturerestoreinnovate.wordpress.com). NRI has now moved beyond this original Biome and is active in arid areas throughout southern Africa; and soon hopefully beyond this too.

NRI is an interesting and ground-breaking business model coupling together two social innovations and fostering local Namaqualand community entrepreneurs who have established "restoration businesses". These businesses create essential, new job opportunities in regions where on the conclusion of the diamond mining operations, communities were left with few alternative possibilities for employment. Ecological restoration on a single large mine can create enough work for 200 people over a 10-year period.


Surface mining has degraded in excess of 30,000 hectares along the West Coast, indicating so much remains to be done. At the outset, little research had been undertaken and common opinion was that the very arid, West Coast, diamond mining landscape could not be rehabilitated. There is now real hope that beyond the restoration-related jobs, once the ecosystems have been reestablished, ecotourism and support for livestock grazing will bring further jobs to the area.

Careful research has created the rigorous science and best practice guidelines that underpin the success of the initiative.

There is also a longer-term approach, which contrasts with the conventional "quick-fix" interventions that characterize the more usual approach to post mining rehabilitation. The training, mentoring and guidelines have also translated the scientific approach into an accessible format for the community entrepreneurs.

A key innovation of the NRI is the "Restoration Pack" system, which is now even being used beyond South Africa's shores in Australia and being taught in the USA. The pack comprises seeds of key plants that provide the important structure of the ecosystem (key functional types, as well as condition/terrain appropriate species)

in temporary biodegradable shelters which mimic the mature plants that would normally provide shelter to new emerging seedlings. The process of planting patches of Restoration Packs is labour intensive and the environment is certainly challenging with only 50 to 150 mm rain per annum and strong wind.

As discussed elsewhere in this brochure, NRI was the winner of the NGO category in the 2012 NSTF-BHP Billiton Awards. The whole enterprise was catalyzed by a grant from the Washington-based Critical Ecosystem Partnership fund, and once the science was developed into an implementable system and sound business model for the mentored local restoration contractors, the role out of restoration has been sustained by mining corporations' investment in responsible practices. 





Follow Us On Twitter: [@UCT_RCIPS](https://twitter.com/UCT_RCIPS)

This publication has been prepared by Research Contracts and Intellectual Property Services (RCIPS) at the University of Cape Town.

Website: www.rcips.uct.ac.za

Email: innovation@uct.ac.za

Tel: 021 650 4015

Ver: 2013

Design by Imago Visual
www.imago-visual.com