TTO NEWS

Inventions receive Innovation Awards

Showcasing UP's inventions

Patent awareness

Knowledge-sharing opportunities

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Newsletter of the Technology Transfer Office of the University of Pretoria

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Letter from the editor

Technology transfer contributes directly to technological innovation by supplying the private sector with new technologies that have commercial potential. This year, the Technology Transfer Office (TTO) saw a number of exciting developments.

The TTO is recognised in the subcontinent as a specialist in the field and hosted delegates from the Copperbelt University in Zambia, the University of Ghana and the University of Botswana. These visits resulted in fruitful discussions among delegates and valuable knowledge sharing with regard to the establishment of technology transfer offices in both Africa and South America.

Various UP-developed innovations received prestigious awards and were showcased at exhibitions. The TTO is proud to be associated with these projects and looks forward to the future success of UP innovations.

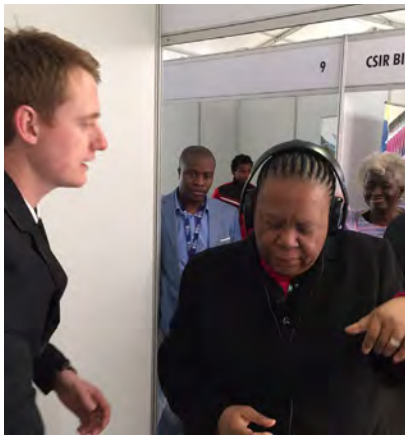
As part of its mandate to facilitate technology transfer, the TTO hosted a successful Patent Awareness Seminar in collaboration with UP's Department of Library Services. During the seminar, delegates were guided through the technology patent and commercialisation process and were given the opportunity to network with experts on matters of mutual interest.

We hope you enjoy reading this second edition of the TTO Newsletter.

Adv Lawrence Baloyi
Head: Contract Research and Innovation Support

Exposing young minds to innovations in science

National Science Week took place at the North-West University's Mafikeng Campus during the first week of August 2015. This initiative of the Department of Science and Technology (DST) is an annual event to celebrate science and increase its popularity in the broader South African society.



Naledi Pandor, Minister of Science and Technology, has a hearing test.

The hearScreen invention is demonstrated on a group of learners.

A number of stakeholders and role players are involved in this event each year and present various science-based activities that expose learners to local innovations. The Technology Transfer Office (TTO) coordinated the University of Pretoria's participation in this event, which represented an opportunity for UP's researchers to share their creative ideas and expose learners to their latest inventions. Three of UP's innovations were displayed at the event: the hearScreen and Motswadi anti-cyber bullying devices, and cosmeceuticals made from traditional plants.

The hearing screen invention was developed by Prof De Wet Swanepoel and Dr Herman Myburgh. It can turn a cellphone into a hearing screening device that is easy to operate and can be used anywhere, anytime. It was demonstrated on a number of the visiting learners. Naledi Pandor, Minister of Science and Technology also received a practical demonstration of how this device works.

The Motswadi invention was developed by Khutso Bapela, a BSc Computer Science graduate. It uses SIM card technology to protect children from cyber bullying and sexting.

The development of phyto-cosmeceuticals based on the active ingredients in South African indigenous plants is the invention of Prof Namrita Lall, a researcher in the Department of Plant Science. The learners who gathered around this display were excited to see how plants that are traditionally used and known by their families, and in their cultures and communities, can be turned into cosmeceutical products.

In addition to showcasing local innovations in science and technology, the event succeeded in creating an interest in science as a career and field of study. Many learners had not previously considered science, engineering and technology as career options.

The Motswadi system beats cyber bullies

In the innovation landscape, the commercial exploitation of inventions is the ultimate goal of practical research. This process of technology transfer is the mark of successful research inventions and affords the inventor the opportunity to actively contribute to the promotion of a healthy society in one way or another. Khutso Bapela, a BSc Computer Science graduate from the University of Pretoria, whose company is based at the Innovation Hub, is one such inventor.

Bapela has successfully developed an anti-cyber bullying device to help parents monitor their children's online activities in an attempt to prevent continuous unsurfaced cyber bullying. The Motswadi system (meaning "parent" system) is a specialised SIM card for modems and cellphones, with an accompanying downloadable program. The system enables parents to regulate the online activities of children aged 9 to 15 in the overwhelming and ever-expanding world of the internet and social media.

While studying towards his Computer Science degree, Bapela started to think about developing a system that could not only prove to be commercially viable, but also improve the lives of South African communities at grassroots level.

While the digital revolution has had many positive attributes in terms of education, business and technology, it has expanded the vulnerability of young children to new platforms. Cyber bullying, as well as access to inappropriate and harmful information, poses a serious threat to the wellbeing of young children all over the world.

The Motswadi system employs an algorithm that wirelessly picks up the specialised SIM card in a child's cellphone or modem. It enables parents to set up an internet profile for each child, which is tailored to each child's needs and vulnerabilities. Standard age group settings determine the level of protection applied to a particular child and the child's profile settings can be customised at the parents' discretion.

The invention allows for restrictions in terms of time limits for features like internet use and WhatsApp messaging, the blocking of searches for certain keywords, the blacklisting and re-allowance of specific websites, the blocking of selected applications and the implementation of a web schedule, among others. The system also allows for the monitoring of a child's internet activities, SMSs, Facebook account via notifications and the child's location (updated every 15 minutes).

Bapela has also developed another interesting invention: BSMART, a system, method and device for transferring information (particularly, but not exclusively, to transfer and exchange business contact information). The TTO has filed a UK provisional patent application for this invention.

As a young inventor, Bapela serves as an inspirational role model for undergraduate and young postgraduate students to strive for the development and optimal utilisation of practically implementable research. This proves that there is no minimum age limit to the integration of innovative thinking and a commitment to improving society.

The complete system on a smartphone.

Seminar casts light on patenting processes

The University's Department of Library Services, in collaboration with the Technology Transfer Office (TTO), presented a Patent Awareness Seminar in the University Library auditorium on 7 October 2015.

Prof Stephanie Burton, Vice-Principal: Research and Postgraduate Education, provides an overview of research opportunities at the University.

This provided a wonderful opportunity for postgraduate students and researchers to clarify how to go about disclosing a new invention and the legal intricacies involved in registering a patent nationally and internationally. Valuable insights were provided by Zulfiqar (Zee) Dudhia, intellectual property (IP) expert at Thomson Reuters, and John McKnight, a South African patent attorney who specialises in domestic and international patent matters, particularly in biotechnology and life sciences.

After welcoming the delegates, Robert Moropa, Director of the Department of Library Services, welcomed Prof Stephanie Burton, Vice-Principal: Research and Postgraduate Education, who provided an overview of research opportunities at the University. She emphasised the fact that the University provides an enabling environment for research, and encourages research that is creative, innovative and contributes to diversity and sustainability.

Invention disclosure

Prof Burton's advice to researchers who have a novel invention that they feel has commercialisation potential is to make sure that they know what to do by consulting the TTO for advice. She stressed the importance of researchers disclosing their inventions and protecting their IP by registering a patent before they publish, and paying attention to the timing of their invention disclosure.

The important aspects to consider are the following:

- Is it novel?
- Is it inventive?
- Does it have potential application?

Innovation resources

According to Zee Dudhia, South Africa is producing an increasing number of research outputs in the biological sciences, engineering, veterinary science and health sciences. These trends indicate that South Africa has a strong potential for innovation. However, this brings with it many challenges, including intervention strategies to assist inventors to develop their innovations from the research proposal through the entire innovation pipeline until they finally disclose their inventions and protect their IP by registering a patent.

Dudhia introduced some of the tools that have been developed by Thomson Reuters to assist researchers in this process. One of these is the Derwent World Patents Index, which provides assistance in the process of discovery and idea generation. Its database of patent information, featuring enhanced titles and comprehensive abstracts, allows one to quickly determine the novelty of an invention. Other valuable assistance is provided through Thomson Innovation. This includes patent analytics, which provides customised reports on technical, competitive and industry intelligence, while safeguarding IP assets with ongoing infringement detection support and guidance in the trademark research process.

Managing intellectual assets

John McKnight's presentation focused on the commercialisation of research, particularly the legal aspects related to this important element in the innovation pipeline. He identified the three most important elements of intellectual asset management: reducing business risk, sustaining competitive advantage and building shareholder value. He went on to clarify certain features of commercialisation that are important from a patent law perspective, such as to protect, respect and exploit IP.

The protection of IP includes aspects such as harvesting the IP, patent registration and knowledge management. Respecting IP relates to matters such as conducting a competitor analysis, ensuring the freedom to operate through a clearance search, obtaining a validity and enforcement opinion, and performing due diligence. The exploitation of IP comprises the commercialisation process, drafting licensing and venture funding agreements, formalising strategic alliances, mergers, acquisitions, and other benefit-sharing arrangements, as well as developing financial strategies and royalty management policies.

From research to commercialisation

To illustrate how research at the University is taken through the innovation pipeline to commercialisation, Prof Elsabé Kearsley, Head of the Department of Civil Engineering, gave some pointers relating to her personal experience. Some examples of innovations developed in this department that proved to be suitable for commercialisation have included concrete grid inlet covers and ultra-high-strength concrete.

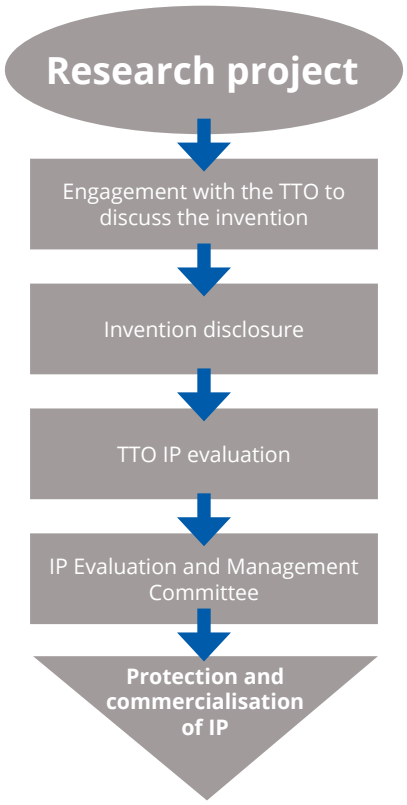
She provided delegates with advice about what can be commercialised, and identified some barriers to commercialisation. She concluded with the following tips:

- The time must be right.
- The idea must make sense.
- The research should add value.
- The IP should generate an income.

Standard operating procedures

Refilwe Ngoato, Manager of the TTO, concluded the seminar by explaining the functions of the TTO, as well as the standard operating procedures (SOPs) of IP management at UP.

It is important to contact the TTO before disclosing the invention so that the TTO can ensure that the full value of the IP is maximised. Premature public disclosure destroys the possibility of patenting, model registration and the registration of plant breeder's rights. The TTO will then evaluate whether the solution is new or unique, whether it offers a solution



to an existing problem and whether it is an original design. It also determines whether it is of potential commercial or strategic value to the University.

If this is found to be the case, the request is referred to the University's IP Evaluation Comittee to evaluate the IP and determine whether it should be protected or not. The committee comprises the following role-players:

- Vice-Principal: Research and Postgraduate Studies, Prof Stephanie Burton
- Head: Contract Research and Innovation Support, Adv Lawrence Baloyi
- TTO Manager, Refilwe Ngoato
- The inventor
- The patent attorneys

Following this, the TTO provides assistance through the entire technology transfer process until the eventual commercialisation of the invention.

What is important for researchers to bear in mind is that public disclosure of potentially valuable IP, including the publication of research findings, should be held back until a patent has been registered to protect the IP. Ngoato assured researchers that the TTO will do

Adv Lawrence Baloyi, Head: Contract Research and Innovation Support, delivers a presentation at the Management Development Workshop for senior staff members on 26 November 2015.

everything in its power to ensure that the period of non-disclosure is as short as possible, so as not to unnecessarily delay the publication of research findings.

Following a successful seminar, delegates could use the opportunity to network and pose questions to the specialists on matters of interest that came up during the presentations.

TTO participation in other workshops

The TTO also participated in the research induction workshop for new researchers at the University of Pretoria, which took place at the Innovation Hub on 5 and 6 October 2015. The purpose of this workshop was to share the Department's role at the University with new academics.

On the first day, Dr Carol Nonkwelo, Director: Research and Innovation Support, presented UP's overall strategies for research, research support and internationalisation. The presentations delivered on the second day covered topics such as research contracts (presented by Dr Simon Thanyani, Contracts and Innovation Support Manager) and the role of the TTO (presented by Relilwe Ngoato, Manager of the TTO).

The TTO has published a pocket booklet on Intellectual Property Management Guidelines at UP. To obtain a copy, please contact Refilwe Ngoato at refilwe.ngoato@up.ac.za or Ntsatsi Mantsho at ntsatsi.mantsho@up.ac.za.

Showcasing UP inventions at the Innovation Summit

Making industry aware of innovation is just as much part of the commercialisation process as obtaining patents. In order to showcase their innovations, two of the University of Pretoria's successful projects were exhibited at the 2015 Innovation Summit in Cape Town from 26 to 29 August 2015.

A highlight of the event was the Technology Innovation Agency (TIA) Inventors Garage Competition, where Moses Kebalepile was the overall winner with his early warning device to predict asthma attacks.

The two projects that were exhibited at the summit were the Asthma Grid developed by Kebalepile and an apparatus for endothermic reactions developed by Prof Mike Heydenrych of the University of Pretoria's Department of Chemical Engineering, which can convert dry biomass into crude oil in a single reactor.

This year's theme for the summit was Innovation Intelligence, which sought to address the mystery of creating a competitive edge through new and convergent thinking. This theme was explored during the summit through a full and varied programme that included a local and international plenary, panel debates, breakaway sessions and interactive workshops. The summit also investigated the different challenges entrepreneurs, developers, researchers, thought leaders, inventors and investors face.

As first prize in the Inventors Garage Competition for his Asthma Grid prototype, Kebalepile received R25 000 cash, incubation support from Standard Bank and an iPad. Over 320 entries were received in this competition.

Two of the University's other entries in this competition, the fast pyrolysis unit of Prof Heydenrych and the mushroom casing soil project of Dr Linda Meyer, each earned their inventors a one-day design and innovation intervention session at the Design Institute of the South African Bureau of Standards (SABS). They will also receive guidance in identifying key factors to consider when evaluating the potential of a new idea.

Asthma Grid predicts imminent asthma attacks

Moses Kebalepile, a PhD candidate the School of Health Systems and Public Health, and a researcher in the University's Department of Education Innovation, has developed a digital medical device that warns users of an imminent an asthma attack.

Moses Kebalepile being interviewed by the SABC.

Kebalepile's prototype, known as the Asthma Grid, specialises in the aetiology and severity of asthma attacks and has the capacity to predict imminent asthma attacks, as well as future attacks using a mathematical algorithm. This device considers the concentration levels of criteria air pollutants with nano-sensors and common aeroallergens like animal dander, hay and pollen. It also considers weather conditions via a software application.

The device tests oxygen saturation with transducer sensors, and considers lung capacity and the amount of airflow with a mouthpiece that connects wirelessly to the device. The device can take small blood samples that allow it to indicate recruitment, heart rate and pressure with a built-in sensor that communicates wirelessly with cardiographer tension leads.

Kebalepile has registered a provisional patent on the Asthma Grid and aims to showcase it to potential investors. He plans to further his research and explore other designs.

Fast pyrolysis unit to power the future

The cost of fuel is affecting every part of our daily lives, even more so for the poorest of the poor. In South Africa, this need is relatively more important due to our lack of natural oil resources.

Prof Mike Heydenrych of the University of Pretoria's Department of Chemical Engineering and Dr Akwasi Boateng of the United States Department of Agriculture (USDA) have developed a fast pyrolysis unit (a process similar to gasification, but operating at lower temperatures) that can convert dry biomass into crude oil in a single reactor.

Calculations show that converting local agriculture and forestry waste into fuel would be able to supply 100% of the national demand for petrol. The unit's design allows for in-situ catalysis of the product oil to convert it in a single step close to the specifications required for transport fuels.

The project consists of a scalable pyrolysis unit with the recovery of char, a catalytic system to provide stable, usable heating oil and the hydrogenation of the heating oil to form oil that can act as a drop-in transport fuel.

The ultimate goal is to commercialise the technology by building small (container) and large pyrolysis units and to sell them to farmers and rural customers so that they can produce their own fuel. In time, this may lead to a rural decentralised biofuel industry.

The research team believes that the real benefit of this solution lies in its size and ease of operation.

According to Prof Heydenrych's calculations, the estimated diesel input cost to farm maize is 64 litres of diesel or R820 per hectare. This means that the average farmer, farming a 1 200 hectare farm, has to pay almost R1 million for fuel to plant the crop, regardless of success or failure. From census data, there are an estimated 40 000 "average" farming units in South Africa. He is confident that such farmers would be willing to invest substantially in a pyrolysis unit. It is estimated that a fast pyrolysis unit can be built for less than R2 million with a capacity of 100 000 litres per month.

The project has received seed funding to the value of R500 000 from the TIA for the commercialisation of the venture. Blue Venture Partners (Pty) Ltd has been appointed to perform market research and conduct a needs analysis. This company will also develop a business plan with a number of business models that may be tested for viability. This will include defining the customer segment, determining the value proposition and channel relationships, and designing a revenue model and cost estimates.

A large-scale pilot project will be undertaken to educate customers, as well as test the viability of the business model. This will be followed by the development of commercial units for local and international rural deployment.

A number of local and international patents for the innovation have been filed, and the University is involved in negotiations with the USDA regarding a commercialisation agreement if the patent is commercialised.

MyWorld of Tomorrow: adding imagination to the innovation mix

Denis Waitley once said: "You have all the reason in the world to achieve your grandest dreams. Imagination plus innovation equals realisation." This is certainly true when it comes to research innovation at the University of Pretoria.

Dr Sibongile Gumbi in conversation with Refilwe Ngoato of the Technology Transfer Office at the UP stand.

Research innovation is often spurred by a need to develop a solution to an everyday problem that will ultimately change the future. The TTO optimises opportunities to showcase innovative projects with commercialisation potential that have originated from UP's intellectual capital. The national recognition of the excellence of such inventions contributes to the University's reputation as a leading research-intensive university that is making a difference locally and globally.

Such an opportunity presented itself in October 2015 in the form of the MyWorld of Tomorrow (MWOT) technology and lifestyle expo and conference, held at the Sandton Convention Centre from 22 to 24 October 2015, and the South African Innovation Awards competition, which preceded the event.

MWOT was launched by Business Connexion to create a platform to showcase technological innovation at its best. It was all about creating a movement to allow African people to share and discover solutions to everyday problems.

The expo was hosted over three days, together with a two-day conference running concurrently.

The conference attracted some of the world's top thought leaders. Over 20 speakers tackled topics that focused on innovation across all industry sectors. Delegates included private sector C-level executives, small, medium and micro enterprise (SMME) innovators, public sector decision-makers, foreign dignitaries, members of the media and international keynote speakers.

Themed "an African evolution of technology and innovation", the expo presented an opportunity for public and private sector organisations (big and small) to gather under a single roof and exhibit the pioneering products and services they had on offer. These offerings could be presented on one or more of the following platforms: Conference Zone, Launch Pad Zone (a 30-minute platform slot with a strong media presence to sell, launch and demonstrate ground-breaking products and concepts), Exhibition Zone and Connexion Zone (collaborative spaces that encouraged and inspired delegates to connect, interact, network and share their experiences).

The event was a first for Africa and attracted over 4 000 people during the three days. The final day saw more than 1 000 attendees, as it fell on a Saturday and was open to high school learners.

The University of Pretoria was a partner at MWOT 2015 and exhibited the following inventions:

- The hearScreen invention: a mobile application that turns a cellphone into a hearing screening device that is easy to operate and can be used anywhere, anytime.
- An annular pyrolysis unit: a unit that can convert dry biomass into crude oil in a single reactor.
- The Asthma Grid: an early warning device to predict asthma attacks.
- The Black Impala: a method to detect polymorphism associated with the black colour variant, providing a specific genetic test for this very sought-after trait.
- The Rhinoceros Index System (RhoDIS®): a system to develop a DNA database of South African rhinos in an attempt to curb rhino poaching.
- The development of phyto-cosmeceuticals: products based on the active ingredients in South African indigenous plants.
- The development of mushroom casing soil: a unique 100% natural, cost-effective, eco-friendly soil that can replace imported peat soil to allow for sustainable mushroom production.

Innovation Awards

The South African Innovation Awards is an awards programme aimed at recognising and celebrating innovative companies and individuals.

The competition comprised nine categories: SMME Innovation, SMME Innovator, Corporate Innovator, Public Sector innovator, Community Innovation, Collaborative Innovation and the Hall of Fame. The finalists were announced on 21 October 2015 during the CEO dinner, which preceded the conference and expo.

The University of Pretoria entered the following two projects into this competition:

- The hearScreen invention, developed by Prof De Wet Swanepoel of the Department of Speech-Language Pathology and Audiology in the Faculty of Humanities, and Dr Herman Myburgh of the Department of Electrical, Electronic and Computer Engineering in the Faculty of Engineering, Built Environment and Information Technology.
- The mushroom casing soil project of Dr Linda Meyer, Managing Director of MABU Casing Soils, and formerly of the Department of Microbiology and Plant Pathology.

The relevance and impact of these projects to local needs was confirmed when the hearScreen invention was announced the winner in the Community Innovation category, while the mushroom casing soil project was a finalist in the Collaborative Innovation category.

Dr Herman Myburgh, hearScreen co-inventor (left), Refilwe Ngoato, TTO Manager (centre) and Nic Klopper, hearScreen licensee.

Mushroom casing soil project

The mushroom casing soil project, developed by Dr Linda Meyer and marketed by MABU Casing Soils, has made great progress since its commercialisation. It employed another two staff members in 2015, bringing the total staff complement to 12. It has received funding from the Industrial Development Corporation (IDC), and has paid higher royalties to the University's Technology Transfer Office (TTO). During a visit to the production facilities, Refilwe Ngoato, Manager of the TTO, learnt that it is currently supplying casing soil to a number of farms, including Chanmar Mushrooms in Mokopane, Tropical Mushrooms in Magaliesburg, Melody Mushrooms in Hartbeespoort, Ocean Mushrooms in Botrivier and Boland Mushrooms in Rawsonville. Several other mushroom farms have displayed an interest in using the casing soil, and negotiations are currently in progress. These include Forest Fresh in Plettenberg Bay, Denny's Mushrooms in Krugersdorp, Agricon Mushroom in Namibia, Mushworld in Zimbabwe and Noord-Kaap Mushrooms in Kimberley. MABU started exporting the casing soil to Namibia in November 2015, and also established a laboratory for chemical and microbial analysis in November 2015.

UP projects shine at innovation competition

Over the past four years, the Gauteng Accelerator Programme (GAP) Innovation Competitions have attracted numerous entries. Researchers and entrepreneurs have been awarded over R7 million in seed funding and incubation support through the innovation projects. At this year's competition, runner-up prizes were awarded to three of the University's inventions.

Prof De Wet Swanepoel.

Dr Heinrich Badenhorst.

Prof Mashudu Tshifularo.

The Innovation Competitions Awards for 2015 took place during the Global Entrepreneurship Week, which was held at the Innovation Hub in Pretoria, and concluded with the awards ceremony on 20 November.

Global Entrepreneurship Week is held to celebrate innovators and entrepreneurs across the globe through various activities that ignite ideas, create larger networks and inspire people to contribute positively to their community. It is jointly presented by GAP and Biotech Fundi.

The competition attracted more than 1 000 entries, not just from Gauteng, but from the rest of the country as well.

Winners received cash prizes, seed funding and incubation at the Innovation Hub.

GAP ICT

The hearScreen invention of Prof De Wet Swanepoel and Dr Herman Myburgh (mHealth Studio) received third place in the GAP ICT category.

This earned the project R70 000 in seed funding and a R10 000 cash award. This invention provides a low-cost mobile health solution by providing clinically valid hearing tests, operated by untrained persons, with cloud-based data management and referral systems that link patients to services. This project's objective is to make an impact on the 1.2 billion people globally who are suffering from hearing difficulties through affordable access and linkage to hearing health.

GAP Green

A project of Dr Heinrich Badenhorst of the Department of Chemical Engineering received third place in the GAP Green category.

This earned the project R100 000 in seed funding and a R20 000 cash award.

The small-scale water purification with concentrated solar power system that was developed provides clean, drinkable water from sea water and other brackish water using sunlight. It is based on a novel solar concentrator, manufactured using cheap, off-the-shelf components. Nanocarbons absorb the sunlight, causing the water to evaporate, producing distilled, fresh water in the same way as rain water is formed in nature.

GAP Medical

The third award went to Prof Mashudu Tshifularo, Head of the Department of Otorhinolaryngology (ear, nose and throat studies) at the University of Pretoria.

This invention received third place in the GAP Medical category, and also received a Special Recognition Award. It earned R50 000 in seed funding for a medical hearing prosthesis.

With this invention, a middle ear medical prosthesis is used to restore hearing faster, easier and safer with minimal complications, surgically implanted into the middle ear by ear, nose and throat specialists.

Sharing knowledge with Zambia

In April 2015, Southern Africa Innovation Support (SAIS) asked the TTO to host a workshop for a delegation from the Copperbelt University in Zambia.

The delegation, which consisted of Dr Alick Nguvulu, Dr Julius Banda and Dr Gillian Kabwe, wished to conduct a knowledge exchange study tour to different technology transfer offices in South Africa. The Copperbelt University, in partnership with the National Technology Business Centre (NTBC) of Zambia, aims to become a technology transfer service provider in Zambia. This partnership will seek to redefine transfer technology in the context of the needs of a developing country like Zambia.

Adv Lawrence Baloyi, Head: Contract Research and Innovation Support, welcomed the delegation to the University. Refilwe Ngoato, Technology Transfer Manager, provided an overview of the University's TTO and showcased some of its current projects. Dr Simon Thanyani, Contracts and Innovation Support Manager, explained how UP's TTO conducts its research contracts and license agreements, while Phumuza Langa, Commercialisation Coordination Manager, spoke to the delegates about the commercialisation of intellectual property (IP).

From left: Adv Lawrence Baloyi (UP), Refilwe Ngoato (UP), Phumuza Langa (UP), Musa Masia (IP legal advisor), Dr Alick Nguvulu (Copperbelt University), Dr Simon Thanyani (UP), Dr Julius Banda (Copperbelt University) and Dr Gillian Kabwe (Copperbelt University).

The workshop allowed the TTO to assist the delegation with IP and technology transfer enquiries and needs, identifying new technologies and innovations for commercialisation and protecting IP, as well as forming development and commercialisation strategies and developing national and institutional policies.

During the knowledge transfer tour, the delegates learnt how to set up a technology transfer office, gained insight into operational policies and procedures, as well as following a hands-on approach.

TTO hosts visitors from the University of Ghana

Two representatives of the University of Ghana, Abena Engmann and Jacob Zuttah, visited the University of Pretoria's Technology Transfer Office (TTO) from 24 to 28 August 2015. The visit aimed to transfer knowledge that would ultimately enable Engmann and Zuttah to enhance the provision of research support services within their respective roles at the University of Ghana.

At the University of Pretoria, the TTO forms part of the Department of Research and Innovation Support (DRIS). During their visit, Engmann and Zuttah were introduced to the DRIS and learnt more about its structure. They were also introduced to various staff members, including Prof Stephanie Burton, Vice-Principal: Research and Postgraduate Education, Prof Carol Nonkwelo, Director of the DRIS, and Lawrence Baloyi, Head of Contracts and Innovation Support. They learnt more about each staff member's portfolio and the role each one plays within the bigger picture of research development at a university.

Among other things, Engmann and Zuttah learnt more about the grant lifecycle and how it is translated into research operations, contracts, research funding and ratings from the National Research Foundation (NRF), audits, compliance and communication, as well as academic development programmes. They concluded their visit with a tour of the Hatfield Campus.

As research development officer, Engmann facilitates research within the University of Ghana's College of Health Sciences in the School of Public Health, and is generally responsible for building a portfolio of funded research projects within the College.

Zuttah's role as research development officer at the University of Ghana entails looking for calls for research grant proposals and approaching researchers within the College of Education who have the expertise required by the funder to apply for these grants. They certainly benefited from the expertise of the University's specialists in grant management and proposal development.

UP inventions that are in the process of commercialisation

- The Black Impala: a method to detect polymorphism associated with the black colour variant, providing a specific genetic test for this very sought-after trait.
- The development of phyto-cosmeceuticals: products based on the active ingredients in South African indigenous plants.
- The Motswadi system: anti-bullying software that uses SIM card technology to protect children from cyber bullying and sexting.
- The Rhinoceros Index System (RhODIS®): a project that involves the microchipping and DNA testing of rhinos by the University's Veterinary Genetics Laboratory (VGL) at Onderstepoort to develop a DNA database of South African rhinos to curb poaching.
- The hearScreen invention: a novel hearing screening device that was developed as a joint collaboration between the Department of Speech-Language Pathology and Audiology and the Department of Electrical, Electronic and Computer Engineering.
- The development of mushroom casing soil in the Department of Microbiology and Plant Pathology (commercialised under the private company MABU Casing Soils (Pty) Ltd), which is a unique ,100% natural, cost-effective, eco-friendly soil that can replace imported peat soil to allow for sustainable mushroom production.

Upcoming events

- An IP Wise Workshop will be held in the University Library Auditorium at the University of Pretoria on 17 March 2016 from 08:30 to 16:00.
- An event focusing on both the IP Open Day and World IP Day will be held in the last week of April 2016. The date and venue will be confirmed.

Knowledge exchange with international partners

The University was pleased to host a representative from the University of Saõ Paulo in Brazil on 26 November 2015. Daniel Dias had come to South Africa to learn more about the country's national system of innovation and to establish collaboration agreements with different technology transfer offices. The other institutions on his itinerary were the University of South Africa (Unisa), the Tshwane University of Technology (TUT) and Armscor.

Photograph (from left): Khangwelo Rathogwa, Senamile Ndlovu, Adv Lawrence Baloyi, Stanly Ehlers, Refilwe Ngoato, Daniel Dias and Dr Simon Thanyani.

On 9 December 2015, the TTO hosted a guest from the Fraunhofer Centre for Responsible Research and Innovation, Mr Florian Schütz, Senior Research and Innovation Advisor. The visit was aimed at fostering collaboration with the University of Pretoria.

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