

TTO NEWS

World IP Day

**International and
regional knowledge
exchange**

**Intellectual
property
awareness**

**BioAfrica
Convention**

**Innovation success
stories**



UNIVERSITEIT VAN PRETORIA
UNIVERSITY OF PRETORIA
YUNIBESITHI YA PRETORIA

**Department of Research
and Innovation**

Departement Navorsing en Innovasie
Kgoro ya Dinyakišišo le Tšweletšopele

**Newsletter of the Technology Transfer
Office of the University of Pretoria**

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Letter from the editor



The University of Pretoria's Technology Transfer Office (TTO) endeavours to assist researchers with their invention disclosures and the filing of patents. An important aspect of this task includes raising awareness about technology transfer and the commercialisation of research.

Among the activities related to intellectual property awareness in 2022 was the celebration of World IP Day, which was hosted at the Javett Art Centre on 12 May. With the theme "IP and Youth: Innovating for a Better Future", it presented an exciting programme focused on making the University's students and staff aware of the role the youth can play in innovation.

Another important focus of the TTO's activities in 2022 entailed international and regional knowledge exchange. The University received two delegations from Africa as part of a benchmarking study tour. Delegates benefitted from the experience of members of the University's Innovation and Contract Management Division. Staff members of the TTO also participated in a reciprocal staff exchange with the Western Norway University of Applied Sciences (HVL).

The TTO furthermore succeeded in expanding its activities to the Health Sciences Campus, where a research commercialisation workshop was held for the first time.

We invite our researchers to contact the TTO for advice to turn their inventions into products that can be commercialised.

Adv Lawrence Baloyi
Head: Innovation and
Contract Management



World IP Day

World Intellectual Property (IP) Day is an annual event celebrated by intellectual property professionals all over the world on 26 April. To commemorate this event, the University of Pretoria (UP)'s Technology Transfer Office (TTO) hosted an exciting celebration, in collaboration with TuksNovation, on 12 May 2022 in the Javett Art Centre.

Each year, the World Intellectual Property Organisation (WIPO) chooses a specific theme for World IP Day. This year's theme was "IP and Youth: Innovating for a Better Future". The aim of the TTO's event was to make the University of Pretoria's students and staff aware of the role the youth can play in innovation. In the process, it explored the potential of young people to find new and better solutions that support the transition to a sustainable future, and also support how innovative, energetic and creative minds are driving positive change in societies. The programme gave young people insight into how IP and its associated rights can help transform their ideas into reality.

The Programme Director was Zamilé Mzizi-Khuzwayo, Coordinator of the UP Symphony Orchestra. The following speakers provided an overview of their innovations, and encouraged delegates to make use of the services offered by the TTO to license the IP behind their inventions:

- **Dr Mthokozisi Sibanda**, Director of the UP spin-out company, African Applied Chemical
- **Dr Moses Kebalepile**, Director of the UP spin-out company, Kebalepile Technologies
- **Isa Lambrechts** and **Bianca Payne**, directors of the UP spin-out company Blyde Botanics, incubated at TuksNovation.



African Applied Chemical was established to commercialise Dr Mthokozisi Sibanda's innovative slow-release mosquito-repellent technology. This makes use of an innovative fibre specially engineered to store high amounts of organic actives, which are then released at a slow rate, and in a controlled manner, to protect against malaria.

Presented by: Dr Mthokozisi Sibanda



Kebalepile Technologies was established to commercialise Dr Moses Kebalepile's innovation, known as the Asthma Grid, which acts as an early-warning device to predict asthma attacks. His invention is an electronic, user-friendly, handheld device that measures environmental parameters such as pollutants and aerial allergens through a built-in nano-sensor.

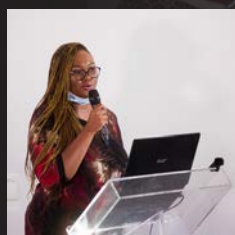
Presented by: Dr Moses Kebalepile (virtual)



Blyde Botanics was established to commercialise the natural products developed by Isa Lambrechts and Bianca Payne in their postgraduate studies in Medicinal Plant Science. The ingredients of the products come from indigenous South African plants, and can be used to treat acne, prevent ageing and provide oral care.

Presented by: Bianca Payne

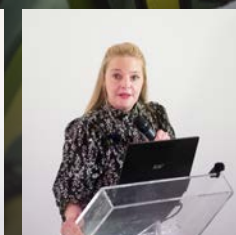
The theme for World IP Day 2022 was "IP and Youth: Innovating for a Better Future". The aim of the TTO's event was to make UP's students and staff aware of the role the youth can play in innovation.



**Zamile Mzizi-Khuzwayo,
Programme Director**



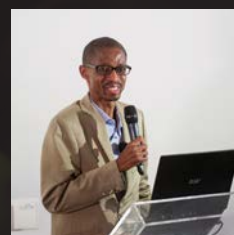
**Dr Carol Nankwelo,
Senior Director: Research
and Innovation**



**Jetane Charsley,
Head: National Intellectual
Property Management Office**



**Adv. Lawrence Baloyi,
Head: Innovation and
Contract Management**



**Phindile Tshabangu,
Centre Manager:
TuksNovation**

ARUA delegations visit UP

The University of Pretoria is a member of the African Research Universities Alliance (ARUA), a network of 16 universities from ten African countries and different historical backgrounds, but with a common vision of making African researchers and their institutions globally competitive, while contributing to the socioeconomic transformation of the continent. Under ARUA's data-gathering and benchmarking projects, funded by a grant from the Carnegie Corporation of New York, the University hosted two African delegations.



The first group, which visited UP in the first week of August 2022, included delegates from the University of Nairobi and from Addis Ababa University. The study tour included a visit to the University's Department of Research and Innovation, where the TTO Manager, Refilwe Ngoato, presented the TTO's innovation outputs over the years, including the number of patents, trademarks and licenses filed and granted in South Africa and internationally. She also shared a success story with the delegates.

The second group, which visited UP at the end of August 2022, included delegates from the University of Ibadan and the University of Lagos in Nigeria, and the Cheikh Anta Diop University in Dakar, Senegal. It also included a presentation on technology transfer by Ms Ngoato.

Norwegian research exchange

As part of the Department of Research and Innovation's international collaboration programme, the TTO Manager, Refilwe Ngoato, was invited to visit the Western Norway University of Applied Sciences from 29 May to 2 June 2022. This was followed by a return visit to the University of Pretoria by the Norwegian researcher who had hosted the TTO in Norway, Prof Inger Beate Pettersen, from 15 to 22 September 2022.

The University of Pretoria (UP) collaborates with the Western Norway University of Applied Sciences (HVL) in Bergen, Norway, on several research projects. These include projects of the International Partnerships for Excellent Education, Research and Innovation (INTPART), and the Norwegian Agency for International Cooperation and Quality Enhancement in Higher Education (DIKU). Ms Ngoato's programme included visits to cluster facilities, incubators, catapult centres and technology transfer offices in Bergen.

The reciprocal visit of Prof Beate Pettersen to UP was aimed at facilitating opportunities between researchers at UP and the HVL, as well as the Technology Transfer Office in Bergen,

VIS, shared between three regional universities.

The Department of Research and Innovation presented Prof Pettersen with a programme on 15 September to introduce her to the role of the Department, as well as the staff members of its Innovation and Contract Management Division.

Prof Elma van der Lingen, Chair of the Graduate School of Technology Management, who has been involved with HVL since 2015, provided staff members with the background and ongoing collaboration of the partnership between UP and HVL.

Advocate Lawrence Baloyi, Head of the Innovation and Contract Management



Division, provided an overview of the division, after which staff members were given the opportunity to introduce themselves and express opportunities they had identified to collaborate with HVL and VIS. Prof Pettersen responded by providing an overview of HVL and VIS, as well as their research clusters. This concluded a very successful collaborative initiative.

Health Sciences' research commercialisation workshop

The University's Technology Transfer Office (TTO), in collaboration with the Faculty of Health Sciences and the Mohn Centre for Innovation and Regional Development at the Western Norway University of Applied Sciences (HVL), presented an Intellectual Property and Research Commercialisation Workshop on the Health Sciences Campus on 22 September 2022.



Refilwe Ngoato, Manager of the University's Technology Transfer Office, was the programme director. The Deputy Dean: Research and Postgraduate Studies of the Faculty of Health Sciences, Prof Tivani Mashamba-Thompson, welcomed the delegates, after which Mantwa Kgarume of the National Intellectual Property

Management Office (NIPMO) of the Department of Science and Innovation provided an overview of the Intellectual Property Rights Act.

Advocate Lawrence Baloyi, Head of the University's Innovation and Contract Management Division, explained the role of the TTO, and how intellectual property is managed at the University of Pretoria. Dr Phuti Chelopo-Mgobozi of the Innovation Hub introduced delegates to the GAP Innovation Competition, and invited them to contact the TTO if they wished to enter their innovations in this annual competition.

The guest speaker at the event was Prof Inger Beate Pettersen, who was visiting the University of Pretoria from HVL in Norway. As a professor at the Mohn Centre for Innovation and Regional Development at HVL since 2012, and programme leader of the master's programme in Responsible Innovation and Sustainable Value Creation, she was able to provide some background on research-based commercialisation and innovation from a northern-hemisphere perspective, and could also share with delegates some of the collaborative research opportunities that were available between South Africa and Norway.

Life sciences innovations showcased at Bio Africa Convention

The Technology Transfer Office participated in the 5th annual Bio Africa Convention that was held at the International Convention Centre in Durban from 27 to 31 August 2022. The theme of this year's event was "Africa Resilient: Life sciences innovation for achieving health and food security.

The Convention provided the opportunity for the University of Pretoria to exhibit some of its innovations related to the life sciences. These included the following:

- The detection of genetic polymorphism for the black pigment in impalas
- Oligonucleotides for Lavender Foal Syndrome
- Plasmid DNA rescue of orbiviruses
- The anti-rhinoceros microplus vaccine against tick-borne diseases
- Avian influenza diagnostics and vaccine
- The characterisation of blue tongue virus serotypes

The event also provided the opportunity for Blyde Botanicals, a spin-out company incubated at TuksNovation, to create awareness of its product range.



INNOVATION FOCUS

Commercial benchmarking of the continuous electrowinning invention

A device to achieve the continuous production of metal in powder form by means of electrolysis reached the commercial benchmarking stage with the relocation of the containerised continuous electrowinning plant to Impala Refineries' base metals refinery in Gauteng. The Rotowinner® is the brainchild of Ryno Pretorius, a PhD graduate from the University of Pretoria's Department of Chemical Engineering.

The first prototype of this invention was developed in 2016. It transformed the standard batch or semi-batch electrowinning process into a continuous process. This was shown to work well for the production of copper, but could also be used to produce metals from aqueous solutions of cobalt, nickel and zinc. The advantage of this technique, which could also be used for electrorefining with minor modifications, is its long-term continuous operation.

The invention is licensed to the process-engineering start-up, Free Radical Process Design, a process engineering start-up, which developed as a spin-off company of the University of Pretoria. Dr Pretorius, the founder of this company, recently completed an industrial benchmarking exercise on the Rotowinner® containerised demonstration plant, which was installed at Impala Refineries' base metals refinery.

This marks the first step towards commercialising this novel continuous electrowinning technology, which

combines electrowinning and cathode stripping into a single continuous operation by reshaping existing parallel-plate electrodes into a rotating cylinder configuration. "The successful implementation of the Rotowinner® continuous metal electrolysis technology will increase the production rate of electrochemically extracted metals, decrease electrical costs, and improve plant safety," explains Dr Pretorius. "The aim of this project was to produce a modular, transportable, demonstration plant capable of showcasing the commercial possibility of the in-house Rotowinner® technology."

The Rotowinner® technology emerged from a project managed by the University of Pretoria (UP) and seed-funded by the Technology Innovation Agency (TIA), the implementing agency of South Africa's Department of Science and Innovation. UP's Technology Transfer Office (TTO) evaluated the technology for intellectual property (IP) protection and filed a provisional patent application. Together with UP, Dr Pretorius has concluded a

technology licence agreement for Free Radical Process Design to commercially exploit the technology.

The TIA awarded R10 million in technology development funds to the company to construct the plant and demonstrate the technology's economic feasibility to potential industry clients. "With the support of UP and the TIA, we were able to demonstrate the commercial and process possibilities of the technology to such an extent that we were invited to operate our demonstration plant at Impala Refineries, in parallel with its existing base metals refinery circuit. We hope to prove improved performance and safety in a commercial environment," says Dr Pretorius.

Free Radical Process Design plans to supply Rotowinner® plants internationally as fit-for-purpose plants, designed to client specifications, or to offer toll-treatment options to clients who want to make use of a containerised plant for short-term beneficiation.

INNOVATION FOCUS

The use of a mobile electrowinning plant disrupts the current standard practice requirement of limited financial deployment in the mining industry due to life-of-mine being too short to justify capital investment. By using a mobile Rotowinner® plant, low life-of-mine reserves can be beneficiated until depletion. The electrowinning plant can then be moved to the next site for use on a new resource.

Free Radical Process Design plans to directly integrate the Rotowinner® plant with solar photovoltaics (PVs) to further enhance its remote operational possibilities and drive down the cost of production. Future developments of the Rotowinner® include using it for continuous water softening and metals removal, thus removing metals and hardness from mine tailings or acid mine drainage, powered by solar energy, and producing hydrogen and oxygen as by-products. Once industrial trials have been completed, steps will be taken to commercially expand and implement the use of the Rotowinner®.



Increasing production after COVID-19

The invention of a technology to reduce the rate of evaporation of expensive chemical compounds that act as insect repellents, making them last longer, resulted in a spin-off company, African Applied Chemical (AAC), with Dr Mthokozisi Sibanda as founder and CEO.

After a very productive start, when the company started shipping its first orders at the end of February 2020, distribution came to a stop the following month when visitors to its primary target market – the Kruger National Park – were limited following the announcement of the nationwide lockdown due to the COVID-19 pandemic.

However, when the park opened its gates to tourists again in September 2020, sales could be resumed. By the end of December 2020, all the company's product lines were sold out. According to Dr Sibanda, the interest in the company's products, including long-lasting insecticide-treated mosquito nets, is so great, that it has started exploring regional export markets, and hopes to commence exports before the end of the year.



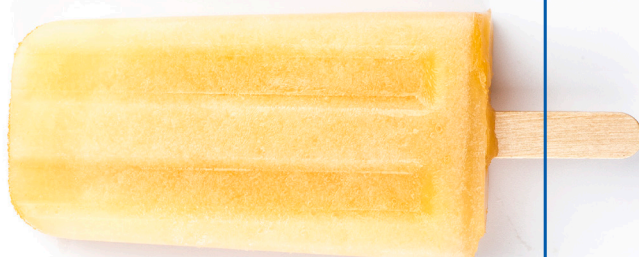
DID YOU KNOW?



ROLLER SKATES

Roller skates made their first appearance at a fancy dress ball in London. Belgian instrument maker, Joseph Merlin, tried to show off an outfit finished with self-made shoes on metal wheels.

He made a spectacular entrance rolling in while playing the violin. Because he had not yet established how to keep his balance or change direction, he promptly ran into a wall-to-wall mirror. His example was only followed towards the end of the next century when new techniques were invented to make the rolling shoe maneuverable. Roller skates evolved to such an extent that roller skating became an Olympic sport in the late 20th century.



POPSICLE

When Frank Epperson from San Francisco was 11, he mixed a drink from soda powder and water, but forgot it outside on the porch with the stirrer still in it. That night, the local temperature dropped to an all-time low. The next morning, Frank was holding the world's first ice pop. At 29, he started selling his invention as "Epsicle Ice Pops". Two years later, after having renamed his company to "Popsicle", he sold it for a fortune. Today, the popsicle is still a favourite snack all over the world.