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## **UCT chemists shine light on African scientists by winning coveted Royal Society prizes**



Professor Kelly Chibale (left) and Dr Wade Petersen (right)

Photo: Je'nine May/Supplied

Internationally renowned University of Cape Town (UCT) chemist Professor Kelly Chibale, who holds the Neville Isdell Chair in African-centric Drug Discovery and Development, and Dr Wade Petersen, a senior lecturer in the Department of Chemistry, have been announced as winners of the Royal Society Africa Prize 2023 and the Royal Society's Rising Star Africa Prize 2023 respectively.

Chibale has been honoured for exceptional leadership and groundbreaking work in drug discovery for African endemic diseases while Petersen received the award for his innovative research into new methods for the construction of molecules relevant to drug discovery using visible light as a source of energy.

The Royal Society Africa Prize, awarded to Chibale, recognises research scientists based in Africa who are making an innovative contribution to the biological or physical sciences, which contributes significantly to capacity building in Africa.

Asked what this award meant to him, the multi-award-winning Chibale said: "Looking at the full citation for the award, it means a lot to be singled out for recognition in two areas: leadership and scientific research excellence. This recognition coming from a highly

prestigious international learned society and UK's national academy of sciences is extra special, an icing on the cake".

Petersen's Rising Star Africa Prize on the other hand is awarded to recognise early-career research scientists based in Africa, who are making an innovative contribution to the physical, mathematical and engineering sciences. The medal, awarded at a ceremony in London, is accompanied by a grant of £14 000 and a personal gift of £1 000.

Peterson said he was completely amazed and surprised when told that he had won the award, which spans a wide range of different disciplines. "This award is significant and shines the light on the fact that African scientists are alive and thriving and allows the world to see that African scientists are ambitious and motivated and shaping the world through their research and discoveries".

### **What Chibale and his team are currently working on**

- Early stage (preclinical) drug discovery against malaria, tuberculosis, and antibiotic-resistant microbial diseases.
- Building Africa-specific models and tools to contribute to improving treatment outcomes in African patients.
- Developing drug discovery platform technologies.
- Training African scientists in drug discovery-related sciences, including expanding the community and ecosystem of drug discovery across the entire African continent.

Chibale said: "By its very nature, drug discovery is an interdisciplinary team-based science and requires the integration of multiple scientific disciplines. My team members at H3D come from the broad scientific disciplines of chemistry, biology, and pharmacology. Since it is not just about the science, the scientific teams at H3D are ably supported by in-house team members representing the broad disciplines of business development, operations, finance, project management and administration". H3D is the UCT Drug Discovery and Development Centre and a Johnson and Johnson (J&J) Centre for Global Health Discovery, one of three such centres worldwide.

### **Sustainable Chemistry**

Petersen's research is in the field of sustainable chemistry – using photochemistry to pioneer drug development and make it more sustainable by utilising light as an energy source. This area of photocatalysis was something he became increasingly interested in while doing his postdoctoral research at the University of York and recognised its potential to drive more sustainable chemical processes.

When he returned to South Africa, he started a research programme in photochemistry, a relatively new and unexplored field here at the time and gave a topical anecdote highlighting its utility: "Typically, chemists activate molecules for synthesis with heat, which was at times challenging in South Africa because of not having electricity to keep the heating equipment running due to loadshedding.

"To counter this, we found ways to replace the 'heat' with low powered LED lights, and this allowed us to still synthesise molecules when the power goes off. This is the potential of photochemistry". Their ultimate goal is to have the reactions take place outside, using ambient sunlight, and are working to perfect conditions for this, even under low-sunlight conditions. They are finding that some of the reactions work well when left outside on the balcony.

He is specifically interested in utilising photocatalysis as a means to develop new potential drugs and is particularly focused on applications toward antimicrobial resistance. In a recent paper published in [Angewandte Chemie](#), they reveal how they use light to make beta-lactams — a key scaffolds of penicillin antibiotics — and are now exploring opportunities to discover new therapeutics.

One of the things that brings Petersen the most fulfilment is interacting with students, which he finds enjoyable, exciting and stimulating. “Students have ideas. I have ideas and I learn so much from the students, learning things I didn’t necessarily know as we journey together.”

### **Developing African Scientists**

Petersen has supervised and worked with some stellar PhD and Masters’ students in his field and they are all currently continuing their research in prestigious institutions across the globe. His passion is to make sure UCT develops great African scientists and that the researchers stay in touch with cutting edge research taking place across the globe. He sends his students to collaborate with colleagues in the UK, giving them exposure to what is happening in other research spaces.

When asked about what some of the highlights of his work have been, Petersen related a story of how a student who had done an honours degree in Zimbabwe showed up at his door one day and said “I want to do science. I want to do a Masters”. This student didn’t have funding, but through a Royal Society FLAIR (Future Leaders – African Independent Researchers) Fellowship which Wade received, he was able to provide an opportunity for this student, who has just graduated with his PhD. Petersen said he really admired this student’s courage to follow his passion despite many obstacles along the way. He has trained eight African scientists who are all doing amazing work in their fields.

***Ends***

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