



Dr Kubheka.

Dr Gugu Kubheka (33) was one of a handful of young South African scientists who were chosen to attend the 71st Lindau Nobel Laureate Meeting that was held from the 26 June to 1 July 2022 in Lindau, Germany. We spoke with her about the experience and her journey as a young scientist.

Tell us a little bit about your background as a scientist?

I was born and raised in Bergville, KwaZulu-Natal and completed my undergraduate and postgraduate qualifications at Rhodes University, where I obtained a Bachelor of Science degree in Chemistry, Geology and Mathematics, a Master of Science degree with distinction and a PhD degree in nanotechnology.

I have conducted research on numerous projects involving nanotechnology to solve some of the world's challenging problems, such as environmental pollution, cancer, and the protection of light-sensitive devices from intense laser beams.

As a postdoctoral fellow at the University of Pretoria, I made innovative materials that can be used to remove some toxic contaminants currently abundant in our water systems for quality living and sustainable environmental development purposes. The cancer aspect of my research, which I undertook as a postgraduate student, involved designing and making materials that can potentially be used in the treatment of cancer using light, a treatment scientifically known as Photodynamic therapy (PDT), as well as materials that can be used in the early detection of cervical cancer, a study which I conducted at Federal Institute for Materials Research and Testing (BAM) in Berlin, Germany. Most of the results obtained have been published in peer-reviewed scientific journals and presented at local and international conferences.

How did it happen that you were invited to attend the Lindau Nobel Laureates Meeting in Germany?

Qualifying candidates such as myself are nominated and apply to participate in this prestigious event and

Interview: Young scientist rubbing shoulders with Nobel laureates in Germany

undergo a highly competitive and strict screening process via a scientific review panel appointed by the Council for the Lindau Nobel Laureate Meetings. Besides academic and research achievements, the candidate's motivation, recommendations, dedication to science, and extracurricular activities are all considered.

What was the experience like?

It was an incredible and humbling experience and a bit overwhelming at first. Being there in person and seeing all these elite scientists felt different from the feeling of knowing you have been selected to attend; it was surreal. Overall, I found it a good platform for exchanging knowledge between nations, cultures, and disciplines.

The main goal of the Lindau Nobel Laureate Meeting is to educate, inspire and connect. Personally, this meant an opportunity to expand my academic knowledge and be up to date with recent research developments in chemistry. The different talks given by the Nobel laureates, such as lecturers, Agora talks, open exchange and panel discussions, were part of the programmes intended to educate. I was inspired, and I, in turn, wish to inspire other upcoming scientists through my work.

What were the highlights for you personally?

Meeting and having conversations with the Nobel laureates were the best parts of the Lindau meeting. Engaging with different young scientists every day and making new connections and friendships was also a favourite part.

I had an opportunity to meet and chat with my favourite of the newly awarded Nobel laureates, Prof. Benjamin List (2021), who was honoured in this meeting. There were different sessions, formal and social, which were intended



Dr. Kubheka with Prof. Benjamin List (2021 Nobel Laureate in Chemistry).

to initiate dialogue and exchange of knowledge, ideas, and experiences among young scientists and Nobel laureates.

In the formal aspect of the programme, I particularly enjoyed Prof. Ben Feringa's lecture. The highlight of his talk was the dedication of his success to his teachers. He said, "Teachers open windows, shaping our future with these young talents," and I found that to be very noble. He further went on to say science has no borders, there must be international cooperation, and we must be united by the passion for discovery. I believe this is the whole purpose of the meeting – to bring together people from different geographical locations, cultures, genders, and races in one place to speak one language, which is to discuss and find solutions to some of the challenging problems facing the world.

Other memorable discussions that took place were a panel discussion on trust in science, demographic and sexual diversity challenges, and collaborations in challenging times. They were of interest because the advent of COVID-19 and subsequent biomedical interventions were met with doubts from some social groups. The pandemic demonstrated many of the shortfalls in science. On the social side of the meeting, the Bavarian evening, where the Bavarian culture was being celebrated, was a highlight and we also could wear our traditional attire, which was also an exciting part.

What did it mean to you to be invited?

Being selected to participate in the Lindau Nobel Laureate Meeting meant an opportunity to learn and share knowledge with some of the brilliant young scientists and academics from different disciplines of science. On a professional level, attending this prestigious event meant expanding my research network with renowned scientists, including the establishment of collaborations with both local and international scientists. As a researcher, I also got

exposure through different interviews. I did interviews with the African Diaspora Magazine (LoNam), which is based in Berlin. The young scientist who also writes for this magazine was interested in chatting with young scientists from Africa about research in Africa. This interview, which was written in German, allowed me to speak about my research, Universities, infrastructure, and some of the best scientists we have in South Africa.

I also had an opportunity to speak virtually with Koester Vera, who writes for ChemistryViews, about the Lindau meetings, research, and South Africa. This opportunity did not only shine a spotlight on my research but also on South Africa. With all the negative media surrounding the country, getting an opportunity to speak about all the brilliant research and other great things happening in the country presented an opportunity to express gratitude for the support the country has offered through sponsorship.

What advice would you give to other young scientists or learners who are considering a career in science?

With the emergence of new diseases, and ongoing research on finding possible treatments for currently existing diseases, water pollution and energy shortages, the world needs more scientists who are passionate and enthusiastic about addressing some of these problems the world is currently facing. My advice to learners is to choose fields that are in resonance with their passion and to study to innovate solutions rather than just to acquire the qualification. Although the qualification is an indication of your aptitude in a particular discipline. Where necessary, they should also not hesitate to take certain aspects from other disciplines in order to understand the environment they are working in, much better.

I am grateful to the following individuals who, without their support, I would not have gained this experience: Prof. PBC Forbes (the University of Pretoria, Postdoctoral fellowship mentor), who played an essential role in ensuring that I applied and wrote a motivational letter even at the last minute, Prof. Mack and Nyokong (Rhodes University, Postgraduate research supervisors) for their recommendation letters. And also ASSAf, DSI and the Lindau Nobel Laureate Committee for sponsorship and the opportunity to participate in this prestigious event.



Young scientists at a Bavarian evening.

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