Professor Shirley Caroline Keolebogile 'Keo' Mamotswere Motaung (1964–2025): Biomedical scientist, innovator and mentor

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Professor Shirley Caroline Keolebogile 'Keo' Mamotswere Motaung (1964–2025) was a pioneering South African biomedical scientist, academic leader and entrepreneur whose contributions transformed tissue engineering, regenerative medicine, biotribology and research commercialisation in South Africa.[1] She passed away on 12 November 2025 while serving as the FALF/FREF/Nelson Mandela University Research Chair in Entrepreneurship and Financial Inclusion. Her life's work left a lasting imprint on science, innovation and higher education.

Early life and education

Born in Kagiso, Krugersdorp, on 2 January 1964, Motaung completed her schooling at Manoane Primary School and matriculated from Nkakane High School in 1982. She pursued a distinguished academic path, earning a National Diploma in Medical Technology (Technikon Pretoria, 1992), a BTech in Biomedical Technology (Technikon Witwatersrand, 1996) and an MTech in Biomedical Technology (Technikon Pretoria, 2003).

In 2010, she completed her Doctor of Technology through the Tshwane University of Technology in partnership with the University of California, Davis, as a Fulbright Scholar.[2] She further complemented her scientific training with specialised programmes in tissue engineering, biotribology, innovation, leadership and higher education management.

Academic and professional career

Motaung's career in higher education and research spanned more than 26 years. She held several senior leadership roles, including:

- Acting Deputy Vice-Chancellor for Research, Innovation and Engagement at the Durban University of Technology;
- Director of Technology Transfer and Innovation at the Durban University of Technology;
- Assistant Dean for Research, Innovation and Engagement at the Tshwane University of Technology; and
- Acting Executive Dean of the Faculty of Science at the Tshwane University of Technology.

Earlier in her career, she served as Senior Lecturer, Section Head, Lecturer and Junior Lecturer in Biomedical Sciences at the Tshwane University of Technology (1998–2013). Before entering academia, she worked in clinical practice as a Medical Technologist and Unit Supervisor at the National Health Laboratory Service and Lancet Laboratories (1989–1998).

Throughout her academic career, she supervised numerous postgraduate students, developed curricula and made significant contributions to strengthening research and innovation systems at both institutional and national levels.

Innovation and entrepreneurship

A defining feature of Motaung's career was her commitment to translating laboratory-based research into socially responsive and commercially viable products. In 2016, she founded Global Health Biotech (Pty) Ltd to advance the commercialisation of Indigenous knowledge based biomedical innovations.[3]

Through this platform, she led the development of La-Africa Soother, an anti-inflammatory ointment derived from indigenous plant extracts.[3,4] The innovation journey included:

- isolation and characterisation of bioactive compounds;
- preclinical efficacy and safety testing;
- intellectual property protection;
- prototype development and validation; and
- market-readiness activities through national and international exhibitions.

La-Africa Soother became one of South Africa's flagship examples of research commercialisation rooted in Indigenous knowledge systems. The product garnered national and global recognition and received national and international recognition through multiple innovation awards.[4]

Her work positioned her as a leading national voice on the importance of commercialising South African research, strengthening local biotechnology industries and empowering academic scientists to become innovators. Through her entrepreneurial work, she advanced the commercialisation of research outputs and championed the integration of Indigenous knowledge systems into biotechnology innovation.

Leadership in scientific engagement

Motaung made significant contributions to establishing South Africa as a continental hub for regenerative medicine. She hosted the 1st International Conference on Tissue Engineering and Regenerative Medicine at the Tshwane University of Technology in 2014, followed by the 2nd International Conference on Tissue Engineering and Regenerative Medicine at the Vaal University of Technology in Vanderbijlpark in 2017. Both events attracted global experts, African researchers and postgraduate students.

These conferences were instrumental in strengthening industry–university partnerships; building continental networks in regenerative medicine; enhancing postgraduate training and scientific visibility; and increasing global recognition of South African innovation capabilities.

Her leadership contributed to positioning South Africa as an emerging centre of excellence in tissue engineering and regenerative sciences. These conferences also gave birth to the African Tissue Engineering and Regenerative Medicine Platform, for which she served as President.

International collaboration and global scientific engagement

Motaung was deeply committed to advancing international collaboration, particularly in empowering women in STEM. She served as Co-Chair of the HBCU–HDI Women in STEM Conference, a partnership that strengthened the collective commitment to advancing women scientists in South Africa and the USA.[5] Through this role, she helped establish a platform connecting women scholars from historically disadvantaged institutions (HDIs) and historically black colleges and universities (HBCUs), creating a space to exchange ideas, confront shared challenges and celebrate their achievements.

Her leadership was instrumental in shaping the conference into a transformative environment where cross-continental collaboration flourished. She understood that representation creates possibility, and she consistently used her influence to increase visibility for women innovators, particularly in biotechnology, entrepreneurship and translational research. Her participation in the conference's innovation panels inspired countless students and faculty, demonstrating how scientific discovery can evolve into commercially viable technologies that transform lives.

Awards and recognition

Motaung received more than 60 local and international awards in recognition of her leadership, research excellence and contributions to entrepreneurship. Among these were the South African Women in Science Award (SAWiSA)[6], the NSTF–South32 Research for Innovation Award, the Black Management Forum Standard Bank Top Inventor Award, and recognition for being among the Inspiring Fifty Women in South Africa. In 2020, Motaung was honoured by the Motsepe Foundation with the Shining Light Award at the International Women's Day Summit, where she also participated as a key panel discussant on the role of women and youth in the Fourth Industrial Revolution.[4] She was also a Top 10 Nominee for the Innovation Prize for Africa. She secured more than ZAR3.5 million in funding that supported postgraduate training, collaborative research, equipment acquisition and conference participation.

Leadership and national service

Motaung played influential roles in several scientific and innovation bodies. She served as Chair of the Female Academic Leadership Fellowship – FirstRand Empowerment Foundation (FALF/FREF) at Nelson Mandela University, Chairperson of the NIPMO Advisory Board, Board Member at the Technology Innovation Agency[2], Chairperson of the EDHE Community of Practice for Entrepreneurship Research and Chairperson of the OWSD South African National Chapter[2,7]. She also served on national and international review panels, including the Fulbright Scholarship Program, the Health Professions Council of South Africa (Professional Board for Medical Technology) and multiple scientific committees.

Motaung actively championed entrepreneurship in higher education, advocating for students and academics to translate their research ideas into businesses and job creators – a theme she emphasised at the EDHE Lekgotla 2019 hosted by Universities South Africa (USAf).[7]

Scholarly contributions

Her academic output included more than 40 peer-reviewed publications, several book chapters and over 30 supervised postgraduate candidates. She presented her work widely at national and international conferences and collaborated with research partners across Africa, Europe and North America. Her contributions strengthened South Africa's biomedical research profile and inspired a generation of emerging scientists.[1]

Professor 'Keo' Motaung

Personal attributes and legacy

Motaung was widely admired for her humility, discipline, compassion and unwavering commitment to mentorship. She was particularly dedicated to supporting women in science, promoting innovation-based entrepreneurship and ensuring the societal impact of scientific research. Her legacy endures through her students, her innovations and the institutional structures she helped shape.

Motaung is survived by her children Tshegofatso Thapelo Motaung and Mathabo Reabetswe Mashigo, and her sister Matshidiso Dorothy Mantshiyo. She is preceded in death by her brother Martin Mpelo Motaung.

Her life's work continues to influence South Africa's scientific, academic and innovation landscape. May her contribution be long remembered.

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