

AWARDS, HONOURS AND ACHIEVEMENTS

- First National Research Foundation A-rating in 1992 which he held until 2011
- PanLabs Award from the American Society for Industrial Microbiology (1997)
- Gold (2011) and Silver (1992) Medals from the South African Society for Microbiology

DEFINING MOMENT

His decision to pursue microbiology at postgraduate level instead of chemistry. At the time he did not realise that the field of recombinant DNA technology would break initially in the field of microbiology within the next few years and produce so many exciting techniques and rapid advances in fundamental biology.

WHAT PEOPLE MIGHT NOT KNOW

He was so inspired by the community spirit and support during his first, very casual Argus Cycle tour (on his son's school bike!) that he has since completed another 21.

SERVING THE BEAUTY OF SCIENCE

"It saddens me that a lot of people do not perceive the beauty of science. They regard it as utilitarian and so its beauty is lost to them. Science is a cultural expression during which scientists design the question, but never the answer. Yet he who sets the question may be as creative and imaginative as someone in art or literature." Douglas Rawlings, Emeritus Professor in microbiology at Stellenbosch University (SU), put this view forward during a public lecture in 2014 in which he introduced the topic of his Doctor of Science degree. It focuses on the plasmid IncQ2. He has been studying this group of molecules and their ability to replicate in many different bacteria on the side since the 1980s.

He describes attaining a degree as coveted as a DSc as "actually a minor event compared with the journey of over 30 years in getting there." Rawlings is internationally renowned for his research on biomining techniques using micro-organisms. He is a man of faith who gets things done, and many recognise this true leader's ability to develop people to their full potential. A colleague once described him as "a true mensch".

He matriculated from Selborne College in East London in 1968, having been born in the city in 1950. While waiting to start his military conscription, he was working at a shipping agent when his father phoned with news that a place had opened at Rhodes University. Rawlings was placed in a quandary, because he has always liked to honour his commitments. Luckily his boss was understanding, and he started studying towards a BSc in chemistry and microbiology (1971) and a BSc Honours in microbiology (1972). For the PhD (1976), he was supervised by Professor Dave Woods, and developed a way for tanneries to treat their toxic effluent water.

"Molecular microbiology was terribly exciting at the time, and as a postgraduate I watched it develop," remembering how his lecturers inspired him during his formative years in science. While working at the Leather Industries Research Institute and funded by the Water Research Commission to supervise research aimed at building a scaled-up version of his PhD work, he realised that he needed his own niche. After a period as a lecturer at the University of the Witwatersrand (Wits) in 1978, he found it in the significantly stronger mining sector.

Professor Woods invited him to join his department at the University of Cape Town (UCT) in 1982 and it became his academic home for the next 16 years, where he truly fell in love with research. His studies using iron- and sulphur-oxidising bacteria and other micro-organisms as bio-agents to extract metals from ore attracted attention. Gencor and Goldfields acquired the technology and built bio-oxidation plants worldwide like the one constructed in Barberton in 1986. During this time, Rawlings also helped supervise the MSc studies of Professor Philippa Norman. This formed the basis for what became the multimillion-dollar Biox® gold-bioleaching process.

Rawlings was one of the first South Africans to be exposed to the techniques of DNA cloning and the study of gene expression. From his laboratory came some of the first genes to be cloned and the first two genes to be sequenced in South Africa. His 1984 paper in the *Journal of Bacteriology*, is probably the first report of a cloning experiment in South Africa. He also kept on at researching IncQ2, with the last of his 21 research articles or reviews about it appearing in 2012 in the journal *Plasmid*.





INVESTMENT IN PEOPLE

When he moved to Stellenbosch University's (SU) Department of Microbiology in mid-1998 to become its Chair for the next 13 years, he did so with the intention of investing in other people in the next part of his career. The spirit of cooperation and collaboration he experienced while at the helm is something he still treasures. He served various periods as Vice-Dean or Acting Dean of the Faculty of Science, and in 2012 was also SU's Acting Vice-Rector (Research). He has served on various university-wide and national committees, advisory boards, journals and research projects over the past four decades and has overseen 38 postgraduate students. He holds eight patents, authored two books on biomining and 119 journal articles – all of them well-cited. He did duty on the scientific committee of the biennial International Biohydrometallurgy Symposium for a quarter of a century, and as a guest Professor of Central South University in China. He also served as General Secretary and President on the Council of the Royal Society of South Africa and was an academic coordinator of the Claude Leon Foundation postdoctoral bursary scheme. He was also a council member of the South African Society for Microbiology.

Since retiring in 2016, he coordinates SU's staff mentoring programme and serves as alternate research integrity officer – and makes a point of reading the *New Scientist* every week, in search of more beautiful science.

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Academy of Science of South Africa (ASSAf)

Academy of Science of South Africa (ASSAf), (2019). Legends of South African Science II.

[Online] Available at: DOI <http://dx.doi.org/10.17159/assaf.2018/0036>

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