

Linda-Gail Bekker: Mentorship is critical for anyone in STEM

 Lucie Van Emmenis¹ 

Linda-Gail Bekker is a professor, chief executive officer of the Desmond Tutu HIV Foundation, and director of the Desmond Tutu HIV Centre at the Institute of Infectious Disease and Molecular Medicine, University of Cape Town, South Africa. Her research interests include HIV treatment and prevention and tuberculosis, and she is active in developing community projects to promote education and research. We talked to Linda-Gail about her career, the importance of mentorship, and how rewarding it is to collaborate, mentor, and uplift other scientists.

Please tell us a little about yourself and how you first became interested in science.

I was born in April in 1962 and grew up and was schooled in Zimbabwe. I was always bookish and a self-identified overachiever. I realized soon that I'm not clever in a "maths" kind of way, but I was always keen to put in lots of bookwork, and this was underlined by rewards such as good grades, awards, and acknowledgments! I knew I wanted to be a doctor from an early age. The influence here was my maternal grandfather. He was an awe-inspiring (though much-loved) patriarch.... He fathered 15 children, and despite going to medical school, he followed his desire to farm and did so until he died at an advanced age. My parents, in contrast, both had to leave school in secondary school due to lack of resources for further education—but they both had an exceptional work ethic and did well in their areas of work and were determined that we would have the opportunities for tertiary education that they did not. They raised us in a loving home, and they were married 63 years when my dad passed during the COVID-19 pandemic. My mom is now 89 years [old]. I have one older brother who is on an opposite pole to me personality-wise.... He was a good sportsman, remains a keen one, and is usually the life and soul of

any party! I left Zimbabwe in 1980 to come down to the University of Cape Town (UCT) medical school. It was quite unusual for non-South African females to be accepted into medicine at UCT in those days...but there were four of us women from Zim' and all of us were head girls of our respective schools. I don't know if I completely understood what would be entailed in medicine but was very driven to be a doctor and never allowed myself to think for a minute that I would not achieve this goal. I knew it would entail drive and persistence.

Tell us about your career trajectory, and what led you to becoming a group leader.

I finished medical school at UCT in 1986 and went on to do an internship in KwaZulu-Natal province, South Africa, followed by a few years in rural KwaZulu-Natal (Eshowe Hospital) as a young and enthusiastic medical officer (to pay back a government study loan). My initial ambition was geriatric medicine, and this is what fueled my passion—I immediately set up a "golden oldies club" in an old house in a local community to encourage the elderly to meet and socialize! I was due to go for one year but was so caught up in the "real work" of being a frontline doctor that this soon turned into



Linda-Gail Bekker. Photo by Nasief Manie for Spotlight.

four years. Then the HIV epidemic broke (early nineties), and I found myself increasingly drawn into infectious diseases. I felt very frustrated that so many young people were dying of AIDS and tuberculosis (TB) without any apparent ways to prevent this calamity. I figured I needed more specialized training and returned to UCT/Groote Schuur Hospital as a medical registrar to train in adult internal medicine. I qualified as a fellow of the College of

¹Scientific Editor, JEM, Rockefeller University Press, New York, NY, USA.

Correspondence to Lucie Van Emmenis: lvanemmenis@rockefeller.edu.

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Medicine, South Africa in 1996. Always very curious about how to solve challenges, although I hadn't had much to do with research and loved clinical service, the idea of clinical research was beginning to formulate as the thing I really was keen to do. It was in 1996 that my career took an important turn, in that I was fortunate to meet Dr. Gilla Kaplan, who was head of a laboratory at The Rockefeller University, and she offered that I join a PhD program. My two additional co-supervisors at UCT were Profs. Gary Maartens and the late Lafras Steyn. Over the next four years I would shuttle between Rockefeller University in New York City doing preclinical and laboratory science and my clinical field work in Cape Town. I am also grateful to the organization "Direct Effect" (USA), which funded my doctoral work.

How did you first become interested in studying HIV?

The fundamental question in my doctoral work was to understand the immunological interaction between HIV and TB at a cellular and host level at the time of co-infection. At this time (late nineties), thousands of Africans were dying predominantly of HIV and TB. They were acquiring HIV in their early and mid-twenties, then going down with TB and dying shortly afterwards in what appeared to be an almost overwhelming immunological catastrophe (with the basic host immunity decimated by HIV but TB causing an immune storm even when treated, which generally tipped the odds toward death with alarming frequency). Gilla had for a long time been studying thalidomide and its role as an immune modulator (it has anti-TNF properties) in the field of leprosy. Our hypothesis was that in these very sick co-infected patients, thalidomide may modulate the "storm" and buy some time for the TB drugs to work. Recall, we did not yet have access to the very new antiretroviral agents that were beginning to have an impact in the Global North. The next four years were a mind-expanding, incredibly stimulating, and exciting time for me. The introduction to the power of research at Rockefeller and my time exploring NYC was more than a "small-town gal" from Zimbabwe could imagine! And Gilla was just the most incredible mentor and has remained so throughout my career.

Since your PhD work, you have stayed within the field of HIV research and been an advocate for increasing visibility and promoting public health initiatives around HIV. What has kept you so involved in this work? What would you say has been the driving force behind it?

I am thrilled every single day by my job and what I do. There really isn't a job description nor are any two days the same. During my PhD, I met and started dating the man I would marry in 2000, just as I was embarking on my postdoc journey. Prof. Robin Wood is also an HIV/TB medical specialist, professor of medicine, and clinical researcher. We are kindred spirits hell-bent on trying to solve the TB and HIV riddles and improve the health and lives of the people in South Africa and beyond. He is brilliant and has really taken up TB transmission research as his mission in the last decade or so. We started a research NGO [non-governmental organization] in 2000, and it became known as the Desmond Tutu Health Foundation in 2004. Together we worked with other advocates and activists to bring antiretroviral therapy to South Africa in the early part of the new millennium. I continue to advocate for better HIV prevention and better patient-centered care for the millions who live with and are at risk of acquiring HIV and was honored to do so as president of the International AIDS Society from 2016 to 2018. I've also developed a deeply rooted passion for adolescent health in general—an area of health that is little understood and insufficiently resourced on this continent despite this being our future. Some years ago, I took over from Robin as the director of the Desmond Tutu HIV Centre and the CEO of the Desmond Tutu Health Foundation. We now have between 350 and 400 staff, all of whom are "soft funded," meaning we jointly raise all their salaries and all the project costs, etc. through competitive grants and fundraising. It's an adrenaline rush!

What are you currently working on, and what projects are you most excited about?

On the implementation side: I'm interested in differentiated care for young people—whether prevention or treatment, we are increasingly aware that young people are not in our traditional health services, and so

these services need to be tailored and adapted to their needs if we want to effectively engage. We have been quite successful in showing that these differentiated services can integrate sexual and reproductive health, but we are now also very interested in seeing whether we can integrate mental health well-being and interventions to reduce the risk of non-communicable diseases in adulthood by intervening in adolescence. The long-term plan is to deliver healthier adults and parents to reduce the cycles of poverty. I'm also very interested in finding innovative solutions to combat sexually transmitted infections and to explore the new innovations in the pipeline of less frequently dosed antiretrovirals for both treatment and prevention. On the more basic science side, I remain very interested in new research in TB and am very supportive of the very innovative work our aerobiology team under the leadership of Robin Wood are doing in understanding TB transmission better. Most recently, I am delighted to be partnering with a long-time friend and colleague, Prof. Glenda Gray from the South African Medical Research Council, to bring the research and development of an African-relevant HIV vaccine to the African continent. We are doing this through the US Agency for International Development-funded BRILLIANT Consortium.

Please tell us about some work in your field that you are currently interested in.

I remain very interested in the critical role that host immunity plays in our ongoing quest to find more effective ways to deal with infectious diseases and bring communicable diseases under control. Pretty much what drew me into the field in the first place.

What are some of the qualities that you learned during your graduate studies or postdoc that you maintain and foster in your own lab?

On a more general theme: the power of multidisciplinary approaches to solve the most challenging problems. This usually means that the problems are best tackled in collaborative teams and partnerships. On a personal theme: I'm a collaborative person and love the brainstorming and ideas sharing that goes on with like-minded

individuals who share a common goal to solve a problem. At the same time, I remain a very driven and competitive person (nothing has changed here!)—but my main competitor remains myself. I love to improve and go beyond what I have already achieved. My work motto is encapsulated by a common, beautiful shrub we often find in our gardens here; it is called the Yesterday, Today, Tomorrow bush, and it has flowers that go through shades of white, pink, and purple over the course of a few days. The life of a soft-funded researcher is constantly analyzing data (yesterday) and ensuring it is written up for publication and dissemination; getting the work of the day done as efficiently and as excellently as possible (today); and thinking about and building on this to write the grants and proposals for funding (tomorrow), all the while solving problems as we go. All these activities are interdependent, and when they are working well, make for a very satisfying cycle of productivity.

The People & Ideas series allows us to learn more about women in STEM and ways in which the community can support and uplift women scientists. We have heard about mentorship, the need for parity between men and women, and ways in which labs can promote healthy working

environments. Is there a specific aspect of scientific culture that you feel requires change or an area that you feel passionately about?

There is no doubt that mentorship is critical for anyone in STEM, but I would say particularly women who have traditionally (although this, of course, isn't universal) had the dual role of being the home builders, nurturers (of both children and elderly relatives), and child bearers in society. A career in STEM is hard work and demanding, and particularly young women can find it challenging to hold, let alone balance, these dual roles. There are, of course, several ways that leaders (all genders), environments, and institutions can enable, support, and facilitate this, but a young woman in STEM really does benefit from a mentor who is supportive, wise, and strategic in navigating this, whether the mentee decides to have a family or not.

Do you feel optimistic about the future for women in science?

Most definitely! I think women are increasingly recognizing their worth, claiming their position and the fact that they can compete successfully, and with more female role models in the world, more young women aspire and have the determination to meet those aspirations.

What do you most enjoy about your work as a group leader?

I continue to understand that asking scientific questions and being able to answer those questions through research is the most wonderful and exciting privilege and has made for a very fulfilled and rewarding career. I am also very at peace with the transition of being in a place where I can increasingly use my status in the ecosystem to support, promote, encourage, and mentor young people to reach their goals too. Finally, I really enjoy that my work and opportunities allow me to interact with and share insights and ideas with colleagues, mentees, and community members at large.

While not in the lab, how do you like to spend your time?

I am a drama queen(!) and continue to love the arts...stage, film, music, and get a huge amount of relaxation in oil and acrylic painting, playing the piano, and when possible, going to the theater. We are very blessed to live in a small coastal village in Cape Town that nestles alongside one of the most beautiful beaches and is surrounded by natural parks. Walking our dogs and enjoying this natural beauty is balm for the soul and recharges the batteries to keep it all going!