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GUEST NAME: PROFESSOR QUARRAISHA ABDOOL KARIM: PRO VICE-CHANCELLOR FOR HEALTH SCIENCES AT THE UNIVERSITY OF KWAZULU-NATAL

	TRANSCRIPTION
DR. MALKA	Hello, I'm Dr. Amaleya Goneos-Malka. Welcome to 'Womanity– Women in Unity'. The show that celebrates women's milestone achievements in their struggle for liberation, self-emancipation, human rights, democracy and much more.
DR. MALKA	Today we're joined by Professor Quarraisha Abdool Karim, who is one of the world's leading infectious diseases epidemiologists. She is the Co-founder and Associate Scientific Director of CAPRISA, Professor of Clinical Epidemiology at Columbia University in New York, and Pro Vice-Chancellor for Health Sciences at the University of KwaZulu-Natal. She also serves as President of The World Academy of Sciences (TWAS) and is the UNAIDS Special Ambassador for Adolescents and HIV. Through her groundbreaking research and global leadership, she has transformed HIV prevention for women and inspired generations of scientists. Welcome to the show!
PROFESSOR KARIM	Greetings, Amaleya, to you and the listeners. What an honour and privilege to be part of your podcast, really looking forward to it. Thank you for that very warm and generous introduction.
DR. MALKA	Well, thank you once again for joining us. Prof, you've become one of the world's leading voices in HIV prevention and global health, and I think sometimes when we look at how developments have happened, we can almost take that groundbreaking work for granted. Tell us what first sparked your fascination in the field of epidemiology, and was there a spark or moment when you realised that this was going to be your life's work?
PROFESSOR KARIM	Great question. I started off life doing a bachelor's in science degree because I love science and I always knew I wanted to be a scientist, but it took me almost a decade to find the thing that I would spend the next four decades working on. So, the first decade as a scientist, I worked in the lab and worked on genetic disorders and iron red blood cell metabolism and very esoteric topics. I should add that I also grew up during the height of the anti-apartheid struggle, so going on for many decades, but I finished high school in 1976, so that was the year of the Soweto uprising and a new energy to the anti-apartheid movement, and I worked largely in the health sector, and I had these two parallel lives, I thought. One of being the scientist working on genetic disorders and the haematological birth-borne diseases, and then the other, which is volunteering and understanding the impact of the apartheid policies on people's lives. Then in 1987 I met my husband-to-be; I didn't know at that stage, and he was just about to leave on a scholarship, and I asked him about the scholarship that he was going to take up at Columbia University, and then he introduced me to epidemiology, and I was fascinated with this rigorous science that also had a social justice component to it. We got married about seven months later, and both went back to the US. I thought I was going to learn about

	molecular techniques that were growing very rapidly in methods, but I had to be a student at Columbia University, and what turned out to be a necessity for being in the lab, actually turned out to be a great opportunity to learn epidemiology, and the more I learned about public and epidemiology in 1988, the more I appreciated that what I've been doing for years in the lab and then what I was doing in the community, could actually be combined. 1988 was also a time when, in New York City, we were seeing the face of AIDs. We discovered the causative organism; we now had diagnostic tests to identify individuals living with HIV, and work had begun on trying to find a vaccine and also treatment for people who were dying of AIDS. So, in 1989, we both returned to South Africa, and having been exposed to so much of HIV from other parts of Africa and also from the Northern Hemisphere, I was curious about why in Southern Africa we did not know more. So, in 1990 I undertook one of the first community-based surveys, and that survey highlighted that HIV in South Africa had shifted from infections in men who have sex with men and individuals who had acquired HIV from unscreened blood and blood products, to a generalised epidemic, but we were at a very early stage of the epidemic. Less than one in a hundred people were infected, but when I had analysed that data, which had about five to six thousand people across the lifecycle, I found women had four times more infections than men, and not only that, but women were also acquiring HIV about five to seven years before men were getting infected. So, while we identified that spread was largely sexually transmitted, young women 15 to 24 years were not getting infected from their male peers, but they were getting infected from men 25 years and older. So that was my epidemiological aha moment, and the question that I asked myself was why this age sex difference and not realising that it would then take up the next four decades of my life and I'd still be working in it.
DR. MALKA	Fascinating, and that segways into part of my next question, which, if you could share what are some of the unique vulnerabilities that women face in the HIV epidemic, because when you were talking that your first inroads in the late 90s, that it was an infection rate of approximately less than one in a hundred, now we're sitting with approximately 20% of the adult population being infected by HIV.
PROFESSOR KARIM	Yes, so firstly, identifying this age sex difference, which is a very unique characteristic of the epidemic in Sub-Saharan Africa, so a lot of the world's focus, particularly in the industrialized countries, was on men who have sex with men and injecting drug use, and so this idea that women were vulnerable did not even feature in the radar screen, and so my descriptions of this age sex difference first was met with scepticism, but I did two more population-based surveys and the pattern that we were seeing was confirmed, and in fact, more recent data tell you this is the unique characteristic and while I described it epidemiologically, more technologies that have emerged have confirmed this in a more robust way through gene sequencing, for example. That aside, why were young women getting infected and why are women more vulnerable to HIV compared to men? Part of that lies in gender power disparities in society. So, it's a social challenge in terms of who has sex with whom and why this sex is taking place, bearing in mind that not all sex that is happening is consensual. We know well about gender-based violence and non-

	consensual sex, but there's a bit of biology, and then there's the woman's anatomy, for example, which enhances the risk of getting infected. So, there are social factors, there are biological factors, and then also behavioural factors. So, for example, if a woman has a partner and the partner has other partners, then she may be monogamous, but her risk changes because of the behaviour of the partner. So, there's a lot that goes into defining women's vulnerability, but what my work highlighted was this age sex difference being important, and two is, everything that was available at that time to prevent HIV infection needed male cooperation. So, if you take, for example, being faithful, the women can be faithful; the men not being faithful, having multiple simultaneous relationships put her at risk; then the tool that we had at that time was a condom, a male condom. So, it's now dependent on the man using it. So, what we identified, and "we", I say a royal we, because my husband and I have been tackling this issue jointly and working together, and then we have a large team of researchers that we work with, both collaboratively in partnership, but also study teams that do this, and then large numbers of women who volunteer in our studies. So now that we have the "we" out of the way, if we look at the field, this is a social problem that's going to take an all-of-society approach to fix, but some of us thought, well, can we fill this prevention gap by developing a tool, a technology that women can use to protect themselves? So, while we wait, social challenges are not easy; there are no quick-fix solutions. So, in 1993, when we identified this gap in prevention technologies, somewhat naively we decided we would try and fill that gap and not to address the social challenge, but at least to create an opportunity where sufficient numbers of women could protect themselves from getting infected. So that started what would be an 18-year journey of many failures, in fact, earning us the Moniker of being experts of failure, of looking and remembering that the efforts we and others were engaged in to find women-initiated technologies were not something on the agenda of industry and pharma. So, we're working in academia; we are trying and learning from each trial that we do, what we need to be looking at and doing. Then in the early 2000s we came across an antiretroviral called Tenofovir that was being used for treating patients with AIDS, and we had this idea: can we test Tenofovir in a topical formulation to prevent HIV infection, and that was what we announced to the world in 2010 as the initial proof of concept that antiretrovirals used by uninfected individuals can prevent HIV infection. So that study was done in women; subsequently, other studies were done, and today, a daily tablet of Tenofovir is widely available that can prevent HIV infection.
DR. MALKA	How do you feel having done all of this work and being able to see the end? To have successes like this, what does it make you feel?
PROFESSOR KARIM	Yes, so it was quite a moment when we unblinded the trial CAPRISA 004 and found this positive result. So that was a moment of celebration, and in science you celebrate the moment and then you go back, and you look, and our question was, why did we not do better? And that led to a whole set of other questions, but I think the significant pieces for me in that moment were that we had finally found something that could prevent the infection in women. Secondly, industry joined our efforts, and the focus, as you know, more recently we had the announcement from Gilead Sciences of a six-monthly injection, and for young women who continue to be at a high

	risk of getting infected, still bear a disproportionate global burden of infection that's taking place. The challenges young women were having were threefold. One is that they don't see themselves at risk of getting infected. Secondly, to access the medication in a public sector clinic, in this case daily tablets, is not easy, there are hidden costs, transport costs, overcoming some of the moral and judgemental approaches in terms of accessing health services as an adolescent, and thirdly thinking about sexual issues and talking about sex is not one many people feel comfortable with, and especially young people, but the other is, they don't have sex very often, young people, so they don't need something that can be used all the time and so the uptake and persistent use of daily tablets was a challenge. So those six-monthly injectables, where twice a year you can get an injection and it's 100% protection, is like a real game changer in terms of preventing infection in young women, but also underscoring this is not just for women, this is for anybody at risk of getting infected and the price point of \$40 a year makes it cheaper than the daily tablet, and I think with some of the voluntary licences that have been awarded, that price can become even more competitive. So I think we're finally at a moment for women and in HIV prevention that is quite a remarkable moment, and it also adds to the broader body of knowledge that scientists have brought in, the hope they've brought in, and you think about just over four decades ago the world was facing a new threat and we were seeing young people sick and dying, a lot of stigma and discrimination, and we saw how activism from communities really challenged and pushed scientific discovery. Science brings hope in terms of preventing infection through mother-to-child transmission, changes the face of AIDS from an inevitably fatal condition to one that's chronic and manageable, and now we have these tools to prevent HIV infection, including enabling women to take charge, or anyone at risk of getting infected. What an amazing four-decade journey for all of us working in this space.
DR. MALKA	Fantastic, and it's so wonderful to hear this story kind of wrapped up in one moment, and I know it's not the end, but it's certainly a fantastic progression, and how you've highlighted that it wasn't just disease aspects, but there were so many social aspects and components to this, which were part of the solve.
PROFESSOR KARIM	Yes, and I should add, I think we've got the tools and our challenge today is how do we scale that up? How do we reach everyone to benefit from the science, and then for me that would be the end of the journey on HIV. So, science has brought hope; activism and science working together has accelerated that. We've seen global solidarity through PEPFAR, through the Global Fund for AIDS, TB and Malaria, but in more recent times, like at this moment where we could really change this trajectory and meet the 2030 goals of ending AIDS as a public health threat, what we've seen is cuts in funding and so on. So, we can come back to that, but just to say that it is the solidarity that will take us over the finish line, and I think we need to focus on that, to make that not a forever story that science has brought us to this point, but it's not meaningful unless we get that science to benefit everyone, everywhere.
DR. MALKA	100% and that's always the way, isn't it, that when you have that momentum driving things, that if there is a little bit of apathy or people don't continue, you kind of lose the gain. So, it is always a matter of persistence and just continuing, please. Please continue with all the efforts that you're doing. Now, Prof,

	besides your work and directly in the field of HIV, you've also trained over 600 researchers across Southern Africa, and importantly for us, being a women's-oriented show, is that you've championed women in science. So, could you share a bit of advice to perhaps a young girl listening today who may enjoy mathematics or biology, but doesn't necessarily know if she belongs in scientific research?
PROFESSOR KARIM	Yes, training and capacity building is really important. Through the Fogarty AIDS International Research and Training Programme, we had the privilege to train individual scientists and enhance our response to HIV and TB, and I think South Africa's contributions partly reflect those early investments that have been made. In CAPRISA, a new centre that I co-founded with my husband Slim, we continue to invest in young people, and I'm really excited to say that more than 80% of our centre is women. I think our true legacy is not just the scientific contributions, but our training and capacity development programme. We have trained about 1,000 people: master's, PhDs, and what excites me is how our postdoctoral students stay on, and each is finding their own contributions to make in our response to HIV and TB and other emerging pandemics. So, I think part of it for me is it epitomises that when we create opportunities for women, when women can see role models, people who look like them, they are more inspired to pursue this. Just yesterday I was having a conversation with some of the students who are just finishing up their PhDs and some who've just become postdocs, and they were saying to me that they're the first in their family to have a PhD, or the first in their family to do this, and I think for me that's that legacy of an increasing cohort of women that we are seeing. So, with all the efforts to bridge gender disparities in every walk of life, to me it's amazing in this time and age that we still have to bridge gaps. I find that a very sad moment, because we're half the population and we have so many complex challenges to address that it's an absolute luxury to exclude half the world's population. So, for young women, it's to say that if you want to make a difference in life, whatever it is, whether it's as a scientist, or an engineer, or a teacher, it's like you've earned your place at this table; take it and live your best life and do what really drives you. Find that superpower in you, and whether it's in science and technology and innovation, I'd say nothing is stopping you from pursuing it. I think the people who've preceded you have really removed a lot of barriers- not all the barriers, but at least the path is easier, and that you can focus on what you want to do and the difference you want to make and the type of legacy you want to leave should shape and determine what you choose to do and how you choose to do it.
DR. MALKA	I think there are so many messages in what you've just shared there. For me, seeing kind of like the parallels with the AIDS research that you've been doing, that everything in life is not a simple cut, that there are so many social factors, behavioural factors that come into play on literally any topic. You were talking about the scalability factor, and I think that in the work that you've been doing where you have women going into different trajectories, that they're amplifying and that becomes the scalability, that it goes on and grows with subsequent generations.
PROFESSOR KARIM	Absolutely, and I think some wise person said that when we invest in women, we actually invest in a multiplier effect, because women really are

	self-centred and they are always carrying, conserving, concerned, and nurturing. So, women and the empowerment of women also mean society benefits. When you were speaking about some of the other facets of disease, for example, and health, I think the one we underestimate is the economic benefits, and we learned during COVID-19, for example, the cost of the epidemics and pandemics and ill-health more generally. So, one needs to think about investments in education and health as investments for the future, and not just in terms of the social wellbeing of people, but also how we can transform societies economically and also sustainably.
DR. MALKA	You wear a number of different caps. You've got your research cap. In the introduction, I shared some of your leadership roles where you have served on scientific advisory bodies, you lead organizations which shape global health policy, and leadership requires a different mindset. What would you say authentic leadership means to you, and how can women lead without feeling that they have to compromise who they are?
PROFESSOR KARIM	That's a great question, and I like the term you use, which is authentic leadership. So firstly, I think that being a leader is very different from being a scientist, for example, or an engineer. So leading means that you're a custodian of something, and I think that being a custodian brings a lot of responsibilities. So, a key issue for me, and it's not whether you're a woman leader or whether you're a male leader, that's why I like the authenticity, it's being true to who you are and true to what you've been charged to take care of and nurture and it's the ethics of that and integrity, it's like your moral compass that's really very, very important. The second is, I think with leadership, humility is really important, because humility means that you listen better and you don't know all the answers, so by listening you create a more inclusive, collaborative environment. Listening also makes you appreciate that everybody in your team who you're leading has value to bring and is valuable. I also think that sometimes as a leader, you're also representing voices of the voiceless, and so how do you do that by ensuring the voiceless don't remain voiceless forever, but that you create space for the voices of the voiceless to be heard in the first instance, directly. So, these are about creating opportunities; it's about guiding, it's about nurturing. I think about leadership as my teachers, where in school, they are custodians of young minds, and their dedication and commitment to give you every opportunity, to create a safe and supportive space that values every contribution that can be made and could be made, I think is all part of what I see as authentic leadership.
DR. MALKA	And have you got any kind of personal habits or mindsets that help you focus when you're trying to balance between your myriad of professional responsibilities and also personal commitments?
PROFESSOR KARIM	Yes, I have been very fortunate in my life that from a very early age my parents and grandparents put a very high value on education. So, they themselves did not finish high school, but notwithstanding, they really instilled in us this curiosity, this ethic of wanting to know more and do better and always trying to improve critical thinking and so on. And then in school I've had teachers who have really helped with that, and I think what was important is sometimes the message came across in a nice way, sometimes not a nice way, but I've learned over the years to filter out even the most toxic comments that are made. If you can find that silver lining

	there and stay focused on what you can take away, it could be either a behaviour you don't want to emulate, or it could be a nugget in there, but I'm always looking for what is the positive takeaway and not be distracted by the noise that it can be surrounded with. I've also been fortunate in having a lot of great mentors, both men and women, who've taught me about some of the underlying values of ethics and integrity and always doing what is morally justifiable and defensible, and showing that you can stand up even in difficult circumstances, that if you can make a small difference with complex challenges, it takes time, and so patience, perseverance, but always do it in the right direction, keep moving in that. Then my husband and I, because we work together, we share the same values, we have three children, and we've been able to balance our professional and personal life, because we do a lot of co-parenting, and we have a lot of support from friends and family. So, it literally is we are who we are because we have a whole community of support and friendship that's really what sustains us during challenging times, but also when we need to celebrate, which we do often; we do have that, and I'm so pleased my children have also found different paths where they found their own passions and make their own contributions. So something I think must have been right in what we've done, because I think the litmus test is really how does the next generation do, and so for me my success is a reflection of my mentees, my children, and others in the next generation, are they doing better and are they achieving more, and I think I'm seeing that repeated, which makes me happy that this is really an exciting time as I enter the third chapter of my life, that the legacy one leaves is a very promising one. One that fills me with a lot of hope and optimism, that we have a whole cohort of young people in Africa changing the narrative of being imbibers of knowledge generated elsewhere, to actually creating new knowledge that's not only impacting Africa but impacting the world.
DR. MALKA	You've given us insights in terms of that fantastic network of support structure that you've built between yourself and your husband, your family, your colleagues, your friends, which is not only there in times of hardship, but also there in times of celebration to drive through and then that wonderful view in terms of legacy and success as you move into your third chapter, of what's happening in the next generation. So, we've chatted about all of your developments to get us here, to chapter three. Can you reflect on perhaps some of the pivotal moments in your life when you were growing up?
PROFESSOR KARIM	Yes, the image or the memory that is always triggered when growing up was the one where my parents encouraged my curiosity. I must have been about three years old when I discovered electricity by putting my finger in a socket, and I thought it was the most exciting thing. I had to share it with my younger sister, and unfortunately her experience was not the same as mine, and that got me into school a year earlier. So, to me, that curiosity, supporting that curiosity, encouraging it, and in my decisions over time of choosing to be a scientist, for example, is not very common in the community that was more familiar with choosing career paths like medicine or engineering and law, teaching, nursing, and now, as a parent, I feel a little bit more empathy with my parents. No matter how I pushed the envelope, they gave me space to be me and supported me through that, and the same with teachers, and I think about teachers who really saw a talent that I was not even aware of and stretched me. A similar experience

	with my mentors as I pursued my masters and PhDs, and I think starting doing that first population-based survey in 1990 and identifying this unique characteristic, and just that opportunity to work in AIDS, I think has been quite a milestone in my life, but with it also has come a whole global community of friends working through challenging times, and again, as we've had these moments of discovery and game changing moments, to pause and celebrate. I think now, working as the President of the World Academy of Sciences and also advising the UN Secretary General on the use of science, technology and innovation to accelerate progress on the Sustainable Development Goals has exposed me to multiple disciplines, multiple different disciplines, and to think about that, and then this time where we meet, which is such a consequential moment. I think in a way not unexpected, given all the progress we've made, the opportunities through Artificial Intelligence, I think for me, are full of promise and peril, and it's how we navigate that. It's not too different from other moments of adversity we've faced, and so part of it is my love for science has just grown and as I've learned more and more facets of it, and to me it's how do we take that science and use it for the betterment of humanity. Not just for our generation, but for generations to come. So, it's that sustainable future, about a planet that our great, great, great-grandchildren can enjoy, but then also that the quality of living that science and knowledge benefits everyone, everywhere. There's this kind of polarisation and inequalities; how do we address that? So, even though I am entering my third chapter, I think I also have a little bit more wisdom maybe of the kinds of challenges that face us and how do we bring new technology in, how do we bring advances in, so that it's not just a few people benefiting from it, but that like other discoveries we've made in the past to bring humanity to this point, that we continue to ensure that it's in service to humanity, but also ensures planetary health.
DR. MALKA	I have been so inspired by you today, personally, and all of the work that you have done and continue to do. As we wrap up today's conversation, is there perhaps one message you'd like every woman and girl listening today to remember, whether that be about health, education, leadership, or believing in themselves?
PROFESSOR KARIM	Yes. So, there's a lot of things I could possibly or probably share, but I think the one thing that I take away is, never underestimate the power of being underestimated.
DR. MALKA	Wonderful! Thank you. Very poignant. It's been a pleasure having you on the show today.
PROFESSOR KARIM	Thank you for having me.
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