

PROGRAM DATE: 2018-05-10

PROGRAM NAME: WOMANITY – WOMEN IN UNITY

GUEST NAME: PROFESSOR HEIDI ABRAHAMSE- BIOCHEMISTRY AT UJ

SPEAKER	TRANSCRIPTION
DR. MALKA	Hello, I'm Dr. Amaleya Goneos-Malka, welcome to 'Womanity – Women in Unity'. The show that celebrates prominent and ordinary African Women's milestone achievements in their struggles for liberation, self-emancipation, human rights, democracy, racism, socio-economic class division and gender based violence.
DR. MALKA	Joining us in our Johannesburg studio today is Professor Heidi Abrahamse who is a professor of biochemistry; she is the Director at the Laser Research Centre in the Faculty of Health Sciences at the University of Johannesburg as well as holding a SARChI Chair for Laser Applications in Health. Professor Abrahamse is leading efforts to investigate the field of phototherapy with specific emphasis on low intensity laser irradiation or photo or photo biomodulation, photodynamic therapy, phyto-photodynamic therapy and stem cell therapy in a career which has spanned more than 20 years and she has published papers in over 130 peer reviewed accredited journals. Welcome to the show!
PROFESSOR ABRAHAMSE	Ooh that's a lovely introduction, thank you Amaleya and thank you for inviting me to join you today.
DR. MALKA	It's a pleasure to have you here and we look forward in terms of discussing more about your work and some of your views with regards to gender. The Laser Research Centre in the Faculty of Health Sciences at the University of Johannesburg was established in 2004; as the centre's director, can you tell us a bit more about some of the work that you do as well as the responsibilities that come with holding this position?
PROFESSOR ABRAHAMSE	Yes. The Laser Research Centre focuses on research at the cellular and a molecular level. We conduct research looking at specifically laser, but light in general, and we look at the molecular and cellular effects of light or laser light on biological tissue. The applications of laser irradiation or laser therapy is vast, it really... it encompasses an enormous field of diseases and conditions but we specifically as biochemists and molecular biologists we focus at a cellular and molecular level, determining the outcomes of irradiation on biological tissue. The centre was established in response to a request from the National Laser Centre who was then directed by Dr.to conduct...he asked me to look at the duo-feasibility study on the medical applications of laser in South Africa and I conducted this feasibility study and as a result of the outcomes of that study he then offered to support research initiated by my group and yes over the last sixteen years it has just exploded into a fantastic centre, well equipped, excellent infrastructure and really it is all possible as a result of the support that I got from the University, from the NRF and the CSIR.
...DR. MALKA	And you also find that as we're developing from a society point of view that advances in technology are growing and they're almost amplifying, you know, in the past we always think about Moore's law on doubling effects, but now the rate at which advances are being made is escalating almost on an exponential level.
PROFESSOR ABRAHAMSE	Correct and our new Vice Chancellor Professor Tshildzi Marwalav, his theme for his tenure is really the fourth industrial revolution and that is such an excellent example of the advances in technology. In our field of research laser therapy or photo biomodulation is the new phrase that's

	<p>been coined for the application of laser irradiation but it's been around for many, many decades. It was really established and well researched and applied in the Russia Eastern Block countries and as a result of the Cold War really it was not as well-known in the western world. Now we learn a lot from what they have already done but what was lacking was not so much the application of the therapy but sound research that supported the outcomes that many people see. There was a lot of controversy surrounding laser irradiation and it was mainly because it was applied clinically prior to being investigated at a laboratory in vitro / in vivo studies. In the last I'd say fifteen years it's exploded in the research conducted worldwide. In our country there are a few people that do this type of research but I think we can safely say that we are the most well-established and really the South African group internationally and we are far better known internationally than we are in South Africa itself as a result of that.</p>
DR. MALKA	<p>Well I think that you have to do more media programmes to get the message out that would be a start, if we're going to upscale the public awareness and interest from South Africa and also from an African perspective. So you've spoken about some of elements and the history of photo bio-modulation or laser irradiation; can you tell us what milestones do you want to achieve in your role as director of the centre?</p>
PROFESSOR ABRAHAMSE	<p>Yes, I think one of our main goals as the Laser Research Centre is to do exactly that; to create public awareness of the benefits of photo biomodulation. There are so many diseases and conditions that can be treated with photo biomodulation. Biomodulation really refers to both inhibition and activation, hence biomodulation so, so many functions in biological tissues are affected by laser irradiation or light irradiation. While it can inhibit some processes, it can activate some processes and in most cases where there's treatment of wounds for example or pain relief, in these cases you are activating or stimulating certain biochemical pathways that will induce preferential conditions to induce healing.</p>
DR. MALKA	<p>And I would imagine that it's very, very targeted as a treatment and that's also part of the success; that it's not going into other pathways, it's very focused on the job and on the task and the therapy that it's trying to achieve.</p>
PROFESSOR ABRAHAMSE	<p>Well when you look at the application of laser in PDT or Photodynamic Therapy that is used for cancer treatment and in that case it is very targeted. Photodynamic Therapy briefly is the use of a photo chemotherapeutic compound that is highly light sensitive applied to a tumour, that tumour is then irradiated specifically with laser light; laser light has certain characteristics that allow it to be highly directed. The light activates this compound within the tumour cells and these cells then die. So for photodynamic therapy, it's a very directed or targeted treatment. When you look at photo biomodulation it is not as directed, where you treat for example, pain or wounds, depending on the treatment modality, you design a probe that really spreads the light so that you can treat larger areas and also of course depending on the wavelength of the light, that determines the penetration depth of the light. So yes and no; it is directed when used in certain applications and more systemic in other applications.</p>
DR. MALKA	<p>Thanks for giving us some of the details in the technical specifications on what each of each of those therapies do as well as highlighting the areas of application, so from pain relief, to wound healing, to cancer treatments. Your career's spanned more than twenty years and you've published articles in numerous journals; we've touched base on some of your research interests in photobiology, photochemistry looking at photodynamic cancer therapy, stem</p>

	cell differentiation and wound healing and I noticed that on your centre's website there was what must have been a fascinating lecture titled 'Can All Diseases Be Treated With Light' by Professor Michael Hamlin, noting that visible and near infrared light might be able to treat all or nearly all human diseases. Can you tell us a little bit more about this because this almost sounds like a miracle cure?
PROFESSOR ABRAHAMSE	Umm. It does sound a bit like a miracle cure, you're referring to a lecture that Professor Hamlin did at University of Johannesburg, a public lecture and he is a distinguished visiting professor to our centre, he's from Harvard Medical School and he is an absolute amazing academic. His career is just phenomenal and he works with us, we collaborate with him and his lecture simply refers to when he says it can treat...or can it treat all diseases, it means that laser or light irradiation at specific dosages, the parameters of the light, the fluence, the power density, there are many technical aspects about the light that must be controlled or manipulated, but if you have that dose response right, light will induce activation of specific chromophores which would induce production of ATP. Now ATP is the miracle molecule really, ATP...
DR. MALKA	...energy...
PROFESSOR ABRAHAMSE	...is your energy. So when you say can it treat all diseases? Yes it can because inevitably it stimulates the body's own responses so that it actually induces an immune response, it just activates and improves the viability, the proliferation of cells and thereby it actually is a miracle cure.
DR. MALKA	And can you tell us about some of the results of your research that you've been working on?
PROFESSOR ABRAHAMSE	Initially we started with diabetic wound healing. Diabetes being a very, very important and terrible disease really and it affects the whole world, but much more so in the last few years in South Africa and Africa....
DR. MALKA	...because it's become more prominent, almost....
PROFESSOR ABRAHAMSE	...absolutely...
DR. MALKA	...as a lifestyle disease...
PROFESSOR ABRAHAMSE	...yes and one of the most severe effects of diabetes is diabetic ulcers. Now as a result of peripheral nerve damage, you know people that have diabetes will bump their foot and they will develop a sore and they won't even be aware of it because of the nerve damage, so those sores become ulcers and those ulcers become infected and causes gangrene and it eventually may lead to limb amputation and that in itself can cause severe...it has enormous economic and social impact on the country. Now the work that we conduct there is using laser irradiation or photo biomodulation to initiate fibroblast and skin growth, so where you have an ulcer laser light or laser therapy will actually induce healing of the ulcers and we've done a few pilot studies on patients and it's got amazing results, I mean we do conventional therapy together with laser therapy. We do a proper research design so that we can actually compare and see and what we've found is that the time that it takes for ulcers to heal when irradiated is much quicker than those that are not irradiated...
DR. MALKA	...so following a conventional...
PROFESSOR ABRAHAMSE	...yes...
DR. MALKA	...approach and practice.
PROFESSOR ABRAHAMSE	In addition to that, because most of the studies international that's been conducted has been conducted on light skinned people and we are in South Africa, we are in Africa, so very little research had been done on darker

	<p>skin types and that is very novel in our country because there are no work out there on darker skinned people and there are...there are basically six shades of skin colour. So we've done...also done pilot studies which really sets the baseline for therapy of this nature to be used for wound healing and we've also...we've found incredible results because what you apply to a light skinned person and what you apply to a darker or more pigmented skin is significantly different, so we're very excited about that work and establishing the molecular and cellular pathways that are activated by doing this therapy.</p>
DR. MALKA	<p>Earlier in our conversation you mentioned that the clinical work had almost preceded the research work so in effect it's putting the cart before the horse. Now there's greater robust research that is taking place; are we going to start seeing these types of therapies being offered in medical practices?</p>
PROFESSOR ABRAHAMSE	<p>We do already. The type of lasers that are used, there are different classes of lasers and of course lasers have been used for many, many years. High powered lasers are used for surgery, ophthalmology applications for eye care, but these lasers are low powered lasers and this application has not been used extensively. So yes there are a number of people, physiotherapists for example, wound care specialists that are already using photo biomodulation as part of their care regime but a lot more can be done and especially with the use of LED's (Light-Emitting Diodes), it's brought the cost of lasers down significantly because it's not about the laser light, it's about the light. So you can by really directing and focusing the light, the type of light, you can apply it and it can work for this treatment modality. It's not applicable to all kinds of treatment, like I said, the photodynamic therapy it's a highly specific, highly directed source of light that is required but the use of LED's that reduced the cost has now allowed specific companies to actually produce hand-held and portable treatment devices.</p>
DR. MALKA	<p>So it's become a commercialised product to take it and...</p>
PROFESSOR ABRAHAMSE	<p>...and you can actually use it at home. You can, you can take it home and use it every day.</p>
DR. MALKA	<p>We've spoken a lot about the positive effects and benefits; are there any negatives?</p>
PROFESSOR ABRAHAMSE	<p>Yes there is negatives and this is part of the controversy that surrounded laser therapy for many, many years. People utilised lasers without real thought of - and now I am talking about clinicians - they might have been introduced to the kind of therapy, they introduced it and without determining the correct parameters that they used they got bad results...</p>
DR.MALKA	<p>...you said the dosage, the power, etc.....,</p>
PROFESSOR ABRAHAMSE	<p>...exactly. So if you treat someone for pigmentation for example and you do not use the right laser parameters you can actually induce enormous damage. So as with anything that is used for medical conditions, you have to know what you're doing and that is being much more clearer now that more results...research is being conducted and results are being published.</p>
DR. MALKA	<p>In the introduction I mentioned that you hold the Department of Science and Technology's National Research Foundation in South African Research Chairs Initiative, or in short format a SARChI, for laser applications which you received in 2015 and it's for a period of fifteen years; that's fantastic. The SARChI as I understand is an intervention by South Africa designed to significantly expand the scientific research base of the country in a way which is relevant to our national development and in support of making South Africa an internationally competitive global knowledge economy. What does the award mean to you and what are you using it for?</p>

PROFESSOR ABRAHAMSE	It was a tremendous honour for me to receive that chair. I can honestly tell you that after so many years of being an academic that is academics are very humble people, I really believe that and we work very hard and to get a pat on the back is really worth so much for us and getting this SARChI Chair is a tremendously pleasing pat on my back because I've been in academics since I was eighteen really. Minister Naledi Pando, which is my heroine, she in her time in that position decided that we need to expand this programme specifically and it was during that time that she also insisted that we look more at women researchers and acknowledge their work and as a result of that I was...I applied for it and I received it and it is very comforting to know as a scientist and as a researcher that you are secure for at least fifteen years. Of course, just like any grant, you have to produce, you have show your input and your output to keep that chair but it's very, very heart warming for me to know that to have that security, not only for the research that we do, but also for all the postgraduate students that we support as a result of that grant.
DR. MALKA	Brilliant; really a wonderful, wonderful achievement.
DR. MALKA	Today we're talking to Professor Heidi Abrahamse who is the Director of the Laser Research Centre at the Faculty of Health Sciences and holds a SARChI Chair in Laser Applications in Health at the University of Johannesburg.
	AD BREAK
DR. MALKA	You are listening to 'Womanity – Women in Unity' on Channel Africa, the African Perspective, on frequency 9625 KHz, on the 31 meter band. Also available on DSTV, Channel 802. Today we're talking to Professor Heidi Abrahamse who is the Director of the Laser Research Centre in the Faculty of Health Sciences at the University of Johannesburg. We would love to receive your comments on Twitter:@WomanityTalk.
DR. MALKA	In the previous segment of the show Prof Abrahamse spoke about some of the work that she does from a laser therapy perspective, we spoke about some of those combinations of eradication and photo bio-modulation. We looked at some of the applications to wound healing, pain relief, as well as targeting cancer tumours with this type of therapy. Prof Albrahimse, this programme is all about gender equality and I'd like to ask you about your perspectives concerning women's empowerment and gender equality legislation, particularly in relation to helping close some of the gender gaps that still exist, whether that applies to promotions or pay even, so if you could share some of your thinking?
PROFESSOR ABRAHAMSE	Ja I am of course a great believer and supporter of women in science and gender equality. I can honestly say that I have over my career, I have experienced gender inequalities, but I have also, at the same time, experienced tremendous support and definitely over the last ten/fifteen years there's been a tremendous boost for women in all facets of life, I'm a great supporter of that. I'm not a great supporter of people who talk the talk but don't walk the walk and unfortunately there's still a lot of that as well. My personal experience in research in science and technology, I think the very fact that I got a SARChI Chair, I would like to believe that it is because of the work and the research and the outputs that we've produced that allowed me that opportunity, but unfortunately you also have to understand that there was a drive towards empowering women and creating more SARChI Chairs for women....
DR. MALKA	...but doesn't that come out of things like affirmative action? So I often tend to think that if women aren't considered for a role or if women are not given an opportunity then it's impossible for them to get to the next level without having

	that opportunity available to them.
PROFESSOR ABRAHAMSE	Ja that's right but I mean you have to create your opportunities. I'm a very proactive person, I don't take no for an answer without an explanation. I believe very strongly in myself and in what I can achieve and I think it's a very personal thing in women specifically, I think women are able to do a lot more than they think they can and that is because of gender inequalities that has been introduced all our lives.
DR.MALKA	It's almost been socialised into people.
PROFESSOR ABRAHAMSE	Exactly, that's the reason. So if you do not believe you can do something or create an opportunity for yourself, irrespective of your gender, you will not achieve that. The fact that there are more opportunities is fantastic.
DR.MALKA	And potentially also when you look at the academic space in terms of peer reviewed publications, they don't know your identity, they don't know if you're a man or a woman, so as you become more published it really is your work is speaking for itself.
PROFESSOR ABRAHAMSE	Correct, yes.
DR. MALKA	You said that you had overcome and experienced some issues of inequality, could you share what those elements were and how you overcame them?
PROFESSOR ABRAHAMSE	I think if I say I've experienced gender inequality I think South Africa has undergone tremendous change. Good change, very good change in terms of gender issues but most definitely when I was a youngster, when I started my career as an eighteen year old going to university for the first time, you hardly saw any women professors, you hardly saw the opportunity for women to be advanced and promoted. With the changes that came in our government, that has created tremendous change with respect to gender equality, BEE equity and I think that is just wonderful for women in South Africa. I have experienced gender inequality just like any other woman in terms of just realising one day that you had the same position or staff level as a male but getting a much weaker salary, so that's what I've experienced but I've overcome it because I addressed it, because just because I'm a woman I cannot make that change or introduce a change in the system and I must say that at the University of Johannesburg the drive towards transformation, equality in gender, in promotion and the advancement that I have seen women academics have undergone is just fantastic.
DR. MALKA	And eventually that will level the playing field...
PROFESSOR ABRAHAMSE	...oh yes, I believe so...
DR. MALKA	..so you'll have pay parity....
PROFESSOR ABRAHAMSE	...in fact women are so fantastic aren't they? They multi-task, I mean ask a man to do something and he can do it. Ask a women to do ten things and she will do all ten of them so really I think women leaders, I think the world should be ruled by women, to be honest, there will be far less power struggles.
DR. MALKA	Well this show certainly supports that ideology. One of the things that you touched on when you spoke about being a young eighteen year old going into academics and there almost being no female professors; what do you think about role models and mentorship as tools to support and nurture young women to groom them up into positions?
PROFESSOR ABRAHAMSE	It's wonderful; I can honestly tell you that I've mentored students and staff at our institution for many, many years. I think there are excellent role models and there's a lot of room for mentorship and for shadowing professional people by young girls. There are many programmes, as you

	well know, but yes, I think it's very good, we have excellent programmes for mentorship at the university and I believe that as an academic and a researcher and a research centre director, my role is not just to produce research or to advance science, my role as a supervisor and as a mentor for my postgraduate students are almost more important.
DR. MALKA	To produce well-rounded individuals.
PROFESSOR ABRAHAMSE	Absolutely.
DR. MALKA	Now turning towards more of a personal perspective, one of the questions that I ask all my guests on the programme who have made significant achievements in their respective fields of expertise is about some of the factors that they consider have driven their success or contributed to their success. So some people speak about hard work, others talk about perseverance, some people speak about a particular person in their life whether it's their mom or grandmother who's helped motivate them, so could you share with us what have been some of the key drivers to your success?
PROFESSOR ABRAHAMSE	On a positive note I think perseverance, motivation; its support from important people in my life. You have to balance your personal life with your career, it's very difficult very often for women who have children and so on but most definitely I have to say my mother is eighty seven years old, she runs a business...
DR. MALKA	...wow...!
PROFESSOR ABRAHAMSE	...she works from seven in the morning 'till five in the afternoon, she more often than not prepares breakfast for all the people that work with her and for her, she's just an amazing woman and she never had the opportunity to have a tertiary education but she and my father worked towards their children achieving that. So I have grown up with absolutely phenomenal examples in my parents for hard work, appreciation, accountability, responsibility and that initially I would say it was a fear of failure that drove me to succeed for...as a payback for what my parents have done for us. Now I think what drives me is to see how the young students develop. It's the most fantastic thing in life to think how many thousands of students I have touched, whether it's in one lecture in the first year or seeing them graduate with a doctorate. It's a tremendous sense of accomplishment to think I've touched your life, irrespective of the greatness of that touch or not but I've touched your life and I hope that I've...that something good has rubbed off on you. So I think my students are my family, I spend...really I spend more time with the centre than with my own family, my own children and I think that is one of the greatest successes that I would like to remember is to now meet someone that's a professor that I taught in first year.
DR. MALKA	So it's almost like going from a payback to your parents for their contributions to a pay forward to your students that they are taking on and manifesting how you've touched them. Reflecting back a little bit on the past; can you tell us a few of the pivotal moments in your life growing up and elements that have...you consider have made you into the person you are today?
PROFESSOR ABRAHAMSE	Yes, I was one of three. I have two siblings; two brothers that are quite older than myself, so I grew up very much very protected but also very hard having two brothers. I think something that was instilled in me from a very, very young age was a sense of responsibility. Both my parents worked, I grew up alone really 'cause my brothers went off to boarding school and I was solely responsible for doing what I had to do; homework, cooking for my parents before they came home, from a very, very young age; that played a very big role in my life. A bit later on when I was a little

	<p>bit older I danced my whole life, I did ballet and Spanish and tap and Latin American for many years, my entire school career I danced and I think that that also brings tremendous discipline and focus to your life. In fact that was one of my dreams, to go the Art School and become a ballerina but we all realise at some stage that we can't all be Margot Fontaine so instead I studied science. So I think that played a very important role in my life, my dad died when I was fairly young, I was eighteen, in my first year, that made me more determined to succeed because he worked so hard...</p>
DR. MALKA	...to get you to this point...
PROFESSOR ABRAHAMSE	<p>...yes, so I think my dad he was an absolute gentleman and I wanted to succeed for him. I think my children play a very important role in my life, they challenge me beyond belief. I only had my first baby when I was 31 and I thought I had conquered the world, I did a doctorate, thought I was very clever and the first time I held this baby that was screaming I almost died 'cause I couldn't understand why, so that brought me back to ground level very quickly, but my children are an inspiration for me, they are just magnificent and they inspire me to be better and to be a better example for them. Yes, I think from a career point of view there are so many people that I have to thank really for how they've supported me but one of my key role models I have to tell you is a prof...a lady, my supervisor for my masters was Professor Amanda Lochner, she is a super professor, she is at Stellenbosch where I did my masters and she was just the smartest lady I'd ever known.</p>
DR. MALKA	Well thank you for sharing those personal moments and lastly as we close out the show today, could you share a few words of inspiration that you'd like to pass on to the young ladies and women that are listening to us today?
PROFESSOR ABRAHAMSE	<p>Ja. I think if there's something that I can say and that I say to my own children, my own students is; you are so much more intelligent and you are so much more than what you believe you are at such a young age. You...never say never. Never say you can't do anything. You can do anything. When babies are born, they are born with the same possibility, with the same abilities. Develop those abilities. Never say I can't do maths, I can't do this, you can do it, you have to just dig deep and explore your own potential really, but never say never and never take no for an answer.</p>
DR. MALKA	Thank you for that powerful motivation. It's been a pleasure having you on our show today we really appreciate you taking the time.
PROFESSOR ABRAHAMSE	Amaleya thank you so much, it was lovely talking to you.
	PROGRAMME END